

The Motor



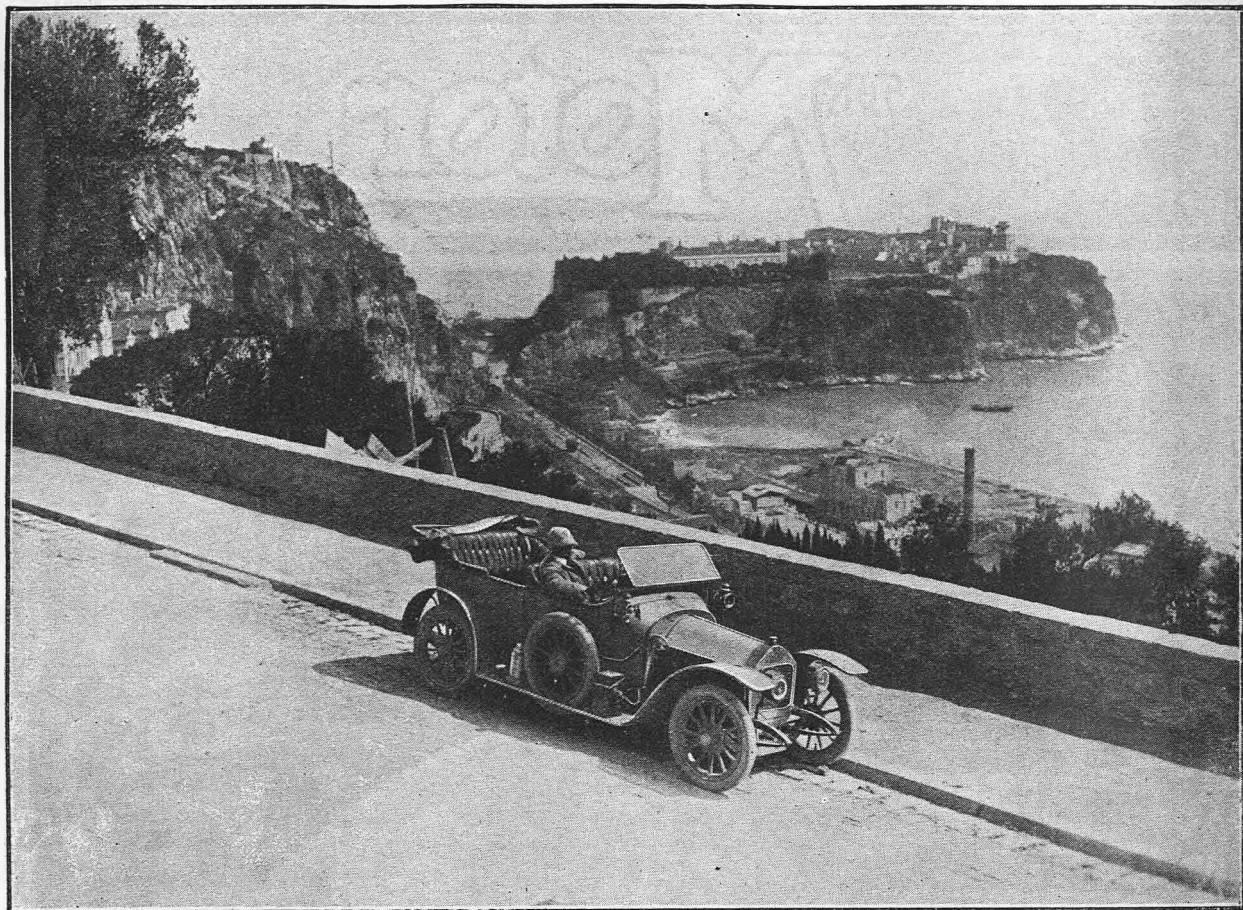
ALONG THE GRANDE CORNICHE.

Dangerous Corners on a Wonderful Highway, and Some Information about a New Road.

THERE is no more international highway, and few that are more beautiful than the Grande Corniche from Monte Carlo to Nice. British motorists are well acquainted with it, for a greater number of costly cars from the home country can be seen on these 20 kilometres on any day in the season than on some of the main roads of England. The rear number plates of the cars on this shore road are a study in geography. The G.B. of Great Britain is followed by the F. of France, the C.H. of Switzerland, the I. of Italy, the A. of Austria, the D. of Germany. Only America is absent, for the motorists of the great republic have no international motor standing, and are thus obliged to borrow their licences from England or France.

The Grande Corniche has the natural defect of being winding; it has the artificial defect of possessing a double row of tram lines which take up a large share of the somewhat narrow road and oblige the drivers of cars to use extreme caution. For the timid motorist the charm of this road cut out of the face

of the cliff is spoiled by its danger. Encounters with tramways and trailers rarely damage the tramway. Realizing the necessity of better means of communication, for motorists bring a big share of wealth to the Riviera, the authorities have undertaken the construction of a new road from Monte Carlo to Nice. It is known as the Moyenne Corniche, and is cut along the face of the cliff about half way up. Instead of running down hill and along the shore from Monte Carlo to Monaco, motorists will climb up a little, striking the new road above the Monaco observatory, and securing a magnificent bird's eye view of the Principality. The first portion of this new road was opened a few days ago, and being in the neighbourhood with one of the new 16 h.p. Darracqs, on which we had made the run from Paris to the Riviera over the Alps without incident, a tour of exploration naturally suggested itself. Within five minutes of leaving Monte Carlo we were on a broad, well-made highway with a footpath on the outside and a stout stone wall as a protection against a drop to the



An aeroplane view over Monaco from the Grande Corniche. The car in the picture is one of the new 16 h.p. Darracqs.

depths below. The view is equal to anything to be obtained from an aeroplane. Personally, we consider it superior, for with a car there is the facility of stopping where the country is most picturesque, and on the road there is none of the deafening roar which still accompanies artificial flight. For about five miles the road winds along the hillside with fairly easy gradients, there being a magnificent view at all times of the Mediterranean right below, with Cap d'Ail to the west and the Italian coastline away to the east. Below can be seen the white line of the Grande Corniche, with its tramways, its constant procession of cars and its palatial hotels and private residences at frequent intervals.

Suddenly the road comes to a stop, for of the 20 kilometres separating Monte Carlo from Nice only about six have been completed. At the other side of the barricade work is proceeding, but before the whole of the road has been finished, making it possible to run to Nice without the accompaniment of the tramway, probably three years will have elapsed. The making of the new road is in the hands of the departmental authorities, with aid from the government. Doubtless the total cost of making this road will be £400,000.

Unable to continue along the Moyenne Corniche as far as Nice, we took advantage of a road which doubles back at this point to climb to the top of La Turbie, the imposing mass of rock which overlooks Monaco and Monte Carlo. At first the gradient was not very steep, and the road was fairly wide. A few of the hairpin turns were difficult to take, for they could only be negotiated after the use of the reverse,

and in going backwards great care had to be taken not to overshoot the mark, otherwise there would have been a non-stop run of a few hundred feet.

Looking upwards, nothing but a vertical cliff, rich in vegetation, could be observed, but along the face of this natural wall the road had been cut out in a cunning manner. We were running up on third, with an occasional use of second on the sharp bends, when the meeting of a Continental car, with English numbers, made us realize the nature of the gradient. The owner, an Englishman, who was at the wheel, did not appear at all reassured, for he was gripping his steering wheel and pressing on his brakes as if afraid that the car would take it into his head to jump over the precipice. We had stopped on the outside of the road, rather near the edge of the cliff, thus giving the other driver the advantage of passing on the inside, for which he was doubtless grateful. Half a mile further up we met a carriage coming down very carefully. There was just room to pass, and on this occasion the horses had to take the outside. A few minutes later the road narrowed to such an extent that there was only just room for one vehicle. Had we met any other car or cart, one of us would have had to back, not at all a pleasing prospect with a sheer drop on the one hand and a vertical wall on the other. Fortunately we were not called upon to give this display of driving ability, the top of the hill being reached without meeting anyone other than a few peasants.

The old Sicilian-like village of La Turbie surmounts the hill. Here there is a road left and right running along the top of the cliff, and connecting

ALONG THE GRAND CORNICHE.—Contd.

Nice with Monte Carlo and the Italian frontier. As we had explored it on a previous occasion we swung round in the village, followed a company of white-clad troopers down the hill until they branched off for an invisible fort, then with motor shut off and the two brakes alternately in use coasted down for about nine miles. On one of the sharpest hairpin turns, with no protecting wall on the outside, a Hotchkiss limousine met us. The upcoming car had the difficult position, but, cleverly handled, it got by us after backing three or four times. Judging from the portion which is already open for traffic, the Moyenne Corniche will have none of the difficulties of the mountain road leading to La Turbie. As it will have more than its share of natural beauty, car drivers will not hesitate to desert the lower road for the higher one.

The illustration on the front page shows two cars meeting on the new Corniche road which, when finished, will connect Monte Carlo with Nice. The photograph shows one of the hairpin bends, which are hard to take singly, but particularly difficult when two cars meet.

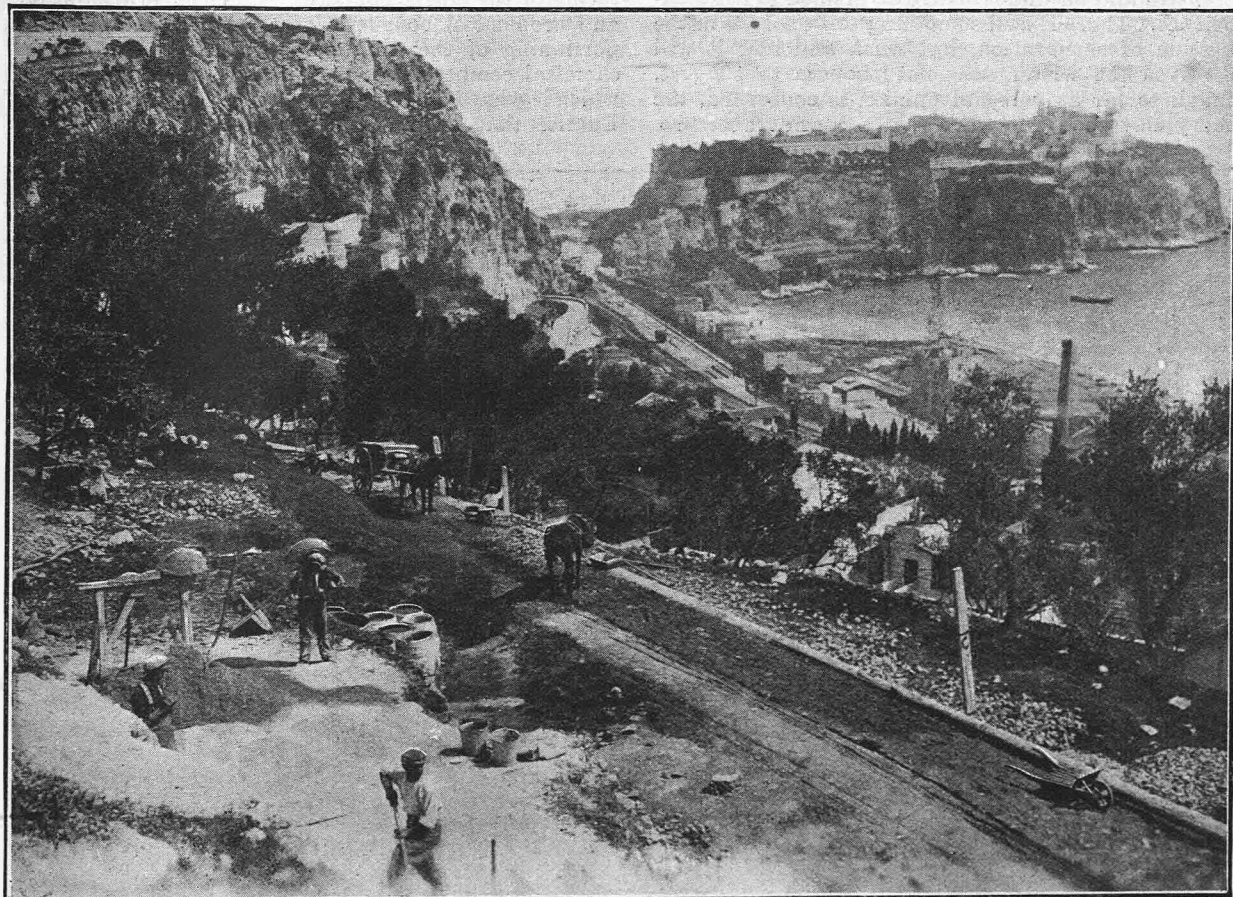
For their hill-climb at Sheisley Walsh, on Saturday, 7th June, the Midland Automobile Club have prepared an interesting programme. The competitions will consist of: an open event, for which two silver cups are offered; a closed event, for members of the club only, for which three cups are offered, and the team event, which is open to all the clubs associated with the R.A.C. There will also be a cyclecar event. Particulars and entry forms can be obtained from the hon. secretary, Mr. C. P. Type, Borough Buildings, John Bright Street, Birmingham.

Benzole—More Convincing Testimony.

Those motorists who are interested in the fuel question—and there are few who are not—will welcome the experiments which Mr. Harry Ferguson has been making with benzole in a series of tests wherein it was directly compared with petrol under identical conditions. The principal results of the experiments may be summed up as follows:—

Petrol.	Benzole.
24½ m.p.g.	30½ m.p.g.
57 m.p.h. max. speed.	57 m.p.h. max. speed.

It will be seen that while, in regard to speed, identical results were obtained, benzole yielded a much larger mileage per gallon at a cost of 1s. 5d. per gallon, as compared with 1s. 9d. for petrol. Excellent results were obtained in respect of slow running on top gear, a speed as low as 5 m.p.h. being registered. Tests were also made for knocking of the engine, but neither by sudden acceleration nor by use of the ignition or throttle levers could the engine be made to knock on benzole. In regard to starting, Mr. Ferguson states, after having many times tested the matter, that as prompt a start could be made with benzole as with petrol, even with a cold engine. The tests were carried out on a 25 h.p. Vauxhall car, which was fitted with an extra air inlet that Mr. Ferguson has patented recently, but it should be pointed out that this fitting was designed for use with petrol, and not benzole.



Cutting a new road out of the face of the cliff above Monaco. This new road when completed will relieve the congestion on the Grande Corniche between Monte Carlo and Nice.

SOME CARBURETTER CONSIDERATIONS.

How to Obtain Efficiency with Economy. The Difference Between Theory and Practice. Future Hopes.

IT is to be feared that one is probably guilty of uttering a decided platitude in stating that the item of prime consideration at the present moment in the motor world is that of carburation, of course in conjunction with and correlative to the price of fuel. Nevertheless, there the fact remains, and it behoves all motorists to study the question of carburation and to see if they are getting the maximum of efficiency in conjunction with economy. As a matter of simple fact, it may be stated right away that such is not the case, as, for reasons which are as numerous as they are diversified, no car made does what it should do in the way of mileage and power output per quantity of British thermal units of petrol consumed. As a matter of fact, an average 15 h.p. car should, in theory, do close on 40 miles to the gallon of petrol on a good road, without any head wind and with moderate windage, and this at a good touring speed. One reads occasionally of such-and-such a car doing this, that or the other distance to the gallon of petrol, but we all know that in ordinary practice if a "15" does its 25 miles per gallon we consider that it has served us well. At any rate, that is the writer's opinion, gauged from a pretty extensive and an undoubtedly diversified driving experience. There is still something to be solved in the question of carburation, but when and how it will be solved the writer does not propose to suggest, though so far as personal opinion is concerned, the theory may be put forward that a considerable pro-

portion of petrol is generally going into the engine in a liquid or semi-heavy state, instead of being atomized and gasified.

If, when we take our pencil and paper and figure it out in theory, a 15 h.p. car should do such a distance to a gallon of petrol, where is the great loss to be traced? It will be well briefly to consider some of the points which bear on this subject. We have now, of course, varying brands and qualities of petrol available, and ordinary commercial petrol not only varies in price but in density and other properties. Not only is the original hydro-carbonic spirit obtained from natural sources in varying localities, but, being a mixture rather than a definite chemical substance, differences are found in volatility and density, etc. Broadly speaking, the heavier the spirit the greater the mileage and power to be obtained from it, although it seems to be a general idea that because a spirit is heavy, therefore it is not so good. As a matter of simple fact, the heavier the spirit the better from the motorist's point of view, if we make the necessary proviso that it must be of such volatility as to ensure easy starting up on, for instance, a cold morning.

One of the chief requisites for efficient carburation and economical consumption is that of correct proportioning of the mixture. Ordinary petrol has a chemical composition which may be taken as C_7H_{16} , which is what is known as heptane, and put into plain English that formula means that a molecule of the



A fine piece of road in Gloucestershire with some unusual hairpin bends.

CARBURETTER CONSIDERATIONS.—Contd.

spirit under consideration contains seven atoms of carbon in combination with 16 of hydrogen. This, of course, brought into conjunction with air and then gasified, burns, and the chemical equation which is the result shows that one volume of petrol combines with 11 volumes of oxygen, the result being seven volumes of carbon dioxide together with eight volumes of water, the latter, of course, being in the shape of steam. It is seen, therefore, that while 11 volumes of oxygen are required to get proper results with one volume of petrol, quite a considerable quantity of atmospheric air must be used to obtain efficiency, as, of course, oxygen is not the only constituent in air. As a matter of fact, if someone would kindly arrange a "little bag of tricks" to fit on the carburetter which would, so to speak, "denitrogenize" the air going into the carburetter, we should be at once much better off.

The chief problem, then, in the carburetter is that of so constructing it that no matter what the speed of the engine, or, another important point, wheresoever the throttle may be positioned, the correct volume of air will always be supplied to suit the amount of petrol which is being passed through the jet. The strong diversification of means adopted by the different carburetter designers in an endeavour to obtain this result is probably well known to most readers of *THE MOTOR*, and the mere fact that so many various ideas on the subject give reasonably, and often equally, good results, shows that the problem is one by no means as yet settled. As already indicated, the carburetter made perfectly in accordance with the theoretical dictates, that is B.T.U.s consumed, turned into miles per hour or miles per gallon, should give results which even the most optimistic of our carburetter makers of the present day would not even think of claiming. And many of them are optimists. With an average 80 mm. four-cylinder engine we should obtain nearly 40 miles to the gallon with normal load, have full power, high speed, slow running, good acceleration and easy starting. Now, it is a simple problem to obtain any one of these desiderata, but "the rub" is found when an endeavour is made to combine all the qualities enumerated in the one instrument. For instance, economy is very easily obtained at the expense of acceleration and slow engine running. Then again, on the other hand, a beautiful slow-running engine can easily be arranged if one does not mind using a fair quantity of petrol in doing it. This latter point, to the writer's mind, seems to be one which should be amenable to proper atomization at slow engine speed, because there is in all carburetters a comparative, if not a complete, lack of real atomization at slow-engine speeds, and it is the petrol consumption under these conditions that is so relatively high. However, the automobile movement is still young, and we must hope that in the course of time still better results will be obtained.

From the foregoing, then, it will be gathered that the two main functions of the carburetter, so far at any rate as the writer views the proposition, are, primarily, meting out the correct quantity of petrol for the amount of air being drawn into the engine, and then to see that the petrol in question passes to the combustion chamber in the form of a gas, and not partly as a gas and partly in a liquid or semi-heavy state. It is this latter condition which causes waste. Correlative to, and almost as a corollary of the foregoing, is the question of a homogeneous mixture, which is a point not considered much, so far as

the writer has been able to discover, in any known carburetter. Further to explain, imagine a spot of petrol with the equivalent "spots" of air in a bunch behind it, and thus passed through to the engine; quite different and much better results would be obtained if the said molecule of petrol had been surrounded on all points by the said quantity of air. If we assume that these three desiderata are obtained, and obtained properly, then the writer can see no reason for the excessive heating of the carburetter frequently indulged in. Obviously, every degree of heat which is applied to the carburetter means a certain amount of power lost, as the lighter and more rarefied the air taken in (due, of course, to the heat) the weaker and less weighty the resultant explosion.

The constant mixture is the point which presents the greatest difficulty, as the range of speeds of an up-to-date engine, running possibly from 180 r.p.m. to 2200 r.p.m., is so great that it is impossible to carry up the petrol-air line straight, and the diagram generally varies from one side to the other. The question of extra air is one which always appeals to the average motorist, as even in these days air is still quite a cheap commodity, and naturally the motorist likes to think he is making air do as much as possible. With the plain jet and tube type of carburetter the mixture usually becomes rich at high speeds, and it is here that the extra air valve may be useful. As a matter of fact, the extra air valve idea only came into being through the existence of defective carburetters, and an up-to-date carburetter, which perchance provides for so-called "extra air" in itself, will not be improved by the mere fitting of an ordinary extra air inlet. Of course, the general idea is that as the throttle movement increases so it uncovers to a greater extent ports admitting air, while in other cases suctional effect, following the increased opening of the throttle, is relied upon to do this work. Then again, there are a number of automatic carburetters which give very good results, which have no extra air valves or ports at all.

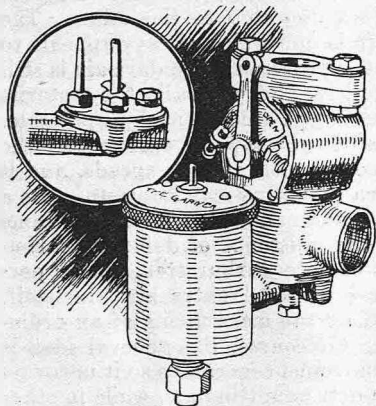
In conclusion, there is one point which is not generally considered, and that is that at very high speeds conditions begin to change, and that change is of such a nature that a diminution of petrol can commence to take place without affecting the efficiency of the engine. The writer is unaware of any carburetter which specifically allows for this state of affairs, which in some aspects verges on a phenomenon, but it has been found experimentally that some of the multiple jet carburetters do this automatically, owing to the jet skin friction increasing in so much higher a proportion at high speeds than is the case with a single jet. No definite data are known on this aspect of carburetter construction, but a number of experiments are being carried out, and this fact has been found to obtain. So it is that as we progress we either find through scientific research or stumble across various items of information anent carburation which will sooner or later materialise to the benefit of the ordinary motorist in providing him with more efficient carburation than that which he is at present accustomed to, and also give him a greater mileage. There is often a difference discernible between theory and practice, but the case where theory has differed from practice to so great a degree as in the question of carburation, and for such a long time without being amenable to practical solution, must indeed be rare. However, as already indicated, improvements are constantly being made one way or the other; and so, little by little, we learn, whilst still groping in—well, the twilight.

THE HEART OF THE CAR.

Details of the Constructional Features and Methods of Operation of the Leading Carburetters.

The Garner.

THE main idea underlying the construction of the Garner carburetter is the production of an apparatus suitable for the average motorcar, and a piece of mechanism which shall be simple in construction and strictly inexpensive in initial cost. It is of the two-jet variety, with separate choke tubes, whilst the simple adaptability of the float chamber to suit any position or space, or comparative lack of space which may happen to obtain, is another

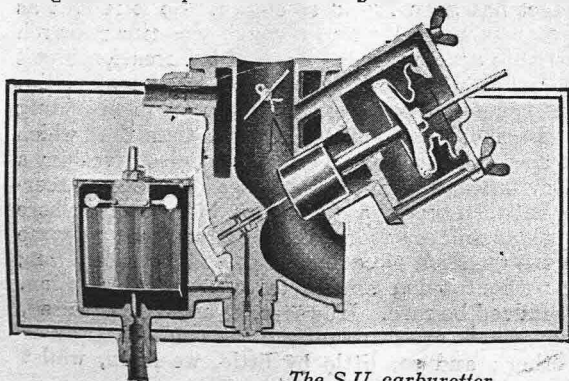


The Garner carburetter.

point in its favour. The small jet which is used for starting-up and slow-running purposes, has its own diminutive choke tube, which is calibrated and set so as to produce the correct mixture for the purpose for which this jet is intended. The larger jet and correlatively proportioned choke tube are, of course, for normal touring purposes. The throttle employed is of the circular variety, and is so designed that the small jet is cut out whilst the car is running on the larger one, and per contra. This should ensure economy, and as there are no springs, air valves, etc., it is claimed that, when once set, further adjustment is an item not likely to trouble the user.

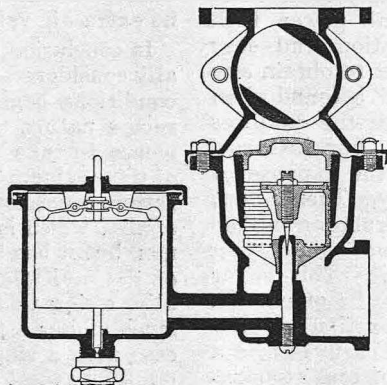
The S.U.

When one examines the construction of the S.U. carburetter one's first thought is one of praise for the designer



The S.U. carburetter.

for making a step in a direction of his own in introducing a jet at an angle of 45 degrees instead of the practically universal upright type. It is set in the choke-tube-equivalent portion of the body of the carburetter, and in this chamber what would otherwise be a free passage for air is impeded by a movable piston. This piston is slidable in its housing, and is also guided by a light piston rod, which extends right up through the top cover. Attached to a plate on this piston rod there is a mushroom suction disc with leather bellows, the cover-plate of the carburetter, in conjunction with the afore-mentioned pieces, constituting the suction chamber. At the lower end of the piston there is a small tapered needle valve, which enters the jet orifice, so that, as the piston moves, the orifice in question is increased or decreased in area. A duct leading from the interior of the bellows comes down to a position adjacent to the butterfly throttle valve, and, consequently, when the engine is running slowly the piston partially obstructs the air passing to the engine, and the needle descends into the jet, leaving a small orifice and only a small clearance past the jet. Thus the actual velocity of the air at this point is great, tending to assure atomization of the fuel, which is so useful for slow-running purposes. As the throttle is opened so the suction increases in the passage-way to the suction chamber, and, consequently, the piston is raised and more petrol and more air are supplied.



The Scott-Robinson carburetter.

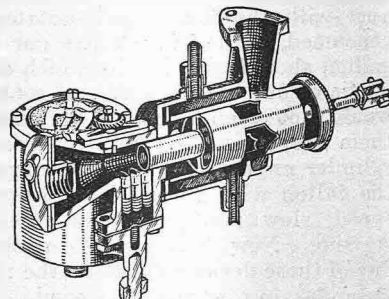
The Scott-Robinson.

The principle underlying the construction of the Scott-Robinson carburetter is that embodying a variable jet, the control being obtained through the medium of a tapered needle. It is so designed that the air velocity and the flow velocity of the liquid shall be maintained automatically as near a constant speed as is

feasible. The next item to be aimed at is that the volume of air and the quantity of liquid shall be varied in fixed ratios the one to the other. The ordinary float in the float chamber is not the only one in this carburetter, as there is what one might term an air float, which is incorporated in the main body of the carburetter, made, of course, to a pre-determined and calculated weight, and this float is movable vertically, varying its position according to the suction of the engine. The base of the said float is cone-shaped, and around the bottom diameter of the circular portion there are a number of small holes. The tapered needle being attached to this float, it follows that as the float itself rises or falls, so the needle in question regulates the area of the jet orifice, and thus in turn the quantity of petrol supplied to the engine.

T. and M.

One of the chief points of value and interest relative to the T. and M. carburetter is that of accessibility, and for tuning-up an engine fitted with this carburetter, adjustment can be made in quite an easy and simple manner.



Trier and Martin carburetter.

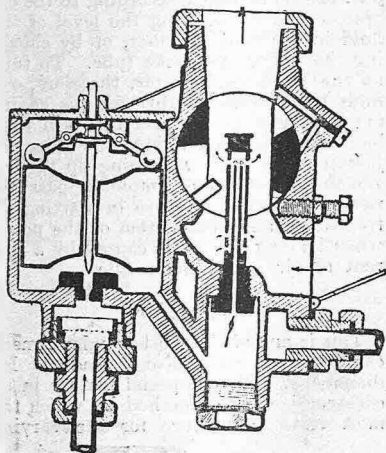
Three jets are employed, and any one or all of these can readily be got at for inspection purposes. When once the carburetter is adjusted, the actual amount of petrol and air is regulated by the position of the throttle plunger and a small and simple spring valve situated in the centre of the main air inlet, the latter fitment compensating for the variation in the speed of the engine. With regard to the question of slow running, this is obtained by regulating the by-pass screw situated at the side of the jet chamber, and when the throttle is closed it automatically comes into action. Another point of advantage to be found in this carburetter is the fact that after the last jet has been uncovered, still more air can be let in by further increasing the travel of the throttle piston. Therefore, at high engine speed, or under other favourable conditions, the mixture can be weakened by the addition of a little more air thus tending towards economy.

Claudel-Hobson.

It would be fairly safe to say that the ideal carburetter should give the maximum of horse-power at all engine

CARBURETTERS.—Contd.

speeds for a minimum petrol consumption, and this is the whole-hearted desideratum aimed at by the designer of the Claudel-Hobson carburetter. Of course, this is impossible of attainment, at any rate, if the carburetter is to remain a commercial proposition, and, consequently, one has to aim at getting as near that result as possible. A special type of throttle and air strangler are employed in the Claudel-Hobson carburetter—these, of course, in conjunction

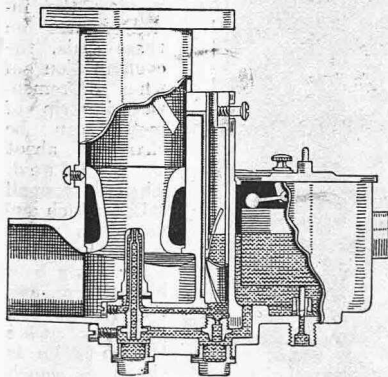


The Claudel-Hobson carburetter.

with the well-known hooded jet. At one time this arrangement of hooded jet acts as a relief to the suction, which is brought to bear by the engine upon the jet itself; whilst at another time it has an injector type of action, this, obviously, being quite different from the previously-mentioned state of affairs, whilst, at all times it is an instrument of atomization. It practically consists of the revolving throttle and air valve acting in conjunction with the special type of jet, the float chamber, of course, being similar to the ordinary type as universally adopted. Consequently, assuming that one has once adjusted the carburetter to give the best results on the car on which it is being used, it is hard to see how it can well get much deranged, from the adjustment point of view. It is easy to fit, and, in most cases, can be delivered with the correct size of jet for any car known on the market.

The Zenith.

One of the chief claims of the Zenith carburetter for consideration is the fact that it contains no working parts whatsoever, and that, therefore, when once

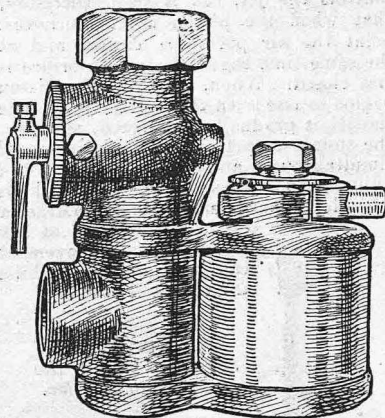


The Zenith carburetter.

it has been properly adjusted, the question of adjustment is one that should not worry the user for some time to come. Two of the chief points aimed at in the design of the Zenith carburetter are that the consumption of petrol should be as small as possible, and that, at the same time, the engine shall have a ready acceleration. Two other points are also considered, however, respectively that the motor is required to run smoothly when the car is only travelling at a very slow pace, and then again comes the question of providing an easy means for starting up. The Zenith carburetter is of the concentric double-jet type. Both jets work simultaneously, and the arrangement is such that they naturally correct each other. If one flows too much, then the other will flow too little, and, of course, inversely, so that the petrol-air ratio is thereby arranged to remain constant at all speeds. Provision is made for heating this carburetter either by water (where pump circulation is employed) or by means of the exhaust gases.

The Solex.

The Solex carburetter is another one in which the two-jet principle is favoured, and it is conspicuous alike for its great accessibility and for possessing an automatic system involving no moving parts. The float, needle valve, and all the other parts are readily accessible, and the throttle chamber, spray chamber and float chamber can all be set in any position, the one relative to the other,



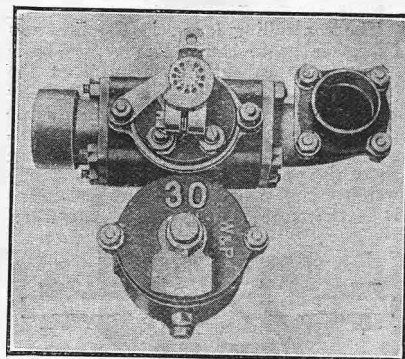
The Solex carburetter.

so that simplicity in the work of fitting up this carburetter to any engine already in use is assured. Automatism is effected by the employment of two jets in conjunction with a constant supply of air. One of the jets is a fixture, having its orifice in the waist of a Venturi type bi-conical choke tube, whilst the other jet, which has its ultimate outlet between the vanes of a compound throttle of special design, is governed by the action of a small gravity release ball, the function of which is to limit the spraying suction thereon in proportion to the increase of the engine speed. Flexibility and slow running are specially provided for in this carburetter.

The White and Poppe.

The single variable jet type carburetter, as exemplified by the White and Poppe, has been with us now for several years, and in that time the carburetter in question has not been subjected to much more than detail alterations. In this device, the resistance to the passage

of the gas is reduced to the smallest extent possible, thus enabling the engine to draw in a high charge at high speed with as little skin-friction as possible. With regard to flexibility, the hole in the jet is varied in size and in proportion to the amount of the throttle opening, and this arrangement is such as to ensure that the gas supplied by the carburetter is of a constant strength. It can be adjusted so as to give any strength of mixture within wide limits, and this from

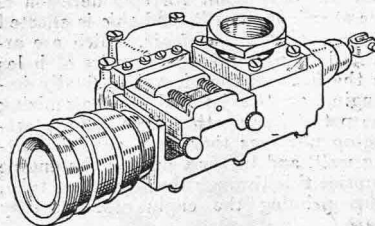


White and Poppe carburetter.

the outside, so that the most economical setting that will give the best general results can easily be found without having to take the carburetter to pieces. With the White and Poppe carburetter, engines start readily with the throttle almost closed, as at that moment there is a very high velocity of gas. For the same reason the engine will run slowly, and also pull steadily at slow car speed. Another item in connection with the carburetter which receives special attention is the accuracy of the work put into it, the limit of error in some cases being noticeably small.

Polyrhoe.

The Polyrhoe is certainly different from the ordinary type of carburetter as generally understood, the only normal part in its construction being really the float chamber, and even here the actual level of the petrol is to a large extent a matter of indifference, so that the float provided is only a small one. Between the float chamber and the body of the carburetter a sheet of felt is used to make the joint, and this acts as a filter, so that any particles of dirt or other injurious matter which might be inclined to find a state of rest in the jets are prevented



The Polyrhoe carburetter.

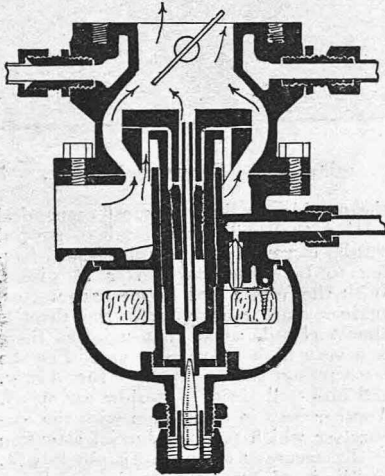
from the possibility of so doing. A number of ducts extend from the bottom of the float chamber to the edge of the rectangular float, and each of the ducts under consideration carries petrol to feed a jet. The said jets are constituted by slots, cut to standard size in small sheets of brass, the slots in question registering

CARBURETTORS.—Contd.

with the ducts and also with a holding-down plate, the latter being arranged in position above them. The design is such that the actual requirements of the engine are arranged to modify the length of the throat in use and synchronously to alter the number of jets employed. The jets themselves are exceptionally fine and numerous, there being one jet to each $\frac{1}{16}$ in. of float.

Stewart.

The controlling factor in the Stewart-Precision carburetter is gravity, the basic idea of the carburetter being that the petrol supply should be controlled by the quantity of air passing through the carburetter rather than by the mere position of the throttle. For this purpose there is an air valve which is fairly weighty and free to slide up or down. It is therefore resting on its seat when

*The Stewart Precision carburetter.*

the engine is stationary. When, however, the engine is started up, it rises according to the amount of air drawn into the engine, and in so doing withdraws a tubular extension from a tapered needle, which allows a larger quantity of petrol to pass up. In other words, the valve lifts to a definite extent for a given amount of air passing to fill the requirements of the engine, and in this way the proportioning is governed. The position of this tapered valve is, of course, amenable to adjustment, but when once adjusted requires little or no attention. This arrangement, then, provides for the metering of the quantity of fuel passed, and the next point for consideration is the atomization of it, and this is effected by several streams of air, which are arranged to pass through a series of holes in the head of the air valve, finally impinging on the jet and thus atomizing the petrol issuing therefrom. For starting-up purposes there is a special starting well, and the first pull on the engine empties this through the aspirating tube, thus priming the engine for an easy start.

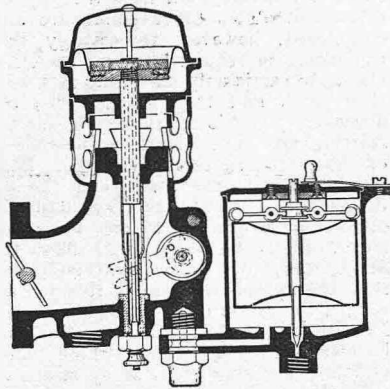
Stewart-Ford Carburetter.

With regard to the Stewart carburetter, the many users of Ford cars should note that there is a special model of this carburetter designed for ready adaptation and attachment to the Ford engine. It is sold at a very reasonable price, and we have heard that it gives very good results.

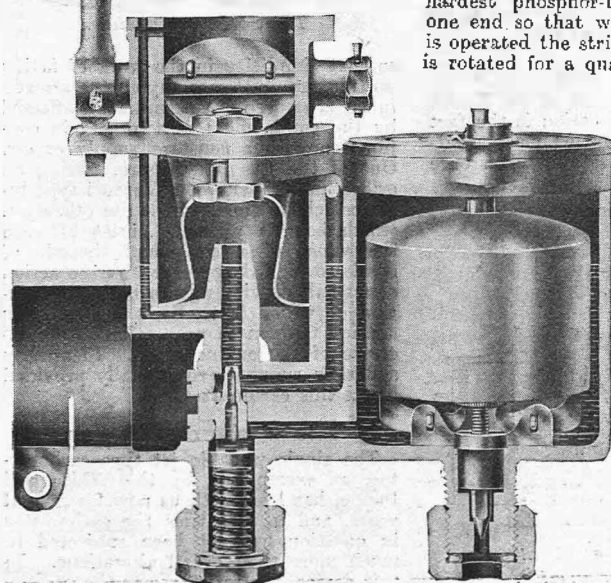
C24

Arnott.

The chief aim in the Arnott carburetter has been so to design it that the quantity of air and petrol supplied to the engine at all speeds shall be controlled automatically. Petrol is carried

*The Arnott carburetter.*

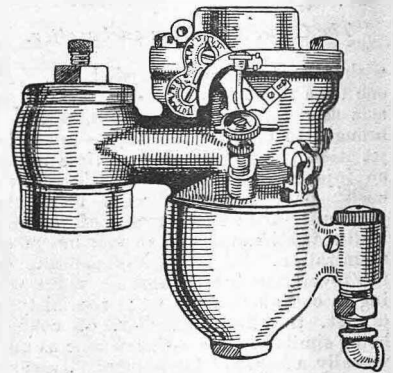
from the ordinary type float chamber to the jet block, on the face of which is a V-shaped aperture. The size of the opening is controlled by a cam-shaped disc, the movement of the latter being conveyed through the medium of a forked arm. The air opening is controlled by a piston, the spindle of which is connected to the forked arm which controls the jet. It is seen, therefore, that when the piston is at its lowest point the air ports are closed, and at the same time the V-shaped jet orifice is also closed. When, however, the piston begins to rise with the pull of the engine the jet is gradually uncovered, and thus the supply of petrol and air is increased simultaneously and proportionately. For adjustment purposes the jet block is capable of movement so as to enlarge or decrease the size of the jet, and this movement can be carried out whilst the engine is running.

Sectional view of the Vapor carburetter.**Vapor.**

The arrangement of the Vapor carburetter is quite different from that obtaining in the majority of other types, as the jet is so low that it is normally "submerged," the word "submerged" being used for the want of a more accurate one. One of its chief claims for consideration is the question of simplicity. It is automatic in action. The output of the jet, which is always under a constant load (the difference, of course, between the height of the level in the float chamber itself and the height of the orifice of the jet), can be modified according to the engine, either by altering the level of the fluid in the float chamber, or by changing the jet or the choke tube. To tune up the Vapor carburetter, therefore, one finds the correct mixture for the engine at maximum power, and this will then be found to have provided the other adjustments from slow running up to that position. It has a simple by-pass for rich gas supply, for ease in starting up from cold, and atomization of the petrol when leaving the jet is caused by a current of air round the nozzle.

Schebler.

This is one of the most popular American types of carburetters, made at Indianapolis, and the special feature in its construction is the method by which the most suitable mixture for the varying

*The Schebler carburetter.*

speeds is obtained by mechanical control. Adjacent to the induction pipe is a small semi-circular strip, made of the hardest phosphor-bronze, and fixed at one end so that when the control lever is operated the strip under consideration is rotated for a quarter of a revolution.

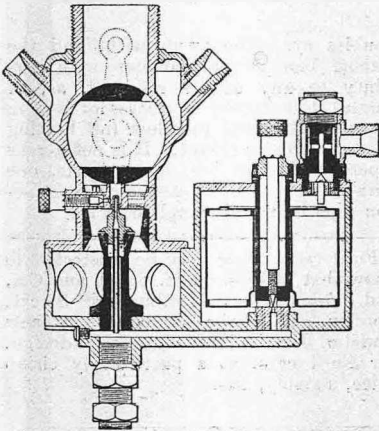
Fixed on the same bracket as the strip, there are two small dials, and by moving the index figures on these dials, the configuration of the aforementioned strip of metal can be changed about as required. There is a small roller which actuates the needle jet through a hinged arm, and for adjusting purposes the throttle is closed as much as possible, and

CARBURETTORS.—Contd.

the needle valve adjusted so that the engine will run at this slow speed. The throttle is then opened until the dial is practically over the roller, and the index figure on the dial is moved until the needle valve is again at its best setting for this particular speed, and so on. It is seen, therefore, that it is possible to set the carburettor so that the best position is obtained. It is quite small, and is easily attached in most cases.

Longuemare.

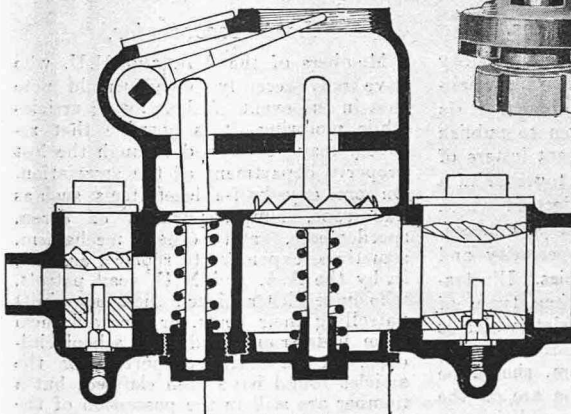
A carburettor with many years of fame attached to its name is the Longuemare, and in the latest model there is an auxiliary jet which communicates with a surplus petrol supply for very slow running. On opening the throttle, however, the full fuel supply at once comes into use, assuring an easy and quick acceleration. When high speed is attained the reserve petrol supply naturally becomes exhausted, and it is then that a small

**The F.B. Longuemare carburettor.**

quantity of additional air is permitted to pass through the reserve chamber and mix with the petrol on its way from the float chamber. Thus the petrol before it leaves the jet is, at high speeds, what one might term "aerated," which is said to render the mixture highly volatile, and granting this, one could then, of course, argue for economy in consumption. The Longuemare carburettor is also easy of adjustment, so as to obtain the best results on different engines.

Binks.

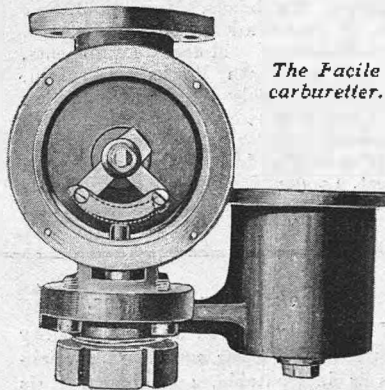
This is another example of the two-jet carburettor, the one jet being large, and the other small. In this design it is the

**The Binks carburettor**

main consideration that slow running and strong pulling on top gear at slow engine speeds should be obtained, and for this purpose, under those conditions there is a high velocity of air past the jet. The small jet is surrounded by a diminutive choke tube, and when the engine is turning slowly the speed of the air through this tube is very great, thus assuring easy starting and slow pulling. When more power is required, of course the larger jet begins to come into operation, whilst at the full throttle position both jets are working together. A strong point is made of the fact that the jets and choke tubes are readily detachable, so that tuning up for any special purpose is easily accomplished.

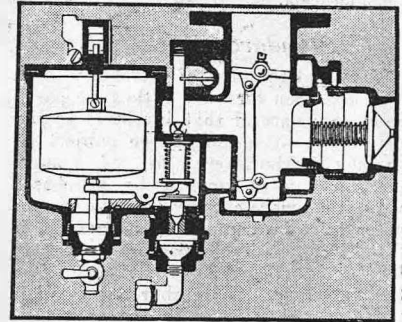
The Facile.

The chief item of interest in the Facile carburettor is, to use a Hibernicism, nothing to do with the actual carburettor in question, as the metal of which it is made is a new alloy called Navaltum, which is claimed to be even lighter than aluminium, and yet to be as strong, or stronger than bronze, so that this feature is rather an outstanding one. The carburettor itself has for its basic principle mechanical control, and the air inlet, the flow of petrol, throttle opening, and degree of atomization are all controlled mechanically and through the medium of a single lever. Inside the circular mixing chamber there is a circular sleeve, which is a running fit, and a hole is cut in the top of this to regulate the throttle, with an air port at the bottom to control the flow of air. Fixed to the sleeve in question is the carrier pin, which supports the quadrant arm, the latter being eccentric in its setting, so that as it turns the distance between the jet and the face of the quadrant varies. For regulating purposes when tuning up, of course, the height of the jet can be altered, and the actual adjustment of the eccentricity can also be altered. Adjustments in this carburettor are of the externally-made order, and can be done whilst the engine is actually running.

**The Facile carburettor.****Rayfield.**

This is a popular American carburettor, which has a number of clever points embodied in its construction, and one of its chief claims is that when once it has been adjusted the adjustment is reasonably permanent. Its construction is quite on a line of its own, and the action is

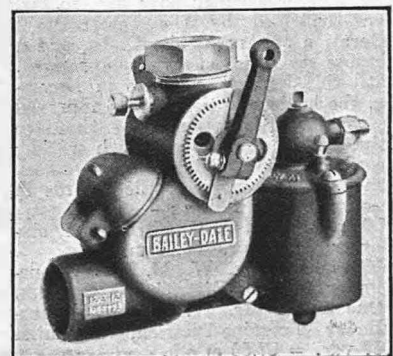
a combination of mechanical movement and automaticity. The mechanical valve is operated in connection with the variable needle valve through the action of the throttle. There are three different air intakes, respectively the constant air opening, which is arranged to provide all the air requisite for slow-speed running, a mechanical valve, which works in con-

**The Rayfield.**

junction with the throttle when the latter is opened beyond the one-quarter position, and then again an automatic valve which to some extent acts as a governor. The petrol supply is controlled mechanically by the same movement as that which operates the throttle, and three separate adjustments are provided. These are for high, low and intermediate speeds, and the necessary mechanism for effecting the adjustments is quite easy of access.

The Bailey-Dale.

This carburettor, of the single-lever control type, is a combination of the mechanical and automatic varieties. Embodied in the design there are two sets of adjustable jets with their respective choke tubes, and the arrangement is such that they are not only visible but also adjustable whilst the engine is running. The smaller, or pilot jet combination is so arranged that at the slowest speed at which the engine will run the air velocity past the jet is sufficiently great to ensure a rich mixture so as to obtain smooth, slow running, whilst comparatively, of course, this high velocity argues for ease in starting up. The small choke tube and its jet are employed for all light work, and the main jet and its choke tube are automatically brought into action by the further throttle movement as and when more speed and power are required. An automatic air device, working in conjunction with the throttle, is incorporated in the design to prevent the mixture being too rich at high speed.



CARBURETTERS.—Contd.

a defect which is not always provided against in carburettor construction. As the air shutter can be adjusted so as to come into operation at any given point in the travel of the throttle, it is seen that the petrol air line can be made to suit the particular purposes, or engine, under consideration.

Standard (Paraffin).

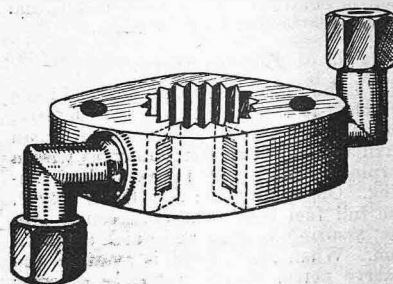
Now that the price of petrol is so high (and has been for some little time past), it is only natural that inventors should give more attention to the subject of paraffin carburetters, as, of course, paraffin can at present be purchased very much more cheaply than petrol. An extra tank for containing the paraffin is fitted in any suitable place on the car, so long as a sufficient head is given to feed the vaporizer. The carburettor itself is made in one piece with the vaporizer, and in ordinary circumstances is readily accessible from the side of the car. From

the carburettor itself a small copper pipe leads to the paraffin tank, and from the end of the vaporizer another copper pipe leads up to a three-way cock, situated between the petrol carburettor and the engine. When the three-way cock is positioned so as to allow petrol to run to the ordinary carburettor the paraffin apparatus is quite out of action, and, of course, therefore, requires no attention. When paraffin is required it is only necessary to turn the three-way cock to one of its other positions, so that the paraffin is turned on as the petrol is cut off, or, on the other hand, a mixture of the two can be used in any proportion suitable for the existing requirements of the engine.

The Hydra Carburettor Heater.

A new heating muff for carburation purposes is now placed on the market by Messrs. G. H. Smith and Co. (London), Ltd., 14a, Gt. Marlborough Street, and it is so simple that it hardly requires explanation. In addition to use with petrol, it is specially suitable for use where benzole or a low-grade spirit is being used. On occasion, of course, the vaporization taking place in the carburettor produces a fallen temperature sufficient to cause trouble, and the new Hydra carburettor heater, for which Messrs. G. H. Smith and Co. have the sole agency, is specific-

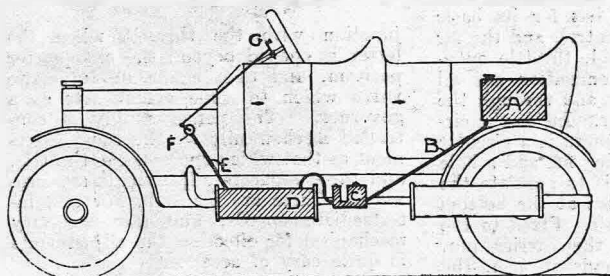
cally a flange muff adapted to fit between the induction pipe from the carburettor and the engine to prevent this: it is adapted so as to take the same centres for the bolts or studs as already in use. It will be seen that as much surface is presented in the centre as possible owing to the corrugations, and by heating this muff with exhaust gas or hot water it is claimed that vaporization



The Hydra carburettor heater.

troubles are done away with, and the heating can be carried out with certainty to any degree required, as, of course, it is merely a matter of having a tap in the pipe to allow full heating or only a small amount. It is not a very expensive fitment, as, for example, one suitable for a 1 in. inside diameter induction pipe is priced complete at £1.

Ford car owners may be interested to know that Messrs. G. H. Smith and Co., Ltd., 14a, Great Marlborough Street, London, W., have introduced a new model of Jericho horn of a special design, for Ford cars, at a particularly cheap price, namely, 21s.



The Standard arrangement for utilizing paraffin.

ALPHABETICAL LIST OF ADDRESSES.

Bailey: W. H. Bailey and Co., Ltd., Albion Works, Salford, Manchester. Binks: C. Binks, Ltd., Phoenix Works, Eccles, Manchester. Claudel-Hobson: H. M. Hobson, Ltd., 29, Vauxhall Bridge Road, London, S.W. Facile: Facile Carburettor Syndicate, Ltd., 210, Capel House, New Broad Street, London, E.C. Garner: Hy. Garner, Ltd., Alcester Road, Moseley, Birmingham. Longemare: E. J. Hardy and Co., Ltd., 132, Queen Victoria Road, Coventry,

Polyrhoe: Polyrhoe Carburetters, Ltd., 144, Great Portland Street, London, W. Schebler: Fairbanks, Morse and Co., Ltd., 87, Southwark Street, London, S.E. Scott-Robinson: Motor Equipments, Ltd., West Heath Works, Northfield, Birmingham. Solex: S. Wolff and Co., 115, Southwark Street, London, S.E. Standard: Standard Petroleum Carburettor (Parent) Co., Ltd., 171, Queen Victoria Street, London, E.C. Stewart: Stewart-Precision Carburettor Co., Ltd., 93, High

Street, Marylebone, London, N.W. Stewart-Ford: Tattersall and Tattersall, 9, Regent Street, London, S.W. S.U.: S.U. Co., Ltd., 336-8, Euston Road, London, N.W. T. and M.: Trier and Martin, Ltd., 101, New Church Road, Camberwell, S.E. Vapor: G.O. and N. Trading Co., 28, Milk Street, London, E.C. White and Poppe: White and Poppe, Ltd., Coventry. Zenith: Zenith Carburettor Co., 17, Harp Lane, London, E.C.

Brooklands Records.

In the Brooklands "Year Book" just issued certain records are entered under world's records which have not, so far, been confirmed by the International Federation of Automobile Clubs, and a footnote to this effect is appended. Until this Federation meets in December, the holders of the records approved by the last Federation are entitled to claim that they still hold such world's records, although their speeds have been beaten. The holders of the records in question are as follow:—

50 miles: Mr. J. C. Christiaens, six-cylinder Excelsior, 102.36 m.p.h.

100 miles: Mr. W. M. Letts, four-cylinder Lorraine-Dietrich, 97.62 m.p.h.

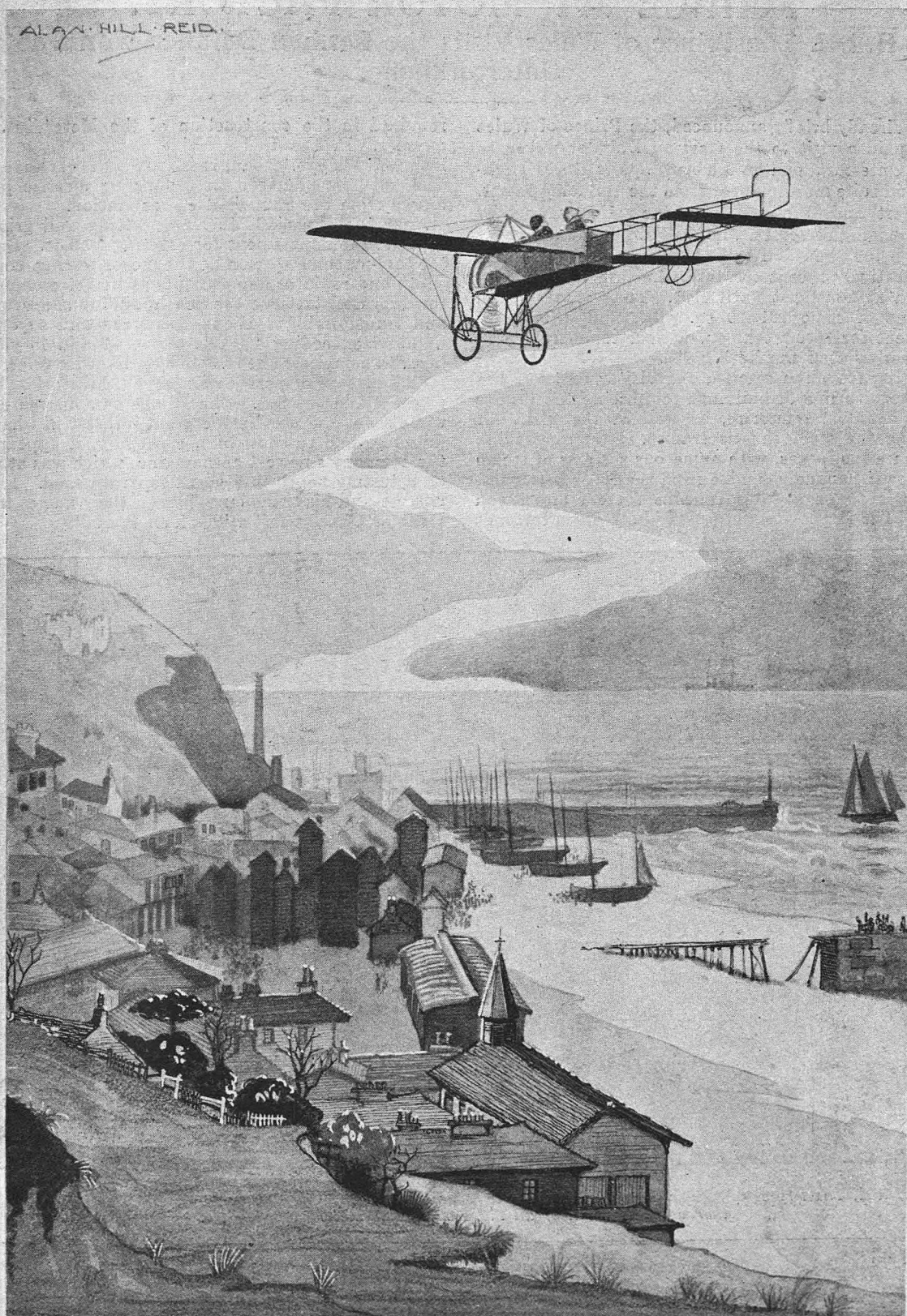
One hour: Mr. W. M. Letts, four-cylinder Lorraine-Dietrich, 97 miles 1037 yds. = 97.59 m.p.h.

Brooks's Specialities.

The quality as well as the durability of the Brooks's car equipment specialities is indisputable, and though it is not Messrs. Brooks's custom to publish testimonials, a shoal of recent letters of praise have been gathered together in a neat little booklet, the object of which the firm state, though perhaps unnecessarily, is to prove the superiority and refinement of their specialities. Illustrations are given of the various types of trunk cases, etc. The booklet, which is obtainable, post free, from J. B. Brooks and Co., Ltd., Birmingham, should be of service to motorists who are on the look-out for such necessary additions to the car.

Lost Accessories.

Members of the A.A. and M.U. who have only recently joined should note that in the event of their losing articles while motoring, it is possible that recovery may be effected through the lost property department of the association. On some days half-a-dozen items, such as hub caps, lamps, portions of syren, speedometer, and other mechanism, sometimes expensive to replace, are sent in by the A.A. and M.U. road patrols, who have either picked them up whilst patrolling their beats, or received them from pedestrians, and even school children. A very large proportion of the articles found have been claimed, but a number are still in the possession of the Association awaiting identification by owners.



THE OLD AND THE NEW.

Gustav Hamel, with Miss Trehawke Davies, passing over historic old Hastings en route for Dover, prior to his great flight to Cologne.

PRINCE AT MOTOR FACTORY.

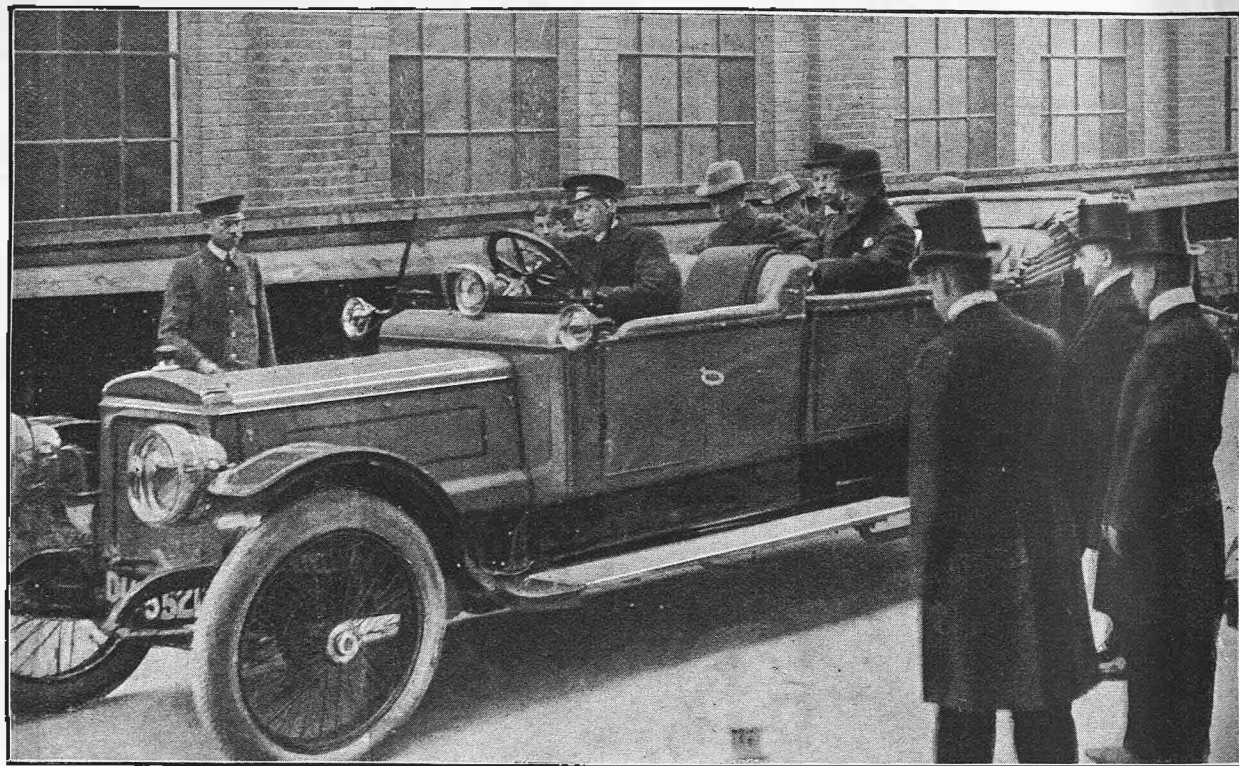
H.R.H. The Prince of Wales Visits the German Daimler Works at Untertürkheim.

AS already briefly announced, the Prince of Wales paid a visit to the German Daimler works at Untertürkheim on 9th April. His Royal Highness and suite motored over from the Wilhelmspalast, Stuttgart, and were received at the main entrance by the managing directors, who also conducted the party through the shops. The Untertürkheim shops are a comparatively recent creation, the firm having been located at Stuttgart until 1904. They stand within an area of some 261,800 sq. yds., and afford employment for 3000 workmen, with a commercial and engineering staff numbering 260.

Coming from the station, the visitor first reaches an extensive line of buildings comprising the bronze and aluminium foundries, as well as the plant for pressing the steel chassis frames. Adjoining these shops are the forges, with numerous systems of steam and power hammers, smoke from the forge fires passing off through a subterranean system of suction flues. The forges account for the bulk of all forgings

required in the construction of the Mercedes automobiles. In the tool-machine shop, over 164 yds. long and 142 yds. broad, there are no fewer than 1200 such machines, driven in groups by electric power drawn from the municipal power station.

Near the capacious turning, cutting and grinding shops is the department for erecting frames. Behind the tool-machine section lie the motor testing, copper-smith and radiator departments; while stretching out towards Canstatt are the coachbuilding shops, pump and transforming stations, gasworks and so on. A building exceeding 160 yds in length and 16 yds. in breadth comprises the staff offices, likewise refectories for all classes of persons employed, lavatories, bathrooms and what not. The Prince saw all there was to be seen, and manifested great interest in what the directors had to show him, especially, it appears, in the company's newest aero engine, which was at work on a testing bench in a small separate shed. Ere he left, he and his attendants signed their names in the Daimler Gesellschaft's "Golden Book."



H.R.H. The Prince of Wales and suite leaving the Daimler motor works at Untertürkheim after making a thorough inspection of all the processes of motor manufacture.

STARTING ACCIDENTS.

Motorists who read of the sad accident of Saturday last, which resulted in the death of Madame Duncan's two little children and their governess, must realize that they themselves are frequently subject to the risk of a similar accident.

For the benefit of those motorists who do not know of a little device which makes such accidents impos-

sible, I should like to say that I have had one fitted to my car for a few shillings, with the result that it is impossible to engage the starting handle while the gears are in any position than neutral. Accidents like that of Saturday are constantly occurring, and the time has come when all car owners should have some such device fitted to their cars as I have on mine.

H. WARDILL.

WHERE BENZOLE MAY BE OBTAINED.

List of Concerns that Supply 90's Benzole, with Some Further Additions.

WE continue to receive complaints from readers concerning the price that is being charged in some quarters for benzole, and in some cases our correspondents despairingly and emphatically assert that nothing is to be gained by using benzole. Now this is not, in our opinion, the right way to look at the matter. We have explained the situation over and over again. At present the supply is limited, owing chiefly to the large exportations of this fuel. The prominence given to the subject of benzole by THE MOTOR has caused the demand to increase, and the result has been that in some quarters the price has been raised. We fear this will be inevitable until supply and demand have adjusted themselves. We know that great efforts are being made to secure greater quantities of benzole for the home market, and we have good reason for believing that the supply available will shortly be very considerably increased.

In the meantime the list of benzole suppliers continues to increase, and a number of new names appear this week.

Accrington.—Altham Benzole Co., The Altham and Great Hanwood Colliery; J. Metcalf, Moorfield Works, Altham.

Barnsley.—Mitchell Main Colliery Co.

Belfast.—Munster, Simms and Co., Ltd., Albert Square (trade only).

Birmingham.—M. Whittingham Jones, 27, Edgbaston Road; Henry Garner, Ltd., 120-124 Alcester Road; the Francis Williams Oil Co., 100-104, Bristol Street; Arthur E. Hooke, 167, High Street, Erdington; J. D. Bradbury, 87, Court Road, Balsall Heath, and 268, Alcester Road, Alcester Lane's End, King's Heath; Alfred Huggins and Co., Ltd., 69, Broad Street.

Birkenhead.—The Birkenhead Motor Works, Duke Street; The Mersey Motor Co., Ltd., 30-32, Conway Stret.

Bradford.—Eric S. Myers, 52 and 62, Manningham Lane.

Bridgwater, Somerset.—The Bridgwater Motor Co., Ltd., Eastover.

Byfleet, Surrey.—Byfleet Automobile Engineering Co., Old Woking Road (for Byfleet district only).

Cardiff.—Hill's Garage, Westgate Street; Messrs. J. Howell and Co., Ltd., Wharton Street; S. Andrews and Son, 1, City Road.

Chelmsford.—J. W. Austin's County Motor Works, Ltd., New London Road.

Cleckheaton.—Henry Ellison and Co., Cleckheaton; The Old Silkstone Chemical Works.

Colchester.—Adams and Co., 47 and 49, Culver Street.

Cumberland.—West Cumberland Bye-Product Co., Ltd., Flimby, near Maryport.

Cheshire and N. Wales.—C. R. Alexander, 132, Ashley Road, Hale, Altrincham; Allison H. Mel-drum, Gronant Road, Prestatyn, N. Wales.

Darlington.—Cleveland Car Co., Ltd., Darlington.

Devonport.—The Midland Garage, Granby Street.

Fareham, Hants.—Quayside Engineering Co. (locally only).

Gateshead-on-Tyne.—Judge, Brand and Co., Ltd.

Glasgow.—William Baird and Co., Ltd.; Richard Smith's Executors, West Street; Brotherton and Co., Provan Chemical Works.

Hull.—Blenkin and Son, 76, Queen Street; Major and Co., Ltd., Sculcoates.

Inverness and Nairn.—Macrae and Dick.

Kingston-on-Thames and Surbiton.—The Lankester Engineering Co., 39, Eden Street, Kingston; The Kingston Motor Works, 27A and 29, High Street.

Knottingley, Yorks.—Stainsby and Lyon, Ltd., Aire Tar Works.

Lancashire.—Wigan Coal and Iron Co., Ltd.; Messrs. W. Metcalf, Ltd., Church; The Automobile Trading Co., Barrow Street, St. Helens.

Leeds.—Brotherton and Co., Ltd.; George Exley and Son, Hunslet Lane (in two-gallon tins); R. Wilkie, 68, Albion Street.

Leicester.—Green and Co., Evesham Road.

Liverpool.—Brotherton and Co.; Bradbury and Hirsch, 11, Dale Street; Theo and Co., 6, Hatton Garden, 15, Johnson Street; Leslie Allan and Co., Highfield Street, and Maiden's Green; J. E. C. Lord, Tar Works, Hawthorne Road, Bootle; North-Western Motor Co., Ltd., Wavertree Garage, Prince Alfred Road; The Waterloo-Blundellsands District Garage, Sandhey Avenue (100 per cent. or 90 per cent.); The Trueman Motor Co., Ltd., 54, Trueman Street and Primrose Hill; The Lancashire and Cheshire Motor and Engineering Co., Hawthorne Road, Bootle.

London and Suburbs.—Gas Light and Coke Co., Ltd., Westminster, Beckton, Woolwich, and Goswell Road depots; Gas Lighting Improvement Co., Ltd., Salisbury House, London Wall, E.C.; Otto Gas Co., Queen Street Place; A. W. Gamage, Ltd., Holborn, E.C. (who supply in two-gallon tins); Thos. Crow and Sons, West Ham, E.; South Metropolitan Gas Co., Ordnance Works, Tunnel Avenue, E. Greenwich; Southern Automobiles, Ltd., Westcombe Hill, Blackheath, S.E.; Central Motor Co., Ltd., 110, High Street, Croydon; The Elhurst Garage, 47, Streatham Hill, S.W. (in two-gallon tins); S. Bowley and Son, Wellington Works, Battersea Bridge, S.W.; Smith and Milroy Ltd., High Street, St. Mary Cray, Kent; G. Stone and Co., Park Garage, Thornton Road, Clapham Park, S.W.; Longman's Garage, 90, Upper Gloucester Place, N.W.; Clifford and Co., Motor Works, Main Road, Sidcup, S.E.; The Mostyn Garage and Engineering Co., Akerman Road, North Brixton, S.W.; Ariel and General Repairs, Ltd., Camberwell New Road, S.E.; S. Brock and Co., Thornton Road, Thornton Heath; Smith and Mitchellmore, Ltd., 1-21, Avenue Close, Poplars Avenue, Cricklewood, N.W.; S. Newton and Co., 214-216, Brixton Hill, S.W., and 109, Streatham Hill (in two-gallon tins).

Luton.—Adams, Morris and Co., 33, New Bedford Road.

Manchester.—Hardman and Holden, Miles Platting; J. E. C. Lord, Ship Canal Tar Works, Weaste; Messrs. Crawfords, Ltd., Chorlton Road and Stretford Road; The Clayton Aniline Co., Ltd., Clayton; Baxendale and Co., Ltd., Miller Street Works and Warehouses; Max R. Lawrence, 35, Blackfriars Street; and Wolsey Garage, Atkinson Street; The Protector Lamp and Lighting Co., Ltd., Lansdowne Road, Monton, Eccles; Sale Motor Works, Cross Street, Sale (in two-gallon tins at 1s. 3d. per gallon retail); F. Bullock, 135, Great Ducie Street.

Middlesbrough.—Bolckow, Vaughan and Co., Ltd.; Sadler and Co.; Cargo Fleet Iron Co., Ltd., Middlesbrough.

Newcastle-on-Tyne.—Messrs. Rossleigh and Co., Engineers, Northumberland Road; Messrs. W. Angus Sanderson and Co., St. Thomas's Street; the Newcastle Benzol Co., Ltd., Milburn House.

Norwich.—Charles Thorn, St. Giles Gate and 16, Prince of Wales's Road.

Normanton.—Whitwood Chemical Works.

Pontypool.—Woolley and Co., Woolley's Garage.

Rotherham.—Ellison and Mitchell, Ltd., Don Chemical Works, Kilnhurst

WHERE BENZOLE, Etc.—Contd.

Southend-on-Sea.—J. W. Austin's County Motor Works, Ltd., Clarence Road.
Staffordshire.—Birchenwood Colliery Co., Ltd., Kildgrove, near Stoke-on-Trent (not retail); Major and Co., Ltd., Wolverhampton.
Sunderland.—Brotherton and Co.
Slough.—B. A. Harris, 163, High Street.
Surbiton.—The Lankester Engineering Co., 82-83, Victoria Road.
Sunningdale, Berks.—E. G. Halfpenny, Sunningdale Garage.

Twyford, Berks.—L. N. Baldwin and Son, Bath Road.
York.—Gibbs and Co., Fawcett Street, Fishergate

Messrs. A. W. Gamage, Ltd., of Holborn, advise that they have now made arrangements by which they will always have in stock benzole in two-gallon tins. Hitherto there has been difficulty in obtaining the spirit in tins, and motorists who have wished to try it have often been disappointed in obtaining supplies. There will be no difficulty in future, as Gamage's will always have two-gallon tins in stock.

MOTOR-HOUSE LIGHTING FROM THE CAR. IS IT PRACTICABLE?

THE safe lighting of a motor-house has always been a ticklish problem. Many private owners have, in fact, no artificial means of lighting their motor-houses. They manage as best they can with one or two lamps taken off the car, and contrive to have as little work to do in the motor-house at night as possible. Even in cases where an electric supply is available in one's residence the cost of running a pair of mains and putting in the necessary switches and fittings is too expensive an item in view of the small amount of use that would be made of the light. There can, however, be no question, of course, that electric light is the proper, if not the ideal, illumination for a motor-house by reason of its safety. A slight petrol leakage can easily, in the course of a few hours, fill a garage with a dangerously-explosive atmosphere, but with electric light available one could work in it with no risk.

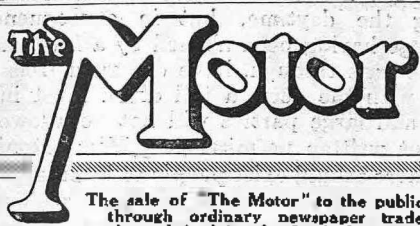
The writer submits that with an electric installation on the car the lighting problem is at once inexpensively and efficiently solved, as all that is necessary is to string up two or three lamps with shades from the

roof of the motor-house, and by means of a length of flexible and a plug connection join up to the car switchboard. If there does not happen to be such a plug connection one can easily be fitted to the side of the battery case. The only expense entailed is that of the lamp and fittings, with length of flexible, say 15s. in all, at a liberal estimate. It will be easily followed that a self-contained lighting system could easily be arranged by purchasing an extra battery and charging this up from the car dynamo when required. The advantages of the system seem so patent to the writer that he submits the scheme as being well worth the consideration of car owners. **H.**

As we announce in our news columns this week, the Sheffield and District A.C. have decided to make a tour to London at Whitsun and to include a visit to Brooklands on Whit-Monday as the chief feature of the trip. This strikes us as a very excellent idea, which might very well be commended to other provincial clubs.



H.R.H. the Prince of Wales (in front) visits the Daimler works at Untertürkheim. Photo. shows the Prince and suite about to enter the offices. See page 608.



The sale of "The Motor" to the public through ordinary newspaper trade channels is claimed to be the largest of any motorcar journal in the World.

Conducted by
EDMUND DANGERFIELD.

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NEXT WEEK—

In the next issue of "THE MOTOR" will be included two articles of particular interest. One will deal comprehensively with the whole question of Insurance and the other with the choice of Accessories.

The Stock Car Race.

Should the Trade Society Withdraw Its Veto?

WE have already said that, in our opinion, there has been regrettable muddling over the projected race in the Isle of Man, and although it is, we admit, easy to criticise in the light of later knowledge, it would seem as if the blame may with fairness be divided about equally between the Royal Automobile Club on the one hand and the Trade Society on the other. The Club was right in concluding that a race in 1913 would be agreeable to many interests, but it did not force the pace sufficiently in the matter of getting the regulations drafted and approved by the Trade Society. The latter was wrong from start to finish in its assumption that there was no need for a car race in 1913, and we believe that there are quite a number of members of the trade who now realize that, if they had assisted in the drafting of an acceptable scheme and approved the conditions and regulations early in the year, the trade would have received a fillip that would at the present time have been very acceptable. The Club's first project for a race called for the building of special cars. Had both sides shown a little energy and enthusiasm, the present set of regulations, the outcome of three attempts to meet the wishes of the trade, could have been arrived at long ago, and the trade society would not have felt itself called upon to veto the race. It has probably already regretted its decision, and now that the entry is open for cars, of the engines of which the cubic capacity of the cylinders does not exceed 356 c.c. (equivalent to an engine of 90 mm. bore by 140 mm. stroke), the society may see its way to the withdrawal of the veto. The public would be intensely interested during the next few months in the accounts of what each entrant was doing in the way of preparation for the race, for the Press may be relied upon to do its share of the work, and we are sure that in the matter of increased sales the trade would gain some material advantage even before the race was contested, quite apart from the results that would accrue next year.

The Life of Gearing.

IT has been stated as a fact that well-made gearing has a practically unlimited life when used under normal working conditions of skill and care, and this is frequently exemplified in the detailed examination of the transmission system of well-known cars. It is found that the gearbox pinions, and back axle transmission gear more particularly, show no measurable wear short of that detectable by the application of a micrometer. It is admittedly physically impossible that any working part should not show some trace of wear—even the "unwearable" ball bearing after a long period of use yields to the micrometer test in a hard-worked lifetime of, say, a quarter of a million miles, but to the ordinary user, or prospective user, of a car such figures convey the simple fact that for practical purposes modern gearing has been shown to be indestructible. This claim does not necessarily apply literally to every car in use, as is proved by the still considerable business done in gearbox and other transmission part renewals, but it is safe to say that in such cases some adverse factor has been introduced in the use of the gear.

Broadly speaking, it may be said that the life of gearing can be shortened by unskilful treatment in manipulation, or some defect in the lubrication, that is, of quality or quantity, but even under what might be fairly termed gross ill-treatment it is the exception not to obtain two or three seasons' work out of the gears. As many repairers are only too well aware, it has been simply the excellent quality of the gearing that has kept many a car in service for so long as two or three seasons. That means simply that the owner has, unwittingly no doubt, tried his best to smash the gearing by unskilful handling or carelessness. In the latter category can undoubtedly be classed those instances in which a loose nut, split pin or a ball is accidentally left in the gearbox after an examination. Sooner or later the superfluous fitment becomes trapped in the gears, and usually the results are not good for the gears, although we have heard of instances where gears must have run some thousands of miles in a crippled condition. It all goes to show, however, that a part of the car which was popularly supposed at one time to be a source of weakness has nowadays a very large margin of safety.

The Omission of Prices in Advertisements.

ONE of the most frequent causes of complaint which we receive from readers, both at home and abroad, is that many of the large advertisers do not, as a general rule, state in their advertisements the price of the articles they are selling. It surely stands to reason that this is a serious omission, and why this quite reasonable complaint should be ignored after so many letters on the subject have been published it is impossible to explain unless it be sheer thoughtlessness. It is very probable that a great deal of business is lost by this omission to state prices. We know for a fact that in the case of Colonial readers business is actually lost for the simple reason that to write, say, from Australia or New Zealand to this country for a quotation, receive a reply and then to send on an order and get it carried out means at the least six months lost in the process. This being so the prospective buyer of the article, although he may be attracted by it, thinks that after all, it is not worth all the trouble and delay entailed and dismisses it from his mind, and in this way business is lost. The latest complaints to hand are with respect to some of the advertisements in the Equipment issue, in which there are so many lines at a wide range of prices. It is much to be hoped that there will be some improvement in this matter, both for the benefit of the buyer and the advertiser.

EVENT AND COMMENT.

His Majesty the King, on Wednesday last, paid a visit to the Birchenwood Colliery, and there inspected the huge benzole plant which was described and illustrated in THE MOTOR of 15th October last. This plant is one of the largest and most completely equipped in the kingdom, and is producing a perfect motor spirit and many other valuable by-products from coal at the pit mouth.

From His Majesty's letter to Lord Crewe:—"We much appreciated the opportunities afforded us of witnessing the different operations in the silk manufacture at Leek, the details of cheese making in Cheshire, and the important enterprise of the colliery by products of Staffordshire."

Our treatment of this subject of the production of motor fuel from coal has been optimistic from the time when we first became acquainted with the magnitude and completeness of the wonderful Birchenwood Colliery installation. Other systems have come to our notice since then, one in particular—the del Monte—which claims to yield a greater quantity of spirit; but we hold no brief for any one system. Obviously, it is essential that as much spirit as possible shall be extracted from our most valuable asset—coal; and it is interesting to note that the yield by the Birchenwood plant has been materially increased.

Further, it is important to record that our latest information is that, by the system in use at Birchenwood, it is said to be quite possible to extract as many as 20 gallons of spirit from cannel coal!

Our optimism in this matter has been met by blank pessimism in another quarter, for reasons which we will not discuss. If facts are of any service in dispelling any effects which may have been produced as a result of the pessimistic treatment of the subject, here they are. By means of the process in use at Birchenwood, Germany will be producing this time next year 800,000 gallons of benzole a week for use in that country. That renders Germany almost independent of imported fuel! Further, the German Government has put down a plant—just completed—which is capable of producing 5,750,000 gallons a year.

In view of figures and facts like these we would rather be counted amongst the optimists, so far as our country, with its wealth of coal, is concerned, than be on the side of the pessimists!

The borough of Kingston-upon-Thames has adopted a by-law requiring all vehicles, including bicycles but excluding handcars, to carry a rear light or proper red reflector at night. The penalty for anyone offending against the new by-law is 40s., and in case of a second or subsequent conviction it will be one not exceeding £5. The date upon which the new by-law comes into operation is not stated, but motorists will receive the information of the decision of Kingston's borough with satisfaction.

Motorists have long enjoyed the privilege of driving through that beautiful Hertfordshire demesne, Ashridge Park, the seat of Earl Brownlow. Nearly five miles of road passing through charming scenery, and displaying some of the finest trees in the three

kingdoms, has hitherto been open to all motorists during the daytime, but in consequence of the privilege having been abused by a few who, not content to pass through, have damaged trees and interfered with the deer, a toll of 1s. must in future be paid, and large parties will not be allowed to enter without written permission. How astonishing it is that there should exist people so lacking in good sense and good behaviour when privileges such as these are provided for them. On another page we illustrate some of the beauties of this charming park, which in future the motorist must pay to see.

A daily newspaper writer on motor topics explained the other day how he received a communication from a brother scribe which rather staggered him. We do not know how many motorists who have read his article were thrown into a similar state of unstable equilibrium by it—we trust the casualties were few. However, the heading to the article, "A New Spring Prime Mover," at once put us at our ease, as we jumped to the conclusion that it had something to do with a quarter-day removal, and we know that spring—beautiful spring—has come. But no, the writer sticks to his "prime mover." Well we never did believe in a spring "prime" mover—call it a "secondary mover" if you like—but even then we should want to know something about that "hydraulic rammer" at 2s. 6d. he speaks of. This is to wind up the spring, that replaces the engine, that drives the car, that saves your petrol and—! Well the possibilities are simply unbounded! The writer, however, is rather unkind to his readers in saying that this revolutionary invention is claimed to approximate more closely to perpetual motion than anything we have yet heard of or seen. Of course, there is this to be said, that if it *did* actually accomplish perpetual motion after one wind up of the spring one could throw the hydraulic rammer away or sell it at half price and effect further economies!

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FINANCE & BUSINESS

As we anticipated, business at the commencement of last week was rather quiet, but towards the end some very interesting movements occurred, and business in one or two issues became quite brisk again. Prices are still well maintained, and the investor has undoubtedly been in the market quietly picking up shares in the principal concerns. This would specially apply to Triumphs, which have changed hands at the higher figure of 81s. 9d., and are a firm spot. Darracqs have also been active, the price gradually improving to 14s. On Tuesday, which was the last day of the old account, there was a little selling by holders who did not wish to take up their purchases, and they were sold down as low as 12s., to recover quickly at the opening of the "new account" which was commenced on Wednesday. They are talked considerably higher. Belsize have weakened to 25s. 6d. sellers, and do not look particularly firm. On the issue of the Charron report business became very active, but the market has since quietened down considerably, the preferred finishing at 13s. 3d. and the deferred at 9s. 6d. De Dion have been inquired for, the price improving to 9s. 10d., but they finish a little easier at 9s. 6d. on profit-taking. Sunbeams have fluctuated, and on balance are materially higher at 59s.

Mr. Edward Manville, on Thursday last, resigned the chairmanship of the Society of Motor Manufacturers and Traders, after holding the office—the most important within trade circles—for six years, and Mr. Selwyn F. Edge was unanimously elected to the position. The Society has always been happy in its choice of an official head, the names of past presidents including Mr. Frederick R. Simms, who was one of the founders of the Society, and Mr. Sydney Straker, still an active and popular member of the industry. Mr. Edge did so much towards establishing the S.M.T. when it was first formed, and has done so much since, that the honour that has now been paid to him is well deserved. Moreover, the Society should benefit under his rule as greatly as it did under Mr. Manville's, for Mr. Edge has the time and energy to devote to the work, exacting as it is, whilst his knowledge and experience may be said to be unexcelled. Mr. Manville has now embarked upon the task which lies before him as the accepted Conservative candidate for Parliament for the constituency of Coventry, and the members of the Society have paid him the appropriate compliment of establishing the Edward Manville Fund, of which he is a life trustee, for the purpose of providing grants or loans or other financial aid to persons who have held important posi-

tions in the trade and have rendered services to the Society.

Mr. Albert Brown and Mr. E. M. C. Instone were elected vice-presidents of the Society of Motor Manufacturers and Traders at last Thursday's meeting, whilst the committee of management was completed by the election of Messrs. F. Lanchester, A. S. Mays-Smith, Harvy Smith, J. D. Siddeley, and F. Shorland, those who had, by virtue of their being elected at the top of the poll in their several sections, already gained places on the committee being Messrs. Albert Brown, L. M. Bergin, D. Citroen, E. M. C. Instone, J. Keele, C. Jarrott, J. Maughfing and A. Spurrier, and Lieutenant Colonel A. F. Mulliner.

The directors of Charron, Ltd., have declared a dividend of 8 per cent. on the participating preference shares and of 145 per cent. on the deferred shares.

The trouble which threatened to arise out of the use of the name "Sizaire" in connection with two entirely different makes of cars has been happily averted by mutual agreement. It has been arranged that the cars manufactured by the Etablissements Sizaire et Naudin shall be known as "Sizaire-Naudin cars," whilst those designed by the brothers Sizaire (who have seceded from their old firm) and manufactured by Messrs. F. W. Berwick and Co., Ltd., will be known as "Sizaire-Berwick cars."

We met Mr. F. C. Baisley last week on his return to London from the United States and Canada looking very fit and well. Following upon his recent visit to the Far East in the interests of the Dunlop group of companies, he is becoming more than ever a hardened and seasoned traveller.

Sheffield-Simplex interests have taken Mr. Warwick Wright to Canada, where he hopes to establish agencies, inquiries having been numerous from the Dominion.

The profits of the Daimler-Mercedes Co. for 1912 are announced at the net figure of £123,837, which, with £19,284 brought forward, provides £143,122 available for distribution. This was after providing £24,244 for debenture interest and depreciation.

Pressure on our space prevents our doing more than to draw attention to the prospectus of Stelastic Tyres, Ltd., with a capital of £200,000, of which £100,000 in ordinary shares are now offered for subscription.

On the appeal of the F.I.A.T. Motor Cab Co., Ltd., against Mr. Justice Joyce's decision in the radiator patent action, the verdict was upset, the patent being declared invalid for claiming too much.

The Victor Tyre Co., Ltd., were awarded £75 damages and costs in their action for libel against the editor and proprietor of the "Field."

"THE MOTOR" SHARE LIST.

The Prices recorded in the end columns are those ruling on the Stock Exchange at Mid-day on Monday, 28th April.

SHARES.		NAME.	Dividend.		Previous 1912.		Prices 1913.		Prices. 28th April.	
Issued Capital.	Paid Up.		Last.	When payable.	Highest.	Lowest.	Highest.	Lowest.	Buyers.	Sellers.
£	£									
45,000	£3	Alldays & Onions...	5%.	Mar./Nov.	4	3 1/2	3 1/2	3 1/2	3 1/2	4
50,000	£5	" " Cum. Pref. 6%	8%	Mar./Nov.	6 1/2	6 1/2	6 1/2	6 1/2	5 1/2	5 1/2
209,802	10/-	Argylls, Ltd.	nil	Nov.	6/-	4/6	6/-	4/6	5/3	6/-
150,000	£1	Belsize Motors	10%	May/Nv.	27 1/2	25 3/4	26 1/2	25 1/2	24 3/4	25 1/2
767,925	£1	Birmingham Small Arms	10% a	Ap./Oct.	53 1/2	47 1/2	50 1/2	47 1/2	48 3/4	49 3/4
75,000	£5	Brampton Cum. Pref. 6%	6%	Oct.	42	31 1/2	42	35 1/2	34 1/2	4
100,000	£1	J. B. Brooks & Co.	10%	Mar./Nov.	37 1/2	31 1/2	38 1/2	35 1/2	35 1/2	36 1/2 d
100,000	£5	" " Cum. Pref. 5%	6%	Mar./Nov.	54	54	54	54	54	54 d
100,000	£5	Brown Bros. Cum. Pref. 6%	6%	Ap./Oct.	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2
384,000	£1	Charron, Ltd., Par. Pref. 7%	8%	Jne./Dec.	11 1/4	8/-	13 1/4	7/6	12 1/2	13 1/2 d
275,000	£1	Darracq (1905)	8%	Jne./Dec.	18 1/4	8/6	16/-	8/6	13 1/2	14/-
375,000	£1	" " Pref. Ord. 7%	7%	Ap./Oct.	19/-	11 1/2	15 1/2	12 1/2	14 1/2	15 1/2
159,229	£1	De Dion-Bouton (1907) Pref. 7%	6%	Nov.	11 1/2	8/6	10/-	7/6	9/3	9/6
105,000	£1	Delahaye & Co.	25%	July	28 1/2	23 1/2	25 1/2	25 1/2	25 1/2	25 1/2
60,000	£2	" " Pref. 7%	10%	Jan./Jul.	28 1/2	23 1/2	25 1/2	25 1/2	25 1/2	25 1/2
570,353	£1	Dunlop Rubber Co.	12 1/2%	Ap./Nov.	55 1/2	27 1/2	53 1/2	35 1/2	36 1/2	37 1/2
200,000	£1	" " 5% Pref.	6%	Ap./Nov.	21/-	17/-	20/-	18 1/2	19 1/2	19 1/2
312,776	£1	" " French I. Stock	5%	May/Nv.	19/-	15 1/2	19/-	17 1/2	17 1/2	18 1/2
282,904	£1	Humber	nil	Nov.	7/6	3/10	13 1/2	6/9	11 1/2	11 1/2
331,405	£1	" " Cum. Pref. 6%	nil	Nov.	10 1/2	6/9	17 1/2	10 1/2	13 1/2	16 1/2
100,000	£5	J. Lucas, Ord.	5% a	Ap./Nov.	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2 d
100,000	£5	" " Cum. Pref. 5%	5%	Feb./Oct.	54	52 1/2	54 1/2	54 1/2	54 1/2	54 1/2
674,946	£1	Parent Tyre Co. Cum. Ord. 8%	10% d	May/Nv.	18 1/2	10 1/2	17 1/2	14 1/2	15 1/2	16 1/2
994,990	£1	" " Cum. Pref. 5%	5%	May/Nv.	16 1/2	10 1/2	17 1/2	14 1/2	15 1/2	16 1/2
499,062	£1	" " Deferred	nil	May/Nv.	15 1/2	6 1/2	10 1/2	8 1/2	9 1/2	10 1/2
31,000	£1	Riley (Coventry) Ltd.	nil	Feb.	8 1/2	5/8	7 1/2	5/8	6/3	6/9
200,000	£1	Rolls-Royce	20%	Jan./Jul.	46 1/2	37 1/2	48 1/2	43 1/2	44 1/2	45 1/2
158,683	£1	Rover	10%	Nov.	22 1/2	14 1/2	40/-	31 1/2	39 1/2	40 1/2
100,000	£1	Rudge-Whitworth	6%	Oct.	29 1/2	15 1/2	25 1/2	22 1/2	23 1/2	24 1/2
100,000	£5	" " Cum. Pref. 6%	8%	Oct.	31	31	31	31	31	31
41,621	6/-	Siddeley-Deasy	8 1/2%	Nov.	10 1/2	6 1/2	12 1/2	8 1/2	10 1/2	11 1/2
50,000	£1	Star	18%	Mar.	18 1/2	10 1/2	17 1/2	15 1/2	16 1/2	17 1/2
69,157	£1	" " Cum. Pref. 7%	7%	Mar.	18 1/2	15 1/4	17 1/2	17 1/2	17 1/2	18 1/2
27,650	£1	Stepney Spare Wheel	20 1/2%	Apr./Nov.	85/-	80/-	82 1/2	80/-	80 1/2	80 1/2
120,000	£1	Sunbeam M.C. Co.	25%	Apr./Nov.	69/-	37 1/2	69 1/2	53 1/2	58 1/2	59 1/2
80,000	£1	Swift	6%	Apr./Nov.	21 1/2	19 1/2	24 1/2	20 1/2	20 1/2	21 1/2
100,000	£1	" " Cum. Pref. 8%	6 1/2%	Apr./Nov.	17 1/2	14 1/2	17 1/2	16 1/2	16 1/2	17 1/2
148,500	£1	Thornycroft, J. I. & Co.	8%	May/Nv.	26 1/2	12 1/2	27 1/2	21 1/2	21 1/2	21 1/2
198,000	£1	" " Cum. Pref. 8%	15 1/2%	May/Nv.	23 1/2	16 1/2	19 1/2	17 1/2	17 1/2	17 1/2
80,000	£1	Triumph Cycle Co.	20% b	Nov.	71 1/2	62 1/2	68 1/2	61 1/2	61 1/2	62 1/2
50,000	£1	" " Par. Pref. 5%	6 1/2%	Nov.	23 1/2	20 1/2	24 1/2	21 1/2	21 1/2	24 1/2

a Interim div. b Plus 10% bonus. c In settlement of arrears. d Including 2 1/2% being part of arrears.

All the shares are fully paid except Alldays £5 ordinary shares.
The dividend recorded is the dividend for the whole year unless otherwise stated.

THE DEL MONTE PROCESS.

More Destructive Criticism Based Upon a Trial which was Admittedly a Failure. Why?

IN dealing with some criticisms of this process in our issue of 8th April we referred to a report which had been sent to us by Mr. Webb when the system was first dealt with by Mr. J. Owen in "The Westminster Gazette." We did not state at that time to whose report we referred, but it was one made by Mr. Alex. E. Tucker, F.I.C. The report relates to a test of a plant at Redditch made by Mr. Tucker in March, 1912, and that test in Mr. Tucker's own words was a "ghastly failure." This is the first time we have mentioned Mr. Tucker's name in THE MOTOR, although we have had a copy of his report in our possession for eight months. Since, however, he has contributed an article to a contemporary on the subject, which is clearly calculated to throw doubt upon much that has appeared in this journal, we are compelled now to go further into the matter.

Correspondence has passed between Mr. Tucker and ourselves on the subject of his test since we recorded the result of our own supervision of a test with the experimental plant at Barnes. With regard to the Redditch plant we must say right away that we know nothing except this:—That Mr. Tucker himself conducted a test which was a "ghastly failure." That other tests were conducted which were entirely successful, one of them being carried out in the presence of Mr. Bertram Blount. That in regard to the test carried out by Mr. Tucker we are confronted, in the report and in the correspondence which has since ensued between Mr. Tucker and ourselves, by a series of statements which to us are conflicting and incomprehensible. In the time and the space at our disposal we cannot possibly deal with this complex matter this week in the thorough and comprehensive manner which the importance of the subject demands at our hands, although all the facts are, so to speak, at our finger ends.

The crucial point of the whole matter appears to be this:—That in a 24-hour test, for 18 hours no gas was passed through the retort, when the essential feature of the process is that gas should be continuously passed during the whole period!

We have already stated this in THE MOTOR and in a letter to Mr. Tucker. In a reply, Mr. Tucker says: "Gas was not passed for 18 hours on Mr. del Monte's own recommendation."

We are writing this five minutes after an interview with Mr. del Monte and Mr. Smith-Everett, who both deny emphatically that any such recommendation was given.

Further, in the report by Mr. Tucker which is before us as we write, the following appears:—

"Mr. del Monte, who gave me no information as to the conditions existing or the arranged test, suggested that we should charge some slack and go on."

Further:—"Neither Mr. del Monte nor Mr. Smith-Everett saw me after this, and I understand both left for Birmingham soon after." (Confirmed by Mr. del Monte and Mr. Smith-Everett.)

Later we read:—"Up to this time (9 o'clock on Thursday morning) gas had not been passed through the retort, as I understood this was done at a later stage."

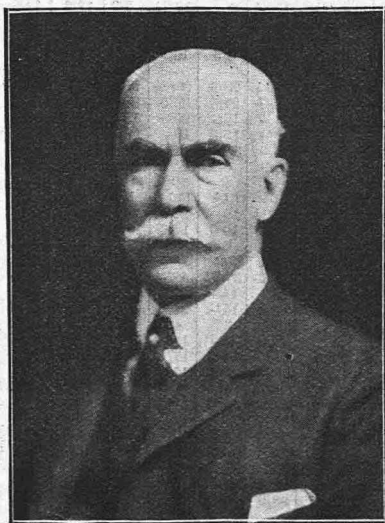
Here is an admission that the process was not understood. After our observation of the plant at Barnes, we can bring this matter down to a very homely simile which is this:—If you put a kettle on the fire and want the water to boil, you must not let the fire go out. If you do you will not produce boiling water. It would be an utterly illogical proceeding to follow up such a failure with a violent diatribe blaming the kettle!

We have necessarily to reserve our full treatment of the whole subject till next week, but we deal above with the main point about Mr. Tucker's report, which resulted in the failure of his test, and we do so at once because it is manifestly an unfair thing for a newspaper to allow destructive criticism to appear based, as it is, entirely upon a faulty test.

We promise our readers that next week we will provide a complete analysis of Mr. Tucker's report and his article in our contemporary, together with some interesting facts. Further, we shall make a suggestion to our contemporary which, if carried out, will enable it to form an opinion of its own upon this subject.

The Late Sir Charles Day Rose, Bart.

In the death of Sir Charles Day Rose, Baronet, M.P., for Newmarket, the cause of motoring loses a very great friend. He was chairman of the Royal Automobile Club in the year 1907-8 during the troublous period of the secession of the Motor Union, and there was no question in the minds of those who were concerned on one side or the other, about the value of Sir Charles Rose's tact and moderate influence. Thanks to him, the rupture was effected without any ill-feelings remaining to mar the subsequent usefulness of both bodies. Sir Charles was 66 years of age. He was born at Montreal, and came to Rugby for his education, afterwards joining the American banking firm of Martin, Rose and Co. He was a well-known breeder of racehorses, and was im-



The late Sir Charles Day Rose, Bart.

mensely popular in Newmarket. He was a vice-president of the Royal Automobile Club, and was qualified to sit on all committees, whilst his period of office as chairman of the Royal Aero Club has been memorable in the advance of the aerial movement. He was a member of the Road Board, and had put in an immense amount of useful work there. His death was very sudden, heart failure occurring whilst he was being driven home on Sunday week after spending the afternoon at the Hendon aerodrome and making his first flight with M. Verrier in an aeroplane. He was so enthusiastic about his experience, and seemed so well on the grounds, that it did not seem reasonable to attribute his death to his flight. He suffered severe bereavement in the deaths of his two elder sons in the last few years. He is succeeded by Captain Frank Stanley Rose, his third son.

THE KING AT BIRCHENWOOD.

Their Majesties the King and Queen Inspect the Coal Distillation Process at the Staffordshire Mine—A Larger Yield of Benzole—Germany's Wonderful Advance!—Eight Hundred Thousand Gallons a Week Next Year!

WHEN we reached Stoke-on-Trent on Tuesday night there was abundant evidence that all "Potterdom" was keenly appreciative of the honour of the Royal visit. We are more concerned, however, with the doings of the next day. It is but a few months since the use of benzole as a motor spirit was known only as an interesting experiment, the spirit itself, a gas-works production, being hardly within the knowledge of the average motorist, whilst it was certainly never considered in any serious vein either by him or even the expert, whereas now it is a general topic of interest and conversation. Undoubtedly our campaign is taking materialized shape, as, owing to the fact of our continual advocacy of this fuel, the effect is gradually being produced of reducing the exportation of it, owing to consumption taking place in this country, in addition to greater quantities being manufactured.

We are perfectly prepared to admit that the price is, in a number of cases, excessive, and, to those whose powers of perspicuity are limited, this appears to be a serious defect. Naturally, for the moment it is not a good feature, but, glancing forward a little, it must be fairly evident that, so soon as benzole is used in anything approaching large quantities, then the price of this spirit and any others which may be competing with it and petrol will gradually find a common base, and motor fuel will be sold at a reasonable price for a reasonable profit. But a few months, then, sees a jump in the history of English motor progress, from the time when benzole was only known as a scientifically possible spirit, but undreamt of as a commercial one, to the present moment when His Majesty the King, accompanied by Queen Mary, evinced a keen interest in one of the largest and most up-to-date benzole plants in the kingdom, a plant which produces large quantities of excellent motor spirit. Incidentally, with further experience with these Still plants, it has been found possible to obtain as much as three and three-quarter gallons of spirit to one ton of coal, a very important improvement.

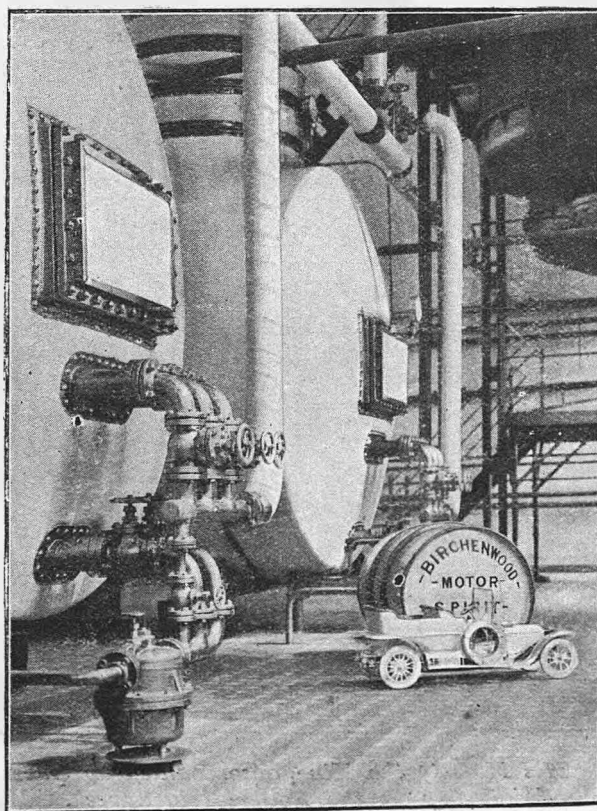
Our readers will recall that our active benzole campaign originated with the discovery of the plant at Birchenwood, which we visited and inspected, afterwards fully describing and illustrating it in *THE MOTOR* of 15th October last. Some short time ago we ventured to address a letter to His Majesty calling his attention to the existence of this extraordinary plant. We also pointed out the vital importance of the provision of a fuel produced entirely in this country, especially in view of the certain use of oil fuel by the Navy, and in due course were honoured with an acknowledgment of our communication.

On Wednesday morning last the colliery was gaily decorated in expectation of His Majesty's visit, and the weather was all that could be desired. As a

matter of fact, the whole of the Royal tour was confined to an inspection of the benzole-producing plant. From the entrance gate to the large water pumps the banks in the yard had been cut out into terraces, and hereon thousands of school children were grouped. The yard in question is that of the No. 4 pit, and it certainly presented a very animated appearance. The centre was a roped-off enclosure, and along both sides of this invited guests and employes of the colliery took up their positions, whilst a stand had also been erected on the roadside, and it likewise was duly packed with people.

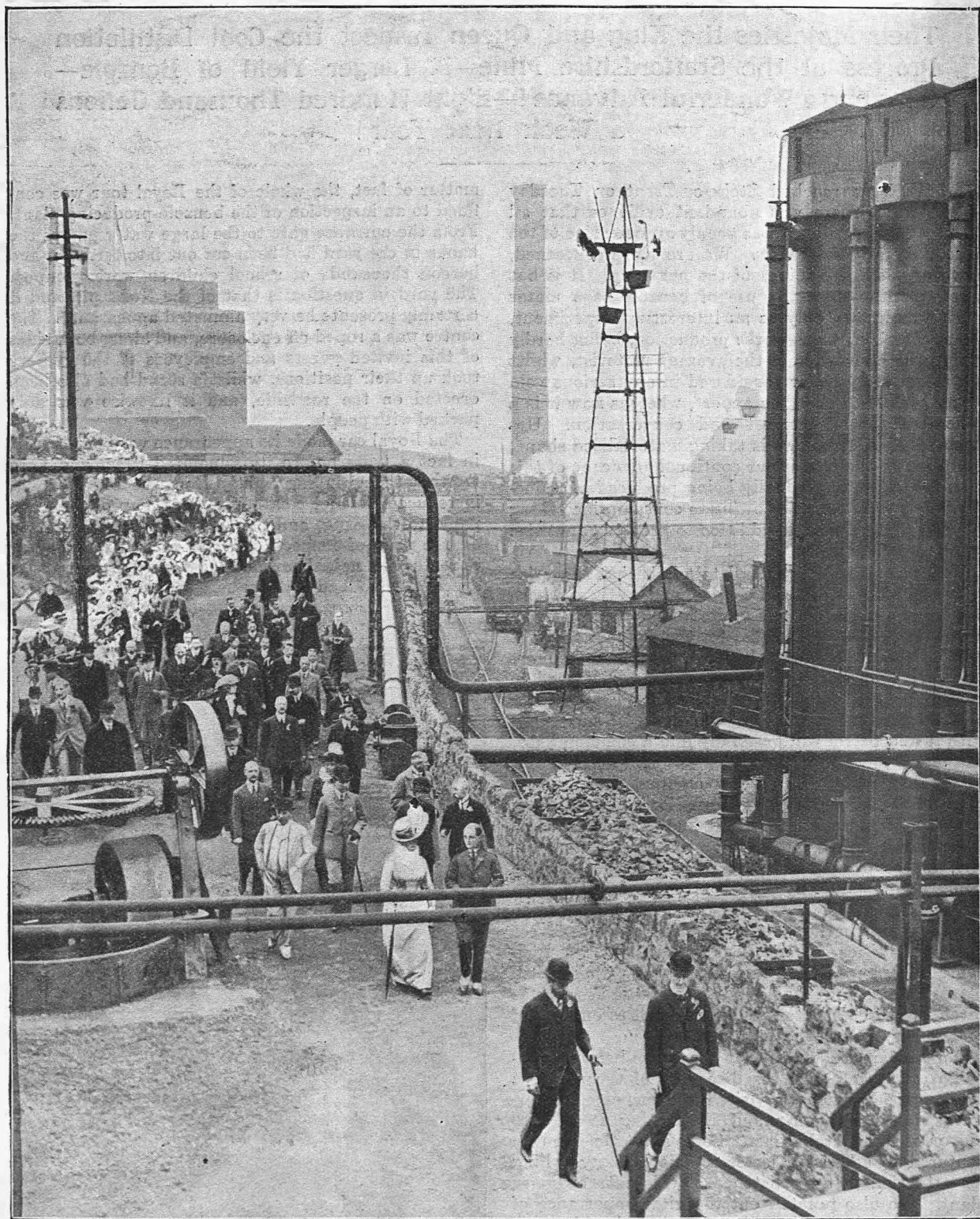
The Royal car made its appearance very punctually, in fact a trifle before its appointed time, and Lord Dartmouth, springing lightly from the big Daimler, introduced Colonel Heath, the Chairman of the Company, to the King, and the entourage quickly started on the tour of inspection. The party proceeded at once to the neighbourhood of the coke ovens. A special bridge leading from here to the Still exhauster

(Continued on page 618.)

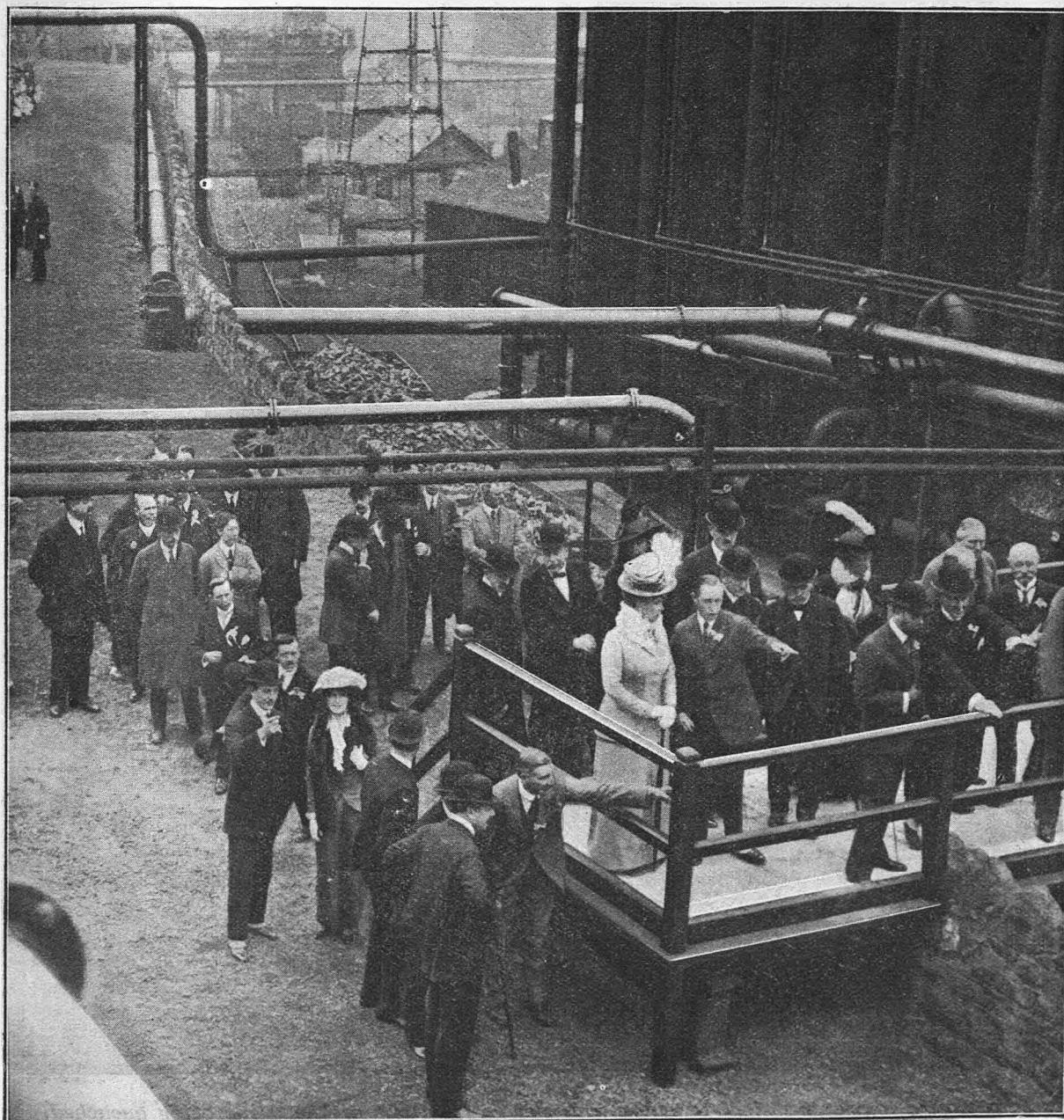
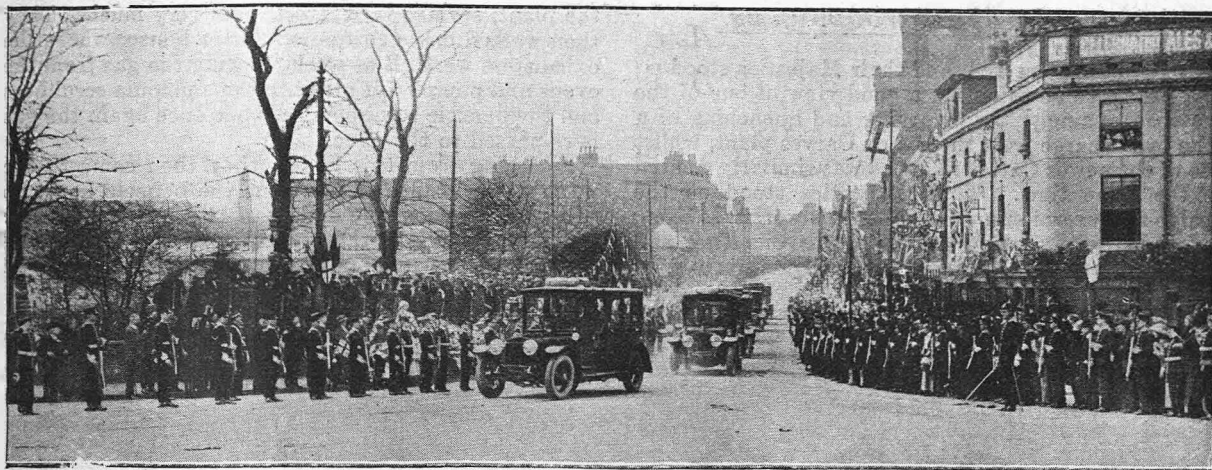


In the Benzole house. The exquisite model of the Rolls-Royce "Silver Ghost" side by side with a drum of the Birchenwood motor spirit.

INCIDENTS OF THEIR MAJESTIES' INSPECTION OF THE BIRCHENWOOD BENZOLE PLANT



His Majesty the King, accompanied by Queen Mary, made a series of visits to large centres of industry in the Potteries last week. We are very pleased to be able to report that their Majesties included in their tour an inspection of the magnificent benzole-producing plant at the Birchenwood Colliery, which plant was fully described by "The Motor" last October. In the photograph his Majesty is seen being conducted round by Colonel Heath, whilst the honour of explaining the process to her Majesty Queen Mary fell to Mr. Robert Heath's son.



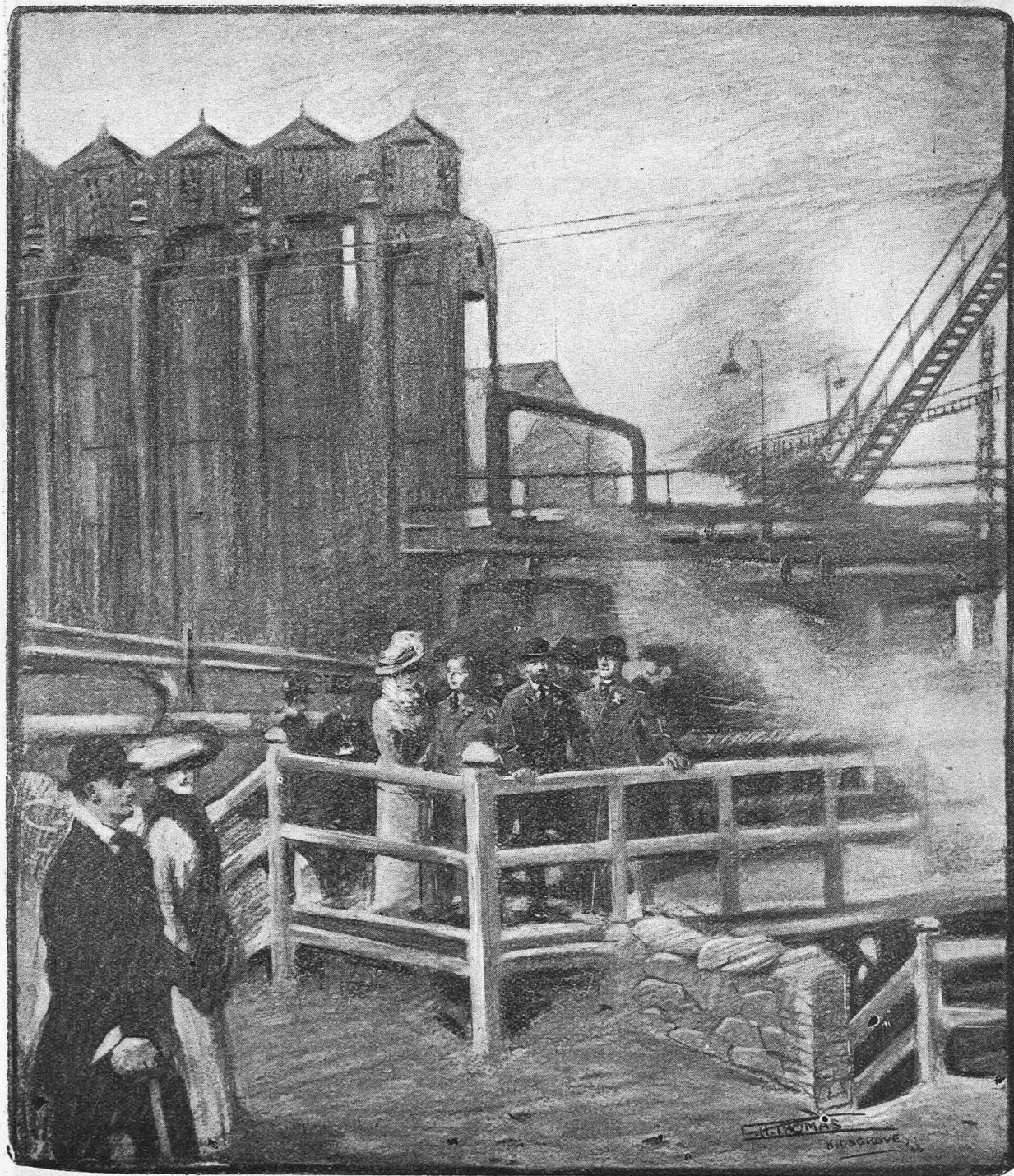
Upper illustration shows the Royal Party leaving the Town Hall, Stoke-on-Trent. In the lower one their Majesties are watching the discharge of coke from one of the ovens.

THE KING AT BIRCHENWOOD.—Contd.

house had been erected, and their Majesties stood on this bridge so as to obtain a good view of one of the processes, namely, the emptying and quenching of a coke oven charge from the Simon Carves plant, whilst one of the newer Carl Still ovens was similarly treated at the same time. Their Majesties stood on the bridge for several minutes, whilst this work was being proceeded with, and the huge clouds of steam and smoke, together with the general impressiveness of

the plant, seemed to interest them very much. They then walked down to the exhauster house, where the exhausters were all at work drawing the gas from the ovens and pumping it along to the ammonia scrubbers and the benzole scrubbers, whence once again the gas is re-passed to the ovens.

Emerging from this house, they then came to the piece de resistance of the tour, the benzole house to wit, which was as spic and span as a well kept dairy. Incidentally, this is the normal condition of the benzole house, as it is a wonderfully clean place. In



It is a very impressive sight to watch a discharge from one of the ovens being quenched, as huge volumes of steam rise up slowly to drift away. Their Majesties saw the charge from two ovens so quenched.

THE KING AT BIRCHENWOOD.—Contd.

here, the first thing which attracted his Majesty's attention was the "Silver Ghost" model of the Rolls-Royce car, which was mounted on a 50-gallon drum of Birchenwood motor spirit, and the suggestion implied of the eventual use in this country of home-produced motor spirit seemed to be at once apparent to his Majesty, who appeared to gather the commercial value of the pictorial representation at the first glance.

The exhibit in the benzole house consisted of a large table, full of all manner of good things (commercially), starting first of all with the coal, then a portion of a "cake," which is the coal dust made into a huge briquette (a little matter of some nine tons under actual working conditions), then all the various by-products in bottles, ranging from vanilla flavouring for blanc mange to 100 per cent. benzole, and finally came the 50-gallon drum of benzole with "Birchenwood Motor Spirit" painted on it, and on top of the said drum the model of the Rolls-Royce car. The model in question was examined with considerable interest by both the King and the Queen, and everyone in the entourage seemed to be taken with the beautiful work it contains. It is complete in every detail, even to carrying two diminutive spare tyres, which particularly attracted his Majesty's attention, as he fingered them, smiling whilst so doing. A considerable time was spent here, and the range of by-products is certainly astounding, even to one with some little knowledge of the no-waste possibilities of this and similar processes. To see all the various spirits and powders obtainable from the distillation of coal is indeed a wonderful sight.

Colonel Heath then presented specially-prepared books, giving an account, with illustrations, of the

colliery and the North Staffordshire coal trade. Both copies were printed on Whatman paper, with an admirable selection of permanent carbon photographs, the photographs in question showing the chief features of the distillation plant. The King's copy was bound in royal blue levant morocco, and the Queen's in white levant morocco, both copies being adorned with some excellent tooled decorations.

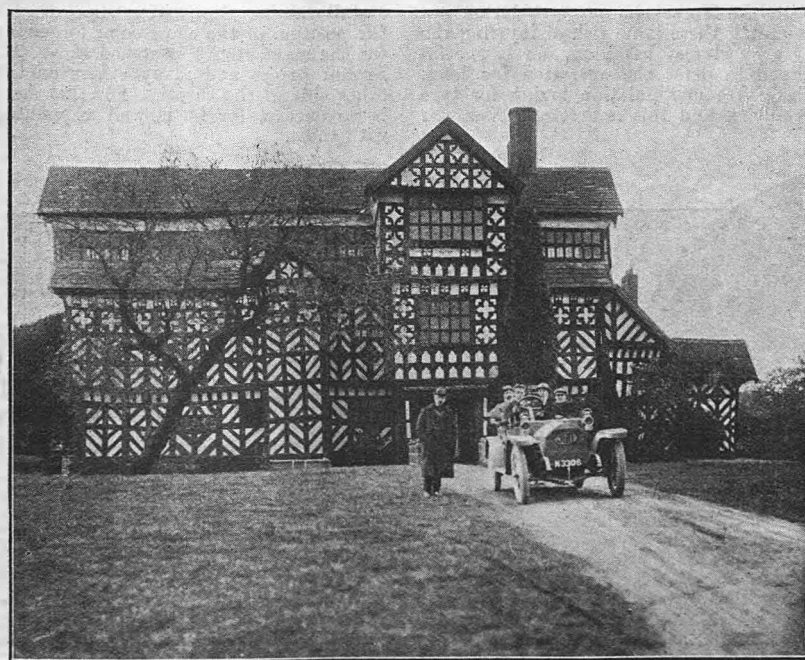
Everyone appeared to be fascinated by the benzole house, with its wonderful exhibit of by-products, and seemed loth to leave the building; we understand that the Marquis of Crewe, Lord Dartmouth and Lord Derby have each ordered some of this Birchenwood motor spirit, and we venture to hope that an opportunity will arise for his Majesty the King to try it.

The next move was to the sulphate of ammonia factory, and passing through here a glimpse of the carbolic acid plant was obtained, though not much time was spent in either of these places. The party then moved out into the open air again, and on the way back to the yard where the Royal car was waiting the huge circular tanks, where thousands upon thousands of gallons of motor spirit are stored, were passed. Walking up the slope to the yard again, their Majesties bade adieu to Colonel Heath and his co-directors, and getting into their car sped off to Moreton Old Hall, Congleton, where they were to lunch.

Altogether, their Majesties spent 21 minutes in the works, and although, of course, one could not inspect the plant thoroughly even in a day, nevertheless some of the chief things were seen, and we venture to hope that, having inspected this huge plant so obviously under successful operation, employing as it does over 2000 men—a plant which we think must be quite as up-to-date as any in this kingdom—his

Majesty may have been impressed with the possibilities of making in this country at any rate enough motor spirit to render us independent of outside sources of supply in time of war, alike for naval, military and aeroplane needs, and that ultimately we may make, on a sound commercial basis, a very large proportion of the motor spirit which will ordinarily be used in this country.

As we have repeatedly pointed out, the value to this country in time of war of producing liquid fuel in sufficient quantities to be independent of outside resources might prove more than immenso. This time next year Germany, with the new plants now being erected, will be making nearly 800,000 gallons of motor fuel a week—a production which, with some little storage facilities, would go far towards rendering them independent of external supplies for war purposes. May we in this country soon follow suit.



THE GATE HOUSE OF MORETON OLD HALL.
The famous 16th century building, of considerable antiquarian interest, where their Majesties the King and Queen were entertained to lunch on Tuesday last.

NEWS AND NOTES.

On Top Speed with the Driver Walking.

Tests of slow running on top gear have often been made, but we believe that the first occasion when the driver left the driving seat and walked beside the car with the engine driving the rear axle on the direct top gear occurred last week when a 12-14 h.p. F.N. was put to this test. The speed of the car was brought down to about 3½ m.p.h., and the driver, on leaving his seat, was able comfortably to walk beside the car holding the wheel. Representatives of the Press observed the performance, and on one of the occasions we ourselves sat in the seat on the left of the driving seat and noted the position of the gear and brake levers and the fact that there was no interference with the general disposition of the clutch, and immediately afterwards, in order to confirm the conditions of the test, we took the driving seat and drove the car through a range of speeds varying from 25 m.p.h. (no higher speed being possible in a busy London street) to 3½ m.p.h. We had no opportunity to test the full range of the engine's flexibility, but we were offered an opportunity—of which we propose shortly to avail ourselves—of testing the extent of the range, which, we are told, is from 3½ m.p.h. to at least 45 m.p.h. without need for gear changing. Flexibility is not a very common feature, and when it goes hand in hand with other excellent qualities—as it does in the case of the F.N. cars—it is valuable indeed.

Next Saturday the Cyclecar Club has a run to Westerham for tea at the King's Arms. The return journey will probably be by Westerham Hill.

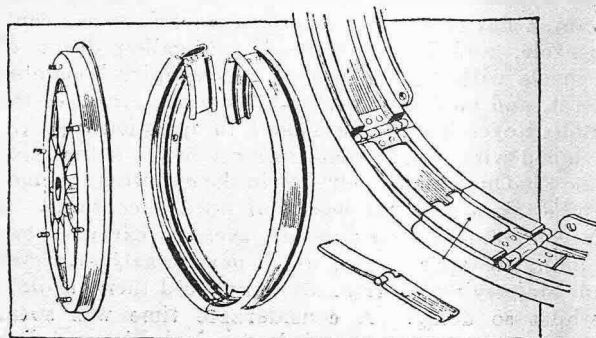
Amongst the models of the Isotta-Fraschini car quoted in the New Car Supplement is a 27-30 h.p. This should read as 27-80 h.p.

The Forse Detachable Rim.

In the Forse detachable rim, manufactured by the Forse Detachable Rim Syndicate, Yeovil, we have a most ingenious example of that type which accomplishes two purposes. First of all there is the element of detachability of the rim, and secondly, there is the easy detachability of the tyre from that rim. Every detachable rim must have easy detachability as regard the rim, needless to say, since that is the essence of the invention. With such a rim the tyre is put on and taken off in the ordinary way. The Forse rim carries the matter a stage further by giving increased facility for removing the tyre from the detachable rim. This end is arrived at by making the rim collapsible, so to speak. A small segment of the rim is movable, and by operating this the diameter of the rim is so reduced that the tyre is easily put on or removed. An ingenious toggle lever effects the necessary expansion when the movable segment is put in its place, and by a simple movement the rim is made whole again with the tyre securely in position. Tyre changing is thus robbed of any difficulty it may possess; and as with the Forse rim no tyre levers are required, there is no risk of injuring the tyre by clumsy handling, nor is one inclined to defer the operation too long. Easy tyre manipulation makes for tyre economy, and this is a strong claim for the Forse.

Cheap Dunlop Tyres.

An advertisement has appeared offering new Dunlop tyres at a reduction of 33½ per cent. The Dunlop Rubber Co. advise us that the covers offered at such a huge reduction are not the same as those priced in the current trade lists; they are of French origin of a pattern that has now been discontinued, and were marked and sold by the Dunlop Rubber Co. as a clearance lot. We are informed that an undertaking has been

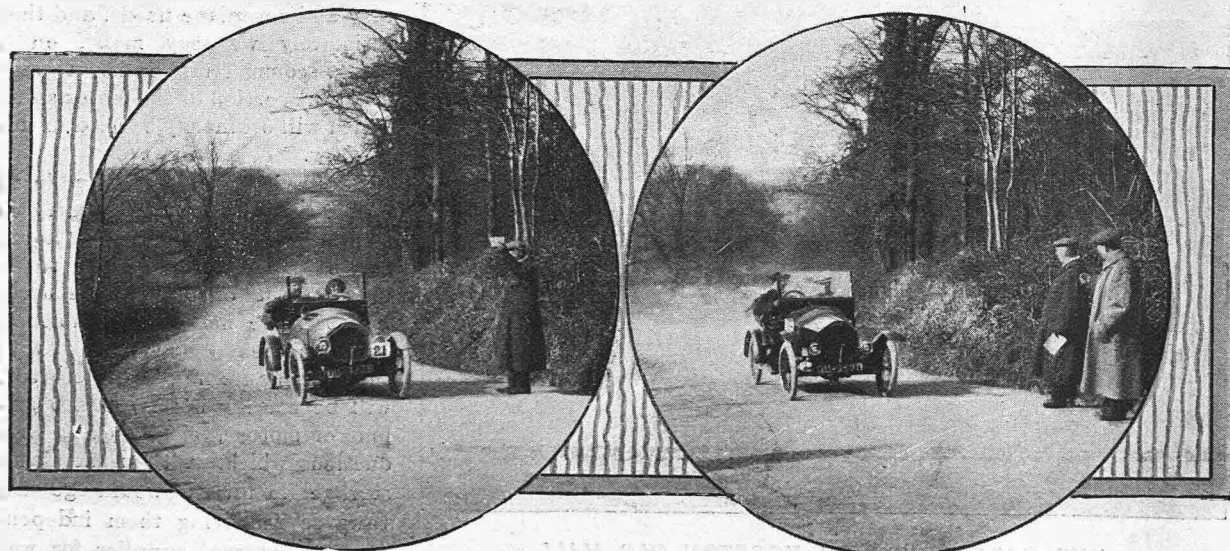


Forse detachable rim. Diagram showing method of attachment to the Sankey all-steel rim.

given that the advertisement shall not appear again.

New Showroom at Regent Street.

In the note in last issue about the new showrooms in Regent Street of the Metallurgique, the writer slipped over the position of the showroom, forgetting for the moment the existence of No. 14, Regent Street and many others on the other side of the Circus. For this there is no excuse, for he is well acquainted with them.



COVENTRY AND WARWICKSHIRE M.C. TRIAL.

On the left: Mr. Geoffrey Smith on his Humberette, winner of president's silver rose bowl for best cyclecar performance ascending Edge Hill. On the right: Mr. Sam Wright on his Humberette ascending Edge Hill. Mr. Wright was the runner-up for the president's silver rose bowl.

NEWS AND NOTES.—Contd.

THE NEW 16 h.p. DARRACQ.

An Interesting Club Test.

The Herts County A. and A. Annual Fuel-consumption Trial took place on Saturday, the 19th inst., at Hatfield. Eleven competitors started, using various fuels. The results were as follow:—
F. G. Carter, 20 h.p. Vauxhall, fuel allowance 80.1 oz., consumption equal to 33.6 m.p.g., fuel used No. 2 Shell.

W. J. Wainwright, 12 h.p. Rover, fuel allowance 79.5 oz., consumption equal to 33.2 m.p.g., fuel used benzole.

W. Young, 12 h.p. Rover, fuel allowance 80.5 oz., consumption equal to 28.2 m.p.g., fuel used half benzole and half No. 1 Shell.

C. E. S. Dodwell, 20 h.p. Vauxhall, fuel allowance 88.7 oz., consumption equal to 24.6 m.p.g., No. 1 Shell.

C. E. B. Morris, 10-12 h.p. Belsize, fuel allowance 67.4 oz., consumption equal to 28.6 m.p.g., Phœbus paraffin.

G. Lowry, 12 h.p. Rover, fuel allowance 76.7 oz., consumption equal to 25 m.p.g., half benzole and half No. 1 Shell.

Mrs. Punnett, 16-24 h.p. Unic, fuel allowance 87 oz., consumption equal to 9.1 m.p.g., fuel used No. 1 Pratt's.

Arrol-Johnston Debenture Issue.

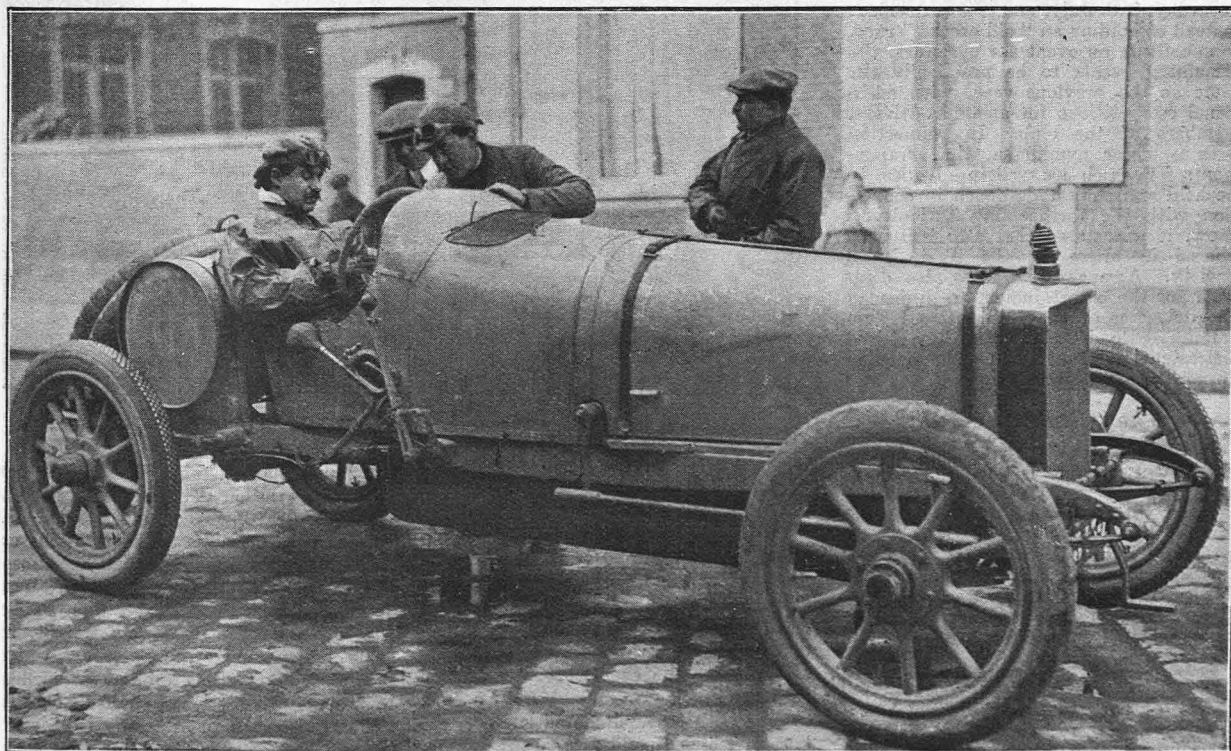
In our next issue we shall give full details of a proposed issue of £80,000 6 per cent. debenture stock in Arrol-Johnston, Ltd. The company has done well under the present management, its profits for the past three years having been 1910, £5957; 1911, £15,741; and 1912, £25,859. The proceeds of the issue will go towards the cost of the new Dumfries factory, the valuation of which with the Paisley factory amounts roughly to £116,625.

We had the pleasure one day last week of driving one of the new 16 h.p. Darracq cars with the new poppet valve engine, which has been produced in order that Darracq customers may have the choice of a "valveless" (rotary distributor) or poppet valve-engined car. In these days of high engine refinement, the poppet valve engine is called upon to be the equal of the non-poppet valve type in all those respects in which the newer type of engine is supposed to have effected a revolution, and, without doubt, the latest Darracq production, which is from the designs of Mr Clegg, in no wise falls short of modern requirements. In fact, it is not going too far to say that the new motor represents an advance in refinement of 75 per cent. on earlier Darracq poppet-valve engines with not a hint of loss of the vim and dash and go that have always characterized the productions of the Suresnes factory. It possesses the silkiness of running, at all crankshaft speeds from merely turning over to a high rate of revolutions, which is nowadays aimed at, but is not always attained; it is almost silent in every one of its functions, for little or no noise can be heard beyond the sound of the air entering the carburetter; it "pulls" wonderfully on hills, holding its power very well indeed; and it is responsive to the controlling efforts of the driver. Although one does not so drive under normal circumstances, we called upon the engine more than once to take up the load on top gear after the car had been brought by exigencies of traffic almost to a standstill, and in every case the task was accomplished with superlative ease.

the load being taken up without a falter on the part of the engine or the slightest chatter in the transmission. We did not have an opportunity of ascertaining the limit of the speed of the car, but from such tests as we were able to give we should be fully prepared for a speed of 50 miles an hour on Brooklands, and also a splendid performance on the test hill. The acceleration is excellent, whilst the clutch is sweet in operation, the gears can be changed without a sound, the bevel drive is free from objectionable noise, and the brakes are efficient and smooth in action. Altogether the 16 h.p. Darracq is the best model ever produced at Suresnes, and will build up quite a new reputation for this well-known make. The dimensions of the new engine, by the way, are 85 mm. bore by 130 mm. stroke, the cylinders being set desaxe, and the big ends of the connecting rods dipping into constant-level-troughs.

A Sunbeam on the Grand Prix Course.

In the secrecy of their private shops, from which all strangers are kept at a distance, preparations are being actively pushed forward for the French Grand Prix race, to be run at Amiens on 12th July. During the past week the Sunbeam Co. brought one of their racing cars across the Channel to carry out fuel-consumption tests on the Amiens course. Mr. Louis Coatalen, who had run up from Monaco, where he had been following the motor-boat races, was present. The three drivers, Resta, Rigal and Caillois successively took the racer round the triangular course.



Rigal on a Sunbeam racer with Messrs. Resta, Coatalen, and Caillois. Fuel-consumption tests were made over the course last week.

NEWS AND NOTES.—Contd.

THE ENFIELD SMALL CAR.

The Leicestershire Automobile Club Meeting.

The meeting held by the Leicestershire Automobile Club last week in the Grosvenor Room of the Grand Hotel, Leicester, was very largely attended, Mr. E. G. Mawbey presiding. After letters of apology for unavoidable absence had been read, the chairman in brief terms referred to the death of Mr. Orson Wright, a former chairman of the club, and a vote of condolence with the widow and family was carried. The business of the meeting was then proceeded with. It was resolved that committee meetings open to all members of the club be held every three months, and that a report of the preceding three months work should be read at each of these meetings. Many complaints came up for consideration in regard to road surfaces, dangerous crossings, etc., notably the cross-road near Narborough, and with regard to this it was resolved to petition the R.A.C. for caution signs to be erected. Sir Bache Cunard made a complaint that a number of caution signs had been erected in unsuitable positions in the neighbourhood of Kibworth and the Langtons, and it was decided to notify the R.A.C. concerning them. It was urged that the attention of the Leicester County Council should be drawn to the dangerous bridge near Theddingworth on the Harborough-Lutterworth road, and also to the unrolled road metal on the Ashby road near Loughborough. Mr. Hewitt, the hon. sec., reported that the grievance of unrolled metal on the Wolford road had been rectified. Discussion took place, and a programme drawn up for a hill-climb to be held at Beacon Hill, on Saturday, 26th July, and it was decided, instead of holding an "old crocks" race, to substitute an event for cyclecars, the remaining events to be practically the same as the previous year, with additional competitions for amateur drivers, members of the club. In connection with a motor gymkhana, the arrangements for which are well in advance, to be held at Ashby-de-la-Zouch in connection with the forthcoming agricultural show, it was stated that £15 had been offered in prizes by the Agricultural Society. Arrangements were also dealt with for the entertainment to dinner of the delegates of the International Conference of Road Users, when they visited Leicester in July. During the evening 16 new members were proposed.

The "Canty" Hood.

In dealing with the Canty hood in our Equipment Number last week, the company was referred to as "Hoods and Screens, Ltd." instead of Hoods and Bodies, Ltd. We greatly regret the error and hasten to correct it. We are also informed by Messrs. Hoods and Bodies, Ltd., that it is not correct that Messrs. Beaton and Sons are manufacturers under licence of this hood.

Masonic Votes.

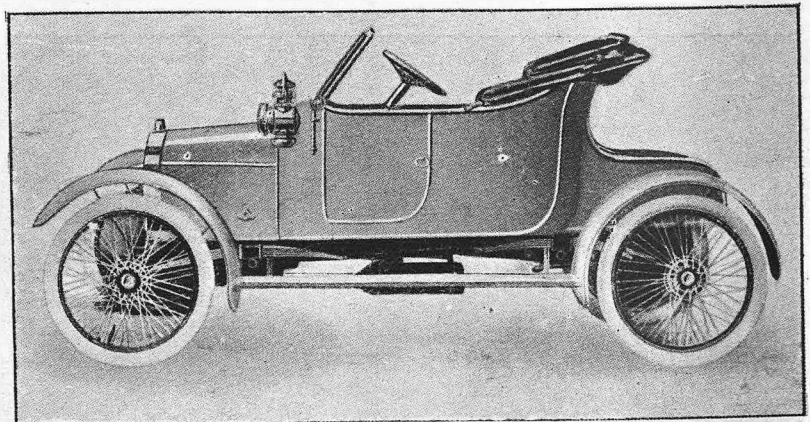
Any of our readers whose votes for the Royal Masonic Benevolent Institutions for Aged Freemasons and Widows of Freemasons are not already bespoken would do us a favour by forwarding them to the Editors, THE MOTOR, for a case we are personally interested in.

D23

The Enfield Autolette, an illustration of which appears, is constructed throughout on car lines. The engine is a two-cylinder Enfield, and its dimensions are 85 mm. bore by 95 mm. stroke. The cylinders are cast en bloc and water-cooled on the thermo-syphonic principle, the gilled-tube radiator and pipes being of ample proportions. The mechanically-operated valves, which are interchangeable, are disposed on one side, and the tappets are made so as to be adjustable. The high-tension variable timing magnet is placed on the opposite side, and is driven by a silent chain, as is also the camshaft. An automatic carburettor of an efficient design is fitted, which allows the engine to accelerate quickly, and also to run at slow speeds, and the throttle control is mounted on the steering pillar, together with the lever for advancing or retarding the spark.

The flywheel, which is of large diameter, thus ensuring smooth running, forms the outer member of an inverted leather-faced cone clutch, the withdrawal fork of which is fitted with fibre blocks instead of the usual rollers. These blocks not only disengage the clutch, but also, on account of the friction between them and the flange that they press against, act as a clutch stop. Between the clutch and the gearbox is placed a universal joint. The gearbox is an aluminium casting with an inspection cover of large size. The gearwheels are all case-

hardened. The sliding gears are carried upon a castellated shaft, the keys being solid with the shaft, and both shafts run in ball bearings of suitable size. Three speeds forward and a reverse are given, whilst a direct drive on top is provided. In the rear of the gearbox is placed another universal joint, and an enclosed shaft transmits the power to the worm-driven back axle, the worm being placed below the axle to ensure that it is constantly and properly lubricated. No torque rod is required with this design, as the shaft casing takes the reaction of the drive. Worm and sector steering is fitted, and the steering column is set at a convenient angle. Semi-elliptical springs of the cantilever type are used both fore and aft. The front axle is a solid steel forging of I-section. The expanding brakes on the back wheels are operated by a lever, whilst the foot brake is of the external-contracting-shoe type. Wire wheels, which are carried on ball bearings, are fitted and shod with 660 mm. by 65 mm. tyres. As will be seen from the illustration, ample room is provided for two passengers, and the neatness and smartness of the bodywork and design will also be observed. The price of the Autolette is £138 10s., which includes Cape-cart hood, windscreen, side and tail lamps, and kit of tools. The Autolette is made throughout of the same high quality and material as the other Enfield models, and is also guaranteed for 12 months.

*The 8 h.p. Enfield Autolette.**The Stock Car Race: Modification of the Rules.*

When the Royal Automobile Club failed to interest the trade in the race first proposed and to be held in the Isle of Man next September, the Stock Car race was devised in order to meet the objection that there was not time to build cars specially for the event. It was decided that the Stock Car race should be open to cars with four-cylindered engines, the bore of which should not exceed 90 mm. nor the stroke 140 mm. This race was given the veto of the S.M.M.T., which means that any entrant would forfeit certain rights in connection with the

Olympia Shows. The R.A.C. has now met an objection that has been raised to the cylinder dimension limitations, and has decided that the cylinders of the engines qualified for entry shall not exceed a cubic capacity (volume swept) of an engine of 90 mm. bore by 140 mm. stroke, or 3563 c.c. The minimum weight, including driver and mechanic, fuel, water, oil, tools, and other appliances, such as spare wheels and tyres, shall be 2000 lb. The chassis must be of a standard touring design and construction, and must be equipped with a two-seated body. The distance of the race will be 300 miles. The winner becomes the holder of the Tourist Trophy.

NEWS AND NOTES.—Contd.

Car and Train Race.

We reproduce on this page a picture of the finale of the greatest piece of realism ever produced on the stage. It is the end of the first act of the new revue "Come Over Here," performed at the London Opera House. A lovesick couple have eloped on the train and the irate father chases them by motorcar. The motorcar is shown on the cinematograph racing along English roads (suspiciously like the Hindhead district) at a speed which would put Percy Lambert's famous Talbot record completely in the shade. How the car—a Napier, by the way—keeps an even keel at the corners is amazing, and it is rather rough luck on Mr. Harry Vane, of Napier Motors, Ltd., who lent the car for this part of the performance, that in order to lend incident to the picture, the actors pretend to have a breakdown on Hindhead. The series of pictures of a car going full speed on English roads, apart from the clever fooling of the driver and occupants being driven, is most interesting, inasmuch as one is shown exactly what it looks like at high speed on the highway with a picturesque panorama of scenery scudding past on either side and the open road unfolding itself like a ribbon ahead. After a period of the cinematograph pictures, the stage is darkened and a railway station scene is dimly discerned from the auditorium. Away in the distance a long range of hills just visible in the twilight. The train appears, by an ingenious lighting effect, winding snake-like down the de-

cline, apparently miles away. Presently the two headlights, unmistakably those of the pursuing car, appear and flicker and disappear to appear again much closer as the car apparently takes the bends and twists of the hill-road. The excitement of the chase grows intense. The attention of the audience is riveted between the snake-like progress of the lighted-up train on the one side and the rapidly-pursuing headlights on the other. Nearer and nearer the train and car approach with realistic noise, till, finally, the culminating effect is reached as shown on the picture, and the steaming locomotive draws up in front of the footlights side by side, a dead heat with the Napier car. We have to thank Napier Motors, Ltd., for the opportunity they gave us last Tuesday of witnessing this startling effect. This, however, is only one of many stage thrills which will make the London Opera House attraction "Come Over Here" truly and literally prophetic for the London public for many months to come.

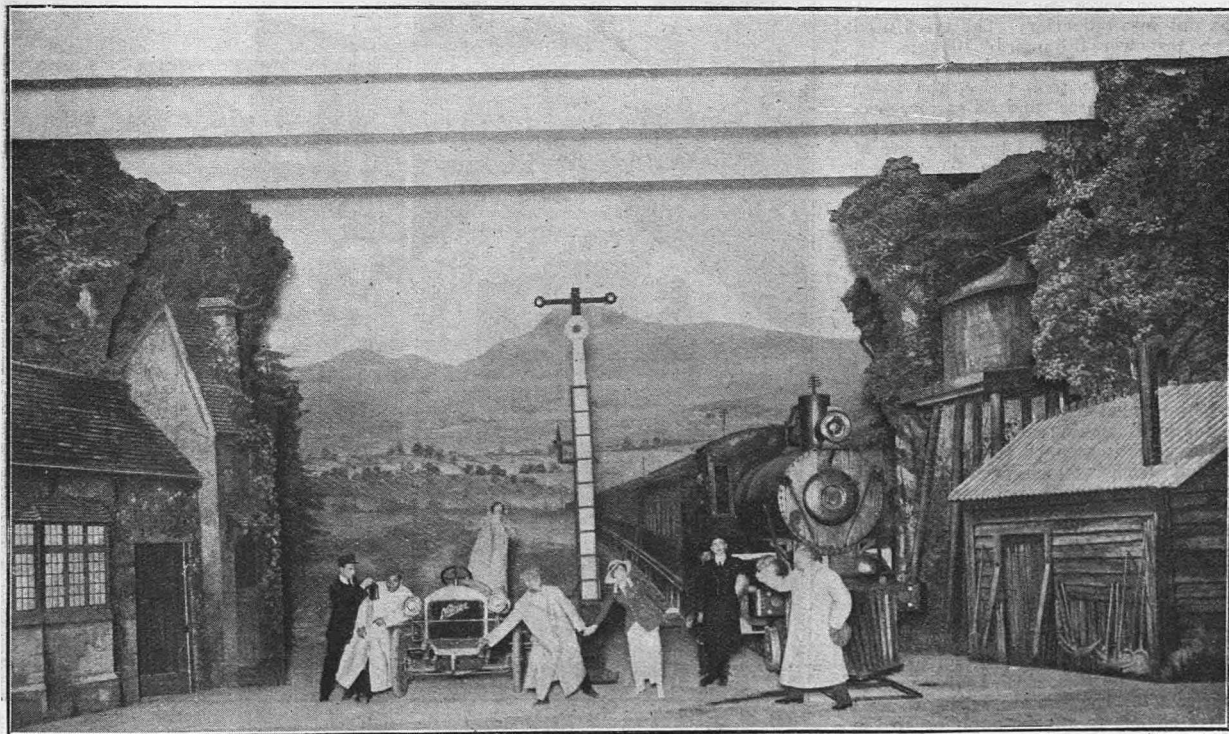
Speed Limits.

An application for a 10-mile speed limit order has been made by the L.C.C. in respect of High Street, Deptford. Objections should be lodged with the Local Government Board by the 28th inst., and the Secretary of the A.A. and M.U. will welcome any information sent in by members relating to the proposed order. Will members note that a 10 miles speed limit is now enforced along a portion of West Street, Harrow, and that heavy motor vehicles are restricted to five miles per hour on Richmond Bridge.

A New Star Catalogue.

The latest Star catalogue which has recently been issued, in addition to retaining the general excellence, in keeping with the car itself, of former editions contains many useful features which entitle it to be placed amongst the high-class motorcar catalogues issued. The descriptive matter is very simple, and, as far as is possible, non-technically written, which makes it most instructive, that relating to the component parts of the car being worthy of note. Very complete specifications are given of all the models, accompanied by many fine illustrations, which for clearness of detail could not be improved. A few testimonials are inserted in the catalogue, also a batch of interesting illustrations of the 12 hours record made by the Star car last year, and, lastly, the conditions of the comprehensive guarantee given with the Star car are inserted—all of which greatly enhance the value of the catalogue itself as well as conveying to the prospective buyer an excellent impression of the car. Copies can be obtained from the Star Engineering Co., Frederick Street, Wolverhampton, or from the London depot at 24-26, Long Acre, W.C.

A highly-complimentary letter has been received by the Atlas Non-Puncture Inner Case Syndicate, Ltd., relative to their tyre pump, from Lord Powerscourt. In the letter the following extract appears: "I have owned an Atlas tyre pump for some months now, and cannot speak too highly of its efficiency. . . . It is really a boon to the motor driver, and I am sure most would purchase one if they had an opportunity of seeing it pumping up a tyre when you have already expended your spare energy in changing punctured tube."



The thrilling arrival of the Napier car and the train which forms the climax of the Revue at the London Opera House entitled "Come Over Here." Other illustrations on page 624.

NEWS AND NOTES.—Contd.

Atlas Tyre Pump Test.

The following is the text of a certificate issued by the R.A.C.:-

"This is to certify that an Atlas Impulse Tyre Pump was entered for test by Messrs. The Atlas Non-Puncture Inner Case Syndicate, Ltd., of 124, High Street, Kensington, W.

"The device, which is permanently screwed into a valve-cap of the engine, consists of two different size cylinders in tandem, from the smaller of which the air is forced through a non-return valve to the tyre. These cylinders are divided by a partition through which passes a hollow piston rod connecting the larger and smaller pistons. The lower end of this rod is closed by a non-return valve, while the upper end communicates with the smaller cylinder on the engine side of its piston. The larger piston is of the usual type with two rings, while the smaller is a leather cup. A suction valve allows air to be drawn into the engine on its down stroke, while to permit the displacement of the larger piston holes are provided close to the dividing partition already mentioned. The diameters of the two pistons are respectively $2\frac{1}{4}$ in. and $1\frac{1}{2}$ in. The weight of the device as entered, with gauge and 12 ft. of tubing (but not including the screw valve by which the pump was attached to the engine valve-cap), was 6 lb. 6 oz. The overall length of the device (not including the connection to the engine valve-cap) was 10 $\frac{1}{2}$ in.

"The device was tested on a 20.1 h.p. (R.A.C. rating) Bianchi car, the dimensions of the cylinders of which were 90 mm. by 115 mm. The pump was fitted as a permanent attachment, lying transversely across the top of the front cylinder of the engine. The pump was connected to the engine valve-cap through a screw-down valve, by turning which it was put into operation. The tyres used in the tests were 815 mm. by 105 mm.

"The device was put into operation (without using a tool) twice, the times taken being 32 sec. and 28 sec. respectively, after the bonnet had been lifted. Two tyres were inflated to a pressure of 66 lb. per sq. in. in 2 min. 50 sec. and 3 min. 21 sec. respectively, with the engine running at 640 r.p.m. The wheels of the car were jacked up during inflation.

"When the air passing from the tubing had been allowed to impinge from a distance of 1 in. upon a piece of white blotting paper for $\frac{3}{4}$ min. (i.e., about the time taken to inflate one tyre), a slight mark of oil was just visible. This test was made $12\frac{1}{4}$ min. after the two tyres had been inflated. During this test the engine was running at 688 r.p.m., but the pump did not seem to be working at its full stroke, which appeared to be caused by the fact that it was not doing any work. When the pump was in operation the engine cylinder was not firing, although no electrical connections were broken."

H.F. Plastene, the new vulcanizing material introduced by Messrs. Harvey Frost and Co., Ltd., 39-41, Great Eastern Street, London, E.C., having proved so successful, the firm are willing to send a free sample to anyone applying to the address given, or, if more convenient, to the firm's West-end establishment, 27, Charing Cross Road, W.C.—close to Alhambra Theatre.

p32

A Tour to Brooklands.

The Sheffield and District Automobile Club, which held its first pace-judging run of the season on Saturday, 26th April, are arranging a tour by road to Brooklands for the races on Whit Monday for a party of its members. The party will start on the previous Saturday about 1 p.m., and make Worcester their destination for that day. On Sunday it is intended to visit Bath and finish the day at Reading or in that neighbourhood, and on Monday morning an early start will be made for Brooklands. After the races the party will journey to London, returning to Sheffield on Tuesday. The annual hill-climb of the club has been fixed for Saturday, 21st June.

Pen-y-ball Hill.

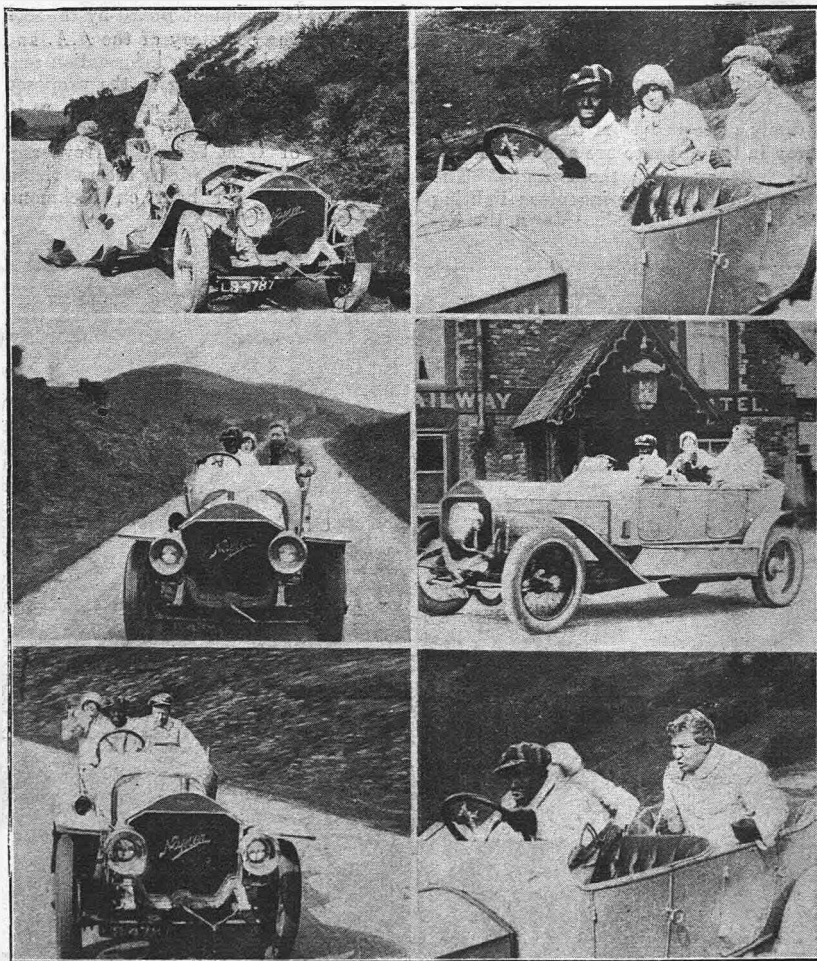
Northern Depot, Ltd., 21 and 23, Leece Street, Liverpool, write:-

"On 21st April our Mr. S. K. Broadfoot, driving a standard 15.9 h.p. S.C.A.R. fitted with four-seater body, and with Mr. Roberts of the Garage, Holywell, as passenger, got up Pen-y-ball Hill, the minimum speed on the steepest

pitch, as shown by the speedometer, being above 10 miles per hour. From inquiries made we believe this is the first time that a car has been driven up this celebrated motorcycle test hill, and we would be glad to hear if any of your readers can inform us if this is correct, and, if not, what make of car and what driver have previously accomplished this feat."

We are asked by Messrs. F. W. Berwick and Co., Ltd., of 18, Berkeley Street, Piccadilly, W., to insert the following:-"As some confusion appears to have arisen in the minds of the public with regard to our respective cars, we have mutually arranged that, in the future, cars manufactured by Sizaire et Naudin, of Paris, and 38, Great Portland Street, London, W., shall be known as 'Sizaire-Naudin' cars, and those manufactured by F. W. Berwick and Co., Ltd., of 18, Berkeley Street, London, W., and Balham, S.W., as 'Sizaire-Berwick' cars."

In reply to the frequent inquiries for makers of benzole, we again refer them to the list of names and addresses which is published in each issue.



Some incidents in the exciting race between a railway train and a Napier car as shown by cinematograph pictures in the Revue "Come Over Here" at the London Opera House. A description and another illustration are given on page 623.

FROM A MOTORIST'S NOTEBOOK.

Some Items of Interest to the Owner-driver.

Axle Lubrication.

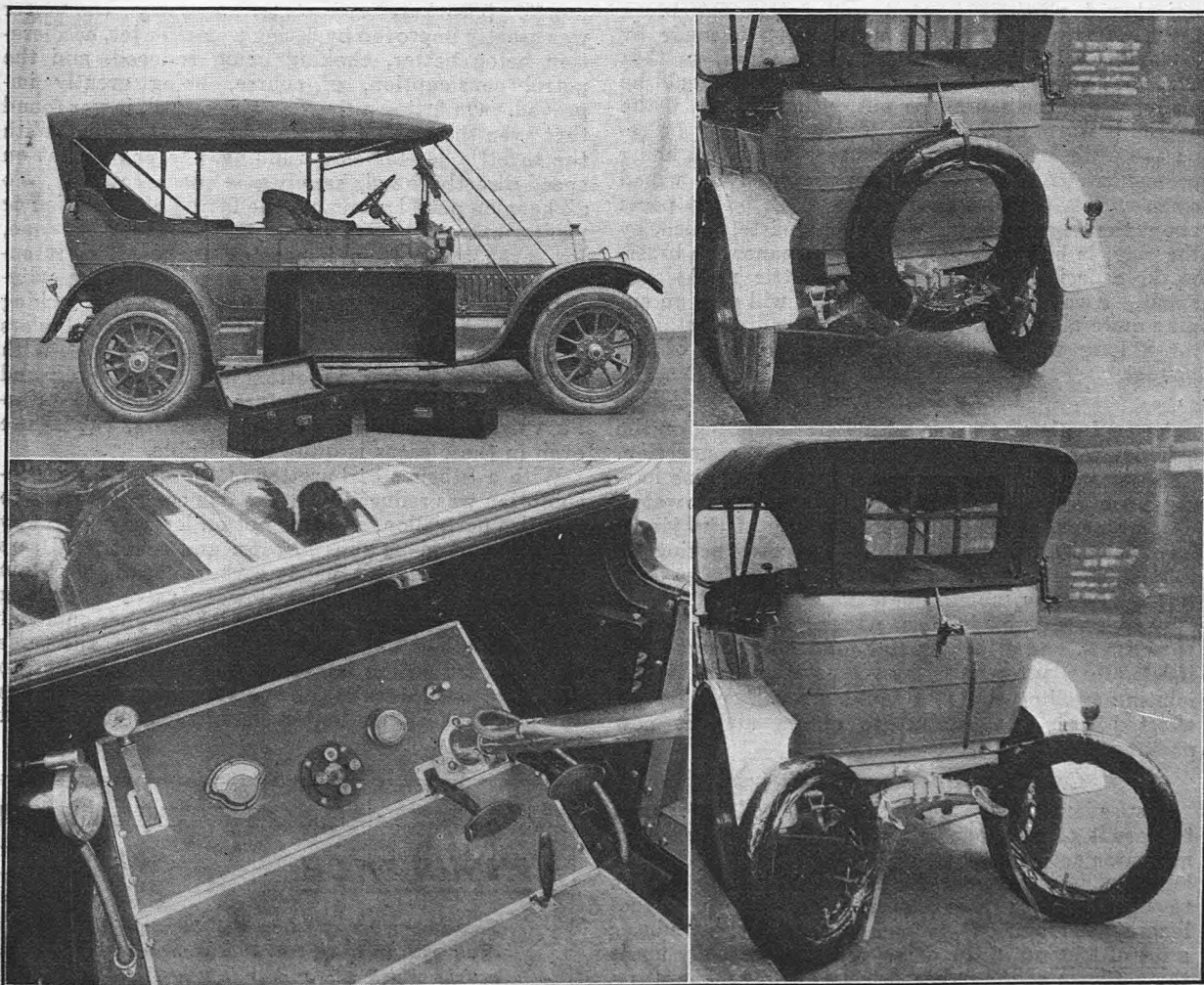
WHATEVER the relative efficiencies of worm and bevel, it is certain that makers put more stress upon the lubrication of worm-driven axles than upon that of the bevel variety. One is generally recommended to fill up with oil to filler level every few hundred miles, and, once in a way, to flush out with paraffin. Owing to there being no air vent, many axle casings are difficult to fill, not only because the filler is awkwardly placed, but because the oil becomes air-locked. It is a good plan to jack up one wheel when replenishing, and to give it an occasional turn to draw the oil in. The wheel should not be spun the whole time, however, as the oil is then taken up and distributed over the inside of the casing, so that one may pour in far more than is necessary, with the result that it leaks out wherever it can, and probably gets on to the brake drums.

Oil is the best lubricant for both worm and bevel-driven axles, but, in many cases, it will leak out even from the joints of the casing, and in such instances a

thicker lubricant may be tried, although the real fault is the absence of a relief vent, for internal pressure is set up by the rise in temperature of the oil. Stiff grease is not to be recommended, but there are now a number of semi-fluid lubricants on the market, primarily intended for gearboxes, which will give efficient lubrication without finding their way out.

Clutch Spigots.

The spigot bearings of many clutches are not provided with sufficient means of lubrication. They are invariably of the plain type, although gearbox spigots are now, in quite a number of cases, ball mounted, and it is hard to see why the clutch bearing should not be similarly treated. As it is, this bearing is often inclined to stick, the symptom being a difficulty in getting into first or reverse, as the clutch shaft continues to revolve owing to the friction in the spigot bearing, even when the clutch is fully disengaged. Seizure of this bearing not being unknown, it is as well to see that it gets lubricant whenever



EQUIPMENT ON A CADILLAC.

The four illustrations of the Cadillac equipped for the road to which reference was made last week (page 558), the pictures being unfortunately crowded out of the Equipment Number.

FROM A MOTORIST'S NOTE-BOOK.—Contd.

there is a difficulty in getting the gears in without noise. If there is no lubricator for the bearing and thrust, there is likely an oil hole somewhere, which, when found, should have oil injected into it under pressure if possible. The lubrication should be assisted by getting somebody to turn the engine while a gear is in mesh but the clutch held out.

Smartening up the Engine.

Many well-kept cars are to be found the reverse of well-kept beneath the bonnet. Oil and dirt cover the crankcase and webs, the copper and brasswork are dull, and the cylinders are rusty. With a little pains, however, one may make the power plant so pretty that it seems a pity to hide it under the bonnet. The first thing is a good cylinder paint. Some engines are finished off with ordinary paint of various colours, but these burn off or darken in time, a dead black finish being about the only one which can be relied upon to retain its pristine appearance. The writer has obtained excellent results with a paint made by Billson's, of North Shields, known as Panoplix. This paint dries quickly to a dead black finish and does not burn off. It is not claimed to remain black on a hot exhaust pipe, but to bake to a smooth terra-cotta finish. Yet, in the writer's case, the jacketed and unjacketed portions treated still retain the black finish. If time allows, the neatest job is made by removing valve plugs and induction pipes, so that these are not splashed. About three coats should be given, and these can all be put on in an hour, if the engine is warm at the time. These coats may be repeated a week later, to make sure of the finish being permanent. All aluminium parts should be wiped clean with a petrol-soaked rag, and all bright parts about the engine treated with Globe paste, which, by the way, is better than any liquid cleaner for brasswork, especially if mixed with a little methylated spirit. A couple of hours thus spent will give an engine quite a show finish, which finish will be retained for a long while, thanks to the protection of the bonnet.

Leaky Water Joints.

An engine is often seen with water standing on the cylinder top or dripping from the upper connection. This can be traced, in most cases, to the engine having been run at some time with insufficient water. The water level having fallen, the top of the jacket has become overheated and dried up the packing, so that it has shrunk, and thus fails to make a tight joint. However, unless the leak is really bad, do not rush to make a new joint, as packing seems to recover sometimes, and a leaky water joint often cures itself if left alone, presumably by incrustation, and by the jointing swelling again. Should this self-cure be not effected it is not difficult to obtain and fit new packing.

Over-long Speedometer Drives.

A speedometer driving shaft should be long enough to permit of easy bends, but if, from some error in measurement, the shaft is of considerably greater length than is necessary, send it back to the makers to be shortened or exchanged for one of correct length. A long shaft, looped up in places, introduces a lot of friction in the drive, and may actually upset the accuracy of the indicator. In any case, there is a lot of lag, the pointer not being responsive to speed changes, while it may be difficult to get the pointer beyond a certain length if a belt drive from the car-dan shaft is used and the belt is on the slack side.

Flat Treads and Steering.

Flat-treaded tyres seem to affect some steering gears more than others. The writer drove a car in the winter which, on a greasy road, objected to keeping a straight line, and, at any speed, it was necessary to be always busy with the steering wheel in order to check incipient skids. Both front tyres were of the flat-tread type, worn smooth, and when replaced by round-tread tyres the steering was greatly improved and the tendency to side-slip largely reduced. Even on dry roads the steering was truer, and one day, when a deflated tyre called for the spare wheel, which carried one of the aforesaid worn flat-tread tyres, a distinct difference in the steering followed the change. Flat-tread tyres are supposed to wear well because the rubber is more in compression, and thus resists cutting and prevents moisture entering and rotting the fabric when a cut does occur. From experience, one is inclined to grant this; but, at the same time, there is no doubt that round treads make for lighter and more accurate steering.

Carburettor Adjustments.

Many drivers, seeking for more power, fit larger jets to the carburettor, whether they can adjust the air supply correspondingly or not. In many cases, a larger jet alone will give even less speed and power on hills, and, of course, be much more wasteful of petrol. A carburettor recently handled by the writer was greatly improved by fitting a smaller jet, acceleration being better, choking being reduced, and the petrol consumption, of course, being greatly improved. On fitting a Bowden air control, it was found that even the smaller jet would take more air. With the throttle set for slow running, the engine put on speed directly the air supply was opened a trifle. To all keen on petrol economy, the fitting of a Bowden or similar extra-air valve should be the first thing done, for, even apart from improving carburation, it enables one to economise fuel by using air in the cylinders as a brake on down grades or on approaching corners. At the same time, it scavenges the cylinders and keeps valves and plug points clean and cool. With carburettors having a bottom air supply only and operating on the fixed aperture principle, the extra-air valve is not recommended by makers, but its use even in these cases is quite practicable.

With a Sthenos carburettor of the older type, consumption was reduced by a Bowden control from 24 to 29 miles per gallon, and this not on long straightaway runs, but on short runs in town and country. Users of old type or 1912 Sthenos carburettors may obtain greater economy without a Bowden valve by drilling a $\frac{1}{16}$ in. hole in either side of the jet chamber on about the centre line of the air intake. These apertures are standard on the latest Sthenos, and are found to give improved results; owners of the older types can easily effect this improvement themselves, or get it done

G.H.C.

INSURANCE.

This important question will be very fully dealt with in a special and comprehensive article which will appear in next Tuesday's issue of "The Motor." It is a subject which must appeal to all classes of motorists.

THE MOTOR TRAFFIC COMMITTEE.

DURING the past fortnight the House of Commons Committee which is considering the cause of accidents due to motor vehicles in London has heard a good deal of evidence, most of it from tramway men, one of whom, at least, has had a good deal of adverse criticism to make on motorbus drivers. Mr. H. E. Blain, General Manager of the West Ham Corporation Tramway system, has had much to say on the practice of motorbus drivers cutting in upon tramcars, and stated that out of 153 accidents in West Ham due to this cause, no fewer than 44 caused damage to the tramcars. According to Mr. Blain, the buses have been rather in the habit of pulling up close to the entrances to the cars, and also of stopping suddenly in front of a tramcar on the tram track in order to take up passengers, and several successful prosecutions have resulted. The practice, however, is said still to continue, in spite of these convictions, and in spite of repeated remonstrances with the bus company. The matter was put so high as that many elderly people in West Ham will not now travel on a tramcar, owing to the fear of a bus running into them whilst they are walking from the kerb to the tram.

No Buses Required!

Mr. Blain, like Mr. Fell, of the London County Council, thinks that the tramcars are sufficient to meet the requirements of the travelling public, and presumably on this argument the buses should be taken off the streets immediately. Incidentally, Mr. Blain does not only suffer in West Ham from the antics of motorbuses, for the small boys of the district seem to take a special delight in worrying the tramcar conductors by hopping on to the platform and ringing the bell, and even pulling the rope and wrenching the trolley off the overhead

wire, all of which, of course, has contributed largely to street accidents in West Ham.

Traffic Board Approved.

Both Mr. Blain and Mr. James Devonshire, Managing Director of the new London and Suburban Traction Co., which is an amalgamation of the London United Tramways and the Metropolitan Electric Tramway systems, agreed with the formation of a Traffic Board consisting of about five members. Mr. Devonshire more or less adopts the views stated by Captain Deasy that the Board should be created by Parliament, should consist of five members, and should be a permanent body. Mr. Blain, on the other hand, did not deal with the real point underlying the constitution of the much-discussed Traffic Board, namely, whether it should be a popularly-elected board or a permanent one selected by Parliament. The evidence of Mr. Devonshire also went to the point that the hours and conditions of drivers of tramcars under company control, whilst perhaps not quite so favourable as on the L.C.C. system, are nevertheless considerably more satisfactory than the average motorbus drivers' hours and conditions. Mr. Blain incidentally brought out the interesting fact that many owners of vans in West Ham, when these vans are, so to speak, on their last legs, purposely send them out in order that they may break down on the tramway track, the idea being, of course, to lodge a claim for compensation, on the ground that the bad state of the track has caused the wreck of the vehicle.

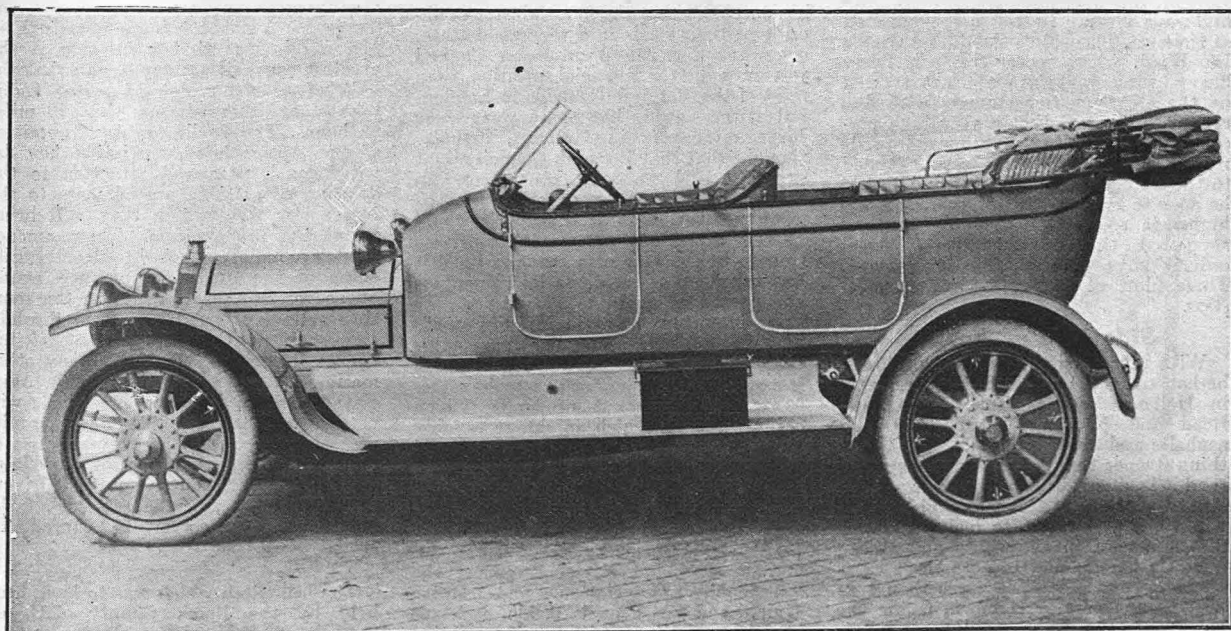
An Interesting Announcement.

Mr. Devonshire, who would limit the number of taxicabs, made the interesting announcement that an arrangement has been come to between the new Lon-

don and Suburban Traction Co. and the London General Omnibus Co., whereby the latter, where they compete for the first penny stage of the tramway company's system, pay to the company 25 per cent. of the net profits in respect of that competition. By the way, the London Underground Electric Railway Co. owns 30 per cent. of the stock of the London and Suburban Traction Co., and as the London Electric Railway Co. and the London General Omnibus Co. are practically one concern, it can be seen how it is to the interests of the bus company to reduce competition with the tramway system as far as possible. A sentiment of Mr. Devonshire's which is not without significance is that he thinks all forms of public passenger-carrying vehicles should pay towards the upkeep of the roads.

Police Statistics.

On Tuesday, 22nd April, statistics put in by the Chief Clerk to the Commissioner of Police brought out some very interesting points. For instance, some of the worst places from the point of view of accidents are those absolutely devoid of tramways. Again, 80 per cent. of accidents occur in streets where there are no refuges, and although much has been made of the fact that skidding is a fruitful cause of accidents, only 8 per cent. of the total number of accidents are due to this cause. Bicycles, on the other hand, seem an increasing source of danger, for whereas the number of accidents to them in 1901 was 2249, in 1911 this had more than doubled itself to 4705. Something has been said about the lack of point-duty policemen, and the following figures were handed in to show that the number of point-duty men is continually being increased. In 1901 there were 392 point-duty police, the cost of which was £50,000; in 1910 there were 500, costing £64,000; in 1911



A 15-20 h.p. Star torpedo to be exhibited at the St. Petersburg Show.

TRAFFIC COMMITTEE.—Contd

there were 520, costing £77,500; and in 1912 there were 577, costing £89,500.

The Danger of Silence.

The House of Commons Committee which is inquiring into the cause of motor accidents in London met again on Thursday, 24th April, when Mr. E. S. Shrapnell-Smith, representing the Royal Automobile Club and the Roads Improvement Association, occupied the witness chair, and expressed the opinion that the quietness of motorbuses is a very big element in the unfortunate increase of accidents. He recommended a characteristic means of giving warning when a bus is coming. A motorbus being fitted with a similar horn to those used by ordinary street traffic, some people think there is a smaller type of vehicle coming, perhaps a bicycle, and do not attach so much importance to it as if they knew it was a bus approaching. He suggested that they should be fitted with foot gongs, peculiar to motorbuses alone, which could be worked by either of the driver's heels. At one time gongs were used on motorbuses, but witness had no idea why they were taken off. He gave figures indicating the increasing number of quiet or "B" type motorbuses on the streets of London, as follows—At the end of 1910 the total number was 1097, of which 59 were quiet; by the end of 1911 the total number had gone up to 1634, and of these 689 were quiet; and at the end of March last the numbers were 2995 and 2000 respectively. These figures showed the abnormally rapid growth of quiet vehicles on the streets, and witness maintained that the public had not had time to accustom themselves to this state of affairs.

Uncleansed Roads.

The failure of the London borough councils to cleanse their highways according to methods which keep pace with the change in traffic received considerable attention at the hands of the witness. He mentioned Westminster as one of the best districts in this respect, and, in his opinion, they had gone far to keep their highways clean. In the neighbourhood of Holborn, Theobald's Road, and Gray's Inn Road, where motor traffic is fairly heavy, these highways are not treated by the cleansing departments with due regard to the fact that a very high percentage of street traffic nowadays is rubber-tyred traffic. He recommended to the Committee that something should be done to remove films of mud from the highways soon after they appear, and suggested the employment of street orderly boys with suitable implements. These films of mud often caused side-slips.

Side Fall of Roads.

With regard to the side fall of roads, he had taken a number of measurements in Holborn between Tottenham Court Road and Kingsway before, the new asphalt and setts were laid. With anything steeper than 1 in 20 on an asphalt road it is almost beyond the human capacity of a driver at times to avoid a side-slip when starting. He had also taken measurements in Cheapside and Queen Victoria Street, and in only three cases could he find a steeper angle than 1 in 20. In one part of Holborn, facing the entrance to the Holborn grill-room, where there are setts, which Mr. Shrapnell-Smith thinks are less dangerous than

asphalte, he found the side fall was 1 in 14. In other parts of Holborn it was 1 in 18, 1 in 20 three times, and 1 in 15 once. In Hart Street, Bloomsbury, where the road is asphalt, he found the angle was 1 in 15 twice; 1 in 16 once, 1 in 17 three times, and 1 in 19 several times. A steep side fall prevents heavy traffic from keeping to the side of the road, especially in the case of horse vehicles, as the horses' hoofs slip down the side.

Tram Obstruction.

The tram, witness said, was an obstruction to traffic, owing to its size, although it must be borne in mind that the tram is a vehicle which the public need, and he did not wish the Committee to think that he was in any way prejudiced. Too many trams and buses were allowed to come into the central zone during the middle hours of the day, and although the L.C.C. had taken off a few vehicles during these hours, he did not think they had taken off enough.

Reference was made to the evidence of Mr. Fell, manager of the L.C.C. tramway system, who, it will be remembered, recently gave evidence before this Committee. One statement made by Mr. Fell was that omnibuses should be prohibited from passing between the tramcars and the kerb and blocking the entrances and exits of tramcars at stopping places. He mentioned a tramway stop in Gray's Inn Road, going towards King's Cross, about 20 yds. past Theobald's Road. When a motorbus came up behind it could not get by owing to the tram. This was a very dangerous stopping place, as the bus must go on to avoid being summoned by the police for obstructing other traffic behind, and has to go between the tramcar and the kerb, consequently cutting through the people getting on and off the car, it not being possible to get round on the off side of the car owing to the traffic, previously "dammed" but now moving, going in the opposite direction. Witness's suggestion was that the stop should be put farther up, so as to enable the bus to pull up behind the tram, or any other traffic to pass on the off side of the tram.

Mr. Harris, a member of the Committee, in cross-examining the witness on his statement that the Westminster Council kept their roads in a very good state, suggested that the Westminster Council was in a better financial position than most of the Borough Councils in London, but witness said that there were some large ratepayers in Holborn, and he thought that that Borough Council might expend a little more on this matter. In answer to a further question by the same member, witness thought it would be very difficult to get motorbus drivers to stop in the rear of a tramcar until it had taken up or set down its passengers and passed on again.

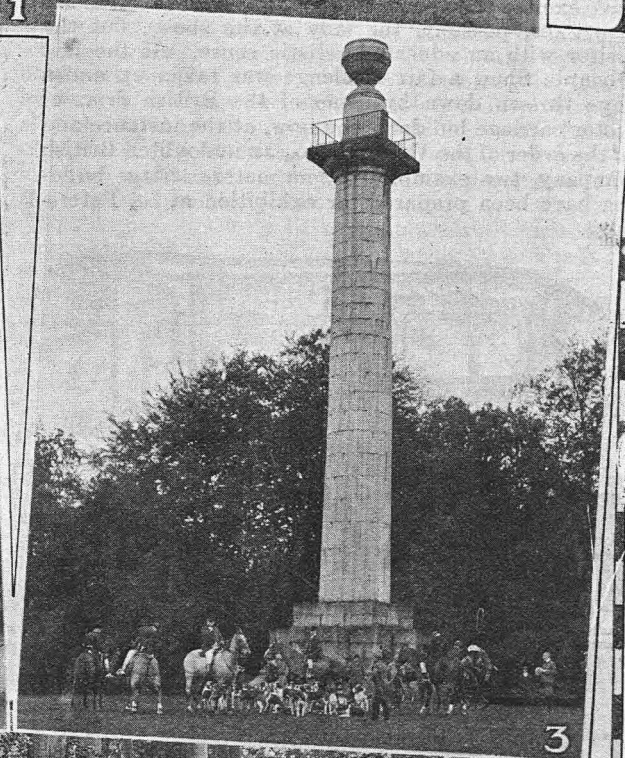
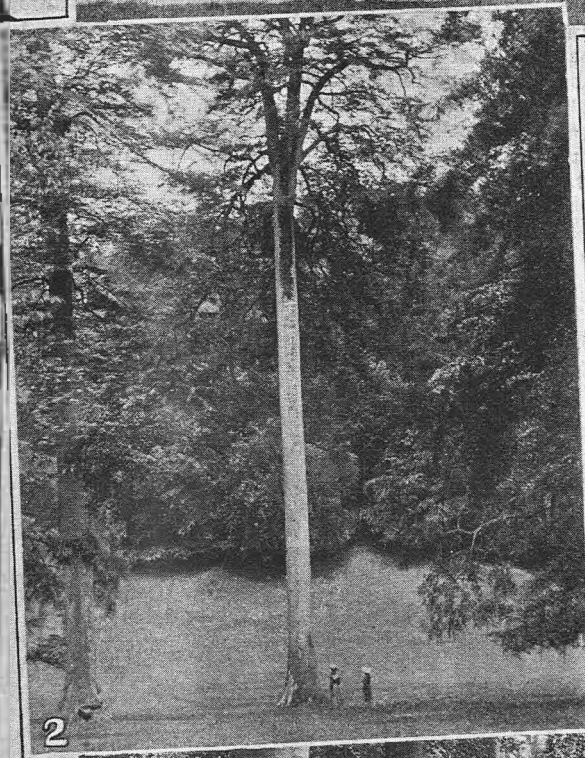
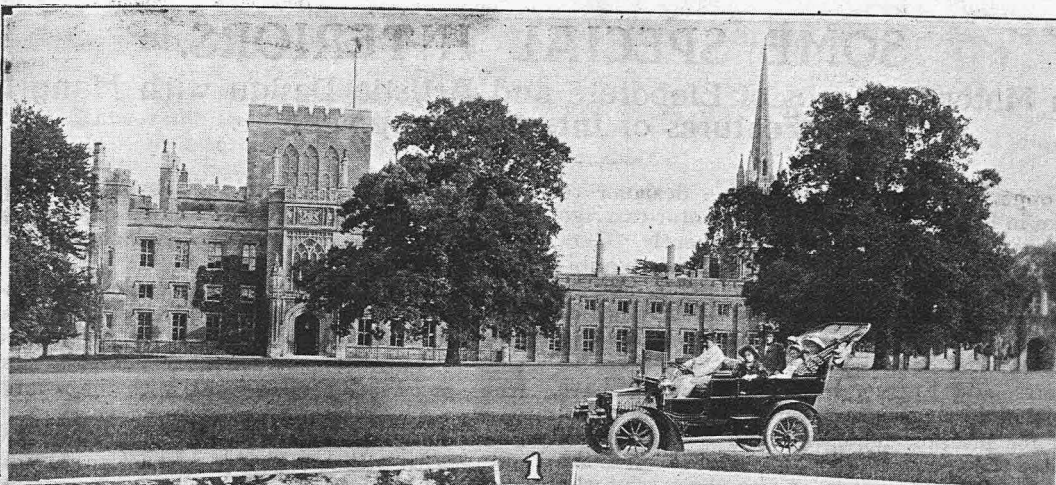
An important point in Mr. Shrapnell-Smith's evidence was the suggestion that the same obligation which is now laid upon motorcars to have regard to the amount of traffic which actually is, or which might reasonably be expected to be, on the highway should be imposed upon all drivers.

Mr. Dodd's Evidence.

In the afternoon Mr. Charles H. Dodd, chairman of the Motor Union Assurance Co., and vice-chairman of the Automobile Association and Motor Union, and Mr. Francis Wilde, assistant secretary of the Automobile Association and Motor Union, gave evidence on behalf of that body. They both expressed

themselves in favour of a Traffic Board for London, although, as in the case of previous witnesses who have made a similar suggestion, none of the members of the Committee seemed to agree with the proposal in so far as its constitution is concerned. Mr. Dodd suggested that the Board should not be merely advisory, but should have executive powers, which would override any authority now possessed in the matter of traffic by the London County Council, the City Corporation, and any other municipalities concerned. He would also have the Board consist of representatives of all classes of traffic, including the pedestrians, but Lord Alexander Thynne rather suggested that such a body would be unwieldy, and expressed a preference for a small Board of three or five members, as recommended by the Royal Commission on London Traffic. On the other hand, Mr. Kellaway was particularly concerned because, as he put it to the witnesses, the ratepayers were apparently to be expected to find the money for any street improvements, and yet were to have no voice in the election of the members of the Traffic Board, the suggestion of the witnesses being that the Government should elect the various members of the Board. Mr. Dodd also made the definite suggestion that, in view of the strain of driving in crowded neighbourhoods, no driver of a tramcar or motorbus should be allowed to drive for more than eight hours a day. Mr. Wilde, in common with Mr. Dodd, was very emphatic that there should be a more stringent application of Section 1 of the Motor Car Act of 1903, for dealing with cases of dangerous driving, and thought that if this were done there would be no need for speed limits, unless in very exceptional cases. Indeed, Mr. Wilde concluded his evidence by the sweeping assertion that, even if a general speed limit of less than 20 miles an hour were imposed, it would be ineffective, as the same process would go on which exists at present, in his opinion, namely, that every motorist, from the Prime Minister downwards, would, where circumstances permitted, habitually break the law and decide his own speed limit for himself according to the circumstances at the moment. Another point emphasized by Mr. Wilde was that congestion is the greatest cause of accidents, and that the bulk of accidents due to motor traffic take place at speeds less than 10 miles an hour. The Parliamentary Committee of the Automobile Association has devoted much time and attention to the drafting of suitable amendments to the Motor Car Act, which they will bring up at the proper time. These amendments are mainly devoted to the strengthening of the provisions of such consequence as Section 1, while at the same time relieving the driver from disabilities such as the endorsement of his licence for trivial offences. Many other matters on which the Automobile Association expressed a view through its witnesses were the desirability of fixing mirrors on horse vans, the universal use of rear lights, the adoption of a definite system of signals on the part of drivers of all vehicles, and the removal of the obstruction so commonly caused by standing vehicles.

The hill-climb which was to have been held by the Essex County A.C. on Saturday last has been postponed to a later date, which will be announced in due course by the committee.



Owing to the abuse, by a few, of privileges hitherto enjoyed, Ashridge Park, Herts., the charming seat of Earl Brownlow, will in future only be accessible to large parties having written permission. Recently motorists have had to pay a toll of 1s., the proceeds being devoted to local charities. (1) Ashridge House, which has the largest frontage of any mansion in Herts. (2) The Queen Beech. (3) The Bridgewater monument. (4) The famous Ashridge Beches.

SOME SPECIAL INTERIORS.

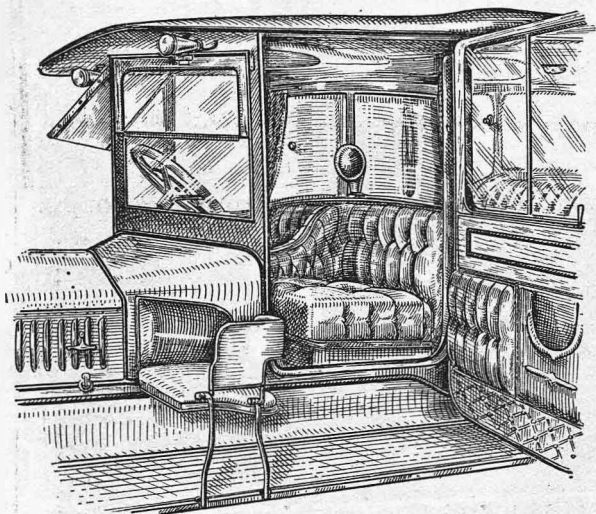
British Motor Carriages of Elaborate and Artistic Design with Many Novel Features of Interior Equipment.

THE opportunity for the decorative designer to take in hand the treatment of a motor-carriage interior does not occur very frequently. Generally, efforts are made when the annual exhibitions are approaching to impress the public and to draw attention to the special qualities of some one of the many cars offered for the public choice. Hitherto the Continent has held the chief place in regard to these efforts, and France, Belgium, and Italy have given examples of artistic treatment of the usual materials for interior upholstery and fittings which have excited the admiration not only of the man in the street (or, possibly, the lady at the show), but the visitor with an educated artistic sense. At the last Olympia Show a fair challenge was taken up and a gage thrown down by some of the British firms of motor-carriage builders, and now, at the instance and to the order of the Vauxhall Co., an undoubted British company, two examples of fine motor-carriage building have been prepared for exhibition at St. Petersburg.

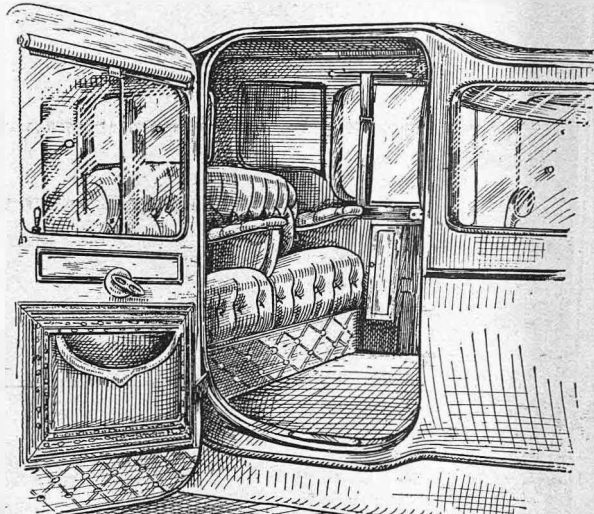
One carriage has been built by Messrs. Mulliner, Long Acre, London, and Northampton, Ltd., and the other by Messrs. The Regent Carriage Co., Ltd., New King's Road, Fulham.

The Mulliner carriage is an enclosed front limousine, into which some novelties have been introduced, and two views of the interior are given. The first shows the arrangement for the chauffeur in the scuttle front, and the V-shaped front, with the reversed bow window dividing the front and rear portions. This is a distinctly novel treatment, and shows how it is possible to utilize a severe restriction to advantage and to give a considerable amount of comfort to the occupants of the front seat, and not to detract from the space required by the occupants of the rear seats.

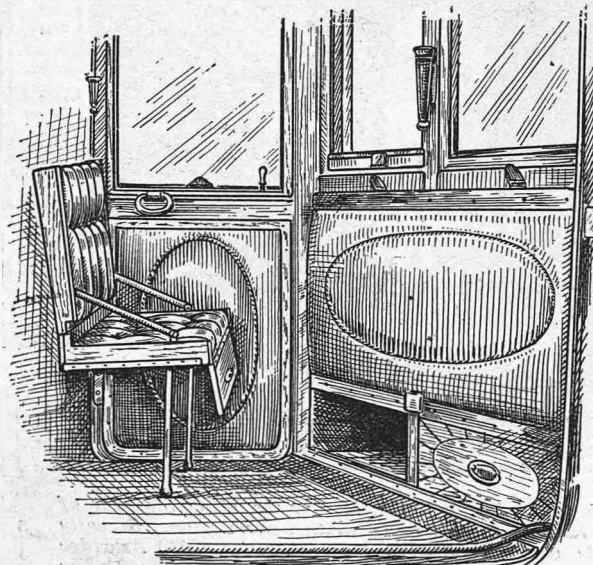
The glasses, which are frameless, are made to slide past each other, as in a circular-fronted brougham, and conversation can conveniently be carried on by the friends in the interior. The window on the right of the driver is divided from top to bottom and slide, so that signals can be made to any overtaking traffic.



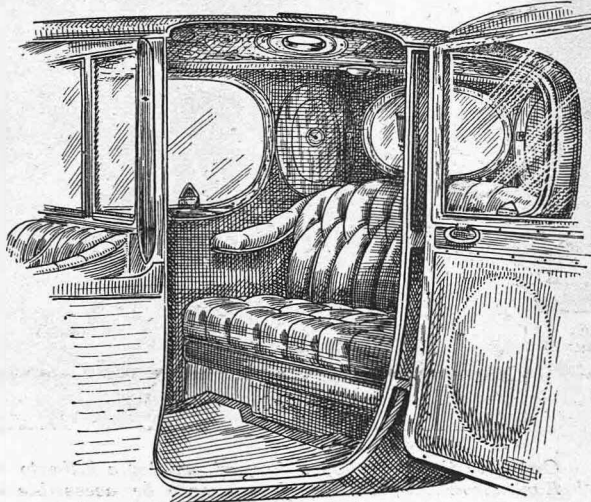
Mulliner's enclosed limousine, showing front seats.



Mulliner's enclosed limousine.



Interior decoration of carriage by the Regent Carriage Co.



Interior of carriage by the Regent Carriage Co., showing arrangement for altering position of seat.

SOME SPECIAL INTERIORS.—Contd.

The rear portion is fitted with wide and comfortable seats separated by a fixed arm-rest, corresponding arm-rests being placed on each side. The occasional seats are fitted under the front seat, and draw out, lifting up into position against the division; these are not for anything but occasional use.

The upholstery is carried out in fine material of a greyish-blue tone, harmonizing with the grey sycamore which is employed in the decoration and finish of the upper part and the roof. On either side, in neat cabinets, there are enclosed the Isaphone, with the trumpet standing erect in the centre of the two front seats, and on the opposite near side a smoker's cabinet is concealed in the panelling. The whole has been very ingeniously and tastefully carried out by the Mulliner Co.

The limousine which has been constructed by the Regent Carriage Co. is unique. It is on the lines of the one exhibited at Olympia, and the interior has been treated in an entirely novel manner. The front is of the usual open type, with large and comfortable driver's and passenger's seat, and is finished in black leather, the ceiling being finished in dead white. The views of the interior which are given will convey an idea of the general arrangement of the decorative design. The manner in which it has been executed is suggestive of the greatest care and skill on the part of the designer and the workpeople employed in carrying out the ideas and instructions. The upholstery is in a pale-grey corded silk, with a faint relief, and is confined to the lower part of the carriage and the centre oval of the roof. The oval type of the body

is carried out in the arrangement of the interior. The panels of the doors, the front, and the roof take this shape, as well as the rear window and the outline of the flanking cabinets. These contain the usual accessories to be found in an enclosed car, a barometer forming the centrepiece of one panel and a clock that of the other.

The fine wood employed is harewood, relieved with a fine inlay, and the mouldings round the lights and windows are of a very elaborate character and beautifully and sharply finished. The space between the tops of the doors and the centre-piece is filled in with harewood inlay, very highly polished and finished. The centre-piece is a floral design worked in silk, of the same shade as the material, novel and tasteful; in the centre there is a roof ventilator, and four electric lamps illuminate the interior. The windows, all of which, with the exception of the rear one, are made to drop, are balanced and held in place by bolt catches. In addition, sun blinds of stout celluloid, with ground faces, are fitted, so that the car can be used with comfort in the most tropical sunlight. The second view shows the occasional seats in position, and the method of concealing them under the front of the car. The seats are full size, and the arrangement by which they form part of the decoration of the front is highly ingenious.

The Vauxhall Co. is to be congratulated upon its enterprise and its perspicuity in placing its orders for these fine specimens of coachwork with British firms. Certainly they will attract a considerable amount of attention in a country which has always been able to appreciate artistic treatment. G.W.

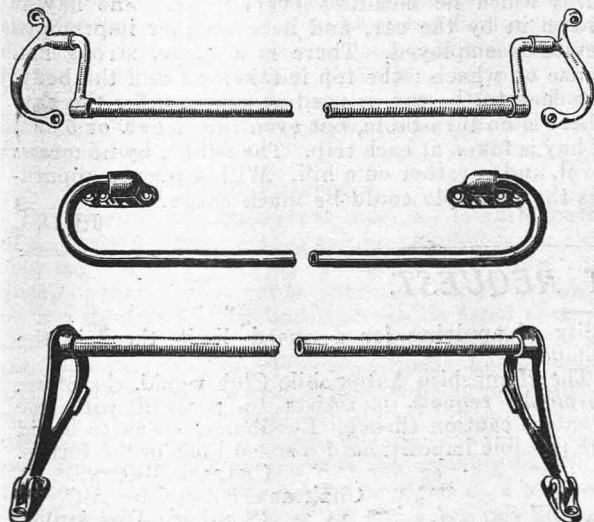
ROBE RAILS AND FOOT RAILS.

Robe and foot rails are commonly fitted to American cars, yet, although motorists over here are perfectly familiar with these fittings in this connection, they have not hitherto asked for them to be applied to their own cars. This must be because they, perhaps, have had no opportunity of themselves learning how useful a robe rail can be or how a foot rail can give one a steadier seat when a car is travelling over rough roads. Or it may be that, up to the present, no serious effort has been made to put such fittings on the market. Messrs. Brown Bros., Ltd., have now stepped into the breach, and are supplying robe and foot rails in any sizes and in various forms. The former are screwed to the back of the driving seat, and can be obtained with fixed brackets or arranged

to fold down against the seat back when not in use. As a means of carrying rugs and coats, the robe rail is of inestimable value, not only when the rear seats are occupied, but also when they are not, for then there is no one to keep a rug or a coat from falling on the floor or even being carried by the wind out of the car. The foot rail is made to be hinged to the foot-board, so as to be easily folded over out of the way for easier access to the seats or doors.

Dear Petrol in Austria.

Apropos of our recent note on the Parliamentary interpellation in Austria about the high price of petrol, some additional particulars may be of interest. Within the short span of three years, remarked the interpellants, the price of petrol in Austria has risen from 25 to 72 crowns per 100 kilog., or nearly 300 per cent. The Government, they declared, was really in a position to keep down the price; since, first, it owned the Imperial and Royal Mineral Oil Works, and, secondly, it could introduce revenue measures to correct the upward tendency of prices. Although Austria figured as the greatest petrol producer in Europe, France, Italy and Germany could buy petrol at 20 crowns per 100 kilog. cheaper than the Austrian user. The reasons for this peculiar state of affairs were very simple. Petrol was "loaded" with a tax of 11 crowns per 100 kilog., foreign supplies being "most arbitrarily" laid under a duty of 13 crowns; while in the neighbouring countries not only did the consumption tax range lower, but industrial petrol was subject to rebate of taxes. Petitioners called attention to the syndication of the most important naphtha refineries, also to the declining yield of the Boryslew wells, and wound up by requesting the Government to bore new wells and, above all, tackle the syndication problem.



THE MOTORCAR ON THE ESTATE.

Subsidiary Uses to Which Motors May be Put.

I OFTEN think that sufficient advantage is not taken of the many uses to which the motorcar engine may be put.

Here we have a power of the most portable and convenient kind, and yet few people use it for any other purpose than driving their cars.

Some 16 or 18 years ago I was the unhappy possessor of a small farm, and being mechanically inclined, I bought as much machinery as would be sufficient for a large one.

The motive power then was what was called a pot-horse gear, in which two or four horses walked monotonously and laboriously round a circle, while their driver sat on the beam and urged them on with a whip. In threshing, especially, the work was hard, even for four horses.

My first motorcar was fitted with a horizontal engine of the early Benz type and belt drive, and when

thresher gave room for more corn underneath without danger of choking the drum.

The conversion was made seven or eight years ago, and the machine is still running with satisfaction on a very much larger farm. Not only that, but it is now used for light sawing as well as threshing.

I should mention that the radiator was replaced by a circular vertical water drum, and thermo-syphon circulation kept the engine cool.

Another engine of one of my early cars is now used by a large and prosperous firm of artesian well sinkers, and its light weight and handiness make it eminently suitable for their work.

Such uses, however, presuppose the dismantling of the car to a large extent. Other uses can be found which do not entail any change. For instance, my brother-in-law, who is of a very ingenious turn of mind, cuts and rolls his lawn with an old motorcar.

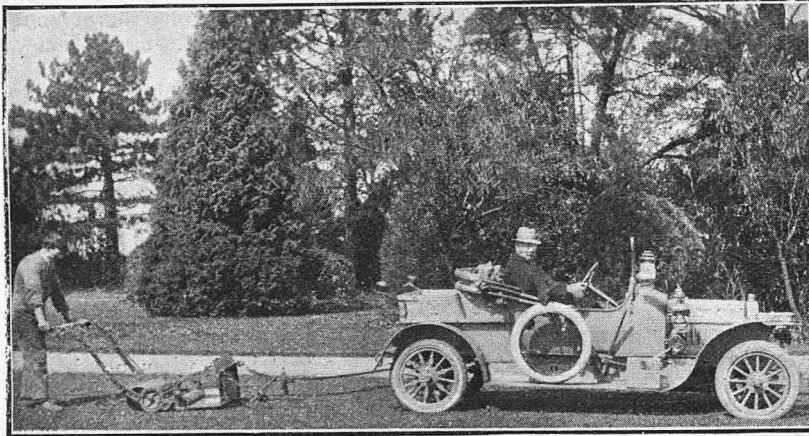
He has almost an acre of land to be mown and rolled every week, and, until lately, this was practically a day's work for a horse, a man and a boy.

Last year he boldly ran the car on the grass and dragged the roller or lawn mower after him, with the most satisfactory results. Four short ropes are attached to the dumb-irons of the car, with loops at the ends, which can be slipped over the hook in the whipple tree of the large lawn mower. The latter can thus be drawn either in the centre of the car, before or behind, or after either wheel, or even partly outside the wheel track. The driver of the car, after a little planning, is now able to go over the ground with a minimum of turning; but in a few places the

mower is placed in front of the bonnet and the car backed out. The wheels seem to make no more impression on the turf than the feet of the horse, even when booted.

Motor lawn mowers are quite common things, but this is the first time I know of a car being used as the tractor. The same gentleman has a field of 3½ acres which he mowes every year. The hay is drawn in by the car, and here another impromptu device is employed. There is a large, strong hen house on wheels: the top is taken off and the body, attached to the car, is used as a wagon for the hay. There is no turn-table, but even thus 4 cwt. or 5 cwt. of hay is taken at each trip. The field is by no means level, and is rather on a hill. With a proper apparatus the principle could be much extended.

J.L.D.



The motorcar in use as an aid to lawn mowing on the country estate.

I had got tired of converting the roadside into a repair shop, as was a common practice with that car, I conceived the notion of using the engine for more congenial work.

I accordingly removed the body of the car and put the thresher in its place. This was of the non-cleaning type, driven from the horse gear by a large wheel and pinion at one end.

Both wheel and pinion were scrapped and, instead of the latter, a pulley 6 in. in diameter and 4 in. wide was substituted. This pulley, being arranged in line with the high-speed engine pulley, a belt was readily run from one to the other and the engine started. The result far exceeded my expectation.

Not only did the machine run sweeter and quicker than four horses could make it go, but the threshing was more uniform, and the increased height of the

LYNDHURST—A REQUEST.

On behalf of the Hampshire Automobile Club, I should be greatly obliged if you would, through the medium of your valuable journal, draw attention to the fast and inconsiderate driving of some motorcars and motorcycles through the village of Lyndhurst, Hants.

For this reason, and for the fact that several accidents have occurred, the Parish Council of Lyndhurst have on two occasions already discussed the advisa-

bility of applying for a speed limit through the village.

The Hampshire Automobile Club would, therefore, earnestly request motorists to proceed with the greatest caution through Lyndhurst, so as to avoid the possible imposition of a speed limit in the future.

CHARLES BRAUN,
Chairman, Hampshire A.C.
(Southern Division).



*Equipment from the Lady
Driver's Point of
View.*

*The Things that make all the
Difference in Comfort in
Motoring.*

THE equipment of a car is perhaps even more important to lady drivers than others, as the little refinements of comfort mean much to them and add so greatly to the pleasure of driving. Good equipment should also increase the simplicity of management, and is, therefore, a big factor in motoring for ladies.

There are two sections of equipment from the ladies' point of view—the utilitarian and the ornamental. The first were fully discussed in last week's Equipment Number, but the little items that make the various accessories specially useful for feminine car owners will be here described in their application to cars which are under the management of ladies. The ornamental side of the fittings of a car appeals to most feminine minds, so the latter part of this article is written not alone for the lady driver, but also for those who enjoy their motoring from the passenger's seat.

Lighting Systems.

Every day brings a greater number of inventions on to the market, making the work of selection for ladies' automobiles more difficult, but more important, for unless possessed of the knowledge as to how certain mechanical or electrical appliances work, and what will be required of the purchasers to keep them working, the remedies may be more trouble than the original evils.

For instance, in the matter of self-starters and electric-lighting sets, some of these are somewhat complicated, and would add considerably to the amount of machinery to be kept in good order. In case any lady reader is apt to jump to conclusions, it would be as well to state here very clearly that I do not infer that new accessories invented for comfort do not fulfil their purpose. The point to be noted is this: that neglected machinery, however good, will give trouble in the end. It is wisdom, therefore, to pick out "extras" of equipment with the above thought in mind, and to choose the simplest that suit the particular object in view.

Self-starters.

Self-starters are at present more an integral part of a car than a fitting that can be adapted to an old one, so the question as to choice is really reduced to that of what car to purchase. There are one or two starters to be found that can be fitted to any chassis; one kind is entirely mechanical by spring and ratchet wheel, and operated by a pedal, but personally I have found this hard to use, it being more difficult for a lady to get sufficient pressure on a pedal to turn the weight of the engine than to give the necessary amount of pull to the ordinary starting handle. The long side lever type on the La Buire cars will be found preferable for ladies. Of the other two kinds,

namely, electric and compressed air, I would in most cases recommend the former, as some designers arrange that they can also be used for the lighting of the lamps. The Overland car is fitting an arrangement that appears most suitable for ladies' use. Where owners without much mechanical or electrical knowledge are going to take their cars abroad or to parts where good repairers are few and far between, it is better to rely on the starting handle or to make very sure that if a self-starter is chosen it is a type that, if out of order, will not interfere with the ordinary running of the car.

Lamps.

In the matter of lamps, too, in the above circumstances it is wiser to rely on one's old friends, paraffin and acetylene. Very charming shapes in lamps are being shown by the well-known makers. Trier and Martin sell an excellent set of torpedo-shaped lamps, which look particularly smart when fitted on to the front mudguards. Owners who clean their own cars should give a vote of thanks to makers of this shape, as the trouble of polishing is reduced to a minimum. A new pattern of lamp, which would be just the type for the low victoria two-seater body so much favoured by ladies, is the Rotax taper form lamp, of the Rotax Motor Accessories Co. As sidelights nothing could be more elegant than this long, drooping shape.

A Useful Pump.

An important part of the equipment of a car, and one which is very apt to be overlooked by ladies, owing to its uninteresting nature, is the foot pump. We are too often inclined to take on trust the pump that is usually supplied with the car's outfit, yet nothing but a breakdown to the car itself can be as obnoxious as a bad tyre inflater. Few ladies can blow up a tyre of any full car size with the smaller kinds, and I have always been an advocate of even sacrificing luggage space to a large pump and jack. The Gleason-Peters garage pump and the Wood-Milne types are both good, or, of course, if expense is not a great object, there are others that are worked by merely starting the engine and looking at the pump doing the work. For jacks, it is generally better for ladies to choose the lever type in preference to those with a rotary movement of the handle.

Ornamental Side of Equipment.

Turning to the more ornamental side of equipment, speedometers and clocks are probably among the most frequent purchases made by new car owners; every motorist likes to have the car fitted with these two devices. For excellence of workmanship, combined with a handsome appearance, nothing can beat the Perfect Tourist speedometer in a square case, made by Messrs. Smith and Co., of the Strand.

THE LADY ON THE CAR—Contd.

They are fitted with two forms of transmission, neither of which, I feel sure, will give any owner trouble.

The ridges round the faces of the brass clocks are tiresome to clean, but the rounded pattern of the New Haven eight-day clocks, sold by Messrs. Plimpton and Co., will be found to be easily accessible to brass polish, and they are mounted in several novel shapes.

Shields for Rear Seats.

For an open four-seater car there is no fitting of more interest to ladies than the Auster extending back shield; it gives the convenience of a landaulet when combined with the Auster one-man hood. With one of these screens there is no fear of arriving in a dishevelled condition at any function where a motor hat is not "de rigueur." A point that will appeal to all feminine owners who like their cars to look smart at all times is the neat method of folding up the Auster screen when not in use, as it shows no cumbersome attachment of any sort. Regarding the hood for the car of the lady driver, there is not the least doubt that the only form to give her any comfort whatever if she possess a four-seater is the kind mentioned above, for nothing can be more trying than the struggles one has to go through in endeavouring to get up the ordinary type of hood unaided, the efforts often ending in the hood never being put up and the driver going on, only to get soaked in the rain from which she has vainly endeavoured to protect herself. It has often struck me as a curious thing that ladies should pay so little attention as they do to such an important part of the equipping of a new car. Before all the present variety of materials were introduced the Cape-cart hood was not a thing of beauty, but now, with coloured waterproof stuffs, light imitation leathers, and specially-thin lightweight leathers there is no reason why this part of a car should not be made to be in good keeping with the rest of the bodywork. All those who value the appearance of their clothes and the upholstery of the car should never forget to

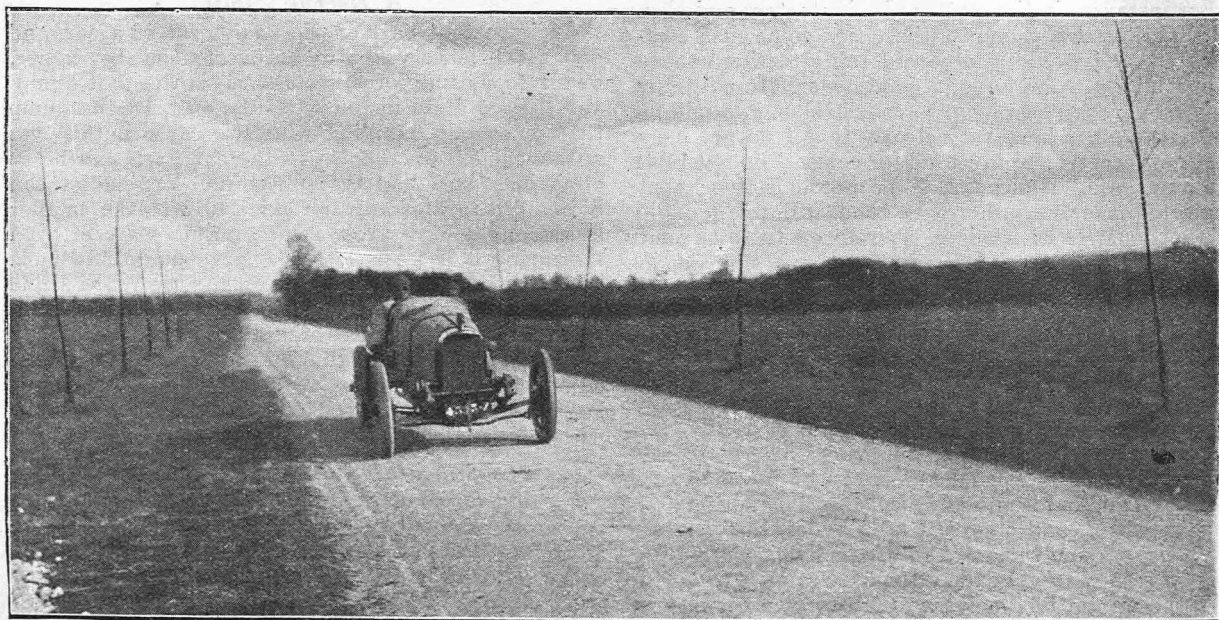
consider the claims of a one-man hood against sudden showers or sun, for with the old type one prefers to let the colours fade rather than be bothered with setting up a big Cape hood.

Miscellaneous Items.

Messrs. Dunhills are, and always have been, the best of friends to the lady on the car. For the equipment of the body they are the outfitters par excellence, whilst for the car they show every season something new, clever and useful. Their patent lock for the bonnet is just the thing that ladies not having a chauffeur require, as, being obliged to leave their cars much alone and at the mercy of inquisitive chauffeurs at public garages, it is highly desirable to keep the engine under lock and key. This firm also sell one of the best kinds of companion cases that has been made, for it is equally suitable to an open or a closed car. Being of metal, it is unaffected by dust, and makes a desirable ornament. In appearance it is a thick tablet in which is set a clear-faced clock, memo. calling tablet, and silver pencil; on pressing a button the front falls down, disclosing a mirror, and powder and trinket boxes. These latter are closed, and can be opened by pressing buttons on either side.

In choosing a body and fittings for a lady's car it is quite necessary to see that it is supplied with a nice vanity case, or little cupboard like those found in the Van den Plas wonderful creations on Metallurgique cars, into which can be stowed a brush and comb, little chamois face rubber, some of the many good face creams to protect the skin against cold winds, hairpins, and a pair of rough gloves for roadside repairs. A little cupboard thus supplied will be found to be of the greatest comfort, even to the least vain among us, for there are surely no members of our sex who would care deliberately to attend any meeting or social gathering with their faces besmirched with smuts and dust. It will therefore be found that the equipment of the lady motorist's car consists of important little things almost as much as of the larger fittings.

MECHANISTE.



One of the Grand Prix Sunbeams making a trial run over the Grand Prix course.

Other People's Views

A Cheerful Article: Rides with an Object.

It was wrong, of course, to tell us that Browning yearned "to be in England now that April's here"; for the word ought to be "there," but the line is misquoted hundreds of times every spring.

Now, I do not write as a captious critic, but as an ardent admirer of the article on page 476, *THE MOTOR*, 15th April, on "The Flower Month in the Flower County." It was a charming and cheerful contribution to current car literature—if one may venture to be awfully alliterative. The article bore the spirit that animates many modern motorists. Gone are the days when they lie on their backs looking for mysterious mishaps in the "in'ards" of a car. Engines run with wondrous faithfulness; and albeit motors are interesting to men of mechanical mind, they are still more interesting to men who love the call of the wild, who "read sermons in stones, books in the running brooks," and find in their cars the medium to glorious health and the joys of the open road.

That Dorset article ought to be an inspiration to all motorists (and especially club secretaries) to make every outing a journey with a purpose; in the old phrase, to carry out "Rides with an Object." Such a spirit would overcome the mere madness for mileage that some men have.

Manchester motorists are not ashamed to tell that they have set out specially on a Saturday afternoon to see the renowned blue-bell banks near Alderley, where the wild hyacinth presents an exceptionally fine azure spectacle. Midland parties rejoice and are exceeding glad when they pilot themselves to Pershore and Evesham to see the greatest plum and pear blossom show in England.

Liverpool and Shropshire motorists often head for Chester and Eaton Park to see the daffodil display in the Duke of Westminster's demesne. Yorkshire motorists (vide a Wharfedale note in *THE MOTOR*, 15th April) find Wharfedale in spring, and the Pickering Moors in autumn, a recompense for special rides.

Let motorists cultivate more and more, then, now that cars are so praiseworthy near perfection in reliability, the spirit of taking "Rides with an Object," and so find out what is really

LA JOIE DE VIVRE.

Condition of Rhayader to Devil's Bridge Road.

Will any of your readers oblige by telling me if the road from Rhayader to Devil's Bridge is now fit for motor traffic? I ask this because in my *Contour Road Book*, by Inglis, which is the 1910 issue, it states, re this route, which is numbered as Route 59, Welsh Series, as follows:—"The route is only given for reference. It has long been almost disused, and is partly grass-grown and all loose stones. Gradients mostly 1 in 10 or 1 in 12, and there are three fords." Is this still the case, or has the road been made more fit for motor traffic? Will your readers kindly say if what is called "The Melyn Promontory" is well worth motoring over, that is, is it worth visiting places west of Pwllheli? E.H.

How Long Do Cars Last?

In a recent publication of *THE MOTOR* there appeared, under the heading "The Life of the Car," some remarks about an old $3\frac{1}{2}$ h.p. Benz, which, till quite recently, was running as a car, and which now serves as a luggage cart and stationary engine.

This reminds me of a similar car, owned by a friend of mine, which is still running. To all appearances it is capable of a considerable amount of future work, and, although it is somewhat shabby and altogether curious to look upon, it manages to waddle along quite happily.

The present owner has had the car 11 years, and purchased it second-hand when it was three years old. Since then it has been doing regular work, and, although it is never taken for long runs, does quite a considerable mileage in jaunts to the station and similar short journeys. So far as the present owner remembers, the engine has never been dismantled or received any further attention than the grinding-in of the valves and timing of the ignition. In the course of its life it has had a pair of new chains fitted, and two flat leather belts, which connect engine to countershaft carrying the gearing arrangements, have also been renewed. Some years ago a pair of new back tyres were fitted; these are solid. The front ones (which are the originals) are about worn out.

The longest run on record for this car in a day is about 40 miles. It is somewhat heavy on petrol considering the small size of the engine, the average consumption being about 17 to 20 miles per gallon. Of course, the body is very heavy for the motor, and all the gears are very low.

It is not now able to do much more than 12 m.p.h. over the flat, and is painfully slow on hills. The owner has thought several times of dismantling the engine and harnessing it to a pump, but he has finally



How long do cars last? Car referred to in letter above from "T.W.M."

O.P.V.—Contd.

decided to leave things as they are and to see how long it will last.

I really do not know how long these sort of cars ought to last. It seems to me that this one has done splendidly, considering the wear and tear it has had over rough Welsh roads and lanes. I think its record compares very favourably with some modern cars. It must have been made of splendid material, considering the state of its engine and working parts, which are very little worn and which are still carrying on their duties quite efficiently. Undoubtedly the Benz Co. make excellent cars to-day, but I wonder if they could turn out one to-day which would last so well as the little $3\frac{1}{2}$ h.p. Benz has done?

T.W.M.

A Small Car Tour on Paraffin.

The fuel question being, at the present time, so much to the fore, the following account of an Easter tour on paraffin may be of interest.

The car is a 10-12 h.p. Belsize (two-seater 1912 model) to which has been fitted a Morris paraffin carburetter (the same type which so successfully completed the R.A.C. 2000 miles trial and traffic test last year) fitted to a Pathfinder car. Leaving Blackheath on Thursday, 20th March, at noon, Stratford was reached via the Blackwall Tunnel, where a friend was met. A fresh start was made at 2.30 for Brandon, Suffolk (about 90 miles). The route taken was via Epping, Harlow, Bishop's Stortford, and Newmarket, where a stop of 45 min. was made for tea. Brandon was reached at 6.15 after driving the last five or six miles through a terrific hail and thunder-storm. The whole journey was completed without a hitch, and on examining the sparking plugs the following day they were found to be quite clean.

The car was driven about 40 miles during the stay at Brandon, and the return journey was begun after lunch on Easter Monday, and proved equally uneventful. The same route was followed, the only stop being at Bishop's Stortford for tea. Blackheath was reached at 7.15.

Petrol was used for starting until the engine was warm, the total amount used on the tour being less than one gallon. The rest of the journey was done on ordinary paraffin costing $7\frac{1}{2}$ d. per gallon, the consumption being about 35 miles per gallon.

The carburetter is fitted in the usual position, and a $\frac{1}{2}$ in. copper pipe is carried through the entire length of the exhaust manifold (about 18 in.), and acts as a heater for the paraffin. This was found to be sufficient for ordinary purposes; and the change over to paraffin could be effected in a few minutes providing the engine could be worked fairly hard. An extra coil of copper pipe is now being inserted in order to accomplish the change over more quickly when starting out in traffic. The paraffin is carried in a tank at the rear of the car, and the petrol in a small cylindrical tank on the footboard, both feeding to the carburetter by pressure. The work was done at a local garage, and was only completed the week-end before starting.

Blackheath.

L.G.C.

"Luminous" Paint—Once More.

I have been informed that a luminous paint has been brought out for use on motorcars, and shall be glad of any particulars as to its nature. Is it the same as Balmain's luminous paint, and has it been found successful in use? I take it that the object in using it is to render motorcars visible at night independently of their lamps.

H.R.

[We should like to point out that this question has a distinct "chestnut" flavour about it; but in case anyone has discovered a really cheap radium paint preparation, giving about 10 c.p. to the square foot, we shall be pleased to hear of it.—Eds.]

c

Motoring in South Africa. A Hint to Advertisers.

As the engineer in charge of the Mission Launch here, I have been a regular reader of THE MOTOR, and have gained much valuable information therefrom. The advertisements in THE MOTOR are always of the best class articles manufactured, and I think that, in comparison with the number of motorists in South Africa THE MOTOR is very popular, but there is one great fault noticeable to us motorists, etc., out here. The fault is that your advertisers do not inform us who are their African agents, and I do think they could manage another odd line or so in their advertisements just naming the Colonial agent, as it would help us out of a lot of our difficulties and also increase their Colonial trade. Let me give you an example. I have just had my motor boat engine to pieces for annual overhaul, and I thought that I would have a new carburetter, etc., and a new set of plugs. Through your journal I decided on a set of plugs, as per the advertisement, and a carburetter, but on trying to find the South African agent I could not do so, so here I am "stuck," and cannot get a spare plug or anything else, just for the want of an odd line in the advertisements. Of course you must understand that if you require anything in South Africa it is "send to Jo'burg," but what is the use of sending there if you don't know what firm to send to? I also wanted my magneto overhauling, but even in that case I cannot find out who is the South African agent. Well, sir, I think I have put before you a general complaint from the bulk of South African motorists, and do hope you will try and remedy it for us by suggesting to these firms that they add the name of their Colonial agent to their respective advertisements. There is also another way of looking at it. If we send to England to the maker's headquarters we have to wait about seven weeks for a reply, and then have the bother of getting the different articles through the Customs here, which means another week's delay at least, so that you have to wait two months for the arrival of the most simple things in the way of spare parts.

C. P. SHAW.

Benzole Exhaust and Action on Steel.

Two extremely interesting items in THE MOTOR of 8th April, viz., the anti-sulphuretted hydrogen inquiry on page 461 ("Other People's Views"—"Benzole: Is Sulphur Present?"), and the answer and reply on page 529, 15th April ("Information Bureau"—"Action of Exhaust Gases on Steel") may perhaps be fairly put into juxtaposition for a few words of observation.

Taking, first, that inquiry by "Anti-H₂S," I have been hammering away for years—since long before the benzole boom—trying to eradicate from the motoring mind any prejudice against good benzole and its effect on the engine, etc. The smell of benzole exhaust may be bad. But it is a sign of bad management by the man at the wheel; that he is not giving the mixture enough air but wasting his spirit. That "perfume" is, admittedly, a sulphurous gas. But the better the benzole (and we can get better than 90 per cent. quality now) the less there will be of malodorous exhaust; and the more air the driver uses (up to a point, of course) the less sulphurous fume will there be. As to sulphuric acid. I think I can say once more, on the strength of an analyst who kindly went exhaustively into this on my behalf, that there is none in good benzole, or at the worst only a microscopical, negligible quantity—not enough to pit the cylinders or to wear away the exhaust pipe.

Some years ago I had sooty deposits examined

O.P.V.—Contd.

with a view to finding if they contained sulphuric acid, which, of course, would have been detrimental, even abhorrent, as that would obviously cause corrosion, pitting, or eating away of the cylinder walls, etc. (The three words or phrases are commonly used as being synonymous, though not precisely so in fact. However, from a layman's point of view, they mean one thing, and that is "damage to the cylinder.") The result was: Benzole found not guilty.

Now, then, one leads up logically to "F.E.'s" inquiry in the "Information Bureau." Presumably he has used petrol, or I think he would have mentioned it. From the excellent answer supplied, the reader will see that other things than benzole will lead to corrosion or eating-away of exhaust pipes, etc.

So, then, let it be clearly understood that sooting-up and eating-away of metal by imaginary sulphuric acid, are only bogeys. To your correspondent "Anti-H₂S." I say use benzole, and be not afraid. Your motoring, unlike your food, will not cost you more. It will cost you less. R.R.

The Fuel Question.

I have been following very closely and with a great deal of interest your articles in THE MOTOR on the fuel question. Your latest article on the del Monte process opens up an entirely new phase of the question, so far as it concerns me. It may be of interest to you to know that, speaking in my capacity as a colliery manager, my company has a seam of coal of a very good quality, but from which another seam has been taken out beneath it, thus rendering it unfit to market, it being so small. It seems to me that you are, by your campaign in favour of benzole as a motor fuel, also opening up the possibility of working many seams of coal such as I am dealing with just now, and thereby earning the thanks not only of the motoring public but of those who are, like myself, both motorists and mining engineers. I would like, if it would be possible, to get, say, 2 cwt. or so of the coal I am alluding to treated at the small del Monte works at Barnes.

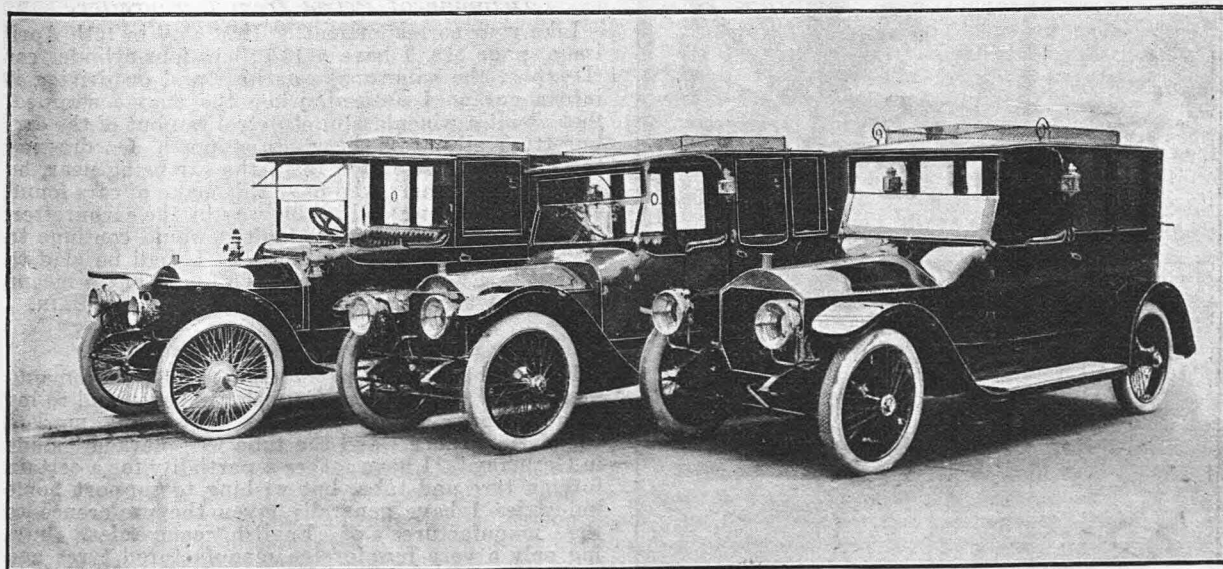
COAL.

Valve Tappet Adjustment.

I was pleased to see the notes on valve tappet adjustment in your issue of the 8th April. I am sure these were appreciated by many. Several methods of getting over the difficulty were given, from the proper and most mechanical way to a makeshift method. There are numerous motorists who do not possess a lathe or stocks and dies, neither can all go to the expense of placing the work in the hands of mechanics at a garage. But if your contributor's method of the 15th April is adopted by adjusting so "snug," our repair shops will not be idle.

I would rather spoil a visiting card than give my repairer an order for a new set of exhaust valves to replace the bent ones, which would certainly result if your contributor's method of the 15th inst. were adopted. In his article he mentions he has not worked out the actual expansion. It would be most interesting if he can supply readers with a table based on all conditions of speed and load and other variable conditions. Your contributor of the 8th inst. distinctly said that expansion "may be" considered a negligible quantity.

If your contributor of the 15th inst. reads that article again he will see that the car ran well after the first 15 mins., i.e., after the fibre head had been hammered in place, so experience on that car proved the visiting card amount of clearance none too much. As a practical repairer, I may be allowed to give my theory on the subject. When I adjust the tappets, I have in view the fact that the induction valve spindle is one of the coldest parts of the engine when working, due to the rush of air, etc., past the spindle. The exhaust valve spindle, on the other hand, I consider one of the hottest parts of the engine. I keep in view the fact that there is a film of oil around the camshaft, and "roller ends" on push-rods, if fitted. Also the slight warping action of the cylinders from side to side, due to the thrust of the connecting rod: this factor, however, I consider small, especially if the cylinders are cast in pairs or en bloc. An important factor which should not be overlooked is the warping of the whole crank chamber, caused principally by the chassis running over uneven ground. The top portion of the cylinders has a tendency to expand away from its fixing flange, which helps to



Three Napier motor carriages specially prepared for the St. Petersburg Exhibition.

O.P.V.—Contd.

cause more tappet clearance. Adjusting whilst hot is, to my idea, wrong, because the induction valve spindle heats up whilst standing after running, and the exhaust valve spindle is cooler than when running; also the whole engine has a tendency to more evenly distribute its heat. The camshaft settles down closer to the bottom of its bearings than it would do when running. It may be granted that the amount of expansion is small, but, if the tappets are to be adjusted "fine," all these points must be considered, and it is preferable to have a little noise and be on the safe side, rather than leaky valves, damaged guides and probably a distorted camshaft and a big fuel bill. If the valve tappet setting falls to my lot, it should be a visiting card for the induction valves and two cards for the exhaust valves that I should use, and under working conditions there will not be much amiss with them. KELLAWAY.

Road Obstruction—an Ancient Right.

A correspondent, "S.T." (15th April, page 526), wants to know "who would be to blame" if an "accident" arose through a motorist colliding with alleged stupid suffragettes if the latter were creating annoyance by wilfully interfering with the reasonable progress of the motorist.

By an ancient custom or law the motorist would be to blame. The plain truth may as well be realized at once—until wiser counsels prevail, and until reckless people can be forced into the position of "contributory negligence."

The law is proverbially "a hass." "'Tis true, 'tis pity; and pity 'tis 'tis true."

The pedestrian has a right to the footpath and the carriage way alike. He often tries to use all the lot, we know—and not always when he is drunk, either, but out of sheer awkwardness.

Judge Longstaffe, who is on a Yorkshire circuit, only last week said, during a county court case, "The whole of the road is for the foot-passenger to walk on, and the more quickly that is understood the better. He is not to be hooted or shouted out of the way. The other people have got to take care he does not suffer damage." It is an antiquated dictum, of course. We live in a quick age. Why not get the law altered, on the principle of

AUTRE TEMPS, AUTRE MŒURS?



A contrast on the road near Bombay.

Camphor in Petrol.

In your 15th April issue Mr. Knight asks for an explanation of the "repulsive action" of camphor in water. The following is, I believe, in accordance with science. Camphor is exceedingly light, and is easily put in motion. On immersing in water a film of water creeps up the side owing to surface tension. We have now a minute analogue of a reservoir wall resisting a pressure of water, i.e., this water film presses the camphor away, is immediately reformed, and begins the cycle anew. It is because one side of the camphor is protected by the paper of the model boat that we get the uniform motion in one direction.

It is perhaps in the change of surface tension on solution that the action of camphor on petrol lies. I have in hand some experiments on the subject which can be of no possible interest to motorists as motorists, but I might perhaps be allowed to indicate the results which would seem to be indicated.

Surface tension, which results in the formation of a "skin" on the surface of liquids, naturally by so doing opposes the tendency to vaporization. If we now introduce some substance which lowers the surface tension of petrol we naturally expect readier vaporization. B.Sc.

Your correspondent Mr. J. H. Knight, 15th April issue, is under a misapprehension as to the cause of the movement of camphor in water.

The camphor moves about, not because of any repulsive action of its own, but because of the pull due to the surface tension of the water. Under normal conditions, the pull on any floating body due to surface tension is the same in all directions, and no movement results. The camphor, when placed in water, immediately lowers the surface tension, and as this occurs to an unequal extent at different portions of the lump, the pull due to the surface tension is greater at one side than at the other, and the camphor is pulled along.

If the surface tension of the water is suddenly lowered by placing a drop of paraffin on it, the camphor will come to rest.

At the same time, it is quite possible that the presence of camphor in petrol might allow the latter to split up into finer spray, by allowing smaller drops to form, due to the lower surface tension of the liquid, but not due to any "repulsive" action of the camphor. WM. D. DOUGLAS.

Dripping of Petrol from Carburetter.

Like your correspondent, "H.M.C.," in 15th April issue, page 528, I have a 10-12 h.p. four-cylinder car (I expect the same make as his), and on driving it into a garage I noticed, when the engine stopped, that about a wineglassful of petrol ran out of the carburetter; after this the waste stopped. On drawing the manager's attention to it, the car being near, he told me that others who have this make of cars found that petrol had wasted in this way by the carburetter. If the needle valve was at fault it would continue to let petrol out, but this is not so. I shall be glad to hear if "H.M.C." or others have found out a means to prevent this waste of petrol. C. E. PAIN.

English Tyres Made Abroad.

I lately bought a tyre and tube which were manufactured by a prominent English company, and to my great surprise found that the cover was marked "made in France" and the tube was marked "made in Germany." I have rather a partiality for a certain foreign tyre and tube, but wishing to support home industries I have generally given the preference to the manufactures of English companies, buying only a very few foreign manufactured tyres and tubes. In future I shall not hesitate to buy where I can get what I consider to be the best article for my money. A MOTORIST.

"THAT TYRE INFLATION QUESTION."

Interesting Observations of Pump and Valve Phenomena.

This subject appears to be attracting so much interest, and the position respecting it seems to me to be so curious, that I feel called upon to explain a point connected with it which, though of vital importance, and though so much has been written on the question, no one has yet mentioned, but the explanation of which will, I hope, at once dissipate the difficulty that has arisen in the discussion. I would say, before proceeding, it is clear to me that the arrival at the ultimate truth about the question is not dependent upon extensive scientific knowledge, but simply upon common sense and adequate practical experience.

The letters in your issue of the 8th April seem sufficiently to deal with the arguments of Mr. Nuttall; but, while I wholly agree with all the criticisms of them, I yet believe that, as regards *fact*, he is right and all others wrong, although the reasons he gives for the fact are doubtless as erroneous as they could be, and the reasons of the others wholly right. What it is clear to me has been overlooked or misunderstood in the discussion, and led to this topsy-turvy situation, is the action of the valve. When an ordinary pump is used this will, I believe, very materially affect the case; but some special pumps act so efficiently that, while in use, they supersede the action of the tyre valve, so that what I have now to say would not apply.

Mr. Sturmeay originally spoke of the resistance of the valve as a negligible matter, and all your correspondents seem to accept this assumption. I would now ask, is it so, always or usually? To make the matter clear, and to avoid what might appear to be arbitrary statements, I would refer to two common experiences. Is it not often found, particularly when a tyre has not required pumping up for a long time, that, on the pump being first started on it, it is very hard to get air to pass into the tyre, sometimes impossible by the action of the pump, although a pressure may be developed in it momentarily of as much as 150 lb., and the valve has to be opened by pushing in the plunger as if one wanted to deflate the tyre?

Is it not again a still more frequent experience, indeed a very usual one, in pumping up a tyre to a high pressure, say 90 lb., that, when the pressure has been got to about 50 lb., towards the end of the strokes of the pump (particularly if it is a single-barrelled one without a gauge, such as is in most common use) there is a point at which the piston is felt to come almost to a stop, though one may be pumping one's hardest, and then goes forward to the finish of the stroke with a jerk? Surely both these experiences are evidence that, under certain circumstances, valve resistance, instead of being negligible, is a very serious matter indeed. When there is no pressure behind it, certainly it never requires any appreciable force to get air through the ordinary valve; but, when there is high pressure behind it, anything about 60 lb., and when a tyre has not been pumped for a long time, there appears to be a tendency for the ordinary coned rubber head on the plunger of the valve to wedge in its seating, so that it requires great force to lift it.

I believe that the force necessary to do this, in addition to the resistance of the compressed air in the tyre, frequently rises, as the pressure in the tyre

is increased, from, say 10 lb., when the pressure in the tyre is about 20 lb., to 20, 30, 40, and 50 lb., or sometimes even more, before a tyre can be got up to 80 or 90 lb.; that is to say, to pump a tyre up to 90 lb., towards the end of the process, a pressure must often have to be developed in an ordinary pump, at the moment before the valve is opened, of probably 150 lb., the pressure in it, when that critical point is passed, being only a negligible amount more than the pressure inside the tyre. When this is so, though there should normally be no "expansion" of the air on entering the tyre from the pump, there will, of course, actually be "expansion" to a corresponding amount to that of the excess of necessary pressure in the pump to open the valve over the pressure in the tyre, so that the air, however hot it may be in the pump at the moment of discharge, will, I presume, actually often have a cooling rather than a heating effect inside the tyre. This may explain the result obtained by the correspondent who actually tried the experiment of pumping air into a petrol tin. Anyway, in view of the real facts about the action of the valve, I cannot assume that the tin should have become heated: it may, for the reason I have indicated have been actually cooled.

To pass, however, from argument to experiment, I would ask, is it not most frequently to be observed, in using a pump fitted with a pressure gauge, that the hand of the gauge during the pumping process undergoes extreme oscillations? These are, of course, directly due to the action of the valve, since, apart from that, the pressure in the pump would never be materially higher than that in the tyre, and this, of course, in the process of inflation, rises quite regularly and steadily. I would say, finally, let anyone who has a pump with a reliable gauge to it, simply put it successively to each of his four tyres, and, giving it a few, say half a dozen, vigorous strokes with the handle, note carefully the maximum pressures indicated on the gauge on each stroke (slackening the pump connection from the valve and tightening it up again between each stroke), and compare these maxima with the pressures found to be in the tyres. The facts which would thus be obtained would conclusively settle this question. Will someone do this, preferably under some independent supervision, and report the results *pro bono publico*? I prefer that someone else should do it rather than myself.

When this point about the heating or cooling of a tyre on inflation has been settled, as I hope it will now be on a sound basis, there is, of course, much else, of much more practical consequence, to be said about the inflation of tyres, and their construction and efficiency generally, which, particularly from the great interest shown in this discussion so far, it occurs to me you might be glad now to have discussed in your columns; and I should, therefore, in another letter, this one having already grown much longer than I would like it to be, be glad to say a word upon these questions. I may say here I would like to submit for discussion the fundamental question, what is a pneumatic tyre, and what pressure should be required in it in relation to the load it has to carry? What there is to be said on this question would, I believe, be of very great and general interest.

THOMAS DUNN.
C63

Information Bureau

RULES.

We are at all times pleased to answer queries on technical and general motor subjects, or to receive correspondence upon any motor topic. In consequence of the large number of letters received, however, we must insist upon the following simple rules being adhered to:—

1. Clear writing. Type-writing for preference.
2. All letters to be written on one side of the paper only.
3. Questions to be clearly expressed, concise and without tedious preamble.
4. An envelope must be enclosed bearing a penny stamp, and the name and full address of the sender. NOT a stamped undirected envelope.
5. Questions cannot be answered on the telephone.
6. Inquiries for routes are dealt with separately. Rules stated at end of this section.

Direct Injection of Petrol into Cylinders.

C. G. writes:—Some years ago I had experience with a car, the engine of which was not provided with a carburetter, but the petrol was transferred directly to the seating of the inlet valves. On the inlet stroke the valve, during the course of opening, drew in a charge of petrol and air, and thus formed the mixture. Can you tell me why this system never came into general use? It seemed to me at the time to be an ideally simple one, and I was not able to find any serious disadvantage.

The method described cannot possibly be considered an efficient one for the simple reason that a properly proportioned mixture cannot be obtained, and, moreover, the petrol enters the cylinder in a more or less unatomized condition, which tends to cause the formation of carbon deposit and other objectionable drawbacks. From the fuel consumption point of view such a system is very wasteful, as the amount of petrol induced through the valve at each stroke is excessive. It has been conclusively shown that the mixture must be prepared in the correct proportion before it reaches the engine.

"Sparking" Metal.

E.P. writes:—Can you inform me who are the actual makers of the sparking metal or "flint," as it is frequently called, used to obtain a friction spark in the cigar lighters sold at tobacconists? Also, if you know whether this friction method has ever been employed to obtain the spark in petrol engines?

So far as we are aware the sparking material in question (known as ceric-iron) is made by numerous concerns in Germany and Austria, but we are unable to specify any of these, as most of the lighters are imported into

this country, and the actual makers are presumably only known to the wholesale trade. We know that the method, as applied to internal-combustion engines, is covered by a German patent.

Late Firing and Noisy Engine.

E.A. writes:—I have a four-cylinder car, the engine of which is unusually noisy. It was taken down some time ago for repairs, and since then the noise has developed. A careful examination has shown that it is the exhaust which is extra noisy, and it is not due to a mechanical defect. Several experienced men I have consulted have told me that either the ignition timing is wrong or the carburetter is badly adjusted, hence the noise; but they cannot state why either of these causes should explain the noise, so I appeal to you for advice.

Late timing means that the explosive charge is exhausted during the process of combustion, and the gases are therefore exhausted at much higher pressure than they ought to be. If the carburetter is so adjusted that it cannot produce a rich enough mixture the effect is practically the same as having the ignition timing set late, because a weak mixture is a slow-burning mixture. Under these conditions an engine is not only bound to be noisy but it cannot possibly develop its power, as the energy of combustion is wasted in the shape of useless heat.

Treatment of a Clutch Leather.

G. W. writes:—I have fitted a new leather to the cone clutch of my car, and the result is that it does not work well. It rattles when engaging, and finally takes up the drive with a jerk. I am told this is because the surface is not true, and that the only way to treat a clutch to make it work smoothly is to have it skimmed up in the lathe. As I do not possess this excellent tool, can you tell me of any extemporized method to improve the surface of the leather?

There are probably a number of high places on the leather surface. This should be well chalked over and allowed to engage the clutch for a very few turns. On withdrawing the cone the high place will show up where the chalk has been rubbed off. These should be carefully marked off and eased down with file and glass paper. After a few more trials with the chalked surface and further treatment an improved surface will result. After a time the leather will bed itself down, and any temporary harshness can be avoided by applying some powdered graphite and collan oil.

Squeak in Foot Brake.

M.H. writes:—My foot-brake—external contracting on metal drum—squeaks loudly when applied. Will you advise me what to apply so as to reduce the noise?

The application of some graphite grease will prove an effective remedy, presuming that there is no mechanical fault in the brakes.



A view of part of the handsome interior of Minerva House.

BUREAU.—Contd.**Exhaust Fan for Silencer.**

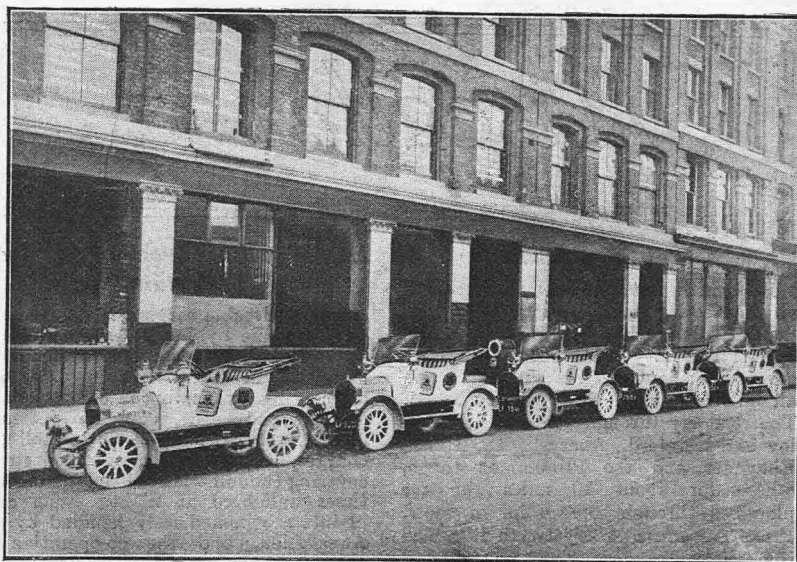
H.I. writes:—I should be glad of your opinion on the following idea:—It has for a long time occurred to me that the best type of silencer designed cannot do otherwise than increase the back-pressure on the exhaust, although this may well be small in amount. What objection is there to arranging a small fan within the silencer, which could be driven from some definite part of the transmission mechanism, thus creating a strong vacuum in the silencer, which would forcibly draw the exhaust gases through the silencer and reduce the back-pressure on the piston during the exhaust stroke?

The plan suggested is a very old one. There have been such silencers made experimentally, but the obvious disadvantage is that it is simply needlessly increasing the complication of the car by the extra mechanical parts required. Moreover, such a silencer would have the further disadvantage of being expensive to manufacture, and would require considerable attention to keep it in order. The silencers which are now made on the accepted best principles cause quite a negligible amount of back pressure, and at the same time the construction is simple and not expensive.

Output of Lighting Accumulators.

E.G. writes:—I am installing a set of accumulators for lighting my car. These I can charge from my house-lighting installation, and therefore am not at present fitting a dynamo on the car. I shall have one small headlamp, two side and a tail lamp, and make occasional use of a dashboard lamp. I am not at all clear as to the relation between volts, amperes and ampere hours in the matter of deciding what size and number of cells of accumulator to install. Could you give me a few hints that would be of use to me?

Each cell of an accumulator has approximately a voltage or pressure of 2 volts. Lamps are always graded in given voltages, thus, 4, 6, 8, 10, 12-volt lamps for car lighting are usual, so that these lamps can only be lighted off a 2, 3, 4, 5 or 6-cell battery respectively. Lamps are also graded by another unit, viz., amperes; that is, the actual amount of current flowing through the lamp to light it up. The amperes may be anything from 1 ampere up to, say, 3 amperes; the greater the current a lamp takes the higher the candle-power, but it is also the fact that a given candle-power can be obtained by using higher voltages and lower current; thus a 4-volt lamp, taking twice the amount of current an 8-volt lamp does, gives the same candle-power. It is simpler therefore to regard candle-power as proportional to the watts, i.e., amount of energy the lamp consumes, ampere $\times$ volts = watts, and with a metallic filament lamp 1 watt gives at least 1 candle-power. The ampere-hour capacity of the accumulator expresses the amount of work you can get out of it per charge;



A fleet of white 8 h.p. Swift cars recently supplied to Messrs. Carreras, Ltd., for advertising Black Cat Cigarettes.

it is important to note that an accumulator may be rated at "actual" and "nominal" capacity, but for lighting it is now usual to rate an accumulator at "actual" capacity at a maximum rate of discharge. If this be exceeded, as would be the case in using higher candle-power lamps, the capacity would be less than the rated figure. As an example, an 80-ampere-hour accumulator would be a useful size for the number of lamps quoted; assuming that when all the lamps were in use the total current consumed is 3 amperes, the useful lighting period, without recharging, would be about 27 hours ($3 \times 27 = 81$) in normal lighting periods of three or four hours each.

Exhaust-valve Breakage.

J.P. writes:—I recently found that one of the four cylinders of my engine was not firing, and further examination proved that there was no compression, because the exhaust valve had broken just below the head. The breakage is rather clean and sharp and there is not much, if any, evidence of burning or pitting of the metal. The tappet adjustment had been kept as close as possible, and there has been no throttling of the exhaust gases. I am, therefore, at a loss to understand why the valve broke. It has run the same distance as the others, viz., about 600 miles, since the car was new.

The most likely explanation in a case of this sort is a flaw in the metal, or else, in the turning of the valve in the lathe, the stem has been accidentally slightly undercut with the tool and a weak place caused, which has undergone crystallization from the normal shock and vibration of the valve action. It may be the case that this particular valve had too strong a spring on, which would help to shorten its life by the increased impact caused each time the valve seated itself. Valves are nowadays made so strong and of such excellent material, viz., nickel steel, that a breakage can only be the result of some quite abnormal circumstance.

Discovery of Spark Ignition

S.A. writes:—Can you give me any idea when the principle of using an electric spark to ignite explosive mixtures was first adopted? I have been informed that it was used on an early type of gas engine about 1850, but I fancy it must be older than that.

The principle is a very old one, certainly 150 years old, and was used long before the gas engine was invented. The famous chemists and physicists of the latter part of the 18th century were well acquainted with it, and experiments on the explosion of gases were made frequently, as the old text books record. The spark was not, of course, obtained from a coil or magneto, as these were not then thought of, but the usual method was to employ a frictional electric machine from which a Leyden jar was charged and a powerful spark thus obtained.

ROUTES.

All inquiries concerning routes and details of tours must be accompanied by a remittance of 6d. and a stamped and addressed envelope. Owing to the very large number of such inquiries received it has become necessary to form a special department to deal with them. Letters should be marked "Motor Routes." We would, however, call our readers' attention to the fact that an excellent series of Motor Road Maps and Books can be had from our Publishing Department. Particulars of these Maps and Books are given from time to time in our advertisement pages.

Routes cannot be sent by return. All applications are replied to in strict rotation in the course of 21 days. We do not give recommendations to Hotels or Boarding Houses.

Owing to pressure on our space a large number of replies are unavoidably crowded out. We are always pleased to reply, almost by return of post, to inquiries, when a stamped addressed envelope is enclosed. During the past week we have posted replies to 140 readers.

Miscellanea

A Run on a Briton.

Particulars have just come to hand of an interesting tour through Mid and South Wales on the well-known 10 h.p. Special Briton. Some 3600 miles were covered without even a puncture, and all hills were climbed at a good speed. The road lay through Tintern, via Ludlow and Hereford, Aberystwyth, Builth, Rhayader and the Plinlimmon range, where for about 10 miles the car ploughed through some 4 in. of snow. From Tintern to Aberystwyth it rained the whole distance. The car followed the coast-line round the Dovey and Mawddach estuaries, then on to Bala and across the mountains to Vyrnwy. The return journey was made through Llanfyllin and Shrewsbury. The hill-climbing capacity of the car was put to a thorough test, and in this, as in other respects, answered perfectly to every demand made upon it. This is the car retailed at the low price of 175 guineas, all ready for the road, and we congratulate the manufacturers, the Briton Motor Co. (1912), Ltd., on the splendid results which they are achieving.

A Well-equipped Garage.

We have had the opportunity of inspecting the new garage and works of Messrs. A. Turner and Co., 4a, Cambridge Street and 12a, Porchester Place, Marble Arch, London, W. The garage, a part of the interior of which is illustrated in the accompanying photo., extends between the two streets named; the illustration only shows a small part of the accommodation. Private lock-ups are provided in Porchester Place, and complete care of cars catered for at lowest rates. A well-equipped workshop also forms part of the most suitably-appointed premises, where any kind of repair is undertaken. Messrs. A. Turner and Co. are now getting better deliveries of Marathon cars, for which they are agents.

Highway Improvement in Great Britain.

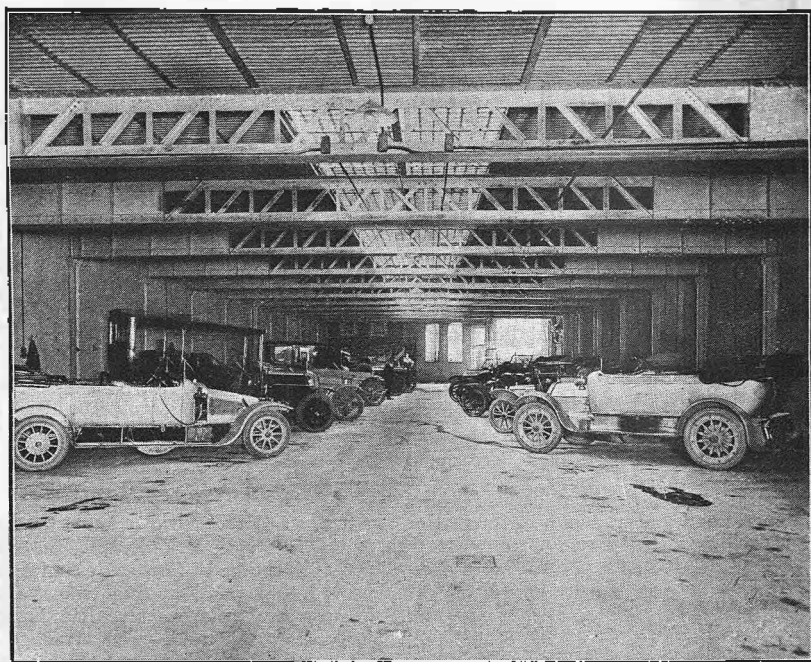
A considerable amount of unobtrusive work is done by the A.A. and M.U. in connection with the improvement of highways in Great Britain. Members are continually sending in complaints regarding bad roads, dangerous corners, unsafe level crossings, exorbitant toll-gate charges, long patches of unrolled stones covering the full width of the road, sometimes unlighted at night. Such complaints are immediately handled by the Association, and the co-operation of

borough surveyors or other persons or authorities responsible for the grievances referred to is obtained in removing such grievances. Cases of stone-throwing at cars are always being reported by the patrols and members, and in suppressing the nuisance the Association has received considerable assistance from police authorities all over the country.

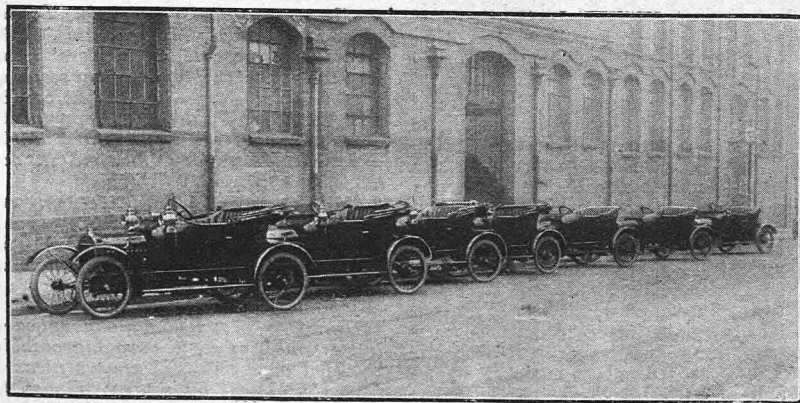
Irish Automobile Club.

It is proposed shortly to hold races for cars owned or ordered by motorists on 18th April, 1913. Cars will be divided into classes, and the racing will be under handicap. Entry fee, £1 1s. per car. Challenge cups and medals will be awarded to the winners. Owners desirous of entering will kindly communicate with the secretary of the Club as soon as possible, who will give all particulars and conditions.

The Westminster Motor Car Garage, Ltd., have removed into larger and up-to-date premises in Greycoat Street, Westminster, S.W.



Part of the interior of the new garage and works of Messrs. A. Turner and Co., 4a, Cambridge Street, and 12a, Porchester Place, Marble Arch, London, W.



A recent day's output of the 8 h.p. model Enfield cars awaiting delivery outside the Enfield factory.

The Lancashire Automobile Club have issued supplementary regulations for the open and closed hill-climbing competition, to be held at Waddington Fells, near Clitheroe, Lancashire, on the 3rd May, entries for which closed on the 25th April. Four events will be held, two closed, an open, and a cyclecar race, and in each case prizes will be awarded for the fastest time, other prizes being given for the best performance on formula. Further particulars of the competition are obtainable from the secretary, Mr. J. Campbell, Kensington Place, Blackpool.

A branch of the Avon Indiarubber Co., Ltd., has been opened at 88, Avenue des Ternes, Paris, which will be under the control of M. de Lalande-Joulin. The telegraphic address is "Pneuvon, Paris." This is the sixth branch opened by the manufacturers of the Avon tyres since the beginning of 1911.