THE AUTOCAR

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

EDITED BY H. WALTER STANER.

No. 394. Vol. X.] SATURDAY, MAY 16th, 1903. [Price 3d.

THE AUTOCAR.

EDITORIAL OFFICES:
COVENTRY.

PUBLISHING OFFICES:
3, ST. BRIDE STREET, LUDGATE CIRCUS, LONDON, E.C

CONTENTS.

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.
Nice: Levant & Chevalier, 50, Quai St. Jean Baptiste.
United States: The International News Agency, New York.
Paris: Neal's English Library, 248, Rue Rivoli.
Melbourne, Victoria, Sydney, N.S.W., Brisbane, Q.L.D., Perth, W.A., Wellington, N.Z., Christchurch, N.Z., Capetown, S. Africa, Durban, Natal, S. Africa — Messrs. Gordon and Gotch.

Notes.

The Belated Ballot.

On Tuesday of this week the Automobile Club issued to its members the voting papers, in which they were asked to express their opinions as to what the policy of the club should be with regard to proposed legislation, the main issues being whether the members were in favour of the numbering or naming of cars conspicuously, so that they could be seen when in motion, in consideration of the removal of the speed limit; or whether they thought it better that nothing should be done by the club at present to promote legislation. Bound up in these propositions is the suggested alteration of the law, so that a driver should not be prosecuted for furious driving on a deserted highway on the plea that had the road not been deserted his speed would have been dangerous. As the law stands, the motorist would be liable to prosecution for driving to the common danger, even if the specific speed limit were removed. In addition to the main questions as to whether the member is in favour of the club promoting legislation or not is a third, added at the request of Lord Russell, Captain Deasy, and Mr. Robert Todd, in opposition to the views of the majority of the legislative committee, and this is an enquiry as to whether the member is willing to exchange for the removal of the speed limit small inconspicuous identification plates, certification of drivers, and an increase of the penalty for automobilists guilty of serious offences, such as giving false names and addresses, or endeavouring to avoid identification after causing an accident. It appears to us that to some extent the issuing of the ballot paper is now more or less of a farce, as practically six months' needless delay has occurred. It ought to have been sent out last year, and not later than November, as it was obvious long before then that the opinion of the members of the club was divided on the subject, instead of which a meeting to discuss the matter was promised for November, and then this meeting, for no good reason, was postponed till March. There is no doubt if a meeting had been held immediately after the holiday period early last autumn, a precisely similar decision would have been come to as was the case in March, *i.e.*, the members would have been asked to express their opinion on the matter by a postal vote. However, it is useless to go into this side of the question further than to say that there is no doubt the club made a great error in procrastinating in the way it did about the discussion of the subject, as the Government has announced that it will introduce a Bill of its own, and the club is in the awkward position of not knowing what its members want, though, without any ballot at all, it may be taken for granted that the one desire of the membership at large and all automobilists outside the club is that the club shall now do its very best to secure the safeguarding of the liberties of the automobilist as far as possible in the Bill proposed by Government. As to sending in the voting papers, the members may as well express their opinion as not, and there is no reason why those who disbelieve in numbering should alter their opinion in view of recent events, as the fact that the Government intends

to introduce identification is not any argument in favour of it, and those who disbelieved in it before Mr. Long's announcement last week will still disbelieve in it.

The Club Influence.

On the other hand, as we have said above, whatever the opinion of the individual may be, there will be no deviation of any kind in the desire of the automobile world that the club shall do its utmost, as it doubtless will, to influence the authorities, so far as the details of the bill are concerned. In the main clauses, the Government will probably do entirely as it thinks fit, but the President of the Local Government Board has shown himself open-minded, and there are certain regulations under the bill which may be secured by the influence of the club—things which would in no way affect the vital principles of the bill, though they would make a very great deal of difference to the comfort of the automobilist. A very important matter, for which the club, we hope, will work hard, will be to endeavour to obtain some concessions for the users of the lighter, smaller, and slower machines. For instance, the great bulk of automobilists are not interested in the entire abolition of the speed limit; all they want is to be allowed to proceed at speeds from twenty to thirty odd miles an hour on perfectly clear open stretches without prosecution, and it is not equable that these owners, who, luckily, form the great bulk of automobilists, should be subjected to the same restrictions and penalties as the drivers of monstrous speed machines which are capable of any pace up to sixty or seventy miles an hour, and yet it is for this small minority and another equally small section of reckless, selfish drivers of less speedy, though fairly fast, cars that the identification legislation will be introduced. In other words, the club should do its best to see that those whose cars make it impossible for them to proceed at extremely high speeds are less hampered by regulations than those who own machines on which it is almost impossible to avoid driving furiously. In fact, as the matter stands, we do not see that the absolute abolition of the speed limit will benefit anybody except a very small minority of racing men, and to permit express train speeds on the roads would be regarded as so great a concession by Parliament when the bill was introduced that there undoubtedly would be a determination to stiffen the regulations in all other respects. We should like to see certain highways, properly guarded, given over for one day to a great annual race, but there is no necessity for unlimited speed in the ordinary way, as there is no doubt that, speaking broadly, the driver who exceeds thirty miles an hour, except very occasionally upon absolutely deserted and entirely open stretches, is a nuisance to every other person on or near the highway, and a nuisance he will remain till such time as dustless roads are general. We cannot help thinking that the entire abolition of the speed limit would only result in greater prejudice against motorists, which before long would culminate in such an outcry that further legislation would be

This illustration was taken during a series of experiments with a Lanchester car, to prove that it was not affected by wet, whether from above or thrown up from the road. The machine was driven repeatedly through a ford of a river in the Midlands, at speeds varying from twenty to thirty miles an hour. Water was thrown up the sloping dash of the car in a solid wave, and the occupants were soaked to the skin. The test showed that the motor ran just as well though absolutely waterlogged, and proved conclusively that the mechanism was waterproof in the true sense of the word.

demanded. Unlimited speed would be a useless concession to the majority of motorists; in fact, it would be a nuisance for all who were not possessed of 40 or 50 h.p. vehicles. Moderate speed and easy regulations are wanted, not unlimited speed, irksome rules, and excessive fines. The legislation, if possible, must be for motorists in general, and not for rich men only. At the moment, the tendency is all towards the latter, while as to the motor cyclist, he and his requirements have not even been mentioned.

The Petrol Question.

The opinion we expressed last week has already been endorsed in an unmistakable manner. We pointed out that the supply of crude material from which petrol was distilled was practically in the control of a trust, and that therefore those people who were supplying the lighter spirit would find themselves unable to do so as soon as the Anglo-American Oil Co., the English branch of the Standard Oil Trust, saw fit either to curtail the supply, increase the price, or make any other similar move their position as monopolists would enable them to execute. Something of this sort has apparently been done, as Messrs. Carless, Capel, and Leonard who, up to now, have been supplying .680 spirit, and whose petrol has been recommended by many automobilists as preferable to the heavier brands because it was .680, have now circularised their clients stating that in future their petrol will have a specific gravity of .690 to .700 at 60° Fahr. Like the Anglo-American Oil Co., they claim that the new standard will be found equal, if not superior, to its predecessor, as the change in specific gravity does not represent the change in the quality or efficiency of the spirit, as the difference in specific gravity is not due to a difference in the volatility of the spirit or its purity, but to slight differences in its chemical composition, and that it is q ite as easy to get perfect combustion and the maximum efficiency with the new standard as with the old. In fact, they add that they can manufacture petrol of .680 to .685 specific gravity from the petroleum they are now using, but that the quality of the product would not correspond so closely with the old .680 spirit as does the new standard, while the price, of course, would be considerably higher. We can only hope that these claims will be fully substantiated. Till the tests which are being conducted by Dr. Boverton Redwood of the heavier and lighter kinds of fuel are completed, it is early to express an opinion, but we understand they are being made with one engine alone, and if this is the case, we are afraid, even if they show that the heavy fuel is as good or better than the lighter, they will in no way help those owners who find they cannot get the same results with the new as with the older spirit. However, as the matter stands, it behoves everyone concerned in the construction of motors to recognise the fact that in future the lightest spirit obtainable commercially will be .700, and that they must make up their minds to design their engines and carburetters accordingly, while those who have constructed engines which are sensitive to the change will doubtless turn their attention to some modification which will enable owners of these machines to obtain satisfactory results, as it would appear that with certain types it is impossible to get the best running with spirit much above .680, however excellent its quality in other respects.

A FRICTION DRIVEN CAR.

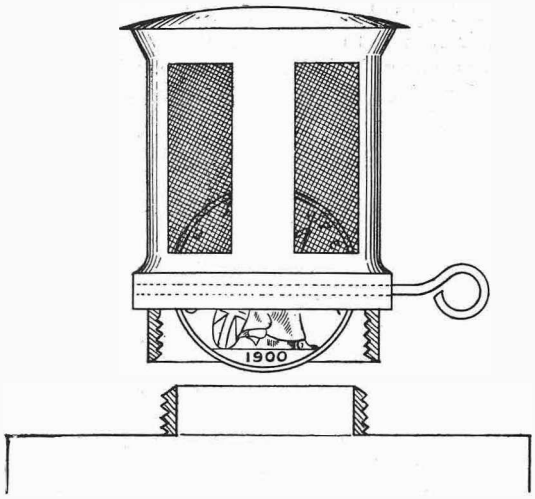
Last week we had an opportunity of inspecting and trying a new car in which a purely friction drive is employed. The only positive gearing occurring in the whole car is the simple chain drive from the countershaft to the road wheels. The designer and maker of this car, which possesses many unique features, is Mr. W. F. Thomas, of Inkerman Street, Vauxhall, Birmingham. The car in question is an experimental one, upon which Mr. Thomas has been working for some time past, and is not to be taken as a criterion of what a finished car would be. Though fitted with solid tyres, the vehicle proved a comfortable one, with due allowance made for the short drive which we took. The engine is a two-cylinder one, the bore and stroke being 3¾in. and 4in. respectively. The cylinders are set opposite to one another at an angle of 16° from the horizontal, and the usual water-cooling and electric ignition devices are employed. Each cylinder acts upon a separate crankshaft, which is located beneath the breach of the opposite cylinder. On the end of the two crankshafts are placed two conical friction pulleys, and these are kept in contact with two large conical drums mounted upon a countershaft. The friction pulleys are carried on the extensions of the engine crankshafts by means of telescopic shafting, which enables them to be brought nearer to the centre or away to the periphery of the drums, to increase or decrease speeds as required. The pulleys are kept in contact with the drums by means of toggle joint and springs, which enable the same amount of pressure to be maintained between pulley and drum, whatever their relative positions may be. All thrusts are taken up by ample dimensioned ball bearings to reduce friction. The speed of the car can be arranged to suit the circumstances under which it is to be driven, *i.e.*, for touring or for heavy country a low gear can be arranged, while for flat country and for high speeds a higher gear can be employed. The two-cylinder engine gives 8 h.p., and this is capable of running a car weighing 18 cwts., with four passengers, at an average speed of fourteen miles per hour. A neat little car with a single-cylinder 6 h.p. engine, for two people, is on the stocks, and we hope to be in a position to deal with this shortly.

The Daimler curved hollow dashboard makes an admirable protection against the weather. Extended somewhat over each side of the body, the rounded corners of the board divert wind and rain at an angle that keeps both clear of the driver and passenger accompanying. The cupboards fitted into the board are also very convenient.

USEFUL HINTS AND TIPS.

A Suggested Improvement in Surface Carburetters.

Judging from the keenness with which the relative merits of surface and spray carburetters are discussed in the motor press, there would seem to be little to choose between the two types. In any case excellent results could be got from either by those skilled in their use. Furthermore, it will be readily conceded by both sides that anything which tends to keep the petrol fresh, *i.e.*, to prevent the escape of the higher and more volatile hydrocarbons, must be of enormous value in either system. Sir D. Salomons has lately touched on some of the methods to be adopted to this end, though without many details. Described below is a device which I have found of great use to the desired end of keeping petrol fresh in a Benz carburetter while the car is standing, especially in windy weather. Delay in starting is no longer so common as heretofore; an additional means is afforded of preventing outsiders tampering with the car in one's absence, and the danger of explosion of petrol vapour is reduced to a minimum. The weak point of many, if not all,



Showing the position of the disc when the engine is running, admitting air to carburetter.

surface carburetters (such as the Benz), is the gauge covered inlet admitting air to the surface of the petrol; when this is removed and the aperture closed by the hand, the engine, of course, cannot be started, and if running will soon stop. The apparatus necessary is very simple. In the above case, a penny, or similar disc of copper, will be found to fill the inlet very accurately. A file, emery paper, a straight piece of stout brass wire three inches long, a drill to match this, and a soldering iron, etc., are all that are required. The coin, or metal disc, being accurately fitted to the aperture, and the sides of the inlet top being drilled, the wire is passed through the holes and soldered to the metal disc which must be supported by filling the chimney with waste; this must be carefully done. The wire projecting at one side is bent round in the plane of the disc, and so indicates its position. When screwed on the whole is complete, and if fitting well forms a very efficient valve, so that, as mentioned above, the engine cannot be started when shut, or, if running, can be stopped by closing it. I needly hardly repeat that there should be a tap from the petrol tank to the carburetter, and that the overflow pipe from the former should not be left open, as is so often done. Lastly, to make things quite tight, the lever adjusting the mixture should be turned down to gas when the car is left for some hours or days. The accompanying sketch fully explains itself.—J. CROPPER, M.A., M.D.

Refixing Solid Tyres.

Last week we had occasion to assist in the replacement of a solid rubber Clincher-held tyre, and as at the time the tyre was dislodged Jupiter Pluvius was doing his utmost to make every creature on land miserable, we viewed that replacement with anything but joy. We were agreeably surprised to find that the rain was in this instance a help to us, as it lubricated the tyre, thus allowing it to slip easily into place. The replacement occupied but little more than half the time that would have been required had the tyre been dry.

One Effect of Irregular Firing.

If one's engine is heard to knock very violently, so much so that the first impression given is that either the crankshaft has broken or the big end bearing bolts have got adrift, it is well, before jumping at such a conclusion, to examine carefully the ignition. We know of a case which occurred at the end of a short tour in which the engine started knocking so badly that the owner of the car feared to run it any further and left his carriage some thirty miles from town, wiring the makers that something had gone seriously wrong with the engine. It was ultimately discovered that the contact blade of the commutator was fractured, and that the knock was due entirely to irregular firing caused thereby.

Faulty Brakes.

Those who have cars on which the brakes do not hold well backward will find it advisable when they come to a very steep hill, like Birdlip, or Edge, to drive the car up backward if they have the least doubt as to the ability of their engine to climb the grade successfully. If they ran up backward they not only have the full power of the brakes available if required, but what is perhaps still more important to the majority, the car is facing forward should it show the least tendency to get out of hand. Everyone who has had any driving experience can steer a car backward at a slow speed safely, but very few are safe if it is running at any pace, and should the car fail to climb a hill and the brakes be weak, there is always a possibility of running down the decline backwards, and if it once jumps the sprag, or fails to obey the brake, the chances are that it will gather speed and the driver will be compelled to take the bank to avoid worse trouble lower down when his speed has increased. Some of the more dangerous hills, too, have no convenient bank, and the road may be embanked considerably, so that there is only a hedge or a mound between it and a very considerable drop. As a matter of fact, no car should be made which has not brakes which will hold it backward and forward on any hill, however steep.

A LONG SINGLE-HANDED DRIVE.

London to Glasgow via Edinburgh.

When Captain H. H. P. Deasy resolved to run his 22 h.p. Rochet-Schneider to Glasgow from London by road to take part in the Glasgow-Leeds-London non-stop trials of the Scottish Automobile Club, and asked the writer to accompany him, as he intended to make an effort to get through without a stop, it is not necessary to assert that the invitation was accepted. Captain Deasy had not previously been over the road, so that the present scribe, in addition to vouching for whatever performance was achieved, acted as road pilot throughout. The itinerary had been carefully typed out, with full directions, from the route book, and intermediate and running distances, together with times, calculated in accordance with an agreed average speed. Food and drink in plenty were carefully packed in a weatherproof box carried in the tonneau, which also accommodated the writer and sundry wraps, rugs, a lighted lamp, and an electric torch. Everything was done that could be done to ensure a non-stop run, which was the end and aim of the trip, and not speed, as the usually ill-reported accounts in the outside press have it in several cases.

A start was made from outside the clubhouse at 12.10 a.m. on the 10th inst., with a drizzling rain falling, a cold, biting, north-easterly wind blowing, and the roads, rural and suburban, about as bad and as slithery and as holding as they well could be. The route out was per Park Lane, the Edgware Road, West End Lane, and the Finchley Road to Tally Ho Corner, where the Great North Road, or what is the Great North Road to-day, was joined, and a true course set northward. The full moon was shrouded almost continually by heavy lowering clouds, the Bleriots alone enabling Captain Deasy to make anything like reasonable progress. Neither person, policeman, nor vehicle was encountered after Barnet was left behind, and by the solitude we might have been driving through a country from which all life had fled. This was an advantage from our point of view, for market garden carts with drivers asleep and on the wrong side of the road would not have conduced to our rate of travel. The last lights were disappearing from the windows of late villagers as we sped through Hatfield, but all Hitchin was fast asleep, and thence until far north the waking workaday world troubled us no more. It was a beastly night. The rain had now set well in with good driving force from the north-east, and penetrated most things on the right front of one's body. My Dunhill umbrella mackintosh, however, stood me in good stead, and the original Hoare motor coat beneath repulsed the raw and chilly blast. A little way north of Hitchin we took the wrong road, and when we had once again got our bearings Captain Deasy, unthinkingly, essayed to start the car from rest on its third. But the roads were just too gluey, and his motor stopped. Thus the chance of the purely, perfect, undiluted, unquestionable non-stop run, which means engine running without cessation from start to destination, went by the board; but the resolve to make a good run was nevertheless maintained. The motor was only at rest for ten seconds or so, for Bell, Captain Deasy's smart mechanic, was off the footboard and had swirled the handle and got it going once again almost before one realised that it had ceased to revolve.

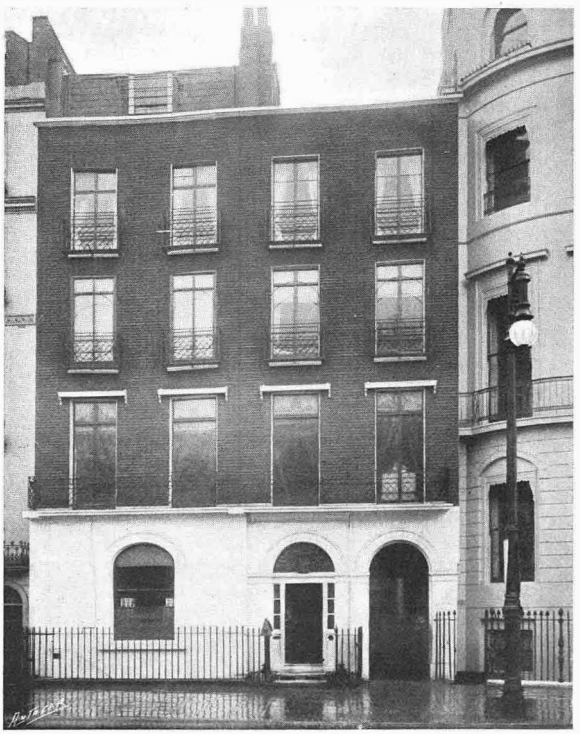
We were soon again on the right track, and Biggleswade, Girtford Bridge, Tempsford, and Buckden were flitted through in the black and blowy night. The rain still descended, and beat furiously upon us and upon the metal bonnet, as though it

were anxious to drown out the pulsating life of the motor within. The grey, grey, miserable, wretched dawn had come as we rose Alconbury Hill and held to the left along Ermine Street. It had been a wretched night; it was even a worse morning, for the wind was chillier and the rain colder and more direct as we progressed northwards. There was little movement and less conversation on that car, save for the frequent attention which the assiduous Bell paid to lubrication. Captain Deasy sat like a sphinx, and drove and drove and spoke not, while the recording one sat in huddled misery and watched the long vistas and curves of the dreary rain-soaked roads. One wondered how the blackbirds and misguided larks could sing on such a horrid morning. Sunday and a wet day seemed to clear the roads for us from one end of England to the other; the police trappists had long been driven to their lairs, and none troubled us. Stamford, Grantham, Great Gonerby, Newark, and Tuxford were left behind, before a sluggish world seemed to think of looking out of window. Just beyond Easingwold we met our first restive horse, and I am bound to say that if all drivers comported themselves under such circumstances as does Captain Deasy, the prejudice of the horsey for the automobile would quickly die away. At Thirsk came our second, but only momentary, engine stop, and this was due to the writer not advising Captain Deasy early enough of the sharp turn to the left, so that the car ran on and had to be reversed. However, Bell again quickly twirled the handle, and we were off again, making the tortuous passage of Thirsk without further mishap. On through the unlovely town of Northallerton, Darlington, and then, cheating the narrow and winding steeps of Durham by taking the road *via* Neville's Cross, we ran over roads which the wretched weather had rendered horribly holding and miserably solitary. It was a fearful day, with never-ceasing rain. At Langton Castle, under a railway bridge, some two miles from canny Newcastle, we found Mr. Campbell waiting for us with a friend on an 8 h.p. De Dion, and supplies of petrol. Here we stopped the engine of malice aforethought, took shelter from the pelt beneath the bridge, and replenished the petrol tank for the first time since leaving London, some 275 miles to the south.

Captain Deasy's spell at the wheel had been a long one—over twelve hours—but he now declared he would drive right through, and when we dropped our pilot, Mr. Campbell, where the tramlines cease from troubling, north of the coaly Tyne, we found drier roads and brighter weather. Things looked up, and between Newcastle and Berwick the sun came out and the wind dropped. We ran once round Alnwick, but ultimately got clear of the Percys' hereditary town down a steep hill, and were climbing out of Berwick with all England behind us, when we could have done well with a "five o'clocker." The run on to Edinburgh, *via* Dunbar and Haddington, was quite enjoyable compared with what had gone before, for the north-easter was now over our starboard quarter, the roads were dry and fast, and all the back of our journey was broken. A dinner basket would have been really welcome as we were piloted through the decoration-gazing crowds on Prince's Street, and out upon the Glasgow road *via* Bathgate by a friend of Captain Deasy on a smart two-seated Waverley. The remainder of the run needs no description, save that the good Rochet-Schneider, as though conscious that its heavy task was fast nearing its end, ran better than ever. To thread the tram maze of Glasgow was something of a strain for a man who had sat driving, driving, since midnight; but police and people were good, and as we passed the opening to St. Enoch's Station, the clock showed sixteen minutes past nine, or 20h. 6m. since our wheels had spurned the slush of Piccadilly. And throughout that long run I never once heard the engine miss or backfire, and absolutely nothing was done to the mechanism of the car save periodical lubrication.

Captain Deasy's drive must be regarded in the light of no slight feat, and I think I am within the bounds of fact when I say that it is the longest practically non-stop drive yet performed in this country. Anyway, it is a great testimony to the endurance and good running of the Rochet-Schneider and its driver of the 10th inst. It is only fair to add, in conclusion, that the Rochet-Schneider car ran on Clipper-Continental tyres, which stood up over the puncture-some roads magnificently, and were never touched from start to finish. HARRY J. SWINDLEY.

At a recent meeting of the Parliamentary representatives of the Labour party, one of the leaders stated as his opinion that it would not be wise to agitate for the nationalising of the railways of this country, because in a few years the railway would be superseded by the motor car, and the shareholders would be only too glad to sell their interest at a much reduced price.



The Ladies' Automobile Club House, 110, Piccadilly, W.

THE 60 h.p. MERCEDES.

Some Details of Mr. Harmsworth's and Mr. Higginbotham's Cars.

As last year, when Mr. Alfred Harmsworth, the editor of *The Daily Mail*, imported a 40 h.p. Mercedes car into this country, he is anxious now that the details of his 60 h.p.—a carriage similar in all points to that upon which poor Count Zborowski met his most untimely fate—should be made as widely known as possible to the English automobile constructors, in order that they may sift the grain from the chaff of its mechanical construction. Accordingly, Mr. Harmsworth has been good enough to afford us a special opportunity of going through the car with his master of automobiles, Mr. Campbell Muir, who drove it from Stuttgart. Mr. Campbell Muir is thoroughly *au point* with this much-discussed carriage, and we are particularly indebted to him for the time he has been good enough to put at our disposal. Our thanks are also due to Mr. G. Higginbotham, of Macclesfield, who bought the car on which Werner won La Turbie climb last month, and who was actually the first Englishman to import one of the 1903 60 h.p.'s into this country, as mentioned last week. Mr. Higginbotham has been good enough not only to furnish us with a number of detail measurements of some of the most vital and interesting portions of his car, but he has also gone to the trouble of preparing drawings of certain parts; and we feel exceedingly indebted to him for the manner in which he has entered into our suggestions by providing just the information which he realises will be of most interest to the student of automobile design.

The general adoption by the leading French firms of the chief features of the 1902 Mercedes design bears out the opinion we expressed twelve months ago, that it represented the highest development in autocar construction at that time. The advent of the 1903 Mercedes-Simplex car was looked for with a good deal of interest by all users of motor vehicles, and no doubt with considerable anxiety by those manufacturers who had followed the 1902 model.

The reader will be able to judge for himself, after a persual of this article, to what extent the Cannstatt people have maintained or enhanced their reputation by this year's productions.

The engine merits first consideration, as it differs in several important particulars from that of last

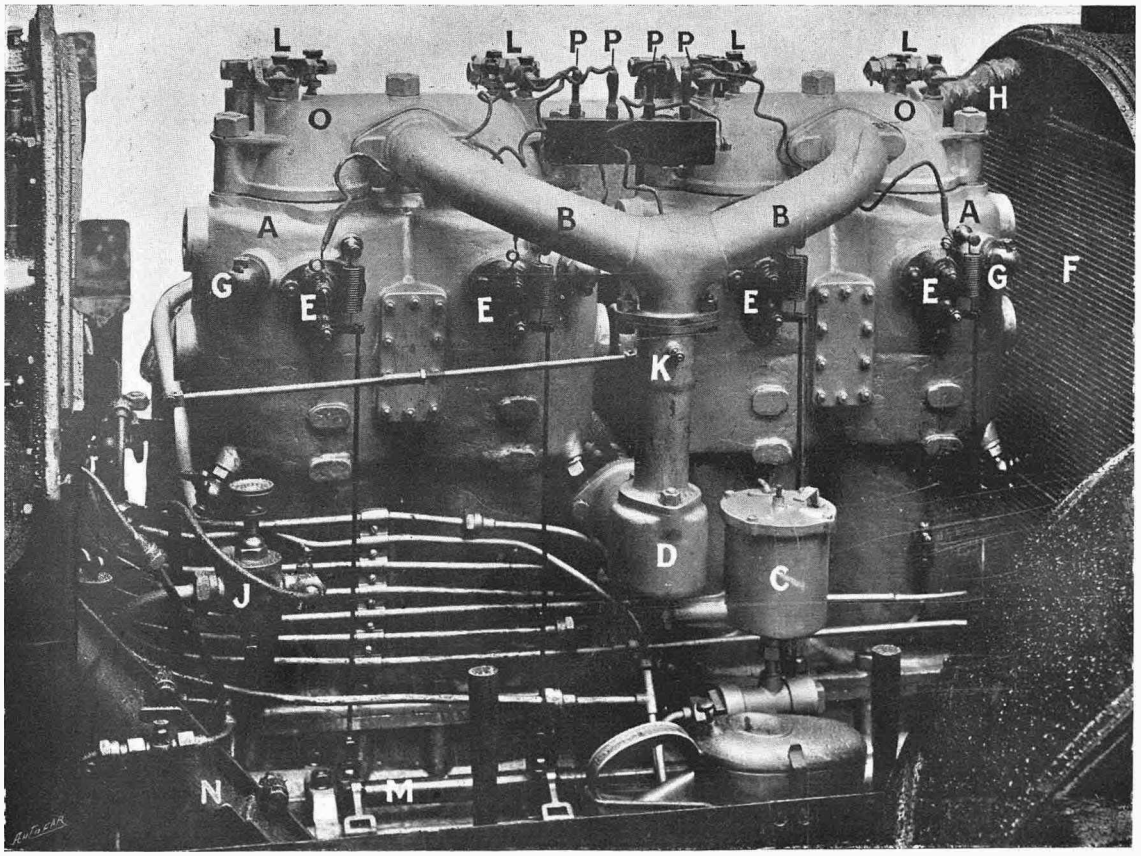


Fig. 1.—Right-hand side of the engine.

A A, cylinder heads
B B, exhaust pipe
C, carburetter float chamber
D, carburetter
E E E E, low tension ignition plugs
F, radiator
G G, bosses tapped for high tension ignition plugs
H, waterpipe to radiator
J, pressure feed reducing valve
K, throttle valve
L L L L, tappet levers
M, ignition camshaft
N, steering gear
O O, casing over admission valves
P P P P, switches to test ignition

year. Figs. 1 and 3 with their accompanying reference tables give a general idea of its design.

The cylinders have a bore of 140 mm., and the stroke is 150 mm., as compared with 118 mm. by 150 mm. in the 40 h.p. car.

The inlet valves, which are of extraordinary design, are fitted directly into the top of the cylinders.

A section of the casting which forms the valve seating is shown in fig. 4. There are three concentric seatings, on all of which the valve must bear properly if compression is to be maintained, and the area of opening is equal to that of a single valve of equal lift and about 8in. in diameter.

The admission valve is operated by a horizontal lever, which has its fulcrum in a bracket on the valve cover, and is operated in its turn by a long vertical rod from the plunger in the camshaft casing. This vertical rod at its upper end is cut with a square-threaded screw D (fig. 2), and this engages with a socket E which forms a knuckle joint on the end of the lever. It will be seen, therefore,

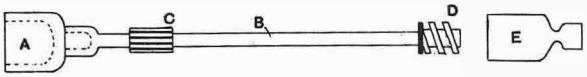
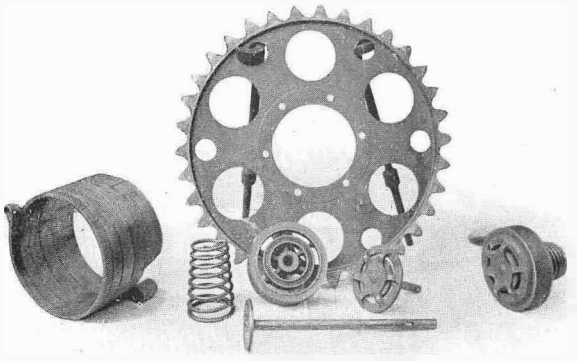


Fig. 2.—Rod for giving variable lift to the inlet valves.

A, cup socket. C, pinion. E, tappet.
B, spindle. D, coarse pitch screw.

that when the rod B is rotated, its length is altered, and a corresponding variation is effected in the lift of the valve. In order that the rod may be rotated, it is provided with a toothed pinion C near its lower end, which engages with a horizontal rack rod carried on the side of the cylinder casting, and



Clutch spring. 34-tooth sprocket. Inlet valve in parts. Exhaust valve. Inlet valve complete.

so arranged that it can be moved in a direction parallel to the crankshaft by means of the lever on the top of the steering wheel. This rack rod engages with the pinions on all the four admission valve rods, so that the lift of the valve can be reduced to any extent while the engine is running.

The exhaust valve has a flat seating instead of the conical one ordinarily used, and is placed in a pocket on the same side of the engine as the admission valve rods, so that one camshaft operates the whole of the valves. This leaves the other side of the engine quite clear, except for the magneto ignition plugs, which are more accessible than in last year's engine. The carburetter is on the same side as the ignition plugs, and is of the most elementary design. It has no auxiliary air supply, the whole

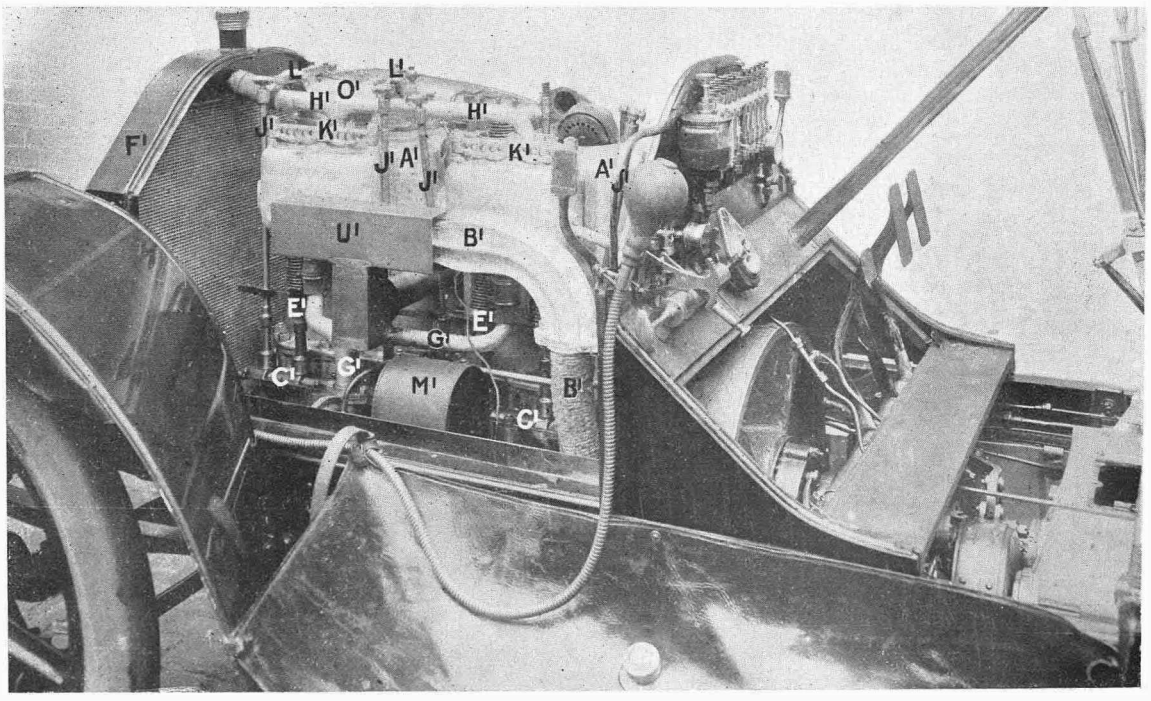


Fig. 3.—Left-hand side of the engine.

A¹ A¹, cylinder heads
B¹ B¹, exhaust pipe
C¹ C¹, camshaft casing
D¹, pump
E¹ E¹, exhaust valve spindles
F¹, radiator
G¹, water pipe from pump
H¹, water pipe to radiator
J¹ J¹ J¹, admission valve rods
K¹ K¹, bridges holding caps on exhaust valves.
L¹ L¹, admission tappet levers
M¹, magneto
O¹, casing over admission valves
U¹, hot airbox for carburetter

of the air being taken from a hot-air box on the exhaust pipe and through the vaporising chamber of the carburetter, where it passes through the vertical sleeve surrounding the spray nozzle. Immediately above the vaporiser is a simple butterfly

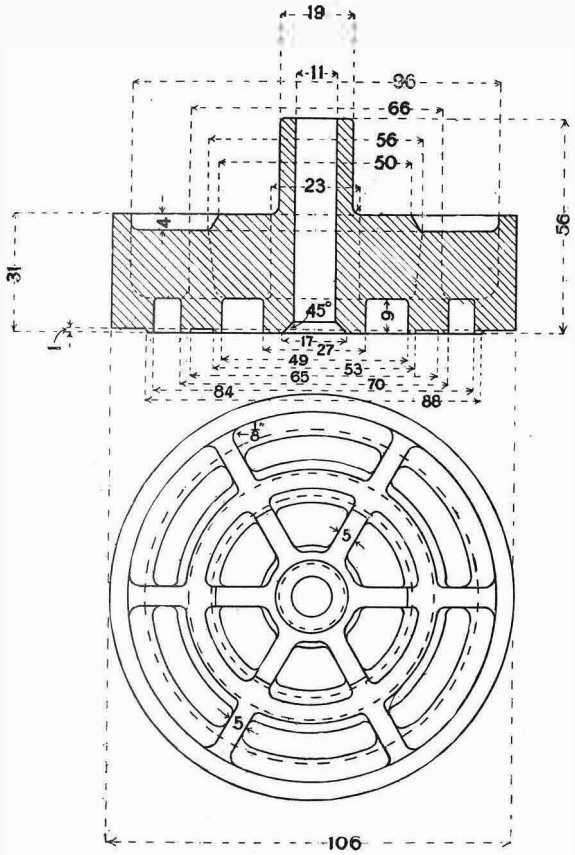


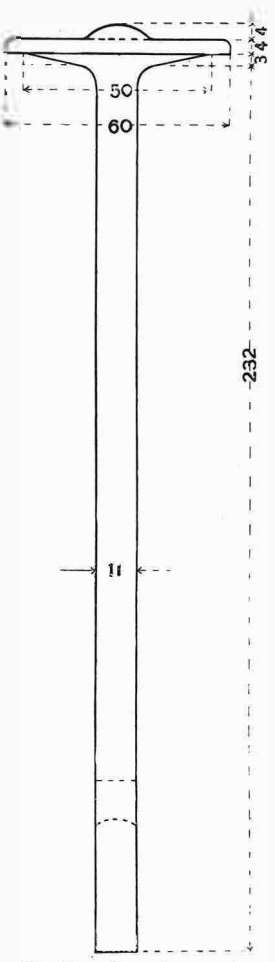
Fig. 4.—Mercedes inlet valve. Measurements given in millimetres.

valve operated by the governor, which cuts out at about 1,200 revolutions per minute.

The magneto itself is placed on the opposite side of the engine to the ignition plugs, and a wire conveys the current to a distributer on the top of the cylinders. This distributer has four plugs from which wires pass to the ignition plugs, so that either of the latter may be readily disconnected. In addition to the magneto ignition plugs, which give a make and break inside the cylinder, provision is made for ordinary high tension sparking plugs, which may be used in conjunction with an induction coil and accumulators. The lubricating oil is carried in a small tank hung below the frame directly behind the front wheel.

A similar tank on the other side contains the water for cooling the brakes. The oil is forced by exhaust pressure to the sight feed lubricators on the dashboard, whence it is distributed by a formidable array of pipes to the various parts of the engine.

The petrol is carried in a large tank behind the rear axle, the exhaust pressure being again utilised to force the fuel to the carburetter.



The Mercedes exhaust valve. Measurements are given in millimetres.

(To be continued.)

A RUN ON AN 18 H.P. MERCEDES

A few days since Mr. J. E. Hutton, of 23, Regent Street, S.W., was good enough to afford us a short, but none the less most enjoyable, trip out from London to Cobham Street and back *via* Richmond Park on the third 18 h.p. Mercedes which has come to him from the Continent. Except for twice in traffic and the Test Hill, Mr. Hutton did not come off his fourth speed, and though at times the carriage was slowed down almost to a crawl, the engine picked the car up on its top speed with such smoothness that no thump or vibration whatsoever was felt. Naturally, our watch was out for the trial bit on the Test Hill (for section and gradients see *The Autocar*, April 18th, page 465), and we made the time 27⅗s. between the tree and the danger board. Those who wish to arrive at the speed at which this beautiful running carriage climbed this steep may work it out for themselves by means of the section referred to above. It is not meet that we give it in naked figures here. Thence on to Cobham the car ran through on its fourth, the sole control from slow to fast and fast to slow being by the throttle lever set centrally in the steering wheel. The manner in which this car with three up took Esher, Horseshoe Clump, and the White Hills, with Tartar Hill coming back, and the reverse of the Test Hill from the Kingston Gate of the Park, was perfectly delightful. Our only possible comparison is to say that it was like riding on silk. We particularly remarked the extreme ease and quietude with which Mr. Hutton changed the gears when we requested to be shown the operation. The gear-striking lever does not appear to be drawn or thrust backward or forward in the sector; it is just flicked over, almost thrown from the hand from one position to another. It is unnecessary to dwell here upon the quiet running of the engine when the car is at rest; that commendable feature of the Mercedes motor has been frequently commented upon. We can compare it to nothing else but the ticking of a somewhat robust eight-day clock. After our short but pleasing experience of the dainty white eighteen, we are not surprised that many whose pockets are sufficiently well lined go in for Mercedes

SOME EXPERIMENTS WITH AN AUTO TREMBLER.

By A. J. Wilson.

Some years ago I expressed in these columns a certain amount of scepticism regarding the supposed action of the De Dion contact breaker, pointing out how, it seemed to me, the trembler had not time to vibrate so as to produce a stream of sparks during the brief period in which the block upon its end dropped into the notch of the cam; and I suggested that a simple make and break contact might be found preferable, at any rate for motor cycles. My ideas was flouted at the time by some very high authorities, who were emphatic in stating that a make and break contact would not act at the high speeds essential for motor cycle propulsion. Since then, however, scores of different bicycle motors have been successfully introduced without a trembling contact, and even the De Dion-Bouton firm themselves have abandoned the trembler and adopted the simple make and break in their latest bicycle motor. The explanation of the success of the non-trembling make and break seems to lie solely in the fact that contact is firm, and the break sudden. The type of contact breaker which has become best known through its introduction upon the Minerva does not rely upon the springiness or rebounding properties of the steel blade for the making of contact, but the blade is mechanically forced into contact with such an excess of pressure that the rebound of the blade produces the requisitely sudden break of contact. It has thus been proved that one good spark suffices, provided that all the parts are in good condition.

But the Minerva contact blade is sometimes subject to defective working, owing to a cause which I have never seen mentioned in type, and I think that the same cause is responsible for a great many instances of temporarily defective working of the De Dion blade. I allude to the heat generated by friction of the trembler on the cam when there is no lubricant between the cam and the trembler block. I have known a brand new De Dion trembler blade to become absolutely red hot from this cause, so that the heat interferes with the springiness of the blade, and occasions misfiring.

The improvement which ensues in many cases by the use of a trembler coil of the Carpentier type is too well known to need enlarging upon, but hitherto there has been some difficulty in deciding whether such improvement was altogether the result of the presence of a trembler upon the coil, or whether it might be attributed to the excellent construction of the coil itself, apart from its trembler attachment. But a little appliance that was recently put upon the market by Messrs. Geipel and Lange, under the name of the "Auto Trembler," enabled me to test the efficacy of the trembler without introducing the dubious factor of a different coil, the "Auto Trembler" being an appliance complete in itself arranged for introduction in the primary circuit, so that I determined to ascertain whether such a trembler would effect an improvement in the working of a motor with a genuine De Dion coil and genuine De Dion trembler contact breaker. Unscrewing the coil box from the dashboard of my 8 h.p. De Dion car, I was momentarily nonplussed to know how to connect up the wires between it and the Auto Trembler, because the terminals on the coil were marked respectively M, P+, and A, whereas the terminals on the Auto Trembler were marked P and C, and I had mislaid the maker's diagram describing how to join them up. But it seemed evident that M on the coil stood for masse, so I left that connected to the earth wire on the motor; P+ on the coil and P on the Auto Trembler would probably correspond, so I joined them up with a short length of wire; and the A terminal on the coil I joined to the C terminal on the trembler with another short length of wire. I then turned the crank handle until the motorshaft revolved to the position where the De Dion trembler blade came into the notch of the cam, making contact, and, leaving it so, switched on my current. The brilliant stream of sparks which instantly sprang across the external gap on my sparking plug showed at once that the wiring was correct. The question then arose whether the effect would be satisfactory when the engine was moving, so I turned on my petrol, flooded my carburetter, and gave half a turn to the crank handle. The engine started instantly, and the spark that jumped across the gap was far more brilliant than I had ever been able to get without the Auto Trembler. So good was it that I kept experimenting with a longer and longer gap with complete success, although when I lengthened the gap to an unreasonable extent it occasionally missed. So I reduced the gap to about one-sixth or one-eighth of an inch, and found that I got the most perfectly regular sparking at all speeds of the engine. The improvement was undeniable. The external gap was much larger than I had been able to work with prior to fitting the Auto Trembler, and the engine always started at the first turn of the crank handle.

But although it was effective in facilitating starting, I soon found that the Auto Trembler ceased to buzz directly after the engine was set going, and the timing of the spark accelerated, and after endless experiments I came to the conclusion that the Auto Trembler would not act during the very brief interval of time when the platinum points of the contact breaker closed the circuit when running at any speed; it was only when the sparking was retarded to the utmost and the mixture throttled down that the engine's pace became so slow as to cause the circuits to be closed long enough for the Auto Trembler to act. The unquestionable advantage of the Auto Trembler is, therefore, that it assists in getting a quick start with the De Dion contact breaker adjusted for speed; without the Auto Trembler the contact breaker must be adjusted in the manner which was recently described in *The Autocar*, which is in reality a compromise between the best position for high speed and the best position for easy starting, but with the Auto Trembler inserted in the circuit the contact breaker can be adjusted with the platinum-tipped screw very close to the trembler blade, so that the contact will be firm and prolonged for high engine speed, and the Auto Trembler will do its part in assisting easy starts and in keeping the engine going at very low speeds.

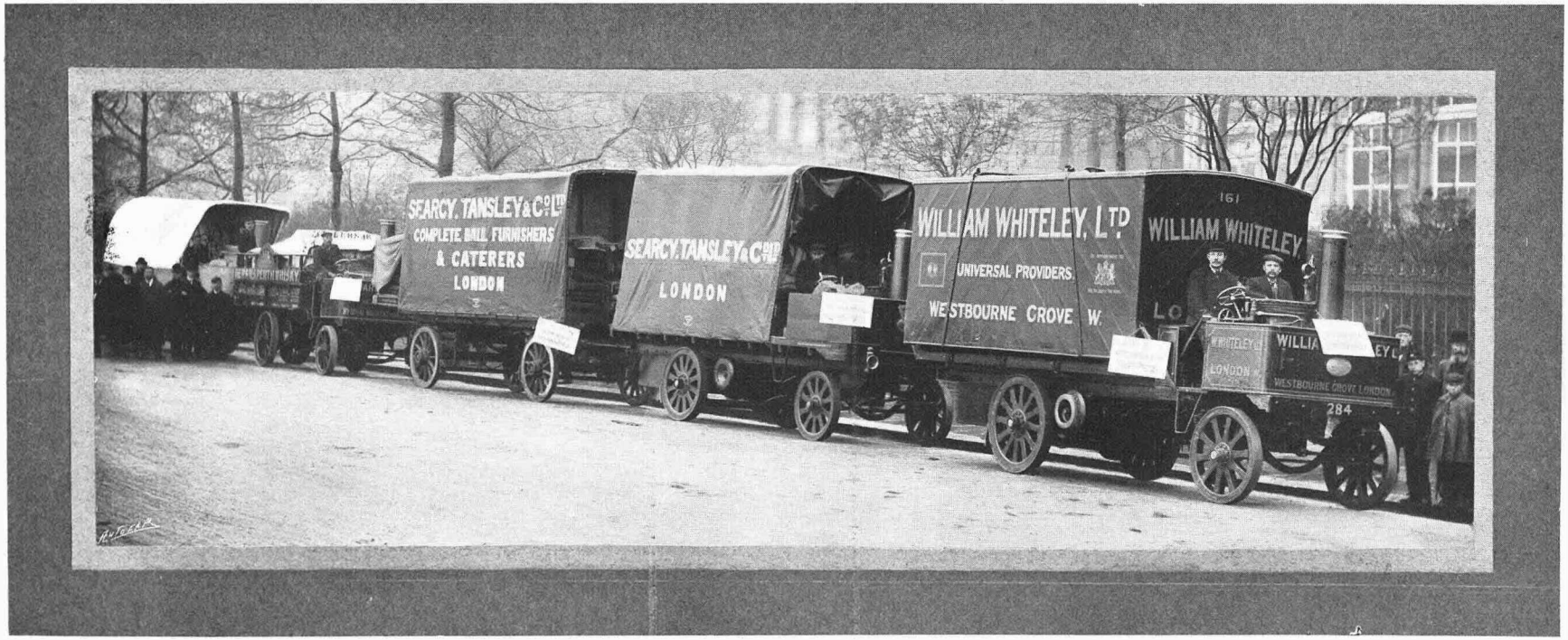
GOOD NEWS FOR CONTINENTAL TOURISTS.

A CLUB ACHIEVEMENT.

After many months of patient negotiations, the Automobile Club has arranged with the French authorities to accept driving certificates issued by the Automobile Club of Great Britain and Ireland to its members, so that they will be saved the trouble and delay of the usual examination in France. Not only so, but the French authorities have also agreed to accept declarations from the English automobile builders, as they do in the case of the French motor cars, so that when a particular make of car has once been granted a permit of circulation, all vehicles of that make can be passed at once by the authorities, provided the driver has a club certificate. It is necessary, however, to have the *permit* for a standard car to be submitted by the manufacturer to the Engineer of Mines at Arras. This place is situated only a few miles from Boulogne, so that beyond the mere crossing of the Channel, it is not a serious matter for the manufacturer of the more expensive types of carriage. Full particulars of the necessary application have been sent to all the manufacturers, and further information will be given by the club, if required.

The Executive Committee of the Automobile Club have selected Captain Longridge their representative on the council of the Marine Motor Association.

THE MAY DAY PROCESSION OF MOTOR VANS ON THE EMBANKMENT.



The three prize winners of the procession of heavy motor vehicles, details of which were given on page 556 of "The Autocar" of the 9th inst. All three were Thornycrofts

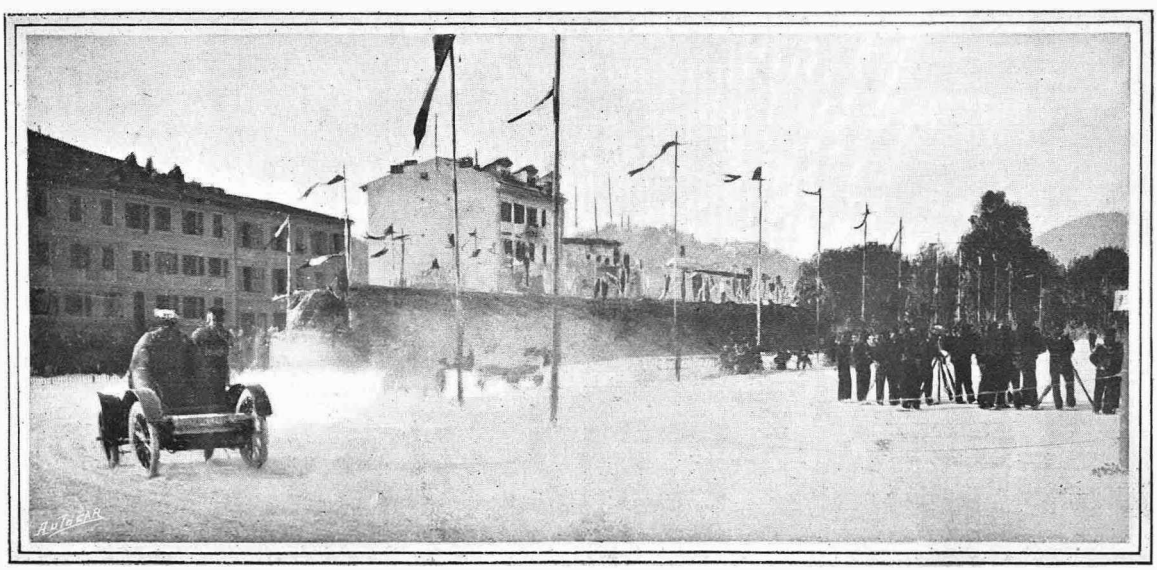
CONTINENTAL NOTES AND NEWS.

Automobile Reforms.

If agitation will successfully effect an object there is some reason for hoping that the zeal of those members of the Municipal Council of Paris who are trying to carry out reforms concerning automobile traffic will have the desired result. The council seems, on the whole, to be favourably disposed towards automobilists; but it is to be feared that their attitude is still swayed by a certain prejudice which the police authorities may be able to foster in order to attain their own ends. The struggle which is going on in the council shows clearly enough that the police do not go out of their way to persecute autocar drivers simply because they think it their duty to do so; they have been brought up to see that the autocar is an instrument of danger to the public weal, and nothing that automobilists have done to demonstrate the security of the motor vehicle has been able to bring them round to a more reasonable view of the mechanical carriage. So long as they were content to see that the present restrictive regulations were observed, it might be admitted that the police were merely performing their duty, though in a way that placed serious injustice upon those automobilists who suffered from the excessive zeal and incompetence of police officers entrusted with the task of holding up defaulting drivers. The worst of it is that, being often unable to catch drivers who are really transgressing the laws, the police revenge themselves upon innocent automobilists who may appear to be slightly exceeding the legal limit, as calculated by absolutely unreliable watches over distances that are merely guessed at. But even this might be tolerated if it could be hoped that the grievance was only temporary and would be removed when the police came to look upon the autocar as a vehicle deserving the same liberty of speed as ordinary carriages. So far is this from being the case that the opposition of the authorities to the new regulations being drawn up by the Municipal Council proves that, in certain places at least, they are doing all they can to suppress automobile traffic altogether. The committee appointed by the council has been engaged for several months past upon the framing of new byelaws relating to autocar traffic. At first it was said that the regulations were sufficiently liberal to give satisfaction to the great body of automobilists; but the delay in presenting them to the council shows clearly enough that the committee is being influenced more or less by the suggestions of the police authorities. It is admitted, of course, that the legal limit of speed can be increased with perfect safety; but how can the committee take upon itself the responsibility of acceding to the demands of automobilists when the police insist that this would be offering serious danger to the lives of the public? The only way of overcoming the opposition is by bringing the whole of the council over to the side of automobilists, so that the laws may be discussed without prejudice and bias, and the committee instructed to modify them to suit the modern conditions of traffic.

A Practical Demonstration.

As something must be done speedily to save automobilists from the irritating attentions of the police, the members of the council who are agitating for reform have acted wisely in organising a series of trials at which their colleagues will be invited in order to prove to them the perfect control of the autocar, and, incidentally, the loose methods adopted by the police for making out cases against drivers. Something like forty cars will be placed at the disposal of the councillors, who will first of all be taken through Paris when they will be able to see for themselves the ease with which cars can be handled in all conditions of traffic. Afterwards they will go to the Bois de Boulogne, accompanied by a number of ordinary cabs. On arriving in the Bois the cabmen will be required to drive their



A reminiscence of the Nice Week. The cars are shown running round the Place d'Armes in the Concours de Bidon or consumption test. It will also be noted that the two cars round the bend are just disappearing through a cloud of thick dust.

horses at the usual speed, while the autocars will be kept just within the legal limit, so that the councillors will see the absurdity of keeping the speed of automobiles down to about one-half that of horse-drawn vehicles. It has been insisted often enough that autocars are not legally permitted to travel nearly so fast as ordinary carriages, with the result that the creation of two currents of traffic going at different speeds must necessarily be a source of danger. There is no doubt that the trial this week will convince the most sceptical on this point. The manner in which the cars are kept under control will be further demonstrated by the automobiles and cabs being required to stop at a given signal, when the distance in which the vehicles are brought to a standstill will be measured. To provide still more convincing testimony of the safety of autocars, it is intended to throw dummy figures in the road in front of the cars and cabs, when, of course, they will have to avoid them by stopping dead or steering aside. There is no doubt that the autocar will come triumphant out of the ordeal. The organisers of these trials are very anxious to get the assistance of the police to time the vehicles. It is suggested that the police should adopt their usual tactics in timing the cars with their turnip watches, while each driver will be accompanied by an expert timekeeper who will keep a record of the times for each kilometre during the run. Of course, the police would lay in hiding, as it is their custom to do, so that the driver would not know he was watched. The idea is to keep the cars within the legal limit of speed, and see whether the police officers will time any of them for furious driving. This is a very reasonable suggestion; but, as might have been expected, the Prefect of Police has politely declined to entertain it. The infallibility of the official turnip is one of those things that cannot be impeached, for if it be proved that the police make mistakes, how will it be possible to trump up any more cases against automobilists?

A Monster Petition.

Meanwhile, the mechanicians and drivers of all classes have sent in the Municipal Council a petition bearing 10,000 signatures against the abuse of imprisoning those who are convicted of exceeding the legal limit of speed on the faith of police testimony supported by the watch under conditions that make accurate timing absolutely impossible. Every conviction carries with it a minimum of one day's imprisonment, together with a fine, and it is easy to imagine the hardship entailed upon professional drivers who may lose their means of earning a livelihood because they are branded with the stigma of having been sent to prison. They cannot get out of it, as the papers they have to produce in seeking employment contain a record of the conviction. It is true that the professional driver is not alone in suffering imprisonment, which is usually reserved for criminals. There are plenty of private owners who have gone through the mill—we had almost said the treadmill—and Baron Henri de Rothschild has found himself under the necessity of passing twenty-four hours in seclusion. In the petition referred to it is stated that, owing to this danger of conviction, a large number of owners now leave their cars entirely to the mechanicians, who, consequently, have to take the responsibility, and it is feared that if this state of things is allowed to continue many owners will abandon the autocar for horse-drawn carriages, which they can drive without limitation of speed. The matter affects not only the professional mechanician, but also the future of the industry itself, since it is obvious that automobilism cannot develop in the way it should do in the face of such irritating restrictions. As the petition has been referred to the committee who are framing the new regulations, it is to be hoped it will have some good effect.

Belgian National Circuit.

The National Circuit, organised last week by the A.C. of Belgium, was a trial of touring vehicles, in which reliability and regularity were taken into account rather than any question of mere speed, but most of the cars, nevertheless, did very creditable performances in the way of fast running, and showed, indeed, that a good margin of speed above the legal limit is not incompatible with a comfortable and reliable carriage. The roads were in anything but good condition, the heavy storms having converted them now and then into quagmires, to such an extent that several of the motor cyclists were unable to finish the journey. The tour started on Saturday, and lasted four days, the stages being from Brussels to Antwerp (63 kiloms.), Antwerp to Liège (34 kiloms.), Liège to Arlon (125 kiloms.), and Arlon to Namur (146 kiloms.) Forty tourists started from Brussels, and most of them got through the first two stages without much difficulty. The run was organised partly with a view of fostering the popular interest in automobilism, and to this extent it is undoubtedly a great success, for the reception given to the tourists in all the towns and villages along the route is described as enthusiastic.

Last month Mr. A. Vonwiller met with an accident near Rome on his 40 h.p Mercedes The matter was mentioned in most of the daily papers, and it was stated in some that Mr. Vonwiller was killed Happily this was not the case, though when the position of the car is seen it will be at once admitted that he must have had an exceedingly narrow escape. As a matter of fact he so quickly recovered that the day after the accident he ordered one of the 1903 Mercedes. So far as can be ascertained the accident occurred through taking the bend at too high a speed considering the condition of the road. It shows how very careful one should be when driving a high speed car as soon as any deviation from a straight line is made. The photograph we reproduce has been kindly sent us by Mr. Vonwiller's friend, Mr C. E. Teffry.

Correspondence.

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

THE KREBS CARBURETTER.

2961.]—It seems to be generally believed that the new Panhard carburetter is the first attempt to automatically regulate the mixture at all speeds. A booklet published giving particulars and sketches of it states that Mercedes, Georges Richard, Crouan, and others have experimented in this direction, but unsuccessfully, owing to the fact of these people trying to regulate it by the governor. This booklet states that "all other inventors have adopted this (the governor regulation) for want of a better one." This implies that none bar Commandant Krebs have tackled direct control of supplementary air by suction controlling a diaphragm or similar device. I find, however, that Bernardi in 1886 invented a carburetter in which a valve opens more or less on the mixture pipe by the suck of the engine, and so varies the mixture at different speeds as required.

In 1887 Haddon (9,111) automatically regulates auxiliary air by speed of engine, causing more or less vacuum and drawing round a rotary valve, thus disclosing suitable ports, by means of which pure air dilutes the mixture.

In 1897 Boult (29,567) describes a carburetter in which an adjustable suction diaphragm allows supplementary air to be drawn into the mixture as the speed increases.

In 1900 Mills (3,273) describes a cone controlled by a light spring placed in the carburetter, and the suction increase or *vice versâ* adjusts the air and petrol mixture automatically.

None of these experimenters seem to have carried out the idea exactly as done by Krebs, but the method adopted by him appears to vary more in detail than in principle, and I think it is quite feasible to control the supplementary air entirely automatically in several ways that shall give results quite as correct as a flexible diaphragm.

A. E. S. CRAIG.

[Without going into the question of originality—which, although of importance to the manufacturers, is not of interest to the automobilist—we think there is a tendency whenever a successful device is brought out to turn up anticipations of the idea, and generally to adopt the attitude that nothing is new under the sun. It would appear that the Krebs is the first automatic carburetter to be successfully fitted to an autocar, though, of course, the Germain is a very close second, while the little automatic air valve on the induction pipe which was fitted by a reader of *The Autocar* to his machine over a year ago, as well as other somewhat similar devices, are more or less upon the same broad principle.—ED.]

THE WILY CHAUFFEUR.

[2962.]—Mr. L. Schlentein's offer in the direction of putting a stop to the malpractices of drivers is worthy of all praise, and I write to enquire whether he can see his way to extend his aid in another direction—the exposure and punishment of wily owners. Take a case in point, among several I have recently heard of, which, I think, will make Mr. Schlentein's scheme of wider scope. An owner of one of the fastest cars in this country insists on his drivers signing a document promising never to exceed the legal limit, etc. (or words to that effect). His car cannot go less than twenty miles per hour, and sixty-five is its comfortable pace on the level. His sole object is to shield himself from the inevitable prosecutions such luxuries entail behind complaisant, but not sufficiently wily, chauffeurs. "A slave has many duties, a free man more," and it is surely the first duty of employers expecting integrity from servants to be a shining light unto them in this respect. Will Mr. Schlentein, therefore, extend his generous offer to the Automobile Club by another £10 for the purpose of bringing to book and duly punishing sundry wily owners?

SAUCE FOR THE GANDER.

2963.]—In answer to your correspondent, No. 2953, re the wily chauffeur, I should like to say a few words. Evidently he is not conversant with the workings of a gentleman's household or he would not have written such a letter. It is well known that the coachman, cook, and butler receive emoluments from the tradespeople, and why should the mechanician (who has paid as dearly for his knowledge as the others) be deprived of the same privilege in the same service? What difference is there between a man receiving commission for work he takes to be done for his master and a gentleman in a good position accepting an address and substantial testimonial for work he has performed and been paid for?

A DRIVER.

[2964.]—I have read the letter signed "Nec Temere, Nec Timide," with great interest, and I think it will prove useful to many owners of motor cars, who won't be now so easily taken in by their drivers; though, of course, the best remedy for the state of things described by your correspondent would be the study and the understanding of the mechanism of their cars by the people who use them.

But my reason for writing on the above subject is not to congratulate "Nec Temere, Nec Timide," but to tell him that he uses the word "chauffeur" wrongly all through his letter.

"Chauffeur" means the *gentleman* who owns and drives a motor car, and, by extension, all persons who frequently make use of motor cars and *are not paid for it*. The word your correspondent ought to have used is in French *mécanicien*, and in English driver or mechanic.

I thought it necessary to explain this before the erroneous meaning of the word "chauffeur" is more deeply rooted in the minds of the English public.

Poor England having to be content with reliability trials and speed contests upon a distance of one mile or so, I had the idea of what, I believe, is a new kind of test which the A.C. of G.B. and I. would perhaps find interesting and put in practice.

It would be a *concours de rendement* (ratio trial). The power of the motors of the vehicles entered in that competition would be carefully measured; and then the power left to propel the car and measured at the wheel. The first figure divided by the second would give the *rendement* (ratio), and would show how much power is wasted in the transmission gear. There would be no need of different categories of vehicles, and the data afforded by that experiment would be useful both to the public and to the manufacturers.

D. YZELEN.

A TYRE QUESTION.

2965.]—As the bursting of motor tyres is evidently a matter of great danger to the drivers and occupiers of motor cars, I wish to suggest that it might be advisable for a record to be kept of the various makes of tyres that burst, so as to enable the public to decide what (make of) tyre is *least liable to this danger*. Several people have been killed and several more seriously injured—including myself, and a day or two since Lord Alan Percy and party—from this cause.

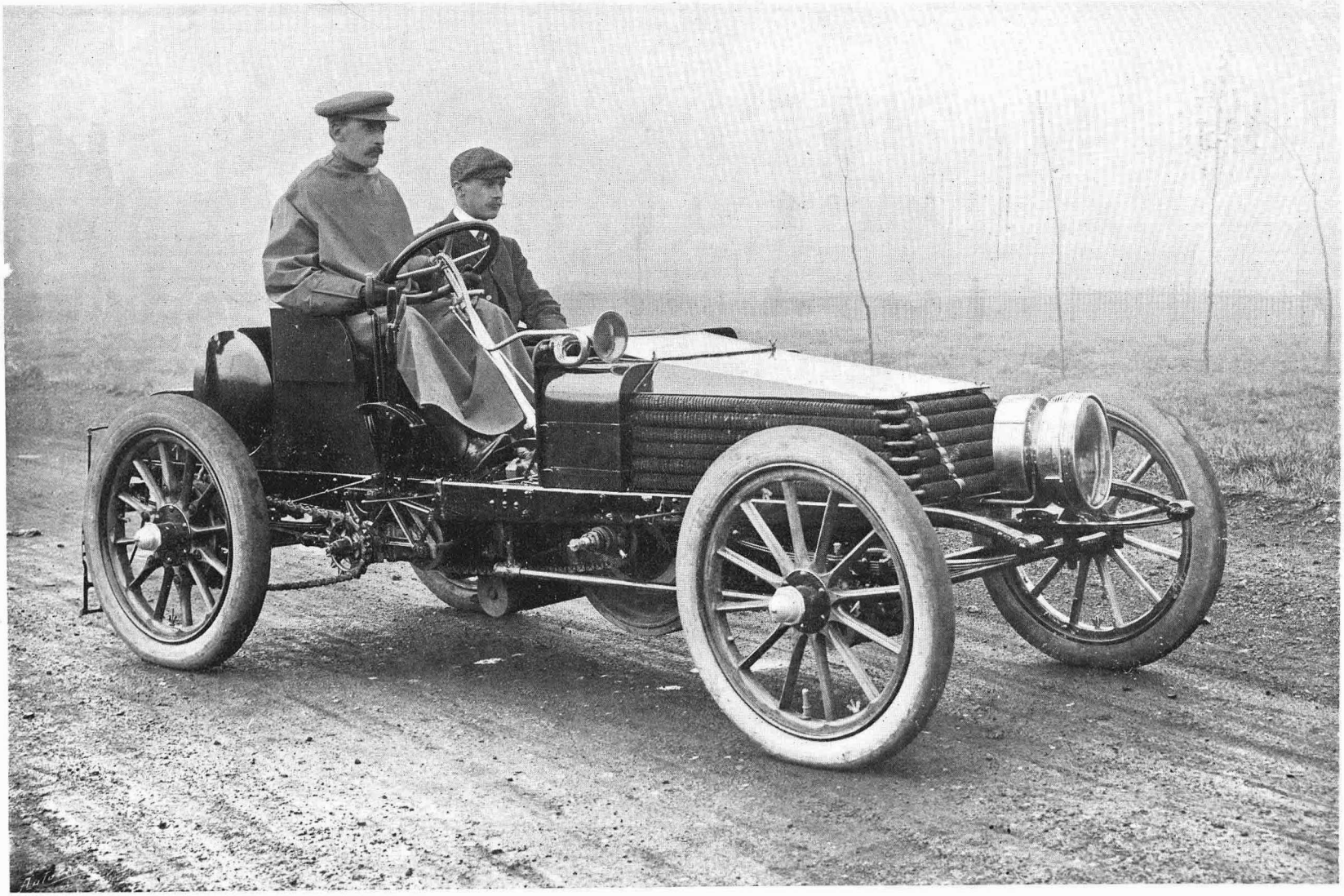
Trusting this proposal will meet with the approval of motor car owners and those about to purchase cars,

THOMAS L. PLUNKETT.

LEGISLATION.

[2966.]—I notice that Earl Russell, after opposing the bill introduced by Mr. Scott Montagu for numbering of vehicles, has introduced one himself, which provides for numbering and also for the drivers of cars being required to have certificates. So that he provides in his bill what he professes to consider very objectionable in Mr. Montagu's, and provides another serious obstacle to motoring in addition. Now, I trust that all motor men who have any interest in anything except racing will do all they can to oppose the latter clause. No doubt to the men of large means who possess powerful and fast cars and a craze for speed certificates are no disadvantage. At least, they do not think they will be. They do not care what they spend on their cars, and, of course, they either drive themselves or only let exceedingly skilled persons drive them. Consequently, there is no inconvenience in the matter. On the one hand, as this type of car is the one that most offends the public, of course its occupants wish to be recognised as little as possible. On the other hand, to people who require to use cars in the way that horses are used for ordinary daily work, it is a very serious disadvantage indeed. Every person who is going to touch the wheel for five minutes, even to take the car round from one door to another, is to go to a private track, stay there till he has learnt to drive, and then presumably go to London to

THE FIRST RESERVE FOR THE GORDON-BENNETT RACE.



H. J. Whitlock & Sons, Ltd., Photos. *Birmingham.*

The 50 h.p. Wolseley which has been appointed first reserve car for the Gordon-Bennett Race by the Automobile Club. The vehicle above is one of four 50 h.p. racers, and belongs to Mr. Harvey Foster, of Battle, who is shown at the wheel. It is a sister vehicle to the racers owned by Lt. Mansfield Cummings, Mr. C. E. Allan, and Mr. John Gretton. It is hoped that all four will take part in the Paris-Madrid race next week.

Iliffe & Sons Limited, London and Coventry.

get a certificate. Further, it will place the position of chauffeur in the hands of a closed profession, with, of course, a great increase of wages. This is a very serious thing to a comparatively poor man, and a tremendous handicap to the use of motors of any kind for trade purposes. In fact, a man would be a fool who bought a motor van which could only be used at the will of a small body of certificated men, who might strike for unlimited wages at any moment, when he can get horses and carts which can be driven by anyone.

Moreover, there has never been shown to be the slightest necessity for certificates at all. No accident that I know of would have been prevented by their use. One has just happened in Kingston. Would that driver have been refused a certificate? Of course not. There is the further consideration of how it is to be enforced. Well, the only apparent way is for any policeman to be able to stop a car at any time and see the certificates. So that anyone who did not care about motors and had any control of the police would have every car stopped every time it passed a policeman for its driver's certificate to be examined. Jolly riding it would be on a nice, cold day with a bit of rain, and one's gloves to get off, to reach into one's pocket every time, wouldn't it?

As to numbering, it is obvious that it is only of real disadvantage to those who do not wish to be recognised because they are ashamed of what they do. Consequently, it is quite clear that, as from special circumstances motor men cannot be recognised like other drivers on the road, Parliament will take some means to have them rec ised. So it is not much use bothering about whether we like it or not, and we had better make the best of it, but to add restrictions to the free use of the road is absurd.

F. STRICKLAND.

THE QUARTERLY HUNDRED MILES TRIAL.

[2967.]—I see that the Weston Motor Syndicate take exception to the note appended to my report on the running of the 10 h.p. Chenard car in the quarterly hundred miles trial.

I did not in any way suggest that the car should have been driven faster, but I certainly consider that the rules were broken by the stopping of the engine on every possible occasion.

I told the Weston Co.'s representative that to earn a non-stop certificate it was necessary that the whole distance must be run without the engine or road wheels being stopped, except, in the case of the latter, for traffic. In spite of this, the engine was at rest for at least twenty-five per cent. of the running time.

I think you will see from this that my note was a perfectly fair comment on the driving of the car; and, in fact, was a necessary addendum to the report to the club committee.

ERNEST DE WILTON.
The observer on the Chenard car.

POLICE TRAPS.

[2968.]—In view of the many cases of police "traps" in which the signal to stop is made by policemen in plain clothes, the real state of the law cannot be too widely understood.

The words of the Local Government Act are clear enough: "He (the motorist) shall on the request of any police constable, or of any person having charge of a restive horse, or on any such constable or person putting up his hand as a signal for that purpose, cause the light locomotive to stop and to remain stationary as long as may be reasonably necessary."

The word *such* obviously attaches to the word person as well as to the word constable, and means the person alluded to in the first clause, namely, a "person in charge of a restive horse." Nobody but such a person or a policeman has any right to signal a car to stop; and though a policeman in plain clothes has as much right as one in uniform to make the signal to stop, it is such as he cannot be distinguished from an ordinary pedestrian, who has no right whatever to make such a signal, the motorist has only to ignore his signal in order to enjoy perfect immunity from prosecution. The simple plea that he was unaware that the person signalling was a policeman would be in law a perfect defence. This particular form of trap can be safely evaded by simply disregarding it.

J. A. FARRER.

SLOPED STEERING CENTRES.

[2969.]—I should be very pleased to have the opinion of your readers, more especially of those engaged in motor car manufacture, of sloped steering centres. I think I am correct in stating that the Duryea Co. and the Fabrique Nationale adopt this plan, the idea being that shocks from obstructions in the road are carried direct through the steering centres, and not (as with the ordinary perpendicular steering centres) upon the shoulder of the axle.

REGINALD A. COBB.

POLICE TACTICS.

[2970.] As a regular reader of your paper I invite your attention to the conviction against me by the Mayor and Bench of Kingston recently. The evidence against me in support of the charge that on Sunday, 22nd March last, at 3.15 p.m., I was driving my car at the rate of twenty-two miles an hour in the London Road was an old stop watch, purchased by the constable some time ago (so long ago that the constable could not remember) out of his slender income, and admitted by him to have been made in Germany. The evidence for me, apart from my own, was that of three persons who swore that the car was not going faster than twelve miles an hour, and that there was a tremendous wind against me, and that the engine was missing fire, and that I had to repair the sparking plug shortly after. One of the three witnesses was a cyclist who travelled by the side of the car the whole distance. He swore that the wind was so tremendous that he had to give in and hold on to a motor bicyclist and try free-wheeling, whereupon the motor on the bicycle gave in, so he (witness) had to pedal to assist the motor, and it was impossible that either he or I was driving at more than twelve miles an hour. I also proved that from the records at the Kew Observatory the velocity of the wind from 2.30 to 3.30 that afternoon varied from thirty-three to forty miles per hour. There was no evidence that the stop watch had been tested even recently.

I suppose the votes of motorists and friends, as a body, are not strong enough to make the impression on the Government (even at this critical stage) that licensed victuallers have recently succeeded in doing. At all events it might be worth considering. It is degrading to be dragged up to the police courts and fined on the evidence of an old German piece of mechanism. I was absolutely surprised at the bench's decision. In fact, I was so satisfied that six unbiased educated gentlemen could not hesitate as to which side the strength of the evidence lay that I thought it unnecessary to occupy their time with a lengthy summarising of the evidence.

G. ARTHUR WINGFIELD.

SOME GOOD HOTELS.

[2971.]—During a recent tour in the South of England I came across some excellent hotels, and give their names for the benefit of motorists going to these towns for the first time.

At St. Leonards, the Sussex Hotel, near the St. Leonards Pier, is excellent for man and motor, petrol being available at the hotel. The Ship at Brighton is too well known to motorists to need any recommendation from me. The Grand Hotel, Bournemouth, is perhaps among the most comfortable provincial hotels, and its lack of motor accommodation, I believe, is being remedied by a fine garage to be built in the grounds. At Plymouth, the Duke of Cornwall leaves nothing to be desired, and very good accommodation for the car is obtained at Clarke's stable, close to the hotel. The Aylesbury Arms, at Marlborough, is comfortable, and has good coachhouses. I have not found a good motoring hotel at Bath; the York House is good, but stabling near the hotel is 2s. per night. An annoying practice after stopping for lunch or tea, having put the car into the yard of the hotel, is to be charged 6d. or 1s., being told the stabling is "let off." This obtains at the Bear Hotel, Devizes, and the Bear Hotel, Maidenhead.

If other motorists would recommend good hotels it would be possible perhaps to get a list of personally recommended hotels.

L. SAVERY.

[Owing to pressure on our space several letters of interest are unavoidably held over.—ED.]

Flashes.

The service of motor cars promoted by Mr. F. H. Dougal, from Bromley to Biggin Hill, Cudham, Kent, has been commenced for the season. This is the third year of the very successful service which is much appreciated, as there is no railway service to the district.

* * *

Some very handy road charts are being issued by the Dunlop Co. gratis to any motorist sending three stamps to cover cost of postage. They take the form of long strips, and indicate the roads, mileage, contour, and general description of the surfaces of all the main roads leading out of London for approximately one hundred miles round the capital. On selecting any particular route, the motorist can cut out the strip relating to it and carry it in his pocket for reference when required.

* * *

The Continental Automobile Co., of 20, Long Acre, W., who list their 9 h.p. single cylinder, 12 h.p. two-cylinder, and 24 h.p. four-cylinder at very reasonable prices, send us a copy of their neat, and lately issued, catalogue, which can be had on application, post free.

* * *

An unusual reception was accorded to the King and Queen when entering the Duke of Buccleuch's park on Monday. Drawn up near the entrance were some twenty-five motor cars, belonging to the members of the Eastern Section of the Scottish Automobile Club, the occupants of which produced by means of their motor horns a volume of sound of a substantial nature, if of questionable melody.

* * *

The member of Parliament who recently suggested the establishment of a corps of motor cycling policemen for the specific purpose of capturing automobilists who exceed the legal limit has evidently never heard of the prowess of certain members of the Leeds force on the ordinary pedal machine. In the course of recent evidence at the local police court, it was discovered that the force possessed a cycling member who can overtake cars travelling at twenty miles an hour on Leeds byways, even though the motorist may have a start of thirty or forty yards. The only person who doubts the officer's ability to do this is the motorist who was fined, and he asserts that the pace was not more than seven or eight miles at one stage of the journey and never exceeded ten at any point. To uphold the police officer's reputation as a cyclist (why has he not been fined for furious riding?) the defendant's assertion was readily rejected by the Court, and the dignity of law and order is preserved—at least, Leeds way.

"THE AUTOCAR" DIARY.

May 16.—Midland A.C. Drive to Stratford-on-Avon.
,, 16.—Wolverhampton and District A.C. Drive to Newport.
,, 16.—Southampton County M.C. Drive to Otterbourne.
,, 16.—Manchester A.C. Drive to Tarporley.
,, 16.—Sheffield and District A.C. Hill-climbing Competition at Pudley Wood.
,, 16-24.—Automobile Exhibition at Stockholm.
,, 18.—Society of Arts. Fourth Cantor Lecture.
,, 18.—Swiss A.C. Geneva. Speed Kilom.
,, 20-27.—A.C. of America. Trial of Commercial Motor Vehicles.
,, 23.—Scottish A.C. Hill climbing Competition.
,, 23.—Wolverhampton and District and Midland A.C.'s Inter-club Meet.
,, 23.—Southampton County M.C. Drive to Swaythling.
,, 24.—Paris-Madrid Race starts from Paris.
,, 25-30.—Hanover Alcohol Van Trials.
,, 30.—Wolverhampton and District A.C. Drive to Ludlow.
,, 30.—Sheffield A.C. Week-end Drive to Bridlington.
June 1.—A.C. de Dorelogne Hill-climbing Contest.
,, 7.—Latest date of entry for Aix Automobile Races.

A speedy motor car is to be provided for the use of Lord Grenfell and the staff of the Fourth Army Corps (London).

* * *

In France the horse is showing a partiality for the motor. Only the other day, a fiery steed broke away from a waggon at Rheims and dashed into a passing motor car, leaping into the back seats. The chauffeur was struck by its forelegs and thrown in the road, while the bystanders were treated to the unusual spectacle of a horse riding alone in an automobile.

* * *

So many complaints have been sent to the National Cyclists' Union relating to the excessive speed of cars on the road and the way in which so many drivers cut cyclists unduly close, that at the last General Committee meeting the following resolution was passed: "The N.C.U. is prepared to consider the question of taking up the case of any cyclist who has been injured by the furious driving of motor cars."

* * *

A reader who has suffered writes: "I think motorists ought to be warned to avoid the Old Kent Road. There are yards and yards of rails laid on the road, temporarily, from London to Deptford; also the road through Peckham to New Cross is likewise 'up' for the electric trams."

* * *

Messrs. Fielding and Platt, engineers, of Gloucester, inform us that the hydraulic pressing plant which they have lately been putting down is now thoroughly installed, and automobile frames are being turned out.

* * *

Mr. C. Jarrott, who starts No. 1 in the Paris-Madrid race on a racing De Dietrich drove last week on a 24 h.p. of the same make right over the course. Lieut. Cummings has also been inspecting it on a 20 h.p. Wolseley, and several other English competitors are also investigating the possibilities of the ground.

* * *

The proprietors of a well-known garage send us a letter which they have received from a member of the Automobile Club, in which the writer complains of certain charges made for repairs on the authority of his coachman, who states that they are out of proportion to the work done. It is certainly a novel idea to quote a coachman as an authority on such a subject, but this is not all, as the owner threatens that, if his views are not met with, he, as a member of the Automobile Club, will make it clear that the firm in question is one to be avoided. Without going into the rights or wrongs of the case, which we cannot attempt to do, it appears to us an unfair use of membership to utter what is practically a threat of damage on the strength of such membership.

Only twenty-eight automobiles were imported to Buenos Ayres last year, but the appreciation of them in the Argentine Republic is increasing, and the British Consul considers that a demand will arise, especially for electric cars in the town, and for other kinds in the country districts.

* * *

Messrs. Wolstencroft and Co., write: "Permit us to point out an error in last week's *Autocar*, in the article on the Stock Exchange Walk. You say there were no less than six official cars, whereas there were nine. No. 7 was a 9 h.p. Napier, driven and owned by Mr. Otto Frankel, of the Stock Exchange; No. 8 was a 9 h.p. Prunel, lent by Messrs. C. Wolstencroft and Co., of Great Peter Street, Westminster, and driven by Mr. Wolstencroft; and No. 9, and last of the official flag bearing cars, was the omnibus driven by Dr. Lehwess. The 9 h.p. Prunel is the one in the Smitham Bottom photograph, with the bonnet raised."

* * *

To-day has a humorous article on the international motor race. It is in the form of a dialogue between the man in the street an' Mr. Magan. Among other happy strokes is the reply of Mr. Magan to the question why the race is not held in England. "Bekase motor dhrivers an' Irishmen have a sthrong bond av union an' sympathy—the' both hate the police." Further on he explains that when the English come to Ireland to race "The'll see that the rayson why Irishmin make great soldiers an' ginerals on furrin battlefields is bekase the' are not afraid to face the police at home."

* * *

It is suggested by a facetious M.P. that the next time Mr. Balfour goes to Clouds he should try a balloon. Autocars are not built for aerial work, though one of Mr. Balfour's captors is reported to have said: "The machine, yer worship, was aflyin' through the air at anorful pace." At the church of St. Mary-at-Hill on Sunday last, the Rev. W. Carlile incidentally remarked that there was a gentleman whom he would not name who had broken the law of the land twice by going twenty-five miles an hour in his motor car. He needed prayers!

* * *

Many of the cars which took part in the Scottish Automobile Club's two days' non-stop run and were driven down from town or elsewhere were put up and carefully looked after at the spacious and convenient garage of the V.R. Motor Agencies, Renfrew Street, Glasgow, where there is space to store thirty automobiles most conveniently. Mr. W. H. Kingsbury, the managing director, is most considerate and sympathetic, and earned the warmest thanks of all who confided their carriages to his care.

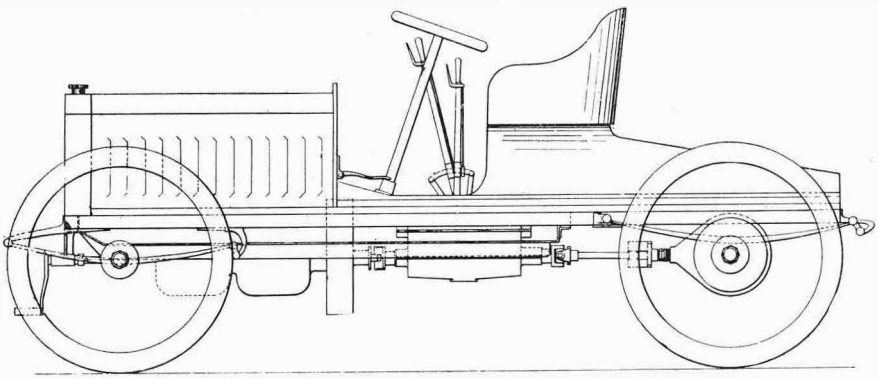
Communication between Bloemfontein and Kimberley by motor cars will shortly be established.

* * *

It is not without interest, in view of the recent motor car prosecutions at Blofield, to mention that the bench of magistrates there is a most antiquated one. We are told that their ages would certainly average between sixty-five and seventy, and a victim of their convictions informs us that some of them appear to be deaf and others blind. It would seem that their decisions are evidences of the vain struggling of the old against the new.

* * *

It has been said that Messrs. Brooke and Co., of Lowestoft, were about to give up the construction of their well-known chain-geared car on account of trouble with the chains. Mr. Mawdsley Brooke, whom we met in Glasgow last Tuesday, gives this rumour an indignant denial. He assured us that they had never had a broken chain, and that in all the private trials they had made the chain gear had proved its superiority over the tooth-wheel gear to their entire satisfaction.



The above line drawing depicts the outline of the 40 h.p. Chainless racing car for which Mr. O. C. Selbach, of Great Russell Street, Bloomsbury, is the agent. The engine is, of course, a four-cylinder one, the bore and stroke of which are 120 mm. by 130 mm. Four changes of speed are given by the gearing, the power being transmitted from the engine through the usual conical friction clutch to a live back axle by bevel gearing and Cardan jointed propeller shaft. We hope at an early date to give a further description of these cars, which weigh 645 kilogs., and will be driven in the 650 kilogs. class of the Paris-Madrid race.

Last week, in referring to the growth of the enterprise founded by Dennis Bros., Ltd., of Guildford, we said that up till three years ago they were only manufacturing motor tricycles and quadricycles. In saying this, we inadvertently did them an injustice, for, while it was true they were not supplying cars to the public till then, they manufactured a number of experimental types previous to three years ago. In other words, they went through their experimental stage before offering the vehicles for sale.

* * *

Messrs. Humber, Ltd., inform us that they have appointed the Victoria Carriage Works, of 25, Long Acre, W.C., as the agents for the sale of their cars in London. This will no doubt be interesting to a good many who will be glad to know where they can try and see the Humber cars.

* * *

Mr. Charles M. Schwab, president of the United States Steel Corporation, has presented the Automobile Club of America with sufficient steel plates to lay down a roadway a mile in length for automobiles. The track is to be established near New York in the midst of fields.

A reader who stayed four days at Great Malvern, recommends the garage of Mr. A. Burgess, of Barnard's Green, Great Malvern, as a particularly well-fitted one, and the owner as being very moderate in his charges.

* * *

In referring to Mr. Olliver's excellent little book, "Notes on the Management of the Gardner-Serpollet Steam Motor Car" (Iliffe and Sons Ltd., 3, St. Bride Street, Ludgate Circus, E.C.), we omitted to mention the price. This is 2s. 9d., post free. We make this announcement, as a number of enquiries have reached us with regard thereto.

* * *

Mr. R. S. Lovelace, of Henstridge, Somerset, whose non-slipping tread has been so successful in the cycling world, and bids fair to be equally satisfactory when applied to motor cars, has had a wide experience with different makes of motor tyres, and he tells us he is convinced that a good deal of the sideslip, as well as the damage to the tyres, is due to the fact that the majority of rims are too narrow. The consequence is the tyre does not get sufficient lateral support, and a rolling action is permitted. This not only strains the tyre at the point where it joins the bead, or thickened edge, but also tends to start sideslip. While speaking of the Lovelace non-slipping tread, it may be well to mention that this is a separate invention from the Dunlop non-slipper. The device being used by the Dunlop Co. is not Mr. Lovelace's.

* * *

The British Consul-General at Berlin reports that the autocar industry in Germany in 1902 had plenty of employment, and the use of automobiles for luxury or for business is steadily on the increase in the Empire. Petrol motors are said to be mostly used in Berlin, and electric vehicles are rare.

A 40 h.p. Dennis. This vehicle is probably the most powerful touring car of English make yet built. It was specially constructed for Mr. S. F. Bircham. He was recently married, and drove away for his honeymoon on the car. The photograph was taken on the day of the wedding, with Mr. Bircham on board the vehicle, and we hear that he is enjoying a most successful tour.

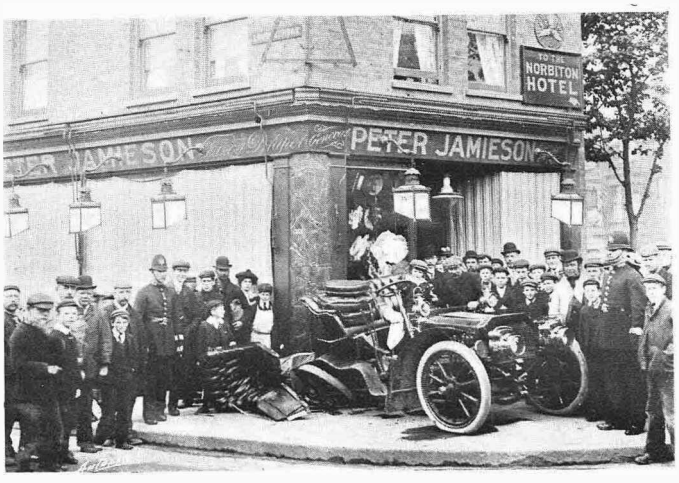
The arrival of Miss Dorothy E. Levitt in Glasgow driving her 12 h.p. Gladiator, upon which she had, accompanied by a friend, Miss Hearn, and that prince of young mechanicians, Macdonald, driven all the way from town, created quite a sensation amongst the automobilists of Clydeside, which was not lessened in any sense when they learned that she fully intended to steer her smart car in the two days' trials. Miss Levitt made the journey in four stages from town, getting as far as Buckden the first day, Leeds the second, Carlisle the third, and Glasgow the fourth. Miss Levitt reported wickedly slippery roads between Settle and Kendal, and much obstruction from sheep and lambs and other beasts. Miss Levitt has not confined her driving to a Gladiator, but has graduated on a 4 h.p. Panhard, and driven both the 12 h.p. and 16 h.p. Napiers considerable distances. She hopes to be able before very long to drive a Gordon-Bennett flier "just a little way." Miss Levitt is also accompanied on her drives by a pretty little toy Pomeranian, who generally resides in an accumulator box, and astonishes the world from time to time by getting up and expressing its annoyance with all and sundry.

* * *

On May 1st a new era in the history of railways in Austria was inaugurated, for on that day the first automobile service was opened on an Austrian railway. Two steam automobiles have been started on the hilly line between St. Polten, Kirchberg, and Mank. The machines, which have been specially built for this service by Komarek, of Vienna, are 35 h.p., and will make twenty-five kilometres per hour. All the machinery is placed on the front platform of the waggon, leaving room behind for at least twenty passengers, which is considered a maximum number in these districts.

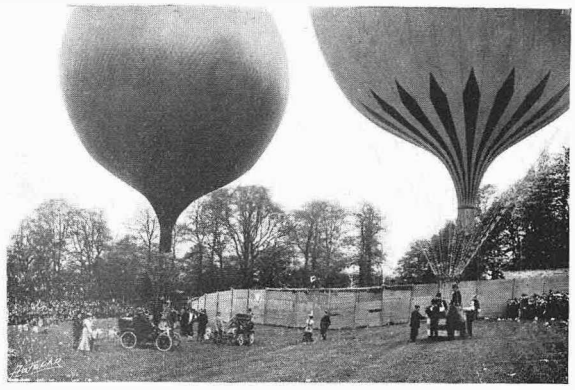
* * *

It is highly probable that Mr. J. A. Holder will drive one of the Wolseley cars in the Paris-Madrid race. Mr. Austin will drive another.



H. Webber, Photo. *Kingston Hill.*

The Norbiton accident. In the small hours of Saturday last, when Lord Alan Percy, the Hon. C. M. Ponsonby, and Major Russell were being driven to Pirbright, the three officers met with an accident. It appears to be entirely due to the high speed at which the car was being driven. So far as can be gathered, the driver assumed that the course was clear, and then a van unexpectedly came out of a cross road. He jammed on all his brakes, locked the wheels, burst his tyres, and the car consequently swung round and charged a draper's shop stern first. Major Russell escaped without hurt, and the other two officers were luckily not very seriously injured. The car belonged to a brother officer, and was a 16 h.p. Milnes Daimler. We attach no significance to the accident whatever; it was simply a case of unduly high speed. Any driver who rushes across a turning without knowing what is coming out of it must expect trouble, and, of course, the faster he is going the probability is the more serious the consequences will be.



The start for the balloon chase from the Crystal Palace (organised by the Aero Club) on Saturday last. The balloons were "Graphic" and the "Aero Club No. 1," and the cars shown are Mr. Roger Fuller's 6 h.p. De Dion and Mr. Huntingdon's 7 h.p. Panhard. In the pursuit the balloon obtained superiority over the motor cars by taking advantage of the clouds.

* * *

Mr. Frank Wellington made a two days' trip alone on the three-cylinder Brooke car from London to Glasgow, breaking the journey at Newark. He reported a heavy hailstorm on the afternoon of Sunday, and did not speak as if he enjoyed his drive very much.

* * *

We recently referred to Mr. Campbell Muir's long drive from Stuttgart to Guildford on Mr. Harmsworth's 60 h.p. Mercedes, and it will doubtless be of interest to give a few particulars of his experiences. Mr. Campbell Muir left Stuttgart at eleven a.m. on the 25th ult., and driving over the horrible German roads which lie between that place and the French frontier, arrived there after making a non stop run of one hundred and eighty miles in five and a half hours from the start. There was no necessity to halt then, but a skurry over the dividing line between France and Germany means pursuit by bullet and other troubles. This does not read like over rapid travelling, but we regard an average of thirty-six miles an hour on such surfaces as are dignified by the name of roads in that part of the Fatherland as being far from an ignoble performance, even with a 60 h.p. Mercedes just from the works. The further thirty miles from the frontier to Nancy were covered the same afternoon, making a total of two hundred and ten miles in all. On the following Monday the car was driven from Nancy to Paris in five hours, this slow time being due first to continuous rain, and secondly to the miseries of three punctures and one burst cover. On Tuesday the Paris Havre route was taken, the seaport town being reached in three and a half hours from leaving Paris, another non-stop run of 132½ miles, the first fourteen and a half miles out of Paris occupying an hour of that time, owing to the stretches of frightful *pavé* which threatened to shake every nut and rivet in the car loose. The stage from Rouen to Havre, 78½ miles, was covered in one hour twenty minutes. Arrived at Southampton speed driving was, of course, at an end; but, nevertheless, the car performed most creditably up to Sutton Place, three miles beyond Guildford, *viâ* Winchester, Basingstoke, Hartford Bridge Flats, Blackwater, and Worplesden.

THE GLASGOW—LONDON NON-STOP TRIAL.

LEEDS, WEDNESDAY NIGHT.

The first day of the Glasgow-London non-stop trial promoted by the Scottish Automobile Club (Western Section) was carried out to-day between Glasgow and Leeds. Out of a total entry of twenty-five no less than twenty two lined up in Saint Vincent Square, Glasgow, at 3.15 a.m., and were sent on their way punctually at 3.30 by the secretary, Mr. R. J. Smith. Only a few minutes separated each car, the 14 h.p. Chenard and Walcker, with five up, leading, followed by Miss Dorothy Levitt, driving her smart 12 h.p. Gladiator, and in rapid succession came the remaining twenty, among which were a 24 h.p. De Dietrich driven by Chas. Jarrott, two 10 h.p. Lan Stocks, an Arrol-Johnston dogcart and a six-seated Gardner-Serpollet, a three-cylinder Brooke driven by Frank Wellington, Captain H. H. P. Deasy, accompanied by Mr. Harry J. Swindley, on his 22 h.p. Rochet-Schneider, 12 h.p. and 24 h.p. Georges-Richards, a 10 h.p. De Dion driven by Mr. J. W. Stocks, an Arrol-Johnston dogcart, and a six-seated Arrol-Johnston carriage, two 10 h.p. Wolseleys, three Argylls, one a four-cylinder 16 h.p. car driven by Mr. Alec Govan, and an F.A.C. 24 h.p. tonneau driven by Mr. Warren Smith. The morning had broken with slight rain and promise of more, which was fulfilled. Leeds was reached by the first car at 3.40, Jarrott being the first to arrive, and by 4.20 the Brooke, Gardner-Serpollet, and the Baby Peugeot only were out. The route prescribed was by Crawford Inn over the Beattock summit by Ecclefechan and Gretna Green into England, thence by Carlisle, Penrith, over Shap Fell, to Kendal, where the road by Kirkby Lonsdale, Settle, Skipton, and Otley to the south-east was taken to Leeds. It certainly struck us as one of the most trying courses over which cars have ever been put, and the 212 miles covered were equal to many more on southern roads. Troubles were few and far between, Miss Levitt leading off with a puncture a few miles outside Glasgow; Mr. Jarrott was annoyed by an air-lock in his spare petrol tank, the Brooke was stopped once; and there were several cases of tyre failure. The drivers were warned of a police trap at Hellifield by some kindly people who drove out in a landau and exhibited a huge printed notice; but though all drove through on the first speeds the police were so enraged at the idea of being foiled that they seized upon Miss Levitt, who was not proceeding at more than seven miles per hour at the time. In the last stage, from Skipton to Leeds, the Chenard-Walcker, the 16 h.p. Argyll, the two Lanchesters, and Stocks on his De Dion went twelve miles out of the way, through Saltaire. The roads were as good as they could be, though a trifle dusty in the middle of the day. Seven out of the nine motor bicycles entered started with the cars, but up to the time of our wire leaving only the two Humbers had put in an appearance at Mr. Roland Winn's commodious and well-handled garage, where the cars were stored for the night. On the whole, the first day's run of these trials must be written down a success, the passing cars keeping fairly close up to one another, so they proved a great attraction to the inhabitants of the villages through which the route passed.

GORDON-BENNETT ITEMS.

Getting Ready.

Preparations for the great race are progressing rapidly. We notice that many farmers are already trimming their hedges and chopping the lower boughs off the trees where they are likely to obstruct the view, and that roadmenders on the eastern side of the course are getting ready for the steam roller, whilst this useful implement is already busily engaged on the western circuit.

The Start.

The position selected by the Automobile Club for the start and finish of the race is hardly an ideal one from the spectator's point of view, for although the road is straight for a considerable distance, one cannot see for more than half a mile at the outside when standing behind the hedges. Automobilists taking their cars over will have to run them into side lines, or into the fields, and back them to the hedges, where they may be converted into private grand stands, from which a better view will be obtained than by those who line up directly behind the hedges. The Automobile Club proposed to erect a grand stand in bridge form directly across the road, but as such a construction would be very expensive to erect, and would only be required for a short period of a few hours, it is doubtful whether the idea will be carried out.

A Point of Vantage.

The Moat of Ardscull, Athy, has been taken by Messrs. Mecredy and Percy, the proprietors of the Irish motor monthly, the *Motor News*, and they will instal a camp there during the race. They have invited a number of friends to share this point of vantage with them. The cars will pass no less than seven times, and as the view from the top of the Moat is an extended one, the view of the race should be exceptionally good. In fact, it commands a view of a three miles straight. It is three and a half miles from Athy, and thirty-seven miles from Dublin.

A Forecast.

Mr. J. Digby Kidd, of Leith, writes on May 8th as follows: "It may interest you to hear that in a dream I had last night I saw Mr. Edge come in first in the Gordon-Bennett. It was quite distinct, as the car was white with dust."

The Eliminating Trials.

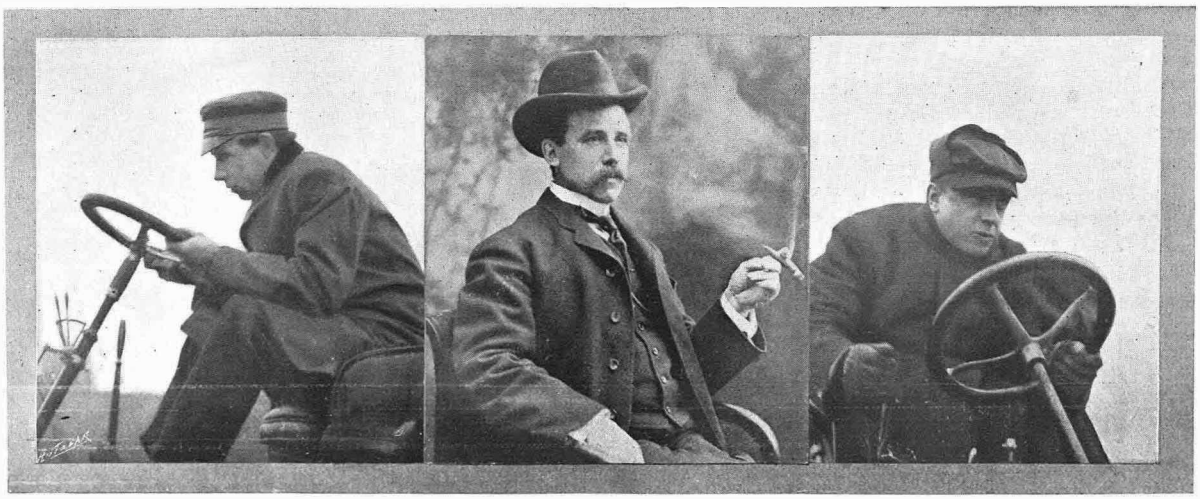
The following letter has been received in reply to that of Mr. Lisle, appearing in the last issue of *The Autocar*: "The statement that Mr. Lisle makes that my Napier car which won the eliminating trials at Welbeck had repairs and alterations to at the end of practically every run up and down the track is absolutely untrue; and, apparently, Mr. Lisle thinks it good sportsmanship to try and belittle the car which beat his both for speed and hill climbing.—J. W. STOCKS."

Garage Room in Dublin.

Messrs. John Hutton, Sons, and Co., of 115, Summer Hill, Dublin, inform us that they not only have garage room for two hundred cars, as previously announced in our columns, but during the Irish fortnight, as a welcome to the English and foreign visitors, they are letting this space entirely free of charge for storage. At the same time, as the available space is rapidly being booked up, they suggest that those of our readers who wish to avail themselves of their offer should write them at once.

The Mercedes Drivers.

The difficulty between M. Jellineck and the Automobile Club of Germany still seems a long way from solution. Contrary to what was generally reported, the club is anxious to make every possible concession, and has gone to the extent of admitting Hieronymous as a member, so that he may be qualified to drive a Mercedes in the Gordon-Bennett cup race. M. Jellineck has thus gained a point, and having secured Baron de Caters and Hieronymous it was supposed that he would consent to replace



The three American Gordon-Bennett champions. The driver on the left is Mr. L. P. Mooers; the middle one, Mr. Alex. Winton; and on the right-hand is Mr. Percy Owen.

Werner with a club member. This, however, he refuses to do, urging that Werner is a man in whom he has the most complete confidence, and he asserts that he would be courting failure by sacrificing him to the principles laid down by the club. It was suggested that Werner might also be admitted to membership, and this proposal has received a good deal of support, but it is feared that if such a precedent were created it would have serious consequences for the status of the club. It is clear that the nomination of Werner will not be accepted, so that it is not easy to see how the matter will end. The name of the American automobilist, Mr. Fox hall Keene, has been put forward as a likely substitute for Werner. Mr. Keene has had a fair racing experience, and has long been accustomed to the driving of Mercedes cars. If M. Jellineck would accept the nomination the club would readily receive Mr. Keene as a member, and thus the difficulty would be smoothed over; but, in view of his insistence on behalf of Werner, it is doubtful whether he will do so. It must be admitted that the Germans are by no means satisfied with the attitude taken up by M. Jellineck, some of them even going so far as to say that he would not be sorry for an excuse to withdraw from the race for fear of imperilling the Mercedes reputation by failure, but as his abstention would do quite as much harm as defeat, we hardly suppose that there can be any ground for this supposition. The Automobile Club of Germany is very anxious to be represented in the Gordon-Bennett cup race, and we have no doubt that some way will be found of meeting the difficulty. The Mercedes cars, two of which are 90 h.p., and one 60-70 h.p., will all be fitted with Jenatzy's magnetic clutch.

Petrol in Ireland.

Sir,—With reference to the supply of petrol in Ireland during the Gordon Bennett race and tour, I feel sure that purveyors of petrol in this country do not in the least sufficiently realise the enormous demand that will be made upon them. From my previous experiences of Ireland I know that it is impossible to obtain petrol in any quantities except in Dublin, and unless the wholesale houses make very serious preparations there will be a petrol famine. I believe that on a very low estimate there will be at least 500 automobiles imported into Ireland during the Irish tour, and I believe that the consumption of these cars will amount at least to 250 tons of petrol, or approximately 60,000 gallons. Taking my own case alone, as I intend driving a 60 h.p Mercedes, I expect that my consumption of petrol will amount to between two and three hundred gallons.

I think it would very much facilitate the arrangements of those intending to tour in Ireland during this period if the wholesale purveyors of petrol would make a statement as to where they propose to have their depôts and exactly how much spirit they will have at each depôt. We shall then be able to let them know how much we shall probably require and thus avoid the terrible calamity of a petrol famine, which will certainly happen unless the most elaborate and careful preparations are made to deal with it. J. ERNEST HUTTON.

The Eliminating Trials.

Sir,—In reference to the letter from Mr. Lisle in your last issue giving reasons why his car was beaten by the Napier in the eliminating trials, and also incidentally suggesting a sort of challenge, it may interest you to know that my reply to Mr. Lisle's challenge to race against him on my Napier car requires a perfectly simple answer. I shall be very pleased to race him every day from August 1st for as many days as he likes for a sum of not less than £500 per race, each race to be finished during the day. I am quite certain that after a dozen or so of races both of us would be satisfied as to which had the best car.

Referring to the letter appearing under the *nom de plume* of the correspondent who calls himself "Fair Play," he seems to write most unfair letters when he suggests that the Automobile Club has not done its best to secure the most likely team to retain the cup for England. It months ago laid down the best eliminating tests that could be carried out in this country to test the capabilities of the would-be participants in the Gordon-Bennett race. Why did he not suggest some means of improving these tests prior to their taking place and not afterwards? If his name was revealed it might then be reasonably obvious why he is not satisfied with the successful cars. Let the car in which he is interested enter for next year or for the open races to be held this year and prove what it is capable of doing. S. F. EDGE.

[Our correspondent is wrong in suggesting that "Fair Play" is interested in any particular make of car. Had he been so, his letter would not have been inserted under a *nom de plume*.—ED]

Repairing the road near Carlow for the Gordon-Bennett race.

CLUB DOINGS.

The Alresford A.C. A New Club.

A new club, having the above name, has recently been formed at Alresford, and the first run took place on May 2nd. Its membership is growing, and amongst those who have already joined are the Hon. Douglas Carnegie (Rose Hill), the Hon. A. Baring, the Hon. H. L. Bruce, Sir John Shelley, Bart., Colonel H. Stratton Bates, Major W. Nicholson, M.P., Captain Faith, Messrs. H. H. Walford, A. Hobson, G. Ferrant, G. Willoughby, J. Ridley Shield and G. Ridley Shield, and Dr. Jollye. Mr. G. Ridley Shield has been appointed honorary secretary.

South Wales Automobile Club.

The South Wales and Monmouthshire Automobile Club continues rapidly to increase its membership, and already those on the roll number over seventy. The committee are actively arranging a list of runs for the summer. On Saturday last, despite the heavy rain in the morning, quite a large number of members took part in the run to Tintern. On Saturday next (May 23rd) the run will be to Bryeon, where the members will be entertained to luncheon at the Castle Hotel by Captain Hughes Morgan, who is an ardent motorist. The club has its own club rooms at the Royal Hotel, Cardiff.

In his report on the trade of Chicago, the British Consul at that city states that the trade in automobiles last year increased thirty per cent., about £300,000 worth having been sold in 1902, but most of these were for recreation. A few automobiles are used as delivery waggons, and two lines of 'buses are being run satisfactorily, both of which use gasoline motors, and recently some heavy trucks moving luggage have been in use, but heavy tractors have not as yet made much headway in favour.

MOTOR CARS*

PUBLIC OPINION about cars is changing in all circles.

"THE MAN IN THE GUTTER."—Last Saturday, when motoring, I had a puncture to mend in a slum, and I found the loafers most friendly. We could not find air pumps enough for the volunteers nor pennies enough for those who had offered advice, proffered tools, fetched water, and ostentatiously searched everywhere for everything wanted. They did not search only that they might find, but that they might be seen to be searching. The street man's contempt for the motorist's intelligence has changed in so far as it is qualified to-day by the conviction that his hairy clothes are swollen out with copper coins.

"THE MAN IN THE STREET."—The "man in the street," with whom is to be classed the "bourgeois" of commerce, has his views. He already knows the various makes by the look of their bonnets; he can tell a steam car by the steam, and an electrical car by the "little ticking noise that goes on underneath," for he is always attentive to what promises a new sensation or new profits. His view is that the purchase of a car is beyond the average purse, its management beyond the average wit, its risks beyond the average, its pleasures transient, and its survival very doubtful, even if desirable.

IN THE WORLD.—After these the world is composed of men, women, and justices of the peace. There are men of law, men of letters, men of art, professional men, politicians, etc. All these are thinking, waiting, listening, trying, and learning, about the extraordinary results of five years of hard brain and handwork. The justices of the peace are also inflicting fines on the workers in the interest of the "land."

THE EFFECT ON THE COUNTRY.—Yet the effect on the land of cheap road traction and rapid road travelling is not to be feared; the old English roads now used as a playground for children, a cackling ground for ducks and old women, and a chatting ground for loafers and lovers will very soon be re-opened. They will once more be available to convey immediately and without trans-shipment the fresh green produce which is so much damaged by waiting and by handling. They will be available to deal with transport which the railways cannot effect with profit to themselves (and therefore very naturally never have dealt with), because of three facts which have often escaped notice: (1.) That a narrow country road can carry in a year from point to point a larger tonnage of goods than a double line of express railway, the reason being, of course, that the length of the road is not cut up into sections thrown out of use by the block system. (2.) That on short railway journeys (up to twenty or thirty miles) the delays necessarily incidental to accumulating a paying trainload of perishable goods—the station charges, terminal charges, charges for demurrage or delay, and trans-shipment—are such as to bring up the cost of conveying a ton of goods one mile to a figure (4d.) which exceeds the cost by road, by motor, or by tractor. (3.) That although goods when travelling by road move more slowly at any point of time than when going by rail, they get to their destination earlier, because they do not have to wait or to be rehandled, and are delivered at the very door. I need only mention incidentally the automobile harvesters and mowers, of which statistics give some idea, and with which, for example, Messrs. Cadbury have had excellent results.

RISKS.—Having touched on this subject, I must not shirk it. Very recently attention was drawn in the House of Lords to what is a serious fact, that in 1902 no less than forty motor car accidents were reported in London alone, apart from the unreported accidents, which are doubtless even more numerous. That is to say, that nearly once a week our daily paper might have had a page with "Motor Car Accident" upon it, and a certain percentage of these might have said, "*Fatal* Motor Car Accident."

RAILWAYS.—The number of persons killed *on* the railways in 1902 in the United Kingdom was 1,096, and 6,651 injured in the year, and, in addition, other accidents from a variety of causes, which bring the total for the twelve months to 17,814 injured.

HUMAN NATURE.—The second consideration is not statistical, and is more consoling to the surviving remnant of our people. If a man has been very closely passed by a rapidly moving and heavy vehicle, especially if it be noisy and if he has had no personal voice or influence in preventing that vehicle from running over him, he is inclined to ascribe his escape *not* to the cleverness of the driver, who knew exactly what he was doing, and the control he had over his machine, but entirely to his luck or to a merciful providence, and he feels angry at having had what he calls a narrow escape. I will say more than this, for if he had done his best from the moment he was aware of the approach of the vehicle to commit suicide under it, he would have to be very canny to do so, for at the last instant nine out of ten drivers would wreck their cars and avoid him by a violent swerve into the hedge or wall. The experienced driver of a fast car well knows that the wisest thing he can do for the safety of certain road users is not to warn them a long time before he arrives. I have seen a party which was standing in safety in the middle of a wide road scatter itself across my path at the sound of a horn, whereas by approaching some ten yards closer before hooting the note would have caused the startled group to move with one accord to the same side out of harm's way. Nothing is more abhorrent to a driver than to run over an animal, and this is not exclusively due to altruistic reasons. A little dog who fails to realise that a car is moving because of the absence of the horse compels the greatest caution as he yelps and barks in front of the—to him—mysterious vehicle. To run him down may be as gravely dangerous to the motorist as it is to the dog. Every consideration of selfish interest that could influence a reckless bully (including his personal hurt and certain capture) will weigh with him against running over any human being which may be in his path. He may blow his horn furiously; he may appear to be scorching up at a terrific pace, which the pedestrian imagines to be utterly beyond control, but it is the man in the car who knows to whom the accident is most serious. If you were to ask him he would give a new shade of meaning to the phrase, "The more I think of men, the better I like dogs."

ADVANTAGES.—The advantages of cars as compared with other vehicles are in the briefest summary—their speed, absence of fatigue (with, say, thirty miles a day), ease of control in not running away, in not starting unbidden, in being safely left untended, in excellence of brakes, economy in requiring less stable room, less immediate attention on return from a journey, and less lengthy attention on proposing to start forth. The access they give to beautiful scenery, the access to a large circle of friends when in the country, and the access to the country when in town, the health they bring with fresh air, with an absorbing pursuit, with distraction from work, with the ease of travelling, with the inoffensive nature of their stabling, and their harmlessness in the streets. Economic advantages in not damaging roads, in giving to us a colonising nation, a means of opening up our possessions without the necessity for burying in the desert £14,000 for every mile of irremovable track, and leaving us free to remove the rolling stock if our expectations are not fulfilled. Educational revolution is turning the minds of men of leisure from dilettantism to the too long ignored importance of mechanics in the modern world.

DRAWBACKS.—Needless to say, these are not all the advantages, but I want to get to the drawbacks—the dust, the noise, the smell, the tyre troubles, the breakdowns, the scarcity of drivers, the fire risks, the damages to self and others, the expense, the cold, the damage to eyes, the hideous dress, the ugliness of cars, the skidding, and the difficulty of making a choice. This list, too, is incomplete, but if the advantages be compared with drawbacks no one can fail to be struck with the abiding nature of the first and the obviously transitory nature of the second. What we have now to do is as nothing to what we have done. Nothing but intellectual petrifaction can prevent the removal of these mechanical difficulties, just as nothing but the stultification of Parliament can prevent the removal of the existing speed limit. An example of what can be done in the extreme mechanical ingenuity is the flying machine, where the 16 h.p. motor apart from the gas bag weighs only 210 kilogs., and is so finely calculated that

* Excerpts from a paper read by Mr. Mervyn O'Gorman at the Caxton Hall, Westminster, on the 8th inst.

a rate of working greater than that of a horse is usefully got out of about 10 lbs. weight, and maintained for an hour by a few ounces of petrol. These are the things which give us the hope that our minor mechanical troubles of dust, noise, weight, and tyres will not be with us very long.

SPEED AND PRICE.—Not only are speed and utility as closely linked in fact as speed and breakdowns are in imagination, but speed also bears a very close relationship to price. Once a buyer has decided on how much comfort in the way of cushions he wants, how much comfort in the silent running he can dispense with, and the colour of his car, and how many people he wants to carry, he must at once decide either how fast he proposes to carry them, which, broadly speaking, determines what price he will have to pay, or he must decide how much he will pay, and this determines how fast he will travel. There are variations from these averages, but the true speed of a car which is very fast and yet very cheap is affected by the fact that it is not really fast travelling to hurl one's self through the air for ten miles and to spend two hours in repairing. At the best, this only yields a rate of five miles an hour. It is on this principle that many people believe a horse and carriage to be on the whole the quicker conveyance. This, I am in a position to say, is a mistake; but not only so, I will dare to say more—the motor car is cheaper mile for mile, speed for speed, and tonnage for tonnage. I could prove it, too, by my own car's 4,000 miles in three months.

PRICES.—In a general way* no useful four-seated car costs less than £200. If we aspire to go at fifteen miles per hour on an average up-hill and down dale, we must pay at least £300.

We can get a car for	That will average	That will reach a top speed of	And will climb Westerham Hill at
£300	15 m.p.h.	26 m.p.h.	5 m.p.h.
£350	16 ,,	27 ,,	6 ,,
£400	16.5 ,,	28 ,,	7 ,,
£500	17.5 ,,	30 ,,	8 ,,
£550	18 ,,	31 ,,	9 ,,
£650	19.5 ,,	32 ,,	10 ,,
£700	20 ,,	34 ,,	11 ,,
£750	20.5 ,,	35 ,,	12 ,,
£800	21 ,,	36 ,,	13 ,,
£900	22 ,,	38 ,,	14 ,,
£950	23 ,,	39 ,,	15 ,,
£1,000	26 ,,	40 ,,	16 ,,

It seems to me important to give at once the facts about speed which are missed by the non-motoring man.

SIX TO EIGHT MILES PER HOUR.—This is the speed which any reasonable driver will take when passing through a crowded village street. At this speed a car whose brakes are proportioned for quicker travelling can be brought to a standstill within a yard, though a horse and cab going at 8 m.p.h. cannot stop within three to six times that length.

TWELVE MILES PER HOUR.—This good old coaching average is the talk of the day, but do all the talkers know that if the maximum speed is 12 m.p.h. the average is only 8 m.p.h.? Experience with horse-drawn as well as motor carriages shows that to run for one hour and cover twelve miles (which is quite a reasonable thing to do) will have necessitated, by reason of hills, traffic, turns, and of the villages, so much slow work that it must be made up for by exceeding 12 m.p.h. in the clear spaces. In fact, we must reach at least 17 m.p.h. for short spells to do twelve miles during the hour, and 17 m.p.h. is the occasional practice of cabs, growlers, carriages, and even of fully-loaded omnibuses on favourable occasions. It is well to be clear on this point, because it explains why a motorist objects to being timed on a hundred yards of straight, level road, and fined £5 for going at 17 m.p.h. The proof that the legal restriction of speed down to 12 m.p.h. is a dead letter is that a touring car which cannot break the law is absolutely unsaleable, as also would be a horse or pony. The same applies to tramways whose maximum speed is 9 m.p.h. under the Tramways Act of 1870, but the hardships are not the same, as their unchallenged speed attains to 25 m.p.h. under the actual facts in 1903.

TWENTY MILES PER HOUR.—It is worth while to consider here some familiar facts. A bicycle race is run at about 30 m.p.h. on the level track, and the touring bicyclist on a good road, when he feels fresh and meets a down grade with a fair wind and a straight run, exceeds this speed with undoubted delight, and with safety if he has a brake. He will not keep it up, nor can he average more than 14 m.p.h., but to do even this he will have to ride sometimes at 23 m.p.h. Personally, I find an average of 14 m.p.h. very tiring, but many very sober-minded men do it, and live. The old road coaches, which ran habitually from London to Birmingham and London to Oxford at 20 m.p.h., must have touched a top speed of about 27 m.p.h. on the down grades; 27 m.p.h. on the road is therefore not a very new invention.

THIRTY MILES PER HOUR.—This is a speed at which the public begins to think it ought to be horrified. I was going by a train at 30 m.p.h. in Yorkshire, when the iron tyre on one driving wheel of the express engine came off. One piece flew straight through a signal cabin, came out at the other side, and travelled 100 yards into a field behind; another piece hit the machinery, and other pieces were scattered about. The brakes were applied, and in threequarters of a mile we were stopped. Just think, threequarters of a mile! These things impress one with the relation of good brakes to legitimate speed. The iron tyre on the iron rails had at least one drawback, for there is probably not a car made which can run at 30 m.p.h. which cannot also be brought to a standstill within one or two seconds of the driver wishing to. The compulsion to use two good brakes is one of the few good features of existing regulations, and if a man were to be allowed any speed, but always find if he failed to pull up within a length equal to his distance of clear vision of clear route, safety would be assured. If the police were empowered to make this test at will, the time would soon come when it would not be used vexatiously. It is easy to buy a car with such brakes, because they are already the normal thing, and this because the driver is quite as keen about his own safety as anyone else. The knowledge of the enormous power of his brakes is liable to make the brutal person (particularly the uneducated mechanician, who is a beggar on horseback) play a little maliciously at the game of bluff, but this also will disappear—it is too expensive in tyres. The "show-off" driver is well known; he goes bang up to his master's hall door at full speed, and suddenly stops one-eighth of an inch from the kerb and exactly where he intended. In a gymkhana this is very nice, but if such skill is used to terrify the defenceless, the person who does it is a cad who deserves the scourge. Still, it is just as well to repeat that this bully will do no harm, for he knows that he runs as much risk as the persons whom he threatens if he happened to run into them. The bearing of these considerations on the admissibility of 30 m.p.h. is very important. I consider that this speed is not only desirable, but should be legitimised and be attainable on all open roads, provided only precautions are taken that the brakes are good, and are secured by some such simple instructions to the police as I have suggested. Also, there would then be no injustice, for in case of accident to the brakes a man has obviously no right to travel fast, and I think that no speed under 30 m.p.h. can fairly be called fast, though much slower speeds may quite well be called "furious."

FORTY MILES PER HOUR.—This is the speed which is so much more often spoken of than accomplished. It is excessively rare; skilled driving and good brakes make it safe, and the danger of it makes skilled driving and good brakes almost a certainty. Nevertheless, the number of pedestrians who do not claim that they have been saved from instant death by their own agility in avoiding a 40 m.p.h. car is rapidly dwindling. This great consensus of the uncrushed deserves some explanation: 40 m.p.h. is very nearly the same as saying 60ft. per second, and no ordinary person standing still *can* move forward one yard in half a second, so that when such a car is 30ft. from you and approaching your way you cannot normally step from the pavement into its path if you would, whereas it could get out of your way if you did, and I have before given some reasons for the driver's desire to do so.

* To get a broad view of this subject the reliability trials of September, 1902, are taken as a basis, and here it appears that out of eleven entries no four-seated car was entered under £200. Four seats could be put on, but this was evidently not reckoned the normal number of passengers by any of the makers. The prices and speeds are only approximations taken to give a concrete example of what it is that is paid for in the price of a car other than the obvious.

SIXTY MILES PER HOUR.—There is a mnemonic symmetry about travelling one mile in one minute that has caused this particular speed to have a fascination for everybody from the schoolboy upwards. It has consequently become a commonplace conversationally, though it is rare enough on the road for it to be worth while to give an impression of the sensations that are followed by such travelling. To begin with, the near objects on the roadside are rushing past at so great a speed that one never allows one's self to look at them, because they practically produce no mental impression other than that of a blur or haze. Only the more distant objects at the sides and all the objects in front of the traveller are sufficiently still to be appreciated by the eye at all. One singular effect which arises from this is that just as on an express train the telegraph posts flit up and appear just to fail to hit the passenger, and then slip out into space again, so a small steep rise in the road appears to rush up with intent to hit the driver in the face from underneath, and then when the hillock has been surmounted, the apparent absence of any ground to run upon, so that the beginning of a down-hill gives to the inexperienced those sensations which doubtless are known, though rarely revealed by persons who have fallen over a precipice.

MECHANICAL ROAD VEHICLES.

Prof. W. Worby Beaumont, M.I.C.E., delivered the third of his series of the Cantor Lectures upon "Mechanical Road Vehicles" at the Society of Arts on Monday evening.

The lecturer, pursuing his theme as to the types of vehicles made in October, 1900 and 1902, showed a picture of an English 20 h.p. car, made by the Motor Manufacturing Co., which, as compared with the older vehicles showed from a customer's point of view how very much the wheelbase had increased in the last two years. The car, although of smaller horse-power, had originally a very short wheelbase. On this car there was a wheelbase with a distance from centre to centre of 7ft. 10in. The car was driven by a four-cylinder engine, and a feature in the gearing was the arrangement of putting one or other speed into gear by means of dog-clutches. He projected a drawing of it on the screen.

The next view was another illustration of an English car which had certain features which made it of considerable interest. It was a 16 h.p. Brush car, with four-cylinder engine and was made by the Brush Electrical Engineering Co., which had established a motor department, and had taken in hand the manufacture of motor cars, and was doing it now on a considerable scale. When they first commenced they used a foreign motor which in certain respects was a very good one, but, as had been said of the horse, under certain conditions it did not answer. The problem was solved, however, by the designing of this four-cylinder motor, which was four inches in bore and five and a half inches in stroke, with about 800 revolutions a minute, although it would run to about 1,100 per minute. The wheelbase was a very long one, viz., 7ft. 9in., so that it was apparent that the long wheelbase was being adopted by all the recent makers.

The wheels were rather larger than were commonly used. It afforded an example of the English-made car with variously made bodies. The Swift car of 6 h.p. and of English design had introduced several departures in ordinary construction and detail. One of the leading points was the disposition of the driving wheels when describing a curve. An axle right through the car was used here—a divided axle thus being dispensed with—and upon each driving wheel there was an arrangement similar in effect to a free-wheel, with which they were all acquainted, but so arranged that when it was necessary to reverse the motion of the car it was done by causing the ratchet arrangement to drop into place and take the car backwards.

Another view of an English car was that of the Lanchester—a balanced engined car—showing the engine and the two pistons in opposite cylinders approaching or receding from each other and connected to two cranks. It was the only car in this country which was using a wick carburetter. Whatever might have been said of the wick carburetter elsewhere it was found to work very satisfactorily in conjunction with this engine.

The De Dietrich car which was being introduced into this country was a well-made car. There was an ingenious arrangement of clutch and gearing, which, instead of being in the more usual form of the Panhard and Levassor, was arranged with the two shafts side by side. There were a lot of points they might dwell upon in this car which were the result of years of experience obtained by men who were able to put them into practice. These cars were introduced into England by Mr. Jarrott. Although this was one of the recent cars the makers had not yet adopted the fashion of the honeycomb coolers.

Prof. Beaumont also showed on the screen an English car. This was the chassis Ariel of 16 h.p. It was almost the only make of car in which the designers have adopted—he would not say with wisdom or otherwise—the very high speed of the small motors of the De Dion type running at 1,400 revolutions per minute, and it was said that these engines would run and remain in the frame at up to even 3,000 revolutions per minute. At all events there were credible witnesses who could testify to the flexible running of the car. They had been accustomed to look upon a car whose engine did 750 revolutions a minute as a vehicle that maintained a high rate of speed over all conditions of road. Gradually they got to look upon an acceleration up to 1,000 revolutions a minute, and began to think it was rather a dangerous practice. Now, however, it had been found that they could drive these engines at double the speed that was formerly practicable.

Referring to the Thornycroft petrol car which he now exhibited in a lantern slide, the lecturer said that much as the son of Sir John Thornycroft had concerned himself with the welfare of steam vehicles, lorries, steam waggons, and so on, this one, like many others, had succumbed to mechanical difficulties; and in order to make a light vehicle he had adopted a petrol motor, and had not tried to use his very successful steam engines as used for the large vans.

The next view shown to the audience was that of a car which Prof. Beaumont said most of them had read about. It was an English-built Napier of 12 h.p., and it was a car which carried, with pleasure to its owner, Mr. Balfour. The pleasure thus afforded was due to the smooth running of the car and its clean and quiet action.

The lecturer then went on to describe the Locomobile car, made to carry four people, and stronger now than it was originally, to suit English requirements. It was one which greatly surprised every English engineer. The engine had a cylinder only 2½in. in diameter and 3½in. stroke, and it performed 400 revolutions a minute. The steam pressure was 250 lbs. Well, this engine, although such a toy, did the work effectively. The boiler was an eye-opener. It was a thing that everybody who knew anything at all about boilers regarded as absolutely useless. Well, that little bit of a thing—this boiler filled with little tubes, with a little bit of a shell—which it was said would not work, being bound to get filled up and choked with encrustation, did not fill with encrustation, nor become choked. The result was that people knew more about boilers nowadays. Several makers had spent a great deal of time in devising boilers that would achieve the same results, and the consequence was that a good many manufacturers were going to adopt them in the future, inasmuch as it was proved that they would not give the trouble that was anticipated of them.

Prof. Beaumont then illustrated the Serpollet steam car, which he said had accomplished some of the most remarkable speeds ever made upon the roads. He recommended all who did not find it a trouble to give it a little care and attention.

On the subject of carburetters, which were mostly used in petrol motor vehicles, and which formed about eighty per cent. of the whole of the vehicles of the lighter type, Prof. Beaumont commented on the great virtue of petrol or petroleum spirit in association therewith. He described Blackburn's surface carburetter and other types, and concluded with a reference to the 50 h.p. Wolseley racing car belonging to Lieut. Cummings, who, unfortunately, he said, did not become owner of it in time to enter it for the Gordon-Bennett cup. He praised the merits of the car, and added that it was a pity it was not made in time to figure as another English representative in the Gordon-Bennett competition.

The lecturer was again warmly applauded at the close.

SOME REPLIES TO QUERIES.

Under this heading we insert a few selected replies, as space permits, to letters containing queries received from correspondents which are likely to be of general interest.

The bulk of questions dealt with each week are of interest only to the senders, and these are replied to by post direct, and are not published.

We are always pleased to reply to queries, even if they be of an elementary and untechnical description, our object being to help the novice as well as the more experienced automobilist. Correspondents will kindly note that queries should be plainly written upon one side of the paper only, and each question should be separately numbered, *i.e.*, two distinct questions should not be asked under the same number.

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

A stamped addressed envelope should be enclosed, in order that a reply may be sent direct through the post, in addition to any reply which may be printed.

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

SIZE OF SILENCERS.

I have a 12 h.p. two-cylinder Aster motor in a car I have just bought. I am delighted with the motor, but find the exhaust silencer inefficient. Can any of your readers recommend and give description of a really effective silencer? The Lanchester and Daimler cars seem to have such. I think a drawing and description of a really good silencer would be of value to many motorists in these days when silence is craved.—F. COOP.

A very effective silencer without excessive back pressure may be made up in the forms shown either as in fig. 1 or fig. 2, working to the general dimensions there given. For type 2, the dust raised by the exhaust is not so pronounced, as the final outlet is split up by the series of notches when escaping into the atmosphere. In type 1, the end cap and discs are riveted in position to the bent over barrel by means of 8 gauge iron or copper rivets, spaced at about 1½in. centres, and the discs must be placed as shown with the centre lines of holes alternating so that the exhaust, after passing through the first series, impinges on the blank part of the next disc and so on, hence breaking up the straight path of the gases. The connecting exhaust tubes to engine should be made equal to the size at present fitted. In some exhaust boxes a relief valve is fitted to relieve the pressure in case of firing in the box, but this is not absolutely necessary.

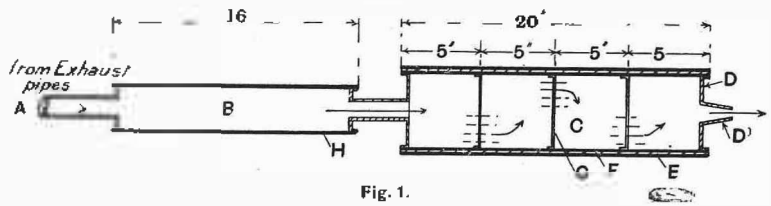


Fig. 1.

A, inlet from motor.
B, first expansion chamber.
C, second expansion chamber.
D, end plate ¼in. thick.
D¹, outlet nozzle ¾in. diameter.
E, steel plate 4⅜in. diameter, 16 gauge thick.
F, asbestos sheet ⅛in. thick.
G, steel discs 16 gauge thick, drilled with sixty holes ⅜in. diameter in half the disc only.
H, 3in. diameter 16 gauge steel tube.

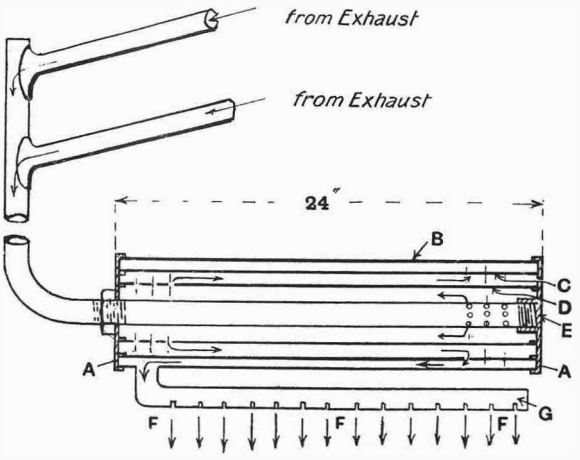


Fig. 2.

A A, end plates ¼in. thick.
B, steel tube 6in. dia., 16 gauge.
C, " " 4½in. " "
D, " " 3in. " "
E, gas tube 1½in. dia., 10 gauge.
F F F, saw cuts in outlet pipe G, ⅛in. deep, ⅛in. wide.
G, outlet pipe for burnt gases.

SIZE OF ROAD WHEELS.

Will you kindly oblige me with some information as to the best size of wheel for touring cars, and state why larger wheels than those usually found are not fixed? Is it advantageous to have the body of the car as conveniently low as possible?—C. V. MERRICK.

A convenient size for a motor car wheel is 42in. in diameter, but this is somewhat larger than is used by most makers at the present time. Theoretically it is, of course, best to use as large a diameter of wheel as possible, as in going over depressions in the ground the larger wheel sinks less deeply into them and, consequently, is easier to pull out from such depressions, while the smaller wheel sinks deeper in proportion and is more difficult to withdraw. The reason why the larger wheel is not used upon motor vehicles is because the weight would be thrown higher and the tendency to turn over when taking corners at speed would be greatly increased. There is no reason why a larger diameter wheel should not be fitted to cars which are not intended to go at great speeds. Another factor in this question is one of price where pneumatic tyres are concerned, as, of course, the larger the diameter of the tyre the more costly is it to purchase in the first place.

H.P. FORMULA.

Would you be kind enough to answer the following queries for me: (1.) N.H.P. of motor four-cylinder 2¾in. bore by 3in. stroke, 75 lbs. compression, 950 revolutions per minute, M.O. valves. (2.) Correct size of inlet and exhaust valves and lift for above? (3.) N.H.P. of four-cylinder motor, 3in. by 3in., 75 lbs. compression, 950 revolutions per minute. M.O. valves? (4.) Correct size of inlet and exhaust valves for above and lift? (5.) Would it make a great increase in power running both above at 1,200 revolutions per minute?—O.H.B.

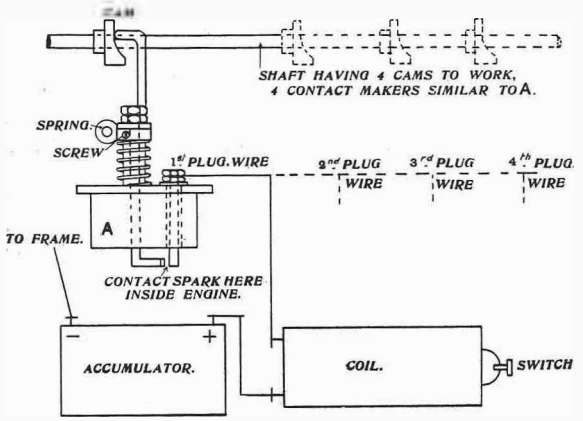
A very good formula for calculating the indicated horse power of a petrol motor is to square the radius of the cylinder in centimetres = 3.5, multiply the result by the stroke in centimetres = 7.5, multiply by the number of revolutions per minute. Multiply result by 1,000, which gives the h.p. in kilogrammetres, and divide by 75, as 75 kilogrammetres = 1 h.p. The h.p. of the four-cylinder 2¾in. by 3in. at 950, therefore, would be 4.4, and the h.p. of the 3in. by 3in. at 950 would 5.2. The increase in each case when running at 1,200 instead of 950 revolutions would be 1.6 or 5.0 h.p. and 1.3 or 6.5 h.p. The correct size of the valves would be approximately 1in., with a lift on the inlet valve of $\frac{5}{16}$in. and on the exhaust ¼in. An engine of these dimensions could be run much higher than 1,200. The reason it is necessary to calculate this in centi-

metres is that the formula is a French one and the calculation is really easier by metric rule than by any other. The compression enters into any calculation of horse power, but it is questionable if any benefit is secured by adopting anything over the normal. The above formula is based on five atmospheres, or 75 lbs. to the inch. One inch equals 2.5 centimetres.

A WIRING DIFFICULTY.

I bought second hand a petrol four-cylinder car made by the Motor Vehicle Power Co., Philadelphia. The car seems in perfect order, but the electric ignition not being wired I cannot find the proper arrangement. I enclose sketch which if you would be so kind as to finish with wiring would greatly help me. My chief troubles, I believe, are that I do not understand the right place to connect the wire (low tension) to contact breakers and whether each one must be connected. I have perused all your papers since last year but cannot find anything to help me. Do you happen to know who is or has been the agent for this car? Any information will be gratefully received.—E. M. THIERRY.

The sketch shows the method of connecting up the coil to the contact makers. One wire will do for all the four



plugs, the insulation being cut away where a connection is required, but the wire need not be cut. We are unable to ascertain the names of the agents in this country.

POOR PETROL.

Re bad petrol. In the event of having bad petrol, say .710 and .720, could this be rectified *pro tem.* by the addition of *benzoline* if brought down, say, to .685—.690? I have had a good deal of trouble lately and should appreciate your advice.—WM. ROPER.

As benzoline is of a higher specific gravity than petrol, no advantage would be gained by mixing the former with the latter. With the higher specific gravity petrol which is now being distributed the easiest method of starting the engine is to inject a little of the spirit directly into the cylinder from a small oilcan kept for the purpose, and to reduce the air supply to the carburetter, afterwards increasing it when the motor has warmed up.

STEAM CAR BURNERS.

With a new supply of Pratt's spirit I have found the vaporiser of my steam car (Prescott) failing. Is this due to the denser spirit supplied, and what is the proper specific gravity of petrol for use in steam car burner?—C. C. ATKINSON.

The proper density of petroleum spirit to get the best results from the burner should be .680. The spirit which the Anglo-American Oil Co. are now supplying usually averages .700, and is, therefore, not so easily vaporised. Hence, the best thing to do is to use a slightly higher air pressure in the fuel supply tank, and to thus increase the temperature of the auxiliary burner considerably, when a good fire will be obtained.

DRY BATTERIES.

I am going out to South Africa and shall be using a 6 h.p. De Dion car out there. As it is difficult to get batteries out there, could you enlighten me on the following points: (1.) Can you recommend me a good dry battery which can be recharged? (2.) Failing a dry battery, is there a good wet battery for motor car use which can be recharged? (3.) Do you know if the ordinary motor car accumulator can be recharged from Le Clanché cells, or can you recommend one which can be so charged?—H.H.M.

(1.) It is impossible to recharge dry batteries. When the primary battery fails it has to be remade with new elements. (2.) The same remark applies to a wet battery as to the dry. (3.) Any accumulator can be recharged from Le Clanché cells, though it can be charged quicker and better by the use of a bichromate or chromic acid cell. Messrs. Peto and Radford, Hatton Garden, London, and the Boron Battery Co., 131, St. Domingo Road, Liverpool, both make a speciality of primary batteries for recharging. These you would find most suitable to meet you requirements.

STRENGTH OF INLET SPRINGS.

With reference to the article by J. Cundy in *The Autocar* of the 11th April on strength of inlet springs, I should be much obliged if you would give me your opinion as to the proper gauge for testing inlet springs. I have never heard of one advertised, but surely these springs should be of certain strength. For instance, what should be the strength by spring balance to pull a valve for standard 8 h.p. De Dion?—CYRIL MOSTYN.

There is no definite strength for inlet valves, but as a general rule those used with automatically operated inlet valves should be of sufficient strength to carry the weight of the valve itself and about one ounce in addition, though this strength varies very much with the suctional power of the motor. Taking it as a general rule, however, the weight is as given, and the springs can very easily be tested by putting them in their seats and then placing weights upon the top until they are noticed to be just lifting the valve from the seat. If the spring requires more than two ounces weight it should be weakened by being slightly compressed.

A STARTING DIFFICULTY.

Noticing your kind offer to reply to enquiries regarding motors, I venture to write you about my 6½ h.p. Gladiator. The chief difficulty is in the starting of the engine. I have written to the agents in London and received courteous letters of instruction as to attending to wires, sparking plugs, contact breakers, etc., and have carefully followed their advice. Still there is often difficulty in starting up the engine. The ignition at present is by non-trembler coil and Aster contact breaker, and I propose to put in a trembler coil and use the old contact breaker in the secondary circuit. I shall esteem it a great favour if you will advise me as to whether this alteration would do away with the difficulty in starting and whether you can suggest anything better? The wiring of the car is as per Motor Power Co.'s instructions, and the insulation, after being tested, is found in perfect order.—C. AUGUSTUS CARLOW.

As the ignition of your engine is in order you will find the fitting of one of the many methods of lifting the exhaust valve to ease the compression (provided one is not already fitted) of great assistance in starting the motor. The motor in question has a rather high compression, and is, therefore, somewhat difficult to start. It is possible that the trouble lies in the lubricating oil tending to gum or bind the piston to the cylinder. This occurs with even some of the best makes of oils, and cannot be put down in all cases to bad oil. This difficulty is easily overcome by injecting into the cylinder a small quantity of paraffin or petrol. This will release the piston and make the starting quite easy. We do not think that you will improve matters greatly by fitting a trembler coil and using the old contact breaker. If you decide to fit a trembler coil it will be better to have a new contact breaker or commutator with the necessary cam fitted, as a vibrating contact breaker is not efficient when used in conjunction with a trembler coil.

EDINBURGH TO IRELAND.

As a regular reader of your paper I take the opportunity of asking you the best way to travel by motor car from Edinburgh to Ireland for the Gordon-Bennett race? Which is the best road and route across? Also can you give me any idea of the cost of passage for car?—R. M. BAIRD.

Your best way to reach Ireland to witness the Gordon-Bennett race would be to run from Edinburgh to Glasgow by road, and there ship your car direct to Dublin if the long sea passage is not objected to. The time occupied is about twelve and a half hours. The car would have to be put on board at Broomielaw landing stage and you yourself could join the boat at Greenock. You can obtain all information as to the times of starting and cost of carriage of car on application to Messrs. A. Laird and Co., 52, Robertson Street, Glasgow.

HIGH SPEED TREMBLER COILS.

Having recently experienced great difficulty in starting my 8 h.p. De Dion engine with dry battery and De Dion contact breaker, I propose to fit instead a wipe contact and high speed trembling coil; also accumulators. I should be much obliged if any of your readers who have tried this would give their experience, and say whether it decreased the power of the engine. I am told that while De Dion-Bouton and Co. still fit the dry battery and trembler on contact breaker, yet when their cars come to England they are mostly fitted with the wipe contact because of the greater ease in starting. Is this so?—ONE TIRED OF ADJUSTING THE TREMBLER.

A very similar query to the above was replied to last week. Since then one firm, the United Motor Industries, have brought out a special set of parts enabling the transformation to be easily made. There will be no decrease in the power of the engine if the change is properly carried out. Our correspondent is wrongly informed with regard to the make in question being fitted with the wipe contact when imported.

GORDON-BENNETT MILEAGE.—STORING PETROL.

Would you kindly let me know what mileage the cars would have to travel in the Gordon-Bennett race held in Ireland, as I have had a dispute concerning same with a friend of mine? And also to whom would I have to apply for a license for storing petrol on the premises, and how much would it cost for a period of twelve months?—JOHN W. PHILLIPS.

The exact mileage the cars will cover in the course of the Gordon-Bennett race is 351⅝ miles. You would have to apply to the local police authorities for a license to store petrol, the charge for which does not exceed five shillings.

Mr. C. H. Palethorpe, of Edgbaston, who was the first automobilist to drive round the Great Orme's Head, Llandudno, kindly sends us the photograph which we reproduce above of one of the amusing items in the May-day procession at Llandudno

THE MOTOR VOLUNTEER CORPS.

Mr. E. Midgley, the well-known member of the Automobile Club, has been recommended for appointment as an officer in the Motor Volunteer Corps.

General Oliphant, commanding the Home District Fourth Army Corps, has applied for the use of motor volunteer cars, one car per day, from May 12th to May 30th.

Capt. Schlosser, signalling officer, Eastern District Fourth Army Corps, has applied for the use of a motor volunteer car for his long distance signalling operations during the Whitsuntide holidays.

THE PATENT QUESTION IN AMERICA.

As has been stated in our issue of April 25th, it has now become a matter of history that the remarkable Selden patent has been upheld in the American courts, and that the majority of the motor manufacturers in the United States have agreed to accept licenses under it. This patent claims virtually the combination of an internal combustion engine with a frame, wheels, steering gear, and transmission reducing gear, and the remarkable thing about it is not so much that it has been upheld and recognised as a "master patent," but that it was held back in the Patent Office in a way which is not possible in this country for a period nearly as long as the natural life of an American patent, so that whilst in the ordinary course it would have expired several years ago it is now only just commencing its seventeen years of life, yet bearing the original date of some twenty-four years since. We now learn that all manufacturers who take out licenses under the patent are called upon to pay a royalty of threequarters or one per cent., and to contribute half per cent. to the "war chest" of the association which is handling it. As the patent, absurd as its claim seemed, has been upheld by the American courts—although taking the American trade in petrol cars at £2,000,000 per annum, it will turn in a very respectable sum to its owners—they are certainly reasonable in their demands, and their proposals stand out in marked contrast to those of H. J. Lawson and the British Motor Syndicate here, who, when they thought they were in possession of master patents in this country, coolly asked royalties of ten per cent.! The American patent owners are evidently more astute people.

New Patents.

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

The following specifications were printed and published on the 23rd day of April, 1903. All notices of opposition to the grant of patents on the several applications should be filed not later than the 8th day of June, 1903.

1902.

43.—W. H. Waud. Reciprocating pulley driving gear.

7,342.—B. H. Mallinson. Combined block and slipper brakes, the latter being brought into operation by the former.

7,692.—J. Brown. Wheels with coil spring spokes.

7,970.—I. Boul. Semi-circular expanding life guard.

9,110.—A. Paget, P. W. Northey, and the Electric Motive Power Co., Ltd. Improvements in No. 8596 (1896) *re* speed regulating and steering mechanism.

12,218.—J. J. H. Sturmey (C. E. Duryea). Low tension ignition as used in the Duryea cars.

12,321.—J. S. Fairfax. Variable speed eccentric spur gearing.

13,197.—E. Valentin. Device for admitting hydrocarbons of different densities to the motor at starting and during ordinary running.

25,796.—J. Hewett (S. de Jong). Minerva motor having both valves mechanically operated and high tension ignition.

28,334.—C. Crompton. Flexible driving connection and two-speed steering gear.

28,739.—J. E. Norwood. Ball bearings for axle-trucks.

1903.

1,282.—J. H. W. Fitzgerald. Non-slipping tread consisting of spiked heads carried by a steel band mounted on a rubber band.

1,984.—E. Braun. Pneumatic or liquid expanding clutches and variable speed spur gearing.

2,109.—M. Bauer and R. Steinhaeuser. Motor car having the body constructed to carry three persons in a compact manner at the back.

2,263.—F. R. Simms. Device for facilitating the starting of internal combustion cycle motors.

3,651.—A. Radovanovic. Liquid fuel is vaporised in a separate chamber by the heat of the motor, and is admitted under pressure into the charge of air compressed by the piston.

The following specifications were printed and published on the 7th of May, 1903. All notices of oppositions to the grant of patents on the several applications should be filed not later than the 22nd of June, 1903.

1902.

919.—M. Crawford. Variable speed gear with conical ended case forming part of change gear friction clutches.

1,069.—R. E. Von Lengerke and T. W. Meanley. Motor carburetters, tanks, electric ignition, exhaust, water cooling, and driving gear.

8,506.—A. Ducasble. Cellular tyre with cover; the manufacture and the means of attaching the same.

8,707.—C. D. Cassidy. Tyres are provided with a detachable tread resembling an inverted metal rim.

8,888.—W. J. Davy. Flash or semi-flash steam generator for automobiles.

9,930.—J. Carr. Automatically depressed life guard for motor cars and other vehicles.

10,344.—A. W. Brightmore. Damping the oscillations of the body relatively to the swivelling forecarriage by springs.

10,631.—G. C. Marks (J. Latille). A clutch is introduced between the change speed gear and the road transmission gear.

12,217.—J. J. H. Sturmey (C. E. Duryea). Steering gear in which the axes are inclined and meet the ground between the steering wheels.

12,233.—R. A. Cordner. Two and three speed epicyclic gears operated by movable cone clutches.

13,292.—J. F. Mason. Inclined screen for preventing the deposit of dust in motor cars.

14,844.—J. Hewett (S. de Jong and Co.). Cycle motors with inlet and exhaust valves operated by a single half-speed shaft.

16,113.—H. Brinkmann. Ball bearing with self-adjusting washer for equalising the pressure.

1903.

1,311.—A. J. Boult (Société des Voitures Automobiles des Etablissements Decauville Aîné). Motor car frames.

3,948.—W. Estey. Solid tyre composed of layers of knit fabric permeated with rubber.

NOTICES.

SUBSCRIPTIONS.

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

GREAT BRITAIN.	s.	d.	ABROAD.	s.	d.
Twelve months	16	0	Twelve months	22	8
Six months	8	0	Six months	11	4
Three months	4	0	Three months	5	8
Single copy	0	3½	Single copy		5

These prices include four special double numbers.

HOW TO ADDRESS LETTERS.

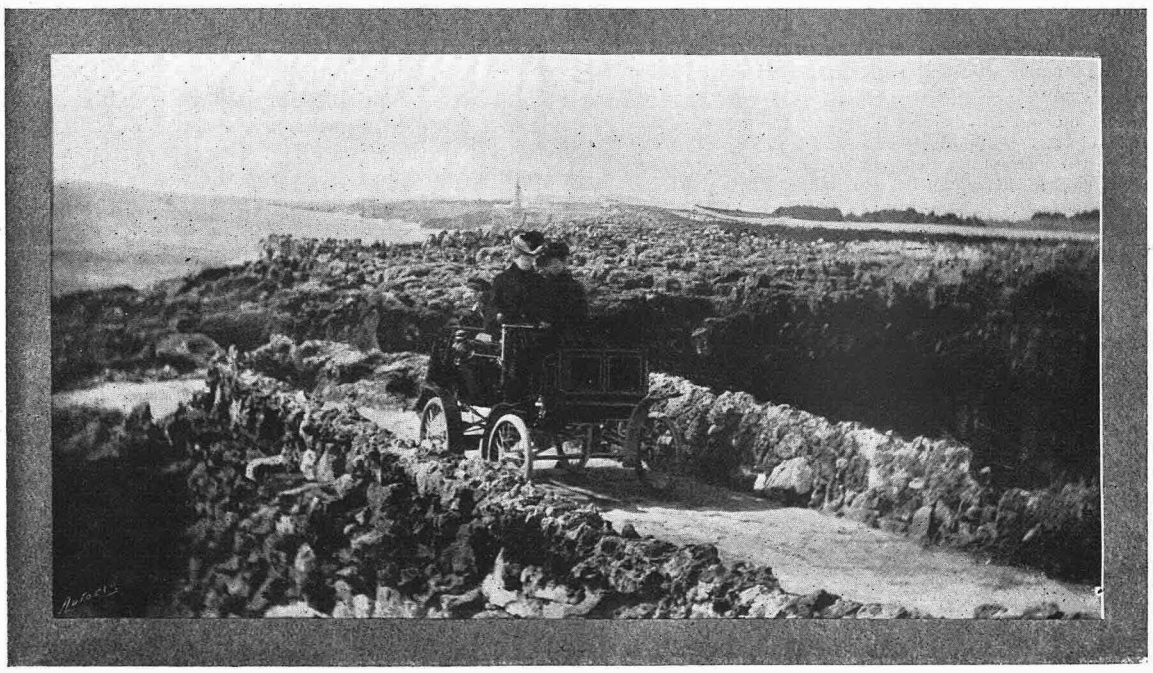
EDITORIAL matter and general queries should be addressed "The Editor, *The Autocar*, Coventry."

ADVERTISEMENTS and Business Communications should be sent to ILIFFE & SONS LIMITED, Coventry, or 3, St. Bride Street, Ludgate Circus, E.C.

Communications to the Editor should be written on one side of the paper only, and must be authenticated by the names and addresses of the writers—not necessarily for publication, but as a guarantee of good faith.

Subscriptions payable in advance, by Cheque, P.O.O., or Postal Orders, to ILIFFE & SONS LIMITED, Coventry.

Postal Orders.—Subscribers and advertisers are particularly requested to use postal orders when remitting.



Wherever automobiles are found there is sure to be one or more Locomobiles. Our illustration shows Mrs. Fish on a Locomobile dos-a-dos, crossing the bridge at A Boca d'Inferno, Portugal.