

THE AUTOCAR

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

EDITED BY H. WALTER STANER.

No. 425.] Vol. XI. SATURDAY, DECEMBER 12TH, 1903. [PRICE 3D.

THE AUTOCAR.

(Published Weekly.)

Registered as a newspaper for transmission in the
United Kingdom.

Entered as second class matter at the New York (N.Y.) Post Office.

EDITORIAL OFFICES:

COVENTRY.

PUBLISHING OFFICES:

3, ST. BRIDE STREET, LONDON, E.C., ENGLAND.

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"THE AUTOCAR" SUBSCRIPTION RATES.

British Isles, 16s.; Abroad (thin paper edition), 22s. 8d. per annum.

Notes.

The Paris Motor Show.

From the preliminary article which we publish to-day, it will be seen that the French motor show is of much greater interest this year than it was last. In fact, last year's show contained so many copies of the main features of the Mercedes car of the previous year's design that the reputation of France as a setter of motor designs received a rude check, from which it has not even yet fully recovered.

However, the features of the German car which were copied in so wholesale a manner have received twelve months' trial. As we stated a year or so ago would be the case, it has been found that slavish copying is not altogether satisfactory. Some of the constructional features which gave full satisfaction on the high-priced German vehicles were by no means equally good when worked into designs destined to be sold at a third of the price, or less. The French constructors, however, have found this out, and have taken a new line of their own, in which they retain many of the good qualities of the German vehicle without attaining them in a precisely similar manner. Among the most noticeable features of the cars in the Paris Show are silence of running both in engine and transmission; increased accessibility of parts requiring adjustment; lightness where lightness can be obtained without sacrificing strength; and last, but not least, great flexibility of engine power. That is to say, the French are proceeding on the same lines as our own constructors have been working upon during the past twelve months. Taken on the whole, the exhibition is a magnificent one, and all English automobilists who can spare the time are making a point of visiting it. Those who cannot do this, however, may console themselves, first of all, by reading our articles on the show, the first of which appears to-day, and which is written from careful critical inspection, and in many cases trial of the new vehicles; and, secondly, by remembering that most of the best cars at present on view in the Grand Palais will be shown in February next at the Crystal Palace. Indeed, but for the fact that the Paris Show is two months earlier than the great London exhibition, there is no reason why Englishmen should put themselves to the inconvenience of visiting Paris. They will be able to inspect all that is latest and best in their own country's productions early next year, and not only so, but to make comparisons with what is best from France.

Anti-freezing Mixtures.

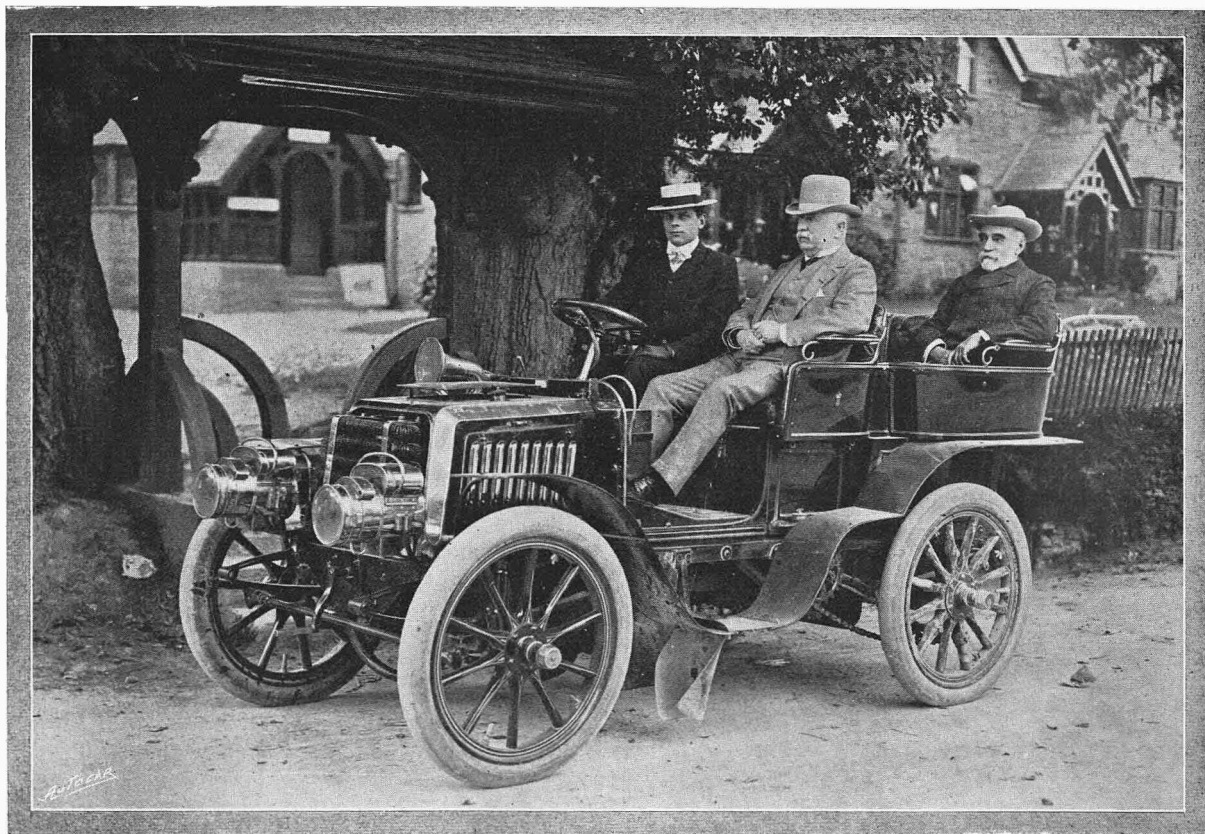
There is no subject at the present time in which automobilists are more interested than that of anti-freezing mixtures. In some districts hard frosts have taken place, and all who keep their cars in unwarmed houses have felt anxiety on the subject. There is no denying the fact that the sum of practical knowledge about anti-freezing mixtures, as applied to the cooling system of an autocar, is very small. We must confess that the experiments we have made with our own cars have not only proved disappointing, but expensive. Without going into minor troubles, we may say that we have found that a mixture of glycerine and water soon loses its efficiency; the glycerine is gradually carried off as the water evaporates. The only way to maintain an efficient mixture is to add the same proportion of glycerine when putting in fresh water. As to a solution of calcium chloride—in many respects the most

promising idea—the effect of this upon the metal is more or less harmful, and it does not appear to be safe to recommend the mixture. In fact, as the matter stands, the safest course appears to be to have a couple of taps at the lowest point in the circulatory system, and to run the water off every night, unless, of course, the car house is never allowed to cool below freezing-point. The matter is one of such general importance to automobilists that we earnestly commend it to the Automobile Club as being second only to the investigations they have pursued with regard to the prevention of dust-raising, and the trials which they will make in the spring of non-slipping devices. In fact, from a selfish point of view, it is of far more importance than the dust problem, in which the convenience of the public is the main point, though here it may be fairly argued that anything which will tend to reduce public prejudice is of paramount importance to automobilists. We would certainly not dispute this view of the question. There is a very general feeling that the side-slip trials should have taken place long ago, as by the time they are held side-slipping troubles will probably be over for some months to come. There is, of course, no need for public tests to obtain valuable data upon anti-freezing mixtures. All that is needed is a small committee to go into the matter and report to the general committee upon the present state of the question, and obtain the authority of the club to

expend the necessary funds for engaging a qualified chemist, who must also be a practical automobilist, to conduct a series of experiments in the laboratory and on cars. There would be no difficulty in obtaining the loan of cars, provided it was understood that any damage which might inadvertently be done to their circulatory systems would be made good by the Automobile Club. The enquiry, perhaps, is of too large dimensions to expect that it would be undertaken by private enterprise, and it is essentially one to which the club funds might fairly be devoted.

The 1,000 Miles Awards.

The judges' awards in connection with the 1,000 miles Automobile Club trials which took place in September have now been published, and will be found in another column. It will be seen that the document only details the actual awards made by the judges; the marks earned by the gold and silver medal cars, as well as those which failed to earn these distinctions, are not given, and will not be available till next week. Those who have followed our reports of the trials carefully will observe that several of the cars which performed best on the road are not included in the awards, this being due to the fact that marks were given for so many other qualifications besides reliability on the road. These and other apparent discrepancies will be explained when the marks under each qualification are available.



LORD LLANGATTOCK ON HIS 15 H.P. 'PANHARD. During the summer Lord and Lady Llangattock travelled many hundreds of miles in this car. They also have another special vehicle which we do not illustrate this being a 24 h.p. Panhard fitted with a most luxurious body of the detachable omnibus type. The 24 h.p. holds eight persons inside and three out, and was specially built to Lord Llangattock's design. When the top is off it makes a most useful shooting brake. It is also much used for station work. It will take its load of eleven passengers, with luggage on the top, up the steepest hill. We need hardly say both vehicles were procured from Messrs. C. S. Rolls & Co., Ltd.

USEFUL HINTS AND TIPS.

Lifting Jacks: Their Choice and Use.

A lifting jack is one of the most useful of the many accessories which go to make up the outfit for an autocar. It is one of those things which is not often requisitioned, but when it is, it is wanted very badly, and there is nothing more annoying than to find that the jack will not suit the car. It may be that it is too high to go underneath the axle, or too short to lift it, though in the latter case this is not so much of a difficulty, as one can usually find some packing with which to raise it to the required height. However, it is far better to have a jack which is suitable for the car, and when purchasing this useful adjunct it is advisable to have one or two details of the car at hand. In the first place, the distance between the ground and the axles should be known so that one will be able to obtain a jack which can be used instantly when required without the trouble of packing up the car. Another thing is to note the most convenient place for putting the jack to lift the wheels from the road, particularly with regard to the front axle, as in some instances it is advisable to choose a jack with as large a head as possible so as to rest well under the steering socket, or, in other instances, with a narrow head, so as to enable it to lift on to a solid portion of the axle, *e.g.*, the shoulders behind the steering socket. We were once inconvenienced from this cause, as the jack we had with a car had a big head. In that particular car the most suitable place for lifting was behind the shoulder of the steering socket, but we were unable to use it here owing to the curvature of the axle. The difficulty was easily surmounted, however, by using the handles of a couple of spanners as packing. This, of course, necessitated the unrolling of the leather toolbag and the holding in position of the spanners until sufficient pressure was applied to keep them in position. Another little point is the length of the handle employed to actuate the jack. With a large diameter wheel, of course, a longer handle is required than if the same jack is used under the axle of a wheel of smaller diameter. Many jacks in which the lifting screw is operated by means of a pawl and ratchet are provided with very short levers which necessitate the operator assuming a cramped position underneath the car in order to manipulate the jack. This difficulty may easily be overcome by procuring a piece of tube sufficiently long to slip over the ratchet handle, thus enabling the screw to be worked from a comfortable position. This piece of tube can be carried with the jack, and it will not take up any appreciable room, as it can be shipped and unshipped from the handle as required.

The Long Jack and its Trouble

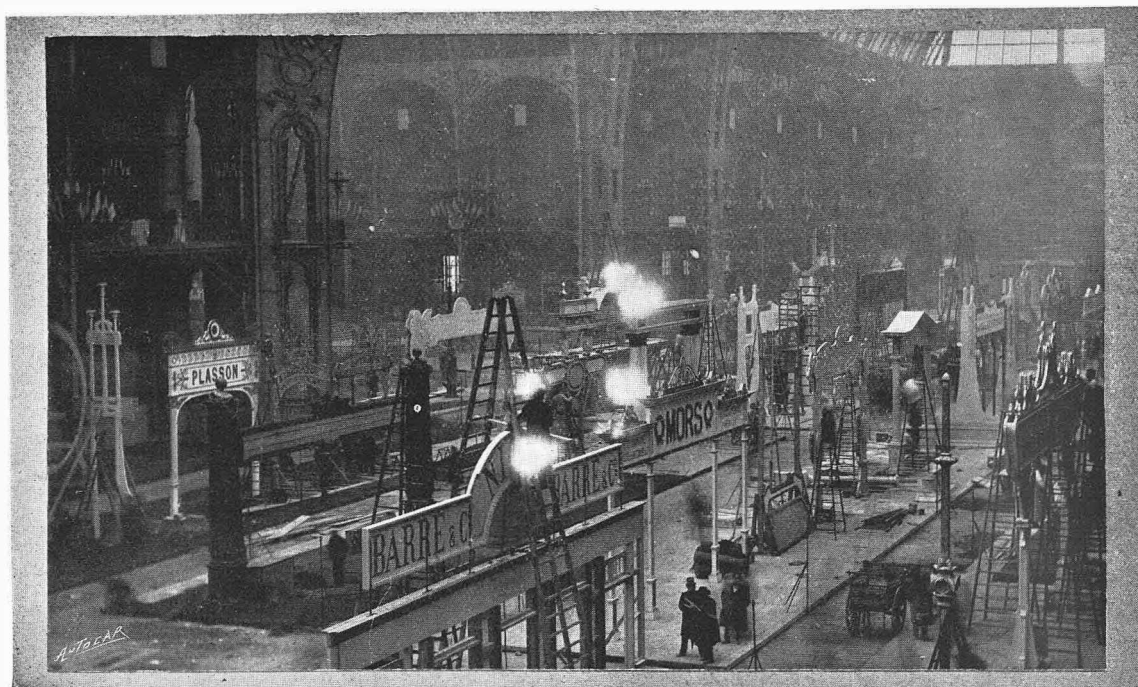
If the jack is found to be too long when the time arrives for placing it in position the problem to be solved is how the car is to be lifted. A very simple method of overcoming the difficulty is to put the jack into position (we will presume it to be under the back axle at an angle), and then to push the car backwards against the resistance offered by the jack. The power should be put on to the car forcibly but not suddenly, for if any great amount of force is used the car will mount to the top of the

jack, and owing to its momentum will run over to the other side, in which event one's labour will be in vain. If, on the other hand, only sufficient energy is exerted to lift the car on to the jack it will rest comfortably in position. This seems such an obviously simple matter that it would almost seem superfluous to mention it, but an automobile friend admitted to us that, finding his jack too long when he had to repair a tyre, he seriously contemplated digging a hole in the road to accommodate it, until after a careful survey the idea of pushing the car on to the jack as described presented itself to his mind, not, however, before the tyre repairs had actually been entered upon.

The Short Jack and its Troubles.

The short lifting-jack is in its way almost as big a nuisance as the longer jack. When a short jack has to be used it is, of course, obvious that some packing will have to be introduced to make it of sufficient height to enable it to be used in as comfortable and satisfactory a manner as possible. The operation of packing up a jack sounds extremely simple, but as a matter of fact we have on more than one occasion found it a very troublesome piece of work. Once in particular we recollect, when touring in the West of Ireland, through one of its many barren districts, where miles may be covered almost without seeing a tree, a puncture necessitated the use of a jack, which was much too short for the car. The only available packing that was to hand was from some loose stones which formed a wall dividing a meadow from the highway, and, truth to tell, some few feet of that wall were dislodged before stones, sufficiently accommodating as to their surface and of the right thickness, were found. Even then one member of the party was obliged to lie beneath the car and hold the packing and the jack in position until the whole was so arranged as to be kept from falling to pieces by the sheer weight of the car. It is not often that one carries such articles on a car as will form ready and substantial packing for use with a jack. If the autocarist should become possessed of one of these very necessary lifting arrangements which may be too short for its work, it is always advisable to procure a block of good hard wood of sufficient height and shape, and if possible to attach this to the base of the jack so that all possibility of its being lost may be avoided; or, if this is not practicable, to make a practice of seeing that the packing block is in the car, as well as the jack, before starting out on a journey.

We are informed that Mr. Tickell has climbed Glen Dhu—the hill upon which the Irish Automobile Club held a competition some time since—in 4m. 03 $\frac{3}{4}$ s. This was on his 10 h.p. Argyll, carrying himself alone. After this, another trial was made with Mr. J. B. Dunlop, jun., accompanying Mr. Tickell, when the car was timed to do 4m. 18s. The roads were very heavy, but the course was measured some ten yards short of the official distance. At the same time, the Argyll performance was a particularly good one.



A VIEW OF THE GREAT NAVE OF THE GRAND PALAIS A FEW DAYS BEFORE THE OPENING OF THE SALON.

THE PARIS AUTOCAR SHOW.

Preliminary Description

A GREAT IMPROVEMENT ON LAST YEAR'S EXHIBITION. ORIGINALITY HAS TAKEN THE PLACE OF WHOLESALE COPYING. SIMPLICITY OF DESIGN AND LIGHTNESS OF CONSTRUCTION, COMBINED WITH STRENGTH, ARE THE MAIN FEATURES AFTER WHICH THE GREAT MAJORITY OF THE PRINCIPAL EXHIBITORS APPEAR TO BE STRIVING.

THE importance of the annual autocar show, which was opened with more than usual pomp in the Grand Palais on Thursday, the 10th inst., can hardly be estimated by the area devoted to the exhibits. A year ago the display of cars was limited to the central hall, and the gallery immediately surrounding it, but on the present occasion the cars have invaded the hall at the back of the building, ousting from their usual site the alcohol lamps and other more or less ornamental and accessory exhibits. Every available part of the building has, in fact, been given up to automobiles, and, as at first arranged, it was intended to provide room for all the autocars by diminishing the area of individual stands: but on the leading firms protesting against this measure, and refusing to take part in the show unless they were given the eighty metres allotted to them in previous years, it is understood that quite a number of intending exhibitors were unable to find room in the Grand Palais. The show, therefore, is essentially a compact one. At the same time, the stands in the main hall are sufficiently large to prevent the show suffering from

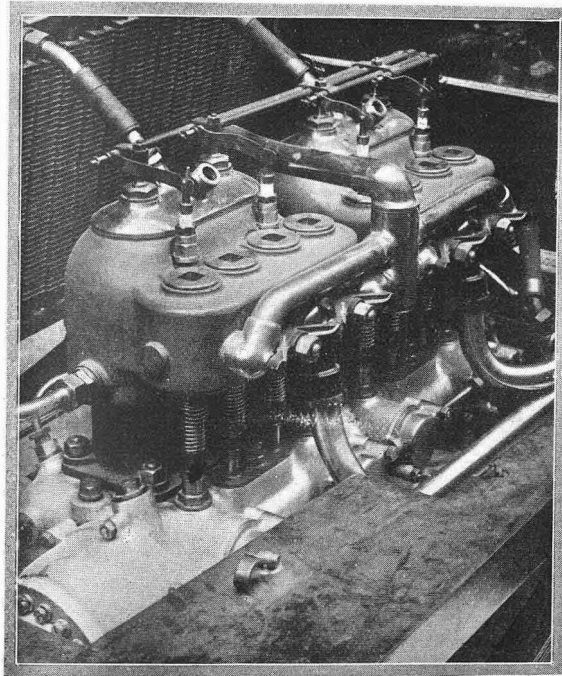
too great a compression. As for the interest of the show, we have no hesitation in saying that it exceeds that of last year. A twelvemonth ago the character of the Salon was succinctly described by the general verdict that it was a "Mercedes show"; consequently it conveyed an impression of uniformity, not to say monotony, and as the majority of makers abandoned their old methods to adopt others which had proved so successful in one particular car, most of the vehicles exhibited were built upon much the same lines. At the present show it will be found that this tendency towards imitation is not so marked. It is true that these features still exist in a modified and improved form, but in nearly all cases we find that makers are striving after individuality, without, however, erring on the side of too great an originality, and the keynote of the exhibition is a simplicity of design, a lightness of construction in which solidity is by no means unduly sacrificed, and a fineness of workmanship which, we think, will surprise a good many visitors to the show. The chief features of the exhibition are sketched in the following pages.

The Leading Constructional Features.

On examining the chassis at the works previous to their being put on view at the Salon it was, of course, impossible to see everything, but we have inspected enough to give a good general idea of the leading features. There will undoubtedly be many new vehicles possessing novel points, of which a

close inspection would occupy the attention of visitors during the greater part of the show. But the main feature of interest is the progress being made by the industry as represented by the big firms. It must be admitted at once that we can look for no important invention of a practical

character which will stand out prominently, as was the case with the Krebs carburetter last year, but on the other hand, we shall see more real advance in the construction of the vehicles themselves, which have been improved in almost every detail—little



Side view of the latest Renault engine.

improvements perhaps, though of such a character as to enhance the efficiency of the cars considerably. During our interview with different makers we had an impression that the petrol car has now reached a stage of development when further progress must necessarily be one of refinement, or improvement in detail. There are, of course, plenty of ingenious inventions which might possibly have a great influence on the design of vehicles if only they proved to be of a practical character, but it is obvious that they cannot be adopted by the leading firms except after a very exhaustive test, for while the reputation of these firms makes them chary of employing untried devices, any change in design in the case of cars that are built by the hundred entails such a considerable expense that it can only be justified when the merits of the invention are placed beyond all doubt. It is for this reason that we cannot look for entirely novel features in well-known makes of cars, but must rather devote our attention to the vehicles of new firms whose cars are largely of an experimental character. While looking very ingenious on a stand, many of these clever devices are rarely heard of again after the show. The big makers are just as keen on promising inventions as the new builders who have to make their reputation, but it is only after exhaustive and searching tests that they are incorporated into the design of the car. Unfortunately for inventors the proportion of devices that survive these tests is very small indeed.

Some Results of the Past Year's Experience.

Last year most of the cars were more or less copies of one pattern, which was regarded as the perfec-

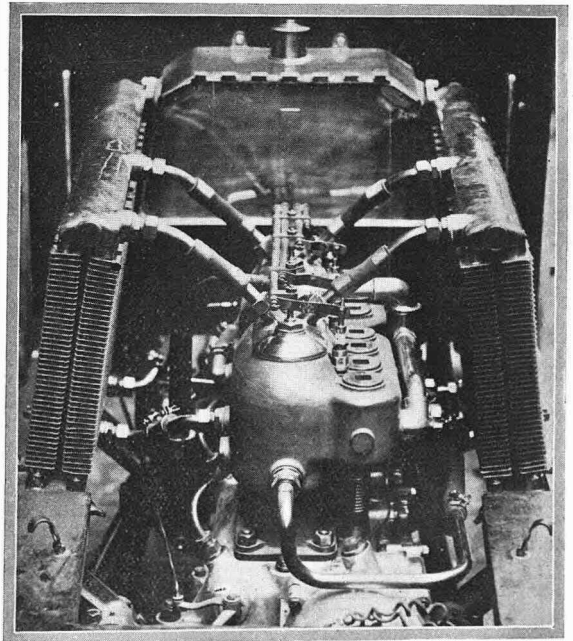
tion of automobile design, and everyone was asking himself whether it was possible to improve upon this type. During the past twelvemonth these devices have been tried. Some of them have been found wanting. What was accepted as a truism is now looked upon as something of a fallacy.

Steel cylinders, for instance, have not come up to expectations, and one firm has entirely abandoned them, while one or two others merely employ them for the big engines, where it is difficult to get absolutely homogeneous castings.

Honeycomb radiators have made no progress, and are, indeed, finding a very strong competitor in the new gill radiator, where the water passes through small tubes connecting with large tubes or "collectors" to ensure a rapid circulation, and as large a radiating surface as possible. Usually, the "collector" is in the form of a rectangular frame of square section, which fits into the front of the bonnet, or is fixed below the frame. So far as appearance goes, the new gill radiator is quite as neat as the honeycomb type.

The pressed steel frame was also expected a year ago to come into general adoption, but, though it has continued to make headway, it has not altogether dethroned the armoured wood frame, which seems, indeed, to be recovering ground.

Coming to the main features of the cars exhibited at the Salon, we note first of all a tendency to cast the cylinders separately. There are several reasons for this. The method now adopted avoids the mass of metal between the cylinders, which was favourable to an unequal expansion and contraction; it allows of the cylinders being adjusted with



End view of the Renault engine looking towards the dashboard. The radiator headers and water connections are plainly shown, as also are the electrical ignition high tension wires.

almost mathematical accuracy, and one cylinder can be removed if required without interfering with the others.

The mechanically operated inlet valve is making headway, and it will be noticed that more than one

firm who have hitherto stood out against it are showing engines with induction valves mechanically operated, but a larger number of firms are actuating both valves with one shaft on the same side of the cylinder. This is particularly the case in engines running with high compressions, where there is naturally a disadvantage in spreading the gas in two chambers. The crankshaft runs in end ball bearings and plain bearings between the cranks, and ball bearings are used very extensively throughout the transmission gear. The camshaft and gear are entirely enclosed.

The carburetters are invariably regulated by the engine upon the principle introduced by the Mercedes, and a general improvement in carburetters will be introduced all round.

The magneto is being used more extensively, and on the big cars it is usual to have the double ignition.

So far, we have seen no absolute novelty in transmissions, which are all improvements on old systems, the idea being to make the sliding gears as compact as possible, so as to reduce the size of the gear box. The propeller-shaft is a feature of the show, this being usually made with a double cardan, and it will be noticed that a good many makers have narrowed the front part of the frame so as to give a bigger steering angle when taking sharp corners.

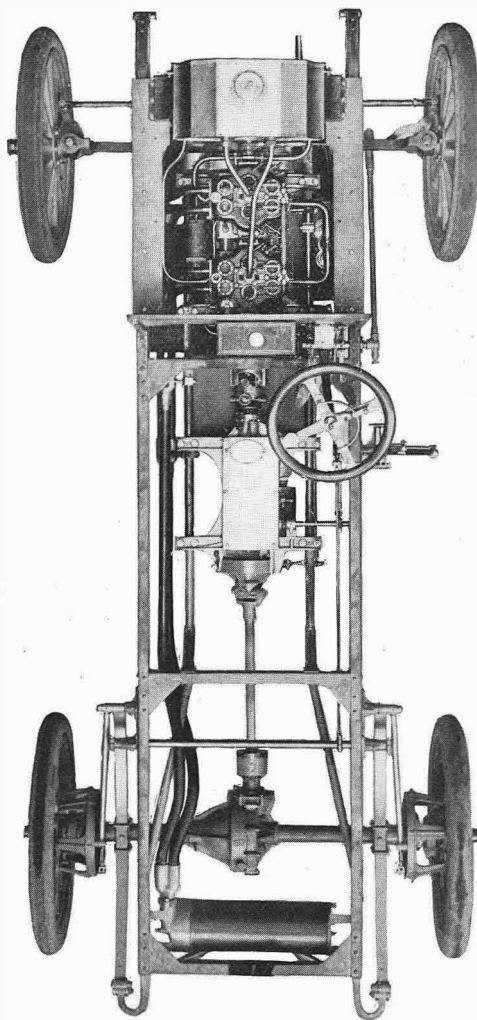
Two types of frame are made—the long and short, the former with bodies for side doors, and the latter for bodies to which access is gained from behind. As builders are making a special feature of the side entrance bodies, they evidently expect them to be a success.

Preliminary Inspection of the Panhards.

In order to give a clear idea of the constructional features of next year's cars, we deal with the improvements to some of the leading vehicles which we were able to examine prior to the opening of the show. Those vehicles which are described here at some length will only be briefly mentioned in our report next week. To learn what was the latest practice, we naturally visited the works of Panhard and Levassor, which we found in full operation, with many hundreds of cylinders, crank cases, gear boxes, frames, and other parts waiting to be assembled into complete vehicles. Chevalier René de Knyff informed us that the Avenue d'Ivry Works had become wholly insufficient to cope with the demand for Panhard cars, of which 1,200 were being turned out a year, the more so, as a part of the works was constantly engaged upon supplying exchange parts

for old vehicles. About 4,000 of these are actually running. M. de Knyff is particularly proud of this evidence of the durability of the Panhard cars which have been in service for so many years with every satisfaction. The output of cars is now to be increased by the laying down of a new plant at Rheims, for which a vast site has already been secured. We were first of all shown the light frame with three-cylinder motor of 12 h.p. When exhibited at the last Salon it was a tentative

venture, and its success has been so great—more than five hundred, we believe, having been sold—that the firm have decided to make this one of their features for 1904. Though of the same type, it has, nevertheless, been considerably improved. Judging from the way in which some other makers are adopting the three cylinders, it would seem as if the two-cylinder engine is likely at some time or another to go out of date. The three cylinders, in fact, give almost the same balance and smoothness of running as the four cylinders, and, of course, for these advantages, no one can object to the extra parts as compared with the two-crank engine. The cylinders are separate, as is now the case with all the Panhard motors, for the reasons already given—an equal thickness of metal, facility for repairs, etc. The crankshaft runs on end ball bearings with intermediate plain bearings. For the small engines the firm are of the opinion that the automatic inlet valve gives entire satisfaction, but for motors of more than 15 h.p. they have adopted the mechanically-operated valve. The valves are on each side of the cylinder, the makers preferring this system to placing them together and actuating them with one camshaft, as the engine works with a low compression, and there is consequently no disadvantage in



Chassis plan of 16 h.p. Georges Richard.

employing two chambers for each cylinder. The ignition is by magneto, driven by a chain, and placed in a box fixed on the dashboard in full view of the driver. The radiator is of the new Grouvelle and Arquembourg type, with small tubes and small square gills, carried in an irregular hexagonal "collector," or frame, fitting in the front of the bonnet. The air circulation is facilitated by a fan driven by a belt from the crankshaft. The pump, driven by friction, is no longer placed low down, but is raised a little above the level of the frame. The spindle is made in two parts, which engage by means of a pin and notch, and are held in place by a spiral spring so as to give a flexible coupling. The transmission gear has under-

gone no change except in the case of the light frame, where the two gear-shafts are placed side by side so as to give a flat box. It will be remembered that Panhard and Levassor have been experimenting with pressed steel frames in their racing cars during the past year, but the results, they state, have not justified them in adopting the system on ordinary cars, which are built with armoured wood frames.

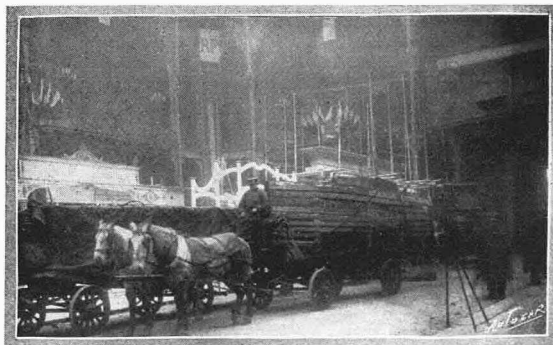
The C.G.V. Departures.

The visitor will also examine with interest the special features of the new cars turned out by the Société des Automobiles Charron, Girardot, et Voigt. This firm have entirely abandoned steel cylinders, and following the growing practice they cast the cylinders separately. On each side of the cylinders, above the piston, is a large opening closed by a rectangular bronze plate with rubber packing. This serves a twofold purpose. The plates are removed for inspection of the piston, and the flat sides allow of the cylinders being placed close together so as to diminish the length of the crank case. Another feature is the placing of the valves on one side, and actuating them with one camshaft. There are three new types of cars, one of 15 h.p. with the camshaft and timing gear completely enclosed, and others of 25 h.p. and 40 h.p., the dimensions being 110 x 150 and 140 x 160 respectively. A modification will also be noticed in the change speed gear, which now gives direct drive on the fourth speed. The back wheel on the differential is composed of a couple of bevel wheels placed back to back, and presenting the teeth like a mitre wheel; it is, in fact, a mitre wheel in halves, and the division is said to give a much smoother action than the simple bevel wheel. The crankshaft of the 25 h.p. engine runs in end ball bearings, as well as the transmission shafts, and considering the remarkably small effort required to put the trains of wheels in motion, it is difficult to see how the mechanical gear can be more economical. The influence of the Mercedes practice is seen in the road wheel bearings, and the controlling levers, moving on sectors, are placed on the steering wheel. An inspection of the parts under construction showed the extreme care with which the C.G.V. cars are built, and no finer examples of machining could be wished for than those we were able to see at the time of our visit. A section of the new motor is being exhibited, and, in fact, the visitor is able to examine critically every part of the C.G.V. car. A further instance of the complete abandonment of steel cylinders by this firm is seen in the 60 h.p. engine, with cast cylinders, which was under construction when we went over the works.

The 1904 Darracqs.—A New Frame.

For the first time A. Darracq et Cie. are showing as a "limited" concern, not, of course, in the sense of capacity, for when a company is limited it usually greatly increases its scope. The only thing limited in Darracq et Cie. is their liability. In a word the firm is now English, constituted with English capital, subscribed for by some of the most prominent men in English politics and automobilism. Under these new auspices it was only to be expected that the Darracq cars would forge ahead, figuratively as well as literally, and during our visit to the works we

were able to see that the firm fully justify their boast that every Salon marks another stage in the development of the Darracq vehicles. Three new types are being built for next year with motors of 12, 15, and 28 h.p. One of the most original things about their construction is the "chassis cuirassé," in which the pressed steel frame is extended in the form of a broad flange or web to act as a support for the engine and gear box in the place of the usual secondary frame. It is pressed out of one plate, which is subjected to a variety of operations in a powerful and costly press of special design, a rectangular piece being cut out to receive the motor and gear box, and then the plate is pressed with C shaped side members and folded up to join the cross pieces. There is, of course, nothing new in this method of supporting the mechanism and protecting it from the dust and mud, but we understand that M. Darracq is the inventor of the system of pressing the solid bottom frame out of one piece. It can be easily understood that the broad webs and absence of joints give a remarkable stiffness and strength to the frame. At the same time it is very light, and is, indeed, well worth inspection as an example of what can be done in the way of pressing steel. The design of the frame is also new. In the old types the straight frame had, of course, to allow of sufficient clearance for the propeller-shaft and differential, but in the new cars the frame curves down from the back, where it has to give this clearance, and thus from the differential forward it is some inches lower than usual. The carriage body is, of course, straight, since it is carried along outside the raised part of the frame. With the tyres inflated the distance of the carriage body from the ground is only 22½ inches. In the engine the cylinders are cast separately, and the valves are now on the same side, as with the fairly high compressions used in the Darracq motors it was found preferable to suppress the exhaust valve chamber on the opposite side. The sparking plug is on the top of the combustion chamber above the inlet valve. The carburetter is very simple, and is composed of exactly seven parts, including the needle valve. It is throttled by a sliding valve which, on being pushed forward, partly closes the aperture to the induction pipe. There are several improvements in constructional details such as the forging of the sector and steering connection in one piece, and, in fact, the tendency generally is to reduce the number of parts as much as possible. Reverting to the carburetter we would also point to



Some exhibits coming into the Salon.

the automatic regulator in the form of a small cylindrical tank placed below the level of the petrol tank to ensure a regular feed, the level in the regulator being always the same, and consequently giving a proper supply to the carburetter, even when the vehicle is inclined with a nearly empty tank on hills.

A Monster Military Tractor.

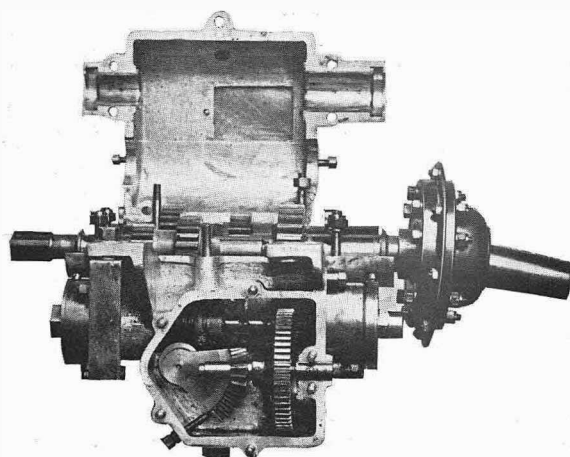
On the Darracq stand is also seen a tractor which will probably surprise most visitors. It has been built for the French War Department, and is intended to haul loads of thirty-five tons at high speeds. The four-cylinder engine develops about 60 h.p. The power is transmitted to the differential on the rear axle through two change speed gears by propeller-shafts—that is to say, there is one gear box forward of the differential, and another aft, the latter gearing on to the differential by a short shaft. We believe that one gives four speeds and the other three, and by combining the two quite a number of intermediate speeds can be obtained. The weight of the tractor is about a ton and a half, and the wheels are fitted with pneumatic tyres. We have been trying to think out the idea that prompted the construction of this tractor, but we cannot even now understand what it all means. If a sufficient load is put on the tractor to increase road resistance for hauling thirty-five tons, the pneumatic tyres will simply burst, while if there is no load on the wheels they will possibly skid round. However, it is evidently an interesting experiment in the way of hauling war material at high speeds, and there are, presumably, reasons for its design that, to us, are not quite clear.

Since writing the above, certain information has reached us which seems to show that the Darracq tractor is after all a perfectly logical and interesting conception. Being a military vehicle the makers were naturally reserved in giving information about it, but we have good reasons for thinking that it embodies ideas of Col. Renard, director of the military balloon station, and of M. Surcouf, the well-known balloon constructor. It is intended to

haul ten waggons carrying the military balloon and its material, and it can easily be understood that under such conditions speed may often be of great importance. To arrive at this end, the power developed by the engine will be transmitted through the whole line of vehicles by a series of propeller-shafts—in other words, the power will be directly applied by this flexible shafting to each waggon. The idea is entirely original. If it be practicable it fully explains why the tractor is fitted with pneumatic tyres, for as the load behind is propelled and not hauled, the tractor does not need any considerable road friction, and the load of 8 cwt. on each tyre is nothing unusual.

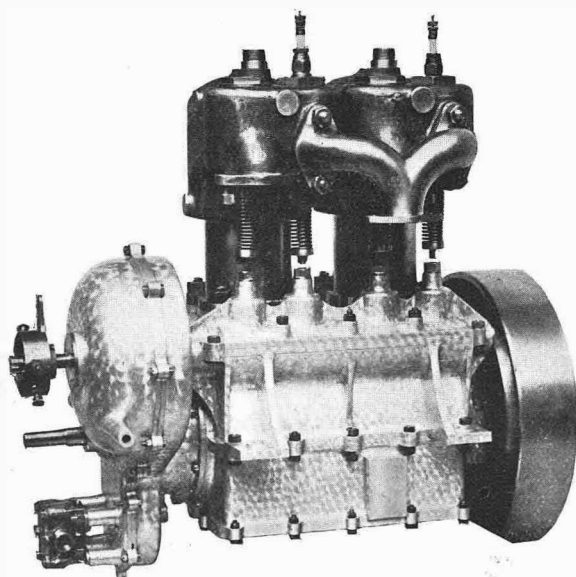
Renault Improvements.

In view of their long and uninterrupted series of triumphs, the Renault cars have always attracted a great deal of attention, and an inspection of them at each show has revealed new and interesting



The New Renault change speed gear.

features. On the present occasion the novelties are particularly numerous; in fact, everything has been improved. So large is the demand for these little cars that the works at Billancourt have had to be considerably extended, and nothing is more surprising than the way in which this firm, starting as they did from such small beginnings, have risen to the front rank of big producers. The secret of their success is that, having introduced a good system, which has been almost universally adopted for light cars, they have steadily improved upon it, and have earned the confidence of users in the reliability of their cars. They have three new types of engines, and are for the first time building their own single cylinder motor upon the same model as the big engines. Formerly the voitures were fitted with motors of another make. In the single cylinder motor of 7 h.p., the carburetter is automatically throttled, at the same time that the mixture is also varied according to the speed of the engine. The motor is slowed down by a special device, which gives more or less tension on the induction valve spring, this arrangement resulting in a very flexible engine with great range of piston speed. The engine is lubricated mechanically by means of a worm-shaft and ratchet, driven by the motor itself, and actuating the lubricator on the dashboard. In the new two-cylinder motor of

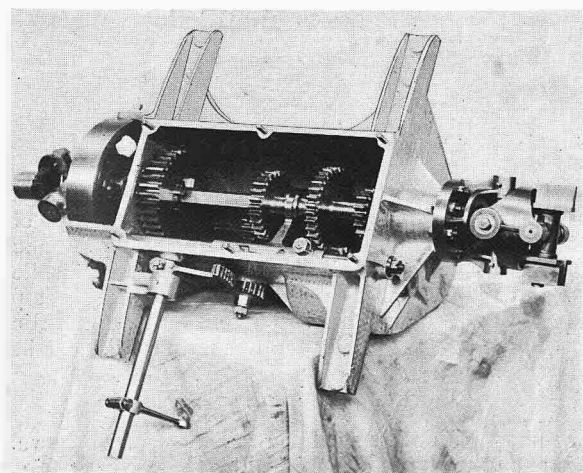


Two-cylinder Ader engine with enclosed gear and pump attached to the forward end of the gear casing

10 h.p. the automatic inlet valves are placed on the top of the cylinders, and the plugs are fixed vertically in the centre of the cylinder head, so that the explosion takes place directly above the piston. This arrangement leaves the valves and plugs easily accessible; facility of access has, indeed, been particularly considered in the designing of these motors. The four-cylinder motor of 14 h.p. is of the same type, except that the induction valves are mechanically operated, and the method of varying the tension of the springs in the other motors is here replaced by a system which gives more or less lift to the induction valves. The Renault motors are well worth inspection, as they are one of the very few that give a high efficiency at high speeds, and the method of governing makes the engine very flexible and remarkably silent. In the four-cylinder the ignition has been simplified to the extent that only two tremblers are employed, and each trembler is mounted on a wood base so that it can be almost instantaneously replaced by another in case of defective working. This avoids all trouble of adjustment. The change-speed gear has been improved by placing the well-known "mandoline" sector inside the gear box. There are many other little improvements in the carburetter, steering gear, forced air circulation through the thermo-siphon radiator, etc., which it would take too long to describe, and it suffices to say that as regards convenience, simplicity, and accessibility the Renault cars are well in advance of the older types. The makers still adhere to the tubular frame, and following the usual practice, they are constructing for next year long frames for bodies with side doors.

The Georges-Richard Cars.

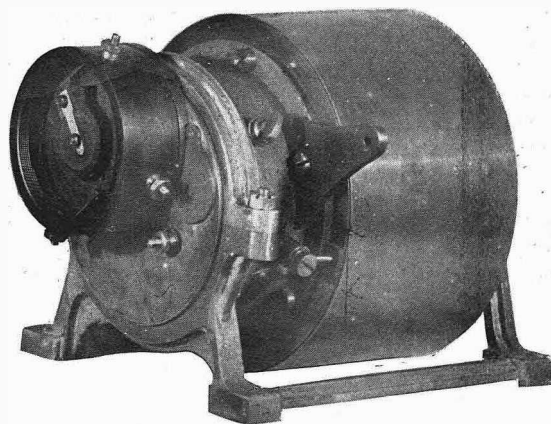
The Georges Richard-Brasier cars have been practically redesigned, though still preserving the valuable features introduced by M. Brasier when he became associated with the firm, notably his magneto and automatic carburetter. Tubes have been abandoned, and the frames are now of pressed steel.



The Georges Richard change speed gear

Some fine examples of engineering work are to be seen in the motors shown on this stand, and we shall probably have occasion to return to them in our account of the show. The firm have always been staunch upholders of the propeller-shaft, so long as

they turned out nothing but light carriages, but in the 40 h.p. car shown they employ the chain drive. It is generally admitted that for more than, say, 25 h.p. the universal-jointed shaft is not satisfactory. We hope shortly to deal in further detail with the 8 h.p. two-cylinder and the 16 h.p. four-cylinder Georges-Richard.



The Rassee Michel magneto ignition apparatus, reference to which was made in "The Autocar" of December 5th (p. 686).

Peugeot Practice.

The Société des Automobiles Peugeot make an excellent display of seven cars, ranging from a 6½ h.p. voiturette with propeller-shaft transmission up to 18 h.p. In the four-cylinder engine the outside cranks are set at 180° to the inside pair. The single-cylinder motor has an automatic induction valve, but in all the other engines the inlet valves are mechanically operated, the inlet and induction valves being placed on opposite sides of the cylinders. The chassis of the voiturette is of steel tube, but armoured wood is employed for the cars with two-cylinder motors, while the big vehicles with four-cylinder engines have pressed steel frames.

The Gardner-Serpollet Steam Car.

The steam pleasure car practically finds its sole representative in the Gardner-Serpollet, which has become very popular among tourists during the past season, and with its silence, speed, flexibility, and reserve of power this vehicle has been gathering around it an increasingly large circle of users, while the fitting of the new condenser, allowing as it does of the car travelling the whole day without replenishing the water tank, has removed the only objection that was formerly raised against the steam automobile. Three new types are being shown on the stand of the Société des Automobiles Gardner-Serpollet, the 40 h.p. car being an improvement on last year's model, principally in narrowing the front part of the frame to give a wider steering angle, and in lengthening the frame, whereby it is now possible to conceal the water tank under the bonnet. The 15 h.p. car is of the type that has been taking part in all the trials during the past year, where it has come out victorious in the tourist category, and in view of this success it has been adopted as a standard model, with modifications to meet the requirements of the average tourist. The frame is of pressed steel, and has a track of 4ft. 6in., while the wheelbase varies according to the nature of the carriage body. The great novelty on this stand, however, is the little

9 h.p. car, which has been designed for the "man of moderate means." It is not only cheap in first cost, but is claimed to be economical in consumption and upkeep. It is extremely simple, since everything has been suppressed that is not necessary for the efficient running of the vehicle. There is no fuel pump in this car. The feed pump for the generator has a fixed travel, and is actuated by a cam on the rear axle. The burners work simply under air pressure. The paraffin passes through a chamber having a certain number of holes, which are opened or closed by a sliding valve, and another similar device, placed alongside and actuated by the same hand lever, adjusts the quantity of water passing through the holes to the generator to the quantity of petrol going to the burners. The feed, therefore, is absolutely proportionate, and the action is quite as sure and reliable as it is with the link and pump arrangement in the larger cars, at the same time the

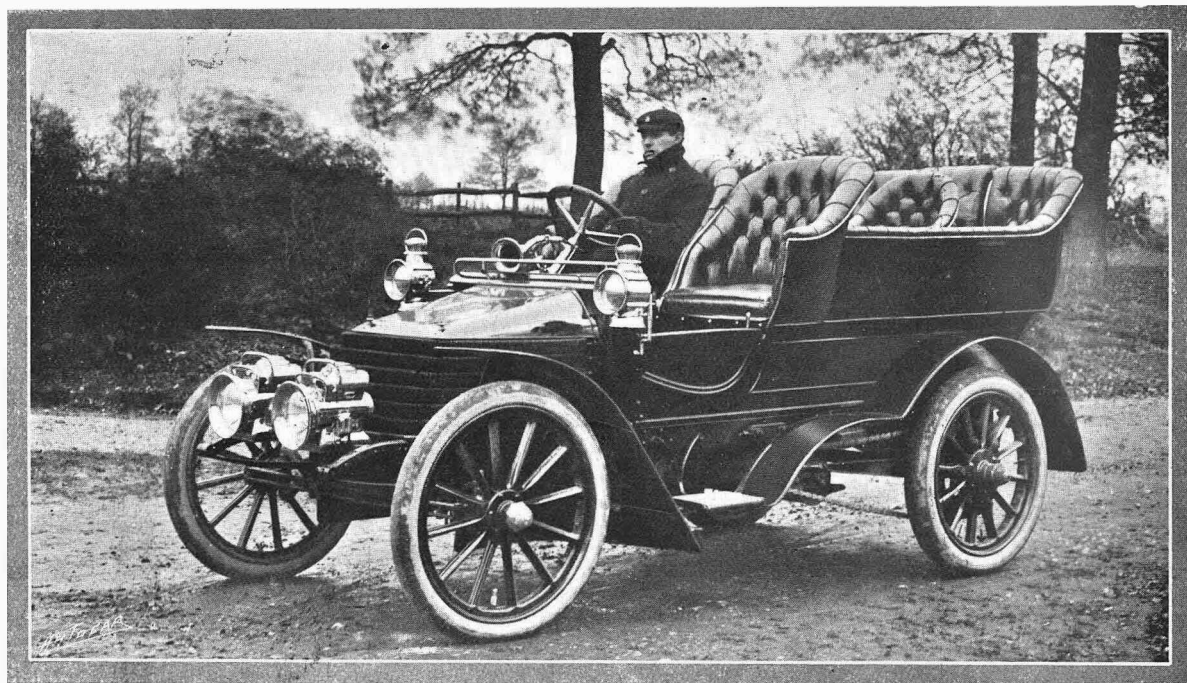
direct on the third speed, and the simplicity of the driving gear contributes to make the Decauville an essentially practical car.

The Mors Models.

The Société des Automobiles Mors were unable to raise the veil of secrecy from their cars until they were shown on the stands, this reticence possibly being explained by the admission of the firm that the vehicles are practically last year's types, with certain improvements to the carburetter, clutch, and magneto, which runs at the same speed as the motor. They are none the worse for this, but it might as well have been admitted at once.

The 1904 Gladiator.

No striking changes have been made in the Gladiators, so far as the general outline is concerned, but a very great deal has been done in enhancing their qualities of silence, freedom from vibration,



An imposing 24 h.p. Wolseley with double tonneau. This vehicle has been specially built for the Maharajah Cooch-Bihar.

mechanism is much simpler. In view of this great simplicity, the little car is known as the "Gardner-Serpollet-Simplex." By lowering the generator and fitting a bonnet, all the mechanism is concealed, and the new vehicles have a decidedly pleasing appearance. The firm are also giving increasing attention to industrial vehicles, of which they show an example in a light delivery van with a motor of 6 h.p.

The Latest Decauville.

The Etablissements Decauville Aine, whose stand attracted so much attention at the last Salon, are making another interesting display, though in their main lines the mechanism has undergone little change, and the improvements carried out have been in the direction of giving a still greater flexibility to the motor, at the same time that all the parts of the vehicle are simplified. The carburetter, of course, is automatic. The transmission runs

and extreme flexibility of engine power. There is a new type of two-cylinder machine, nominally of 9 h.p., and both it and the four-cylinder 14 and 18 h.p. have mechanically-operated valves, while a direct drive is given in all instances on the top speed to the countershaft. There is a new automatic carburetter, but we are not at liberty to disclose its details at present.

Three-cylinder Cars.

Cars with three-cylinder motors are shown, among other types of vehicles, by Cottureau et Cie., of Dijon, and so many makers are exhibiting this type of engine that the three-cylinder motor is one of the features of the show. The Cottureau vehicles are designed something on the lines of the Mercedes, with ball bearings for all the transmission shafts, and this firm are certainly making considerable progress every year. The Ader cars are also

making headway, and several new types are being shown. Hitherto the makers have turned out nothing but V-shaped motors, but while still preserving this form for lighter motors they are building the bigger engines with vertical cylinders. The exhaust valves are mechanically operated, and all the gear is enclosed.

A New Accumulator and a Monster Fire Engine.

Probably the most interesting thing outside the petrol cars in the show was to have been the new Rosset accumulator, to be exhibited by M. Jeantaud, but we are informed that as the patent formalities are not yet terminated this accumulator is not on view. It is, however, in daily use on the Jeantaud cabs, and M. Jeantaud assures us that the claims of the inventor, that the accumulator has double the capacity for a given weight of other batteries, have been fully borne out, for the cabs will run 120 kilometres with one charge as against only sixty kilometres with the batteries previously used. We briefly described the principle of this invention in our report of the Automobile Congress. From an accumulator to an automobile fire engine is a big step, and this fire engine is the biggest thing of the kind yet constructed. Built by the well-known engineering firm, Weyher et Richemond, the vehicle has a multitubular boiler and an engine of 30 h.p., developing up to 50 h.p., and by a single lever it can be geared on to the vehicle or the pump. The fire engine, weighing five tons, can be propelled at the rate of twenty-four miles an hour. This is one of the curiosities, and there are many others.

The British Exhibitors.

Quite apart from the many English firms which are agents for French makes, and which may be said in consequence to be indirectly exhibiting in the Salon, we have *bona-fide* British-built machines directly exhibited by their makers. These include the Napier, Argyll, M.M.C., and Wolseley cars.

The Motor Manufacturing Co. have spared no efforts in the production of their small but choice exhibit. The central figure is a beautifully designed and well proportioned Pulman-bodied car, the principal mechanical features of which are the employment of the Eisemann and high tension ignition systems, either separately or jointly; the use of an iris diaphragm as a throttle valve; and a new type of change-speed gear, in which the top speed drives direct on to the countershaft, while the secondary gearshaft remains stationary when on this gear. The engine is a four-cylinder one, and develops 25 h.p. The car body is designed to accommodate six passengers—four within the Pulman and one beside the driver. The two front seats are of the scoloped pattern, and particularly well designed. The car is finished in dark green and gold, with brass fittings on the outside, while within the Pulman dark green and silver are employed, with white lin crusta. A swinging seat occupies each corner, while between them on each side are placed neatly-designed cupboards, which are well provided with drawers for small articles. The space at one's disposal is quite sufficient to carry an ample luncheon for the occupants of the car, every detail having been carefully thought out for the complete equipment of the car

and the comfort of the passengers. Two standard 20 h.p. cars are also to be exhibited—one with a curved back tonneau, the other having side entrance to the rear seats. The left-hand front seat swings on a pivot, so that for the rear seats ample room is allowed for ingress and egress. Both cars are very handsomely finished, and should do much to uphold the credit of the English manufacturer. In order that the detail work of the M.M.C. cars may be examined, a 20 h.p. chassis with the new gearing is also shown. The Napier have two four-cylinder cars—one of 15 h.p. and the other of 20 h.p. They are fitted with the hydraulic carburetter which was described in our issue of October 24th. However, the Napier system is too well known to need description, and consequently the interest in it from the English visitor's point of view is rather in the carriagework, which is some of the finest we have yet seen, the 15 h.p. being provided with a canopy and the 20 h.p. with the Cape cart hood we illustrated last week. The Wolseley Co. exhibit examples of all their cars, ranging from 6 h.p. to 24 h.p. The principal features for notice are the pressed steel frame; the discarding of the countershaft brake in favour of two expanding brakes operating on the insides of the chain wheels, these being applied by a pedal. On the 24 h.p. cars the commutator is placed on the dashboard in sight of the driver. The Wolseley voiturette is to be shown for the first time with a change-speed gear giving three speeds forward.

We hope to deal with the other English exhibits next week, though we should add that the Oldsmobiles are being shown by the British agents and the Dunlop and Collier tyres exhibited by their respective makers.

A SUPPLEMENTARY IGNITION.

A very simple, though at the same time ingenious, supplementary ignition has been brought out by Messrs. Jarrott and Letts, Ltd., of 45, Great Marlborough Street, W. It is known as the C.J.L. ignition, and is specially designed for fitting to cars which already have a magneto ignition. The magneto ignition plates fitted in the cylinders are utilised for the purpose of creating a make and break low tension spark, produced by means of an ordinary accumulator and a coil, the latter being of a special type. That is to say, instead of the current being supplied by the magneto machine, it is furnished by the battery and coil, not through plugs, but by means of the existing make and break tappets in the cylinder for the magneto. The idea primarily is to overcome the difficulty of starting with the magneto, as a certain speed of the armature in most magneto devices must be obtained before a spark is produced, but, of course, by switching on the accumulator this difficulty is overcome in a moment. Not only so, but in the event of derangement of the magneto the accumulator can be used for continuous firing. We need hardly point out that this combination, while giving two systems of ignition, effects it in a very simple form, as there are no sparking plugs, commutator, or tremblers; that is to say, no addition whatever to the magneto ignition, except the accumulator and coil.

THE 1,000 MILES RELIABILITY TRIALS.

The Judges' Award.

THE JUDGES' AWARDS IN CONNECTION WITH THE 1,000 MILES RELIABILITY TRIALS ORGANISED BY THE AUTOMOBILE CLUB LAST SEPTEMBER, AND FULLY REPORTED AT THE TIME IN "THE AUTOCAR," HAVE NOW BEEN ISSUED. THE TECHNICAL SECRETARY OF THE CLUB ANNOUNCES THAT THE DETAILS OF THE MARKS EARNED BY EACH COMPETING CAR WILL BE ISSUED NEXT WEEK.

The awards have been made by adding together the marks gained by each car for—

Reliability on the road.	Absence of dust raising.
Cleaning, replenishing, etc.	Speed on track.
Hill-climbing.	Restarting on hill.
Condition after trial.	Finish and appearance.
Brakes.	General cleanliness of motor and gear.
Steering.	Fuel consumption.
Absence of noise.	Accuracy of horse-power.
Absence of vibration.	Cheapness.
Absence of vapour or smoke.	

Section I. (Complete Cars.)

CLASS A1: Tandems and quadricycles above 170 lbs. weight and below £150 in price.

FIRST PRIZE (silver medal).—No. 1, the Century Engineering Co.'s 5 h.p. tandem.

CLASS A: Vehicles declared at a selling price of £200 or less.

FIRST PRIZE (gold medal).—No. 21, Jarrott and Letts's 5 h.p. Oldsmobile.

SECOND PRIZE (silver medal).—No. 17, Jarrott and Letts's 6 h.p. Oldsmobile.

CLASS B: Vehicles declared at a selling price of £200 to £300.

FIRST PRIZE (gold medal).—No. 39, the Motor Manufacturing Co.'s 8 h.p. M.M.C.

SECOND PRIZE (silver medal).—No. 24, the Swift Motor Co.'s 6 h.p. Swift.

CLASS C: Vehicles declared at a selling price of £300 to £400.

FIRST PRIZE (gold medal).—No. 41, S. F. Edge, Ltd., 10 h.p. Gladiator.

SECOND PRIZE (silver medal).—No. 62, Oscar Thompson, Esq., 7½ h.p. Wolseley.

CLASS D: Vehicles declared at a selling price of £400 to £550.

FIRST PRIZE (gold medal).—No. 92, New Orleans Motor Co.'s 12 h.p. New Orleans.

SECOND PRIZE (silver medal).—No. 91, De Dion-Bouton's 12 h.p. De Dion.

CLASS E: Vehicles declared at a selling price of £550 to £700.

FIRST PRIZES (gold medal).—No. 105, Speedwell Motor and Engineering Co.'s 10 h.p. Gardner-Serpollet; Special (gold medal).—No. 114, Captain H. H. P. Deasy's 14 h.p. Martini.

CLASS F: Vehicles declared at a selling price of £700 to £900.

FIRST PRIZE (gold medal).—No. 130, Captain H. H. P. Deasy's 16 h.p. Rochet-Schneider.

SECOND PRIZE (silver medal).—No. 133, the Motor Manufacturing Co.'s 20 h.p. M.M.C.

CLASS G: Vehicles declared at a selling price of over £900.

FIRST PRIZE (gold medal).—No. 137, the Daimler Co.'s 22 h.p. Daimler.

Section II. (Parts of Cars and Special Mechanisms.)

GOLD MEDAL.—Clarkson's, Ltd., combined engine, differential gear, pumps, etc., complete.

SILVER MEDAL.—Messrs. Clarkson's, Ltd., oil burner and boiler feed device.

SILVER MEDAL.—Albion Motor Car Co., magneto ignition.

SILVER MEDAL.—New Orleans Motor Car Co., change speed gear.

SILVER MEDAL.—Hozier Engineering Co., change speed gear.

Special Gold Medals.

Of the three special gold medals to be allotted by the judges under Rule 36 to vehicles which they may consider

to possess specially meritorious features, a gold medal was awarded to the Daimler Motor Co. for their 22 h.p. 'bus for general excellence, and silver medals were awarded to Messrs. John Marston, Ltd., for the chain case on their 12 h.p. Sunbeam car No. 65, and to Messrs. Evart-Hall, Ltd., for their 15 h.p. C.G.V. car No. 127 for its dustlessness.

An additional special silver medal was awarded to the White Steam Car Company for their 10 h.p. White Steam car No. 116 for its small water consumption.

It must be understood that the medals awarded in Section II. *et seq.* are purely for the points specifically named and not in any way for reliability.

The judges have carefully considered the question of making a detailed report on the trials, but they are of opinion that the inelastic system of marking adopted, whereby each point laid down in the rules has to be dealt with with a view to marking for that particular point alone, renders impossible the exercise of any judgment on the general merits of the various cars apart from the points actually marked.

Signed,

R. E. CROMPTON
W. WORRY BEAUMONT
DUGALD CLERE
E. H. COZENS-HARDY
JAS. SWINEURNE
R. E. PHILLIPS
LYONS SAMPSON
CHARLES H. H. NUGENT

Judges



THE DUTIES OF A CLUB CORRESPONDENT. Mr. G. H. de Steiger, of Sutton, in kindly placing the photograph we reproduce above at our disposal, says: "You have so many notices anent the arduous nature of the duties of club correspondents that the accompanying photograph may be of value as representing the reverse side of the medal. The picture represents Mr. A. W. Mokowski instructing the daughter of a leading Surrey J.P. to drive a car. The car, as will be seen, is a 6 h.p. De Dion, and it will be interesting as showing the ease with which these cars can be driven when it is known that the lady in question, on her first country drive of ten miles, was able to bring the car home through traffic without any difficulty."

Correspondence.

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

REGISTRATION.

[3348].—As our registration fee of £1 ls. can be paid anywhere, it is hardly fair to help the counties that have already made so much out of us, and not for damage done or harm caused.

If every car owner within fifty miles would trouble to think the matter over and register, say, in London, the Surrey and other C.C.'s might have cause to think too.

FAIR PLAY.

[3349].—I cannot understand how it happens that a body of gentlemen composing the committee of the A.C.G.B. and I could so far forget their dignity as to allow their secretary to address a letter to nearly all the clerks of county councils on the subject of registration. It was most unwise, unbusinesslike, and silly. As matters now stand, he has set all the clerks and county councils by the ears. I have just met the clerk of the Salop County Council. He is most indignant, and calls it an impudent and insulting letter to think that for the sake of £10 or more it would bias their views one way or the other. He says he has thrown the letter into the waste paper basket, and rightly, so I told him.

J. R. GREATOREX.

TYRES.

[3350].—I read in your issue of last week a letter (3336) over the *nom de plume* West Country, in which the writer refers to a previous one from Mr. B. Valentin (3289).

I agree that "it would be to the benefit of all car owners if they would only state their experiences as they found them." This Mr. B. W. Valentin has done, with the result that West Country, with strange inconsistency, says "the whole thing is an utter absurdity," and by impugning Mr. Valentin's statement displays a deplorable lack of good feeling, good breeding, and good taste. My object in writing is merely to state that I have quite recently driven a 12 h.p. Darracq with a Collier tyre deflated for three miles at top speed to catch a train without the least difficulty in steering, inconvenience, or damage to the tyre. West Country's surmise that "to drive a hundred yards at full speed would mean a bad smash up" is, in my experience, not justified, unless the fact of the two tyres being deflated makes it more difficult to steer than with one down, which seems contrary to reason.

I believe that the Collier tyre people advance the contention that their tyres can be driven deflated without injury as an argument in their favour; if that is so, West Country does them an injustice too.

A friend of mine drove from Canterbury to London on a deflated Collier tyre without apparently damaging the tyre at all or experiencing any difficulty in steering.

W. PICTON PHILLIPS.

[3351].—Your correspondent West Country seems to treat experiences with Collier tyres as a "romance," and ventures a statement that even driving at six miles an hour on a deflated Collier tyre he could not steer the car straight. I can only assert that his steering gear must have been hopelessly out of order. He further says, going at full speed would mean a bad smash-up in a ditch. I can prove by the evidence of three passengers that every word I stated is correct. Surely, if a cover is firmly bolted to the rims, and cannot leave them, the deflated tyre becomes practically a cushion tyre. How on earth can it then affect the steering? Your correspondent writes it down as an utter absurdity; at the best he can only pit his experience against mine; his aspersions on my veracity are therefore most discourteous. I can further mention the experience of a friend of mine who drove a 6½ h.p. Gladiator almost all the way from Margate to London with one Collier tyre deflated. He drove at a good pace, and did no damage to the outer cover. Of course, no practical motorist would advocate such a proceeding. I only gave my experience to prove that a medical man who met with a puncture on his rounds can get home without anxiety, or when touring one can drive to the nearest hotel and repair under cover instead of at the roadside possibly in the wet and mud.

BASIL WM. VALENTIN.

[3352].—In reply to Mr. Strickland's letter, I have no personal experience of solid tyres on live axle cars, as I do not approve of live axles at all, but I have friends who have tried them with disastrous results to their bevel gears, possibly because the make of car was not suitable for solid tyres in any case. I quite admit that the car must be built and sprung better for solids than pneumatics, and probably it is the perfect balancing and distribution of the weight and the position of the flywheel, as well as the exceptionally good springs, that combine to make the James and Browne such a smooth-running car on solids. I quite agree that pneumatics are better if you can afford them, and as soon as a really satisfactory tyre is made I shall use them (I have great hopes of the new cord tyre), and if a car will run well and smoothly on solids how much better will it be with pneumatics.

H. J. BATH.

MECHANICALLY OPERATED VERSUS AUTOMATIC VALVES.

[3353].—Commenting upon the brief but interesting article on "Mechanically Operated versus Automatic Valves," by M. Henri Walcker, in your last issue, it struck me that the conditions for the perfect working of the automatic valve are seldom fulfilled. Take, for instance, the expression, "In a multiple cylinder motor this adjustment of the spring should be identical in each cylinder." Even if this one condition is ensured absolutely, ensuing failure to procure satisfactory results often indicates the presence of other conditions equally necessary to be complied with—equal areas of and absence of constrictions in inlet pipes and passages, equal radius of curves in bends of same, equal fitting of piston rings, and various other conditions also affecting the sensitiveness of a column of gas in motion under varying velocities. My own experience has provided instances which, I suppose, are fairly common, in which the only satisfactory working of a "multicylinder" engine is secured by using inlet valve springs of different strengths.

The precise reason for the difference in any one instance I have—greatly to my regret—never had time to discover, but it probably referred to one or other, or perhaps to a combination of the conditions mentioned above. There is no doubt that two important results are secured by the employment of M.O. valves—viz., silence and more even working of the engine at slow speeds, the former being a great advantage, especially when the car is at rest and it is not desirable to stop the engine.

FRANK CONSTABLE.

[3354].—I was much interested in that able little article on inlet valves by Mons. Henri Walcker in your last issue, though not in entire agreement therewith.

As owing to a slight throttling action (to put it briefly) an a.o.v. motor does not take in quite so full a charge as would an m.o.v. one of the same proportions; then on the explosion stroke the charge of the former must be expanded slightly more than in the latter case. Therefore an a.o.v. must be more economical, give a less noisy exhaust, and be easier working. It will be said—only in a very small degree—quite so, but it is in a degree just equal in obverse ratio to the gain of power by the m.o.v.; and I think that this minute decrease of petrol consumption, exhaust noise, and wear more than compensates for the equally minute decrease of power.

It is urged against the "automatic" that there is a liability of sticking, but this only exists to a very slight extent—certainly no more than the liability of the extra complications of the "mechanical" to get out of order. Also, it is contended that in multi-cylindrical engines it is almost impossible to have the springs of equal tension. This may be but to such a small degree in any properly-adjusted engine as to be barely distinguishable amongst the other slight inequalities which separate practice from theory.

But even allowing the foregoing, the advantages of the m.o.v. do not compensate for the great added complications. It is certainly not to my mind that "the trivial mechanical complication which it entails (since it is merely a repetition of the construction necessary for the exhaust) is after all scarcely worth mentioning." Surely duplicating the exhaust valve motion is a serious addition to any motor.

By the way, why should not the exhaust be larger than the inlet valve? And what is the advantage of having them the same size, apart from the spare part box? (I know the disadvantage.)

Personally, I think that the modern tendency is to sacrifice far too much simplicity for efficiency—an efficiency which is of a very doubtful quantity in many cases. The car minus pump, fan, m.o.v., magnetic clutch, electric light, and other "refinements" is really far and away ahead of its complicated brother with its numerous "talking points" when it comes to actual working. Especially is this so as regards immunity from repairs and breakdowns. Let the motto be, "Simplicity combined with ample proportions." R. G. WELLS.

DUST.

[3355].—I have read the dust article with great interest, as in my private reliability trials with my 10 h.p. M.M.C. 1904 model (full data of which I propose sending you shortly) I have taken special note of the dust raised. The car is high off the ground, aluminium casing under gear, etc., and a plate over the commutator, etc., in front. Radiators are high, as in older models. The aluminium casing slopes away downward towards the rear.

So far as I could observe, the tendency of this is to cause the air to deflect outwards between the wheels to some extent. A certain amount of dust is emitted thus. There is next to none discharged behind, and I have found the car singularly free from dust raising.

As regards dust inside the touneau, there is practically none, and after long runs no one sitting behind was dust-coated, nor was there any dust upon the back of the car.

On the other point raised by you—the bother of removing the aluminium bottom—I cannot speak, as I have never had to do it.

FRED T. JANE.

FRENCH OVER PRODUCTION.

[3356].—We were pleased to see your French correspondent's mention of the statement of affairs in the French trade. Not because of any satisfaction that it should be so, but because it is having an effect on the English trade, which should be known, and that is that the French are now "dumping" their surplus products—which are unsaleable at home—upon the British markets at prices which are far less than the cost of production. These are being purchased by dealers and factors here and placed on the market under English names ostensibly as British-built cars. Herein lies the danger, and the public should be made aware of it, and should be warned that when they buy what they believe to be a car of home construction they should make sure they are getting it. It would not perhaps matter so much were the cars so dealt in representative of France's best productions, but it is not so. The leading houses which have made a name and reputation for their goods can sell their cars readily enough, and it is the numerous unknown firms who have rushed into the industry as mere copyists whose goods—having no distinctive merit—are being thus dumped on the unsuspecting British public. If a car is sold as British it ought to be British throughout, and what is not should be clearly stated.

THE DURYEA COMPANY.

STEAM CARS.

Too late for publication in the last issue of *The Autocar*, we received a large number of letters replying to the points which "Roy" raised in his letter published in *The Autocar* of November 28th (3327). These letters are so numerous as to preclude the possibility of their being published in full, so that in order to bring out the leading points made by our many correspondents, we have made extracts from their letters. In all cases the extracts are given in our correspondents' own words. In all these letters there is an unanimous opinion expressed that the cars have not yet been long enough in this country to enable any reliable information to be given as to how long they will last. The steam connections are eminently satisfactory, and no

trouble has been experienced from freezing, and the cost of repairs has been nothing unless otherwise stated in the letters given below:

"I am the owner of one of the Toledo *dos-à-dos* steam cars, which I have run for about one thousand miles during the past summer with perfect satisfaction. The points of merit I consider in the Toledo system are that it is fitted with a water tube boiler with large heating surface, and it is almost impossible to scorch it under average conditions. Owing to the rapid circulation obtained by the construction of the tubes under the Toledo system, a good head of steam can always be kept up without any fear of damaging the boiler, and with no fear of furring, using even the worst water. I daily remove all sediment, etc., by opening the blow-off cock fitted in the lower shell. I can thoroughly clean the tubes, thereby keeping the boiler in good working condition, and thus prolonging its life. Another point many of your correspondents have overlooked is the construction of the burner. This is fitted with a pilot light, and burns the low flash cheap gasoline used in the United States, and known in England as 'benzolene,' and obtainable almost everywhere. It may interest owners of steam cars to know that I have found I can run my car very successfully owing to the special construction of the burner on a mixture of two-thirds kerosene lamp oil and one-third Pratt's 'B' spirit, by which combination I get more heat units per gallon of fuel than with gasoline alone. Thus my fuel bill is greatly reduced, obtaining over ten miles per gallon of fuel. I pay in this district sixpence per gallon for kerosene and one and threepence per gallon for Pratt's 'B' spirit, making a shade over ninepence per gallon for the fuel used. I may say my Toledo car is a splendid hill-climber, and no hill ever comes amiss to me; and as the car is so strongly built, I have spent practically nothing so far on repairs. I had at first a few tyre troubles owing to the roads in this district being so sandy and flinty, but I have greatly overcome them by filling my tyres with the new 'P.P.' puncture-proof jelly compound, supplied by Messrs. Shippey Bros., the agents for the system, which has saved me from the annoyance of the numerous small punctures so commonly met with on these sandy and flinty roads."—J.M.P. (Stevenage).

"Early last summer I was exactly in 'Roy's' position, desirous to buy the most satisfactory car I could find at a moderate price. After a great deal of investigation and many trials I decided on the White steam car. I am pleased to say my choice has been entirely justified by the results I have obtained. Since July last I have driven my car about 1,500 miles, chiefly in the most hilly part of Surrey. Every time the car leaves my house—which is at least once, and often several times each day—I have to negotiate a hill a mile long with gradients varying from one in fourteen to one in ten, and containing four right-angle turns, at each of which I have to bring the car nearly to a dead stop, so that I think the car may be regarded as having to undergo an exceptionally severe test. During the time I have run the car I have had trouble with two things only. Once the diaphragm of the water regulator cracked owing to my not having pumped oil into it after the car had been standing for a fortnight when I was from home. On this occasion I easily managed to run the car home by keeping the hand water pump going. The other trouble is that sometimes the vaporiser becomes choked up, unless it is cleaned out regularly. The detention then amounts to about fifteen minutes, until the spare vaporiser, which is always carried on the car, can be fitted, the dirty one being cleaned out at home when it has cooled down. I may add I have also just had new brake blocks fitted, but if 'Roy' knows the district round Guildford, the necessity for having that done will occasion no surprise."—JOHN HENDERSON, D.Sc., F.R.S.E.

"I drive my car and look after it myself. It runs charmingly. It is a capital hill-climber, and has far more power and speed than are required for ordinary toning. The car cannot be learned in a day, but one soon masters all the points. I studied the mechanism and principle of the car for some time before I purchased, and in three days after doing so was quite able to take it out by myself and come back without any trouble. (1.) The White car certainly appears to me to be a strong, well-built machine. Several engineers who have no interest in its

safe have assured me of this. The generator I consider splendid, and if the automatic fire regulator is not interfered with, ought to last for several years. The cars are of too recent date in this country for any owner to have had a long experience, but in America I am told that some generators have been in use as long as five years without having given trouble. (2.) Not having had to do any repairs so far, I cannot say what the cost would be. It would, of course, depend on the extent of the damage. (3.) Plenty of allowance is made in the arrangement of the pipes for the jolting of the car. In the petrol pipes, for instance, I can with simple hand pressure obtain quite three-quarters of an inch play. It is put there on purpose to take the jolting from rough places, or if one is unfortunate enough to collide with anything. The steam pipes are arranged on the same principle. (4.) The boiler does not render the car hot. The generator is enclosed in two metal casings, with a thick layer of asbestos between them. Personally, I should never allow my car to have the chance of freezing. I keep my coachhouse warmed in frosty weather. It could do no good to allow it to freeze even when empty. If you prefer not to warm your motor house you can drain your car; there will then be no water to freeze. As to the last query about an accident fracturing your petrol pipe between turn-off tap and tank, I consider this would require a very severe smash indeed; no ordinary accident would do it. But supposing that this occurred, I should not bother about the main tap, as it might be useless, but instantly turn off the main burner with a twist as I jumped from my seat, and extinguish the pilot light at once by closing tightly the regulating valve underneath it, which would have instantaneous effect. Another point is that the heavier spirit I burn does not when spilled anywhere give off its vapour anything like as fast as the high-grade petrol used in the petrol-driven cars. When lighting my pilot light I have to hold the match to it for some little time for it to take fire, and at a little distance it takes considerably longer to give off vapour sufficient to ignite."—H. G. P. LE FANU.

"I bought my first White steam car—the old 6 h.p. Stanhope shape—in February last. I have driven it since then over 2,000 miles, and have not spent sixpence in repairs, and have had one puncture (a 3in. wire nail). I drive the car myself every decent day from the southern suburbs to London. I drive to a livery stable near my office, turn out the pilot light and the main petrol tap, and think no more of the car. At six o'clock I light up my pilot light, and within four minutes I am on my way home. A groom washes down the car and leathers it on as if it was an ordinary carriage. I have no chauffeur, so the panels are as free from scratches and the polish as bright as the day I received it from the makers. I have never touched the vaporiser, which has not carbonised (the secret of this is running the petrol into the tank through the finest wire gauze, and preventing the dirt always in petrol getting into the tank). I have packed the glands once—a matter of a few minutes. The boiler has never troubled me. As to cost, I run fifteen miles on a gallon of Anglo-American B petrol. None of your fancy, expensive A for me. I have not got a sensitive carburettor, but a good, simple, Bunsen burner, which I supply with vaporised oil. I have never found any trouble from the heat of the boiler, even though, as 'Roy' says, I sit on the top of it, and I have never had any pipes burst by frost, because I do not leave my car in frosty weather without a little oil stove in the stable. I was so pleased with the 6 h.p. car that I bought a 10 h.p. tonneau—also a White steam car—in April last, and have run just over 4,000 miles. I have been as far north as Harrogate and all over Wales, and visited a good deal of the south coast. I carried six weeks' luggage with me, to say nothing of guns, rods, and such-like impedimenta. 160 miles was my longest day, on which day I ran 120 miles on eight gallons of petrol, and filled up with water after running ninety-seven miles, and I have never had a moment's anxiety. All one wants is to look at the nuts and glands occasionally and see that all is tight. You do not expect to treat a car like a garden wheelbarrow, and even that is better for a little oil on the wheel occasionally."—W.

"I bought my White car in October last year second hand. Practically to all intents and purposes it is as good as new now. I have had it, however, thoroughly overhauled by

the makers. I consider the White as durable as most petrol cars. I have found the connections, etc., satisfactory. All nuts, etc., should be gone over occasionally, and if necessary tightened up in the same way as the joints and nuts of petrol cars have to be looked to. Ordinary frosts do not seem to affect the car. If it freezes hard I empty the boiler, tank, etc., and keep a small paraffin lamp burning in the wooden shed I keep the car in. It would, of course, be a great improvement if a petroleum burner could be invented suitable for the White car. The makers say they have tried numbers of them, and none have been found satisfactory. I have never kept a *chauffeur*. I pay a labourer a small amount weekly to clean the car, and get a mechanic to help me with anything else that may have to be done."—F.E.R.

"I have just bought a White car, and am very well pleased with it. I rode in it from Regent Street to Worthing (about fifty-eight miles), and we used about three and a half or four gallons of Pratt's B spirit. The question asked by 'Roy' (3527) as to the durability of the car is an impossible one to answer. (1.) How long will it last? In all cases where we use machinery attention to lubrication and skill in manipulation and general good driving add very materially to the life of the machine used. In answer to question two, the gear used is the differential, the driving being through a shaft with universal joints and bevel gearing. As nearly all petrol cars are driven in this way, this gear is common to both types. But it must be remembered that the White steam car has no use for ignition appliances, clutches, and the awful change-speed gear, so the chance of gear going wrong is minimised by its simplicity. The question of the "large" quantity of petrol carried (eight gallons) in a White car; surely it is not more dangerous to carry eight gallons than five or six gallons. There is one thing certain: if there was a burst up with the petrol either of an internal combustion engine tank or of a steam engine tank, the chances of being cremated would be about the same in either case. I may add that previously to mounting my car I had never driven one in my life. In about four lessons I felt myself quite at home, and drove the car up and down hills with ease, and took her through traffic on King's Road at Brighton during my second lesson. My White takes hills beautifully—in fact, the taking of hills is the strong point of the Whites. They actually pick up speed on the hills. I was told I had bought trouble when I bought my White, but the White Co. very considerably sold me the car, and not the trouble."—J.Q.S.

"Replying to question No. 1, it is very difficult to state how long this type of car will last, as same has only been on the market since February of this year. I have driven my car nearly 3,500 miles. The machinery is in thoroughly good condition, and certainly should last for many thousands of miles. The jolting of the car has given no trouble to any of the steam joints. The presence of the boiler under the seat is not objectionable. On a very warm day you can just feel the boiler is in position, but I think that this could be entirely eliminated by putting in an extra thickness of asbestos. At this season of the year it is, of course, the most comfortable car in existence on account of the slight heat that comes from the boiler. Ladies sitting in the tonneau are very pleased with same, because the rug keeps the feet warm by holding the heat. If the owner of a White car wishes to be particularly cautious the boiler could be blown out without trouble. The tank is made so as to expand if it is frozen. If the car is to be put away for several months during the winter it would, of course, be advisable to pump oil through the regulator pipes. In consideration of the many points of advantage in the White car we must expect some disadvantage. I do not consider the exposed light at all dangerous under ordinary circumstances."—A. A. RIGHTER.

"Having driven a petrol car for twelve months in my practice, and getting tired of the vibration, noise, and ignition troubles, I decided to purchase a steam car if I could find one practicable. I asked the advice of a motor engineer, and with him went over all the steam cars at last year's Palace show, when we came to the conclusion that the White steam car was the most suitable. I bought one, and had it delivered to me last May. At first I was disappointed with it, but on consulting the firm found it was no fault of the car, but of the mechanic, who had

adjusted the fire wrongly. The firm at once sent down an expert, who put the car in perfect order, and since then I have had no trouble. After running 3,000 miles over badly-paved and hilly streets and all sorts of roads and in all weathers, the car shows no signs of wear, the gears being apparently as good as new. My steam pipes give no trouble, the joints being quite steam tight, rendered so by taper formation, which requires no red lead, etc. There is no undue heating. There can be no freezing, provided the generator is blown off at end of day. I cannot see there would be any great danger from the main petrol pipe fracturing in position mentioned in 'Roy's' letter, but it could be protected by covering with larger rubber pipe from tank to valve. I can thoroughly manage my own car in every respect, but I have a chauffeur (aged 16), who, although he has never been in a mechanic's shop, after a fortnight's tuition from one of the firm's men, can drive the car and take to pieces, clean, and replace any part of it. As regards the comfort and reliability of the car, I can do five or six hours work a day without the least nerve fatigue and worry which I experienced from continuous vibration and noise of petrol cars."—MEDICUS.

"In reply to several enquiries, I beg to state I find the Miesse a first-class car in every respect, and its hill-climbing powers are marvellous. I have occasionally sent to the manufacturers for duplicate parts as a matter of precaution, and have found them most liberal and very prompt indeed in attending to all requirements, and a great contrast to the slowness of some firms in attending to customers' wants. All parts are evidently kept in stock, as the Miesse is made at Wolverhampton, and I consider this a point in favour of an English-made car. I may here remark that the Miesse is the only steam car with the burner and boiler under a bonnet in front. Personally, I always feel more comfortable with the boiler in front than I do when sitting on the top of it, as is the case with other steam cars. Paraffin is used, and as there are so many objections to petrol, I consider it preferable to have a petrol car throughout in place of a steam car fired by petrol."—A.G.

"I agree with your correspondent 'Roy' that the practical experience of the users of any make of car must possess particular value in the eyes of the prospective purchaser, though undoubtedly the makers are also entitled to be heard in explanation of their system. I am glad, therefore, to place my short experience at your correspondent's disposal, for what it may be worth, in answering some of the questions he asks in regard to the White steam car, a specimen of which, in the shape of the new tonneau pattern, I have had in my possession since the end of May last, and have driven between 1,000 and 1,500 miles. I take 'Roy's' points in his own order: (1.) Durability.—I am hardly as yet qualified to speak. Nothing about the car has so far shown any signs of giving out. Even the tyres are in good condition. The latter point is one which may legitimately be put to the credit of steam cars in general, the action upon the tyres being apparently much less harsh than in the case of petrol cars. My one disappointment under this head lies in the fact that before I had run 1,000 miles I found it necessary to have the ball bearings of the engine taken up for wear. As no means of adjustment is provided, this necessitated a visit to the shop. On the other hand, I should mention that my crank case had been allowed to run nearly dry of oil, which may account for the rapid wear. This was due to my not having been informed that the automatic lubricator does not make up all wastage of oil from the crank chamber. The owner of one of these cars, if wise, will satisfy himself by frequent inspection that all is in order in this department. (2.) Cost of repairs to steam pipes.—Nothing up to the present. The simplicity and directness of the arrangement of steam and water pipes in the White system are striking features to anyone who, like myself, has served his novitiate upon an American steam car of the ordinary 'pot-boiler' type. (3.) Boiler tubes, steam pipes, etc.—These have given no trouble whatever so far, and have not been touched. (4.) Heat from boiler.—Inappreciable on the front seat, and but little felt in the tonneau; not sufficiently so to cause any inconvenience. (5.) Frost.—Provision is made by which oil can be easily pumped from the cylinder lubricator into the pipes most likely to be affected by frost. The generator, too, can be readily emptied. A more convenient method of emptying the

water tank than that at present provided would be an appreciable benefit however. In the absence of the simple precautions enumerated above, no doubt trouble from burst pipes might be expected if the car were exposed to severe frost. Your correspondent lays great stress on the question of danger in connection with the fuel used. There must, of course, be potential danger wherever considerable quantities of petrol are carried; but as strength, directness, and solidity of pipes and connections characterise the White system, I, as a user, am personally satisfied that the risk has been reduced to a minimum, so much so that at equal prices I should prefer petrol as being cleaner to handle than paraffin. The fact that a railway journey is always fraught with the risk of a hideous accident does not disturb the equanimity of the average traveller; similarly, although the result in the supposititious set of circumstances mentioned by your correspondent might be a blaze, the danger is, I imagine, so remote in practice that the contemplation of it need not impair one's enjoyment in driving the car. It is perhaps right that I should mention that in one respect my own car has not come up to the expectations which I founded upon it, and that is in the distance which can be covered on a full tank of water. I have not been able to realise anything like the mileage claimed by the makers without re-filling. This is a point on which I should myself be grateful for the experience of other users of the car, as I am inclined to suppose that mine may be an exceptional, and not irremediable, case. The use of high pressure steam renders some little attention to the glands necessary (especially that of the high pressure cylinder) in order to avoid leakage and waste of water. The engine, however, is placed in such an extremely accessible position that it is a simple matter to insert an additional ring of packing from time to time. As to simplicity and ease of management, probably in no other car have these qualities been attained in a greater degree than in the White. A novice could learn all that is requisite to safely direct the movements of the car in two or three days, and if only the White people would issue a detailed and intelligible handbook, he might thereafter be independent of even the advice and assistance which they at all times so courteously render to their customers. Of the behaviour of the car on the road, it is almost impossible to speak too highly. The engine makes no more noise than a quiet sewing machine, and the 'hiss' of the furnace when full on, while not loud enough to be disagreeable, is a useful indication to the driver how matters are progressing. The car is very 'sweet' in action, easily controlled, and a magnificent hill-climber."—CUTHBERT LAWS.

"I purchased a two-seated White steam car in March for £300, considering, as I still do, that the White is probably the best steam car on the market. If 'Roy' expects he can succeed with a steam car without the constant aid of a skilled mechanic, I fear he will be woefully disappointed. I have formed this opinion not only from my own experience, but also from that of others in my district. The fact is steam cars are essentially very rich men's cars. The consumption of petrol and serious depreciation make them so. To enjoy successfully the constant luxury of a steam car 'Roy' would find it necessary to have two cars and also a highly-trained mechanic. Probably in this case his man would always manage to have one car in repair. I cannot afford this, and have had to content myself with a 10 h.p. Wolseley, which I purchased in August, to my entire satisfaction."—HERBERT BARBER.

[The correspondence in reference to "Roy's" letter is now closed.—Ed.]

Judging from Mr. J. B. Dumbell's communication in your issue of December 5th, he appears to have a grievance about my letter in *The Autocar* of the 28th ult.

Will Mr. J. B. Dumbell be good enough to state clearly: (1.) What "inaccuracy" he refers to? (2.) What "suggestion" have I made in said letter that he can possibly imagine to apply to the Miesse or any other car? ROY.

In reply to Mr. R. T. Brankstone's letter (3331) in *The Autocar* of November 28th, Mr. J. E. H. Colchough, of 25, Russell Road, Kensington, W., offers to lend for testing purposes to our correspondent or others who would care to test it an anti-skidding device, which he has designed and patented.

Flashes.

A two-seated light car, known as the Frick, is being sold by Messrs. Alf. Dougill and Co., Ltd., Great George Street, Leeds. The transmission is of the friction type.

* * *

A colonial reader of *The Autocar* visiting England is anxious to have the names and addresses of motor manufacturers who are prepared to construct in quantities the chassis of a light narrow gauge petrol van suitable for carrying a load of 10 cwt. and two passengers at a speed of about sixteen miles per hour. Complete chassis alone without body is required. A good order will be placed if a suitable chassis can be obtained. Any replies addressed to *The Autocar* will be forwarded to the proper quarter. We hope that British manufacturers will rise to the occasion.

* * *

We recently mentioned that the Grand Duke Michael of Russia was ordering a car from a firm of English agents. We understand that the vehicle of his choice is a Dennis, which is being specially built to meet his requirements by Messrs. Dennis Bros., Ltd., of Guildford.

* * *

The Electric Ignition Co. are carrying the war into the enemy's country, if we may so speak of la belle France in these days of the *entente cordiale*. The company's sole agent for France, Mons. Etienne Hirsch, is showing under the company's name a full range of their well-known sparking plugs, coils, switches, and other details of their electric ignition work at the Paris Show, which opened on the 10th inst.

* * *

In advertising their official notice as to the registration of motor cars, one of the Lincolnshire county councils overlooks the fact that cars owned by people living within the area of their jurisdiction need not necessarily be registered with that particular council. The notice states, "Every motor car or motor cycle must be registered, and must carry two identification plates, or designs, bearing the index mark of the county council" (meaning, of course, their own). This is really unwarrantable in face of the fact that in the Act, as explained in *The Autocar* last week, there is nothing to specify what counties owners of cars shall register their vehicles with. Such notices, of course, ought to read a county council instead of the county council. Autocarists will be well advised, therefore, to put that interpretation upon the advertisements, and register their cars with and pay their registration fees to those councils who are most favourably disposed towards them. We repeat what we stated last week that the Automobile Club is collecting information for the guidance of automobilists in this respect.

Judge Edge recently remarked that "a lot more gaols would have to be built if perjurers received their deserts." Perchance the learned judge had measured "stretches" in his mind's eye.

* * *

Almost everyone is interested in the three-cylinder Panhard car, so that the illustrated description of it which has just been published by Messrs. J. E. Hutton, Ltd., of 81 and 83, Shaftesbury Avenue, W., comes most opportunely. In it the main constructional features of the car are described and illustrated by an excellent series of reproduced photographs.

* * *

To-day the standby of the magneto ignition is the high tension, or, as so many call it, the accumulator ignition. Only a year or two ago the high tension—i.e., accumulator, coil, and plug—was looked upon as so unreliable that the standby was the tube ignition. From present indications it is only a question of time before magneto becomes the universal system.

* * *

The French exhibitors at the French Show have had an example of English punctuality and promptitude, in the guise of the fact that the exhibits on the English Napier stand were *in situ* on Monday last, and ready for inspection. In fact, we believe the Napier stand was the first in the Grand Palais to be completed.

* * *

The balance-sheet of A. Darraacq and Co., Ltd., recently issued, was a most satisfactory one, the net profit for the year ending September 30th last amounting to £100,275 after allowing for depreciation, commis-

sions, and all expenses in the formation of the company. As the purchase was not completed till ninety-seven days after the commencement of the financial year, nearly £29,000 net profit goes to the vendors, but after paying this and the six per cent. dividend on the preference shares, as well as 1s. 6d. per share upon the ordinary shares, over £34,000 were carried forward to the next account. The capital of the company is £375,000, of which £100,000 are in six per cent. cumulative preference shares, the balance being in ordinary shares. The shares now stand at 13½ and 15½.

* * *

We have just heard of another demonstration of the work which can be got out of a good car. Mr. G. Wale bought a 10 h.p. Decauville from the Motor Car Co. last April. From that time he has used it professionally for eight hours every day; in fact, during the last three months he has averaged one hundred miles for every week-day. He has had no trouble with the engine, the only difficulties he has experienced having been in connection with the tyres. These he has decided to abolish finally by substituting solids for pneumatics to the driving wheels.

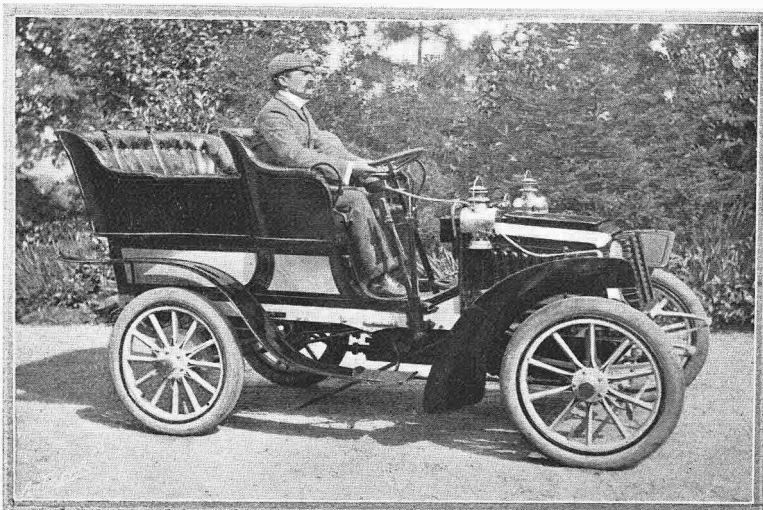
"THE AUTOCAR" DIARY.

- Dec. 10 to 25.—Paris Autocar Show, Grand Palais.
 " 12.—Lecture on "Motor Cars—Gearing and Steering," by Mr. F. G. Haseldine, Keighley Technical Institute.
 " 24.—*The Autocar* published two days in advance on account of Christmas Holidays.
 " 31.—Entries close for 1904 Gordon-Bennett Race.
 Jan. 1.—Motor Car Act, 1903, comes into force.
 " 15 to 23.—Madison Square, New York, Motor Show.
 " 15 to 23.—Leeds Cycle and Motor Show.
 " 19.—Scottish A.C. (W. Section). Paper, "Reminiscences of the Road." By Mr. C. Jarrold.
 " 23 to Feb. 4.—Brussels Autocar Show.
 " 28.—A.C.G.B. and I. Paper, "Railway Companies and the Motor Problem." By Mr. G. Montagu, M.P.
 Feb. 1.—Entries close for Harmsworth Cup Yacht Race.
 " 12.—A.C.G.B. and I. Non-stop Trials, Oxford Road.
 " 12 to 24.—Crystal Palace Motor Car Show.
 " 15.—Conference between A.C.G.B. and I. and Provincial Clubs.
 " 29.—Entries close for A.C.G.B. and I. Side-slip Trials.
 A.C.G.B. and I. Side-slip Competition (date not fixed.)

It is announced that the latest recruit to the ranks of automobilists is a lady of distinction who has reached the age of eighty years. "She is wonderfully enthusiastic, and, in spite of her years, a cool and level-headed driver. She may be seen in the streets of London, or enjoying a long drive in the country, at an age when most of her sex have resigned themselves to the fireside."

* * *

The Bolton Corporation have not made the headway that was anticipated in their motor bus scheme. We hope that the Lancashire body in question will shortly get the service working. It was a beautifully neat car they bought, and many of the suburbs of the town would be glad if it were introduced into their districts. Public motoring at one penny a mile, with a fair number of passengers, ought to pay.



MR. J. H. NASH AND HIS 14 H.P. CHENARD WALCKER. Mr. Nash is a member of the committee of the Kent Automobile Club, and although an enthusiastic automobilist still retains his horses. In other words, he is one of those who hold the commonsense view that there is room on the road both for horses and motors. We may mention that he finds motoring an immense convenience and a great saving of time, as he lives in a district where, so far as long journeys are concerned, he is dependent upon the local railway service, and that, as most people know, is not particularly good in Kent except for two or three crack trains.

The Parliamentary delegation which visited Paris recently numbered amongst its members many automobilists. These, at the invitation of the directors, visited the Panhard-Levassor Works during their stay in the French capital. The party included, amongst others, Lord Avebury, the Earl and Countess of Galloway, Sir Charles and Lady McLaren, Sir Walter Peace, Sir John and Lady Brunner, Sir Geo. Newnes, Sir Howard Vincent, Major Jamieson, Hon. Claude Hay, Major Evans Gordon, Capt. Pirrie, etc. They were received by Commandant Knibbs, M. de Tremenville (directors of the company), M. René de Knyff, and M. Pierront, who conducted them over the works. Everyone was impressed with the vastness of the place, which, indeed, almost resembles a small town, while the perfect organisation and arrangements of everything aroused genuine expressions of admiration. After making their tour of inspection the visitors expressed their thanks to the directors of the company for their kind reception.

So many automobilists are also amateur photographers that we need make no apology for drawing their attention to *Photography* Christmas Number. It is one of the most interesting and artistic productions which has ever been published in connection with the subject. Not only are the illustrations of exceptionally high class, but they are also remarkably fine productions of the best photographic work of the time; in fact, they form quite a photographic exhibition in themselves. The number can be obtained from our publishing office, 3, St. Bride Street, E.C., for 1s., or 1s. 4d. post free. To avoid any misunderstanding, we should like to say that we take a fraternal interest in *Photography*, as it is issued from the same offices as *The Autocar*.

* * *

In dismissing a charge against a motorist of excessive speed in Hyde Park—based on a policeman's stop-watch—the Marlborough Street magistrate said he had experience in his younger days of stop-watches in boating on the Cam. The prejudice of the person holding the watch had sometimes a good deal to do with the result. Counsel for the defence declared the stop-watch had become a fetish with the police.

* * *

The new duties imposed upon local councils under the Motor Car Act, 1903, in the matter of narrow and dangerous roads, are exciting the minds of many of our rural councillors to an unnecessary degree. At the North Bromsgrove District Council, the other day, the question came up, when one member is reported to have spoken against a too free use of sign and finger posts, and went on to say that the council could not be responsible for the consequences if motor car drivers were such fools as to go down hills like some that he mentioned in that district. The natural comment upon such a statement is that no one has asked the council to be responsible for recklessness on the part of motor car drivers, though the duty is nevertheless imposed upon them of indicating dangerous roads.

* * *

An example of the surpassing wisdom of county councillors who agitate against motor cars comes from Staffordshire. The county council was considering the new duties imposed upon them by the Motor Car Act, when a Mr. Peach, in proposing an amendment to a committee's report—an amendment hostile to autocarists on the question of speed limits—spoke of "those idiots who drove furiously through the streets to the danger of the public." But, letting that pass, we have a Mr. Cotton seconding the amendment, and the newspaper report of his speech states: "While admitting that he knew nothing about the matter, he seconded the amendment because he supposed Mr. Peach was in the right." Such trustful confidence in the infallibility of a fellow member is altogether too overpowering.

The price of Pratt's motor spirit was recently reduced—the A by one penny per gallon and the B grade by twopence per gallon.

* * *

English visitors to the Paris show who are interested in the Georges-Richard car will find examples of the latest model on view, and Mr. Overton, of Messrs. Mann and Overton's, Ltd., the sole agents for the car in this country, will be in attendance, and will be staying at the Hotel du Palais, Cours la Reine.

* * *

The interest taken in the Oldsmobile is very great, and it will certainly not be lessened by the judicial recognition of its performances in the thousand miles trial. However, that the merit of this was recognised by the prospective user is pretty clear from the fact that from November 23rd to 28th Messrs. Jarrott and Letts gave trial runs to three hundred people. In the same period they delivered eighteen new cars, while thirty-two were ordered. This, of course, is in reference to the Oldsmobile alone, and does not refer to the De Dietrich.

* * *

Unlike the majority of the daily press, the *Western Mail*, the leading Welsh daily, has ever been sympathetic in its remarks concerning the industry and pastime. Dealing with a couple of recent cases at the Newport County Court, in a leader-ette, the journal named makes use of the following words: "To a certain extent the motor car is still on its trial in this country, and it would be well for those who indulge in motoring to try and conciliate public feeling as much as possible. Unfortunately, a vast amount of prejudice exists against the vehicle, and county councils can throw many obstacles in its way by making their byelaws as stringent as legislation will allow them. The fewer collisions with market carts and pigs, and especially with human beings are recorded against the motor car, the easier and quicker will its passage into public favour necessarily be."

* * *

The A.V. sparking plug—one of the many specialities dealt in by the United Motor Industries, Ltd.—has been very considerably improved, and in its present form will entirely supersede the original A.V. plug, which, by the way, has given very general satisfaction. In the new plug a hardened steel body is employed, provided with the ordinary porcelain insulator. The screwed end of the body is chambered out, so that the central conductor stands up in the middle of the chamber, thus preventing any soot being deposited around it and causing short circuits. The central conductor consists of a solid steel stem, which is held in position in the porcelain by means of a spring washer and nut, which form the surface of the terminal. The earthed sparking point consists of a piece of wire which is let into the end of the plug, and crosses from one side to the other at a point a little away from the actual centre. The sparking point of the steel central terminal is slightly bent in order that the sparking gap may be adjusted, and this, when once adjusted to suit the strength of the accumulator and coil, remains fixed, and is adjusted by slackening off the locking nut on the extremity of the plug.

According to the *Morning Leader*, great consternation has been caused in Constantinople by the appearance of a motor car.

* * *

Mr. Warne, of Warne's Hotel, Worthing, informs us that he is making special preparations for motorists at Christmas. We have no doubt that many automobilists in London and the South will take advantage of this, and will make Worthing the objective of their drives in Christmas week.

* * *

At the second annual automobile show of the Boston Automobile Dealers' Association, to be held in Symphony Hall, March 14-19 next, exhibitors will not be allowed to display more than one car of a given model, and only one chassis if it is desired to show the latter. Nor will unfinished machines or those in prospective be admitted, such as are usually shown at the New York and Chicago shows. The secretary is Mr. Chester I. Campbell, 5, Park Square, Boston.

* * *

In connection with the regulation of motor traffic under the new Act, Messrs. Speirs and Co., structural engineers, of Glasgow, have patented a disc and pole device for use upon blocked or dangerous roads. The poles consist of wrought iron, about 1½ in. external diameter and 8 ft. in height, about 1 ft. of which is set into the concrete base while the remaining 7 ft. project above the ground. The disc is circular, about 15 in. in diameter, and made of 18 B.W.G. steel. The disc and poles are painted in any colour which may be decided upon to indicate the necessary information with regard to they roads they cover.

* * *

During the past few weeks many of the leading French and German automobilists have gone round the proposed course for next year's race for the Gordon-Bennett cup, and, according to the German papers, all are very favourably impressed with the route selected. The Chevalier René de Knyff is reported to have said that he finds it excellent, and he considers there should be no doubt about it being accepted. The German Emperor evinces much interest in the forthcoming race. We learn that the secretary of the German Automobile Club (Herr Von Brandes) has had an interview with His Majesty in regard to the event and the course. Herr Von Brandes explained to the Emperor, and without doubt succeeded in convincing him, that the race would be attended with advantages not only to the automobile industry in particular, but to the country in general. In regard to the arrangements of the details connected with the event, His Majesty appears to have been much impressed by the manner in which last year's race was carried out in Ireland, and he is reported to have said that he did not think Germany could do better than follow as far as possible that excellent example. "It seems to me," he said, "they did it extremely well over there." The Emperor further proposes that a competition for alcohol cars should be held after the great race, and he has offered a prize in connection with that competition, which, on account of its having received imperial sanction, and being the outcome of the Emperor's suggestion, is rightly regarded as an important feature of the proceedings. The Emperor himself has promised to be present.

THE STANDARD CAR.

SINGLE OR DOUBLE CYLINDER—5in. BORE, 3in. STROKE, SPEED 250 TO 2000 R.P.M.
—SLIDING TYPE CHANGE SPEED GEAR, THREE SPEEDS AND REVERSE—BEVEL GEAR
TRANSMISSION ON TO LIVE AXLE—A NEW GIRDER FRAME.

A car which seems destined to make its mark is now being built by the Standard Motor Co., of Coventry. There are several novel features in the design and construction of the vehicle, and these should be carefully noted by those who peruse the following description of its mechanism, as some are distinctly striking.

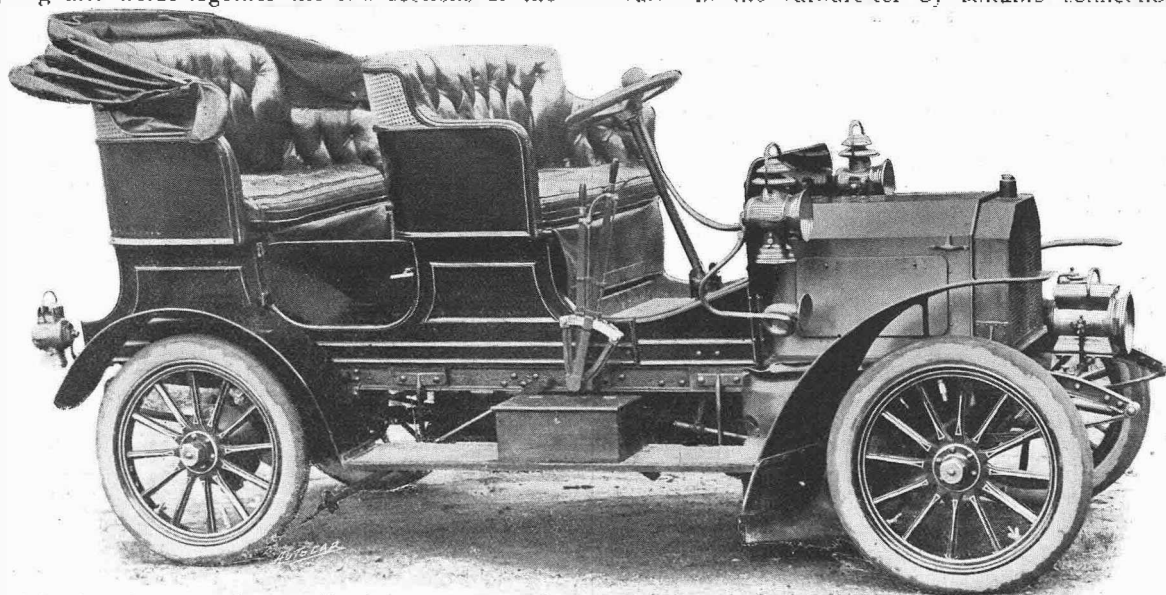
The Framework, Springs, and Axles.

The side members of the frame are constructed of H section rolled steel. The forward end has a long V-shaped piece removed, and the ends are then closed together, and electrically welded at the place where the metal is removed so as to form the tapered forward end of the side members. The rear ends are similarly treated, though they remain straight as to the upper edge of the girder, the lower edge being tapered upward, giving the side member the form usually assumed by a pressed steel frame. The side members are joined together by seven transverse members of channel section. Two of these plates at about the centre of the car support the gear box, and the two forward ones support the engine. The forward member, as well as holding together the side plates, also supports the radiator. Brackets carrying the front and rear springs are bolted to the ends of the side and rear cross members. The frame is supported on elliptical springs, 3ft. in length, both fore and aft. The front attachment of the spring is made in sections, being drilled out to receive the anchored end of the forward spring. These sections are bolted together to the central web of the frame, the ends of the bolts being afterwards riveted over, so as to preclude all possibility of their working loose. The same bolt which serves to anchor the forward end of the spring also holds together the two sections of the

front spring iron. The springs are provided with exceptionally long links so as to give them plenty of free motion. The forward axle consists of tube 1½in. in diameter and 1in. bore. In this instance the stud axles are provided with arms embracing the fixed axle ends. Additional support is given to the forward end of the frame by means of a rod which is used to carry the headlight. Brackets are provided on the frame at one end to form a hinge for the lamp-bracket rod, and at the other for a key bolt, which bolt is always kept in engagement by means of a helical spring. When it is necessary to start the engine, instead of the lamp having to be removed the key bolt is lifted, and the whole of the lamp bracket swung back.

The Engine.

There are two types of car, one having a single cylinder engine, and the other a two-cylinder engine. The single cylinder engine is of 8 h.p. This has a bore of 5in. and stroke 3in. The normal power is developed at 1,200 revolutions per minute. This speed may be accelerated up to as high as 2,000 revolutions per minute, and the engine will continue to run at as slow a speed as 250. The valves are placed side by side, and both are mechanically operated. The forward end of the camshaft is enclosed, and directly attached thereto is the water circulating pump, on the end of the spindle of which is carried the commutator. The connection between the pump and the commutator spindle and the camshaft proper is made by means of a positive jaw coupling. The governor is mounted on the forward end of the crankshaft, and is of the usual centrifugal ball type, engaging in collar with a sliding sleeve. The governor has a fork connected to the throttle valve in the carburetter by suitable connections.



One of the earliest complete Standard cars. Larger wheels and an improved body are now used.

Carburettor and Regulating Mechanism.

The action of the carburettor and combined throttle is shown in fig. 2. The petrol enters at A into the float chamber B in the usual manner, and passes thence to the nipple C, communication with which

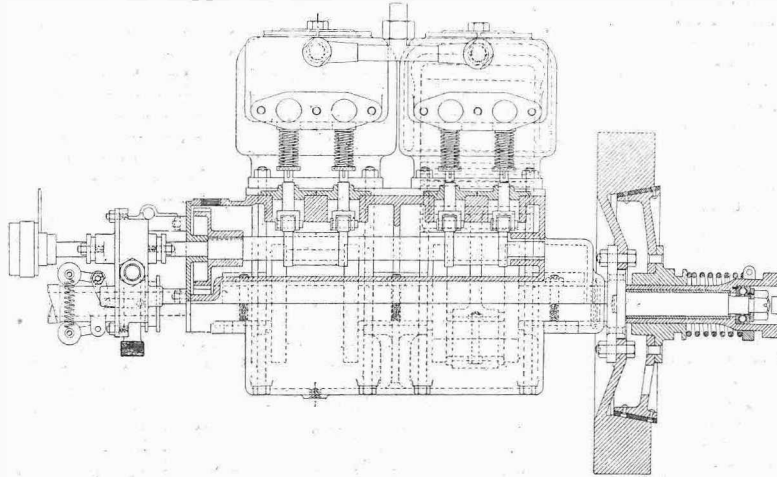


Fig. 1.—Side elevation of the Standard two-cylinder engine.

is effected along the port D, past a belt mouthed cone through the body E, and through the valves F and G, which can be rotated by the levers H and I respectively. The gas passes through slots in the two valves G and H, and is carried by passages along to the inlet valves. The whole casting is bolted up quite close to the cylinders, by means of four bolts. The valve F acts not only as a throttle but also as an air regulator. The governor sleeve lever is attached to H, and when the governor opens, the slot J in valve G is moved over by the slot K in valve F. The result is that, although there is a movement on the valve F from the governor, no difference is made in the orifice in the valve G until the edge of the slot K comes over to the remote edge of the slot J, after which the valve H commences to cut off the supply of gas to the engine, and totally cuts off when the fore edge of slot K comes up to the inner edge of slot J. Before this valve commences to cut off, however, the slot L in valve F begins to move over the slot M in the body of the casting E, with the result that an increased opening for an additional supply of air is given. When the engine is at rest this opening is closed, and it attains its maximum opening when the engine is running at its maximum speed. The shape of this opening, as will be seen, follows a curve which has been carefully gone into, and gives correct mixture at every range of engine speed. To cut out the action of the governor valve G may be operated by the lever I, by means of a hand lever mounted on the steering wheel, and can be so worked as to follow the slot in valve F, and thus not allow the cut off to take place. This hand throttle G can be set so that the engine can be made to cut out at any speed from 250 up to 2,000 revolutions per minute, by a simple movement of a hand lever on the steering wheel. The simplicity of this method of governing can be readily seen, and in practice gives perfect results.

The Two-cylinder Engine.

The two-cylinder engine has precisely similar dimensions to the single cylinder engine, the con-

structional features being two independent single cylinders attached to an enlarged crankcase. The cranks are set at 180 degrees, running in three phosphor bronze bearings, the central one being purposely stiff. Lubrication of the piston is by sight feed lubricators, and that of the connecting rod ends and crankshaft bearings by splash. While on the subject of splash lubricating, it is interesting to note that this may sometimes be carried out to an abnormal extent without any fear of fouling the sparking plug. If this is placed immediately over the inlet valve it is always surrounded by the richest portion of the mixture, while the exhaust gases subject it to a slight scouring action, which contributes to its cleanly qualities. There is a circulating pump of the rotary gear type, delivering water to the bottom of the cylinders, the water circulating completely round the cylinders and valve chambers, and passing thence to the top of the honeycomb radiator, behind which is placed an open fan, belt-driven, which creates an abnormally strong draught, thus ensuring efficient cooling.

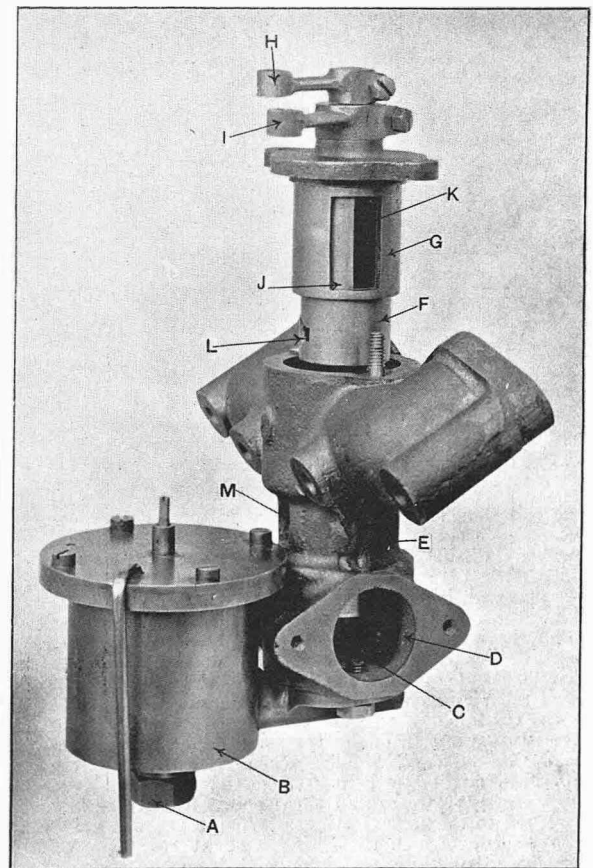


Fig. 2.—The Standard carburettor and governor.

- | | |
|--|------------------------|
| A, petrol intake | G, hand throttle valve |
| B, float feed chamber | H, lever operating F |
| C, spraying nipple | I, lever operating G |
| D, air intake | J, slot in G |
| E, carburettor and governor body | K, slot in F |
| F, governor throttle valve and air regulator | L, air regulating slot |
| | M, extra air inlet |

(To be continued.)

THE DUST PROBLEM. The Discussion.

(Concluded from page 701.)

Some Experiments.

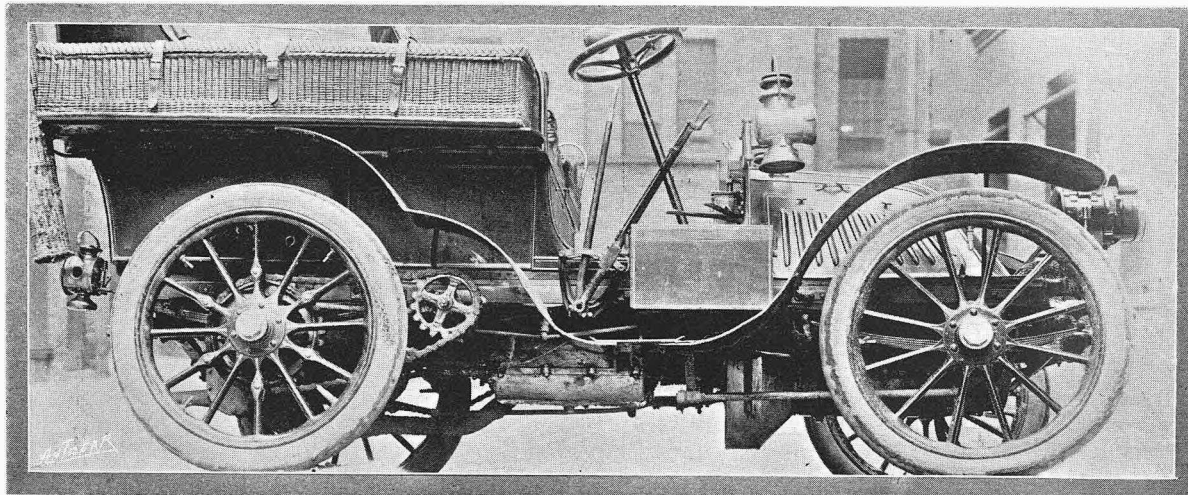
Mr. Brown said he was of opinion that dust was first raised by the wheels. The dust rose at the rear of the wheels, and the dust feather came low at first and then rose when the currents of air set up by the car caught and lifted it. He thought that perhaps air was sucked up out of a porous road. In the next trials the softness of the tyres should be taken into account. He agreed with the diagram showing the movement of the rubber of the tyres, but it was due to the wheel movement itself. In order to test the question whether it was the car or wheels which raised dust, he suggested that cars should be run over a track on which were two clear courses for the wheels, with dust between them. By microscopical examination of flour and road dust he had found that road dust showed much more lightness than flour. While he was in favour of continuing such trials as these, he held that the proper solution of the dust problem was to get proper roads.

Mr. T. Clarkson held that in the matter of air currents, one aspect had not been studied so much as it should be. The motion of an air current was very similar to that of any other fluid; it did not move in a straight line, but rolled over, as it were. That was what took place in the case of an air current retarded by the friction of a road surface, and he thought one or two of the photo-

wheels would be cheap to make, and very strong. There would probably not be so much suction as with ordinary wheels.

Mr. E. Shrapnell Smith said there were the questions as to change from compression to tension in the tyres, and the material used for testing the dust-raising capabilities of cars. Colonel Crompton had shown a diagram of a wheel with the tyre coming into a state of compression before reaching the normal point, and then springing into a state of tension. Looking at a wheel drawn circular, one would think the "angle of throw" of the dust should be tangential; but, as had been mentioned, they had to consider a point in the path of the tyre of which the motion was not circular but cycloidal, and therefore the dust, instead of being thrown out backwards, had a tendency to be thrown upwards, thus following the actual path of the point in the tyre. That might account for the tendency of the dust to follow. As to the use of flour in tests, it was not so "lighty" as road dust, and some other material would have to be used in the future. One such material was slaked lime. If properly slaked, it could do no damage, could be easily handled, and would give very striking results.

Mr. Lyons Sampson made a suggestion as to what probably accounted for the difference caused by speed in the dust-raising capabilities of the same cars at different



A half underneath view of the C.G.V. car which was awarded the gold medal in the Automobile Club Trials for absence of dust-raising proclivities

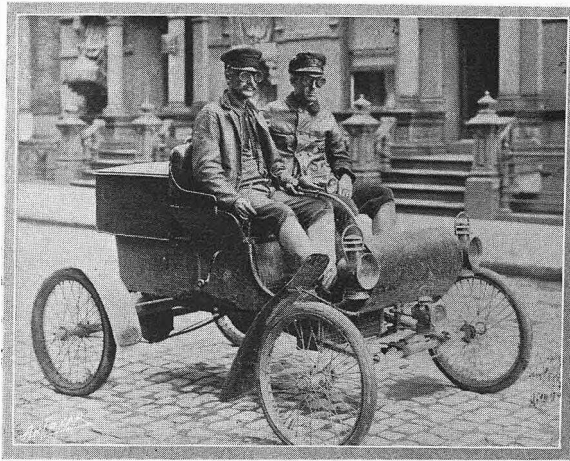
graphs had shown that clearly. That in some degree explained why a car with a number of irregularities on its under body disturbed air more than one with a smooth under surface. With regard to the height to which the dust was raised, if the back of the car was any height the dust still got to the top. Flour might be affected by atmospheric conditions, and in the case of a tyre running on a road, the path of the periphery of the wheel was not circular but cycloidal, and gave a wavelike motion. Some of the air immediately beneath the point of contact with the road might also be compressed in addition to the actual compression of the tyre, and might form a sort of explosive mixture, which, when released from the compression, might also help to raise the dust.

Mr. Mervyn O'Gorman said three points had struck him with regard to the investigations. When a car was going over a road in which there was a slight roughness an important action arose which depended on the springs. That action would be very different on a country road from what it was on the track. He might point out that the back wheels skidded more in the case of low cars, owing to the deficiencies of the springs. In the matter of wheels, he might draw attention to a form of disc wheel, which had been invented with a view to preventing dust on railways. It had parallel disc sides instead of spokes, and, it was claimed, would not raise so much dust. The

speeds. When a car was driven at higher speeds there was greater slip in the pneumatic tyres. It began at about twenty miles an hour, and at twenty-five miles would be much greater than at the lower speed. That would cause the dust to be thrown back much further at the higher speed. With bicycles there was eighteen per cent. difference in slip between driving at sixteen and six miles an hour.

The use of disc wheels.

The Hon. John Scott Montagu said he wondered if any had noticed how the dust wall or feather behind the wheel was divided into three furrows—a central line with two little walls on each side of it. There was a good deal in the theory of the spokes coming down towards the road, and that on their going up they helped to raise the dust. As to disc wheels, he was inclined to think that they would become very popular, and would decrease dust. He agreed as to a smooth underbody in cars; but there was another point—that was the exhausts, discharging directly downwards, which had a very bad effect. The exhaust that discharged straight out behind was the type to encourage. He thought that where there were houses something should be done to the roads to make them dustless, and he might mention it as a curious point that over-watering in the long run was productive of more dust than no watering



THE TOURING OLDSMOBILE. The trusty Oldsmobile and its two adventurous navigators who recently crossed the American continent from San Francisco to New York.

at all. He thought, too, that a form of wing which he had seen in France was very good. The mudguard was very narrow, and of curved form, fitting over the tyre and coming close to the ground. Little dust was raised, and the arrangement seemed to concentrate the air and keep the dust down.

Mr. F. R. S. Bircham thought that a big cloud of dust behind a car gave an impression of greater speed than was actually the case. With regard to the effect of the wheels and the body, he could give them an example. A few days ago he had tried a small petrol car on a railway. It had rained the previous day, and there were quantities of wet leaves between the rails, and he was surprised to find that at twenty-five miles the car, which was almost like a box on wheels, made a great deal of disturbance amongst the leaves. There was, of course, no effect from the wheels, which were on the rails and almost boxed in, while the body was some 7in. or so above the sleepers.

Exhaust discharge.

Mr. Cozens-Hardy said there was just one point with regard to an exhaust impinging on the ground which he thought Mr. Crawley had not noticed. Some seven cars on the other side of the track from where Mr. Crawley was had shown bad effects from downward discharging exhausts. He also suggested tests uphill, on a very severe gradient, as that would give them double the power, double the slip, and approach more nearly ordinary working conditions than tests on the track.

The Chairman, in moving a vote of thanks to Colonel Crompton and Mr. Crawley for their excellent paper, which had been prepared at very short notice, said the work done at the Crystal Palace was of very great value as a commencement of the study of this question of the dust nuisance. The way in which the evidence had been collated was highly creditable, and every inch of ground seemed to have been traversed. He was of opinion, however, that the question of the direction of discharge of the exhaust had a much greater bearing than the lecturers seemed to think, and Mr. Cozens-Hardy's experiences at the other side of the track seemed to bear that out. Experiment should be made with a chassis with bodies of different shapes and heights upon it. These tests had been only a commencement, and they could not build much upon them as yet, and a great deal of time and money and effort would have to be devoted to their continuance in future.

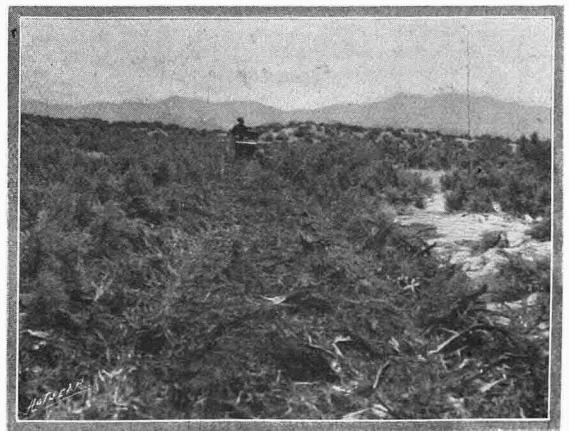
Mr. R. J. Mecredy seconded the vote of thanks to Colonel Crompton and Mr. Crawley for their paper. He had been watching roads treated with Westrumite for the Gordon-Bennett race, and had been surprised to find that, though the Westrumite was put down at the beginning of July, its effects were still quite apparent at the end of September, the treated roads being smooth in wet weather and dustless in dry.

Colonel Crompton, in reply, said he was afraid that the lecture might not have conveyed the very strong impression the trials had produced upon them, and he would like to

repeat what he had already said, that they had been convinced that the ideas which previously obtained with regard to the effects of wheels and tyres in raising dust were erroneous, whereas the chief factor in dust raising was that the atmospheric currents set up took the dust, which was only disturbed to a very moderate height by the wheels, and raised and threw it about in all directions. The thing to do then was to minimise and reduce the air currents.

As to the flattening and compression of the tyre, he thought that the diagram shown expressed very clearly the flipping action of the tyre in driving out an almost straight and almost horizontal stream of dust behind the wheel. Pneumatic tyres slipped largely. Indeed, if they put a speed indicator on the driving wheels, and another on the front wheels, they would find that the difference was sometimes as much as twenty per cent.; they might call that slip if they liked, but it was really part of that seven miles difference which he had shown was due to the stretch of the rubber, and was not really slipping at all. The waves shown in the photographs might be due to roughness of tyres, but he thought they were caused by air currents in a regular way. Mr. O'Gorman made a very good point, viz., that a car running over a rough road did set up a rhythmic, bumping, jumping motion, due to the springs, which increased the raising of dust. He might say that they had tried dust, but that it did not give as good results on the Crystal Palace track as mill sweepings. The dust did not go up in cycloids; they could see that it was shot away from the wheels in a regular steady stream at a small angle with the road. The closely-fitting mudguards would, he thought, be found more effective than the fashionable flare guards, which were wholly bad from a dust-raising point of view. He didn't think much was to be hoped from disc wheels. He hoped the club would allow them to carry out experiments on one chassis fitted with many forms of bodies, wings, mudguards, and several styles and shapes of tyres. One road material which raised less dust than others was whinstone, which didn't produce more than one-tenth the dust of ordinary road stone.

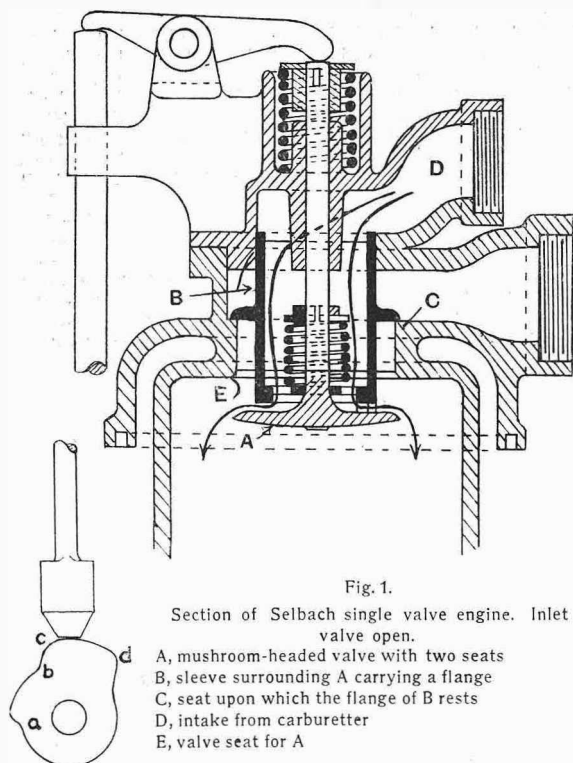
Mr. Crawley said one of the best points about the use of the flour was that it sank quickly, and that there was no swirl from it, and consequently it allowed them to see much more than ordinary dust. With regard to road wheels, he thought they had made it quite plain that if there were no air currents to disturb it the dust would go down. At high speeds a greater cloud was thrown up. One thing he could not too strongly emphasise was that wheels had nothing to do with the cloud dust raised. They should leave the dust alone, as if they stirred it up at all it was very bad. A smooth under surface to the car was very good, but they should also see to it that they had all the lines straight, and the air openings the same. Mr. Bircham had pointed out how cars could be further improved by attaching a cloth underneath in such a way as to get a slope up to the back; that was always worth trying where a car was dusty. So far they had not good results, but he thought next time they would adopt the expedient of simply running a trial car over the dust patch periodically, and so getting a standard throughout the day.



THE TOURING OLDSMOBILE. A specimen of prairie track encountered between San Francisco and New York.

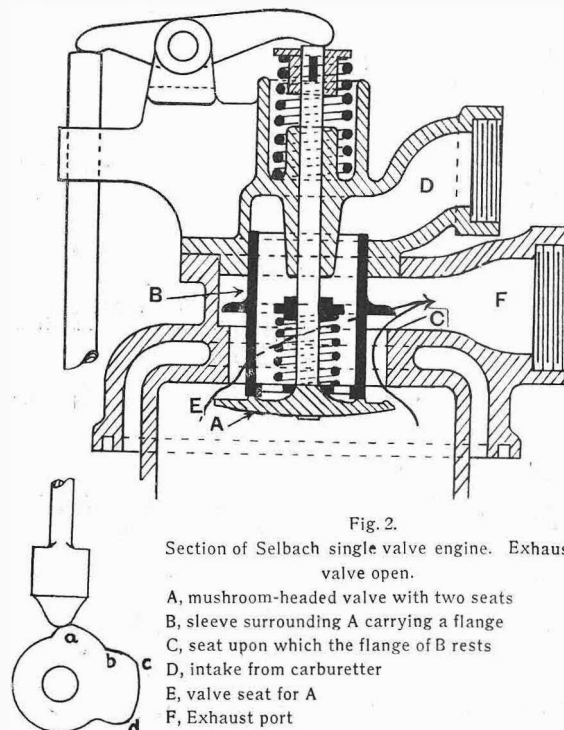
A SINGLE VALVE ENGINE.

A new engine which contains a very interesting feature is being introduced by Mr. Oscar C. Selbach, of 66 and 66a, Great Russell Street, Bloomsbury, W.C., the well-known agent for the Regal and other cars. The sectional illustrations given herewith depict the valve motion, which is the principal feature of interest in the engine. A single mechanically-operated valve A serves the purpose both of inlet and of exhaust valve, in conjunction with the sliding sleeve B. This valve, it will be seen, is placed in the head of the combustion chamber, and the form of the cam which operates it is seen in both illustrations. On referring to fig. 1, it will be seen that the valve A is being depressed to the extent given by the lift of the cam from the points *c* to *d*. This depresses the valve A to a considerable extent, and enables the sleeve B to become seated, as shown by C. The gaseous mixture is drawn in at D, and passes through the sleeve B, and through the orifice between the flat seat of the valve A and the edge of the sleeve B, as shown by the indicating arrows. Now, directly the cam has revolved so as to drop the valve plunger on to the concentric portion of the cam, the valve closes to its seat E, lifting upward with it the sleeve B, so that a perfectly gas-tight chamber is maintained during the time of compression and explosion. After these two operations are completed, the exhaust comes next in its turn, and in order to see what happens on the exhaust we must turn to fig. 2. Reference to this will show that the valve A has been forced from the seat E only to about



half the extent shown in fig. 1, so that the sleeve B remains seated on the flat face of the valve, while the exhaust gases are permitted to depart through

the exhaust port F, as shown by the direction arrows. Directly the exhaust stroke is complete, the valve cam by this time has travelled to the point *b*, and is further depressed by the travel from *b* to *d*, when the sleeve B drops on to its seat, and the



inlet valve then becomes open. By this construction, it will be seen that two mechanically-operated valves are obtained in conjunction with the use of one cam, plunger, and one mushroom valve. The extra valve seat necessary cannot be objected to on any grounds. With regard to the remainder of the engine, the cylinder and head are cast in one, and surrounded by an aluminium water jacket. The cylinder is machined both inside and outside, so that uniform thickness is obtained throughout. Large flywheels are employed, which help to overcome the loss of power on the compression stroke and to maintain that perfect balance which is so essential in the efficient working of an internal combustion engine. It is interesting to note that in this engine the crankshaft bearings are of soft steel.

This engine is but the forerunner of several new features which Mr. Selbach will shortly be placing before motorists. Prominent among these may be mentioned a type of motor with one, two, or four cylinders, to be used both in voiturettes and in large cars.

Mr. Thos. Parker, jun., M.I.M.E., A.M.I.E.E., of 115, Colmore Row, Birmingham, has been appointed Midland agent for the Oldsmobile and De Dietrich cars, also the Lancashire Steam Motor Waggon Co. Mr. Parker is an expert in motor matters, and makes a speciality of giving advice on mechanical and electrical matters by post.

EXPERIENCES AND INCIDENTS ON THE ROAD.

On Thursday evening, December 3rd, the Hon. C. S. Rolls stepped into the gap left by the unavoidable absence of Mons. Forestier, and caused the very few members present in the club on the above date to pass a very pleasant evening in listening to his (Mr. Rolls's) recital of the various amusing adventures upon the road since he first took up automobilism. He began with his

Experiences in France

in 1895, and told how he subsequently brought to England a 3½ h.p. Peugeot car—then considered a very powerful and almost dangerous machine. It was a rather top-heavy vehicle carried on three springs, and it swayed terribly when running down-hill. The engine was a V type Daimler by Panhard and Levasseur set in the rear of the car. Upon attempting to drive the car out of Victoria Station he was stopped for not having a man in front carrying a red flag. The chief constables of Herts. and Cambs. arranged in some way that their officers should have business elsewhere when Mr. Rolls appeared on his strange beast. So he started on his first journey from London to Cambridge, driving by night only and running as far as Potter's Bar at

Four Miles per Hour,

preceded by a red lantern. A lift was given to a policeman, who showed some curiosity, and suggested as soon as he was seated that they might go for all they were worth, for there was not anyone on that beat now for another mile and a half. So they let her go, and were very pleased to do so. After Potter's Bar the car went badly. There were many stops for water, which was difficult to obtain, and sometimes only by invading people's gardens and wells. The car was so noisy that it woke up all the villagers, who appeared scared at their windows. With no radiators and pump not working above a certain temperature, the only means of discovering a stoppage was by sticking the hand under a pipe in a box behind, and as this was generally boiling hot, the passenger became weary, and said yes mechanically after a time. Cambridge was ultimately reached after eleven and three-quarter hours running—average speed of five miles per hour. The driver and his passengers frequently fell asleep on the way, so tired were they. Mr. Rolls read an interesting and amusing extract from a local journal describing how many good folk of Royston waited nearly the whole of one moonlight night to see the horseless carriage pass through. The curious hung about on the Heath until morning, and then gave it up as a bad job. The car ultimately passed through Royston at 9 a.m. But the perseverance and patience of the Royston folk show how keenly interested in the novel motor car were people in those days. Mr. Rolls quoted from other accounts of other of his early trips, one writer beginning, "A motor car with a couple of occupants passed," etc. The journalist seemed surprised that the car should have had occupants. But in those days, said the lecturer, one's

Passage through the Country

was notified in all the papers, and if you stopped in a town or village for spirit or water a huge crowd surrounded your vehicle. Out in the country, on the other hand, every other man you met scuttled up a tree or a telegraph pole, every woman gathered her skirts about her and few demented across the fields, every horse jumped about the road, and every butcher's cart left unattended by the side of the road with the tailboard down bolted, scattering its contents about the road.

Late returns to college through breakdowns were put right by giving numerous venerable dons rides, but these frequently, arrayed in cap and gown, had often to assist in pushing the car home.

The First Smash

was in 1896, and occurred before the famous London to Brighton run organised by Mr. Lawson. The right front axle broke going down hill at Hatfield, the car turned turtle with an awful crash which he could still hear. Nobody was hurt, luckily. They had already been ten hours doing forty miles. At Christmas, 1896, Mr. Rolls made a run from London to his home in Monmouthshire, lasting three days. Cirencester was reached after many

difficulties and breakdowns, and the unknown and unsuspected descent of Birdlip Hill essayed with very poor brakes. The brakes very soon fired, the car got away, swayed all over the road while descending this dangerous hill at a dizzy speed, and after a whirl downhill, which seemed to last for miles and hours, they landed scared but safe at the bottom with ruined brakes but whole skins. It was during this trip that Rolls was

Run over by his own Car.

The car was standing in a hotel yard with the engine running, and the clutch pedal having stuck, Mr. Rolls, who was standing in front of the car, bent over to release it, the first speed being still on. Result—Car moved ahead, irresistibly pushed its owner down, and ran over him, leaving him on the ground to all appearances dead. People who did not know his friends or where he lived were in a terrible state of mind, particularly as the car was moving solemnly off down the hotel yard and they did not know how to stop it. But Rolls came to life again in time to jump up, rush after the car, and stop it just as it had nervously butted a dogcart. Then the next day the engine seized up in a lonely part of Gloucestershire (night again), the lamps would not keep alight in the gale, all the matches were soaked, so all the work had to be done in the dark. That night was spent

On the Road

in the greatest discomfort, bitter cold, and sleet. However, Monmouth was reached at 3 a.m. on Christmas Day, in which town folks had been waiting to see them pass for two days and two nights. Mr. Rolls said he had experienced many runs of a similar character—in fact, you expected such things in those days whenever a run was attempted. In those days everything went wrong except the tyres, which were solid, and even these gave trouble at times. Water was required nearly every ten miles or so, and it was sometimes difficult to get. Loose nuts were a great worry, for with no split pins, anyone following a car along the road in those days with a basket could retrieve a varied assortment of nuts and bolts, chains and lubricators, bits of the engine, belts, etc. Tube ignition, too, was then fraught with woe. Burners were frightfully troublesome.

The Three-wheeled Bollee

was more or less of a terror in this respect. For a start at 10 a.m. you got up at six to light your burners. After some time you discovered you had turned on the wrong tap, when you turned on another, went to light up, and—you lit up! The burner made a noise like a Channel steamer, then you turned the engine for two and a half hours, with the ultimate result of a backfire. If it did start you were so surprised that you let go the handle, which flew off and hit you. The engine grunted like a pig; you expected a lively time and got it. The cylinder was oval, the breach was generally red hot, but you got lots of fun out of an old Bollee, even when running down a greasy hill when the back wheel came round and said "Howdy." Mr. Rolls's first run on a Bollee was from Coventry to Cambridge, a most interesting trip which ended in a cart. In 1898 he became possessed of his

First Panhard,

the first fitted with wheel steering, and had many adventures on this and another 8 h.p. Panhard car, the most eventful being a run in France with Mr. Mayhew, Mr. Russell, and Mr. Hutchinson, the latter writing a graphic description of the run, which ran through three numbers of *The Autocar*. The journey was made in the middle of winter, with incomplete equipment of tools and parts. They took the best part of three days to cover the route from Paris to Havre. First day numerous water joints went from no cause whatever, but they reached Rouen that night. The next morning disclosed a huge rent in an outer cover, but this was repaired, and they resumed their journey in a heavy snowstorm. They had more troubles, and lost their way after dark. The light of the lamps on the flying snow made it difficult to drive. Then a tyre went down, and they stopped at Bolbec to repair. At 8.30 they were twenty-five miles from Havre, and they took all night getting there, for later the car slowed, gave a fearful skid, and stopped. Cause—one of the macintoshes

had got mixed up with the chain. Later a hiss from the engine—ignition tube loose. Later again, the car slowed up and stopped, and the top of the engine was found to be a glowing red. Cold and the faulty circulation had caused the water to freeze up solid; result, engine seizure. Pump found to be jammed up with ice. All in the open country at ten o'clock at night, freezing and snowing hard. Ultimately, after two hours' work pushing burning petrol soaked wads of waste under the pump and radiator, it was found that the pipes had frozen up elsewhere. The engine was restarted with a liberal allowance of oil, and the bonnet open, and a town reached by eleven. A friendly engineer in charge of an electric light plant aided them. Hot water was dashed over the pipes only to freeze, and at last a bonfire was lit under the car with live coals. Havre was ultimately reached, but not before one of the brakes had gone wrong. Another series of

Extraordinary Breakdowns

occurred between Southampton and London. Mr. Rolls then gave some very amusing and interesting accounts of incidents which had occurred to him in motor races. In the Bordeaux-Biarritz race he had been reduced to controlling his governor with wire and a broomstick, and had bagged on the road five chickens, a goose, two dogs, and a sucking pig. His worst racing experience, however, was in the Paris-Berlin race, when a sparking plug went wrong, and Mr. Claud Crompton had crawled on to the bonnet and replaced it *en marche*, complaining bitterly all the time of receiving 700 shocks a minute. At Cologne they found they had broken the bracket of the water tank, and had shed one end of the latter, but after four hours, had patched up with canvas and grease held in place by a stick. The Mors mechanics at Cologne had said that no repair could be effected. Water was required at each control, and when entering one Mr. Rolls yelled, *Wasser, wasser, wasser!* at the top of his voice, which usually resulted in a waiter bringing him a wine glass full to drink. However, they ultimately reached Berlin, classified eighteenth out of 130, but they slept for three days on end afterwards. He could tell them many other incidents, but he would conclude with a categorical list of what he remembered having happened on different runs.

A Catalogue of Events.

On one occasion he made a fresh cylinder head joint on the road five times in twenty miles on a big Mors. He

had burnt his boiler out three times on a steam car, and once had to push it three miles in dress clothes. Once he thought he was taking a short cut along a wretched country lane in the dark, and was stopped a few feet short of a quarry, on a motor tricycle. He was once stuck in a deep flood with Mr. M. Maybaw, the water coming up to the floorboard, and he had to hail a punt. That was the only time he ever had to resort to a horse. He once had to be practically dug out of a bog. He was once stuck with his burner out for want of a match for over two hours. The longest distance he had had to walk for petrol was in France—nine miles. He once lost all his water, and had to fill up entirely by thawing handfuls of snow into a funnel. He had twice taken a *caniveau* at full speed through not seeing it in time. In each case the axle was badly bent, and in one case, when he hit one of these at the bottom of a long hill, his friend, Mr. Sennett (who was a somewhat heavy passenger) was thrown high up into the air, and came down with such a bump that he went clean through the seatboard on to the tools below. He twice had had a wheel come off through a broken axle. He had, of course, had several broken springs and other minor parts, but once he had the steering column break off at the bottom. It luckily happened when going slowly in a street, and he managed to steer by pressing the column firmly down inside the socket. He was going slowly along like this, when he picked up a friend for a lift, and he should never forget his face when he spoke about the latest detachable steering, and pulled the thing out to show him for a few seconds; he nearly fell off his seat. He had had a broken connecting rod in the Circuit du Nord race. He once had a broken piston. He once had a horse and cart on top of him. In the Paris-Vienna race he ran into a tree at seventy miles an hour. He had twice overturned. He once had his head bashed in by a starting handle. He was once mistaken for dead—when lying under the car admiring the clutch, and an old lady suddenly caught sight of him and shouted, "Oh, there's a man been run over and killed by a motor car!" He had twice run away completely down hill forwards, and two or three times backwards. He had upset an apple cart in the Strand, and he had twice had his car burnt up.

An interesting discussion followed, in which Messrs. Lyons Sampson, Crawley, Harry J. Swindley, Worby Beaumont, and E. W. Peall took part, many further amusing incidents of early days' experiences being detailed.

POLICE TRAPS.

The Potency of the Motor Union.

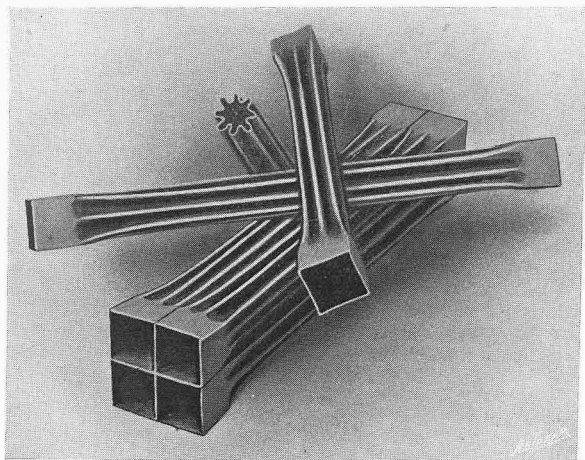
A police trap is reported at Hanwell, on the London to Oxford road, in the Brentford police district. Mr. F. Guy Lewin, who was recently stopped here and brought before the Brentford magistrates on a charge of alleged furious driving, succeeded, with the aid of the Motor Union and Mr. Staplee Firth, in getting the case dismissed. "This," says Mr. Lewin, "was very gratifying, especially as we were told when we entered the court that it did not very much matter what defence we had, the result would be '£10 and costs.' I think too many motorists to get out of the trouble plead guilty, especially where the court, as in my case, has a record of fining one, guilty or not. In my case I had the assistance of a powerful body, and, therefore, apart from the inconvenience and expense of my going down, I was not out of pocket. When I was stopped, I took the trouble to get down and Mr. Dickson (my friend) with me, and I interrogated the police officers, so that at the Court we had a good many facts to put before the Bench. One of them was that a motor bicycle was being pushed by two men and being pedalled by another, and that this bicycle was with us for one hundred

and fifty out of the two hundred and twenty yards. Of course, it is obvious to anyone that a bicycle could not travel at the alleged speed that I was going, viz., twenty-one miles an hour. This incident, although small at the time, proved to be of very material importance. I should advise motorists not only to stop and take a little time in collecting evidence, but to go to the court and fight the cases, always provided they can afford it, or, like myself, have the assistance of the Motor Union. This is the first time I have ever been summoned for furious driving, and I do not think I fully appreciated the fact that I had someone at my back until now."

A police trap was revealed in a case heard at the Yeovil County Petty Sessions the other day, in which Mr. Henry Boden, of The Beeches, Sherborne, Dorset, was fined £2 and costs for furiously driving a motor bicycle at Preston Plucknett. The trap consists of a half mile on the Preston road. Although the motor cyclist pulled up within fifteen paces, the magistrates believed the police evidence that he was travelling at twenty-five miles an hour, and fined him as above stated.

A THERMO-SYPHON HONEYCOMB RADIATOR.

We think we are right in the statement that in the case of the 18 h.p. Chenard and Walcker a honeycomb form of radiator is employed for the first time in a thermo-syphon circulation system.



The Chenard & Walcker honeycomb radiator tubes

The feature of this new radiator, which has made natural circulation possible in respect of an engine of such power as that stated, is undoubtedly the special section of the radiating tubes of which the

radiator is formed. The accompanying illustration will serve to show our readers the exact form of the section taken by these tubes, and nothing more is required to convince those who have any conception of the radiating surface offered by the form of such tubes how natural circulation is rendered possible. In connection with this device it will be interesting to give a few figures concerning the radiator doing duty on the 18 h.p. Chenard and Walcker chassis. There are no fewer than 2,025 of these tubes built into the radiator, and these afford no less than ninety square feet or ten square yards of cooling surface. A careful experiment in the amount of water flowing per minute through the tubes connecting the water jackets to the radiator has proved that no less than two and a half gallons passed in the time stated. The fluid movement, unless proved by experiment, would hardly be expected to result from convection.

The illustration shows that ample provision has been taken in the formation of the tubes to prevent the possibility of leakage, and we are informed that after the tube has been drawn through a special shaping machine it is subject to a pressure of 12 lbs. to the square inch before it is built into the radiator, and when the latter is complete that also is subject for two whole days to a similar test. So assured are the makers of the staunchness of this radiator that they guarantee it against leakage.

THE SIDE-SLIP TRIALS.

Below are the regulations which have been framed by the Side-slip Committee of the Automobile Club for the competitive trial of devices to prevent side-slip, which will take place under club auspices in the spring:

1. Full particulars of any device to be submitted for the competition, with drawings (but no models), must be sent in by February 29th, which is to be the last day of entry.

2. Drawings must be accompanied by an entrance fee of five guineas.

3. The Side-slip Committee shall examine the drawings sent in and eliminate those which in their opinion are unworthy of being put to a practical test. In the event of a device being ruled out by the committee, four guineas of the entrance fee shall be returned to the entrant, and no reason need be given for such elimination. Competitors may submit their devices to local clubs affiliated with the A.C.G.B. and I., and the report of those clubs will be carefully considered by the Side-slip Committee.

4. Every competitor whose device is approved for the preliminary trial must pay a further five guineas entrance fee. Such devices must be submitted to the committee, fitted complete on a car, at a date and place to be hereafter named, such date to be in March or April. If the construction of the device is not obvious on inspection without getting under the car, a drawing or model must be provided at the time of the preliminary test.

5. In interpreting the results of tests, the design of car on which the device is tested as affecting side-slip will be considered. Consideration will also be given to the effect of the device upon the speed or resiliency of the tyres, or power needed to drive it; to the effect upon the road; to the effect upon the life of the tyre; to the liability to dangerous derangement or fracture; and to the price.

6. A device which from its nature is always available, other things being equal, shall be considered the better.

7. The device must be fitted by the competitor at his own expense to a car, which must also be provided by him, and the cars shall be submitted to a preliminary test, which will consist of a run on a greasy surface, made up of a twisting course, to be covered within a certain time. All cars entering for this trial must weigh at least fifteen hundredweight without passengers. The preliminary side-slip trial will take place on a private road or track consisting of concrete, cement, wood, or some similar surface, covered with some slippery clayey material.

8. Any competitor whose device shall be considered unworthy of an endurance test shall have five guineas of his entrance fee returned to him. Competitors whose devices may be considered worthy of the endurance test must defray all the expenses of providing and running a car fitted with the device, and such endurance test will consist of a run of not less than five hundred miles.

9. If necessary, a further trial will be held, when the various devices will be fitted to a car supplied by the club, but the devices must be fitted at the expense of the competitors.

10. All devices submitted must comply with the regulations of the Local Government Board as to width of tyres, damage to roads, etc., and all competitors take part in the trials at their own risk.

11. The committee recommend that the right shall be reserved to the judges to vary, amend, or add to any technical condition in any way they may think fit.

12. The judges shall be appointed by the Executive Committee of the Automobile Club, and their decision shall be final.

BASIL H. JOY, technical secretary.

Automobile Club, 119, Piccadilly, London.

MOTOR VOLUNTEER CORPS.

Annual Dinner.

On Tuesday evening last between 200 and 300 members and guests of this newly formed corps held their annual dinner, under the presidency of the commanding officer, Lieut.-Colonel Mark Mayhew, in the Balmoral Room of the Trocadero Restaurant. The chairman was supported by Major-General Sir H. Hilyard, K.C.B., Major-General L. J. Oliphant, C.V.O., C.B., Colonel J. R. P. Gordon, C.B., Lieut.-Colonel H. H. Wilson, D.S.O., Major Stonham, Mr. R. Stillwell, Colonel J. Dimfee, Mr. R. Wallace, K.C., Colonel F. Johnson, C.B., Major Lindsay Lloyd, Colonel Rawson, Colonel Holsley, Major Gaskell, the Hon. M. B. Parker, A.D.C., Earl Russell, Claud Johnson, and others.

A Major-General's Tribute to the Autocar.

After "The King," the toast of "The Motor Volunteers" was given by Major-General Sir H. Hilyard, K.C.B., who expressed his gratitude at the privilege accorded him in being asked to propose such a toast for the first time. The pleasure would have been that of the Commander-in-Chief, Field Marshal Lord Roberts, who but for the condition of his health would have been very glad to have been with them that night. He thought he was right in saying that the M.V.C. was the first body of motor soldiers in Europe, and they could claim credit for being the first military force to put the use of the autocar to a practical test under conditions which might obtain in a state of war. In that test he might say they had been very largely successful. His connection with the corps during the manoeuvres had been a very pleasant one. The gallant General then went on to draw a picture of the manoeuvres of 1898, when the commander and directing staff had only their horses to carry them from the central headquarters at Marlborough, fifteen miles out and home, to the scene of operations. This year they had the motors of the corps, and got upon the scene of operations fitter as to themselves to find their horses there also fit and fresh. Quoting from a German work, the General showed to what stress staff officers were put in the Franco-German war for means to transport themselves long distances. He was convinced that military motors had a great future in England particularly. It was claimed by some that motors and motor cycles could be used for reconnaissance and for supporting special points, but upon that he was not quite

certain, and should prefer to regard them as means of conveyance for the commander and his staff. The different armies of Europe had greatly appreciated their work, and were beginning to ask about them. It was a great credit to them that they should be first in the field. He had been greatly struck by the way the motors were worked, regardless of their tyres, and when necessity demanded it, driven over bad and flinty ground. He was more than pleased to say that in response to Lord Roberts's urgent representations, it had been arranged that compensation should be afforded the members of the corps for the tyre damages they had sustained in their earnest work during the manoeuvres.

The Aspirations of the Motor Volunteer.

The toast was coupled with the name of Lieut.-Colonel Mark Mayhew, who on rising to respond was greeted with prolonged applause. Lieut.-Colonel Mayhew acknowledged General Hilyard's compliments, and remarked that the corps was only too delighted to be of value. They did not think they were perfection, and knew they had as yet only shown a tithe of what could be done by motors in warfare. They hoped to show that cars were useful for other military matters. By the step she had taken in adopting the use of motors, England had led the way towards an important step in military history. In regard to the further use of motors, this year they had been non-combatants, but they hoped in future to take their places in the combatant ranks. He was pleased to learn that the loss through the excessive wear and tear on tyres had been noted. At Marlborough and elsewhere they had been put up in hotels. Next year they hoped to have their own camp equipment, to go out as soldiers and to look after themselves. In order to keep so scattered a corps as theirs in touch, they were about to establish a Motor Volunteer Corps Gazette for circulation amongst their members, and which it was hoped would keep up the interest in the corps. He thought all automobilists who owned good vehicles and could spare ten days out of the year to afford to the service of their country should consider the membership of the M.V.C. (Applause.) The remainder of the toast list included "The Automobile Club of Great Britain and Ireland," proposed by Captain Skiffington-Smythe, responded to by Mr. Roger Wallace, K.C., and "Our Guests." The toasts were punctuated by an interesting vocal and instrumental programme.



A flash-light photograph of the gathering at the dinner of the Motor Volunteer Corps.

SOME QUERIES AND REPLIES.

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

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

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

CHARGING FROM A TRANSFORMER.

My house is supplied with an alternating 210 volt current. I have a transformer which reduces it to anything up to 10 volts. Is the reduced current still an alternating one, and therefore useless for charging accumulators, or is it transformed to a continuous current, and, if that be the case, could I connect up to my accumulators? If this is so, how can I find the positive and negative poles?—H. B.

A transformer converts an alternating current into a continuous one suitable for recharging accumulators. The average charging rate is $2\frac{1}{2}$ amperes, and 6 to 8 volts. It will be necessary to ascertain, by means of a voltmeter and amperemeter, the actual output of the transformer before coupling up the accumulator. The best method of finding the positive and negative poles is by means of a pole-finding instrument, which immediately indicates without a shadow of doubt the direction of the flow of the current. These instruments can be obtained from any dealers in motor sundries and accessories. Another method is by the use of litmus paper. This is damped, and the wires are applied separately. The negative wire will turn the blue paper red, while the positive will have no effect upon it.

LEAKAGE FROM THE COIL.

I shall be glad if you can give me some information re my commutator. I am driving a $9\frac{1}{2}$ h.p. Clément. I find that the brass where rollers make contact wears very quickly. About every hundred miles the brass requires re-turning. Recently I have been using steel instead of brass; this, too, wears quickly. I get bad firing and, consequently, loss of power. Is there any other system more durable than the roller contact breaker? If so, what? I also find my induction coil sparks at the terminals on to the frame woodwork of car. Will you kindly say if this is any fault of the coil? I might say that when coil is lifted a considerable distance away from woodwork of car it does not spark at terminals.—GLOUCESTER.

It is evident that the tension upon the spring of the contact maker of the commutator is too strong, thus wearing away the metal segment in the commutator too rapidly. The contact of the commutator should be on hard gunmetal, and the tension of the roller arm should be adjusted so that it ensures the roller being kept in contact with the commutator, but not bearing heavily upon it. There are, of course, many other types of commutator, but none of these can be said to be actually better than the one you have fitted. Sparking at the terminals of the induction coil denotes short circuiting, and this will naturally contribute to weak firing; if not to misfiring entirely. The coil should be placed in such a position that the terminals do not come sufficiently close to any part of the frame to enable the current to leak by jumping the gap in the form of a spark. If it is necessary to keep the coil in the present position, indiarubber insulation should be put opposite to the terminals, or a piece of vulcanised fibre may be used for the purpose of insulation.

HIRERS AND LICENSES.

Re the Motor Car Act, a question has occurred to me that I have not seen asked or directly referred to in any correspondence, viz., the position of the agent or the manufacturer in hiring a car or cycle. Can it be done? I, as agent, take out licenses for cycles, trailers, and cars for hire, and have done a fair trade during 1903, but if it is necessary for everyone to have a license, I presume we shall not be able to let one out on hire

or even take a person out to try a cycle unless he has first paid for his license to drive, and if he has a license to drive will the number as given to a trader be allowed to pass as legal for the person hiring a car, he not being in the employ of the owner? The above leads to many other thoughts in the same connection, but an answer to the above through your valuable paper will perhaps lead someone to tell us where we shall be in connection with the hiring business before we take out licenses for other than private purposes on Jan. 1st.—W. A. S.

The driver is the only one responsible under the Act except that a master is responsible for the license of his servant. If, therefore, a motor car or motor cycle is hired by anyone without a driver, or is driven by the hirer himself, or a person employed by the hirer, then the owner of the car or cycle is in no way liable for the omission of the hirer to take out a driver's license. It would, however, be best for agents to show that they have every desire to assist in carrying out the law, and we therefore venture to suggest that agents who let out cars or motor cycles on hire should have a notice conspicuously posted up that the hirer is bound to take out a driver's license, and in any instance where an agent knows or suspects that the hirer is not licensed he ought, in his own interests, to refuse to let out a vehicle to him.

MAGNETIC CLUTCH.

Sir,—A query signed F. Watts appeared in your edition of November 28th, in which the question is asked, "Has anybody used a magnetic clutch in the form of a dynamo, the field magnet being fixed to the flywheel and the armature on the gear shaft?"

The answer to this query given in the same issue is not quite correct. Such a clutch has been tried, and I have one in my workshop at the present moment with which I did some interesting experiments. It is essentially a clutch that will slip without wear. The engine, however, always has to rotate faster than the gear shaft, in order to produce the requisite current for transmitting the torque. If N be the velocity of the field, and n that of the gearshaft, the work put into the clutch will be a constant times N . say KN ; the work transmitted to the gearshaft will be Kn ; and the loss in the clutch $K(N - n)$. This last can be made as small as you please by designing the clutch suitably. If the engine develops 10 h.p. at 1,000 revolutions, and one is content to lose 1 h.p. in the clutch, then the gearshaft will revolve at 900 revolutions, and the dynamo must be designed to give 9 h.p. at 100 revolutions. And this is where the objection to the design comes in. Such a dynamo will necessarily be very heavy.

But, nevertheless, it remains a fact that by suitable design the heat loss in the clutch can be reduced to what you please.

Of course the dynamo should be series wound, and a variable resistance, operated by a controller, should be inserted across the brushes, which resistance should be capable of being cut out altogether, thus short circuiting the brushes.

Such an arrangement will give a large torque at starting, because then the relative velocity of the field and armature is greatest. Moreover, the engine can always run at a constant speed, no matter what the speed of the car, which is regulated, of course, by an ordinary electrical controller. Also the full h.p. (less the loss in the clutch) can be transmitted at a somewhat lower speed, depending on the electrical design of the dynamo employed.

The idea, however, is by no means new, although till lately I thought that I was the "true and first inventor." That this is so can be seen from the specification 9,447, of 1898, of Morrison, Chicago. E. RUSSELL CLARKE.

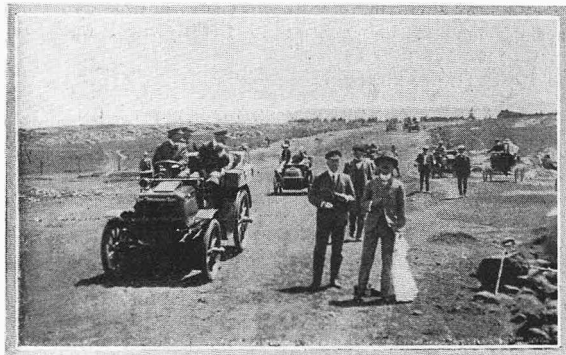
CLUB DOINGS.

The Automobile Club Founders' Dinner.

A very pleasing function took place at the Automobile Club on Wednesday of last week, when the long talked of dinner of the founder members of the Automobile Club of Great Britain and Ireland, and the members of the Club Committee, took place at the Club House. Mr. Roger Wallace, K.C., presided over a good gathering, among those present being Sir John Thornycroft, Mr. F. R. Simms, Dr. Boverton Redwood, General England, Capt. F. E. Dyke Acland, Col. Crompton, Mr. Worby Beaumont, Lieut.-Colonel Holden, J. E. Ochs, H. Sturmey, C. Cordingley, J. H. Knight, E. Shrapnell Smith, Hon. C. S. Rolls, etc. In proposing the toast of the founder members, Sir John Thornycroft coupled with it the names of Mr. F. R. Simms and Dr. Boverton Redwood. He mentioned that the founder members of the club numbered 240, and that the club membership was now just ten times as great. Mr. F. R. Simms, in responding, mentioned how, when the idea struck him to found a club, the prospects of automobilism in this country were as dark as they well could be. He touched very lightly on his own work for the club, but referred most appreciatively to that of Mr. Wallace, while Dr. Boverton Redwood, in his response, paid a well-deserved tribute to the help which Sir David Salomons had rendered to the club, and the great good which had accrued to it from Mr. C. Johnson's organising ability. There was much interesting retrospection in the speeches which followed, but pressure of news compels us to pass over this portion of the programme. We may say, however, that the Hon. C. S. Rolls entered into the spirit of the gathering, and showed some interesting lantern slides, which not only dealt with many historic cars which have played a prominent part in the history of the club, but also went back to earlier times.

The Transvaal A.C.--Hill-climbing Contest at Johannesburg.

The 1st of November was distinctly a red letter day in the annals of the above young and vigorous club. On



At the starting point.

that day was inaugurated a most successful series of motor car and cycle trials. The hon. sec., Mr. H. F. Marriott, at very short notice, arranged all the necessary details, and succeeded in bringing together a representative field of cars and cycles. The entries were not confined to members of the club. The hill chosen lies to the north-west of Johannesburg, between Braamfontein and Parktown. It is some 900 yards long, the rise being townwards, of varying gradient and somewhat circuitous form; portions of the surface were found to be rather loose, making the test still more trying. There being a clear view from top to bottom of the course, the simple expedient of having a large white flag, clearly visible from the top of the hill, to start the cars was adopted. On the fall of this flag the judges located at the top started their watches, and so no timing at the starting line was necessary. The conditions imposed on the cars were, that they should start from rest with the front wheels in a small sluit at the bottom of the hill; one-cylinder cars to carry one person, two-cylinder and upwards two people; all cars to be in touring form.

The cycles were allowed more latitude, and could choose their own starting point anywhere behind the line from which the cars were sent off, most of them selecting a place some twenty yards up the hill facing the course, but their time was taken from the place of starting. The gradient



The 12 h.p. Panhard nearing the bend in the course.

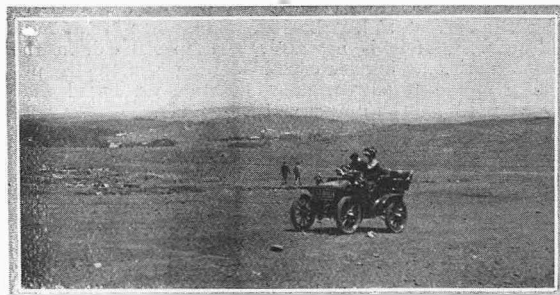
of the hill is about one in seven starting out of the sluit at the bottom, varying to one in ten, and finishing at the top by one in five.

The first four cars were: 1, A. M. Robeson (10 h.p. two-cylinder Wolseley), 2m. 2; 2, Rudge-Whitworth Agency (5 h.p. one-cylinder Baby Peugeot), 2m. 5s.; 3, L. Reyersbach (12 h.p. four-cylinder Panhard), 2m. 7s.; 4, A. Gaydon (two-cylinder Locomobile), 2m. 9s. Others taking part in the competition were: H. F. Marriott (9 h.p. one-cylinder Progress), 2m. 19 2-5s.; Mrs. Engel (one-cylinder Clément), 2m. 23 2-5s.; Dr. N. J. Worthington (6 h.p. one-cylinder Delahaye), 2m. 45 4-5s.; F. Dumat (two-cylinder White Steam), 2m. 45 1-5s.; S. H. Pearce (6 h.p. one-cylinder Gladiator), 2m. 58 3-5s.; R. Ruben (10 h.p. two-cylinder Benz), 3m. 14s.; A. Rosendorff (4½ h.p. one-cylinder Benz), 4m. 48 4-5s.; also eight cars the names of which have not reached us.

The 6 h.p. Delahaye failed to negotiate the hill at the first trial, the time given above being that of a second attempt; and the Locomobile avoided the steepest part of the course just nearing the finish by going over to one side.

One or two suggestions arising out of these and other similar trials may be mentioned.

Manufacturers exporting cars to South Africa should make all springs and axles much stronger than is deemed necessary for English roads; good clearance should be allowed above the roadway, so that cars may cope easily with the uneven and rough country; and above all there should be simplicity in design. The illustrations given herewith are from prints sent us by Mr. A. R. Atkey, of Nottingham and Johannesburg. Our thanks are also due to Mr. G. I. Cree and others participating in the above events, who kindly sent us photographs.



The winning 10 h.p. Wolseley, coming up the hill.

Wolverhampton and District A.C.**HERMITAGE HILL CLIMBING HANDICAP.**

The following are the awards in connection with the above, which was held on October 24th last: First, G. H. Evans (10 h.p. Wolseley, weight 2,742 lbs.), time 2m. 53½s.; second, E. B. Bayliss (7½ h.p. Wolseley, 2,092 lbs.), 3m. 11½s.; third, W. Clarke (20 h.p. M.M.C., 6,386 lbs.), 2m. 4½s.; fourth, T. Cureton (10-12 h.p. Sunbeam, 2,448 lbs.), 2m. 45½s.; fifth, J. Lisle (10 h.p. Star, 2,884 lbs.), 2m. 59s.; sixth, P. S. Bayliss (10-12 h.p. Sunbeam, 2,336 lbs.), 2m. 53½s.; seventh, F. W. Bayliss (20 h.p. Wolseley, 3,648 lbs.), 2m. 13½s.; eighth, H. Moore (10 h.p. Star, 2,904 lbs.), 3m. 15½s.; ninth, J. O. Evans (10 h.p. Wolseley, 2,778 lbs.), 3m. 42½s.; tenth, A. E. Jenks (8 h.p. Wolseley, 1,780 lbs.), 3m. 55½s.; eleventh, W. H. Haden (7 h.p. Star, 2,021 lbs.), 4m. 5½s.; twelfth, T. F. Mills (8 h.p. Sunbeam, 2,015 lbs.), 4m. 13½s.; thirteenth, F. C. Bishop (7 h.p. Star, 2,015 lbs.), 4m. 29s.; fourteenth, A. E. Price (5 h.p. Vauxhall, 1,051 lbs.), 5m. 46s.; fifteenth, J. H. Dark (8 h.p. M.M.C., 1,536 lbs.), 5m. 5½s.; sixteenth, E. W. H. Trusselle (3½ h.p. De Dion, 1,223 lbs.), 6m. 3½s.

The hill climbing competition formed the subject of a discussion at the Salop County Council, when Sir Thomas Boughey called attention to the event, and asked for an explanation of why "racing" was allowed, and how many police were taken from their ordinary duties to keep the road clear. Mr. Southwell explained that it was not motor racing but hill-climbing—a very different thing. Major Heber-Percy said, in reply, that the competition lasted from one o'clock to 4.30. The arrangements were exceedingly well carried out, every care being taken to prevent obstruction or inconvenience to the public. The local police were on duty, but no extra expense was caused to the county. There were no accidents, and no complaints during or after the competition, nor any ground whatever for police interference. Subsequently the honorary secretary of the club had an interview with Sir Thomas Boughey, and as a result he expressed himself friendly dis-

posed towards the Wolverhampton and District A.C., and offered to place at their disposal a road upon his estate for competition purposes.

ANNUAL CONCERT.

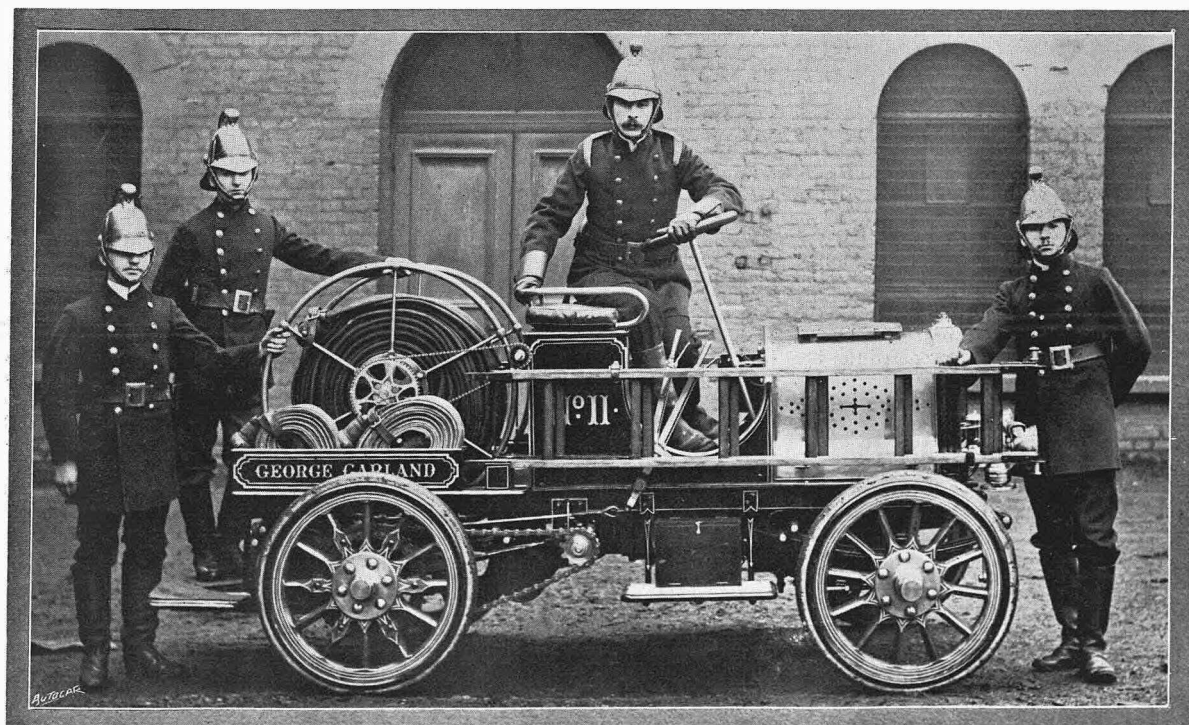
The members of the Wolverhampton and District Automobile Club on December 4th held their second annual smoking concert. Mr. W. Owen presided, and welcomed the visitors, referring also to the growth of the club, which had only been in existence a matter of three years. The membership now reached a total of seventy. He urged upon those who drove cars to be tolerant, and to remember that they were not the only users of the King's highway. Mr. Rhodes also referred to the good understanding which existed between the club and local authorities.

WOLVERHAMPTON CLUB AND FEDERATION.

The Wolverhampton Club delegates, finding it inconvenient, owing to the brief notice given, to attend the meeting convened in London by the Reading Club to discuss the federation question, have written to the Reading secretary stating their opinion that, in the interests of automobilism, one club should govern automobile matters generally, but that each club should be allowed to manage its own affairs and to control absolutely any events restricted solely to its members. It (says the Wolverhampton secretary) the A.C.G.B. and I., after the meeting they propose convening for the purpose of considering the affiliation question, do not exhibit a more reasonable attitude towards provincial automobilists, then my committee are prepared to support a federation scheme.

Yorkshire A.C.

Mr. E. Faiers, of Bradford, has promised to give a lantern lecture on Thursday, Jan. 14th, 1904, in the Leeds Clubroom, in which he will narrate his motoring reminiscences. A new departure will be made in commencing fortnightly meetings at the rooms, commencing Thursday, Jan. 28th, for the discussion of the motor car and its parts.



Merryweather's 15 h.p. four-cylinder motor hose reel and tender, built for the Valparaiso Fire Brigade. Driven through friction clutch, three-speed gear (Panhard pattern), bevel gearing and chains, it will do twenty-five miles per hour with full load, and has climbed a gradient of one in six with all gear on board, including six men. It also carries 2,000ft. of hose on the reel, and another 200ft. in side boxes, in addition to two folding scaling ladders each 13ft. in length. The motor hose reel runs on solid rubber tyres by the North British Rubber Co.

Mr. Winn will open the discussion. The Leeds Watch Committee propose a speed limit of seven miles an hour in the city for one mile radius from the centre, and from the mile radius to the two miles radius a ten miles limit. This seems a very stringent regulation, considering what other towns and the London County Council are doing. A member reports that on applying at the Leeds Town Hall for registration he was told to wait until January, as the necessary papers were not obtainable, whereas another member reports that he has already registered at Bradford.

The annual dinner on Friday, Dec. 4th, was a successful affair, Mr. E. H. Hepper being in the chair. Amongst the guests were Messrs. Chas. Jarrott, J. W. Stocks, Rees Jeffreys, and a large number of local automobilists.

The Scottish A.C. (Western Section).

The annual dinner was held on December 7th. Chairman, the Right Honourable the Lord Inverclyde, Lord Dean of Guild. Crompters, John Adam of Larchgrove (chairman of the Section), and William Weir. Amongst those present were: The Marquis of Ailsa, Sir J. H. A. Macdonald (Lord Justice Clerk of Scotland, president of the club), Colonel R. E. Crompton, C.B., Comte Louis de Clercq, and a large number of local automobilists. After the loyal toasts had been honoured, Lieutenant-Colonel Hugh Reid, V.D., responded to the toast of "The Imperial Forces," proposed by Mr. J. R. Richmond. In addressing the gathering, the Lord Justice Clerk remarked that automobilism was making progress after a fashion which none of its enemies and very few of its friends expected. He counselled them to carry out the new Act in a reasonable way. By so doing they would disarm public disfavour, and in time would be able to ask for and obtain concessions which were now denied them. The Chairman proposed the toast of "Automobilism," and remarked that the development which had taken place in automobilism was little short of marvellous. Speaking, however, as a commercial man, he confessed to a feeling of disappointment that motor cars had not done as much in commercial work as he hoped they would yet do. He hoped that they would soon see motor cars used for bringing the produce of farms into the centres of population and taking back things which the country districts required. Apart from that, however, he looked forward to the time when they would see motors standing for hire in the same way as cabs stood now, and delivering goods, parcels, and letters. He was hopeful that the development of motors would help to keep this country going, and keep it amongst the foremost nations of the world. Lieut.-Colonel R. E. B. Crompton, vice-chairman of the Automobile Club of Great Britain and Ireland, replied, and mentioned that last week the War Office had carried through a series of automobile experiments in connection with the military manoeuvres with perfect success. A prize of £1,100 had been awarded a firm in connection with the matter. Comte Louis de Clercq, a member of the Administrative Council of the Automobile Club of France, also replied. Mr. Norman D. Macdonald proposed the "Corporation of Glasgow." Preceptor Mitchell replied. Sir John Shearer replied to the toast of "Our Guests," proposed by Mr. John Adam; and Mr. J. Wilson, M.P., proposed the health of the chairman.

THE WORKING OF THE NEW ACT.

There is a disposition on the part of many local Authorities, particularly county borough councils, to take counsel with automobilists before determining upon the spirit in which the new Act shall be administered within their areas. This is a hopeful sign, and indicates the dawn of an attitude of reasonableness towards motor car users in boroughs. Not only so, it will conduce to the efficient carrying out of the new duties imposed upon local governing bodies. Amongst the clubs who have been approached by county borough councils is the Burnley and District A.C., who, at the invitation of the Town Clerk, sent a deputation to meet the Watch Committee of the borough to talk matters over. On the question of applying the ten miles speed limit within the borough, the deputation expressed their views that a limit of this nature invariably created the impression on the minds of motorists that they would be allowed to ride at that speed, which while absurdly low on the outskirts of the borough, would be quite dangerous near the centre of the town—an argument with which the committee

appeared to agree. The question of the closing of certain roads was raised, but there appeared to be a general opinion that there was no necessity to take advantage of the Act in that respect. It was also arranged that the secretary should communicate with the borough surveyor as to the erection of danger posts where necessary. The question of supplying number plates was left over until the opinion of the members had been taken as to whether automobilists would prefer to supply their own.

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 3rd December, 1903. All notices of opposition to the grant of patents on the several applications, should be filed not later than the 18th January, 1904:

- 1902.
- 22,024.—E. M. Munro, H. Brecknell, and H. I. Rogers. Life-guard or fender for motor vehicles.
- 25,066.—A. Shrieves. Exhaust valve mechanism and governing device.
- 25,355.—Willans and Robinson Limited, K. J. McMullen, and M. H. Robinson. Internal combustion engine with scavenging air pump.
- 26,874.—H. B. Graham and F. W. Beeching. Internal combustion engine in which fuel is drawn into vaporiser by suction of engine piston.
- 27,386.—F. H. Smith. Carburettor in which petrol is sucked from the surface of a rod reciprocated into a constant level of petrol.
- 27,715.—W. J. Wyatt. Clutch and spring drive for motor cycles.
- 27,891.—J. Van Hooydonk. Two-speed gear for motor cycles.
- 27,941.—A. J. Ruley and J. Warry. Internal combustion engine using paraffin.
- 28,477.—N. M. Goculdas and K. S. Irani. Rotating bell put into contact with road wheel by applying a pedal.
- 28,522.—H. J. Haddon. (J. Lacroix.) Undeatable air tube for pneumatic tyres.
- 1903.
- 611.—A. W. Brightmore and R. W. H. Bailey. Steering gear operated by varying the speed of front driving wheels.
- 682.—R. N. Von Lengerke. Spring loaded air valve carburettor.
- 4,660.—J. P. Lajoie. Carbon dioxide motor.
- 11,942.—P. Mayer. Motor with special means for lubricating the gudgeon pin.
- 15,547.—I. H. Wilkinson. Stand for motor cycles.
- 17,190.—E. Cote. Double acting explosion motor.
- 18,823.—A. B. Clark. Collapsible footrests for motor cycles.
- 20,037.—J. Puch. Timing gear for magneto circuit breakers.
- 21,557.—A. C. Davison. Gauge glass fitting for tanks.
- 21,933.—E. Edwards (The Waggon and Maschinenfabrik, A.G. vorm. Busch). Wrought iron wheel with wood felloes.

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