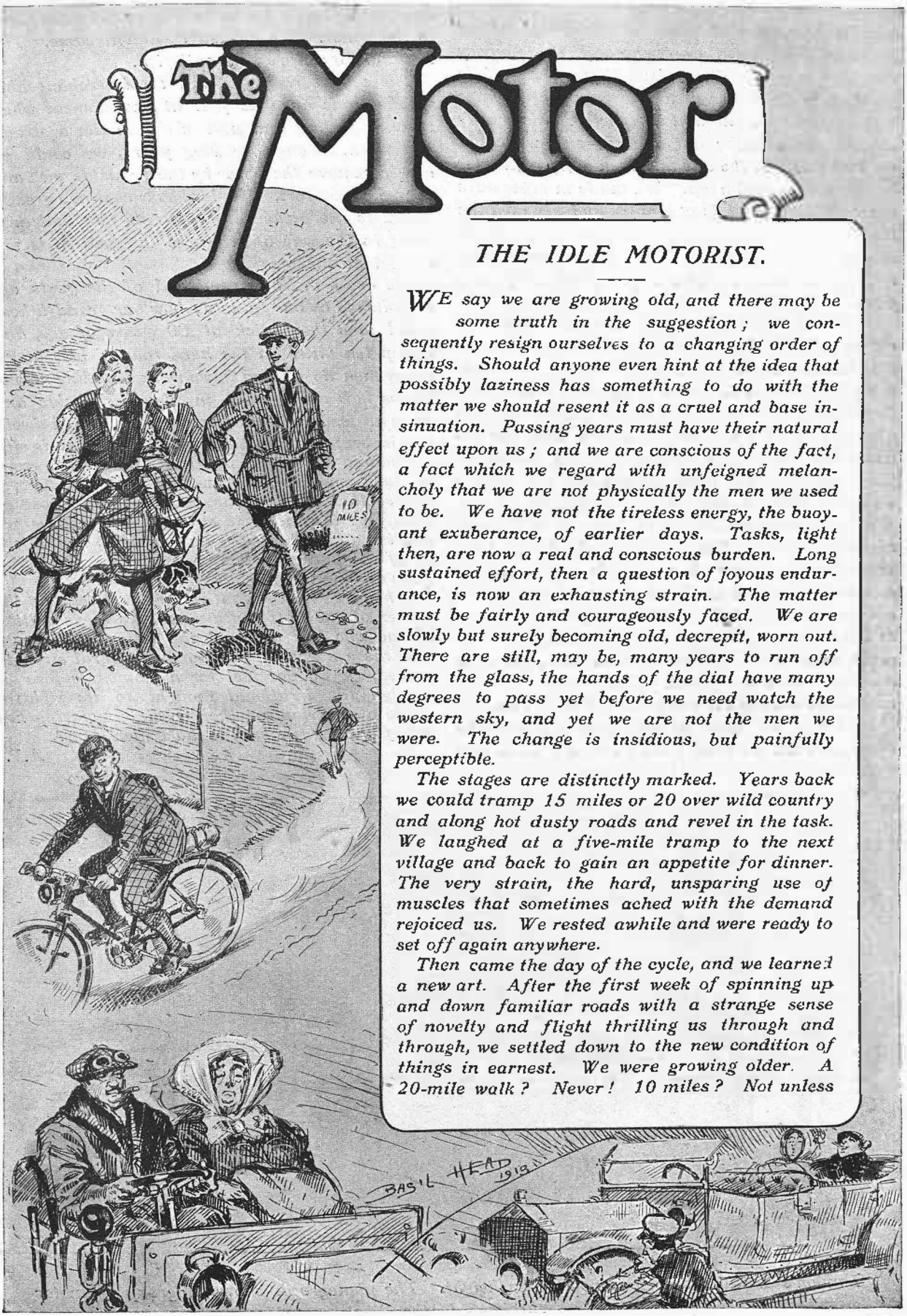
Vol. 23. No. 598. 3rd June, 1913.

The Motor



THE IDLE MOTORIST.

WE say we are growing old, and there may be some truth in the suggestion; we consequently resign ourselves to a changing order of things. Should anyone even hint at the idea that possibly laziness has something to do with the matter we should resent it as a cruel and base insinuation. Passing years must have their natural effect upon us; and we are conscious of the fact, a fact which we regard with unfeigned melancholy that we are not physically the men we used to be. We have not the tireless energy, the buoyant exuberance, of earlier days. Tasks, light then, are now a real and conscious burden. Long sustained effort, then a question of joyous endurance, is now an exhausting strain. The matter must be fairly and courageously faced. We are slowly but surely becoming old, decrepit, worn out. There are still, may be, many years to run off from the glass, the hands of the dial have many degrees to pass yet before we need watch the western sky, and yet we are not the men we were. The change is insidious, but painfully perceptible.

The stages are distinctly marked. Years back we could tramp 15 miles or 20 over wild country and along hot dusty roads and revel in the task. We laughed at a five-mile tramp to the next village and back to gain an appetite for dinner. The very strain, the hard, unsparing use of muscles that sometimes ached with the demand rejoiced us. We rested awhile and were ready to set off again anywhere.

Then came the day of the cycle, and we learned a new art. After the first week of spinning up and down familiar roads with a strange sense of novelty and flight thrilling us through and through, we settled down to the new condition of things in earnest. We were growing older. A 20-mile walk? Never! 10 miles? Not unless

THE IDLE MOTORIST.—Contd.

absolutely compelled, and then under constant protest. We cycled everywhere if the journey exceeded a mile. It was not that we were idly yielding to an easier means of transit; only age was beginning to tell, and we felt five miles really enough for a walk; but cycling—ah! we could do 100 miles in the day and then enjoy a saunter by the sea to finish up. We made in those days daring attempts at long climbs, and relished the thought of impossible rides; but as for walking! It was not only so slow, but, at our advancing age, too laborious. The days of walking were past.

Was it a kindly fate that first set a motor in our way? We thought so, and when first we sank into the seat and took the wheel we realized that it had just come in time. Just when nature was demanding an easier method of pursuing life's pilgrimage. We welcomed the new way, not because we were growing idle, but the weight of years was pressing more heavily, and the change was an answer to the imperative call of nature. We have accommodated ourselves now to the new regime. Walk? We shrug our shoulders at the suggestion. Cycle? Yes, if it be only a mile or so, and the car not ready for the road or the road not quite convenient for the car. But we prefer to have the car always ready. Not only is it so much quicker and saves so much time, but it is more suited to our years. We are not so young now as we used to be, and years tell their tale.

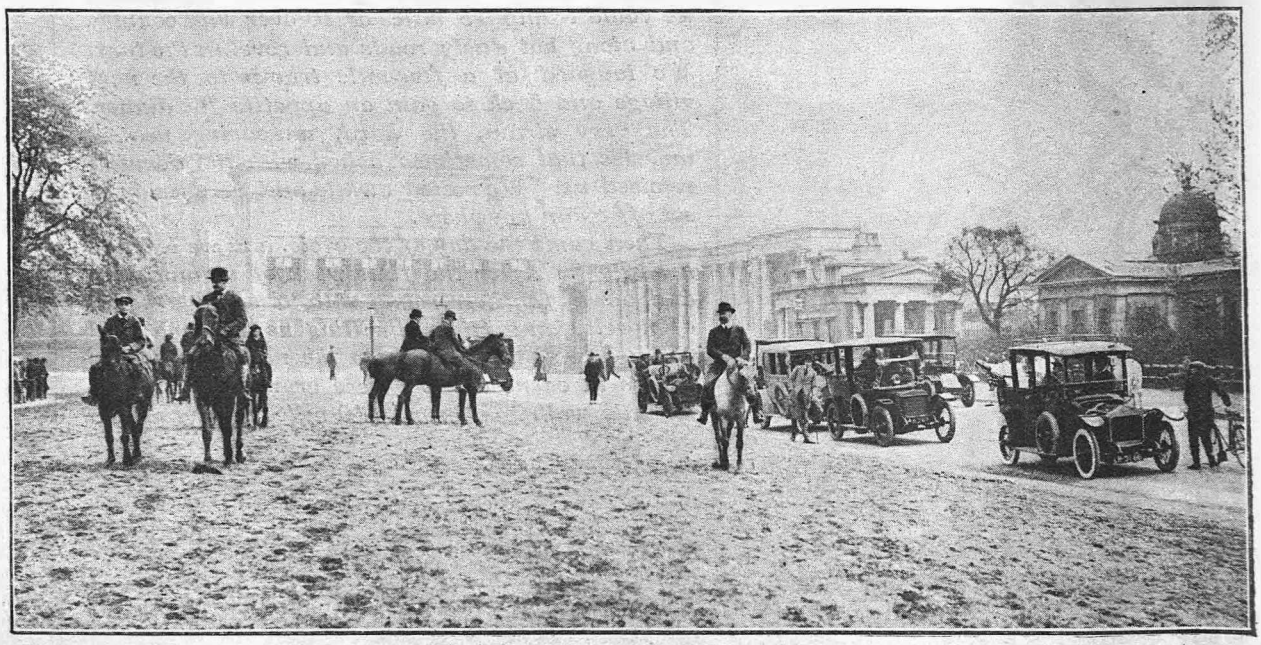
It is age, not want of use, that stiffens the muscles when we walk a mile or two. It is age that makes a ten mile cycle run an effort. We have taken to the car as readily as the duck takes to the water. We needed it, and it came. The demands of nature were satisfied.

The self starter, too, and the interchangeable wheels came upon us just at the moment when we were feeling that pull of the handle a strain, just when, through growing years, we could no longer remove the cover by the roadside with any degree of comfort. The low, easy seat has greatly added to the pleasure of the ride now that anything in the way of stiffness in position is unsuitable to our age.

We are sometimes reminded of the feats accomplished by our fathers; how our grandfathers could take their stick at 80 years of age, and tramp ten miles on the hard roads; how at 70 many men do a hard day's work, treading no one knows how many miles in ploughed fields and farmyards, how at 60 the son of the soil dwelling in country ways and rural habitations is still considered a young man; and after a long record of such prodigies we awaken with a start to realise that the first applicant for the post of chauffeur is waiting to see us. We feel we are needing a man to do the harder work, and relieve us of the burden which is now too heavy a strain upon our diminishing strength.

When we consider that we are just turning the corner of the half century, and that it is written of one who had attained the age of 120 years that his eye was not dim nor his natural strength abated, we wonder just for a moment before we consign the irrational thought to its rightful abode of oblivion, whether possibly motoring has not after all a tendency to make men lazy?

A.P.



London's brilliant season is now at its height. The photograph shows a group of motor carriages in the Row.

THE KING AND QUEEN AS MOTORISTS.

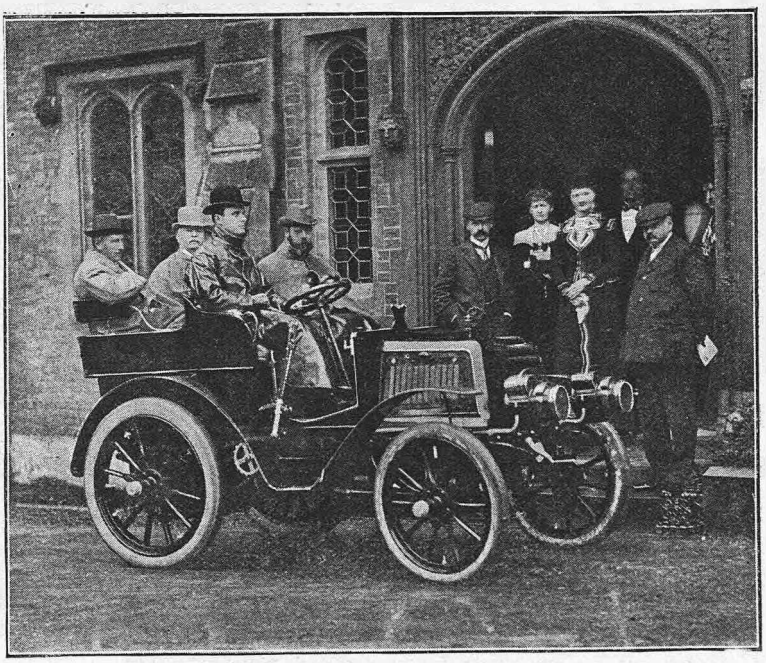
Interview with Capt. the Hon. Sir Charles Wentworth Fitzwilliam, K.C.V.O., the Crown Equerry—Interesting Details of the Royal Garage and the Royal Cars.

KING George and Queen Mary have been ardent supporters of the motorcar from its early days. Both were close followers of the late King Edward as votaries of the movement. All these Royal personages have been attracted rather by the recreational and utility aspects than by the sporting side. This is only natural, having regard to the welcome escape from the incidental delays of alternative methods of travelling to discharge public or social obligations. We well recollect the late Hon. C. S. Rolls telling us of the deep personal interest that King George and Queen Mary evinced when, as Duke and Duchess of York, they were the guests of the late Lord Llangattock and Lady Llangattock, at The Hendre, near Monmouth. It was during that visit, in the year 1900, that the photographs which we now reproduce, by the courtesy of Lady Llangattock, were taken.

One of the most recent instances of their Majesties' deep interest in all that pertains to the motorcar was the visit they paid to the Birchenwood Colliery, and their critical observation of the various processes by which modern benzole for motorcar purposes is made. It will be within the recollection of our readers generally that we gave very full particulars of this visit, accompanied by exclusive illustrations.

Immediately before the departure of their Majesties for Berlin, we took the opportunity, on the occasion of our paying a visit to the Crown Equerry on other matters, while being conducted by him round the Royal stables, to assure him how much pleasure it would give readers of THE MOTOR to know a little more about the employment of motorcars by their Majesties. Capt. The Hon. Sir Charles Wentworth Fitzwilliam, K.C.V.O., who has been Crown Equerry to King George since the year 1910, and who was Master of the Stables to the King when Prince of Wales, cordially agreed and readily assented.

It was in the foregoing circumstances that we obtained from Sir Charles Fitzwilliam the interesting details which have enabled us to compile this illustrated article and interview.



The late Hon. C. S. Rolls setting out for a drive from The Hendre, in 1900, with the King (then the Duke of York) as passenger on the front seat.

"The motors consist of four Daimler cars, two Daimler brakes, and a Leyland luggage van." When the King goes to Balmoral, all the vehicles are sent by train.

"I quite agree that a very considerable saving of time and formality is rendered possible by the use of the cars. On the other hand, they have never yet been used in a State procession and I do not think it is likely, just yet awhile, that any of them will be."

We somewhat reluctantly agreed in this view, because we know the deep-rooted affection of the British public for the spectacular display to which the horse can be made to contribute so admirably.

We reminded Sir Charles of certain early breakdowns of which we happen to know, dating back to the use of motorcars by King Edward, and in particular of one which occurred when he was, in the year 1904, on the way to Wellington School, for Speech Day there.

"We have found the cars wonderfully reliable. I cannot call to mind a single occasion on which we have had a mishap or delay of any kind. There are, very occasionally, tyre troubles, but even they are almost eliminated nowadays."

We may here interpolate the remark that the whole of the cars are shod with large Palmer cord tyres.

"As to accidents. Yes, we are covered by insurance, but, as you surmise, in the very few instances in which, unfortunately, injuries have been sustained, the persons concerned have been most generously treated, over and above any actual question of insurance cover.

"It is motorcars alone that have rendered it possible for their Majesties to undertake very much more in any one day than was possible before they possessed facilities of the kind. Many people, indeed, would have to be disappointed, in respect of the attendance of either the King or Queen at functions of different kinds were it not for the avoidance of delays in travelling from place to place. I think this was exemplified to the full on the occasion of the recent visit to the Potteries."

We here told Sir Charles Fitz-William how greatly

THE ROYAL GARAGE.—Contd.

we feared that this important aspect and consequence of motorcar travelling was lost upon many who benefited by the presence of their Majesties, and who would, but for the motorcar, have to be content with the knowledge that such visits could not possibly be compassed.

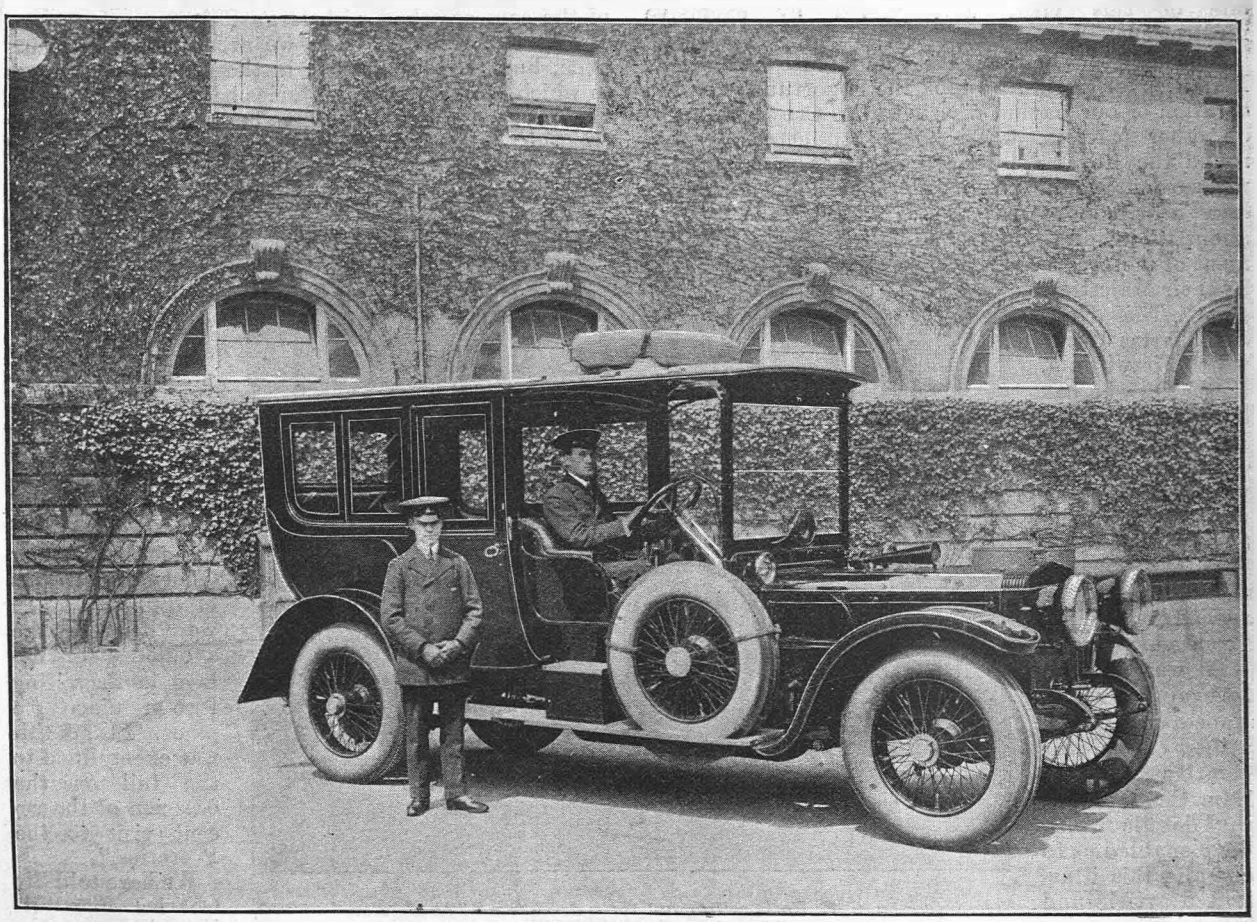
Reverting to the question of benzole, we asked Sir Charles if the King had yet tried home - produced fuel in any of his vehicles, and we were glad to learn that a trial is being given. We venture to think that arrangements will shortly be made to alter the present situation, and that a home-produced motorcar spirit will take its place, side by side with the Shell spirit which is now consumed, with a view to its ultimate adoption as circumstances may dictate.

The late Hon. C. S. Rolls, in 1900, starting for a drive with the Queen (then Duchess of York) as passenger on the front seat.

It appears that their Majesties at no time use their motorcars for dinner or evening visits. The State carriages are requisitioned on such occasions, and the same vehicles—up to the present time—are sent to meet State visitors and other guests.

Turning to the point of reductions in the horse establishment, we were interested to learn that these have been very small indeed. The motorcars are largely employed by their Majesties upon new work, and the horse establishment, which is directly under the control of Capt. Baydon, is at all times very busy indeed.

"We have a number of horses here, and there are, of course, others elsewhere. I do not think we have reduced the number of horses much since the first motorcar was purchased by King Edward. There is a very large amount of station work to be done in London, and this



The King's car in chief, with O. Humfrey, the chief driver, at the wheel, and H. Lucas, the footman.

THE ROYAL GARAGE.—Contd.

is apart from the personal requirements of members of the Household in the service of the King and Queen. It is only when their Majesties are away in the country that they find it an advantage to use their motor-cars for evening work. The distances to be travelled render their use most desirable at such times, and I do not think I am going too far in saying that they are quite indispensable at holiday times.

After we had finished our round of the Royal Mews, and had looked at the cars, of which we give some illustrations and details below, we made a parting inquiry of Sir Charles.

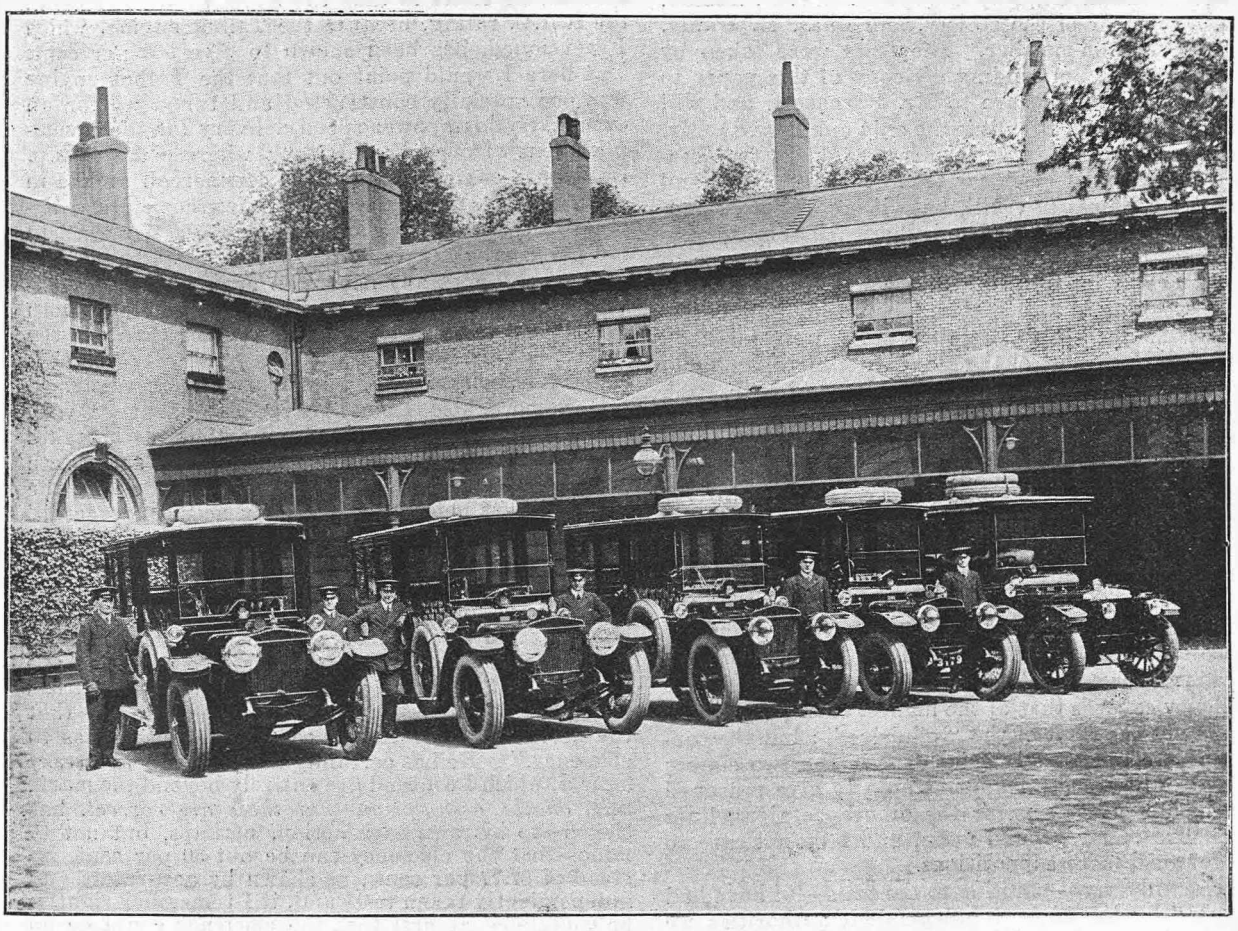
"Does the King ever drive a car himself?"

"No; I may say that he does not. That does not mean he cannot, because he has taken a turn at the wheel, just for the sake of the experience, on several occasions. He never drives on the highway, and he has never driven other than for the purpose of merely trying a car. On the other hand, as you know, the Prince of Wales drives, at Oxford and elsewhere, quite frequently."

With regard to the Royal Garage, one might perchance be inclined to anticipate a building replete with all the apparatus and paraphernalia relative to the immediate effecting of ordinary running repairs. One pictures in the mind's eye a lathe here, a drill there, with a bench in some suitable spot, and blue overalled mechanics busily at work upon sundry repairs and adjustments. Such, however, is not the case, and the garage is simply a place in which the cars may be housed; it is very cleanly in appearance, the chief evidence as to the building being in point of actual fact a garage (when the cars are not housed therein) being found in the presence of large oil-catching trays, which are situated beneath them.

To us, however, the item of chief importance was found in the presence of a large 50-gallon drum of Birchenwood motor spirit—a most happy portent, and a correlative feature of his Majesty's recent visit to the great benzole plant at this Staffordshire mine. One is led to hope that the results of such tests as may be made on his Majesty's car with this home-made motor spirit may prove entirely to his satisfaction, and that in this practical manner he may become further acquainted with the possibilities of this country supplying herself with her own fuel. His keen interest in naval matters is well known, and perhaps the greatest arguments which we have continually advanced in favour of our campaign for home-produced fuel are the requirements of the Navy, the Army, and the Aeronautical Services relative to the supply of liquid fuel under certain possible contingencies. It is perhaps supererogatory once again to draw attention to our complete reliance on external supplies, and to the fact that but very little in the nature of warfare would be required to render this country incapable of taking in adequate supplies of liquid fuel, even assuming that the said adequate supplies were available. We feel sure that his Majesty's gracious visit to the Birchenwood Colliery, and this further proof of his interest in the subject of a home-produced motor fuel, will go far to stimulate interest in this important subject.

With regard to his Majesty's cars, the illustrations which we give show, in one case, his Majesty's five Daimlers, the two larger ones on the left being



The five Daimler cars in use by the King, photographed outside the garage at Buckingham Palace.

ROYAL GARAGE.—Contd.

six-cylinder, 57 h.p. models, and the next two, the four-cylinder 38 h.p. type, whilst the one on the extreme right is more of the shooting-brake, general-utility type of car. The other photograph depicts the "car in chief," so to speak, which is the one in which his Majesty made his recent tour in the Potteries, and will again utilize when he visits Lancashire shortly. The head chauffeur, who is responsible for driving his Majesty and for the general welfare of the cars, is Mr. O. Humfrey, whilst the honoured post of footman falls to the lot of Mr. H. Lucas. Needless to say, the cars were all in spick-and-span condition, and, though thoroughly equipped, there is nothing particularly out of the ordinary, except the provision of a small fire-extinguisher. The two largest cars are fitted with electric-lighting outfits and the others have acetylene headlamps; the important point of comparative immunity from the puncture fiend is assured by carrying two spare wheels; as the Palmer tyres are 7 in. in section, it may be well imagined that punctures are very much more the exception than the rule.

EFFICIENCY OF HYDRAULIC TRANSMISSION.

BY HENRY STURMEY.

"HE that's convinced against his will is of the same opinion still." But I am afraid I have not convinced Mr Parnacott at all yet, even against his will, as to the proved efficiency of hydraulic transmission. He is indeed a "doubting Thomas."

I will, however, once again reply to his queries and endeavour once more—a hopeless task, I am afraid—to convince him. The figures of proved efficiency to which I referred as having been given in a previous issue of THE MOTOR, and which Mr. Parnacott admitted having read, were taken from the "Proceedings" of the American Society of Mechanical Engineers (29 West 39th Street, New York), pages 1593 to 1610, being a paper entitled "Variable Speed Power Transmission," by George H. Barrus, Boston, Mass., member of the society, and Chas. M. Manly, New York, non-member. The tests were taken by Mr Barrus. (I am sending my copy of this paper to the Editor for enclosure to Mr. Parnacott, and will ask him to return it, as it is the only one I have.) Mr. Parnacott, I note, rather appears to doubt the accuracy of figures of efficiency taken to 1 per cent., and says "it requires the skill, knowledge, disinterested ness and care of the National Physical Laboratory to approach this figure." If Mr. Parnacott will turn to my last reply on this, he will see I said that similar tests, working out to within 1 per cent. of the efficiencies shown by Mr. Barrus's tests, were made by Prof. Ira N. Hollis, of the Harvard University Technical College. Of course, if the names of both Prof. Hollis and of Harvard University convey nothing to Mr. Parnacott, they will not convince him; but, for his information, I may say that the same "skill, knowledge, disinterestedness and care" needful for such tests, are, in America, held to apply in the case of the H.U.T. Coll., as is the case with the N.P.L. with us, and I for one am not disposed to throw doubt on the character of the work performed in the national institutions of a great mechanical nation like that of the U.S., any more than I would doubt the conclusions arrived at by the N.P.L. here. That the efficiency exceeds that of the highest class pump practice is not the fault of the "oil-drive"; but the conditions are not exactly coincident in the two classes of hydraulic work. I am not able to give reasoned arguments to account for the difference along lines I am sure of my ground upon, and I do not care to put forward mere suppositions.

Mr. Manly says—pointing to the tests—"I have had it tested by the highest independent authorities we have in this country. *These* are the figures, and I can-

not say more than that," and I am inclined to agree with him, and I do think that, apart from exact figures, the records of actual performance which I adduced do show the possession of very high efficiency for the transmission, and in Mr. Parnacott's treatment of my quotation, I am sorry to say I consider he is quibbling. He says I now fling it suddenly at his head that the 48 h.p. of the motor used in the La France truck is 48 h.p. "R.A.C. rating." But I would ask him how often any other nomenclature is used in common converse. Although it ignores stroke, it gives us a very fair idea as to the comparative size of engines, and I do not think anyone but Mr. Parnacott would have concluded I was speaking of 48 b.h.p., and now, in order to prove his own contention, he elects to take the b.h.p. as 400 per cent., the R.A.C. rating, because the Talbot engine, which I mentioned, has been shown to give 500 per cent. But here I would point out that the Talbot engine was one specially constructed and tuned up for an excessively high-power speed delivery for the accomplishment of a particular feat; whereas the 48 h.p. La France engine was just the commercial article in everyday use, and I take it very few commercial engines in this country give more than 200 per cent. to 250 per cent. of their rating, and I should certainly very much doubt any American engine doing so, because American practice generally employs both shorter strokes and lower compressions than are the vogue with us, so that again I say the performances speak for themselves of high transmission efficiency.

Once more, also, I must charge Mr. Parnacott with quibbling in his criticism of my article, as he takes me up for saying that my figures as to the speed rate of the track, on the 1 in 22 per cent. grade with the big load, was not a "scientifically accurate record," and then goes on to point out that I give figures to one-tenth of 1 per cent. I need scarcely point out to him that the figures I gave "to one-tenth of 1 per cent." were not those to which I referred as not being a scientifically accurate record. I should have thought this would have been quite clear from the context, and I certainly deny that Mr. Parnacott has in any way "fully proved"—or proved at all—that the performances referred to "prove nothing as to efficiency." He has certainly taken purely arbitrary figures, which I contend are entirely beyond the mark, and, *on the assumption that these are correct*, has shown—to his own satisfaction, perhaps, but not to mine—that the efficiency can be but 50 per cent. instead of 87.77 per cent., as shown by accurately and independently taken tests and, if I remember rightly, he contended at first that the efficiency could be no more than about 36 per cent. So we are getting on!

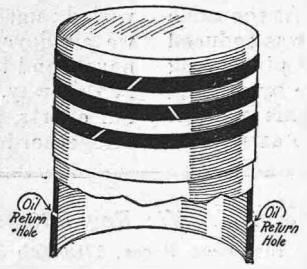
SMOKY ENGINES.

The Problem of the Engine with a Persistent Smoky Exhaust—How a Troublesome Case was cured—Some Practical Suggestions.

(BY OUR PARIS CORRESPONDENT.)

PROBABLY the following experience with a motor which developed a strong tendency to smoke may be of use to other owners. The motor in question, a 12 h.p. model, was lubricated by a pressure system, the gear-driven type oil pump contained in the crank chamber being worked off the camshaft, delivering oil to the two main bearings through the bored crankshaft to the connecting rod ends, and up the tubular connecting rods to the wrist pins. As the crankshaft was carried in two plain bearings, semi-circular copper tubes on the webs of the shaft took the oil respectively from pins 1 and 4 to pins 2 and 3. This is the method adopted on practically all motors with two bearing shafts.

After a thorough overhauling, the motor showed a slight tendency to smoke, and No. 3 cylinder fouled up more than the others. Not much attention was paid to this at first, but after six months running the smoking at the exhaust became considerably worse, and so much oil was drawn up into No. 3 cylinder that the sparking plug had to be changed at frequent intervals. To remedy the trouble, the cylinders were taken off, all carbon deposit cleaned out, valves ground in, and one piston, which had a small hole near its skirt, was changed. It was also found that the connecting rod of No. 3 cylinder was slightly out of true. This was carefully bent back to its original shape, tested with a square, and the cylinders remounted. As the piston rings were all in fairly good condition they were not changed.



How a smoky engine was cured.

Instead of remedying the evil, the motor smoked as much as ever. No. 3 cylinder received so much oil that it never carbonized, but was always washed clean. As soon as the throttle was opened, the motor smoked excessively, and, in order to avoid trouble with the police, it was necessary to keep the car speed down to 12 or 15 miles an hour. For a second time the engine was dismantled, it being determined to leave no stone unturned to discover the cause of the smoky exhaust. The main and the connecting rod bearings were in perfect condition, although there was a slight amount of play in the wrist pins. All the pistons were taken off, a special type of hollow wrist pin was ordered, the bronze bearings for two of the wrist pins were changed, and, as there was evidence of an excess of oil on the wrist pin, the bearings were turned round so that the lubricating hole did not come opposite the hole in the tubular connecting rod. This removed all direct means of lubrication to the wrist pin. Not caring to rely on splash only for the lubrication of the pin, a 3 mm. hole was bored in each connecting rod at a point about an inch below the wrist pin and above the lower edge of the piston. The oil travelling up the hollow connecting rod would be forced through this hole, would strike the inside of the piston wall, and would be thrown upwards to the top of the wrist pin, entering through the lubricating hole on the head of the connecting rod.

The pistons were also treated with a view to preventing oil getting up. A shallow groove about an inch deep was cut on each piston just below the piston rings, and on the lower edge of this groove half-a-dozen diagonally-drilled holes, 4 mm. in diameter, were made. By this means oil scraped off the cylinder walls would collect in the groove, then pass through the holes to the interior of the piston, and thus fall back into the crank chamber. (See illustration.)

It was believed that a certain amount of oil, passed through the openings in the crank chamber for the connecting rods, lodged there, and was more readily drawn up into the combustion chamber. Soon after it was built, this motor had been fitted with a thick plate between cylinder base and crank chamber to reduce the compression. This plate left the bare amount of space necessary for the passage of the connecting rods. The plate was taken off and cut away almost to the diameter of the piston; thus, while it still served its original purpose of diminishing the compression, it also provided a small intermediate chamber between the bottom of the piston and the top of the crank chamber. Further, the edges of the crank chamber were bevelled away, so that any oil collecting on the top would have a tendency to drip back to the base chamber. Next, attention was paid to the cylinders and piston rings. Fearing that there might be a certain amount of oval wear, the cylinder group was sent to the factory to be tested. After a most careful test it was found that the amount of oval wear in hundredths of millimetres was 12, 16, 12 and 10. This was really negligible, providing well-fitting piston rings were used.

Although the rings were not at all in bad condition, the whole 12 were changed. Each one was adjusted in the base of its cylinder so that it would fit with no gap; when pushed further in, as far as the working portion of the cylinder, there was a gap of about one-tenth of a millimetre, the cylinder having a slightly greater bore here, owing to wear. In selecting the piston rings, the centre one in each set of three was chosen with a left-hand cut. That is to say, the top and bottom rings had their cut from right to left, while the central one had a cut from left to right. (See illustration.) If the rings turned round, so as to bring the cuts into line, there would, by this method, be no direct passage for the oil. Finally, all the valve seats were trued up, the valves were ground in, and the piston rings were "lapped" in with oil only.

When this work was completed, we felt certain there would be no more smoke at the exhaust. We had spoken with a dozen engineers and repair men on this matter, and each of the many improvements we had adopted had been effective in some particular case. One person had found the drilling of the piston walls quite sufficient; another had cured a smoky

SMOKY ENGINES.—Contd.

engine by changing the rings and reversing the central cut; another factory found the gap between the bottom of the piston and the top of the crankcase to be effective; another had found the abolition of forced feed to the wrist pin to be a cure.

We assembled the motor, it being a difficult matter to get the pistons in, owing to the tight fit of the rings, started it up, and found that it smoked as much as ever. The plugs did not foul, and the third cylinder was not flooded with oil; but it was impossible to go into the city without being reminded by the police half-a-dozen times a day that smoking was against the regulations. We were in despair. Everything possible appeared to have been done, the engine was, apparently, in perfect condition, yet it smoked to such an extent that we were afraid to take it out. The harder the car was driven the more the engine smoked; running slowly on top gear there was very little smoke. The factory, on being appealed to, could offer little assistance; they knew that, when new, this engine did not smoke, and others of a similar type had given long service without showing any tendency to offend in this manner.

As a possible remedy, the brand of oil was changed, a very thick oil being substituted for the high-grade brand of medium oil we had been using. At the same time, the entrance to the main feed pipe was reduced in diameter from 5 mm. to 3½ mm. This pipe being external, the change could easily be made by putting in a brass washer with a 3½ mm. hole. This brought about a partial cure, but not sufficient to satisfy us. The fact still remained that the motor was getting too much oil.

As a last resource, somebody suggested that we should examine the relief pressure valve and also see that there was no crack on the external oil pipes attached to the crank webs. The pipes were found to be in perfect condition. The pressure relief valve, being incorporated with the pump in the base of the crank chamber, had not been dismounted: when we took down the base chamber we had merely assured ourselves that the pump was working properly. When the pump was taken out it was found to be in perfect condition, but the valve—one of the poppet type—was wedged in its full open position, and was further kept off its seat by a certain amount of fluff and a few particles of metal. When the valve had been trued up, cleaned and ground in, it was put back, care being taken to see that it seated properly after being screwed into position. The trouble with the motor was cured. From that moment it was impossible to make it smoke under any circumstances, excepting, of course, by swamping the crankchamber. The pump, having an unusually large capacity for a motor of this size, was putting the maximum amount of oil into circulation owing to the failure of the pressure relief valve. As there was no indicator, we were not aware of this excess pressure, against which all our varied remedies had been in vain. It is probable that we employed every known remedy for a smoky exhaust, and if any other motorists have been troubled in this way, they may find a cure in this account of our efforts, in which case our time will not have been altogether lost.

The A.-C. Light Car.

Quite an imposing little two-seater is the new A.-C. light car, of which we give an illustration, and it will be seen that its lines are graceful and that its smallness will warrant one in anticipating very economical results. The engine is a small four-cylinder monobloc, water-cooled, the actual circulation being thermo-syphonic. Both the crankshaft and the magneto are driven through the medium of a silent chain; the tappet mechanism is adjustable, and the cylinders are set desaxé. This latter point is specially useful in a small car of this description, as it tends largely to reduce vibration at high engine speeds, whilst also reducing somewhat the ovoid tendency of the cylinders due to the thrust of the explosion stroke. Pump lubrication is used and the oil is fed to all the main bearings and likewise to the troughs underneath the connecting rods. A large-diameter cone clutch is used, and this transmits the drive to the three-speed-and-a-reverse gearbox, the selection of the various speeds being effected through the medium of a simple gate, the final drive being by worm gear. The body, as may be seen, is of the torpedo type and is liberal in the accommodation provided both for passengers and luggage, the latter being in a box at the rear. With the reputation held by A.-C. productions, this new 10 h.p. car ought to prove a very popular little vehicle. It is priced at £165 complete as illustrated, that is to say, with hood, screen, lamps, horn, repairing outfit, etc., and it ought, therefore, to find many purchasers. Further details may be obtained from Messrs. Auto-Carriers (1911), Ltd., Ferry Works, Thames Ditton, Surrey.

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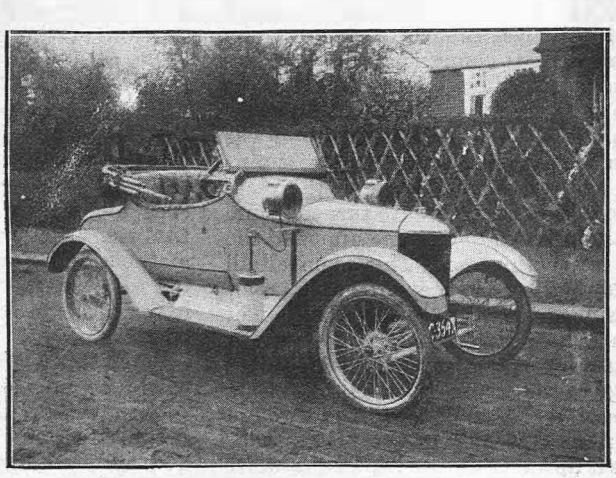
Ascot Traffic Regulations.

For the Ascot Races, 17th-20th June, explicit traffic regulations have been issued by the police, who are meeting with the support of the R.A.C. Every motor-car visiting Ascot will require to find accommodation in some special garage, or motor enclosure, as no motors will be allowed to stand on any of the neighbouring roads, and to meet the requirements the R.A.C. has leased all motor enclosures on Ascot Heath, and these will be open to the general public and to all motorists at charges varying from 2s. 6d. upwards. Other regulations which will be enforced include the following: After 3 p.m. a single line may be formed at the side of the road from the Royal Hotel cross-roads to the entrance to Royal enclosure, and from the Station Road to the top of the asphalt pathway to station, under the direction of the police. All motorcars wishing to turn in the road between Royal Hotel corner and the County Police Station must, as far as possible, turn at the "Turning Place," opposite the Grand Stand, or at the cross roads at either end, so as not to stop the traffic unnecessarily, and to lessen obstruction drivers of motorcars are requested to move on as soon as they have set down their passengers at the stands.



The A.-C. light car.

One of the best features of "The Cyclecar," which has now completed its first volume, is the very fine series of front cover pictures, printed in colour, on art paper. This week's picture is the best of the lot, in our opinion.

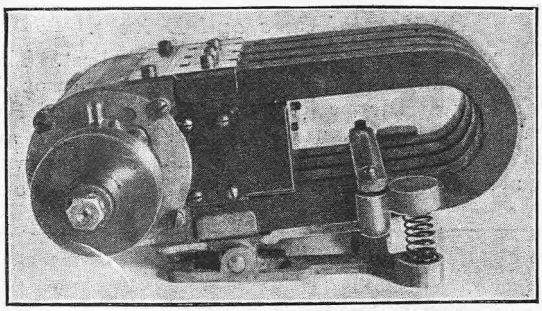
Apropos the recent reference we made to Astoli, the hood covering material manufactured by Messrs. Fry and Co., 115 and 116, Cork Street, Dublin, our printer omitted an important nought when giving the number of yards of Astoli supplied and used exclusively by the Wolseley Tool and Motor Car Co., Ltd. This should read as 15,000 yds. per annum.

A NEW DYNAMO LIGHTING SET.

A Unique Principle of Simplified Dynamo Construction.

AT the outset, in describing this interesting dynamo, it is important to make clear its true function. It is not designed to supply all the lighting of a car, but is intended for running a pair of powerful electric headlamps to replace an acetylene system. The side and tail lamps, presumably, would be of the usual oil-burning pattern, although they might just as well be electric if run off independently-charged accumulators. This, however, is a matter for individual consideration, but doubtless most car users would decide on the former.

This dynamo is particularly interesting in its theory and construction. It generates an alternating

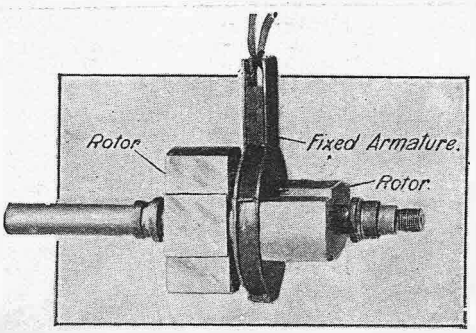


The K.W. magneto dynamo from the driving side,

current, and thus is incapable of charging accumulators, but on the other hand it represents the nearest approach to "rock bottom" simplicity in a dynamo. If anyone has seen an ordinary low-tension magneto taken apart it may have seemed that nothing could be made more simple to generate a current, but it is nevertheless a fact that this dynamo, which is named the K.W. lighting magneto, is even simpler than the old low-tension machine.

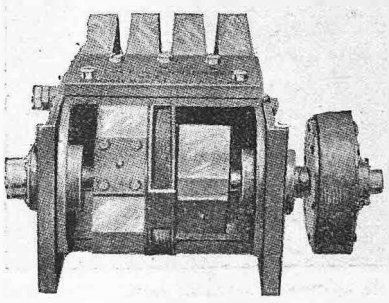
Briefly, it consists of a set of four permanent magnets of narrow and thick section, rather unlike the conventional magneto magnets. These are attached to a frame fitted with pole pieces. Instead of the usual shuttle-shaped armature, in which a winding is placed, there is simply a "rotor" or shaft carrying two masses of soft iron set crosswise. This is the only working part, and it runs on ball bearings. The "armature," which is equivalent to the usual rotating shuttle of the low-tension machine, consists of a flat disc-shaped coil of insulated copper ribbon, which is fixed and in such a position that the "rotor" masses revolve one on each side of it. The two ends of the armature coil are connected to terminals, and this is practically all that there is in the magneto. Brushes, commutator, cut-out devices, and all the conventional parts of a lighting dynamo are dispensed with. Four "waves" of current are generated per revolution of the rotor instead of two "waves" in an ordinary magneto, ensuring great steadiness of current. The dynamo is connected to the headlamps by a simple parallel wiring circuit and switch. It runs two 3-ampere 6-volt bulbs, and with a suitable gear ratio a good light is obtained at 8 m.p.h., and at 12 m.p.h. maximum brilliancy is obtained. No higher speed than this will greatly over-run the lamps, as, by the well-known principle of armature reaction, and the fixed intensity of the magnetic field, the machine will not increase its voltage. The makers lay stress on the importance of using the bulbs designed for the machine to prevent over-running.

The illustrations show the dynamo mounted on a hinged base to fit in a horizontal position. Two coil springs between base and dynamo are to give the necessary tension for a friction drive off the engine flywheel. An ordinary belt pulley is, however, fitted on the model shown, so that it can be driven from any

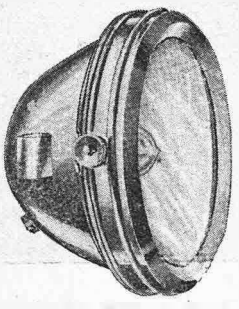


The only moving part in the dynamo. The rotor or inductor.

convenient point of the chassis. The machine works equally well if run in either direction of rotation, and, except for the oiling of the bearings at long intervals, no attention whatever is required. It weighs 23 lb. A pair of headlamps, of the design illustrated, are supplied with each machine. There is no reason why side and tail lamps should not be run off this machine as well if specially desired. The makers, in fact, say that it has capacity for this, but obviously to do this means keeping the engine running, even when the car is standing for long periods, so that, as stated at the beginning of this article, its normal function is for headlight work only. The output of current is sufficient to ensure a powerful light for normal fast road work. It is sold exclusively in this country by Morris, Russell and Co., 6, Great Eastern Street, London, E.C. Complete with a pair of headlamps, bulbs and wiring the set is sold at £10 10s.



Interior of dynamo. End cover removed showing the rotor and the stationary coil.



One of the headlamps supplied with the set.

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FIVE HUNDRED MILES RACE.

The Great Contest on Friday Last at the Indianapolis Speedway—Some Details of the Cars and Drivers that Started in a Classic International Contest Before a Huge Concourse of Spectators.

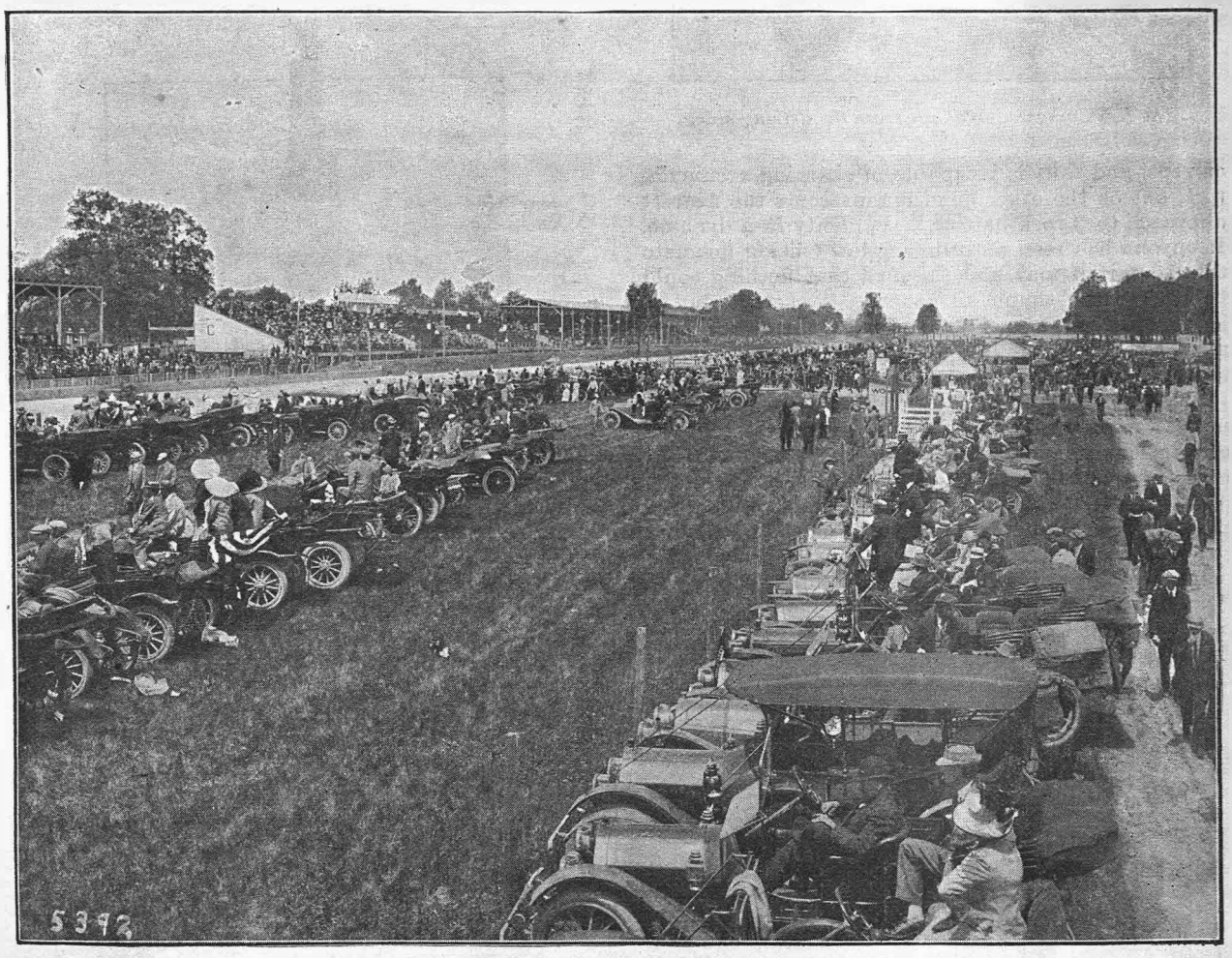
SINCE the days when Hemery and Wagner drove for Darracq, and the flat, sandy stretches of Long Island were the scene of exciting Vanderbilt Cup races, Europe has not taken a great deal of interest in American road or track races. European racing cars have not altogether been lost to the view of the American public, but when they have figured it has been in the hands of rich amateur drivers, and not with the official backing of the company responsible for their construction. This year there has been a revival, for the 500-mile race, which was run on the Indianapolis Speedway last Friday, had cars from France, England, Italy, and Germany, all these cars being entered by their respective manufacturers, and driven by the best European drivers. The race was thus rendered all the more interesting, for it was the first real contest between the best that America can produce and the finest to be procured on the eastern side of the Atlantic.

England's Hope.

England's hopes were centred on the six-cylinder Sunbeam, which had already figured with great credit to itself on Brooklands track. It was not handled by an Englishman, the mount having been entrusted to Albert Guyot, one of the most rational of French drivers, and one who has had experience of the racing game since its inception. There was an Englishman aboard, however, for Guyot had selected Crossman as his mechanic, in view of his special knowledge of Sunbeam cars.

Continental Cars and Drivers.

France had two cars, and two of her best. They were practically the identical Peugeots which won the Grand Prix at Dieppe last year and the Grand Prix de la Sarthe in the autumn. Paul Zuccarelli and Jules Goux were in charge of them. As they were presented at Dieppe, the cars were just a little over



A scene at the Indianapolis speedway during the running of the great 500-mile race which takes place on the 30th May each year. The report of last Friday's race and further illustrations will be found on our centre pages.

FIVE HUNDRED MILES RACE.—Contd.

the cylinder area allowed under the Indianapolis rules. New sets of cylinders have therefore been cast a couple of millimetres smaller than those originally used. In all other respects the cars were the same. Italy had sent a team of three Isotta-Fraschini cars, which were almost up to the maximum cylinder displacement allowed under the rules, and had three very good drivers. Vincenzo Trucco, the leader of the team, is, as his name indicates, of Italian origin, and has to his credit the winning of the 1908 Targa-Florio race in Sicily. Teddy Tetzlaff is a wealthy amateur who last year finished second in this race on a F.I.A.T. car. The third man is Harry Grant, winner in 1909 and 1910 of the Vanderbilt Cup. Particular interest attached to the Mercedes entry made by M. Pilette, the Belgian agent for the German firm. The car is fitted with a Knight motor, naturally built by the Mercedes Co., this being the first occasion on which this type of sleeve valve engine had been brought into competitive test in a long race with the poppet-valve motor. M. Pilette endeavoured to enter this car in the French Grand Prix, but his entry could not be accepted, owing to a rule that manufacturers only should take part, and the Mercedes factory refusing to substitute itself for the agent. The car was very much under the cylinder area allowed by the rules, its cubic capacity being 250 in., compared with the maximum of 450 cub. in. Previous races have shown that this is not necessarily a disadvantage. Being of low weight, the car was expected to be able to cover the entire distance without a change of tyres, and it could carry more than sufficient petrol for the race.

The American Cars and Drivers.

Not many of the American drivers are known to European motorists, for very few of them have taken part in European races. Ralph de Palma, who drove for Mercer, will be remembered as one of the F.I.A.T. team at the French Grand Prix at Dieppe last year. In the 1912 Indianapolis race, De Palma figured even more prominently than the winner of the race. He was driving a Mercedes, his car being considered one of the most dangerous of the group. There was a concerted attempt to rush this car out of the race, a practice quite common with American race drivers. First one car then another would get in the stern of the Italian driver, forcing him to an unusually fast pace. De Palma fell a victim to the combination; but he almost came out a winner, for his Mercedes had stood the strain and had been first throughout the race, when, with only two more laps to go, the lubrication system failed. The only other American driver who has figured in a European contest is Knipper, the driver of a Henderson.

A Remarkable Set of Drivers.

Caleb Bragg and Spencer Wishart, who, with De Palma, completed the Mercer team, are wealthy young men who drive for sport. Bragg won the Grand Prix at Milwaukee last year, and finished second in the free-for-all at Santa Monica, in both cases on a F.I.A.T. Another well-known man was Ralph Mulford, for a long time a Lozier driver. He finished second behind De Palma at Elgin last year, and second in the Tacoma heavy-car race, both on a Knox. Altogether, a remarkably fine set of drivers has been brought together for the Indianapolis race. For a long time it was believed that Europe possessed the pick of the "knights of the steering wheel." Perhaps this was true when cars needed to be pampered and nursed on the road. Now that the mechanical is as enduring as the human element, the greater dash and daring of the American driver gives him an advantage over the more cautious and usually more scientific European driver.

How the Race is Started.

Practically only one race a year is run on the Indianapolis motor speedway. But as that race offers £10,000 in cash prizes, attracts 30 of the world's best cars, and brings together 180,000 spectators, the track can afford to be empty for 364 days of the year. The speedway being 2½ miles round, and the distance of the race 500 miles, the competing machines have to cover 200 rounds of the course. It is obviously impossible to line up 30 cars on a track 40 ft. in width. The method of starting, therefore, is that commonly employed on American speedways of placing the cars in rows of six or seven, putting a pacemaker's car in front, and sending all the competitors away at the same time. The pacemaker sets a speed sufficiently fast to prevent the racers fouling their spark plugs, and at the end of the first round pulls in to one side of the track, allowing the actual racers to go past him.

The Competitors as They Lined Up.

The following is the list of competitors in the race, with the characteristics of the machines, so far as they are known:—

1. Sunbeam, six-cylinder, 80 mm. by 150 mm., 380.8 cub. in.; Albert Guyot.
2. Peugeot, four-cylinder, 108 mm. by 200 mm., 446.8 cub. in.; Paul Zuccarelli.
3. Peugeot, four-cylinder, 108 mm. by 200 mm., 446.8 cub. in.; Jules Goux.
4. Mercedes (Knight), four-cylinder, 100 mm. by 130 mm., 250 cub. in.; Pilette.
5. Mercedes, four-cylinder, 115 mm. by 185 mm., 440.8 cub. in.; Mulford.
6. Isotta-Fraschini, four-cylinder, 115 mm., by 150 mm., 443.8 cub. in.; Trucco.
7. Isotta-Fraschini, four-cylinder, 115 mm. by 150 mm., 443.8 cub. in.; Tetzlaff.
8. Isotta-Fraschini, four-cylinder, 115 mm. by 150 mm., 443.8 cub. in.; Grant.
9. Stutz, four-cylinder; Anderson.
10. Stutz, four-cylinder; Merz.
11. Nyberg, six-cylinder, 152 mm. by 101 mm., 389 cub. in.; H. Endicott.
12. Keeton, four-cylinder, 130 mm. by 140 mm., 387 cub. in.; Bob Burman.
13. Mason, four-cylinder, 135 mm. by 152 mm., 350.5 cub. in.; Evans.
14. Mason, four-cylinder, 110 mm. by 152 mm., 350.5 cub. in.; Tower.
15. Stutz, four-cylinder; Herr.
16. Henderson, four-cylinder, 110 mm. by 155 mm., 350.5 cub. in.; Knipper.
17. Fox Special, four-cylinder, 120 mm. by 140 mm., 389 cub. in.; Wilcox.
18. Smada, four-cylinder, 90 mm. by 130 mm., 192.4 cub. in.; Adams.
19. Amel, four-cylinder, 115 mm. by 130 mm., 318.1 cub. in.; Liesaw.
20. Schacht, four-cylinder, 115 mm. by 140 mm., 410.6 cub. in.; Jenkins.
21. Mercer, four-cylinder, 125 mm. by 160 mm., 447.9 cub. in.; De Palma.
22. Mercer, four-cylinder, 125 mm. by 160 mm., 447.9 cub. in.; Caleb Bragg.
23. Mercer, four-cylinder, 110 mm. by 130 mm., 299.7 cub. in.; Wishart.
24. Pennebaker-Stearns (Knight motor), four-cylinder, 130 mm. by 135 mm., 443.5 cub. in.; Pennebaker.
25. Tulsa, four-cylinder, 115 mm. by 140 mm., 389.9 cub. in.; Clark.
26. Case, four-cylinder, 450 cub. in.; Dishrow.
27. Case, four-cylinder, 450 cub. in.; Endicott
28. Case, four-cylinder, 450 cub. in.; Nikrent.
29. Mason Special, four-cylinder; Haupt.

Last year the Indianapolis race was won by Joe Dawson on a National car at an average speed of 78.7 m.p.h., the second man being Tetzlaff, on a F.I.A.T.

[Report of Friday's race on centre pages.]

CUTHBERT'S FIRST CAR.

Being a Few Fictitious Letters from John Gaunt, Formerly Carpet Manufacturer, U.S.A., to His Son Cuthbert, who Purposes Taking Up Motoring.

By RICHARD E. GODDARD. (With apologies to Horace Lorimer.)

No. II.—On Hiring a Chauffeur.

Wick, —, 1913.

Dear Cuthbert,—

Your letter duly received, and I'm glad the cheque pleased you. There's nothing like a postscript for really emphasizing a point. With a woman it's an afterthought, as a rule, containing the one vital item of news she set out to convey. But the essence of a decent postscript is pithiness. It shows a lack of tact to drag it out. I appreciate your appreciation of my paternal generosity, but there's no need to be fulsome over it, and from a business point of view its bad. Folks are apt to think they've done enough for you if you're too grateful, so that they reckon they'll give someone else a turn next time.

I once knew two brothers who shared a single maiden aunt between them. She was a wealthy maiden aunt—as all properly constituted relatives of that type should be, but she didn't care over much for parting while she was alive. Still, she wasn't a bad old party on the whole, and she never forgot to send Rupert and Ronald birthday cards at Christmas and Christmas cards on their birthdays—she didn't believe in wasting anything, so she just passed on what was sent to her. Well, Rupert used to make as much fuss of those cards as I don't know what. He had them framed and stuck up in his study—kinder allowed that the poetical sentiments on them helped him to bear life's sorry burden and made him a better man, etc., etc. As a matter of fact, what he said was perfectly true, because every letter of thanks he wrote he reckoned was another trifle on the certainty of his getting the bulk of the boodle when it came to reading the will. So if the old lady sent him a bunch of cowslips, he'd lay himself out to thank her in fourteen different positions. Ronald, on the other hand, thought the cards were rather a bore. When he thought of it he thanked her, and when he didn't he'd generally send them back again on her birthday or at Christmas. He was of a saving nature, too. The sad day was a long time arriving, but it came at last, and Ronald found that he had benefited to the extent of some 60,000 dollars. Rupert hadn't a cent, so he trotted off to the lawyer to see if there wasn't some mistake, but the lawyer said no; it was a true bill sure enough. He allowed it seemed very, very hard, but explained that the old dame had told him that a man who was so overcome by the receipt of a half-penny birthday card as to pay twopence overweight in letter postage to return thanks might not survive the blow of finding himself a legatee to a fortune without being able to thank the donor—except in prayer. And as, when she did depart, she wanted to feel free to do as she chose all the time, she concluded to put her chips on Ronald.

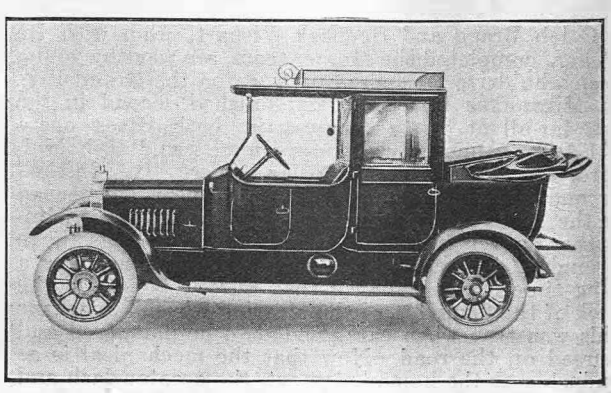
This is rather a digression, but I want to point the fact that thanks properly handled should pave the way to future favours—at least, that's my idea.

I hope the good feeling you have about the auto you've bought yourself will last only half as long as the thing itself. I may be a pessimist, but I've generally found that most of the pleasure in getting things is confined to the making of your choice—so to say. It isn't often I go in for purchasing luxuries, but I once spent a whole day making a round of the general stores pricing patent coffee machines, as your ma had a hankering for one. I got a working insight into pretty nearly every kind of coffee boiler that was on the market, and I was so impressed with what I saw that I decided to keep on with the old-fashioned way of brewing it in an earthen jug. I saved exactly fourteen and sixpence at the lowest computation, and I felt real good, I assure you. When it comes to selling things, a good average salesman can out-do a lifetime angler by exactly ten to one, and his lies are infinitely more instructive and amusing.

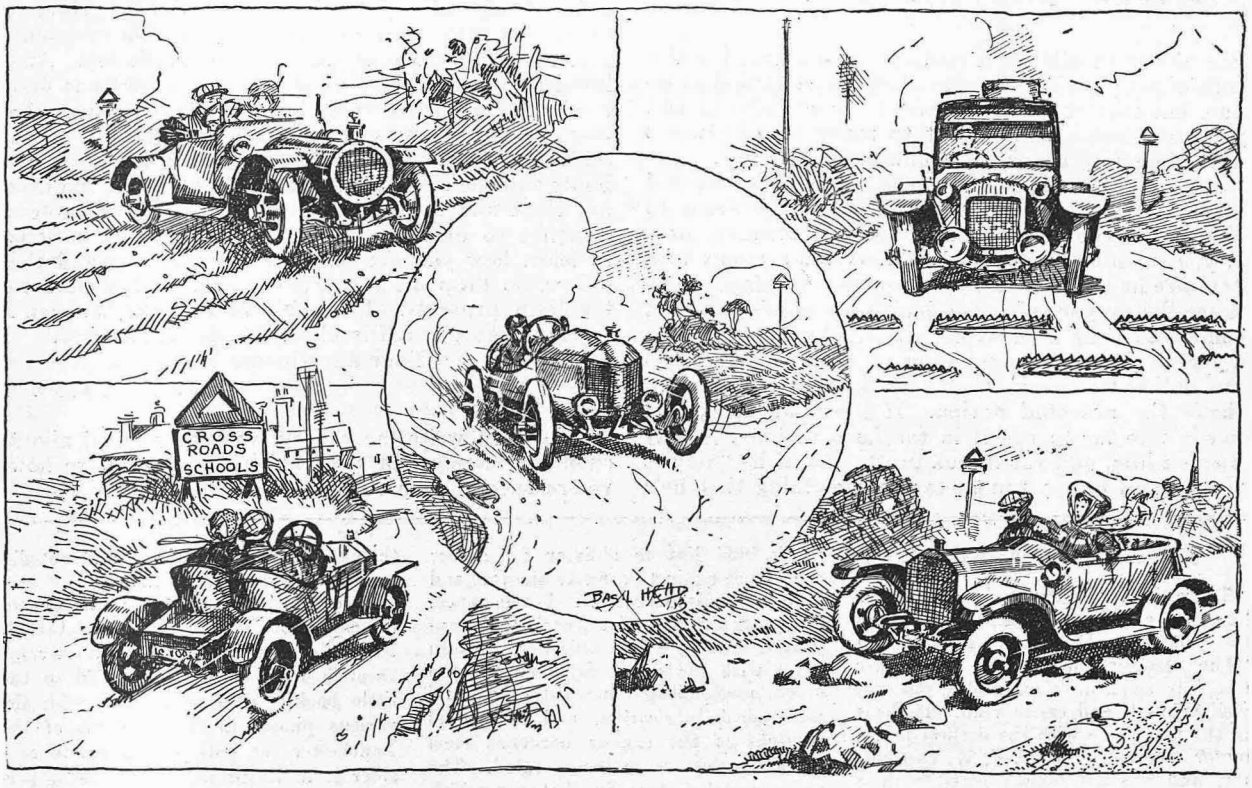
I trust you discounted all they told you about the car they sold you—(you'll begin to buy cars when you've had six or thereabouts; until then they're just sold to you)—or you'll be wanting to buy a kicking machine before you're half through. Still, that's your funeral.

It appears to me from what you say that you're having a bit of trouble over the chauffeur question. What's more, you're likely to continue until you're able to do everything that's required yourself and can show your man that you know just a little bit more than he can teach you. Then he'll begin to respect you, and your bills will reduce themselves accordingly. Also, the machine will be available for riding in, not once now and then, but most times, when it's wanted. So the quicker you get friendly with its interior economy the sooner you'll be able to enjoy yourself.

When I first took up with bees I got stung unmercifully, because I tried to teach the drones to make honey and the new and strong workers to be kind and gentle with their worn-out sisters. By and by I realized that the bees knew their business better than I did, and I didn't get stung so much. Then I wired in and learned exactly how the hive was governed and the why thereof, and then I was able to institute a few little improvements which the bees approved of so highly that they left off stinging me for keeps. So if you take my advice you'll first of all learn to distinguish the drones from the workers—the



A 20 h.p. four-cylinder all-British Standard single landaulet for Maj.-Gen. Sir R. Baden-Powell.



THE CAR AT THE CROSS ROADS.

A certain class of driver needs drastic control at the cross roads. Our artist makes a few suggestions. A few yards of ultra wavy road might slacken his speed, or perhaps a few rows of spikes would take effect. Possibly the signs are not large enough. Spaced boulders might be effective.

drones usually look busiest—and weed 'em out very, very quickly. When you've got a worker, set to and study his methods. After you've assimilated all he can teach you, fire him out and get another. By the time you have fired three or four, you'll be competent, if you make good use of your opportunities, to manage the next, so long as it suits him to stay with you. It may sound a bit hard on the workers, but good men can always find a job. It's only the sooners—those who'd sooner loaf than do a bit of graft—that spread baldness among the officials of the employment bureaux. I'm not particular, but if there's one thing more than another that makes me sore, it is seeing a man having a quick lunch or a slow smoke when he's on duty. It doesn't look pretty, and a man who's chewing cheap cigarettes all day is bound to get nervy in the end. Tobacco's been many a fellow's friend, but it's got to be taken in moderation, same as other luxuries.

There was a man I used to know once, called Joe Diggory. He'd accumulated a hefty bit of money by speculating in real estate out Montana way. Then he thought he'd go in for tone and picture buying for a change. He reckoned he'd be able to combine business with pleasure—buying at sales, and selling what he didn't want by private treaty. Old Joe, I should tell you, was a man who was never without a cigar in his mouth. Big cigars they were, that had a reek on them like a bone mill. He said they inspired confidence, but I couldn't see it, unless he was out to fumigate a fever hospital. Well, one day there was a little sale coming off at an old-fashioned place way back in the country. It had belonged to an old Spanish family who'd fallen on evil times. Joe was mighty keen to land what he'd decided was a genuine Velasquez—only the other folks didn't know it. He started in safely enough, and the auctioneer was getting very, very happy, when all of a sudden there was a lull. It was up to Joe to call, and it was pretty certain that he'd get the goods, as his opponent was looking pretty sick. The auctioneer waited, then started to hammer the deal, but Joe didn't speak, and at last it was knocked down to his rival for some fifty dollars less than Joe expected to have to spring. He'd got so excited thinking how wicked the other fellow would feel when he found what he'd lost that he stuck the wrong end of the cigar in his mouth. By the time he'd cooled his palate, the sale was over. The moral's a bit strained, perhaps, but I daresay it will serve.

The servant problem is a very, very difficult one at the best of times—whether it's a plain cook or a top-side galow, ten-cents-to-speak-to-you valet. I figure that chauffeurs are a bit inclined to fancy they don't come in the category of mere earthly serfs, but that's sheer bunkum. Any fellow-me-lad who sets out to do a job for filthy lucre is a servant of the chap who stumps up that lucre—though he may argue from Jermyn Street to Jericho to the contrary. I don't know which is the worse—the man who accepts your money under high-falutin' protest or the chap who grabs it.

The helper who knows he's a servant is usually too beany with his own importance as such, that you've got to rub your head in the dust and say "Please condescend," before he'll open the door for you. The one that won't acknowledge it will blow off most of his superfluous anxiety to argue—if you keep out of his way—in doing his chores, but he's an aggravating cuss to come to grips with when you've three minutes to keep an appointment in, and he insists on explaining that he's your equal anyway and he wants tomorrow off to meet his cousin, who's commander of the flagship that rolled into harbour last night. There's one thing that's bound to raise trouble with either kind, and that is shoving jobs on to them that belong by rights to His Ultra Highness the Head Bottlewasher. I don't mean that a man hasn't a right to make himself useful when the family cow's strayed

CUTHBERT'S FIRST CAR.—Contd.

into the next allotment and the goat's chewing the cuffs of popper's best Sunday shirt from off the clothes-line, but that's a different story from serving out odd jobs promiscuously and just to make sure he won't have time to practise the violin or be idle any.

If a man's a cook, he's got to put in all he knows and a bit over amongst the pots and pans if he wants to keep your palate titillated to the last ultimate itch. If you set him on cleaning saddlery it's a penny to a Jebusite he uses harness polish instead of Mayonnaise sauce the very evening you have your wife's pet rival coming to sling hash with you. At the best of times a servant is a poor performer of what you could do just half as well again if you took the trouble—at least, that's the accepted notion. If it's your view, you needn't go far to rub it in too hard to him; it may dispirit him, and you'll look pretty wan if he "downs tools" and leaves you to tackle something that he's put out of order for sheer wickedness. Human nature's a very, very curious thing, as the old lady said after a lecture on the Darwinian theory. And though you may be sure that your henchman is first cousin to the cussedest simian that was ever bred, he won't be any the more slick to do your bidding if you tell him so. You can generally size up a man by his boots and the sides of his trouser pockets: if the first are clean and the second not too uncommon napless he's not so extraordinarily useless. I'll be curious to learn how you get on with the machine and the driver, so drop me a line when you've had time to try both properly. I needn't hint that you can't expect a Walt or a Diesel for five dollars a week.

Your affectionate Dad,

JOHN GAUNT.

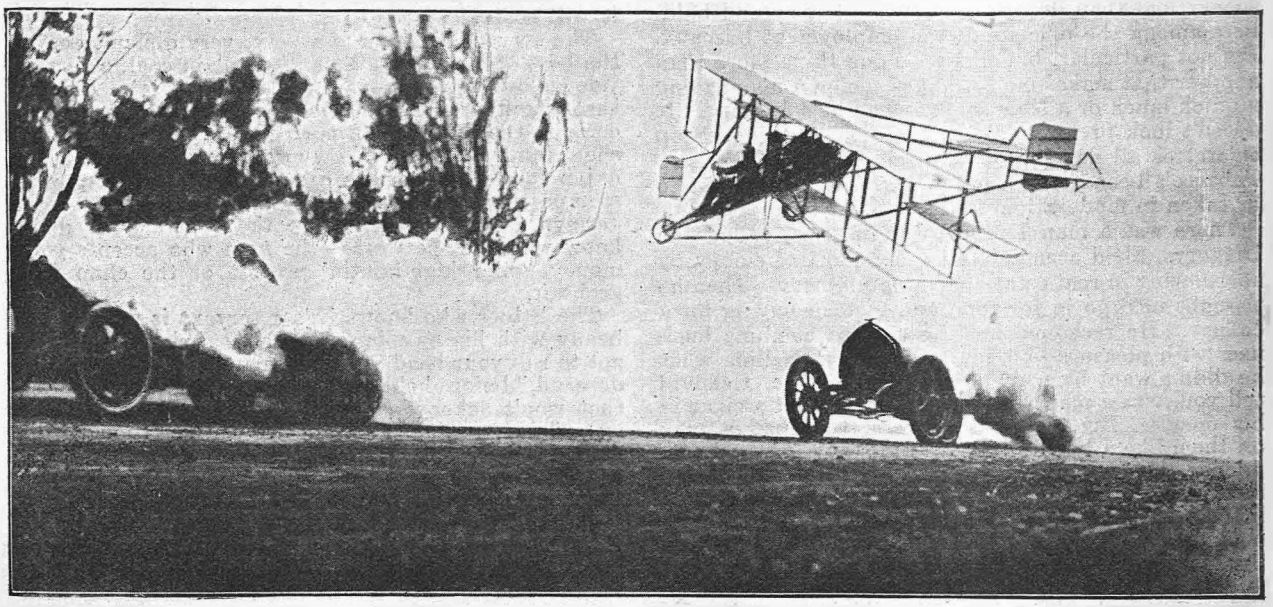
P.S.—You write me a very, very great deal about spending money, but you don't rhapsodize as to how you're speeding up to make it.

The Lanchester Booklet.

There is a pleasing vein of historic lore in the new little booklet issued by the Lanchester Motor Co. It is termed "The Development of the Lanchester Car," is small in size, neatly put up, well printed, and easily read. It deals in the first place with the earliest petrol motor experiences of Mr. F. W. Lanchester, and a small launch fitted with a single-cylinder engine (and, of course, tube ignition) was his first introduction into the large field of internal-combustion engine mechanism as it exists to-day. In 1895 a small syndicate was formed for building motorcars under Mr. Lanchester's patents and designs, and the first car was run in the early summer of 1896. It is really instructive to study the specification of it, as many of the features which it contained are now up-to-date practice, some of them having obtained throughout in certain isolated cases, others having been side-tracked, so to speak, and lost in oblivion for a few years once again to come to the fore and become standard practice. For instance, this early car had wire wheels with tangential spokes, a live axle and a worm drive with the direct drive on the top speed, mechanically-operated valves and mechanical lubrication, and in several portions of the chassis hardened steel roller bearings were incorporated. The only special feature in that car which has not come into general practice is epicyclic gearing, and—in the writer's opinion, at any rate—this is rather the fault of the trade than of epicyclic gearing per se. Somehow no one except the Lanchester Co. seems seriously and thoroughly to have tackled the question of epicyclic gearing, and if anything like the energy which has been brought to bear in improving the gearbox of to-day had been displayed in inventing a correct train of wheels, proper control, and generally perfecting epicyclic gearing, then the latter would have undoubtedly been more largely used than it is.

Of course the Lanchester was one of the cars which took part in the A.C.G.B. 1000 miles trial 13 years ago, and it came through most successfully. And so the little booklet goes on dealing with the various phases in the progress of the Lanchester car until one is led to consider it in its present-day state of perfection. A copy of this little booklet will be sent on application to the company either at their London depot, 95, New Bond Street, W., or at the head offices at Armourer Mills, Montgomery Street, Birmingham.

Some letters addressed to Puncture-Seal, Ltd., The Motor House, Hampstead, have been returned to the senders by the Post Office, and readers are requested to note that the full address is: The Motor House, Eden Street, Euston Road, London, N.W.



This remarkable snapshot was taken during the Santa Monica road races, and shows two cars, driven respectively by Dave Lewis and Earl Cooper. The aeroplane is driven by Glenn Martin. The photo. was taken by an amateur who had no knowledge of the publicity value of the snapshot.

ROAD WAVES.

The Motorcar, the Motorbus and the Road—How Road Waves are Caused.

By. Dr. A. M. LOW.

I HAVE read with intense interest the various opinions in this week's MOTOR, but with the exception of the very able article written by "Road Engineer," it is hard to see if the writers have given any real study to the problem, which may be sufficient reason for bringing up a few points at some length. The subject is one of most vital importance, for the bus routes are extending every day, and not a few of our high-roads are becoming almost unsafe to negotiate; the wear and tear set up on every vehicle is so excessive that it would surely pay the manufacturers to devote time to the subject. The results which are given in the following article are easy to follow, and whilst I would never make blunt statements and expect them to stand, I would point out that many reasons may be given, and all of them true, but it is the chief cause we have to seek. It is quite impossible in practice to imagine that any one explanation can satisfy conditions as varying as those found

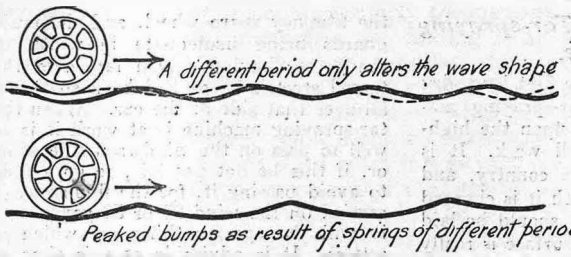


FIG. I.

"If the spring periodicity varies by 50 per cent, it will not vary the hollow assisted period enough to nullify the bumps, but will smooth down the waves, and sometimes 'peak' the bumps."

in everyday use, and, indeed, if this were the case, it would render life not only simple, but very monotonous, and I am personally of opinion that there are very numerous effects to be taken into account.

The explanation of "The Inspector" is partially true, and especially so in cases of very soft roads, but waving is noticeable on any road surface, and an almost identical action is recognized on tram systems and railways, which itself goes to prove that waving is chiefly due to the effects of spring periodicity.

Taking "The Inspector's" points in turn, I would indicate the following facts. In the first place, as I explain further on in my article, the periodicity of motorbus springs varies very little indeed, and as the front wheels have no grinding effect to speak of, the periodicity of the front springs is certainly without sufficient effect on the road to neutralize the tearing-up effect of the driving wheels. Again, the load distribution is not of such great importance in this instance of fairly even loading, as it is only vehicles which propel themselves which cause this wave formation to any extent, and if "The Inspector's" arguments were true, the wave formation would be observed in cases of rolling by towing a heavy roller at speed over a cricket pitch, and your readers may be interested to know that I have experimented by driving a motor roller slowly over a grass field and noticing that no effect was produced, but if it is driven fast and is fitted with springs, one is able to get a bounce. On the other hand, if the roller is towed by ropes over a windlass running fast, it is not easy to obtain the wave effect, as the wheels do not grind at each bounce, so as to have any marked effect, although the conditions can be more easily produced by models.

When your correspondent does not admit that the periodic bumping would be started from the same spot, he is surely neglecting the facts of the case, for periodic wave formation on surfaces quite as irregular as roads is one of the best-known and most-easily studied effects in half the problems with which one is confronted, and if one once admits that one irregularity exists in a road, then each bounce is bound to start from the same point. There is a still more important fact. The springs of all motorcars do not vary very enormously when one takes the average car. If one chooses a motor-bicycle at one end and a Lanchester car at the other, of course the periodicity effect varies by about 200 per cent., but taking 100 cars that pass in an afternoon, one will find, by observing the makes and afterwards making rough tests, that the periodicity seldom varies by more than 50 or 80 per cent. Now the speed of these cars is also reasonably constant, and one will find that if one assumes the springs to bounce regularly, the irregularity caused by the periodic frequency variation is not sufficient entirely to smooth out the bumps, but merely to soften them down or alter their wave length in some parts and also their formation.

Fig. 1.—After all, a hard road is not easily cracked up, and yet it is worn to pieces on any corner by the slipping effect of the wheels, and this is certainly not due to rolling. If on a dry day the road is observed when a car has passed a corner, there will be a series of heaps of torn-up small stones, each situated at almost the exact distance from the preceding one, proving most conclusively that the wheel is tearing up the road under the periodic action of the spring.

Fig. 2.—In the case of a very hard road, such as a wood paving or a metal surface, it is not easy to see that the bumps will form first, but the bumps will certainly be due to the bounces. I think these points

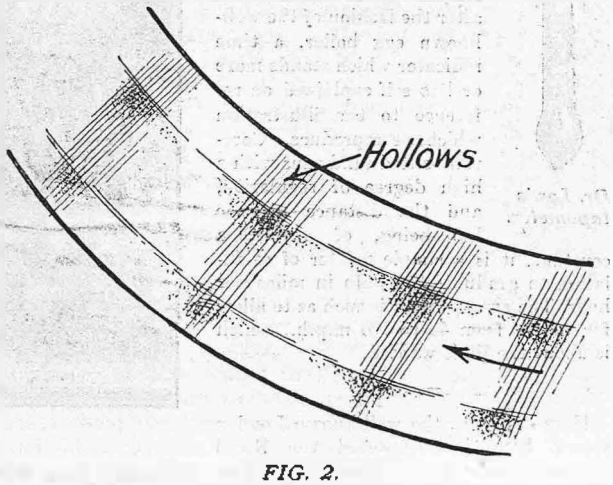


FIG. 2.

"On any bumpy road, and on corners, little pools of torn up stones collect at regular intervals after the passage of a car."

ROAD WAVES.—Contd.

bring out what is going on to some extent, and I would like to go over and elaborate the argument by means of records and diagrams still further, but there are so many causes to which one may attribute the effect of this wave formation that I do not think it is possible to deal other than with the most important ones in a short article.

Let us take the example of an ordinary motorcar, which is comparatively light, and the contact weight of which is well distributed; even a motorbus is not large compared to a roller when one considers the pressures applied in the first instance to road-making and the absolute lack of surface adhesion, notwithstanding, which allows so much grinding to take place. The rolling effect, which is, of course, well known to exist to some extent, gives a wave depending on the surface, but on ordinary roads the wave length due to rolling at high speed is usually between 2 ft. and 3 ft. in length, taking the half-wave to indicate one period and including all frictional effect. Now, as motorcars and buses travel quite six times as fast as would the roller, it would be expected that over a hard road the waves would be about 12 ft. or more in length, but on wood paving such as we have at Ealing Broadway, and on metallic surfaces where the rolling effect is practically absent, the wave effect is often at its very worst. It is also important to notice that on roads such as that leading to Brooklands and in the approaches to Brighton, where buses are not running, the period for the ordinary car effect, which, if it was due to wave rolling, should be longer, owing to the faster speed, is much shorter. Now, most cars travel at very much the same speed, and the assisted wave period would not vary from the springs by more than 1 ft., as I have already mentioned, so that for 2 ft. waves they would not be damped out, but only cracked, and would still be apparent as if the spring periodicity did not greatly vary. I think that as the wheels of cars and buses each travel along with a hard, grinding motion, trying to slip all the time, and as they are alternately almost off and rebounding hard against the road after striking a bump, owing to the springs, they must grind the hollows out in a cumulative manner, and, of course, they, no doubt, very slightly wave-roll a bad road in the well-known manner. Both average car and average bus periods agree with this estimate from average periodicity, and the speed of each is wonderfully constant when one treats of majorities, and although all effects are present, I agree with "Road Engineer" in believing that this grinding and release of pressure is very much in the "majority."

The Low Lapometer.

The spectators of races at Brooklands or record attempts are naturally interested to know the speed at which the car is running. Even the most expert judge of speed under ordinary touring conditions is inclined to fail rather badly when it comes to high-speed work. Not many people have reliable stop watches, and for the little general utility to be obtained from such an excellent thing (when one already possesses an ordinary watch), it is but few who care to go to the expense of purchasing one. Dr. A. M. Low, of 15, Great St. Helen's, London, E.C., bearing these points in mind, has brought out a simple little instrument after the fashion of the well-known egg boiler, a time indicator which stands more or less self-explained on reference to the illustration which we reproduce. Carefully-sifted sand runs with a high degree of regularity, and the distance for the lap being, of course, a constant, it is a simple matter of calculation to graduate the bulb in miles per hour. The arrangement is such as to allow for speeds from 45 to 120 m.p.h., which is about the limit wanted.

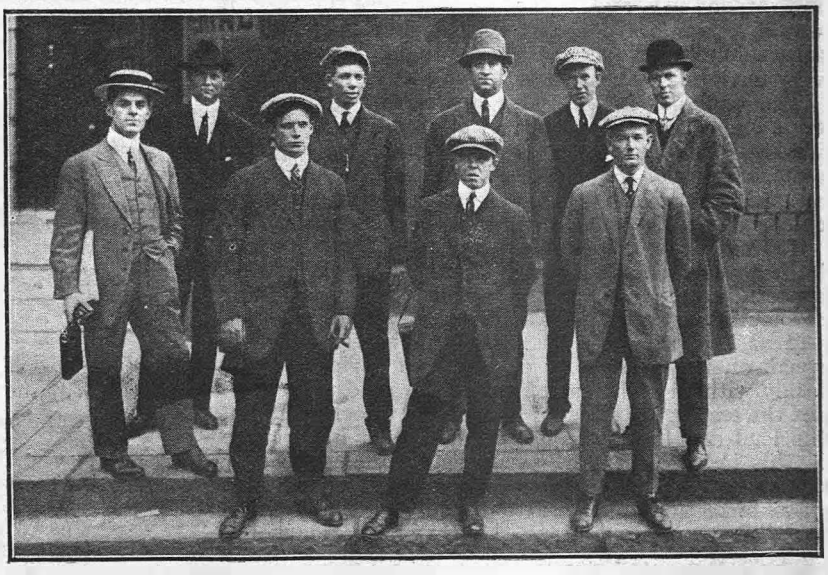
Dr. Low's lapometer.

Harrods, Ltd., the well-known London stores, have been granted the Royal Warrant of Appointment to Her Majesty the Queen. They already hold a similar appointment to the Queen of Norway.

D2

The Evils of the Tar-spraying Machine.

With the coming of the first long, dry spell of weather the tar-spraying machine has blossomed out upon the highway and is doing its fell work. It is to be found all over the country, and some of the tar with which it is charged and which it is intended should be laid as a coating on the road surface is really carried far from the appointed spot. The tyres of each passing car pick up quite a substantial quantity and scatter it all over the car. We saw a fine landaulet in Watford the other afternoon. A puncture had compelled the use of the Stepney spare wheel, and the mudguards being inadequate in width or the driver having driven fast over the tarred stretches, tar had been spattered all over that side of the car. When the tar-spraying machine is at work it is as well to pass on the windward side of it, or, if this be not possible, to go a mile to avoid passing it, for the fine spray is carried on the wind 20 or 30 yards, and it will damage anything on which it settles. It is advisable at this time of the year to give wheels, rims, axles, brake drums, brake and steering rods a rub with a rag saturated with oil or covered with grease. The tar will not get such a grip where it is thrown, and will afterwards be more easy to remove.



THE AMERICAN MOTOR POLO TEAM.

Reading from left to right the men are: Joseph Warner, financial manager; Len Edgsen, private secretary; L. B. Blackman, driver; Bud Jackson, mallet man; Frankie Quinlan, mallet man; James McNolly, team manager: Walter Stirling, driver; Clyde Farriter, mallet man: Billy Ray, Junr., driver.

The Motor

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.

Proprietors: TEMPLE PRESS LIMITED,
7, 9, 11, 13, 15, Rosebery Avenue,
London, E.C.

Telegrams: "Pressimus, Holb., London."
Telephone No.: 5292 Holborn.
(Four lines.)

The Price of Petrol.

THE results of our benzole campaign, so far as they are of a positive nature, are fairly patent to those who observe: nearly 200 retailers are now known to be selling benzole regularly throughout the kingdom, and many motorists are finding it an excellent spirit. There is, however, another side to the question, namely, the possibility of substantial negative results of a beneficial character, which do not appear on the surface. One must go back, then, a short time, to the recent days when it was very freely rumoured amongst the cognoscenti that the price of petrol would be 2s. a gallon at the end of May. We have very good authority for saying that those rumours were not ill-founded: in fact that a decision had actually been come to on the subject. We are now able to state (though it is proverbially unwise to assume the rôle of prophet) that:—

No such rise is now likely to take place in the price of petrol, at least for the present.

In short, that the decision has just been rescinded, and that the price of petrol will remain as it is. It would, perhaps, verge on the presumptuous if (not being directly responsible for the variations in the price of petrol) we stated definitely that our benzole campaign was solely responsible for stopping the very generally anticipated rise in the price of motor spirit; but, on the other hand, we may with full justification point to the steadying influence of the list of nearly 200 benzole retailers around the country, who have sprung into being in the last few weeks, and although their sales are admittedly infinitesimal at the moment compared with the total consumption of motor spirit, nevertheless it is *a sign of the times and a portent which certainly would not encourage the raising of the price of petrol.* That list will grow, not only in numbers, but also largely in regard to the quantity of benzole sold.

We shall make another important announcement next week relative to our benzole campaign—a further rung on the ladder to success.

The Era of the Island Refuge.

THE employment of "refuges" in the streets of cities and towns is almost certain to grow. These island refuges provide havens of safety for pedestrians halfway across a busy thoroughfare, and at the same time serve to define definitely the course of each stream of traffic. Refuges in London have been increased in number in recent years, but the most marvellous growth in numbers that we have ever observed has been in Paris during the past two years. There the refuges are so placed as to divide some of the wide thoroughfares into three streams, an "up," a "down," and a central stream occupied mainly by the tramcars. Between the two island refuges only tramcars may pass, so that the control virtually amounts to the introduction of a series of "bottle-necks" along a thoroughfare, the net effect of which is to reduce the speed of the traffic, as between one bottle-neck and the next there is insufficient space for the speed of the individual items of the traffic to get out of hand. We must say that when we have been driving in Paris we have fretted at the delays and checks brought about by these numerous refuges, but, when walking in that city (with, let it be noted, the streams of traffic running in exactly the opposite directions to those we are accustomed to meet in England), we have appreciated their usefulness. We observe that more of these refuges are being constructed in London, whilst many of the existing refuges are being enlarged. On balance, there is no doubt that the island refuge at a busy crossing is a great advantage. It tells one which course to take, and it keeps other streams of traffic from fouling one's course, whilst one knows that the confused old lady will fly to it instead of trying to dodge one's car. The only danger about a new street refuge is that it suddenly blossoms forth in a place where regular users of the highway have never seen one, and therefore had not expected to find one.

Large Diameter Tyres and Their Advantages.

THE growth in the popularity of large-size tyres is due mainly to the missionary efforts of one or two of the tyre manufacturing companies, although a powerful countervailing influence has been the larger initial outlay. The use of large-size tyres is not merely a luxury, for the real fact of the matter is that the mistake was made in the early days of the motor-car of using tyres of too small a diameter. We remember clearly that our first car tyres were 900 mm. by 65 mm., and we recall our impressions of the extravagant boldness of increases in our tyre sizes on a subsequent car from 750 mm. by 65 mm. to 780 mm. by 80 mm.! It seems ludicrous in these days of the 120 mm. by 135 mm. tyres, and particularly so when we remember that the art of motor-tyre making was then in its infancy, when a greater margin of safety was more necessary than is the case to-day. A few years ago, after the 90 mm. tyre had become firmly established, 100 mm. tyres were produced to fit the same rims, and it was the superiority of this larger tyre which finally convinced the public that the arguments of the makers in favour of larger tyre diameters were based upon a desire to give the user the best service and not upon a selfish desire to obtain more out of him. We now observe that a new range of "oversize" tyres is being introduced, the new 135 mm. tyre being designed to fit on 120 mm. rims and the new 125 mm. tyres fitting on to 105 mm. rims. The larger size, of course, has a greater air capacity, the rubber tread is heavier, and the walls of the tyre stronger, so that, whilst the first cost may be higher, it is almost certain that the greater mileage obtained will reduce the cost per mile. We have had experience of 5 in. (127 mm.), 6 in. (152 mm.), and 7 in. (178 mm.) tyres, and we must say that we should feel considerable hesitation in going back to smaller tyres again.

EVENT AND COMMENT.

In this issue we give some interesting details of the Royal Garage at Buckingham Palace and the motorcars used by his Majesty. The statement is made that, although the King never drives a car in public, he has on occasions taken the wheel of a car himself in private. It is interesting to note that his Majesty has just given his consent to the Prince of Wales owning his own motorcar. The Prince has frequently been seen at Oxford at the wheel of a motorcar, which he manages exceedingly well.

On Wednesday last the Prince of Wales drove his newly-acquired motorcar from Oxford to Althorp Park, the residence of Earl Spencer. He was accompanied by a chauffeur, but during the afternoon he dispensed with the services of the chauffeur, and took Lady Adelaide Spencer, Lady Lavinia Spencer, and the Hon. Cecil Spencer for a drive in the country.

Our present King took his first motorcar ride with the late Hon. C. S. Rolls, when, as the Duke of York, he was on a visit to The Hendre, the seat of the late Lord Llangattock, near Monmouth. The same remark applies to the Queen, who, as the Duchess of York, also on that occasion went for a ride with the Hon. C. S. Rolls as driver. By the courtesy of Lady Llangattock we are enabled in this issue to give photographs of the King and Queen setting out for their drives with poor Rolls, whose end came so tragically in July, 1910, when flying at what, if only on account of his untimely death, will ever be regarded as the ill-fated flying week at Bournemouth.

Another apropos incident, concerning which we well recall hearing mention in the course of conversation with the ever-to-be-lamented "Charlie," is the fact that, following the visit of the Duke and Duchess of York to The Hendre in the year 1900, Queen Mary, both as Duchess and as Princess of Wales, on various occasions sought the assistance of the same guiding hand to extend her motoring experience. Everybody who was driven by Rolls at any time will agree that her Majesty's confidence was fully justified, for this pioneer was an amazingly careful, if daring, steersman; the few who do not know, quite wrongfully suppose him to have been a foolhardy or risky driver.

The election of Mr. S. F. Edge as chairman of the Petrol Substitutes Joint Committee, in quick succession to that gentleman's co-option as a member of the R.A.C. Committee, is high testimony to the way in which his capacity for hard work and his unflagging energy are esteemed. Furthermore, he happens to be the only member of this Joint Committee who is individually a member of each of the committees of its three constituent bodies—the R.A.C., the A.A. and M.U., and the S.M.M.T.

Mr. Henry L. Doherty very courteously postponed his return to New York in order to discharge his acceptance of the invitation to state his case, before the Petrol Substitutes Joint Committee, in regard to the washing out of benzole from town gas. Whilst this proposal has been under discussion in the circles of chemistry and gas-making, Mr. Doherty is quite justified in calling the proposal a new one. It is a new one, so far as the public at large is concerned, and the forceful way in which he has put it forward merits every support by motorists. Their duty is to talk about it at all times, and, above all, to speak to gas engineers or directors of gas companies. Never before have the arguments been so trenchantly put forward, and at no time has a combination of circumstances so favoured the adoption of a strenuous campaign in favour of this change of method. We look forward with great interest to an early announcement in regard to it at the hands of the Committee, which is now engaged in probing details and data in respect of yield. Those settled, the larger problem of helping forward the necessary legislation will have to be tackled. Mr. Doherty will be the man to whom the credit will belong, in that he vivified a scheme to which little or no attention was being given.

The question as to the legal position of the chauffeur came up for consideration before the county bench at Canterbury a week or so ago, when a chauffeur summoned his late employer for wages and expenses on being dismissed for incompetence. If he were held to be a workman he would only be entitled to a week's notice or wages in lieu thereof, but if he were held to be a domestic or menial servant custom decrees that a month's notice is necessary. Mr. Justice Darling, in a High Court case, had decided that the chauffeur is a workman differing from a coachman in that the latter does not effect any repairs to the vehicle he drives, whilst the fact that the chauffeur does do so makes him a mechanic. The Canterbury bench took the same view, but agreed to state a case, so that the action will in all probability go to the High Court.

Speaking of the county bench at Canterbury, it is worthy of note that of the seven magistrates five are motorists, whilst throughout the county there is a very strong motoring bench, and therefore the police traps in Kent are few and certainly not unfairly worked.

INDEX TO CONTENTS.

FINANCE & BUSINESS

Transactions in the motor share market have been less numerous this week, but prices, with a few exceptions, have been well maintained, for which, no doubt, the improving weather conditions are responsible. It was thought at one time that some of the companies had accumulated a stock of cars, owing to the bad weather, but there should be no difficulty now in disposing of them. Darracq ordinary, after weakening to 13s. 9d., finish firm with buyers at 14s. 3d., and Small Arms are steady at 47s. 6d. There have been a few sellers of Charron preferred at the lower price of 13s. 3d., and Rudge Whitworths have fallen to 18s. 3d.; the market is none too firm. Humber ordinary have changed hands at 10s., but the preference are inclined to improve with buyers at 15s. 7½d. De Dions preference are wanted at 8s., and Rileys are buyers at 6s. Rovers have fluctuated, the price at one time weakening to 38s. 6d.; good support, however, was forthcoming at this figure and they quickly improved to 39s. 6d., with very few shares on offer, and we should not be surprised to see a further improvement. Further selling of Stars has brought the price down to 11s. 6d., and the preference are still sellers at 16s. 6d., with no actual buyer. Sunbeams changed hands freely at 57s., but have fallen again to 55s. 6d.; the market, however, has a firm appearance. Triumphs have been quite neglected and are now sellers at 76s.; there has not been a transaction in these shares during the whole week. Dunlop issues are rather flat at the time of writing. Rubbers changed hands at 38s., after being 39s. bid. Parent Tyre deferred have been a quiet market and sagged to 10s. 1½d.; the ordinary and preference are practically unchanged.

The agency for the Fafnir car for the London and Home Counties district has been obtained by Messrs. H. F. Hodges and Co., Ltd., of 11-13, Young Street, Kensington, London, W. Mr. Hodges has held a responsible position with the Iris Cars, Ltd., and is fully conversant with the trade and the requirements of the discriminating purchaser. Messrs. Hodges have acquired the garage recently occupied by Messrs. Coles at Kensington.

We are glad to hear that Mr. Charles Sadgrove, who has been in the motor trade from its inception, is, after his well-earned rest, again starting in business, negotiations for premises in the heart of the West End of London being now in train. He intends to specialize in Minerva, Renault, Sheffield-Simplex, Metallurgique, Oakland, and, of course, Darracq cars, other makes being supplied as customers may desire. With his wide experience and his large clientele of friends and customers, Mr. Sadgrove is, no doubt, destined to build up, once again, a big agency business.

In a recent action brought by General Motors, Ltd., against a London shipping agent, it was alleged that a car, sold to the latter, who was granted a discount upon the understanding that the vehicle was to be shipped to India, was actually sold to a purchaser in Scotland. Damages to the amount of £50 were claimed, and, on the application to the Court for Orders for Discovery and Interrogatories, the amount was paid into court with an admission of liability. The plaintiffs then applied to the Court for costs upon scale "C," upon the ground that the question litigated upon was of importance to some class or body of persons or of general or public interest, and Judge Woodfall decided last week in their favour, granting costs upon the highest scale obtainable in the County Court. The importance of the decision cannot be over-estimated.

Mr. Sydney G. Cummings, who holds the sole agency for the British Isles for the 15-25 h.p. British-built Sirron car, has, in order to deal with the increase of the business, taken into partnership Mr. G. E. Wright, M.I.E.E., the business in future being carried on under the title of Messrs. Sydney G. Cummings and Wright, at 71 Britannia Road, Walham Green, London, S.W. Negotiations, however, are under way in connection with larger premises. A new four-cylinder light car, to be called the Cummikar, is shortly to be placed on the market. This is a small edition of the car with which Mr. Cummings was so successful at Brooklands on Whit Monday.

Windhoff Cars, 8 and 9, Sherwood Street, Piccadilly Circus, London, W., are sole concessionnaires for Great Britain and the Colonies for Windhoff cars made by Windhoff Bros., Rheime, Germany. Three models are supplied: 10-12 h.p. (70 mm. by 100 mm.), at £290; 12-14 h.p. (70 mm. by 118 mm.), at £320, and 14-16 h.p. (75 mm. by 113 mm.), at £345, each car complete with four-seated torpedo body.

The motor trade was more than usually interested in the amateur golf championship by the success of Mr. A. Mays-Smith, managing director of Delaunay-Belleville (England), Ltd., who reached the third round, and we sympathize with his bad luck in not getting nearer the final.

We know of a vacancy for a thoroughly capable man to take charge of the export department of one of our largest manufacturers of motorcars. He must have a knowledge of the commercial side of the motor trade and be acquainted with foreign and Colonial shipments, currencies, etc. It is a good opportunity for the right man. All communications will be treated in confidence and should be addressed to "Exporter," care of A. J. Wilson and Co., Ltd., 154, Clerkenwell Road, London, E.C.

D9

"THE MOTOR" SHARE LIST.

The Prices recorded in the end columns are those ruling on the Stock Exchange at Mid-day on Monday, 2nd June.

SHARES.		NAME.	Dividend.		Previous Prices 1912.		Prices 1913.		Prices. 2nd June.	
Issued Capital.	Paid Up.		Last.	When payable.	Highest.	Lowest.	Highest.	Lowest.	Buyers.	Sellers.
£										
[illegible]	£8	Alldays & Onions...	6%a	Mar./Nv.	4½	3½	[illegible]	3¾	3⅜	3⅝
50,000	£5	,, Cum. Pref. 6%	6%	Mar./Nv.	5½	5½	[illegible]	5½	5	5⅛
200,802	10/-	Argylls, Ltd.	nil	Nov.	6/-	4/6	6/-	4/3	5/-	5/9
150,000	£1	Belsize Motors	4%a	May/Nv.	27/9	25/3	26/9	25/6	25/-	26/-
767,925	£1	Birmingham Small Arms	10%a	Ap./Oct.	53/3	47/6	50/-	47/	47/-	48/-
75,000	£5	Brampton Cum. Pref. 6% ...	6%	Oct.	4½	[illegible]	4	3⅞	[illegible]	4⅛
100,000	£1	J. B. Brooks & Co.	10%	Mar./Nv	37/6	31/-	36/6	35/-	36/-	37/-
100,000	£5	,, Cum. Pref. 5%	5%	Mar./Nv.	5½	5½	—	—	5½	5¾
100,000	£5	Brown Bros. Cum. Pref. 6% ..	6%	Ap./Oct.	4½	4¼	4⅞	4¾	4¾	5
884,000	£1	Charron, Ltd., Par. Pref. 7% ...	8%	Jne./Dc.	11/4¼	8/-	13/7½	7/9	13/-	13/9
275,000	£1	Darracq (1905)	9¾%	Jne./Dc	18/4¼	8/9	15/-	9/6	13/10½	14 4½
375,000	£1	,, Pref. Ord. 7% ...	7%	Ap./Oct.	19/-	11/10½	16/-	12/6	14 9	15/6
150,929	£1	De Dion-Bouton (1907) Pref. 7%	6%	Nov.	11/3	8/6	10/-	7/6	8/-	8/6
105,000	£1	Delahaye & Co.	25%	July	—	—	—	—	1¼	1⅝
60,000	£1	,, ,, Pref. 7%	10%	Jan./Jul.	28/1¾	28/9	25/7½	25/-	1¼	1⅜
970,363	£1	Dunlop Rubber Co.	12½%	Ap./Nv.	56/6	27/6	41/-	35/6	37/6	39 6
200,000	£1	,, ,, 6% Pref. ...	6%	Ap./Nv.	21/-	17/-	20/1½	18/6	19/3	20/3xd
812,796	£1	,, ,, French I. Stock	5%	May/Nv.	19/-	15/6	19/-	17/6	17/-	18/-xd
292,904	£1	Humber	nil	Nov.	7/6	3/10½	13/10½	6/9	10/-	10/6
331,495	£1	,, Cum. Pref. 6% ...	nil	Nov.	10/9	6/9	17/7½	10/4½	15/6	15/9
100,000	£5	J. Lucas, Ord.	5%c	Ap./Nv.	9½	9	9¾	9¼	9¾	9⅝
100,000	£5	,, Cum. Pref. 5% ...	5%	Feb/Oct.	5⅛	5¼	110/3	5⅛	5⅛	5⅛
634,926	£1	Parent Tyre Co. Cum.Ordy.8%	10%c	May/Nv.	18/7½	10/-	17/9	14/-	15/7½	16/-
994,990	£1	,, ,, Cum. Pref. 5% ..	5%	May/Nv.	16/6	10 9	14/9	12/7½	12 9	13/3
490,982	£1	,, ,, Deferred ...	nil	May/Nv.	15/-	6/3	12/-	8/-	9/10½	10/3
81,000	£1	Riley (Coventry) Ltd. ...	nil	Feb.	8/9	5/3	7/4½	5/-	5/9	6/3
200,000	£1	Rolls-Royce	20%	Jan./Jul.	46/6	37/7½	48/-	43/9	44/-	45/-
138,668	£1	Rover	10%	Nov.	29/-	14/-	40/-	31/-	38/9	39/6
100,000	£1	Rudge-Whitworth	5%b	Oct.	22/9	15/-	25/9	18/9	18/-	18/6
100,000	£5	,, ,, Cum. Pref. 6%b	6%b	Oct.	5⅛	3⅞	4⅜	3⅞	3¾	4
41,621	6/-	Siddeley-Deasy	8⅞%	Nov.	10/6	6/-	12/-	8/10½	10/6	11/6
70,000	£1	Star	5%	Mar.	18/6	10/6	17/-	11/6	11/-	12/-
69,157	£1	,, Cum. Pref. 7%	7%	Mar.	18/-	15/4½	17/6	16/6	15/3	16/3
97,350	£1	Stenney Spare Wheel	20%a	Apr./Nv.	35/-	30/-	32 6	28/3	29/-	29/6
120,000	£1	Sunbeam M.C. Co.	25%	Nov.	59/-	37/6	59/6	53/6	55/-	56/-
80,000	£1	Swift	6%	Apr./Nv.	21/9	13/-	24/-	20/-	19 9	20/3
100,000	£1	,, Cum. Pref. 6½%	6½%	Apr./Nv.	17/6	14/10½	17/-	16/3	15/9	16/9
148,500	£1	Thornycroft, J. I. & Co.	5%	May/Nv.	26/10	12/6	27/6	17/-	14/6	16/-xd
198,000	£1	,, ,, Cum. Pref. 6%	6%	May/Nv.	23/9½	16/10½	19/-	17/6	[illegible]	[illegible]
80,000	£1	Triumph Cycle Co.	20%b	Nov.	71/6	43/9	82/-	68/-	74/-	76/-
50,000	£1	,, ,, Par. Pref. 5%	6⅛%	Nov.	23/6	20/7½	24/6	21/6	22/6	23/-

a Interim div. b Plus 10% bonus. c Including 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.

NEWS AND NOTES.

THE LATE SIGNOR BIGIO NOT THE ITALA CHIEF ENGINEER

As a result of the recent fatal accident to the Itala driver Signor Bigio and his mechanic, while training for the Grand Prix, it was reported that these cars would not take part in the great French race next July. This, however, is incorrect, for the French manager of the Itala company this week visited the offices of the Sporting Commission of the A.C.F. and declared that the full team of three cars will start in the race. The sad death of Signor Bigio does not deprive the Itala factory of the master mind responsible for the rotary valve motor to be used in the race. Although generally described as "directeur technique," which is equivalent to chief engineer, Signor Bigio was in reality one of the administrators of the company, and was not in any way responsible for the conception of the Itala rotary valve motor. Felice Nazzaro will drive No. 7 Itala in the Grand Prix, but no official announcement has yet been made regarding the two other drivers.

Manchester Club Reliability Trial.

The Manchester Automobile Club held their annual reliability trial to North Wales on Saturday, 31st May. Starting from Bowdon, the route was by way of Chester, Mold and Denbigh, to Bettws-y-Coed, where one hour was allowed for lunch. Then by Capel Curig, Pen-y-gwryd, Beddgelert and Festiniog back to Bettws, a total distance of 132 miles. Marks were awarded for reliability, petrol consumption, and hill-climbing, and in order to obtain the best performance on petrol the car miles and ton miles were added together and divided by two. There were six classes, and of these two were not filled, viz., American cars and cyclecars; the remainder, however, were well filled, 35 out of 39 entrants starting. There was keen competition in the trade class for cars not exceeding 16 h.p. by R.A.C. formula, only the 15 h.p. Crossley failing to put in an appearance This event was won by Mr. J. Newton on the 12 h.p. N.B., who took the silver medal: this was the first appearance of the N.B. car in open competition. The bronze medal went to Mr. G. K. Gilchrist on the 15-30 h.p. Stoewer. In the next section, for cars not exceeding 21 h.p., Mr. R. Wilkie, on the 20 h.p. Vauxhall, was first, and won the Trade Silver Cup for best performance on formulæ and a silver medal; Mr. P. A. G. Bell, on the 16 h.p. Bell, winning the bronze medal. The fastest time on the hill was made by Mr. E. Mercer's 25 h.p. Vauxhall, which car took 50 sec. The highest marks for hill-climbing were awarded to Mr. R. S. Owen's 20 h.p. Argyll, 56⅘ sec. In the class for two-seater cars the silver medal went to Mr. A. Fillingham's 20 h.p. Vauxhall, the bronze medal to Mr. S. Frankenburg, on the 12-16 h.p. Sunbeam. In the amateur class Mr. E. R. Foden, on his 20 h.p. Vauxhall, did a remarkably good fuel consumption test, doing 32.31 car miles to the gallon, and 58.97 ton miles; he also won the silver cup for the best amateur performance. Many of the cars in the competition ran on benzole, notably the Vauxhalls, N.B., Bell, etc. All the arrangements made by the officials worked with great regularity and smoothness, and with the exception of a heavy rainstorm at the hill-climb the weather conditions were perfect.

D10

Next Paris Show Date.

Just as we close for press we have received from our Paris correspondent a wire announcing that the next Paris Show will open at the Grand Palais on 15th October, and close on 31st of that month. THE MOTOR was the first journal to announce on this side that the Paris Salon would this year precede the Olympia Show.

In consequence of the long cable received from America reporting the Indianapolis 500-mile race many interesting items are unavoidably crowded out this week.

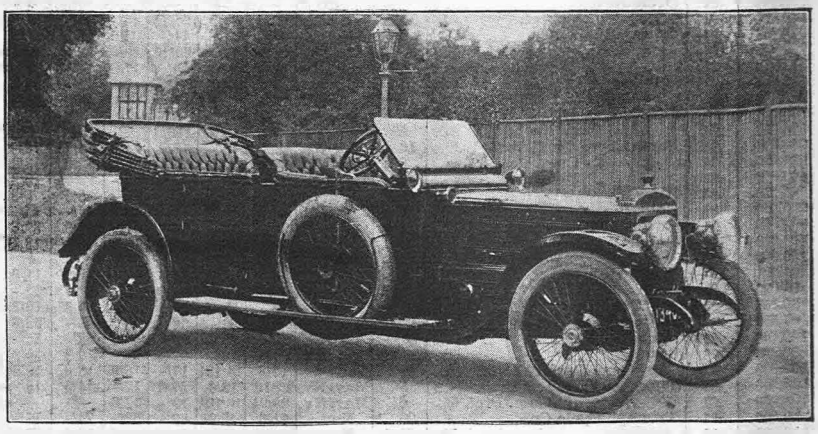
"MOTOR CYCLING" AND THE T.T. RACES.

Next Tuesday's issue of "Motor Cycling" will contain the first complete illustrated report of the Tourist Trophy Races in the Isle of Man. Apart from the fact that it will be the first out, this issue will be remarkable in many ways. It will contain a section printed in two colours and will be bound in a very striking cover in three colours. This issue of "Motor Cycling" will be on sale first thing on Tuesday morning as usual

London's New Western Highway.

The decision of the Middlesex County Council to proceed at once with the construction of the long-talked-of new western road into London will be favourably received by all motorists, particularly those who have had to run the gauntlet of the existing entrance into London from the west. Flanked by the unlovely gasworks and slum property the London end of the narrow Brentford High Street is little short of a nightmare to drive through at any time. A jumble of trams, buses, tractors and farmers' carts wedge in the motorist, and, as a rule, he rarely requires a second experience of Brentford if he can avoid it. The new road will start at Kew Bridge and skirting Brentford to the north will join up with the main Bath Road at the west of Hounslow Barracks. The cost is estimated at well over half a million. Of this sum 75 per cent. will be paid by the Road Board.

We learn from Paris that Colonel Crompton passed through that city en route for Madrid, on Saturday last. It appears that his expert advice in regard to certain considerable road developments, in the neighbourhood of the Spanish capital, has been invoked by an important financial group in the French capital.



The "Special" Daimler six-cylinder "Calder" phaeton, which has just been supplied to H.R.H. the Prince of Wales. Some reference to the Prince as a motorist will be found under the heading of "Event and Comment" on p. 832.

MOTOR GLADIATORS AT RANELAGH.

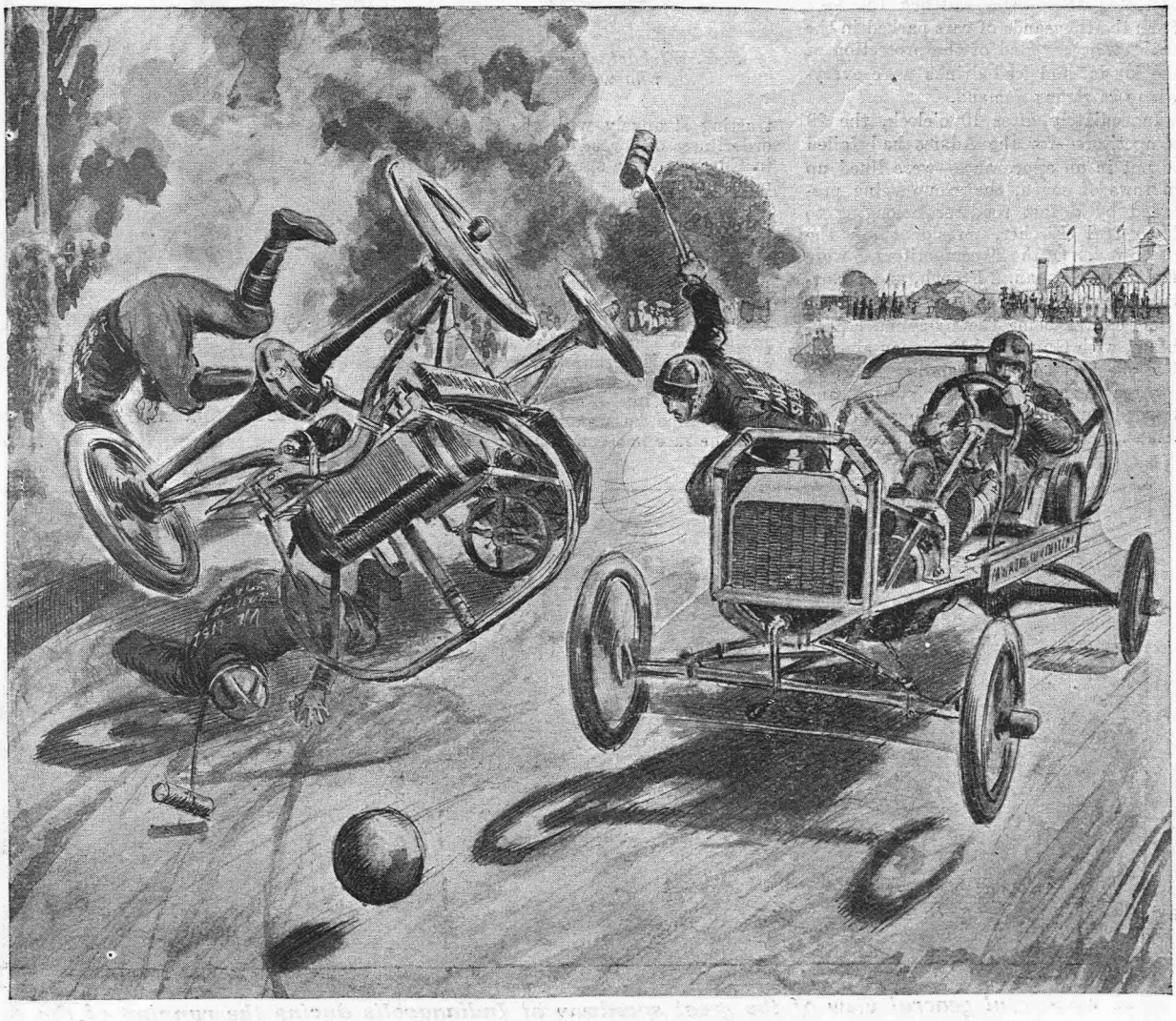
New Game of "Auto Polo" Creates Small Amount of Interest. Society not Greatly Impressed.

IN THE MOTOR of 4th March we described the game of "auto polo" as played in America and gave a series of photographs illustrating exciting incidents of the new "sport." Later we announced that the first game to be seen in England would take place at Ranelagh. In our description of the game our American correspondent remarked:—"It is a game I should like to see tried in England, but I wonder how it would strike the English!" Judging by the effect upon the aristocratic assembly at Ranelagh last Saturday, the impression cannot be described as favourable. We hardly think the new game is likely to "catch on" in this country.

It was 4.15 before the large and fashionable crowd lined the sides of No. 3 ground to view the very latest thrill of thrills in the motor polo game. The latest edition of the game, according to the rules, was to be played by four cars—two at the goal posts and two forwards; but on Saturday afternoon it was only played by one on each side. The cars are all Fords, specially strengthened and protected by hoops of steel (one over the radiator and a much higher one at the back over the petrol tank), the idea being, if the car should turn turtle, the radiator and steering wheel should be clear of the ground. The wheel is on the left-hand side, the very useful brake being on the driver's left, whilst the mallet man stands on a strengthened running board on the right.

The ball is placed in mid-field, the opposing teams take their positions in front of the goals. Taking up positions was the first thrill, the rival cars tearing down the field to their appointed stations. The red team consisted of Driver Clyde Ferriter and Malletman Frank Quinlan. Blue: Scott-Stirling driver, Clarence Jackson mallet man. Five bouts of 10 min. each was the order of the game. Quinlan scored the first goal for the red team. During the first 10 min. play the car of the red team, when making a sharp skid right on the line, collided with its rival and capsized. This was the best spectacular event of the day, for the carburetter caught fire. The engine belched flame (it being minus exhaust pipe), and clouds of smoke enveloped the car and its occupants. The men seemed quite used to little things like this and merely crawled out from under the car, righting it, and on after the ball again, Quinlan scoring almost immediately afterwards. This brought hearty applause from the spectators; but, apart from the wild skids of the cars when chasing the ball and a smashed goal-post or so, the rest of the game seemed to fall rather flat. The driving was wonderful, and the mallet men might well have been trained acrobats. Seven goals were scored, five going to Quinlan and two to Jackson. Various changes of cars took place, the men being very smart, and wheels were splintered and changed in quick time, inverted T pieces of wood being used to jack up the cars.

After another game at Ranelagh the team will play for a week at the Stadium, thence to Berlin and Paris, after which they will pay a return visit here if the game proves a draw.



An exciting moment in the game of Motor Polo played at Ranelagh last Saturday.

D15

PEUGEOT WINS AT INDIANAPOLIS.

Great Race Results in Victory for Famous French Car and Driver —Two American Cars Second and Third—Sunbeam's Game Effort Brings it into Fourth Place.

JULES GOUX, driver of the Peugeot car built for last year's French Grand Prix, marked his debut as a driver in America by winning the Indianapolis 500-miles race last Friday, at an average speed of 77 miles an hour, defeating 28 American, French, English and Italian cars.

Long before 10.30 o'clock on Friday morning, the hour fixed for the start of the annual 500-miles race on the Indianapolis Speedway, a huge crowd, estimated at more than 100,000 persons, had gathered around the 2½-mile race-course. Indianapolis has the advantage of possessing the only specially-constructed autodrome in America, and of having but one big race a year. But as that race offers £10,000 in cash prizes, it is of no small importance to manufacturers and race drivers, and, being run on Decoration Day, with wonderful facilities for bringing in crowds from all the towns in the middle-west, and even as far east as New York, it is not surprising that it is well attended. The weather on the morning of the race had only the disadvantage of being too hot, thus paving the way for tyre troubles. The visitors, with true American sans gêne, abandoned coat, waistcoat, collar and tie; those who watched the race from the thousands of cars parked in the enclosure were glad of the protection of the hoods, and iced drinks were everywhere in strong demand.

Immediately after 10 o'clock, the 29 competitors—for the Adams had failed to put in an appearance—were lined up in rows of seven, the group being preceded by a fast roadster belonging to Mr. Carl Fischer, president of the Speedway. Of the 29 competitors, 3 were Italian, 2 German, 2 French, and 1 English, the solitary representative of the Old Country being the six-cylinder Sunbeam, with Guyot and Crossman aboard. For the first time the familiar figure of Starter Wagner, who has started and flagged practically every big race in America, was absent, his place being taken by Mr. Pardington. Promptly at 10.30, the crack of a pistol, only heard by those in the immediate neighbourhood, announced the start of the race, the 30 cars rushing away in a cloud of smoke to the accompaniment of a roaring from human throats, syrens and horns which defies description.

There is something diabolically wild about a start under these conditions, con-

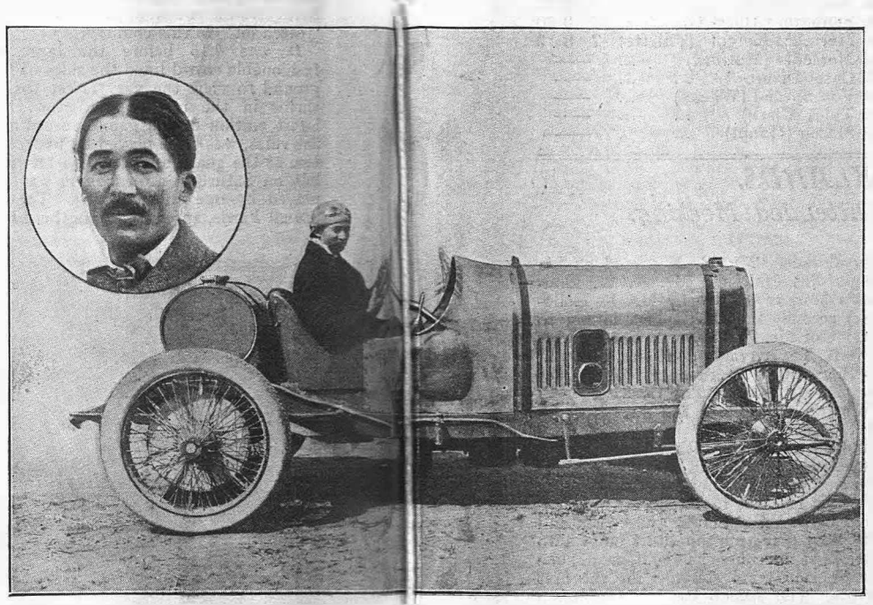
S. E. Wishart, American Mercer, who was second.

trasting strangely with the silence and orderliness of a road race as it is known in Europe. At a speed of practically 70 miles an hour, the pacemaking car, with Carl Fischer and C. W. Sedwick aboard, covered one round of the course, followed by the loud-voiced pack. As the end of the first lap was approached, the pacemaker pulled well in to one side, then, when opposite the stands, shot into the prepared opening, leaving the competitors to rush ahead at their highest speed. This preliminary round had scattered the cars over the track; as each competitor came over the line a second time he was timed electrically, and the race had commenced.

Fast Pace from the First.

At the very outset a fast pace was set, this being encouraged by the various prizes offered for short distances. The Frenchmen, Goux, Zuccarelli and Guyot, had made no attempt to get to the front during the preliminary lap, but as soon as the race was actually in progress it was evident that they were no slower than the most dashing American drivers.

Bob Burman, on the Keeton, a car on Renault lines, with the radiator behind the motor, set the pace, making some of his laps in 1 min. 39 sec. and 1 min. 40 sec. Goux and Zuccarelli followed him very closely, with the Sunbeam just astern. While the sight of a single car travelling on a straight road at nearly 80 miles an hour is impressive, the sight of nearly 30 cars maintaining the same speed on a comparatively small track, is



Jules Goux and the Peugeot racer with which he drove to victory in the 500-mile race at Indianapolis on Friday.

thrilling in the extreme. Tyre trouble came at a rather early stage of the race, the Peugeot men, who had suffered considerably in this respect during practice, not being spared. Goux had taken the lead twice and lost it twice owing to his tyres bursting. His work in changing the Rudge-Whitworth wheels was particularly smart, and he was soon off again in pursuit of Burman.

C. Merz, American Stutz, who was third.

Goux's Handling of the Car Creates Interest.

Before the first 100 miles had been covered by the leaders, Zuccarelli was seen to be in difficulties, for he limped to the pits and announced a burned-out bearing. It looked as if there would be a keen struggle for first position at the end of 100 miles, when, on the ninety-eighth mile, Goux blew out a rear tyre, allowing Burman to get ahead. The 100 miles were covered by the Keeton in 1 hr. 15 min. 15 sec., which is about 1 min. slower than last year's record time. Goux was only a quarter of a lap behind, with the Sunbeam a full lap behind the leader.

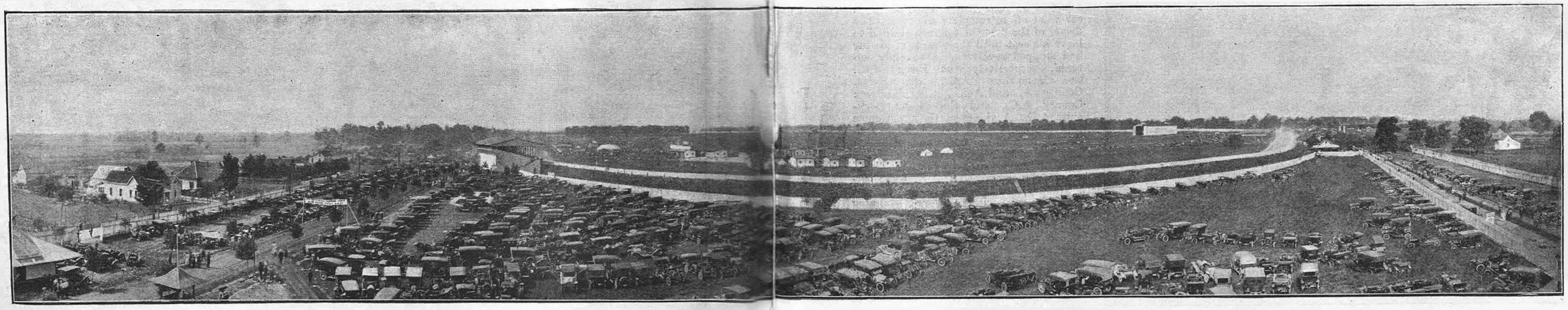
The Peugeot and the Sunbeam had created a most favourable impression; the American spectators were particularly impressed with the way Goux handled his car on the track after only 10 days training. Fourth place at the end of the 100 miles was held by Gil Anderson, on one of the Stutz cars, this team being the American favourites. The others in order were Wishart on Mercer, Merz on Stutz, Tetzlaff on Isotta-Fraschini, all these being two laps behind the leader. Trucco, the Italian driver of one of the Isottas, was four laps behind; Evans and Towers each on Masons were five laps behind, with Billy Knipper, on a Henderson, six laps in the rear. The others were far in the rear, among them being De Palma, who last year led for all but the last few miles of the race.

A Franco-American Duel.

Goux and Bob Burman settled down to a Franco-American duel, with the advantage slightly in favour of the Frenchman. The American, however, had been pushing his car beyond its limits of endurance, for after 150 miles he had engine trouble, which caused him to retire. Freed of this dangerous rival, Goux had the race well in hand, for his four-cylinder Peugeot had a slight advantage in speed over the six-cylinder Sunbeam. But another rival came up, in the form of Gil Anderson, on the Stutz, who passed the Sunbeam and attempted to creep up to the Peugeot. The 200 miles were covered with Goux leading, his time being 2 hrs. 23 min. 30 sec., or nearly 6 min. faster than the leader at this distance last year. Anderson, on the Stutz, was two laps behind, Guyot, on the Sunbeam, was three laps behind the leader. The others in order were Merz on Stutz, Evans on Mason, Mulford on Mercedes, Wishart on Mercer, all four laps behind; Nikrent on Case, five laps; Disbrow on Case, six laps; Tetzlaff on Isotta-Fraschini, seven laps; and Pillatte on the Mercedes-Knight, eight laps. By finishing first in the 200 miles, Goux won the cash prize of £500 offered by the Remy Magneto Co.

Speed Slackens.

There was a slackening off in the speed of the leader after the 200-mile mark, for, with three laps to the good, the Peugeot driver was satisfied to regulate his speed



A wonderful general view of the great speedway at Indianapolis during the running of the Annual 500-mile Race. It was held last Friday, and something like 100,000 people gathered to witness the race; the concourse of cars is always a remarkable one as may be gathered from the above panoram photograph.

NEWS AND NOTES.—Contd.

on those who were following, without seeking to increase his advantage. This explains that while the 200 miles were covered in record time, the 300 miles were 4 min. slower than last year. Mulford, on the poppet-valve Mercedes, put on a spurt and got into second position, three laps behind Goux, having ousted the Sunbeam, the Stutz, and the Mason. From his very advantageous third position, Guyot's Sunbeam had dropped back to seventh place, time having been lost in changing tyres and in some mechanical work at the pits.

Goux Improves His Position.

When another 100 miles had been covered, Goux's position was stronger than ever, for he was four laps ahead of his nearest rival, Anderson on the Stutz, and was keeping up the same steady pace, with a certain amount of power in reserve. His time was exactly 4 min. slower than that of De Palma's Mercedes, which led at this distance last year. Guyot had worked up one place with his Sunbeam, seventh position being taken by the small Mercedes-Knight driven by the Belgian Pillette. This car made a remarkably favourable impression. It was one of the smallest in the race, having but 250 cub. in. cylinder capacity, compared with practically 450 for the Peugeot, Mercer, Isotta, and Case cars, yet it was able to hold its own with most of these.

Sunbeam Finishes Fourth.

During the last hundred miles Goux had the race entirely in his own hands, for without any apparent effort he gradually worked away from the field, finishing in 6 hrs. 29 min. 37 sec., this being at the rate of 77 miles an hour, compared with 78.7 miles last year. The pace was faster than last year during the first 200 miles, but was materially slower during the final 300 miles. Mulford's Mercedes had dropped back and Anderson's Stutz had been disqualified, this driver having been helped by more than two men at the pits, thus bringing the Sunbeam up two places, or into fourth position. Guyot had shown a falling off in speed towards the end and was unable to catch up to Spencer Wishart on the Mercer and Merz on the Stutz, who finished respectively second and third. Out of the 29 starters 10 cars finished the race, which is about the same proportion as last year. In addition to the first prize of £4000, Jules Goux won the £500 prize of the Remy Magneto Co., the Prest-o-Lite trophy, and the Wheeler and Schebler cup. Spencer Wishart won £2000 in cash, Merz £1000, Albert Guyot £700, and the others amounts decreasing to £300. The gate receipts for the race attained the record figure of £41,716.

Result of Indianapolis 500-mile Race.

	H.	M.	S.
1. Peugeot (Jules Goux) ... (Average speed, 77 miles an hour.)	6	29	37
2. Mercer (Wishart) ...	6	43	28
3. Stutz (Merz) ...	6	45	31
4. Sunbeam (Albert Guyot) ...	7	0	10
5. Mercedes-Knight (Pillette)	7	8	0
6. Mercedes (Mulford) ...		——	
7. Case (Disbrow)		——	
8. Fox Special (Wilcox) ...		——	
9. Tulsa (Clark)		——	
10. Mason (Haupt)		——	

INTER-CLUB GALA DAY AT BROOKLANDS.

The R.A.C. and Its Associated Clubs Have a Well-attended Meeting.

ADMITTEDLY, it must be a very hard task for the officials to provide anything in the nature of excitement in such an event as the gala day of the R.A.C. and its associated clubs, and, as a matter of simple fact, the meeting concluded without anything in the nature of a keenly-fought-out finish: most of the events were "runaway matches." However, they managed to do the next best thing, and a good deal of amusement was provided for the entrants and their friends. The attendance was far in advance of that of last year, which is a good sign, and, all things considered, the meeting was carried through very successfully.

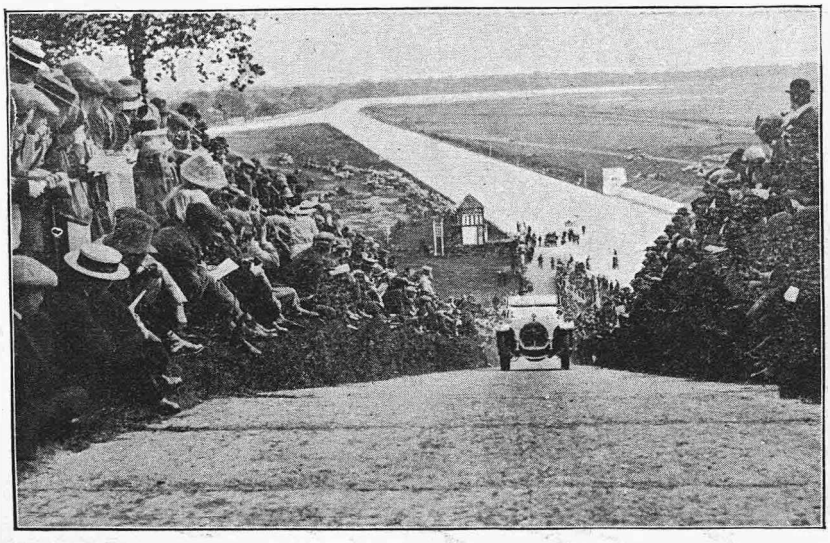
The first event was the skilful-driving race and hill-climb, an event arranged for any class of motorcar owned and driven by a member, or an associate of the R.A.C. The cars were started on the "finishing straight," passed between a number of obstacles placed on the course, had to turn and reverse through a passage, returning through a parallel passage opposite the paddock, and finally ascended the hill. Five seconds were added to the time occupied for each contact with an obstacle (any part of the passage included).

For this there were no fewer than 23 entries, and most of the drivers lost time by not getting their cars straight when backing. The winner proved to be Mr. Harry O'Hagan on his 15.9 h.p. Shelsley model Crossley, whilst Mr. H. Nelson Smith on his 8.9 h.p. Hillman was second and Mr. Harold Lambert on his 15.9 h.p. Shelsley model Crossley was placed third.

The next event was The All-comers' Open Cyclecar Handicap Race, over a distance of 8½ miles, and these little vehicles showed up very well and provided quite a good race. Mr. B. Haywood on his Singer was first, and Mr. A. W. Lambert's Morgan (driven by Mr. E. Holloway) second, the third place falling to the lot of Mr. J. Talfourd Wood on his G.W.K. The average speed was 60 m.p.h. Further details in to-morrow's issue of our sister journal, "The Cyclecar."

The relay race was the next item on the programme, for teams of two standard motorcars with touring bodies, propelled by means of internal-combustion engines, the combined R.A.C. rating of which had not to exceed 50 h.p., entered by associated clubs and owned and driven by private competitors only. Two circuits of the course had to be made, one car of each team starting for the first circuit. The second car of each team was stationed on the starting line, the driver being in his seat. The driver of the first car of each team, on completing his circuit, dismounted and handed to the driver of the second car of that team a badge, on receipt of which the second car went off to complete the race. The driver of the first car was not allowed to leave his seat until the wheels of his car had stopped revolving. Five clubs entered, respectively the Essex M.C., the Hampshire A.C., the Herts. County A. and Ac.C., the Middlesex County A.C., and the North Berkshire A.C. A glance at the programme told the cognoscenti that, barring accidents, it was a foregone conclusion that the event would fall to the Herts. club, and, as a matter of fact, Mr. G. D. Pearce Jones and Mr. R. H. Cobb carried everything before them—*summa cum celeritate*, and with great ease—winning by 85 sec. in the "eliminating trials," and by 82 sec. in the final. Obviously, it was a runaway affair, quite lacking in spectacular interest. Why not a handicap relay race next time, each competitor to state his maximum speed? Admittedly, it would necessitate three or four starters for the relay "off," but to pit most of the cars entered against such fast machines as the two Vauxhalls mentioned verges on the ludicrous.

The next item was a motorcycling



Watching the cars climbing the Test Hill at the R.A.C. and Associated Clubs' Gala at Brooklands on Saturday.

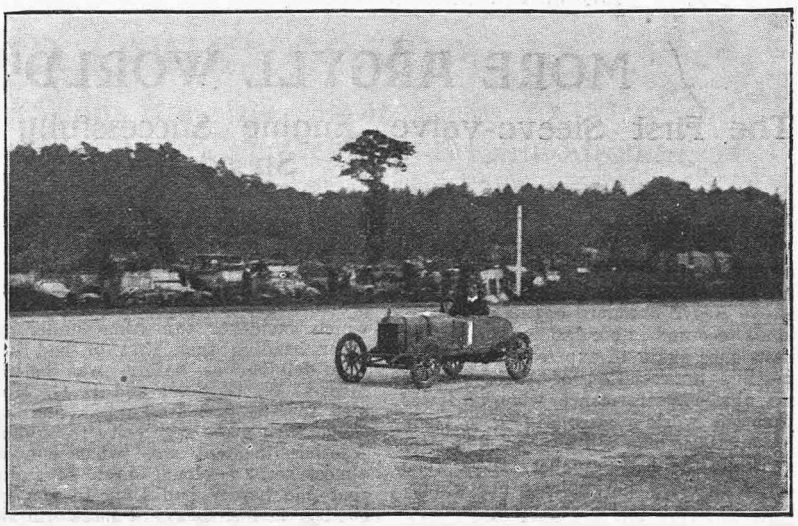
NEWS AND NOTES.—Contd.

one; but after it had been run off it was declared void—"no race."

Then came the best event of the afternoon, the All-Comers' Open Motorcar Handicap Race, for which there were 14 entries, though, unfortunately, five of them did not start. Though, from the spectacular point of view, this race was the best of the day, it was, nevertheless, marred by an egregious error, which, presumably, was not discovered until long after. Mr. W. G. Barlow, on his 15.9 h.p. Sunbeam, "walked" home a winner by about three-quarters of a mile, and in due time the ball went up and the "bookie confraternity" paid out the coin of the realm, and, no doubt, wondered why they had been caught napping to the tune of paying on long odds—8 and 10 to 1. The solution lay in the fact which transpired later on, that it was a big mistake, as Mr. Barlow had been despatched *one minute too soon*. It was certainly a big mistake, but it is also one which is so very rare that it would be ungenerous further to comment on it.

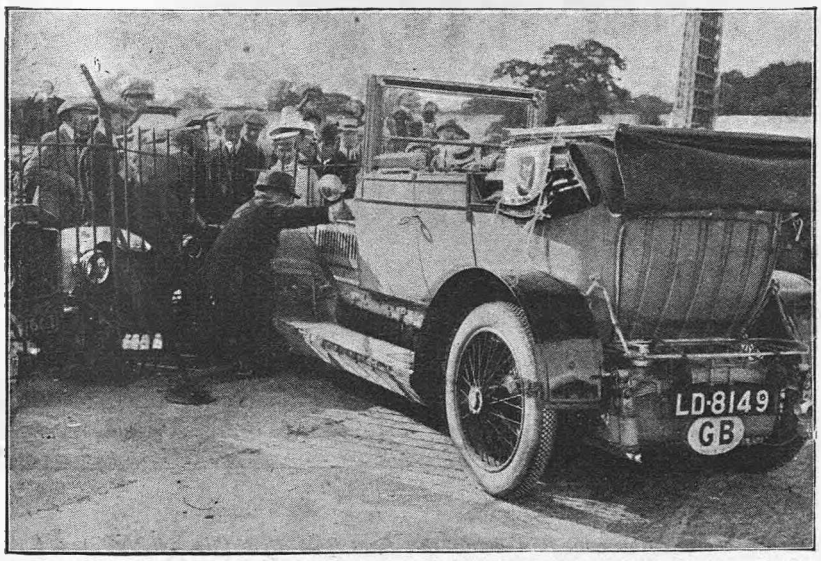
The actual winner was Mr. Percy Lambert, on his 15.9 h.p. Singer, Mr. Barlow, on his 15.9 h.p. Sunbeam, being second, whilst Mr. L. Coatalen, on his 23.8 h.p. Sunbeam, was third.

The hill-climb, which came next, was quite a successful event, and most of the competitors did pretty well. This was an event for teams of four standard motorcars with touring bodies, propelled by means of internal-combustion engines (the combined R.A.C. rating of which had not to exceed 100 h.p.), entered by associated clubs. Not fewer than three of the four cars had to be owned and driven by private competitors. The cars started from a mark about 50 yards from the foot of the hill, and the winning team was the one whose cars occupied the least aggregate time in ascending the hill. This event again fell as easy prey to the Herts. club, with a total of 64.8 sec., the Hampshire team being second with 77 sec., and the Essex club third with a total of 78 sec. The fastest climb we timed was that of Mr. Pearce Jones, on his Vauxhall, which we made to be 13.4 sec., whilst Mr. Cobb, on his car of the same make, was 15.8 sec., and Mrs. Hippisley performed very well on her Sunbeam, doing the climb in 16.8 sec.



Pearce Jones's Vauxhall which made the fastest time in the hill-climb at Brooklands on Saturday.

The final event was the Blindfold Driving Competition, in which competitors had to start from the side of the track (blindfolded), turn round and get as near as they could to a mark in the centre of the track some 30 yards from where they started. An observer went with each competitor armed with a bell, which was rung when the competitor was approaching danger, and was the signal to stop. One lady competitor, although given plenty of warning, did not stop, and drove into the paddock railings, luckily doing but little damage to them or the car. The incident was chiefly noticeable for the fact that, although the railings were "bashed in," and the lamp bracket bent back, the C.A.V. headlight had no more damage than a little of the plating removed. Even the glass was not cracked, and the shape of the lamp was as good after its encounter as before—an extraordinary testimonial to the strength of the lamp in question. None of the competitors shaped very well, the nearest, Mr. Cecil Whitehead, on a G.N. cyclecar, being 23 ft. away. Mr. Warwick Wright, on his Sheffield-Simplex, was within a foot of the winner's mark, and Mr. L. W. Cox, on his Crossley, got within 30 ft. This was the end of the afternoon's sport, though a large number of people stayed to witness some good flying, including an attempt on the height record, by Mr. T. Sopwith.



A big Napier car runs into the fence in the Blindfold race at Brooklands.

A very important step has been taken by the St. Albans Rubber Co. in the insuring of every Grimston tyre sold for 4000 miles against all possible damage, due to accident, ill usage, failure of materials, or faulty workmanship. Formerly Grimston tyres were guaranteed against everything for 3000 miles, so that in addition to safeguarding purchasers of the tyre for another 1000 miles the present scheme, it should be noted, is not merely a guarantee but an absolute and definite insurance. A few conditions have, of course, to be complied with, but these are very simple, and a specimen policy is sent to all inquirers. Such a progressive step has not been made without very careful consideration, and it is evidence of the absolute confidence the makers have in their tyres.

So Mr. Rees Jeffreys is to have an assistant secretary at the Road Board; we observe that £500 a year is offered. Evidently the work is going ahead, as this intended increase of staff comes soon after one on the engineering side. Some highway experience is a necessary qualification.

A graceful act on the part of Mr. C. Y. Knight, the well-known inventor of the new Daimler engine, was the sending of a congratulatory telegram to the Argyll Co. on their recent success in beating several world's speed records.

A procession of motorcars and cyclecars decorated with Alexandra roses is announced in connection with the celebration of Alexandra Day, 25th June, and for which several prizes will be offered. The route of the procession is not definitely decided on.

MORE ARGYLL WORLD'S RECORDS.

The First Sleeve-valve Engine Successfully to Attack Recent World's Speed Records.

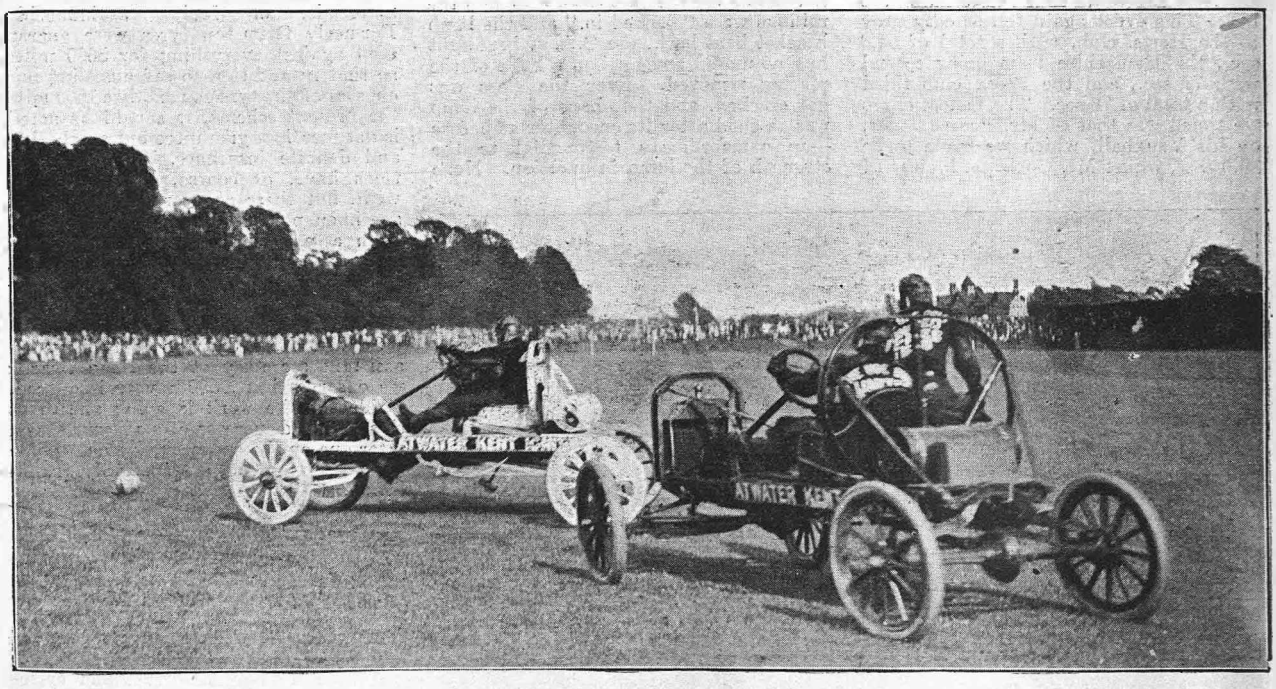
Hardly has one's surprise abated somewhat after contemplating the magnificent achievements of the single-sleeve Argyll standard engine at Brooklands recorded in our last issue, than we have once again to express the greatest possible appreciation of their further magnificent performance, when no fewer than 13 world's records fell to their happy lot at one fell swoop. The proverbially unlucky number, then, thus seems to carry particularly happy portents on this occasion. Naturally enough, the chief reason for our wonderment is found not in the fact that an Argyll car should beat records, but rather in the fact that a sleeve-valve engine should do it, which has (through the simple fact of being a sleeve-valve engine) been generally classed as possessing no abilities for high speed work and track records. It has been admitted to possess a good torque at slow engine speeds, and to be blessed with silent valve motion; but to beat recent world's records for speed—impossible! However, last Tuesday morning, the car in question set out to see if it could improve its previous performances, and, to the great credit of all concerned, and to the greater credit of the engine, it was successful in doing so. Incidents were mainly confined to tyre changes and punctures in the early part of the trip, and, in addition to this, very bad luck was experienced in a plug porcelain cracking, necessitating a change, whilst the petrol pipe and a pressure gauge also broke, not one of which incidents can come under any other heading than that of bad luck. The driving, as before, was between Messrs. W. G. Scott and L. G. Hornsted for the first 1000 miles, and both drove with great regularity throughout. Another incident was what one can almost term a cloud burst, so sudden that one hardly had time to run into shelter, and so heavy a hailstorm that Mr. Hornsted, who was driving at the time, had to ease up considerably.

The actual world's records which fell to the onslaught of the Argyll were as follow :—

	H.	M.	S.	M.P.H.
600 miles ...	7	40	49.63	78.12
700 miles ...	9	6	53.76	76.80
800 miles ...	10	28	14.67	76.40
900 miles ...	11	49	18.61	76.13
1000 miles ...	13	5	45.68	76.36

	MLS.	YDS.	M.P.H.
7 hours ...	544	1171	77.81
8 hours ...	622	523	77.79
9 hours ...	690	1234	76.74
10 hours ...	766	1504	76.69
11 hours ...	837	598	76.12
12 hours ...	914	604	76.20
13 hours ...	992	483	76.33
14 hours ...	1070	57	76.43

It is seen, then, that, with all the tyre changes, the adjustments, and a few mechanical troubles due to bad luck, an average speed of 76.36 miles an hour was maintained for 1000 miles, which is some few minutes better than the record previously standing. Among the incidents of the run, it is to the credit of the Dunlop tyres used that, when they had done their allotted period, they were only taken off to be allowed to cool, and were then put on for another period. In three of the cylinders the same plugs were in use as were utilized for the actual bench test of the engine before it found its way into the car. Apart from the time when rain fell, the heat was intense, and the drivers wore smoked glasses so as to lessen the glare from the track. Mr. J. H. Toop stood ready all the day as a spare driver, and after the 1000 miles had been accomplished, he took the car and drove on to the finish. The condition of the chassis after the finish of so exacting a run was really splendid. Such a magnificent achievement must undoubtedly constitute a conspicuous point in the history of the sleeve-valve movement, and the Argyll sleeve-valve engine has, by its magnificent achievements, established itself on a pinnacle of fame. Illustrations appear on page 844.



MOTOR POLO.

Motor polo was played at Ranelagh on Saturday afternoon, this being the first time that this exciting sport has ever been played in England. During the game the cars travelled at fast speeds, and each car had two men, one the driver and the other the striker or "mallet man." The illustration shows an exciting race after the ball, with the cars travelling at great speed. Report on page 835.

GRAND PRIX GOSSIP.

Some Details of Preparations for the Great Races of 12th and 13th July—The Grand-stands—A Perfect Natural Autodrome—Accommodation Scarce.

(BY OUR SPECIAL CORRESPONDENT.)

UNDER the control of M. André Sautin, general manager for the French Grand Prix, the preliminary work in connection with the three big races at Amiens next July is being rapidly brought to a conclusion. M. Sautin has had plenty of experience in this class of work. For a number of years he was general secretary to the Sporting Commission of the A.C.F., and last year had full control of the arrangements in connection with the Grand Prix and three-litre race at Dieppe. This year it is intended that the big car, motorcycle and cyclecar races at Amiens shall be of a more spectacular and attractive nature than any of their predecessors; consequently, the task of the general manager is rendered more arduous. Work has been carried on very energetically during the past three or four months, with the result that the roads are now in first-rate condition. On the two triangular courses, the smaller one for cyclecars being within the bigger one, trees have been chopped down, grassy banks have been levelled, corners have been improved, and humps have been smoothed away.

Building the Cross Roads.

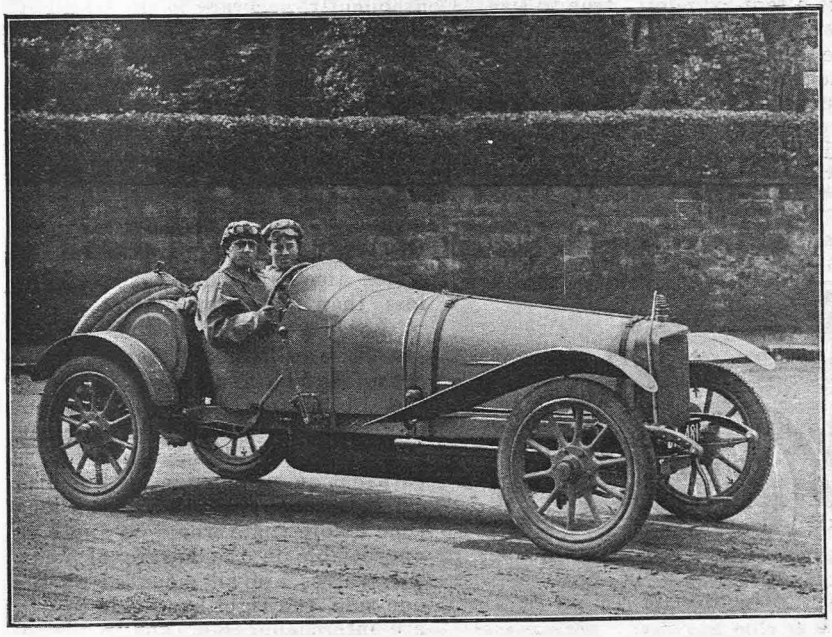
The most important work has been the building of the cross road immediately in front of the grand-stands and between these stands and the tyre pits. The two main roads being parallel and about 200 yds. apart, it was necessary to connect them by a special track having the grand-stands, offices, etc., on the outside and the tyre pits on the inside. This task was rendered the more difficult by reason of one of the roads being several feet higher than the other and the necessity of making the bends sufficiently easy for cars to take them at speed. As the surface of the road is now being cemented, the pits are finished, and the tunnel under the cross road has been dug and properly bricked up, it is possible to gain a good idea of what this part of the course will look like on the day of the race.

Perfect Natural Autodrome.

It would be difficult to imagine a better natural autodrome. Standing on the framework, which will later be transformed into spacious and luxurious grand-stands, the spectator has on his right a fine stretch of high road coming from the direction of Boves. There are no hedges at this point and very few trees, thus making it possible for the spectators to watch the cars approach the bend without any straining of the neck. The drivers will swing round to the right in order to enter the newly-made cross road. If no changes or adjustments have to be made, the cars will rush past the stands, swing to the right in order to enter the second leg, and will remain in view for several seconds on this road. If tyre changes have to be made the cars will pull in on the cross road and carry out their changes immediately in front of the grand-stand spectators. The portion of land on which the stands have been erected is an oblong field, having as its boundaries the cement-surfaced cross road, the two main and parallel high roads, and parallel with the cross road a very high wall having a house and garden beyond it. Only three or four miles away in the rear is the town of Amiens, its cathedral being clearly visible from the stands.

Accommodation Scarce.

As the course passes under the main railway line at two points and presents very sharp curves, it has been decided to cement the road surface at these spots, thus effectively preventing the surface being torn away. All the main portions of the course will be treated with calcium chloride, as was done at Dieppe last year. This is a most effective dust preventer, and has the advantage of not injuring the eyes of drivers. Amiens has made preparations for an unusually big crowd. The city, being on the main railway line from Paris to Calais, can be reached by express train from Paris in about 90 minutes, and as the race is run on the eve of the French national fête, thousands will be able to get away who would otherwise be detained. As Amiens is not a holiday town, the accommodation, while being good, is of rather an inelastic nature. There is not much accommodation on the course. Boves is a small village with only a couple of inns; Domart is not much better provided, and Moreuil, on the south-eastern end of the triangle, has only one hotel of any importance.



L. Coatalen (at the wheel) and D. Resta on the Grand Prix racer.

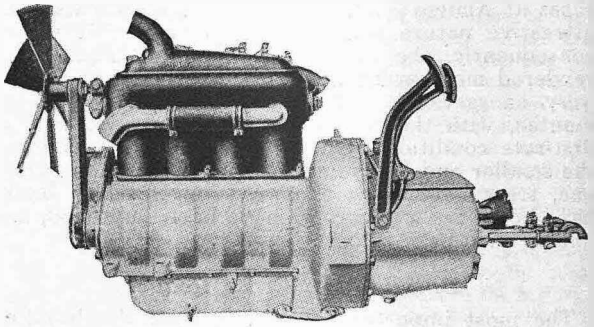
A SPEEDY AMERICAN CAR.

Some Constructional Details of the New Model K.R.I.T.

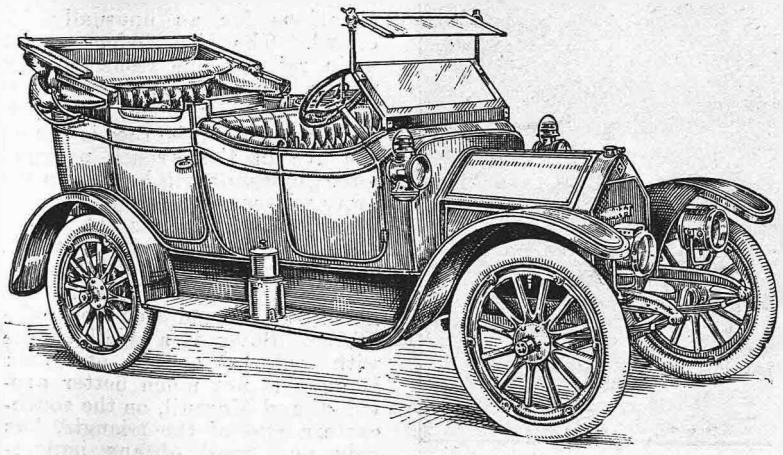
IN this country, for many years, the work of equipping the bare car when once it had been purchased was always left to the taste and whim, and, unfortunately, on occasion, the lack of taste, of the purchaser. On the other hand, we have lately developed the idea of selling the car completely equipped as a standard production, having followed in this respect in the wake of the example set by our American cousins. Arguments can be advanced on both sides. To some people it is undoubtedly a work of pleasure and interest to select the lamps, horn, windscreen and such-like appurtenances. To the more busy man, or to him to whom such work would not fall as a pleasure, it is preferable to pay the cheque and take the car away well equipped with everything which he is likely to want.

A good American car which is completely equipped and ready for the road when bought is the K.R.I.T., and for some time past it has been this company's consistent aim to give the purchaser a completely-equipped car of roomy proportions and of a speedy turn of mind, at a price which must certainly be put down as distinctly moderate. By production in large quantities the company are able to incorporate high-grade material and good workmanship in the manufacture of their cars, and the motor is certainly a very efficient one and provides a serviceable means of getting round the country. Recently we made a test of one of the five-seater models, known as the K type, which is a side-entrance touring car of ample proportions, of such a size, in fact, as comfortably to seat all the occupants.

The motor itself, in conjunction with the gearbox, makes a particularly neat power unit, and is compact in arrangement. The flywheel and clutch mechanism are totally enclosed in a large circular expansion of the crankcase, and to the face of this crankcase extension is bolted the gearbox proper, whilst the brake pedal and clutch pedal are likewise mounted directly on the unit. Of course, the engine is a four-cylinder one, water-cooled in the ordinary way, the actual cooling being effected through the medium of a thermo-syphonic circulation. In the newer models the radiator has been fitted with a larger filling cap, and the lines have been slightly altered, which rather adds to the general appearance and dignity (if one may so express it) of the car. Another quite minor improvement, which, however, shows the care given to detail work, is in reference to the fan at the rear of the radiator, which has been made a little lighter, and also arranged so as to be somewhat more efficient. The bore and stroke are, respectively, 3½ in. and 4 in., and the component parts of the engine follow standard high-grade practice—speaking in general terms. The crankshaft itself is mounted on two very large ball bearings, which, of course, argues for the line of least resistance so far as friction efficiency is concerned, and although we made a point of listening for any additional engine sound emanating from the bonnet through the presence of these ball bearings, no such "whirr" was noticed. The crankshaft is short and stiff, and generous in section, so that anything in the nature of whip is guarded against. The cylinders being cast en bloc enables the designer to keep down the overall length of the engine, and to bring the crankshaft within the shortest space possible, thus rendering practicable the two-bearing crankshaft. The camshaft is made from the solid, a special alloy steel being used, and both the cam facings and the bearings are hardened and ground true to size. Consequently, accuracy in the timing of the valve mechanism is assured with the minimum of work by the testing department, which naturally makes for enonomic production. The crankshaft itself is supported in the upper portion of the crankcase, the lower part being easily taken down so as to enable one thoroughly to examine the connecting rod bearings, and if necessary to adjust them. With regard to the adjustment of the crankshaft bearings, these being of the ball variety in which the balls themselves are no less than 15-16 in. diameter, one might do a good deal of inspecting, but little adjustment, for two reasons. In the first place, of course, the bearings themselves are not ordinarily amenable to adjustment, and in the second place their size is so great in proportion to the load carried that it should be a very long time before there would be anything appreciable in the nature of wear. The valves are all mounted on the one side, the right-hand side to wit, are interchangeable, and made of nickel steel, with electrically-welded



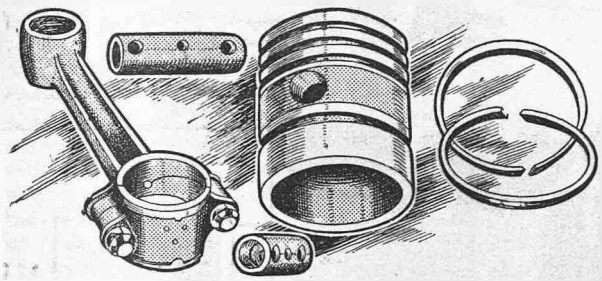
The power unit is neat, clean, and compact.



A smart English-made landaulet on a K.R.I.T. chassis.

A SPEEDY AMERICAN CAR.—Contd.

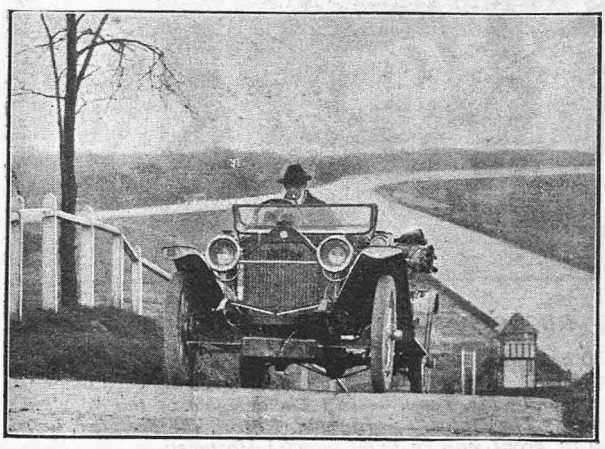
stems and case-hardened tappet ends. There is one little feature in connection with the valve construction which is worthy of notice, as it is an item which does not so frequently receive attention as it should do, and that is, that the heads of the valves are carefully machined to a uniform thickness, instead of being rough on the top, as is not infrequently the case. The object of this, of course, is



The piston, connecting rod and kindred parts of the K.R.I.T. engine.

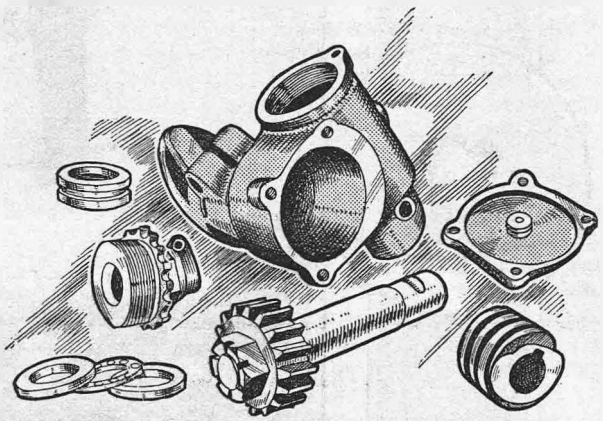
to ensure that the valves retain their correct shape, and thus ensure proper seating on the valve face, as anything in the nature of unequal thickness of metal carries with it, as a natural corollary, unequal expansion and contraction, which in turn, of course, means lack of truth in the valve seating. The illustration which we give of the piston rings and connecting rod, etc., shows the construction of these parts in a pretty clear manner. A special quality high-grade iron is used for the pistons, and these are annealed and finally ground true to size. No fewer than four piston rings are used, three of these being above the gudgeon pin, and the other one below it, the design being arranged so as to prevent excessive smoking even should one surcharge the crankcase with oil. Here, again, the question of differential expansion is considered, owing to the varying mass of the metal at the head of the piston and at the base, and to guard against this the final grinding true is arranged so as to allow the least little bit more clearance at the head where the larger mass of metal lies. The connecting rods themselves are drop forgings, and, as shown in the illustration, hollow gudgeon pins are used.

It is seen from the foregoing details that considerable attention has been given to the consideration of accurate and serviceable design in the production of this motor, and in actual road usage we find it to answer very well. In fact, one of its conspicuous features was its speedy nature, and it provides an excellent means for quickly getting from one place to another. Again, with regard to the question of hill-climbing, it does most ordinary hills on the top gear, and when it is requisite to change down the change-speed mechanism is quite easy of manipulation. The gate mechanism is brought down in simplicity to what must be something like the irreducible minimum in fewness of parts and of the three speeds provided (with, of course, a reserve gear) a selection can be made and effected in a very easy manner. The mounting of the change-speed lever and the brake lever is very simply carried out, and one quickly accustoms oneself to accuracy in using it. The gears themselves are forged from chrome nickel steel, and special care is taken to render them quiet in operation, a fact which was noticeable on the indirect gears in the case of the car which we tested.



The K.R.I.T. car taking the test hill at Brooklands.

The final drive is by means of a tail shaft with a well lubricated universal joint, and it is of the all-enclosed type, whilst the plugs for replenishing with lubrication are easily get-at-able. The frame work



The steering box is a substantial and well-designed unit.

itself is well stayed and of substantial design. Another item calling for comment is the springing, full elliptical type being employed at the rear, the ordinary type used in front. The usual two sets of brakes are provided, both operative on drums mounted on the rear wheels, so that the transmission gear and universal joint, etc., are relieved of the greater portion of the braking stresses. In action we found them to be abundantly powerful, and either the one set or the other was ample to hold the car on any hill which we encountered. Of course one does not expect a £1000 car for a couple of hundred guineas, and in justice to cars such as these and at such a reasonable price one must judge them on the basis of the price in conjunction with the quality. On these considerations the new K.R.I.T. can certainly stand the fullest scrutiny—and stand it very well, too. It is a large, comfortable car of good appearance, with a better body than many of this type, whilst as regards the chassis itself there are many points which are distinctly favourable. With regard to the running of the car, it is smooth, easily controlled and possessed of quite a good turn of speed. On top gear one can come down to a fast walk of, say, about five miles an hour, and she will then quickly accelerate, if desired, to a speed approaching the addition of a nought to the five previously mentioned; not only is this so, but the acceleration is steady and quick. Altogether our study of the K.R.I.T. car leads us to form the opinion that not only is there value in the production for the money paid, but that it is likewise a substantially-constructed car, and one likely to give good service.

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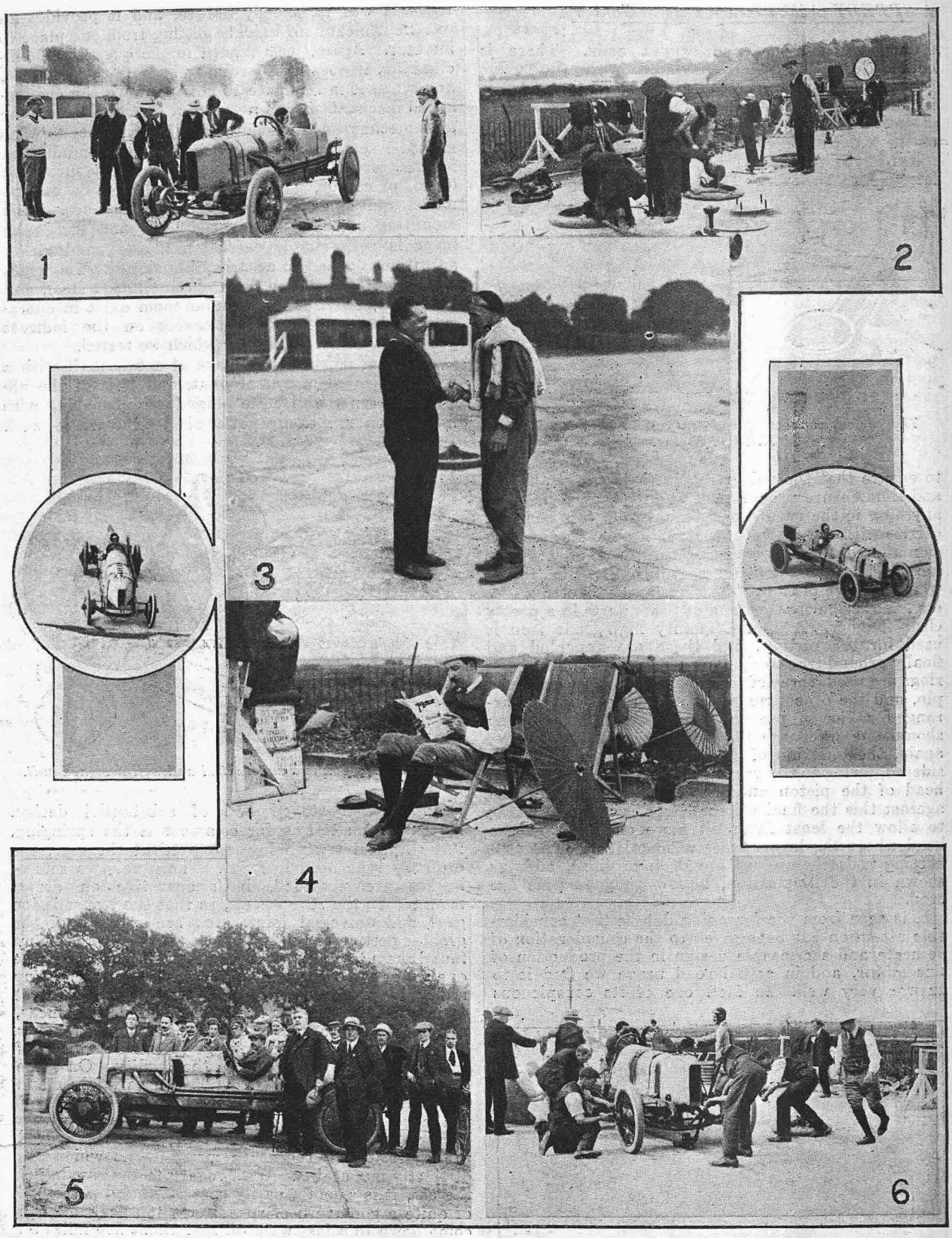

MORE ARGYLL RECORDS.

Incidents of the further onslaught on records by the 15-30 h.p. sleeve-valve Argyll on Tuesday last. (1) All clear: Scott starting after a refill. (2) The Dunlop tyre group. (3) Hornsted and Scott greeting each other after completing the 1000 miles. The car is still going on driven by Mr. Toop. (4) The designer of the Argyll engine, Mr. Perrot, reading the report of the previous run in "The Motor." (5) Mr. Perrot, the designer, in the driving seat, and Mr. P. Burt, the inventor, standing in front, cap in hand. (6) Hornsted in driver's seat, Scott coming towards him, hands outstretched; Perrot running on right; the inventor, Mr. Burt, on extreme left. Insets: The car at full speed. *Report appears on page 840.*

THE DAYLIGHT SAVING BILL.

The object of this Bill, as most of your readers no doubt are aware, is to secure during the summer months one additional hour of daylight for recreation after the ordinary work of the day is over, by the simple process of advancing standard time one hour on the third Sunday in April and reverting to the present standard time on the third Sunday in September, or, in other words, for about six months in the year keeping clocks and watches one hour in advance of Greenwich mean time.

The effect of the proposed change would be that everything would be done at the same hour by the clock as at present, there would be no change in railway time tables, work would commence and finish, meals would be taken, social functions would be held at the clock hours we are accustomed to; but when the ordinary work of the day was over we should find an additional hour of daylight awaiting us—a boon of inestimable worth to all who value health and eyesight.

To no class in the community does this Bill appeal more strongly than to motorists, and especially to those who, for one reason or another, ride, or would like to ride, after they have quitted shops, offices, warehouses, factories or other places where the atmosphere becomes more and more unhealthy as the day goes on. To these, the possibility of exhilarating exercise for an extra hour in daylight in the cool of the evening through country lanes or over breezy uplands would lead to a ride being taken more frequently, with a resultant gain in health, energy and happiness, and a recuperation of the exhausted forces of their physical and mental equipment for the next day's work.

Sir Thomas Barlow, Sir Robert Ball, and, with few exceptions, the other eminent medical and scientific men who gave evidence before the House of Commons Select Committee, have spoken at public meetings, and have written to me on the subject, are agreed that the Bill, when in operation, will improve the health of practically all classes of the community and save the eyesight of workers by artificial light.

Sir Thomas Barlow, K.C.V.O., physician to his late Majesty King Edward VII, and president of the Royal College of Physicians, London, said:—

"The medical case for this Bill is that it is an attempt to make it possible for town working-people to approximate to a more natural mode of living. In a temperate climate like our own, the natural mode of living is to be out in the open air and sunshine for as long as possible in the day and to reserve the dark hours for sleep. That mode of division of time is the one which, in general, obtains in the country with those engaged in agricultural pursuits; but in towns there is a continual shrinkage of the open-air life and of available sunshine, both from the crowded dwellings in which the working people live, and from the long hours in workshops and offices, which are apt to be dusty and supplied, in great measure, only with artificial light. Of late years, we have come to look upon sunshine and open-air facilities as the most important means of neutralizing the ill-effects of indoor exhausting occupations. A great many of these occupations are extremely damaging, and, as I say, we look upon accessibility of open-air facilities and sunshine as the most important means of neutralizing those ill-effects. If the principle of this Bill were accepted, it would lessen the amount of employment of artificial light in many workshops and offices, and thereby would do a great deal towards safeguarding the eyesight of the workers. The medical case for this Bill is a strong one. An extra hour of daylight for all purposes instead of artificial light would, from the point of view of eyesight and therefore of health (because eyesight affects the health), be a great national asset."

The Rt. Hon. Winston Churchill, in one of his speeches, said he believed that one effect of the passing of this Bill would be prolonged life to millions of people.

The truth of all this, fully confirmed as it is by Sir Arthur Conan Doyle, Professor Rambaut, Sir William Ramsay and other well-known men, must be admitted by all engaged in the motor industry, whether they be employers or employees. To each and all of these the Bill offers advantages free of cost and with few (if any) corresponding drawbacks. The extra hour of daylight recreation will increase the number of motorists, motorcyclists and wheelmen, bring more cars into existence, give a new stimulus to trade, with consequent enhanced profits for the manufacturer and wages for the artizan.

The Bill was reintroduced into the House of Commons by Mr. Robert Pearce, M.P., last month, and was greeted with cheers from all parts of the House. It is supported by about 290 Members of Parliament and by leading men in all political parties. It will, therefore, pass as soon as the Government is satisfied that there is a sufficiently strong popular demand for it. Will you and your readers, all motorists and cyclists, and all engaged in the motor industry in all parts of the United Kingdom, urge all Members of Parliament to vote for the second and third readings of the Bill, and to secure its passing without any further delay. It is no use leaving the advocacy of this Bill to me alone.

WM. WILLETT.

General view of Rhubina Hill, where the Cardiff motor club recently held a hill-climb.

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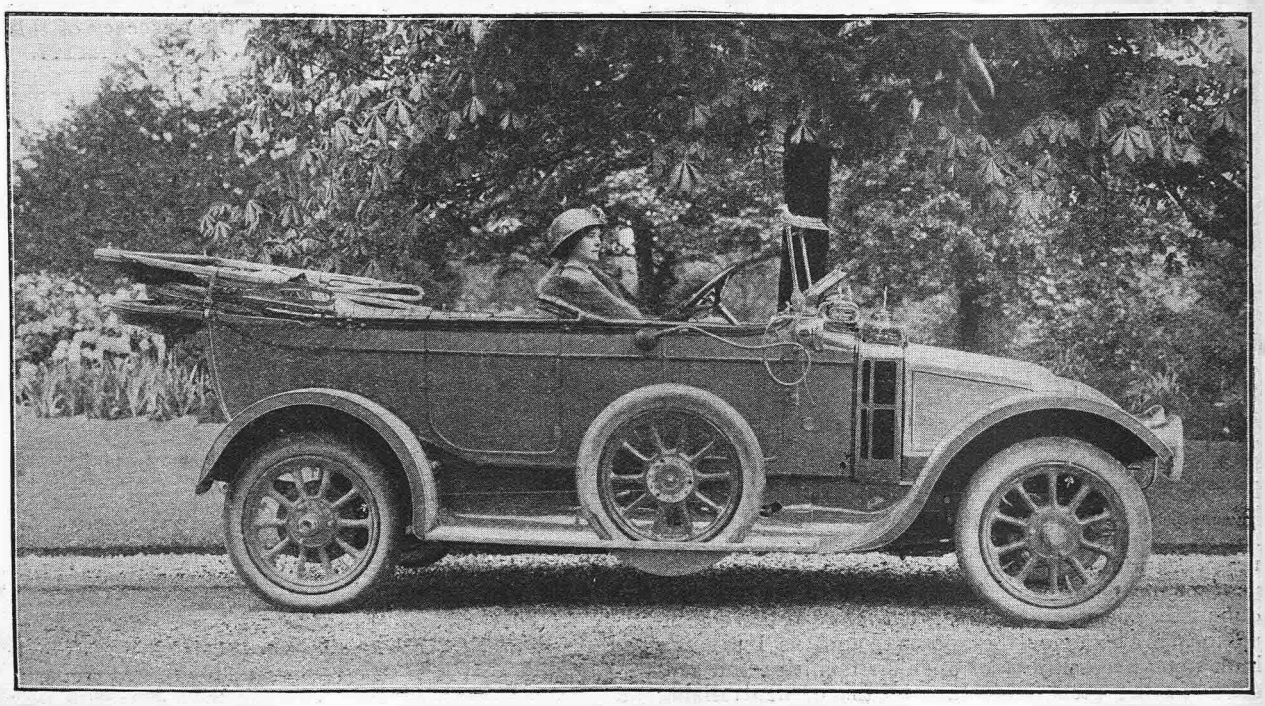
THE NEXT PARIS SHOW.

October Shows that Stand in the Way of the Paris Motor Salon—Only a Question of the Grand Palais—Important Move in the Direction of Building a New Exhibition Hall.

NEGOTIATIONS are still being carried out with a view to obtaining the use of the Grand Palais for the Paris motor show next October. The decision rests with the various government departments, for the Grand Palais is national property, and the most important problem is how to satisfy the promoters of the motor show on the one hand and the artists responsible for the autumnal salon on the other hand. The use of the hall has already been granted for the Concours Lepine, during part of August and September; this is a small exhibition with very little trade interest, which cannot fill more than a tenth of the huge hall, but which is nevertheless a real competitor to the motor show. The exhibition of paintings is also a small affair of no commercial importance, but as the artists have had the use of the hall at this period for a number of years, their claims cannot be ignored. Meanwhile the joint committee responsible for the Paris motor show is in a rather embarrassing position. It is most important from their standpoint that this year's show should be held in October, thus reducing the slack period which exists in all the factories at the close of the summer trade by at least two months, and helping to distribute the active production season over a greater period. Until they get the reply from the government regarding the date on which the palace will be available it is impossible to make any announcement. If an October show is to be held the committee would like to know of it at once, otherwise it will become a difficult matter for the various manufacturers to prepare their models for the earlier date.

The suspense in which the Paris motor show committee is being held regarding the use of the hall for the next exhibition has drawn attention to the fact that the Grand Palais is not an ideal building. Certainly it would not be possible to find a more architecturally beautiful hall—one with such luxurious surroundings, or so easy of access. But these qualities no longer satisfy the show authorities. There are a lot of defects which are probably unknown to the average visitor. In the first place the Grand Palais is used for too great a variety of purposes. From a cattle show and a horse jumping competition to an art salon and an elegant motor exhibition there is such a wide difference that extensive alterations have to be made. The glass roof is leaky, the floor is formed of loose earth, there is no proper heating apparatus, gas mains are not laid in the building, there is not a permanent dining hall and kitchen, and electric current has to be taken from private companies, and costs £100 an hour, whereas it could be made cheaper on the spot. There is a feeling that a special building should be erected in the neighbourhood of Port Maillot for the motor trade. The site is an admirable one, being close to the fashionable centre of the city, with ample means of communication with the business centre, having the Bois de Boulogne as a background, and three-quarters of the French factories only a mile away. The fact that the fortifications are shortly to be abolished only makes this project the more attractive. A hall on this site would doubtless be erected by the government bearing specially in view the requirements of the motor trade, and giving the motor shows preference over all other exhibitions. The scheme has not yet been officially discussed, but the matter has been so thoroughly developed by the interested parties that detailed plans have been drawn up and such arrangements made that if government support were assured building operations could commence in a few weeks.



One of the latest 1913 15·9 h.p. Arrol-Johnston cars.

WHERE BENZOLE MAY BE OBTAINED.

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

The Question of Quality.

FOR several weeks past we have dealt with the question of the price of benzole, and while the matter is still receiving careful attention it is necessary to come now to the question of quality. In some few cases benzole is being sold of a quality that is unsuitable for motorcar purposes. We are quite prepared to believe that in such cases the spirit is sold in ignorance of its unsuitability, but it is necessary for us now to take some steps to ensure something in the nature of a line of demarcation between suitable and unsuitable spirit. We are therefore making arrangements to carry out some exhaustive tests to find the limit, or approximate limit, permissible in the lack of refinement in benzole, and also exhaustive tests to decide something in the nature of a specification for it as regards sulphur content. We hope either next week or the week afterwards to make an important announcement with reference to certain temporary arrangements which we are making to ensure that only suitable spirit is sold by those people whose names will appear in THE MOTOR list of benzole suppliers.

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.
Ashbourne.—A. R. Atkey and Co., Ltd., Compton Street.
Banbury.—Ewins and Son, Marlboro' Place and Calthorpe Street.
Barnsley.—Mitchell Main Colliery Co.
Bath.—Fuller's Garage, 18 and 19, Kingsmead Street.
Belfast.—Munster, Simms and Co., Ltd., Albert Square (trade only); Harry Fergusson, Ltd., May Street.
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; E. H. Penzer and Co., 415 and 370, Stratford Road.
Birkenhead.—The Birkenhead Motor Works, Duke Street; The Mersey Motor Co., Ltd., 30-32, Conway Street; R. E. Wright and Co., The Cheshire Motor Works, 14, Balls Road.
Bocking, Essex.—Oliver E. Durham, Hardware Stores, Bocking.
Bradford.—Eric S. Myers, 52 and 62, Manningham Lane; The Jowett Motor Manufacturing Co., Grosvenor Road, Manningham Lane.
Bridgwater, Somerset.—The Bridgwater Motor Co., Ltd., Eastover.
Bristol.—Wm. Butler and Co. (Bristol), Ltd., St. Philips.
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; The Park Hall Garage, Park Place.
Chelmsford.—J. W. Austin's County Motor Works, Ltd., New London Road.
Cheltenham.—T. V. West, 88, High Street.
Chingford.—Jones Bros., The Green.
Cleckheaton.—Henry Ellison and Co., Cleckheaton; The Old Silkstone Chemical Works.
Colchester.—Adams and Co., 47 and 49, Culver Street.
Crewkerne.—E. A. Miller, Motor and Cycle Works.
Cumberland.—West Cumberland Bye-Product Co., Ltd., Flimby, near Maryport.
Cheshire and N. Wales.—C. R. Alexander, 132, Ashley Road, Hale, Altrincham; Allison H. Meldrum, Gronant Road, Prestatyn, N. Wales.
Darlington.—Cleveland Car Co., Ltd., Darlington.
Derby.—A. R. Atkey and Co., Ltd., Becket Street (off Wardwick).
Devonport.—The Midland Garage, Granby Street.
Doncaster.—Albert Murray, Ltd., Printing Office Street.
Dorchester.—E. Channon and Sons.
Dumbarton.—E. Watkinson, Eastfield Garage.
Dunchurch.—Sam Robbins, Ltd.
Dunstable.—Scott and Sons, High Street South.
Egham.—The Egham Motor Co., 1, 2 and 157, High Street.
Fareham, Hants.—Quayside Engineering Co. (locally only).
Gateshead-on-Tyne.—Judge, Brand and Co., Ltd.; Stanley Steam Car Co., Ltd., Motor Engineers; C. H. Mason and Co., 67, West Street.
Glasgow.—William Baird and Co., Ltd.; Richard Smith's Executors, West Street; Brotherton and Co., Provan Chemical Works; The Gas Lighting Improvement Co., 370, Pinkston Road, Port Dundas; Clarkson and Beckitt, Lochburn Road, Maryhill; Gibbon and Son, Parliamentary Road, Glasgow. (From bulk.)
Huddersfield.—Alfred Mellor and Sons, Mold Green Engineering Works, Carr Pit Road, Mold Green.
Hull.—Blenkin and Son, 76, Queen Street; Major and Co., Ltd., Sculcoates.
Inverness and Nairn.—Macrae and Dick.
Ipswich.—D. C. Goldsmith, 67, St. Matthew's Street.
Kingston-on-Thames and Surbiton.—The Lankester Engineering Co., 39, Eden Street, Kingston; The Kingston Motor Works, 27A and 29, High Street; H. Horsman, Acre Road.
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; A. R. Mirande and Co., West Park Parade, Far Headingley.
Leicester.—Green and Co., Evesham Road; A. W. Brook, 38 Charles Street (wholesale); W. H. Cuffin, Grosvenor Motor Works, Gwendolen Road, North Evington.
Lichfield.—Jones and Co., Bird Street and Bore Street.
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; W. Watson and Co., Renshaw Street.

WHERE BENZOLE, Etc.—Contd.

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., also Harts Lane, Barking, 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, Streathan 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 Mitchelmore, 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); The Benzole Motor Spirit Co., 112, Leadenhall Street, E.C.; Trickett and Co., 130, Norwood Road, West Norwood; Oylers, Ltd., 35, New Cavendish Street, W.

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

Maldon.—L. S. Hicks, 67A, High Street.

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, 33, Blackfriars Street; and Wolseley 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; George Baker, 13, Hyde Road, West Gorton; Manchester Autocars, Ltd., 97, Whitworth Street; France's Motor Co., 2, 4, 6, 8 and 10, St. Mary's Street, Deansgate.

Middlesbrough.—Bolckow, Vaughan and Co., Ltd.; Sadler and Co.; Cargo Fleet Iron Co., Ltd., Middlesbrough; Nesham's Central Garage, Grange Road, E.; Coal Distillation Co., Middlesbrough.

Morpeth.—Woods Motor Garage, Bridge Street.

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.

Nottingham.—A. R. Atkey and Co., Ltd., Trent Street.

Oldham.—Harry Wilde and Co., County End Motor Spirit Stores, Lees.

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

Reading.—P. Smallbone and Co., 499, Oxford Road.

Rugby.—Sam Robbins, Ltd., Bilton Road.

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

Southend-on-Sea.—J. W. Austin's County Motor Works, Ltd., Clarence Road.

Staffordshire.—Birchenwood Colliery Co., Ltd., Kidsgrove, near Stoke-on-Trent (not retail); Major and Co., Ltd., Wolverhampton.

Sunderland.—Brotherton and Co.

Slough.—B. A. Harris, 163, High Street.

Stanningley.—Armitage Motor Car Co., Bradford Road.

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.

Uttoxeter.—A. R. Atkey and Co., Ltd., Carter Street.

Wallington, Surrey.—Premsell and Co., Wallington Motor and Cycle Works, Stafford Road.

Watford.—The new Ellis Motor and Cycle Co., Ltd., 122a, High Street.

Weymouth.—E. Channon and Sons.

Whitby.—A. H. Walker, The Whitby Garage.

Willenhall.—J. H. Wedge and Co., New Road.

York.—Gibbs and Co., Fawcett Street, Fishergate.

Del Monte Progress.

A gratifying letter is just to hand from the proprietors of the del Monte process, in which they enumerate their progress, which is certainly satisfactory. In the course of their letter they state that they have already signed an agreement in relation to the Spanish rights. Two large companies are concerned, and the minimum royalties to be paid are—well, a good deal more than enough to pay the dividends—in fact, with 100 per cent. to spare! Important negotiations are also in hand with Belgium, France, Russia, Germany, and Canada, and in the case of the two last mentioned the Governments are taking a keen interest. As they do not even hope to have the full-size plant erected here finally to prove their claims for some months to come, the progress made is very encouraging.

"Wanted, a Joseph Lyons to organize Restarants in Country Towns," is the subject of an interesting article in "The Cyclecar" this week, expressing opinions and suggesting a co-operating scheme which we think will interest many readers of THE MOTOR.

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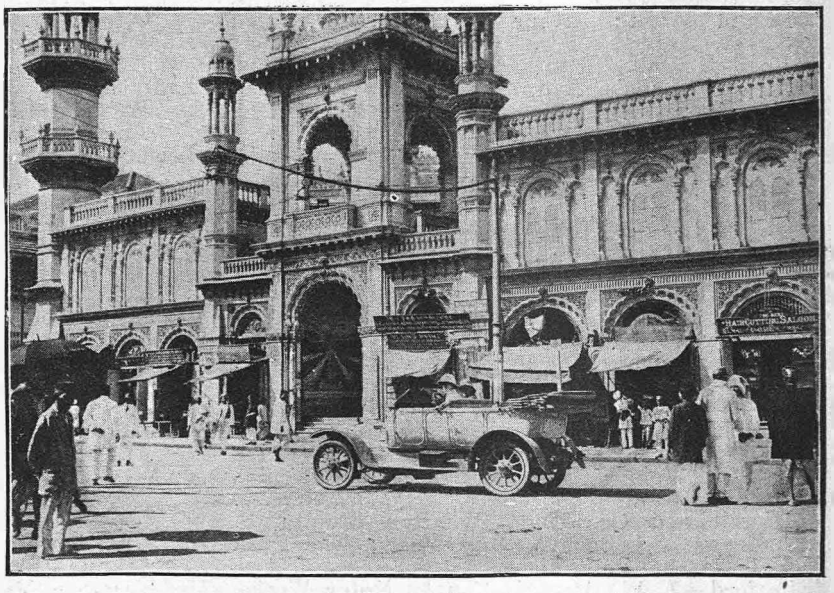
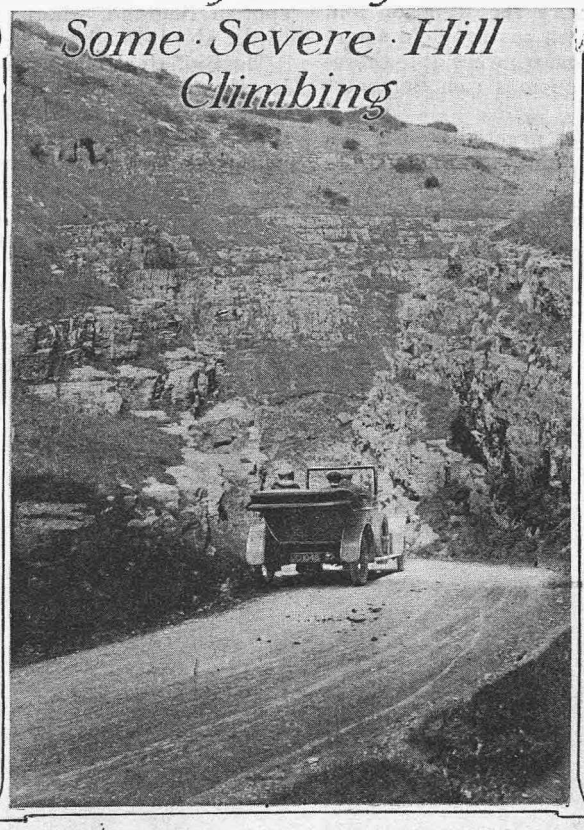


A 12 h.p. Talbot car passing through one of the principal streets of Bombay. The picture shows the remarkably fine architecture of oriental bazaars.

WHITSUN WANDERINGS

Holiday Trips in the Mendips with a Siddeley-Deasy Car



Ascending the Gorge, Cheddar.

WE anxiously watched the barometer and weather forecasts for a week before the Whitsun holidays, as we intended visiting Weston-super-Mare and the fascinating Mendip country during that week-end. Although it rained heavily during the early part of the week and our friends prophesied uncertain weather and a partially spoiled holiday, we nevertheless decided to risk it, and it was well we did so, for the Fates proved kind, and with the exception of a rather wet Monday we were favoured with brilliant weather.

The journey was taken in an 18-24 h.p. four-cylinder Siddeley-Deasy (the car of perfect comfort), which, as its makers claim, turned out to be a luxurious carriage of moderate speed. As our itinerary detailed below will show, we gave it a very severe test over all classes of roads under various conditions and up and down many steep gradients. Never once did it give us the slightest trouble, the flexibility of the noiseless engine, the smooth working of the clutch, the reliability of the brakes, and, perhaps above all, the perfect springing making a journey in a Siddeley-Deasy a delight.

We left Evesham Market Place shortly before noon and had an easy run to Tewkesbury, where the magnificent abbey and half-timbered houses made a delightful picture. After passing through the town we obtained a pretty glimpse of the abbey, which I felt constrained to reproduce with my camera. I could not help contrasting the condition of Tewkesbury now with what it was when I ran through it on Easter Monday. The Avon and Severn, which here converge, were still swollen as the result of recent heavy rains, but on the previous occasion there were miles of water round the old town, and in the interim the floods were still more extensive.

The road to Gloucester lies through pretty undulating country, which was looking at its very best, the hedges and trees being clothed in their spring garments and the fields bright with wild flowers. There are one or two dangerous cross-roads on the way to Gloucester, and at the worst of these we were glad to see an A.A. scout stationed. Without stopping in Gloucester, except to have a peep at the grand cathedral, which stands out majestically above the city, and which can be seen for a great distance, we proceeded by way of Southgate Street towards Bristol. I had not before realized what a centre for the timber trade Gloucester is, but the run by the yards on the canal side would convince the most sceptical that this city supplies a very large proportion of the timber used in the South Midlands. Passing through Hardwick and Cambridge, we reached the pretty village of Stone, where I photographed the charmingly-situated church, my only objection being the unsightly telegraph pole which disfigures my picture, as similar obstacles detract from so many beautiful country scenes.

Through Alveston and Filton, we soon reached Bristol, where the heavy traffic and narrow streets thoroughly tested the flexibility of the Siddeley-Deasy engine and the simplicity of its steering. The keen air had given us a rare appetite, and this was amply satisfied by the excellent lunch which was so well served at the Royal Hotel. While the meal was in progress, we were immensely interested in watching from the windows of the dining-room the work being carried on in the busy docks. One large merchant vessel had fouled her anchor, and the services of a diver had to be requisitioned to undo the mischief. This operation was quite a novelty to us, and consequently claimed our attention; nevertheless, it did not in the least prevent our enjoying a capital meal.

Before leaving for Weston-super-Mare, we ran up to Clifton Suspension Bridge, where again the camera was brought into use. The cliffs through which the Avon passes at this spot rise to a great height. One of the photographs gives a delightful peep of the river looking towards Bristol. Having enjoyed the charming scenery to be observed from here, we retraced our steps to Bristol, and crossing over the swing bridge made straight for Weston-super-Mare.

This part of the journey presented few striking features, but the rich pasture-land and the prosperous appearance of the villages denoted that, despite the trying period through which the farmers have passed, agriculture is not yet on the down grade here. As we approached the famous West Country watering-place the magnificent downs, which rise above Worle Village and upon which the noted Worlebury golf links are situated, came prominently into view. Running round the end of the promontory, through Worle and Banwell we passed Weston Station into

WHITSUN WANDERINGS.—Contd.

the town. Before going to our hotel we ran along the front, and were the objects of envy to all who saw us. Traversing the whole length of the esplanade "on top" we did not exceed a speed of three miles an hour, and our progress was absolutely noiseless. Fortunately, the management of the Royal Hotel was able to accommodate our party. We were well provided for, and were pleased with the situation and grounds. Adjoining these is a rich pasture field where the hotel's dairy cattle thrive, and we were able therefore to get daily supplies of delicious rich Somerset cream.

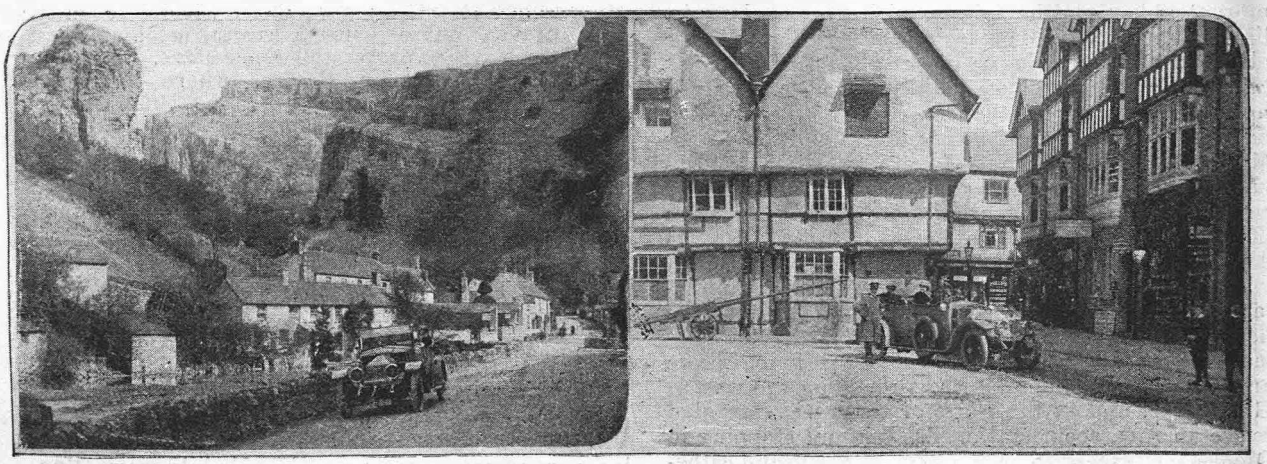
How delighted we were to be greeted by the sun as we rose on Sunday morning, and it was still quite early when we again took our seats in the car, looking forward to a delightful day in the Cheddar Valley. Our road led us again through Banwell to Sidcot, where I renewed my acquaintance with the old-established Quaker's school at which I received my early tuition. Standing on an eminence, it commands an excellent view of the Mendips, and is one of the most healthily situated seats of education in England. A few miles of undulating country, through the cutting of Shoot Shelf, and we were in the quaint old town of Axbridge, the narrow streets of which, with the picturesque fourteenth century houses, attracted our attention. The pretty village of Cheddar at the foot of the cliffs, with gardens bright with flowers, and the rapid stream running by the side of the road, looked its best, bathed, as it was, in brilliant sunshine. The varying colours in the rocks, relieved here and there by the vivid greens of the shrubs and trees, composed a picture which it is impossible to forget. The photograph gives a capital impression, though necessarily incomplete, of the beauty of the scene. But how can I describe the grandeur of the cliffs which towered above us as we proceeded slowly through the gorge itself! Here, indeed, we were face to face with the tremendous forces of nature, and we could not help a feeling of awe in this beauty spot of England, where, except for the songs of the birds, absolute silence reigned.

The Siddeley-Deasy proceeded slowly up the climb, hardly a sound from her engine disturbing the serenity of the surroundings, and when we reached the top we felt that we could not leave the gorge without again seeing its beauties. We retraced our steps, the descent revealing further delightful peeps which we had passed unnoticed on the upward journey. We also explored the famous stalactite caves, which are continually being added to, and which even more than the gorge itself denote the marvels of nature's hand.

The Cheddar Gorge: showing height of the cliffs.

From Cheddar a charming run brought us to Wells, but before visiting the cathedral and other objects of interest in this famous city, we took lunch at the Swan Hotel, a hostelry well known, from the front door of which an excellent view of the historic cathedral is obtainable. This view we greatly admired and much appreciated.

After luncheon we wandered round the grounds of the Bishop's palace and admired the rippling water of the moat as it flowed as clear as crystal over the shining stones and water plants, and visited the cathedral. How magnificent did this



(1) Entering Cheddar village. (2) The Siddeley-Deasy car in Evesham

WHITSUN WANDERINGS—Contd.

fine old Gothic structure look bathed in the sunshine; how the exquisitely carved figures seemed to stand out from their niches, and how insignificant did our powerful car looked compared with this noble edifice! The workings of the wonderful clock were explained to us, although we could not wait to hear it strike and see the performance of the figures: we were much interested in the soldiers on horseback inside and the man with the bell outside.

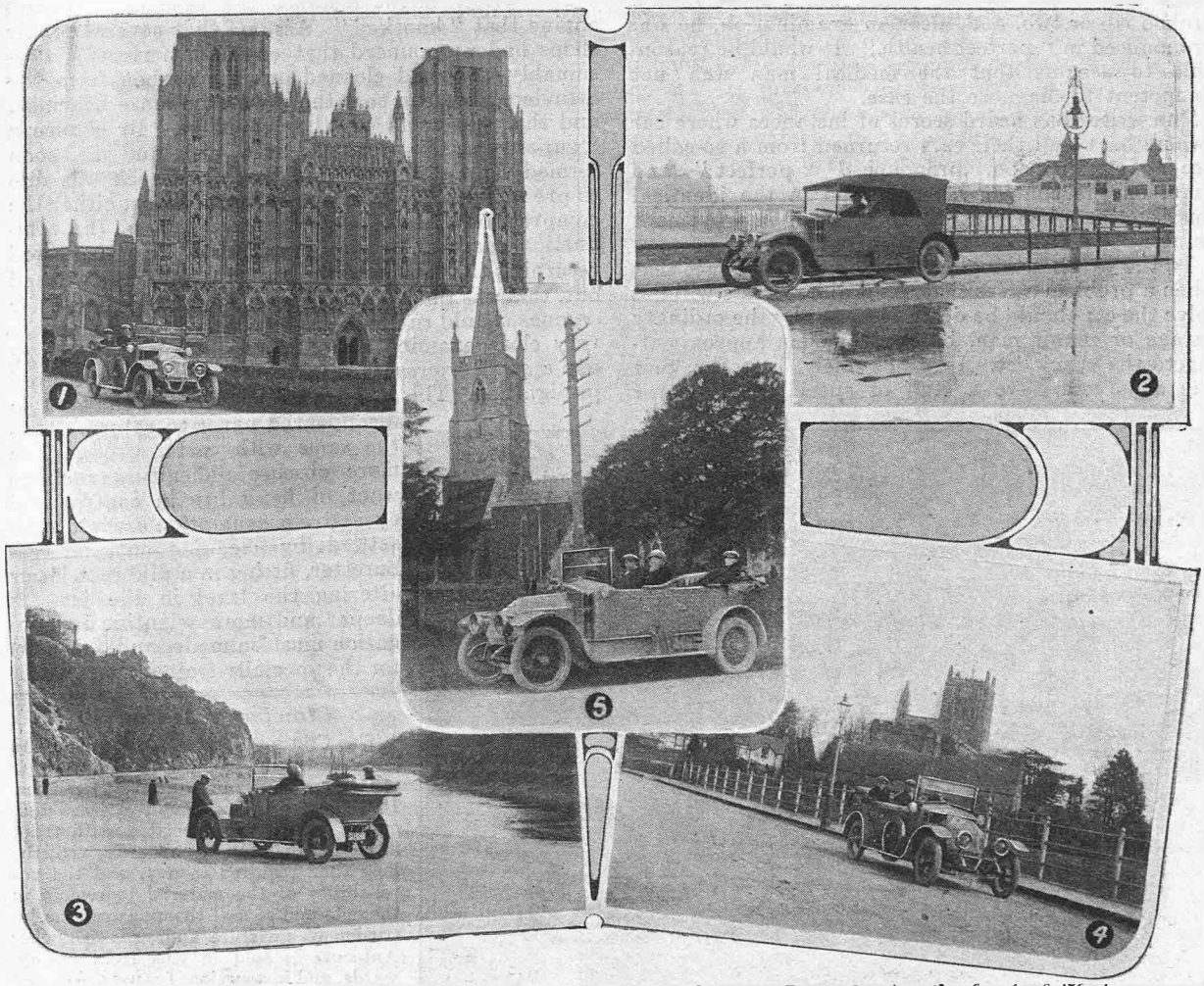
Taking the road through Radstock to Bath, we passed along beautifully wooded lanes where the high banks were brilliant with wild flowers: cowslips, primroses, wood violets, bluebells and white starry blossoms peeped out from amid the fronds of the ferns, whilst overhead the fairy larches, pale oaks and budding elms relieved the heavy green of the firs, and hawthorn trees bursting into bloom gave one an idea of a real English countryside.

As the day was declining, we could not dally at the beautiful city of Bath, except just long enough to have a peep at the Abbey church and the exterior of the Roman Baths, Pump Room, Municipal Buildings and Victoria Park, and call upon friends from the Midlands, who have recently settled in Bath.

We took a circuitous route along by-ways where we were able thoroughly to appreciate the luxurious springing of the Siddeley-Deasy, for the surface was extremely bumpy, and the roads mended in such an amateurish manner that in many cars we should literally have felt our teeth rattle. Here we passed quaint Somerset villages, with creeper-covered cottages and fine old churches, and along winding lanes, arriving at Weston at sunset.

Monday morning dawned with a heavy, overcast sky, no sun, and an early morning drizzle, and as we said good-bye to the sea, cosily ensconced in the car, with an adequate hood protecting us from the rain, we encountered few people, as will be seen from the photograph. So resourceful a driver had we in Mr. Woodbridge that he mapped out an entirely different route for our return, and although we traversed the same road as far as Bristol, we passed over quite new ground afterwards.

From Bristol to Malmesbury we saw many fine family mansions, and a hilly gradient led us through Nailsworth and Stroud to Gloucester. So popular have the hills at Nailsworth become in reliability motor trials, that they are known to all lovers of the car, but as we passed "The Ladder" we cogitated as to the advisability of any motorist attempting to climb so difficult an ascent. Had the clouds lifted we should have revelled in photographing the quaint old streets and the picturesquely situated houses on the hillside and in the valley, but hoping the day would brighten, we reserved our photographic plates until then. Passing near the fine old



(1) The Siddeley-Deasy passing Wells Cathedral. (2) Our Siddeley-Deasy leaving the front of Weston-super-Mare en route for Evesham. How it rained! (3) Cranking up after looking at the view of Clifton, Bristol. (4) Our party passing Tewkesbury Abbey en route for Weston-super-Mare. (5) The pretty church in the village of Stone.

WHITSUN WANDERINGS.—Contd.

cathedral at Gloucester, and noticing the solid stone houses of the city, we arrived at the Bell Hotel, well known to motorists, in Southgate Street, and there partook of an excellent lunch, and, the weather still being far from desirable, we pushed on towards Cheltenham. Here we were able to put down the hood, which had kept us so dry and comfortable, and our car, travelling slowly and noiselessly along the promenade and principal streets of this fashionable spa, attracted considerable attention, and we noticed several envious glances thrown in our direction. Although we had travelled a considerable distance in dirty weather, we showed few traces of the mud through which we had driven. Nearing Evesham, we encountered crowds of rowing people come to witness the annual regatta, and felt sorry for their bedraggled condition, though from the noise they made we gathered they were still in high spirits. Here again we were envied, and we can cordially endorse the claim of the makers after giving it a thorough test that the Siddeley-Deasy is a most luxurious carriage.

M. HARTLEY-SMITH.

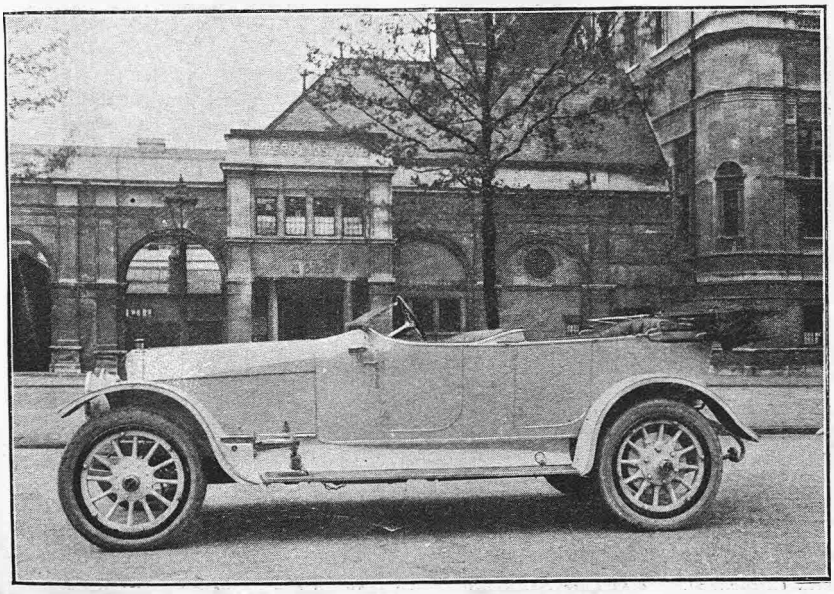
THE SUPER-REPAIR MAN.

A VERY reasonable cause for complaint with some car owners is that when they take their car to the repair shop to have the cause of some abnormal trouble elucidated, they are not infrequently, and much to their surprise, simply told that "Everything has been examined and found to be in perfect order." Well, it seems hardly logical to assume that a car suffering from, say, a bad knock, overheating or excessive petrol consumption should be "in perfect order." The professional attainments of a medical man would be open to question if a person were to go to him with, say, a hacking cough and severe internal pains, which arose from a broken rib or two, and, after an examination, he was pronounced in "perfect health." It would be reasonable to assume that the medical man was not competent to diagnose the case.

The writer has heard scores of instances where car owners have had their cars returned from a so-called expert examination, pronounced "perfect" and have, on the contrary, been found in the identical condition as when sent in, no trace of improvement being apparent.

To the writer's thinking this points to the fact that when a problem arises that the ordinary tests will not solve the car should be dealt with, not by the ordinary garage or repair man, but by someone approximating to the specialist. It is not likely, however, that any shop will have a staff of specialists to cover everything. Large places may keep one man with a special knowledge of carburetters, another for ignition work and one for special engine problems, such as knocks, loss of power, and overheating. The writer, however, suggests that even the smallest place ought to keep what he may term a "super-repair" man, someone of superior and trained intelligence who can reason out the "why and wherefore" of something that does not show itself on the surface. In a difficult case he might only be able to localize the source of the trouble without being able to effect a definite remedy.

The writer might instance the case of a certain engine that "knocked." Assume that several repair shops had pronounced that engine "perfect." Presumably they had cleaned out the carbon from the cylinders and seen that there were no loose bearings, and that was as far as they could go. By chance a "super-repair" man was met with and he soon formed the definite opinion that the knock was due to pre-ignition, and, for one or two reasons, either the compression was too high or some part of the combustion chamber became overheated. He suggested returning the engine to the makers, and, as it turned out, this was the proper course. They knew how their engines should run and, in their testing department, a very close examination of the cylinders revealed in one a small excrescence in the casting, which caused pre-ignition. This was soon removed, and the trouble disappeared never to return. It is the same with carburetters. The more obscure difficulties, such as want of flexibility in control and excessive consumption are not to be settled by cleaning out the carburetter, fitting in a different jet or altering the level in the jet. A deeper and more scientific investigation must be made, and this calls for the specially-trained man. H.

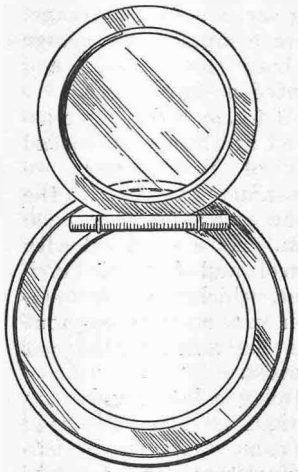


A 40 h.p. six-cylinder Oakland, with body built to the special design of the Overland Motor Co.

THE CONVENIENT OPENING.

IN the dull round of daily business there are many things which arrest the attention of the man in the street, and he is apt to entertain the thought, "I wonder how it's done," and then passes on to matters of more moment which may really be of importance to him. The lady seated in her landaulet, using the opening for communicating with the driver, may give a moment's thought to wondering however it was managed that the opening was cut and the neat metal frame fitted to the window in front.

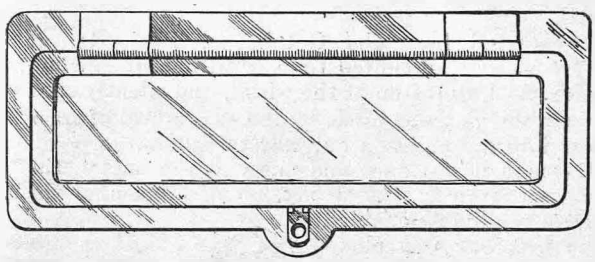
The piercing of a hole through glass has been done since glass was made in what we are sometimes pleased to call "the dark ages." The cutting and fitting of openings of larger size in sheets of glass is of later date.



The circular rigid motor flap.

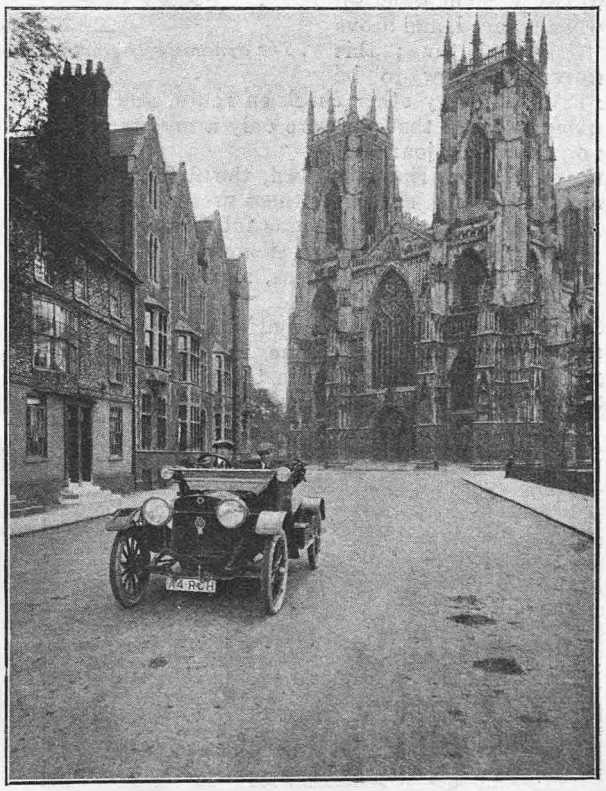
An opportunity was recently given to our representative to see "how it was done," and very interesting the process was found to be. Messrs. John Hall and Sons, a very old-established Bristol firm, have extensive premises and workshops in London, where a large part of the everyday fitting up of their rigid motor flaps is carried on, along with many other interesting processes. Anyone who has tried not to break glass knows how very brittle it is, and how, on the least excuse, it "breaks of itself." This tendency may, however, be made useful when treated with skill and judgment, and the workmen employed by the company have attained great skill in dealing with the piercing of the sheets of heavy plate glass. Preferably, the large sheets which form the front windows of landaulets, etc., are about ¼ in. in thickness; they are apt to get knocked by people's elbows and heads, and thin glass would be dangerous. The selected glass is taken, the place where the flap is to go is marked out, and the workman runs his diamond round and then marks in freehand a number of smaller circles and ovals with what would be, in a sketch, shading and cross hatching; gently tapping the glass in the centre round and round, pieces begin to fall out, and before long the whole of the opening is made; the frame is then cemented in, and the two halves secured together by fine screws, and the business is over. There is always a liability to crack a glass, and great skill and care have to be exercised; the apparently careless cutting and tapping are the result of experience and knowledge of what can be done with glass. The frame, once fixed, should not be tampered with, and it is astonishing how often glasses are broken by persons who try to improve upon the work. The glass, where the circular frames are fitted, is cut with a circular cutter of the proper size. A metal tube of the desired size is fitted to a machine, and the glass placed in position beneath it; the cutter is made to revolve rapidly under pressure, and pumice powder and water are fed on the glass under the rotating tube. In a short time the glass is cut through, and a perfectly round hole is ready to receive the flap.

The rounding and polishing of the edges of the glass for windscreens and frameless windows are carried out on the premises. The old potter's wheel, perhaps the earliest form of machine tool, is the basis of the polishing table. The wheel is of cast iron, and fine sand and water are fed on the edge, while the workman runs the raw edges fresh from the diamond along the surface, and in a short while the desired rounded edge is produced. This is passed on to others, and on a revolving disc of fine York stone, still the potter's wheel, the rough edge is ground to a fine surface. This is but dull compared with the highly-polished glass, and a finish is given by a willow wood wheel and fine powder, and the beaded edge without a flaw is produced.



The rigid motor flap.

Incidentally, Messrs. Hall were amongst the first, if not the first, to produce white-lead paint by the improved process whereby the dangers of white lead poisoning were reduced to a minimum. The London address of Messrs. Hall and Sons is 173, Pancras Road.



The R.C.H. touring in York. During the coming week many hundreds of motorcars will be seen round the minster on the occasion of the annual military service. The car shown is driven by Mr. Wilson, of Harrogate.

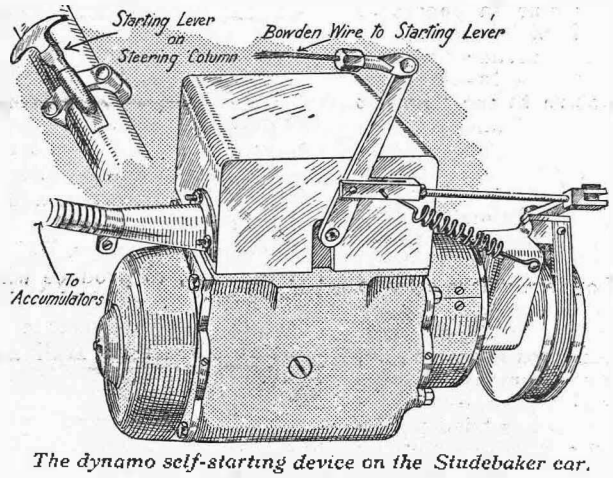
LONDON TO EDINBURGH.

A Reminiscence of the Recent Competition—North and South on a Studebaker.

NEVER have I enjoyed a long run on a car so much as I did at Whitsun on the London-to-Edinburgh trip. The Studebaker was officially entered to compete in the trial, and gained a gold medal.

We started from the Gatehouse, Highgate, at 10.37 p.m., our appointed time, with five up, including Mr. A. J. Sproston at the wheel, and silently sped through the gangway made by the vast crowd of spectators into the night on our way to Edinburgh.

Although it was dark and misty at the outset, the efficiency given by the strong, lengthy beam of the electric headlights enabled us to pick our way along the road with ease, the yellowness of the electric light having a great advantage over the whiteness of an acetylene lamp, owing to the fact that it pierces the mist and gloom infinitely better than the latter.



The dynamo self-starting device on the Studebaker car.

We reached the outskirts of Biggleswade—our first check—considerably before time, and consequently waited outside the check until the moment when we slowly advanced, and drove in "dead on" time; this performance grew to be our habit at every other check en route, and it was pleasing to learn that we were only a minute or two out on the whole journey.

As we were nearing Stamford, the first streaks of dawn crossed the sky, and these were the coldest moments of the journey. It was fully daylight when we reached Grantham, where steaming coffee and a sumptuous breakfast awaited us, and we fell to with rare appetites.

The run was absolutely uneventful so far as the car was concerned, for the engine ran with clocklike regularity and a perfectly even torque, taking practically everything on "top" throughout the whole journey. Having satisfied the "inner man" and replenished our pipes, we were in the mood to observe our surroundings with pleasure and admire the beauties of spring on one of the prettiest main roads in England.

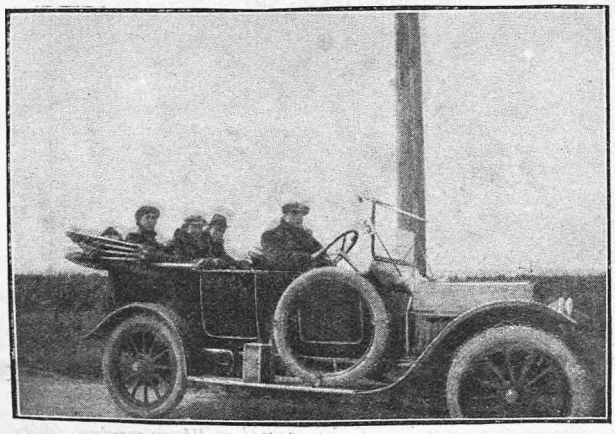
It is interesting to note that on one occasion only were we compelled to change down to the lowest gear, that being on the worst hill on the route with two extra passengers, making seven up and baggage. The number of times we were compelled to change down to second speed on both the outward and return journeys could be counted on two hands.

At 9 a.m. exactly we arrived at the old historical city of York, where we breakfasted again with the same amount of appreciation. Here we filled with petrol and Sternol lubricant, which we may mention was used throughout the 800 miles with great success.

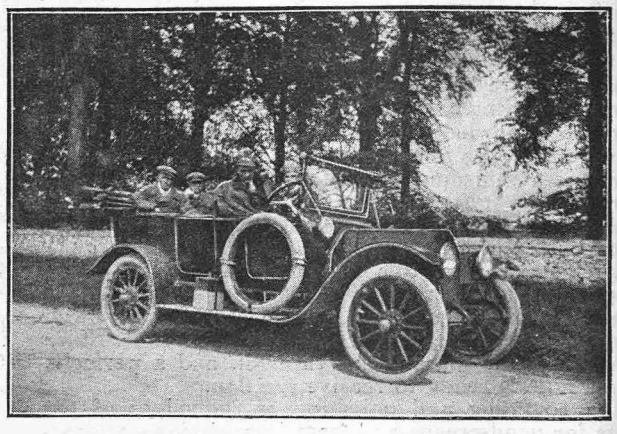
Being a late number on various parts of the road we came upon one or two competitors in trouble, and we acted as Good Samaritans to the needy few—endeavouring to meet the requirements of those who were in quest of tools, puncture outfits, etc., and giving an occasional lift to stranded competitors. These voluntary stops were welcome, principally because they gave us a chance of an occasional burst of speed.

Carlisle was our next stop, where a goodly luncheon was prepared at a moderate sum. We indulged in a general clean up, and then on again to our destination with never a falter.

After crossing the border into Bonnie Scotland the change was noticeable everywhere; the roads became rougher, more winding and more undulating, but as road conditions seemed to make no difference to the Studebaker we were more than repaid by the rugged



The Studebaker car outside Newcastle.



The car photographed near York.

LONDON TO EDINBURGH.—Conta.

beauty of the scenery. Our course ran through a continual valley for miles, and the heather-covered hills stretched far above us on either side with sheep and cattle dotted here and there.

As far as the eye could see the rises abounded with rivulets and Scotch firs, and to add to the beauty thereof a brownish stream of rushing waters travelled along our course. The air, though slightly colder, was most invigorating.

The rest of our outward journey was without incident, except for the fact that when passing through village or hamlet men, women, and children, from 7 to 70 odd years of age, frantically cheered and waved. On arriving at Edinburgh we threaded our way through Princes Street to the Royal Hotel, our last check, which we reached exactly on schedule time—that being 9.4 p.m. Although everyone was pleased with the run, I was inclined to think at the moment of arrival that we were more pleased to be near a chamber of rest.

The following day was spent in a hurried look round Edinburgh, and a final rest in the evening, after which we were again thoroughly prepared for the return journey. Except for a good clean down, the car was untouched for the return.

We took the East coast road via Berwick, Newcastle, Durham on the homeward journey, and though the road is somewhat bumpy, the view obtained of the sea from the cliffs is really worth it, but the road through the colliery districts known as the Black Country is most dreary, the surface is truly awful, and its name well befits the locality.

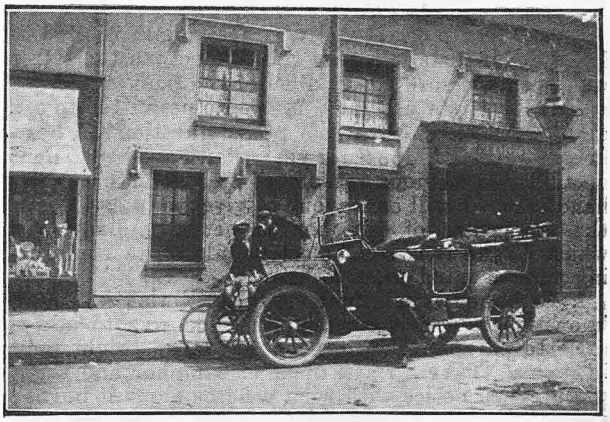
At York we arrived a few minutes before Bell, the first competitor, who had come round by Carlisle, and looked as though he had had a fairly hard ride.

After lunch I took the wheel over from Mr. Sproston, while he retired to the back of the car for a well-earned nap. I found the control as comfortable and easy as could be desired, and the legal limit was somewhat tiring with such a reserve of power. Although I drove from York to Grantham (about 120 miles) I did not experience the least fatigue, and at the end of the distance felt as though I could drive on indefinitely.

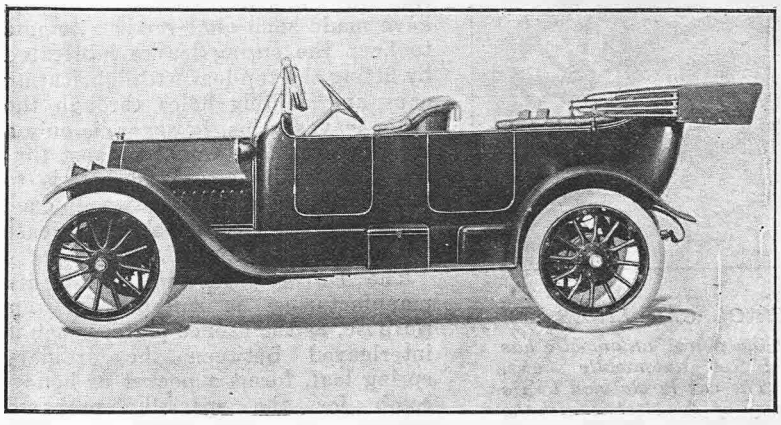
The run from Grantham to London was uneventful, except that we took on board our sixth passenger. In spite of this, however, we speedily floated along, and everyone in the car was surprised when we surmounted the hill out of Welwyn on top speed without much slowing.

The dynamo self-starting device worked splendidly, not failing once over the whole journey, which certainly is evidence of its reliability. We were afforded no little amusement by the looks of astonishment exhibited on the faces of the onlookers when we all entered the car at Carlisle after lunch, calmly took our seats with the engine at rest and then suddenly glided away from the pavement, leaving them open-mouthed with wonder.

In conclusion we are compelled to acknowledge our appreciation of a car that is efficient in power and praiseworthy for silence, neatness, and finish, having a 20-25 h.p. engine, a well-sprung four-seater body, with two auxiliary seats to make it a six-seater, detachable and divisible rims, an all-efficient self-starter, a complete electric lighting set, including five lamps, dual ignition, with self-charging battery, hood, screen, rugs, and, lastly, every little requirement, such as tools, speedometer, watch, etc. Nothing more inclusive can very well be imagined than the Studebaker for the extremely moderate sum of £295.



At the end of the long run. The car at Barnet.



The Studebaker car completely equipped for the road.

Grand Prix Course Now Closed to Touring Cars.

An order was issued a couple of weeks ago that no racing cars or motorcycles should be allowed on the course under penalty of disqualification. Consequently few race drivers are to be seen in the neighbourhood of Amiens. Just before the rule came into force the Delage racer was round several times, these tests evidently giving complete satisfaction to M. Delage and his engineers. The work of this firm is so advanced that the completion of two other cars, identical with the one that has been tried out on the road, is now being undertaken. The road tests will thus merely consist of a final tuning up to the same standard as the sample car. The Italian team, including Felice Nazzaro, was on the course recently, but naturally no attempt was made to go round on the racing cars, the drivers contenting themselves with driving the standard touring cars. At a later date the course will be opened at determined hours for big car motorcycle and cyclecar practising. Some further interesting facts concerning the Grand Prix race and preparations of the course appear on page 841.

Other People's Views

Camphor in Petrol.

I was glad to see that Mr. Ernest Smith replied to Mr. Pemberton's letter on this subject, as the latter was so very sure upon a subject about which he admittedly knew nothing. May I be permitted to say a few words on the camphor petrol question? I have known of this "dope" for years, but have been silent about it for obvious reasons connected with second-hand cars. I will endeavour to give the reasons why the admixture of camphor to petrol is beneficial, which I take it is what most people of an engineering turn of mind want to know.

1. Camphor is a "fuel energizer," this is a well known fact, and a common practice was to add a little to paraffin oil to produce an extra bright light in lamps. Take a small piece of camphor and set it alight, then notice with what a fierce flame it burns; it also gives off a dense black smoke, hence the care required in using the proper quantity only.

2. Camphor adds to the calorific value of petrol, and comment on this subject is unnecessary.

3. Camphor is supposed to be an "atomizer" or breaker up of petrol spirit. I use the word "supposed" here as there is no direct proof that this is so, but less likely things have happened. Perhaps someone skilled in chemistry would enlighten us upon this subject.

At any rate here are two good reasons, and one doubtful one for Mr. Pemberton to think over. Mr. Ernest Smith gives another good reason, to wit, increased efficiency, which I have no reason to doubt. As to whether it is a practice that pays to use camphor continually is another matter. The proportion advised is 2 oz. to 5 gallons. Now 2 oz. of camphor cost 8d., therefore your petrol spirit costs over 1½d. per gallon more; the question is if it is worth it. It is quite possible for low and moderate powered cars. It may also be useful for racing cars, who knows? At any rate, there is a little more in it than the barley sugar stick with which Mr. Pemberton dismissed the whole subject. It might be too hard on him to say that "all the world knows of camphor," but, at any rate, a great many people have known of it for years, so it is possible that there may be something in it.

G. A. C. Webb, Major.

"The Pioneer Lady Chauffeur."

I read with great interest your article on "The Pioneer Lady Chauffeur"; one always looks in The Motor for anything new in the motor world. I cannot claim to possess either Miss Neville's originality or her very extensive experience, but, like her, I am attempting to start in what I believe is a new profession, namely, that of lady-chauffeur-companion to a lady motorist. I have had three years driving experience and hold a certificate for driving and repairs, also a clean licence.

Like Miss Neville, I am young, but have had a few lively experiences. On one occasion one of the back wheels came off, and another time the cardan shaft broke when I was several miles from the nearest garage. I send you this letter because, unlike some of your contemporaries, you always welcome pioneers, whether they come in the guise of inventors of a process for the manufacture of a home fuel or lady-chauffeurs.

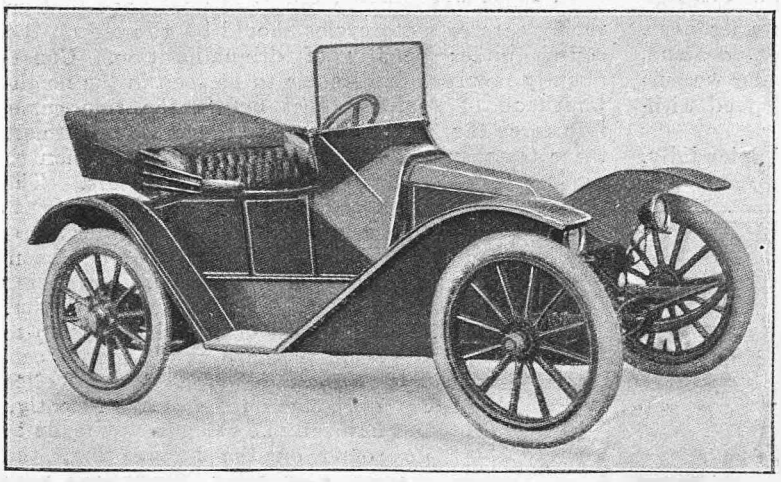
Irene M. Wilson.

Lubrication of Springs.

We notice with interest the article by "E.C.M." on the treatment of springs in the 20th May issue of your journal. We note your correspondent suggests that the springs should be taken down once a year to be cleaned and greased, and he also points out that many high-priced and otherwise almost perfect cars suffer from rusty spring leaves, which, of course, render the springing insufficient.

To us it is extraordinary how little attention has been paid to this part of the car; one or two manufacturers have made somewhat crude attempts to keep the spring leaves lubricated by fitting the top leaf with lubricating caps and drilling holes through the other leaves; this, however, is only a compromise. We would suggest that the only really sound method is to provide some caging between each spring leaf which will hold the grease when it is once applied.

The Duval plate, which we are manufacturing, is suitable for this purpose, as the bronze plate, which is interleaved between the ordinary spring leaf, forms a pocket or honeycomb for the specially prepared waterproof graphite grease, thus preventing the grease exuding from the



ELECTRIC CAR BUILT ON PETROL CAR LINES.

An electric roadster built on the lines of the petrol automobile has drawn considerable attention at recent U.S.A. automobile shows. Even the scuttle dash has been adopted. The car is claimed by its makers to combine the simplicity and luxury of the electric with the flexibility and reliability of the petrol car, and some developments on similar lines may be expected over here shortly.

O.P.V.—Contd.

leaves when the full weight of the car comes on the springs and keeping the plate efficiently lubricated for a very long period.

We have cars in our service at the present time which have not been dealt with for over 18 months, where the springing is still efficiently lubricated.

SOUTHERN AUTOMOBILES, LTD.

Strange Case of Petrol Supply Stoppage.

Have any of your readers had a similar experience to this, which seems a very unusual one? I have a two-cylinder car which runs well in all respects except for the following curious defect:—About every 10 to 15 miles the engine stops, and I find the carburetter is starved for petrol. This interruption of the flow of petrol has puzzled me for some time: there appears no reason for it, for the pipe (5-16 in. diameter) is quite clear. The head of petrol in the tank should be ample, as it is sufficient to flood carburetter on an up grade of 1 in 7 (tested); there is no large obstruction floating in the tank, and supply is taken at top of a 2 in. well formed in the tank; a good filter is fitted, and little or no dirt or foreign matter is found on removing same.

The only remedy I have is to simply remove the lower half of filter, empty what little petrol there remains in it away, and replace. By doing this, every time the engine stops I get over the trouble. I might add that when the filter cup is removed and tap is on the petrol flows readily, but before removing cup of filter no amount of "tickling" the needle of carburetter will get a result. I use a petrol strainer always, and the petrol supply pipe is 4 in. away from exhaust pipe at the nearest place, but does not appear to be causing air lock, as the pipe scarcely becomes warm. I shall be glad of any suggestion as to the cause.

W. E. MORRIS.

Car Upkeep.

The following may be of interest to your readers. Expenses for running—first an old type 12 h.p. four-seater from 1st January to 6th May, 1912, and for the rest of the year a modern high-grade car bought secondhand. Total mileage closely approximating 8578.

	£	s.	d.
Petrol	29	12	2
Tyres	28	7	6

(810 mm. by 90 mm. to September: then 815 mm. by 105 mm.). Both cars started work with old tyres, and three 810 mm. by 90 mm. and two 815 mm. by 105 mm., one a steel-stud non-skid, were purchased and put on.

Oil and grease	£4	1	6

(Quite one-half used on the first old four-seater.)

	£	s.	d.
Carbide	0	12	8
Pair of Parsons chains	4	0	0
Polish, cloths, etc.	0	12	0
Washing and cleaning at 1s. a day's work	13	13	0
Sundries, vulcanizing, security bolts, straps, small painting jobs, etc., etc.	2	15	10
Man's time for odd jobs...	1	4	6
New gears to the two-seater car ...	9	17	5

(A warning to all purchasers of second-hand cars to open the gearbox and examine the gearwheels.)

Pair of brake shoes	0	19	2
Repairs to clutch	0	17	6
Steering gear leathers, spanners ...	0	19	0
Insurance	10	18	0
Tax (medical man)	3	3	0
Total...	£111	13	3

MEDICO.

Running on Paraffin and Petrol Mixture.

Can any of your readers oblige with their experiences on the following?

I am told that a mixture of paraffin and petrol (or benzole) does not undergo perfect combustion in the cylinder, the heat not being great enough to consume all the paraffin, consequently the unconsumed residue of the paraffin finds its way past the pistons into the crank chamber, and gradually, by accumulation, reduces the viscosity of the oil therein, eventually leading, possibly, to a seizure of the engine.

A friend of mine gets very good results by using a mixture of half-and-half of paraffin and petrol, and I should like to try it if there are likely to be no detrimental results such as the above. The air supply is heated.

F.E.A.

Fitting New Friction Surface to Clutch.

We notice a letter from "L.F." appearing in your issue of 20th May about fitting a copper surface for his clutch. We note he is troubled with slipping, and we are certain that our Ferodo fibre, which has a co-efficient of friction of nearly twice as much as leather, will cure his trouble. Perhaps he will communicate with us; we should recommend him to send the clutch to our works, where we would fit the lining. We return all clutches the same day as received, and we know that when the fitting is done by ourselves, the material will give satisfaction. We have never known Ferodo-lined cone clutches to slip involuntarily.

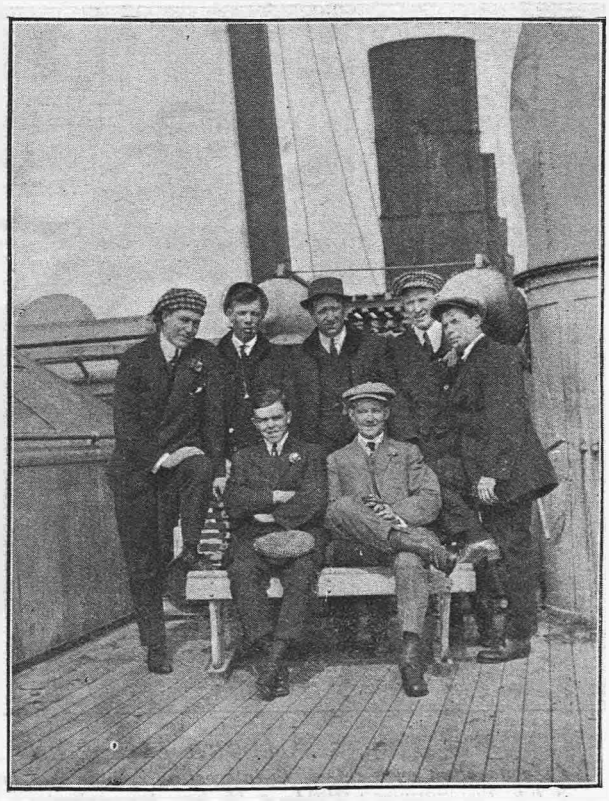
THE HERBERT FRODO CO.

Chapel-en-le-Frith.

Rust in Circulation Water.

Can any reader offer a suggestion as to any preparation which can be added to the circulation water to prevent or minimize the formation of rusty deposits, which is a trouble I am experiencing with my car?

A.W.



The auto-polo team on board the "Mauretania." They are engaged to play at Ranelagh during the season.

C57

O.P.V.—Contd.

Motorbuses on the Road.

With regard to the article on the above subject, page 743 of your issue of 20th May, I have also noticed the same effect on roads, i.e., "cross-ridging" or waves, caused by motorbuses, instances being Aberystwyth and Aberavon, Mid Wales, Haverfordwest and St. Davids in S. Wales. Motor lorries and steam tractors cause the same effect. Motorcars cause pot-holes, the result of high speed traffic, and traction engines cause trails or tracks and ruts from sheer weight. In each case it is due to the roads having insufficiently firm and fixed foundations in distinction to movable or floating foundations, e.g., clay or marl pockets which are often found when taking up existing foundations to renew. The only remedy is a solid and fixed foundation of block stone (cemented or tar-grouted for choice) to carry the macadam to withstand the traffic. F. Russell.

Tar Macadam Roads.

Supposing all the roads were tar-macadam (not tar-sprayed, but properly constructed tar-macadam) what a boon it would be to everybody—motorists, cyclists, pedestrians, and residents.

We are told that the cost of upkeep of tar-macadam roads is less than that of "mud"-macadam, but the initial cost is much greater and constitutes the only serious obstacle to its universal adoption. Can the latter be got over?

I have no data, but I suppose it will be available. (1) What is the total h.p. of the motor vehicles in use, say, in England and Scotland? (2) What would be the cost of converting the main roads to tar macadam? (3) How far would a tax of, say, £1 per h.p. go towards defraying that cost?

I should say that no motorist would, on fully considering the advantages, object to paying such an additional tax. It would not be a tax, but an investment, paying him at least 100 per cent. per annum in tyres, mechanism, paintwork, and comfort. And the various local authorities would surely not object to bearing a part of that additional cost, in view of the comfort to their ratepayers and their own ultimate saving in maintenance. J. C. Eddison.

Cork as a Gear-quietening Medium.

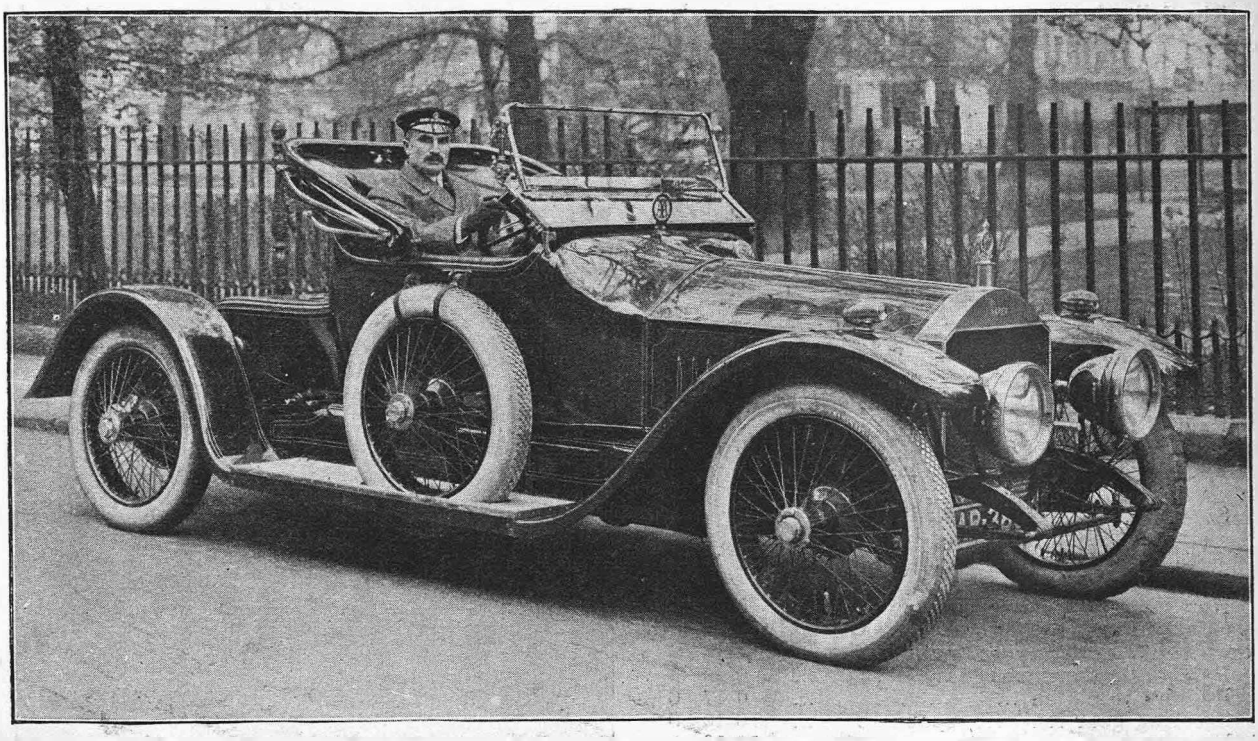
I have a three-speed and reverse epicyclic gearbox on my car, which is an old pattern single-cylinder, which is very noisy except on top speed. I have tried various lubricants without success, and on the advice of a friend am now using a mixture of oil and cork dust. This is most satisfactory from the "silence" point of view. Have any of your readers tried this? I should like to know whether there is any danger to the gears in using cork. S.M.

The Front Spring Difficulty.

We have read the letter on the above matter in your issue of the 13th May, and it interests us greatly because we ourselves, and our chairman, Mr. S. F. Edge, have taken a very keen interest in the springing of cars and efforts to improve them, and we have been very successful in improving the springing of a good many cars, and we believe we could very materially assist the writer of the letter in your issue of the 13th if he would communicate with us, as we have made quite a study of the matter.

When communicating with us, we should like to know the amount of camber, if any, the number of the leaves and approximately the weight of the car on the front springs. A shock damping device might not be the solution; the first step should be to fit springs of greater flexibility, then adding the shock damper to them. If the writer would also tell us the make of car, we might already have data to deal with his springs.

The United Motor Industries, Ltd.
45 Poland Street, London, W.



MR. S. F. EDGE'S LATEST CAR. A 30 H.P. SIX-CYLINDER NAPIER.

In connection with this it is interesting to note that his previous cars (all Napiers) were as follow: 1900, an 8 h.p. two-cylinder; 1901, a 16 h.p. four-cylinder; 1902, a 30 h.p. four-cylinder; 1903, an 80 h.p. four-cylinder. After this all his cars were six-cylindered, the first in 1904 being of 90 h.p.; in 1905 and 1906 he had 60 h.p. cars, whilst in 1907, 1908, 1909, 1910, 1911 and 1912 the car each year was of 45 h.p.

O.P.V.—Contd.

Automatic Timing of the Spark.

I have read with very considerable interest your article, in 20th May issue, on the above subject, and the reason I have read it with interest is that some 18 months or more ago I was converted to the automatic timing of spark on a car, and for at least two years my own Napier motorcar was fitted with an automatically-timed magneto.

The particular magneto I used was so made that whether the spark was advanced or retarded the lines of force were always cut so that maximum sparking capacity was attained. The result from every point of view was better than I could get with the best movable or fixed point magnetos. My engine could be run slower and faster than before, it consumed less petrol, and was infinitely more pleasant to drive, because it never under any reasonable circumstances knocked. The only disadvantage I found was that it took a considerable amount of personal trouble to get the springs in the automatic controlling device correctly adjusted to my particular engine, and that was the difficulty found in trying to use it commercially, viz., that the magneto could not simply be put straightaway on the engine and then be found to work well. Each magneto had to be adjusted to each engine, and this required care.

Then, again, the overall length of the magneto was too great for some cars, particularly those in which the magneto was set across the engine. When I first experimented with it I was told that the springs would vary their strength and that all kinds of troubles would take place, in fact some of the best magneto makers told me that the automatic magneto was no use. My experience has been that the automatic magneto, if one takes a certain amount of individual trouble to get it right at the beginning, enables you to save quite an appreciable quantity of petrol; that is to say, it makes the engine more efficient and economical, and at the same time infinitely more pleasant to drive. Personally, I dislike driving with either fixed or movable point magneto after the comfort and pleasure I got from the automatically-timed magneto. S. F. Edge.

The Motorbus and the Road.

Seeing in a recent issue your mention of the wave-like condition of the Bath Road and other main roads affected by the motorbus it appears to me that this effect on the road is owing to the very pronounced "period of shock" set up by these vehicles. When running past my residence the vibration caused is so peculiar that we are able to pick out these buses from all other vehicles.

What appears to me would prove a means of prevention is the use of vertical coil springs in conjunction with the springs now in use, or some form of shock absorber. This subject being of such importance to those of us engaged in the motor business, alike with all road users, has prompted me to write.

F. G. Keene.

Tools Left Behind.

A motorist driving an Austin landaulet was kind enough to help me just outside The Oaks, Woodmansterne, on Sunday, 25th May. When he had gone I found he had left some tools on the grass. I shall be glad if you will kindly assist me through your columns to find the owner to enable me to return them. H. S. Trehearne.

Mayfield, Hillcrest Road, Purley.

Tests of Electric Lighting Sets.

The High Tension Co. were good enough to suggest recently that the various makers of electric-lighting sets should publish their R.A.C. certificates for comparison, and as they, with ourselves, appear to be the only concerns who consider the certificates gained by them of sufficient value and importance to bear keen investigation at the hands of the public, perhaps you can spare a little space for the making of a comparison between the two certificates which were published by the High Tension Co. and the Polkey-Jarrott Electric Equipments Co. in a recent issue. In reading these certificates through, I think the following is a fair comparison:—

Magnetolite.	*Polkey-Jarrott.*
Dynamo.	
Permanent magnet. (a) Output not mechanically governed, but by armature reaction. (b) A centrifugally-operated contact in driving pulley prevents electrical connection until a pre-determined engine speed is reached.	Two-pole shunt wound. (a) Output governed by clutch (b) The same.
Battery.	
Consists of four cells coupled in series, two cells in each unit, each measuring 4⅛ by 6¼ by 6.	Consists of four cells coupled in series, two cells in each unit, which measures 6¼ by 4¼ by 6⅞.
Lamps.	
Headlights took 2.25 amps. each. Side lights took .77 amps. each. Tail and dash lamps took 1.1 amps. each. Weight, less lamps, 66 lb. 11 oz.	Headlights took 1.002 amps. each. Side lights took 1.014 amps. each. Tail lamp took 1.002 amps. Dash lamp took 1.000 amps. Weight, 86 lb. 12 oz.
Description of Trial.	
This consisted of running for a distance of 3.581 miles, starting each morning at 9.30 a.m., and returning in the evening between 6.30 and 7.30.	Distance run 2000 miles at night, excepting first day.
Commencing with accumulators charged.	Commencing with accumulators discharged.
Variations in Voltage.	
1½ volt.	⅜ths volt. This comparison is taken after the first day's run, as the accumulators were discharged at the commencement of the trial.
Lamps Alight.	
96 hrs. 51 min.	109 hrs. 26 min.
Incidents en Route.	
After 2790 miles belt had to be shortened; time, 38 sec. At 3014 miles a new belt was fitted; time, 16 sec. One electric bulb was replaced. Total time taken in adjustments, 54 sec.	One of the brushes became stuck on two occasions; time, 2 sec. and 3 sec. respectively. One lamp glass cracked. Five electric bulbs had to be replaced. Total time taken in adjustments, 5 sec.
Condition after Trial.	
Driving pulley worn 1-64 in. Brushes worn 2.5 mm. and 2.2 mm. Both ebonite brush holders were cracked. Commutator scored. On frequent occasions during trial the needle of ammeter stuck until instrument was tapped.	Commutator somewhat worn. Bearings very slightly worn. Brushes worn 9-64ths and 5-64ths.

The number of broken bulbs on the Polkey-Jarrott equipment I account for as follows. We started with discharged accumulators, so until these were fully charged the bulbs had to sustain a great strain. After the first two days I think only one bulb was replaced. Chas. Jarrott.

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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.

Defect in Springs.

A.B.R. writes:—(1) What is the effect on a car of the springs going flat? (2) Is it necessary to fit new springs, or can anything be done to the old ones?

The car will run more or less "dead." The springs have evidently been of insufficient stiffness for the load, or the tempering has been defective; but the makers of the car can have them re-hardened and, if necessary, an extra leaf fitted; it is sometimes the case that springs have to be replaced if they are permanently set or strained.

Oil Leakage.

A.R.F. writes:—The oil persists in leaking out of the gearbox at the cardan shaft end, also from clutch end. Myself and other people have tried to stop this leakage without success. Can you suggest a remedy for the trouble? I had a new gearshaft fixed last year with phosphor-bronze bearings and the gearbox has leaked ever since. The tappets are noisy, if screwed up too much they retard the pulling power of the engine. Would it be any use fitting fibre heads to the tappets? Oil from the differential gearcase runs freely into the back wheels, so much so that when running fast it splashes all over the tyres. I have tried fitting fibre washers inside the tubular casing but without result. Can you suggest any remedy for the defect?

The only effective remedy is to have oil-tight glands fitted to each bearing. This is usually possible, although it means some expense. You might, however, try first of all a heavier lubricant, and only have enough in the box to ensure the teeth of the pinions dipping into it. Fibre heads generally effect some improvement in the reduction of noise. We can only suggest a heavier lubricant, reducing it to as small an amount as possible, short of having a proper overhaul of the axle and the fitting of oil-tight packing.

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Reflection from Steering Wheel Arms.

F.R.H. writes:—I find the sun shining on the top of my steering wheel is distressing to the eyes when I am driving. The spokes or arms of the steering wheel are made of aluminium. Can you suggest any method of frosting this metal in order to prevent the glare from it?

You could try the effect of roughening the aluminium with coarse emery cloth, but personally we should prefer to paint the arms with a dead black varnish. Any dealer in photographic supplies would have it in stock or obtain it.

Fitting Ball Bearings to Gearbox.

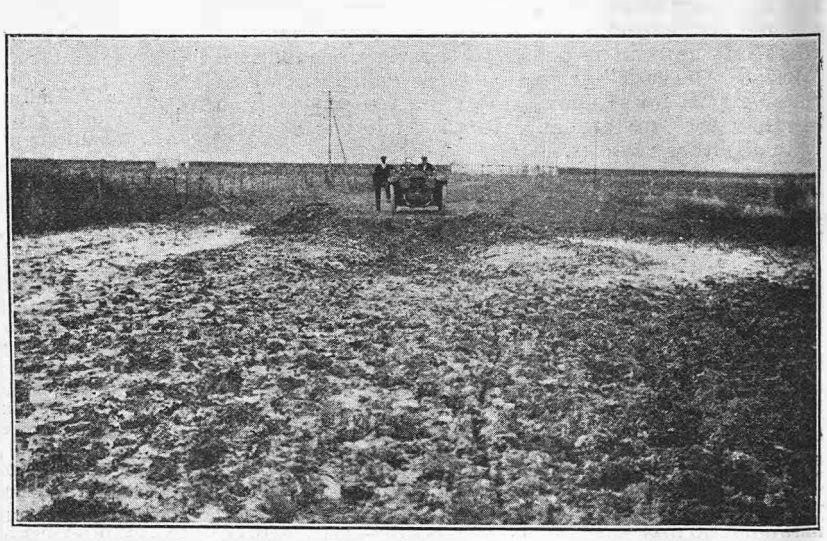
J.C.E. writes:—I have a somewhat early pattern of car which has plain bearings in the gearbox. These have had to be replaced several times owing to excessive wear. Are ball bearings ever adapted to old gearboxes, and, if so, could you advise having this done in my case? Would I obtain any increase of speed, as, presumably, the gearbox friction would be lessened? How long do ball bearings in modern gearboxes last?

Yes, ball bearings are occasionally fitted to gearboxes of old patterns, and the plan can be recommended. As a rule there is not much difficulty in doing it, as the bearings can each be mounted in a flanged carrier or housing which can be bolted to the gearbox. Obviously the conversion may entail considerable expense, this depending on the design of the box. Some are much more awkward to adapt ball bearings to than others. It is impossible to say what, if any, improvement in speed would result, as obviously this depends upon the present condition of the gearbox. If it is in bad condition and causes much friction through faulty bearings then there certainly ought to be a very marked improvement. Gearbox bearings nowadays last indefinitely. Perhaps with an adapted set of bearings the life would not be so great as in the case of a gearbox properly designed for them, but they ought to run 50,000 miles before requiring renewal.

Difficulty in Starting on the Switch.

T.W. writes:—Can you help me in the following case? I have a four-cylinder car with magneto and trembler coil ignition with independent sets of plugs. The set that I do most of the running on are at the side of the cylinders. The set which I start up on are placed over the inlet valves. Till about a month ago I could start on the switch, as a rule, on four out of six occasions, but now the switch starting has become very unreliable, and I cannot start once in six times. The coil seems in quite good order, and its trembler well adjusted, and the dry battery also has been tested and found practically as good as new. I may say that I am driving on a mixture of benzole, ordinary quality, and the cheaper grade of petrol. There seems to be some connection between the fuel mixture and the failure to start on the switch, as this has developed since about the period I began using it. Do you consider this is likely, or is it the ignition? I may say that I cannot start easily on the magneto.

As no variable factor appears to have been introduced in the ignition the indications certainly point to the carburation being the cause of the trouble. It must obviously be assumed that the



Something like a race route. An 18-22 h.p. Buick on the route between Buenos Aires and Max del Plata.

BUREAU.—Contd.

compression is normal to prevent leakage of the retained charge during the period that the engine is standing. There are two directions in which an improvement might be sought for. Rather a smaller proportion of benzole could be used, and a richer mixture should be obtained just prior to stopping the engine by reducing the air supply, if this be easily controllable. The engine should be stopped on the switch and not on the throttle to ensure that the cylinders take in a full charge

Overheated Brake Drums.

G.H. writes:—The two sets of brakes on my car act on the rear wheels, and the drums become extremely hot when descending long hills, so much so, in fact, that clouds of smoke come from the brake drums, presumably due to the ignition of oil inside. Is there any way to lessen this overheating? It does not occur to the same extent if I use one brake, i.e., the foot brake, but this will not always keep the car in check.

The overheating described ought to be avoided, as it is very bad for the brakes and is risky from the point of view of possible fire. If the lowest gear be engaged at the top of the hill and the ignition switched off, the throttle being left full open, or, better still, an air port opened and the throttle closed, the engine will act as a very powerful brake, which will relieve the work on the main brakes to a great extent. A proportion of the extra braking effect arises from the increased transmission gearing friction, but the major part is created by the engine by piston and air friction. Work is also done against the compression. This principle of braking is well known to experienced car owners, and is invariably used.

Timing Low-tension Armature.

A.W. writes:—I have an old pattern low-tension magneto, which works through a coil fitted to my car, and, as the bearings had become so worn that the armature core fouled the pole pieces I sent it to the makers and asked them to overhaul it. They replied that they could not do so, as the magneto was a very old one. So I have obtained the necessary parts and fitted them myself. Would you let me know how to time the break at the contacts in relation to the maximum position of the armature, so that I may find the proper position for the steel cam which is fitted to the left hand of the insulated armature shaft? How much end play should be allowed on the armature bearings? Would ¼ in. be too much?

If you will obtain the makers' booklet which they supply for timing an ordinary magneto you will find that the same diagrams they give apply exactly. The armature is in a maximum position when it almost bridges the pole pieces. The usual distance or the amount of space between the edge of the armature and edge of pole piece is 5 mm., therefore the cam must be set in such a position as to break the contacts when the armature is in this position. The direction of rotation has to be taken into account in determining at which pole piece the 5 mm. gap must be There should not be any end play at all of the armature.

An 18-22 h.p. Buick on the race route between Buenos Aires and Max del Plata; 10 ft. of water on the course.

Play in Universal Joints.

C.W. writes:—I recently bought a car second-hand. It is by a well-known maker and has shaft drive. On the whole it runs well, although it was not overhauled. There is about 2 in. movement in the steering wheel before the front wheels are actuated. This I presume could be made right by adjusting the gear, but the more serious fault is a sharp knocking from the transmission, which occurs on starting or changing speed. It is not noticeable when there is a steady drive on the car. Can you suggest the cause and a remedy?

The backlash in the steering can be taken up by fitting a new sector. Adjustment is not always possible unless the sector shaft is mounted in an eccentric bearing. The noise from the transmission we attribute either to worn universal joints or a worn dog clutch in the gearbox, although this is less likely. The former can be easily remedied by fitting new pins if the joints are of the simplest type.

Choking Due to Carburetter Flooding.

J.F.R. writes:—A fault has developed in the single-cylinder engine of my car. It runs fairly well up to 17 miles per hour, but, when opening out the throttle further, it seems to choke and, on hills, begins to knock. After running down hill at a good speed it takes full throttle and pulls well, but when slowing down on a hill the power falls off and the old trouble commences again. When standing, the engine does not run so steadily as formerly. Can you suggest any reason for this behaviour?

So far as we can express an opinion, it is largely due to a flooding carburetter. The precise adjustment required, however, could only be settled by a practical investigation. The usual remedies for flooding no doubt you are well acquainted with. There is some evidence also that the engine requires cleaning. The knock may be partly due to carbon deposit, although too rich a mixture will cause knocking.

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.*

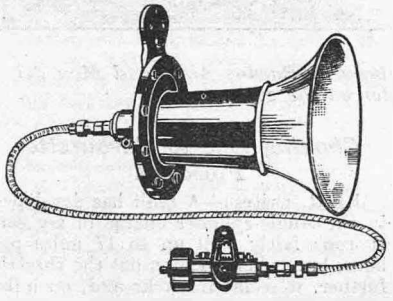
Routes cannot be sent by return. *All applications are replied to in strict rotation in the course of 21 days. We do not give recommendations to Hotels or Boarding Houses.*

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 135 readers.

Miscellanea

The Vibrophone Horn.

Amongst the most ingenious of the innumerable warning devices now on the market is the Atlas Vibrophone, sold by the Atlas Non-Puncture Inner Case Syndicate, Ltd., 124, High Street, Kensington, London, W. In the Vibrophone a most compact electric motor operates a plate to which are affixed a number of little rollers. These, by coming in contact with a steel ball working on a dia-



The Vibrophone horn, mechanical friction drive model.

phragm, set up rapid vibrations, thus producing a powerful and distinctive note. It will be observed that the vibrations are produced by a rolling contact, and for this reason the claim is made that wear is reduced to a minimum. Every moving part is mounted on ball bearings, and the entire horn is made with the idea of rendering long and satisfactory service. The care and finish given to this horn will be appreciated on examination, and these claims are important, for, as every motorist knows, there are warning devices on the market which very soon show signs of wear. The Vibrophone is worked from a neat switch mounted on the steering wheel, and this is so placed that the thumb of the left hand can press the button, thus leaving the right hand free for any other purpose. The horn weighs only about 2½ lb., and this, taken in conjunction with its convenience, quality and tone, should make it a great favourite. The illustration is that of the alternative mechanically-driven model, the principle, so far as the horn is concerned, being the same as the electric model. The rotation, however, is produced by a friction drive and flexible shaft from the engine, the contact being effected when desired by a simple control device.

A tribute to the efficiency of the Zenith carburetter is provided in the fact that in the recent Targa Florio race, one of the most severe motoring contests held, the first, second, third, fourth, sixth, and ninth cars were fitted with standard Zenith carburetters, which is indeed a remarkable success in view of the fact that only 11 cars completed the race. To the non-racing motorist it is also important to remember that this race nearly approaches touring conditions, as it is not run over a specially laid track, but just ordinary give-and-take roads.

An Eight-cylinder De Dion Car.

The landaulet, an illustration of which is given, is mounted on one of the 26 h.p. eight-cylinder De Dion Bouton chassis, and has been completed by the local agents of the manufacturers, Messrs. the Caversham Motor Co., Ltd., Reading. The lines of the bodywork have been designed to continue those of the front bonnet so far as they are applicable to the landaulet type of motor carriage. The careful manner in which the curves of the scuttle have been managed and merged into the main body outline will be noticed. The carriage has a very wide quarter to meet the requirements of the client, and this has been so arranged that the hood falls neatly and compactly. The carriage has been equipped throughout with the latest arrangements in interior seating for occasional use, communicating methods, lighting and fittings. The luggage grid and tyre carrier have been combined at the rear; either or both can be used or removed for town use, a great convenience ingeniously carried out by the body builders.

The colour scheme is in light coach green; the front seat in leather and the interior in corded cloth have been finished in green in harmony with the painting, the metal work being nickel-plated.

The Automobile Association and Motor Union advise that their Dublin telegraphic address has been altered from "Fanum" to "Dufanum" and that the former has been cancelled.

The prevalence of newly-tarred road surfaces round London is very evident just now. Slow driving is desirable to prevent splashed bodywork

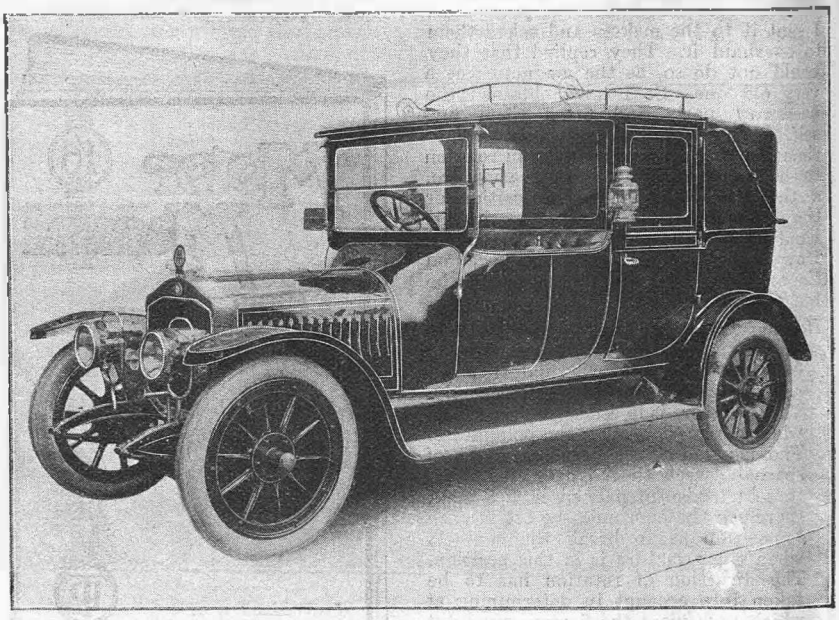
Touring Facilities for City A.A. and M.U. Members.

Now that the touring season has commenced, it may be opportune to remind members chiefly occupied in the City of London that it is quite unnecessary for them to make a special journey to the head offices at Fanum House, Whitcomb Street, to complete the necessary preparations for tours abroad. The City offices of the Association, situated at Guildhall Annexe, Guildhall Yard, E.C., are provided with the necessary staff and facilities for arranging all the preliminaries of a tour at short notice. To further assist touring members, an office has been opened in the heart of Paris, at 39, Rue de la Chaussee d'Antin, where every assistance is afforded.

Notes on the Care of Solid Tyres.

The fallacy that the solid tyre requires no care or attention is a deep-rooted one, and therefore particular interest is attached to the publication of a well-produced and instructive little booklet, relative to the subject, issued by the Dunlop Rubber Co., in which are given nine golden rules, which, if carried out, greatly add to the longevity of the solid tyre, and incidentally reduce running costs. A few remarks are also made regarding wheel alignment. A list is included of mileages obtained on Dunlop solid tyres, which very clearly but imperceptibly shows their reliability. Two photographs are also reproduced of Dunlop solid tyres which have completed more than 25,000 miles, and these show the remarkably good condition the tyres are still in. The booklet is obtainable, gratis, from the Dunlop Rubber Co., Ltd., Manor Mills, Salford Street, Aston, Birmingham.

The R.C.H. car is now being represented in the following towns:—Leicester, Parr's Garage; Nottingham, Walter Stephens, Trent Bridge; Newport Pagnell, Alexander Rose, Swan Hotel Garage.



An eight-cylinder De Dion Bouton landaulet.