

The Motor

Vol. 20.—No. 510.

3rd October, 1911.

A TALE OF A RACING CAR.

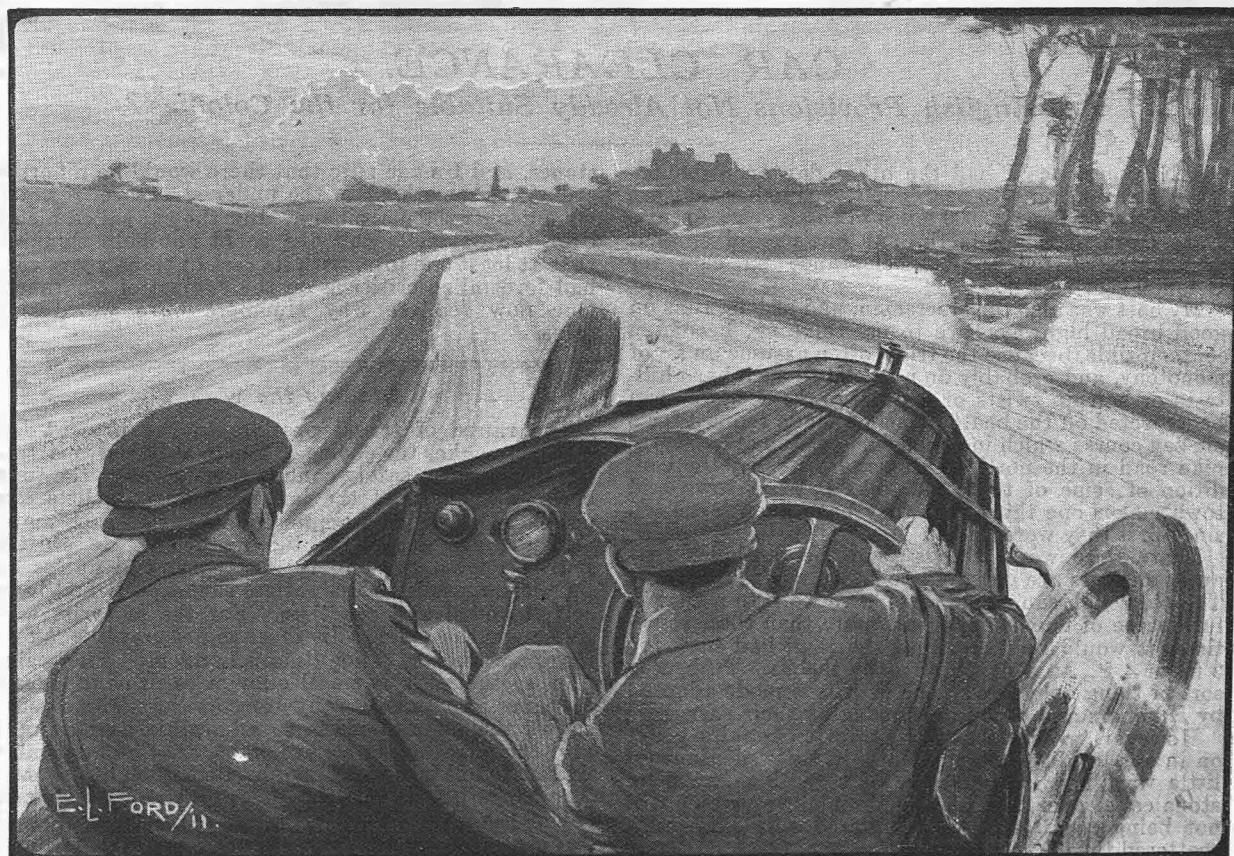
THE following is a true story of a drive on a racing car, though, for reasons that will become obvious enough, the identity of the people and places concerned is concealed. The car had to be driven a matter of 50 miles to the scene of a race meeting, which, we will suppose, was at S——, and the owner, a very well-known racing man, started off with a friend about 6 p.m. one summer's evening.

The first eight or ten miles lay through traffic and tram lines, ideal for acceleration tests, and on consulting their watches on reaching the open country,

the time was found to be good, so good that it was decided to indulge in a little "speeding," and an endeavour to cover the distance in the hour, a feat never previously accomplished on that particular road. They hummed along at a merry pace, taking the bends in the workmanlike way that they have to be taken when good times are being made and with more attention to the camber than the rule of the road.

In due course they came to a well-known trap, a quarter of a mile long over an easy curve in the road, and worked on the following lines:—

One policeman stands at a gate and signals to his



"They hummed along at a merry pace, taking the bends . . . with more attention to the camber than the rule of the road."

A TALE OF A RACING CAR.—Contd.

companion in iniquity, who is forced by an intervening clump of trees to stand well back in a field. The second man, having got the starting time, sprints to the road, and can just get there in time to stop the fastest touring car. Only on his particular occasion it wasn't a touring car. She went through the trap "en plein," and the second policeman could be seen scuttling across the field as she passed.

Then the telephone came into play. A car was proceeding towards S—— at such a terrible speed, said the local police, it was impossible to estimate it, and would the chief constable of S—— please have the driver arrested. So the chief constable of S—— made his preparations, and every garage in the town was watched for the arrival of a racing car.

But the trap had only been 15 miles out, and by keeping his foot firmly on the accelerator, the driver of the racer had reached the town before the police preparations were complete, and in less time than it takes to tell, had shot into a garage, taken a wheel off the car, covered it with a tarpaulin, and made it look like an old creak undergoing a prolonged repair.

Five minutes later a policeman appeared, and asked if a racing car had come in.

"No," said the attendant, who was a tactful man. "All the same," said the policeman, who had met tactful men before, "I will have a look round." Which he did. And he never noticed that the neglected, wheel-less car under the tarpaulin, covered with the dust of weeks, had a radiator near to boiling point.

Meanwhile, the driver had washed and changed and settled down to dinner, when, who should come in but the chief constable. It so happened that the two were friends, so they dined together.

"You motorists," said the chief constable, "should really look after the black sheep among you; I am after a man now who came through one of our traps so fast it was impossible to estimate his speed. If we catch him he will get three months."

"What a disgraceful thing; driving like that does a lot of harm," said his companion.

Later on they had a game of billiards, and the conversation, over a glass of whisky and soda, came back once more to the event of the day.

"About that racing car, old man," said the driver.

"Well?"

"I drove it."

"Then I hope my men catch you, and if they do, you will be locked up. But, about your time; did you do it in the hour?"

"Fifty-nine minutes."

"Splendid, I mean I'm sorry to hear it," said the chief constable, who was a sportsman at heart. "Remember, I want you to be caught, but you had better not race to-morrow."

"Why not?"

"Because my men have orders to look out for the car, and they will watch every garage in the town for three weeks."

"Many thanks," said the driver.

"All right, only don't do it again," said the constable.

"I won't."

Three weeks later a furniture van stopped outside the garage at 1 a.m., and a wicked, spidery-looking car was pushed into it. The van stopped again outside the town, and the car was pushed silently out. A passing policeman approached, for the spectacle of a car emerging on an empty road at 2 a.m. from a furniture van seemed to call for investigation. But just as he approached there was a bellow, a flash of flame from the exhaust, and with a hoarse rattle, the great racer slipped away into the night.

CAR CLEARANCE.

Are English Provisions Not Already Suitable for the Colonies?

AN experience I had the other day on a demonstration run—to be explicit, a Humber that has already done 30,000 miles in three years—sent a train of thoughts through one's mind on that very-much-debated subject, clearance on cars for Colonial service.

My host was also the steersman, and as long runs on good broad highways, are to my thinking, becoming contemptible, because the trials often assume an air of monotony, and probably do not lead to such hard hill-tests or hairpin twists or sudden brake-usage as can be expected off the beaten track, I made request for a zig-zag course which included some of the oldest turn-pike road in the north of England. Really, the condition of some of these old links betwixt town and town makes one think that they have been forgotten since first they were laid.

There were worse things than the pot-holes that anti-motorists are growling about on macadam roads. The old rough sandstone setts have worn to a shameful degree of unevenness, but, more than that, sometimes it would be found that the road had sunk for 3 ft. or 4 ft., to a depth of many inches. True, this sort of thing only proved the excellent mode adopted by Humber and others for springing their cars.

However, we came across extensive repairs going on in one locality. The paviers, in their pleasant (?) little way, had thrown some of these 8 in. or 9 in. stone cubes over that part of the highway which was not being repaired. One wondered why they were scattered thus.

We found out. At least, we came to a conclusion.

It was to test the clearance of motorcars.

The helmsman made straight for three big paving

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stones, and I made sure that there would be a horrid crunch of something in the under structure, if not a rip amongst the machinery. But the car sailed nicely over the obstacle, and one could not help thinking that at least one firm, with its cars of three years ago, had forestalled criticism on the subject of clearance. One now realizes why Humber's have world-wide sales.

R.

Finding the Way.

The range of travel possible to the present-day motorist makes the choice of a map a difficult matter. Pedestrians can safely confine themselves to the four corners of maps of the largest scale. Cyclists can use those covering a single county. But such maps as these are useless to the motorist. He swiftly journeys from one end to the other, and unless he burdens himself with countless sheets, will find himself stranded and chartless. For the motorist who lives near the Metropolis there is nothing like "THE Motor Map of 50 Miles Round London." The scale, 4 in. to the mile, is small enough to provide a map covering an immense range of country. The colouring of the main roads is so admirably carried out, and the printing is so excellent, that no difficulty will be found in tracing the most complicated routes. The scope of the map is shown by the fact that it covers the whole of Kent, Surrey, Sussex, Middlesex, and parts of Herts., Essex, Bucks. and Hants., and includes such widely-separated towns as Harwich, Portsmouth, Oxford and Dover. It costs 1s. on paper, and 1s. 6d. mounted on linen.

HOW TO USE YOUR BRAKES.

An Interesting Article on the Subject of Brakes and Braking. Important Hints as to the Use and Overhaul of Brakes and Brake Fitments. The Safety of the Engine as a Brake.

In the following article Mr. Henry Sturmev deals exhaustively, interestingly, and instructively with the important subject of brakes, their use and the importance of regular attention to all details concerning them. He particularly emphasizes the importance of the use of the engine as a brake irrespective of the known or unknown condition of the side and foot brakes.

THE attention which was called recently to the question of brakes by the lamentable charabancs fatality, has brought the subject into considerable prominence, and it may not be amiss, therefore, to give it some consideration here.

Whilst the design and construction of brakes to-day leave comparatively little to be desired, it is astonishing how little designers knew about the subject, and how few of them could produce an efficient brake a few years ago. Brake tests always formed a part of the R.A.C. trials in the early days of the century, and whilst many cars failed utterly to stand the tests, others, whose brakes were apparently efficient in stopping the cars when running forward, failed lamentably when on the backward test.

Nowadays no car that is worthy of the name is fitted with brakes which, under ordinary conditions, when properly adjusted, will not stop the car when running in either direction. But, under extraordinary conditions of service, brakes, even to-day, as was illustrated in the event above alluded to, may often fail. There are several factors to be considered in the design of a brake, and, primarily, the weight of the loaded car for which the fitment is intended, has to be considered.

All-round efficiency depends upon surface area in relation to weight, and if insufficient surface be given, there is likely to be trouble with excessive wear. I do not know whether there is any recognized relationship between brake surface and weight of car, but I know that one firm reckons to provide one square inch of brake surface to 13 lb. of loaded car. But this is not the only consideration; as mere surface area is not sufficient, and if the surface be incorrectly placed, efficiency may still be absent. To secure efficiency, the principal factor is diameter, and diameter, not only in relation to weight, but in relation to wheel diameter. In effect it largely whittles itself down into a question of leverage.

I remember, some years ago, coming across a designer who held the view that diameter was the all-important thing, and that width of face of brake drum and band were of no importance, and he argued that the same amount of efficiency would be secured with a line contact as with a wide band, so he fitted out a new car he was building with large drums of only about $\frac{1}{2}$ in. width. When he came to try them, the brakes were not only ineffective, but, when extra stress was put upon them, they quickly broke, and I remember upon one occasion he spent an afternoon in brake tests, using a succession of new brake bands as they broke one after the other, and he got through a dozen in a couple of hours!

From a purely theoretical point of view, I believe this is correct, so far as the mere ability to apply power is concerned, but the effect of width in distributing the power over a larger area reduces the heating and consequent wear, and generally results in higher all-round efficiency. It will be readily perceived that if a strong braking action were applied

to a drum by means of a steel cord, having practically line contact, it would soon cut through the drum.

Apart from the question of surface and diameter, we have that of material, and here a wide range of choice exists, but experience shows that some materials have better wearing qualities than others, and that different materials possess different co-efficients of friction; in other words, in popular language, gripping power. Cork, for example, has probably a higher co-efficient of friction than any other material, and metals vary greatly in this quality, the difference, for example, between the efficiency of cast iron and of gun metal being considerable.

Nowadays, metal to metal brakes are almost universal, but in the earlier days of motoring, the metal to metal brake was a rarity, and brake bands were lined with hard wood blocks, leather, or some fabric material, and I remember the camel's hair cloth was quite popular at one time when the Panhard was King. I also remember, too, going down Birdlip Hill with Mr. Frank Butler, on a car fitted with camel hair brake linings; the brakes held beautifully, and Frank was quite chirpy about them, until, half-way down the hill, a strong smell of burning hair assailed our nostrils, and, pulling up, we found the camel hair brake linings fast shrivelling up into cinders.

There are many ways of operating the brakes; that is to say, of bringing the surfaces of the drum and of the shoe or band into contact with each other, and it was largely on account of a lack of knowledge of methods in this direction that many of the earlier brakes failed, but these things are better understood of the people who design cars to-day than they were, and little need be said concerning them. The effect of all brakes is to absorb energy. When a car has been worked up to speed by the power of the engine, there is a large amount of stored energy in it, and the object of the brake is to absorb some of that energy. It is just the same when descending a hill. Energy has been put into the car by the work of the engine in raising it to the top of the hill, and when it gets on the falling gradient, that energy becomes translated into speed, and, to stop the car, the energy requires to be absorbed, and the doing of this produces heat, and, as I have indicated above, the fact of this production of heat frequently results in loss of efficiency, by changing the character or conditions of the surfaces.

When stopping a car on the level, or checking its progress upon a hill of moderate length and steepness, no excess of heat is engendered, but when the brake application is continued at full power on a long grade of considerable severity, then it is that trouble may possibly ensue. To obviate this danger, a few years ago, a good many cars built for use in hilly country were fitted with water-cooling arrangements, being provided with water-jackets and a by-pass in connection with the water system of the car, which was automatically opened when the brake was applied. By this means the superfluous heat

HOW TO USE YOUR BRAKES.—Contd.

was removed by the water, just as in the case of an engine cylinder.

The Importance of Care and Attention to Brake Details.

Presuming, however, that the brakes are mechanically perfect and wholly efficient, as brakes, it is useless having such mechanical efficiency, if they are incorrectly used or cared for. And the care and attention to the brakes is one of the most vitally important points which the motorist has to consider, albeit one which, I am afraid, is oftentimes more honoured in the breach than in the observance. However well a brake may be designed, its surfaces will wear by use, and it is when worn that the brake becomes dangerous, because it may so happen that, when the brake lever is put forward to its fullest extent, with all the power available, the surfaces may have so worn that, whilst they will hold the car on a gradient of, say, 1 in 20, a little further application of power becomes necessary to hold them on a gradient beyond this figure. And then the motorist is helpless, for he simply cannot apply any more power, for the simple reason that his levers and connections cannot be moved any farther in the direction required for the purpose.

Hence, not only should the driver give prompt attention to any indication that his brake is not acting with full efficiency and at once adjust it, but he should make it a point periodically to examine all his brake connections to see if they are working at or near the end of their possible movement, in which case they should at once be re-adjusted. If the connections have been fully taken up and have still got to the end of their tether when full brake action is required, or are anyway near it, then it is manifest that new brake blocks are required or the band requires relining, and this is a thing which should on no account be put off until that "to-morrow" which never comes. And in the testing of the efficiency of an adjustment, it is wholly futile to depend upon jacking up the car and hauling the wheel around by the hand against the brake. If a ten foot lever be applied to the spokes, such a method might be effective, but the best course is to see how it acts on the road against the engine, and if its application will pull down the speed of the car to a crawl, or even stop it, when the engine is working at its normal revolutions, the adjustment may be fairly passed as satisfactory.

Then there is another point in regard to attention which is often sadly neglected. I refer to the lubrication of all working joints and bearings and brake connections. It is a very common failing to allow these to go without oil for weeks and months.

Useful Hints and Tips.

In the earlier days of motoring, before the universal adoption of throttle control, when we had governed engines running at a constant speed, it was quite the accepted practice to arrange the brake system so that the action of the brake automatically caused the clutch to be withdrawn, the idea being to cut off your power and apply the brake at the same time.

Since, however, I first put forward in this country the theory, which was so heavily ridiculed at the time, of utilizing the engine as a brake, it has been universally accepted, the inter-connection of brake and clutch has gone out of fashion, and the motorist should see to it that this obsolete system is not embodied on his car.

Apart from their neglect of their brakes, many drivers clearly do not fully understand their method of use. They very easily get into bad habits. They follow the line of least resistance in the first place, and form a habit hard to get away from; thus, they will work entirely on their foot brake and never use and never test any other brakes which may be fitted to their car, until they want them, and want them badly, and then they find that they are out of order, or rusted up, so that they cannot use them.

Many men, too, use their brakes much too harshly. Except in the case of an emergency, where a stop simply has to be sudden and as sudden as possible, there is no necessity—and it is, indeed, wrong practice—to use the brakes harshly, or to use them at all more than is necessary. In stopping at a pre-intended stopping-place, the brake should only be applied as a final check to stop the car exactly at the identical location intended. The engine should be throttled down, and finally the clutch put out, so that the car may be brought to a stop at the exact point desired, a light application of the brake at the finish being all that is necessary to conclude the operation.

Yet many drivers will drive up to within 30 or 40 yards of their stopping-place, almost at full speed, and then jam on the brakes, and if they pull the car up "all of a heap" at the spot desired, they think they are doing it cleverly. This is by no means good driving, and it imposes—not only on the brakes themselves, but on all parts of the car, and particularly on the tyres—wholly unnecessary stresses, which all tend to reduce the life of the car.

Except in emergencies, the application of the brake should be at all times gentle, and when the car is required to be held in hand on a decline, the first brake depended upon should be the engine. I am speaking of moderate gradients. If, instead of putting the clutch out and running free, or driving down at a high speed, the driver prefers to check his pace and descend the slope at a moderate pace, the proper thing to do is simply to close the throttle, which will have quite sufficient braking effect under ordinary circumstances, and if the pace is still a little more than desired, or the grade increases somewhat and the pace



A LONDON DANGER SPOT.

A protest has been raised against motorbuses in Threadneedle Street, where a fatal accident occurred recently. The photo. shows the congested state of this narrow thoroughfare when two buses have to pass each other.

HOW TO USE YOUR BRAKES.—Contd.

increases accordingly, then, and then only, should the brake be applied.

Very little brake power will, in such circumstances, be necessary. And the driver will be well advised if, instead of always using his foot brake—which, of course, is the easiest thing to do—he will, on such gradients, at least once in a day's run, if he will not be descending any steeper gradients, give his side brakes a turn. This helps to keep them in order, as well as to assure him of their satisfactory working.

Upon whatever gradient the driver is, however, he should always aim to keep his car well in hand, and upon moderately-steep grades the brakes should be alternated in action, and either or both should supplement the braking power of the engine. But it is when really bad hills have to be negotiated that drivers fail, and that is where accidents occur.

The braking power of an engine on the high gear, whilst sufficient to check the speed on a moderate gradient, is comparatively of little use on a steep one,

but when the lowest-speed gear is engaged the braking effect of the engine is enormous, and in most cases can be depended upon to hold the car in anywhere, even without extra brake application.

Upon really bad and unknown hills or where excessive steepness may be suspected, the driver should always, no matter how good his brakes, put his low gear into engagement before starting on the descent. He should then put out the clutch and put on his brakes, using them alternately, or both together, until the steepest part of the hill is encountered, when the clutch should be put into engagement and the car kept in hand upon the throttle variation alone, until conditions indicate that more braking power is advisable, when a comparatively light application of foot and side brakes, distributing the braking stresses throughout the car, will enable the driver to descend any hill in confidence and safety. If proper attention were given to brakes and their adjustment, and they were used with more discretion and commonsense, we should hear very little of runaway cars and bad smashes.

Rolls-Royce Cars for the Delhi Durbar.

At such a function as the forthcoming Durbar at Delhi, it is but fitting that the cream of England's automobile productions should be represented, and it is, therefore, gratifying to find that the Government of India have honoured the Rolls-Royce Co. with instructions to furnish eight cars for use during the Durbar. As may be gathered from the imposing photograph which we reproduce (taken outside the Tate Gallery), these well-known six-cylinder 40-50 h.p. chas-

sis are surmounted by five landaulet bodies, and all the cars were shipped by the P. and O. boat "Simla" last Saturday to the Rolls-Royce depot at Bombay. We had a look at them before they went, and the coachwork in each case is of a sumptuous description, though in no sense has good taste been exceeded in the decoration and fittings. Messrs. Barker and Co., of South Audley Street, are responsible for four of the bodies, whilst the following firms built one each: Messrs. Hooper, Thrupp and Maberley, H. J. Mulliner, and Messrs. Mulliner's, Ltd., of Long Acre, each car

being listed at approximately £1,350.

It is interesting to note that his Excellency the Viceroy of India is a user of Rolls-Royce cars, also that for some years past the Rt. Hon. the Earl of Minton, K.G. (ex-Viceroy of India), has been a user of Rolls-Royce cars both in India and, later, in England.

The three cars which have recently put up such good performances in R.A.C. Trials, namely the Rolls-Royce, the Sheffield-Simplex and the Napier, were all fitted with Rudge-Whitworth detachable wheels.



The eight Rolls-Royce cars which have been sent over to India for the Delhi Durbar.

THE NEW 15 h.p. VALVELESS CAR.

Further Practical Trial of a Car with an Original Two-stroke Engine.

THE early form of the Valveless car and the fully-developed type represented by the 25 h.p. model have both been through our hands and been subjected to driving tests upon the road, so that we attacked, with more than the usual interest appropriate to the trial of a new car, the pleasant task of discovering the good points of the new 15 h.p. live-axle car.

We made our test as exacting as it was possible by making a larger proportion than usual of our running in town and through traffic. The reason for this will be obvious when it is remembered, or explained, that the flywheel inertia on the Valveless engine is rather higher than usual. With two flywheels, one at the forward end of one crankshaft and the other at the rear end of the second crankshaft, it is obvious that the amount of power stored up in them

the little check valve which retains the pressure in the petrol tank.

Out of curiosity, we examined each of these items, in order to ascertain to what extent the user would be called upon to deal with them. The carburetter is extremely simple and most handily placed. The suction effort in the crankcase caused by the upward movement of the pistons lifts a disc, past which the air required is drawn into the crankcase, and to this disc is attached the needle that closes the petrol orifice. When the needle is lifted, a rich mixture forms in the jet passage, but has not the time to be drawn into the crankcase, instead being forced, by the upward rush of the air, into the cylinders. Thus, no mixture is taken into the crankcase. A defect, common to the two-stroke engine is the presence of the mixture in the crankcase, which alters the constituency of the lubricating oil and the quality of the gas.

The explosion takes place in the single combustion space, thus calling for the use of but a single sparking plug. The two pistons driving down together, the two crankshafts, being geared together, turn in opposite directions, thus reducing engine vibration. The exhaust port is large, and a complete scavenging is effected by the inrush of the new gases.

With the system adopted, there is an explosion stroke at each downward movement of the pistons, and with the two cylinders disposed as described, there is just one half of the explosions that

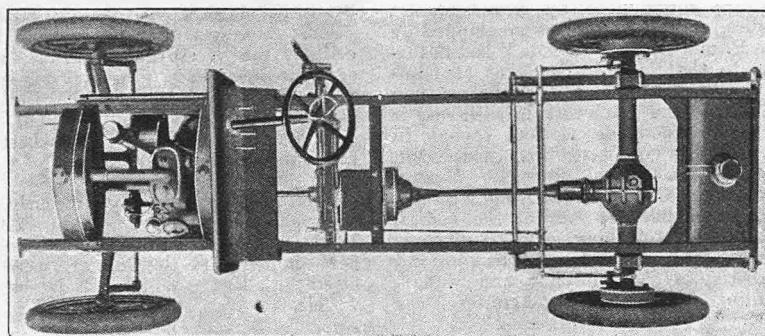
would be given by a four-cylindrical engine working on the four-stroke cycle. Yet the efficiency of the engine is by no means behind that of the average 15 h.p. four-cylindrical engine. In fact, we found that, with full load, the engine held its power astonishingly well on hills and on the level. At first we put this down entirely to the fact that so much energy is stored in the flywheels, but when, on a long hill, we found the engine pulling so well with top gear still engaged, and then gradually picking up as the gradient eased, it became obvious that the efficiency was largely behind the pistons, because if a flywheel be so heavy that it can materially help to retard a slowing-down effort

is above the normal, and, both in accelerating and decelerating, there must be a slower responsiveness to throttle action.

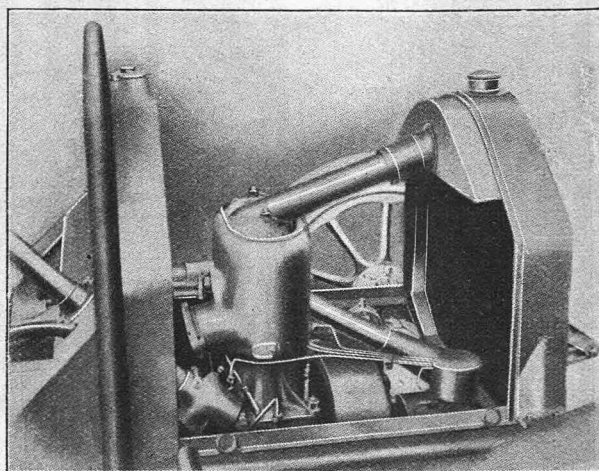
If this effect were to be at all strongly marked, thought we, we should notice an increase of noise when declutching, due to the comparative slowness with which the engine would slow down, and all gear changes must needs be made with greater deliberation. But we soon found that there was nothing in it worth speaking about, for one soon learned slightly to exaggerate one's throttling action (for example, shutting down more than would be necessary, and then opening up again to the required point), and so preventing undue racing of the engine, whilst the greater deliberation in gear changing was by no means a disadvantage. Traffic work was extremely useful for testing a couple of theories such as these, with its constant succession of checks and stoppages and the desirability not only of engine quietness, but of readiness quickly to respond to the wish of the driver.

The size of the cylinders, namely, $\frac{4}{5}$ in. bore by 5 in. stroke, would seem big nowadays for a four-cylinder engine, but, with a two-cylinder engine, the power developed is ample for the work for which the car is designed, and, at the same time, the disadvantages of an engine of large diameter are not present. Thus, with a half-compression tap, which relieves the compression on the compression stroke, it is perfectly easy to crank the engine over for starting purposes, easier, in fact, than many of the smaller four-cylinder engines can be cranked over.

The management of the engine is simplicity itself. The absence of valves is a great point in its favour, grinding in of the valves, tappet adjustments, etc., all being avoided, so that the only features remaining to call for attention are the carburetter, the magneto and sparking plug, the oil circulating pump, and, we will add although somewhat unnecessarily,



Plan view of 15 h.p. Valveless chassis.



Under the bonnet. The 15 h.p. Valveless engine.

15 h.p. VALVELESS CAR.—Contd

(in other words, help to maintain the power), it must also have the effect of retarding the recovery of the engine when it has lost most of its momentum. So, from the behaviour of the car on hills and also in traffic, we were forced to conclude that the flywheel weight presented no disadvantages.

The magneto is of the most simple type, and the

its bearings. The oil pump is positive in its action, each bearing receiving a regular feed, whilst the engine is most economical with oil. We also found that it was economical in petrol, as its consumption whilst the car was in our charge was in the region of a gallon per 25 miles.

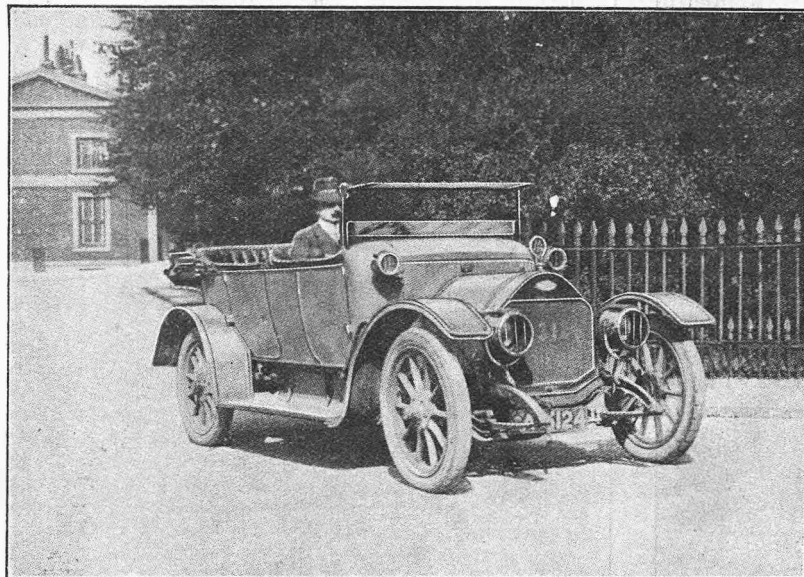
The clutch acts very sweetly, and the clutch spring does not need to be "stood upon" before the clutch will disengage. And, in case of need, the clutch can be removed without disturbing anything else.

The gear changes are easy and silent, and the gears extremely quiet—thanks to the short shafts and the form of the gearbox. We found the car very comfortable in the steering, there being no variation in the feeling of the steering throughout the whole range of car speed, and we must say that we found that the car had an excellent turn of speed. The springing, too, is very good, as we had found on the larger model. In fact, the Valveless car is largely to be commended upon the way in which it holds the road and maintains its speed, its steadiness in both these respects being most noticeable.

The compactness of the engine necessarily gives more body space than usual upon a given chassis length, and this makes for the comfort of the passengers and gives the coachbuilder more scope than he usually has.

Taken all round, the 15 h.p. Valveless car is well designed and well equipped, and is calculated to

give a deal of pleasure and satisfaction to those who use it.



The 15 h.p. Valveless car on the road.

timing of the ignition being fixed, the machine may be forgotten except for an occasional drop of oil to

NEW NAVAL AERO-HYDROPLANE.

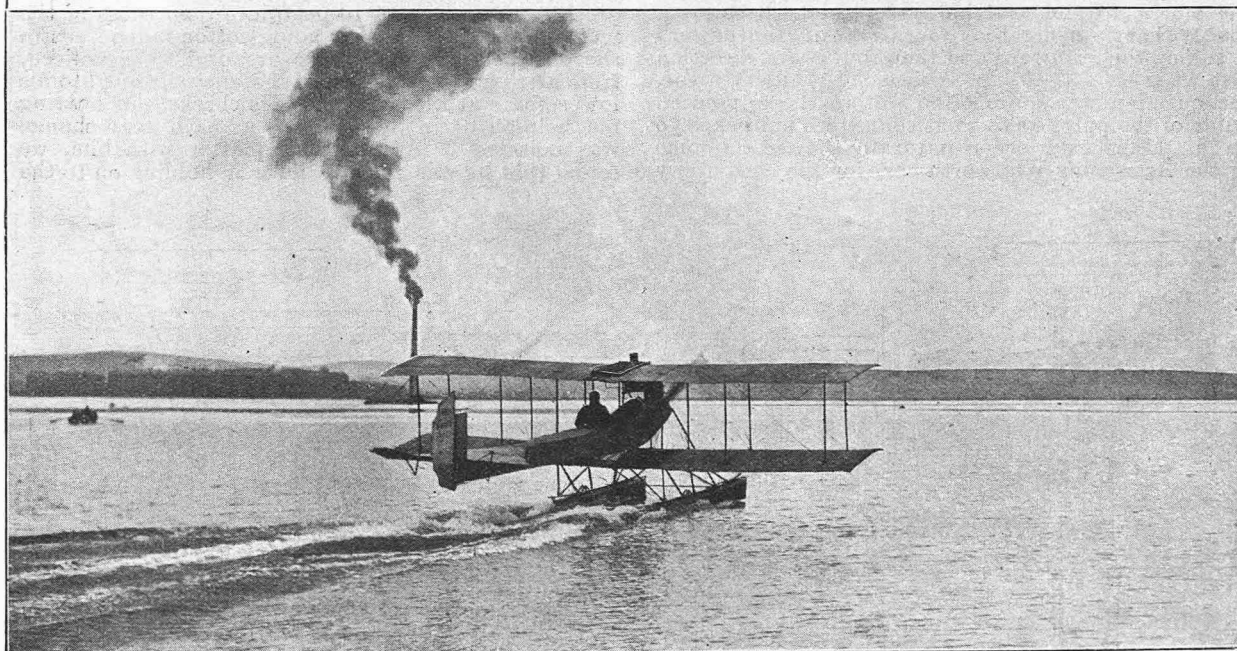


Photo. shows the new naval aero-hydroplane being tested at Cavendish Dock, Barrow-in-Furness. Commander Schwann, of H.M.S. "Hermione," conducting early morning trials in the Roe biplane with floating attachments of his own invention.

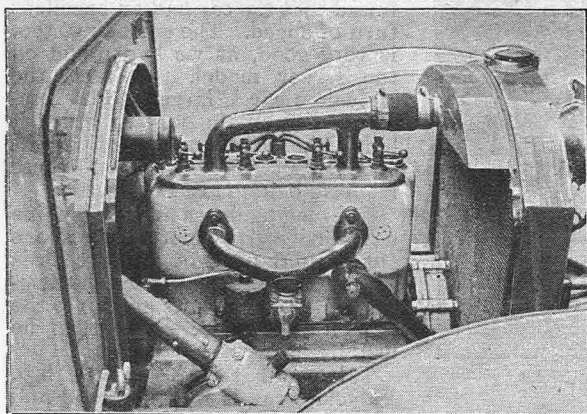
ENCIRCLING THE DERBYSHIRE PEAK.

Over Hill and Dale on the New 15-20 h.p. Armstrong-Whitworth Car.

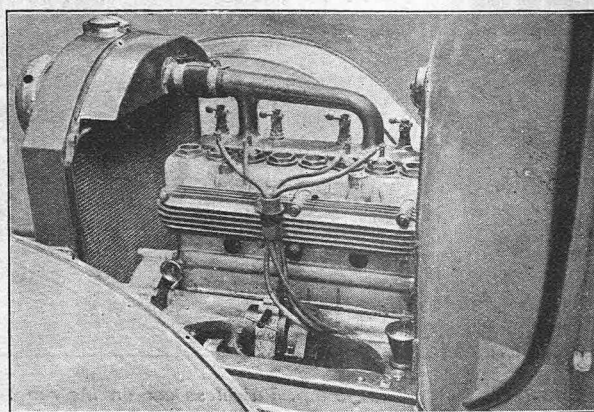
MANCHESTER is a city from which we have made quite a number of motoring trips, and, although we do not envy Manchester motorists their weather, we do envy them their wonderful choice of motoring country, for it is interesting in almost every direction. Each of the four surrounding counties, Lancashire, Yorkshire, Derbyshire, and Cheshire, has its charms, and many of the beauty spots are not far to seek, especially those in the two counties last named. And how varied is the scenery, and how great are the contrasts between heavily-verdured Cheshire and moorland Derbyshire!

is rich in its associations with this world-famed firm with whom motorcars have, of course, not played so important a part as they are—we are sure—destined to play in the future. The motorcar department is extending quietly, but it is extending surely, and one of the signs is the opening, within the past few weeks, of the depot in Manchester—a development which almost obviously is destined to succeed, especially considering the capability of the management of it.

The third member of our party, the aforesaid guide, who devoted himself to his lens and his dry plates and left the driving of the car to Mr. Slaney and the



The carburettor side of the engine showing the large water pipes of the thermo-siphon cooling system.

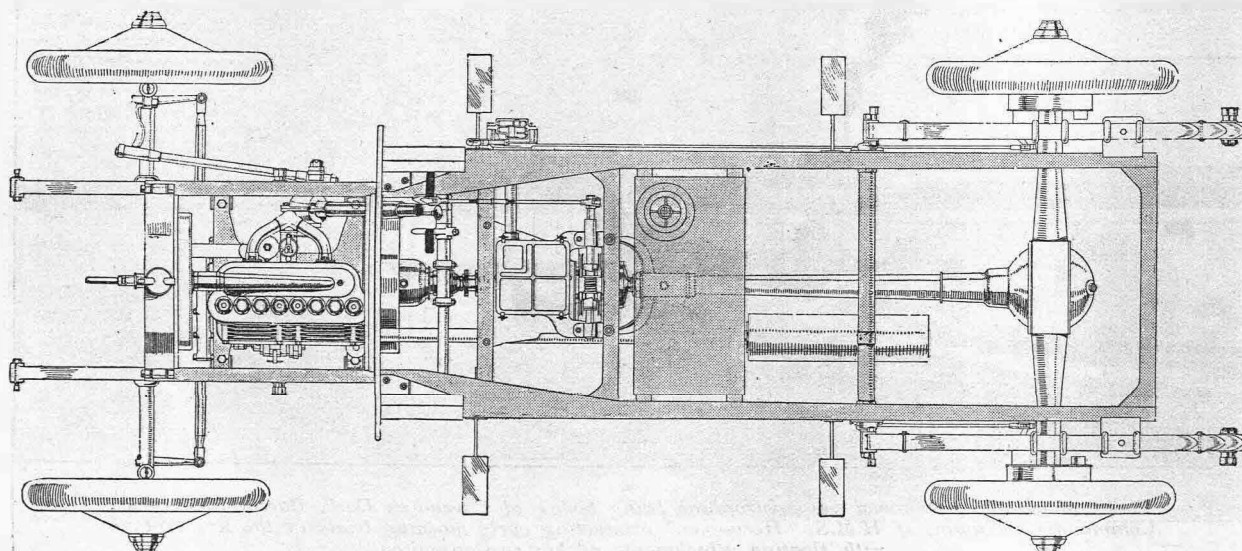


The magneto and valve side of the engine. The three air intake ports in the valve cover are shown.

Yet Cheshire can offer its scenic surprises. Who, for instance, is not astonished, after travelling some ten or fifteen miles eastwards and climbing up on to the moors, to find that he has entered Cheshire—a county that he thought lay south-west of Manchester?

Taking this eastward and then southward direction last week on a 15-20 h.p. Armstrong-Whitworth car, the question was quite often put to the appointed guide of the party as to what county we happened to be in. Manchester seems naturally the second home of the Armstrong-Whitworth car, for the cotton city

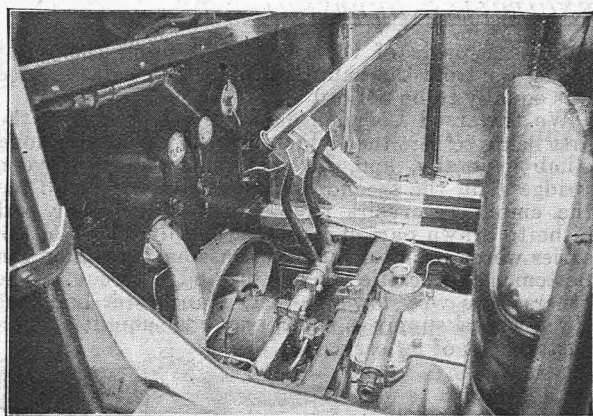
writer, directed us out through Stockport before we turned off to Longden Dale, and we must say that the suburbs and the suburban traffic of Manchester are far more pleasant to negotiate than those of the metropolis. Yet the slow-going cotton-laden vans in the precincts of the city are dreadful. We noticed, from arm movements, that Mr. Slaney dropped to his lower gears at the various traffic checks, our hearing not helping us in this respect, as each gear change was noiseless. Arguing this matter with him, we found that he was not a believer in holding on to the



The new 15-20 h.p. Armstrong-Whitworth car—plan view.

ENCIRCLING DERBYSHIRE PEAK.—Contd.

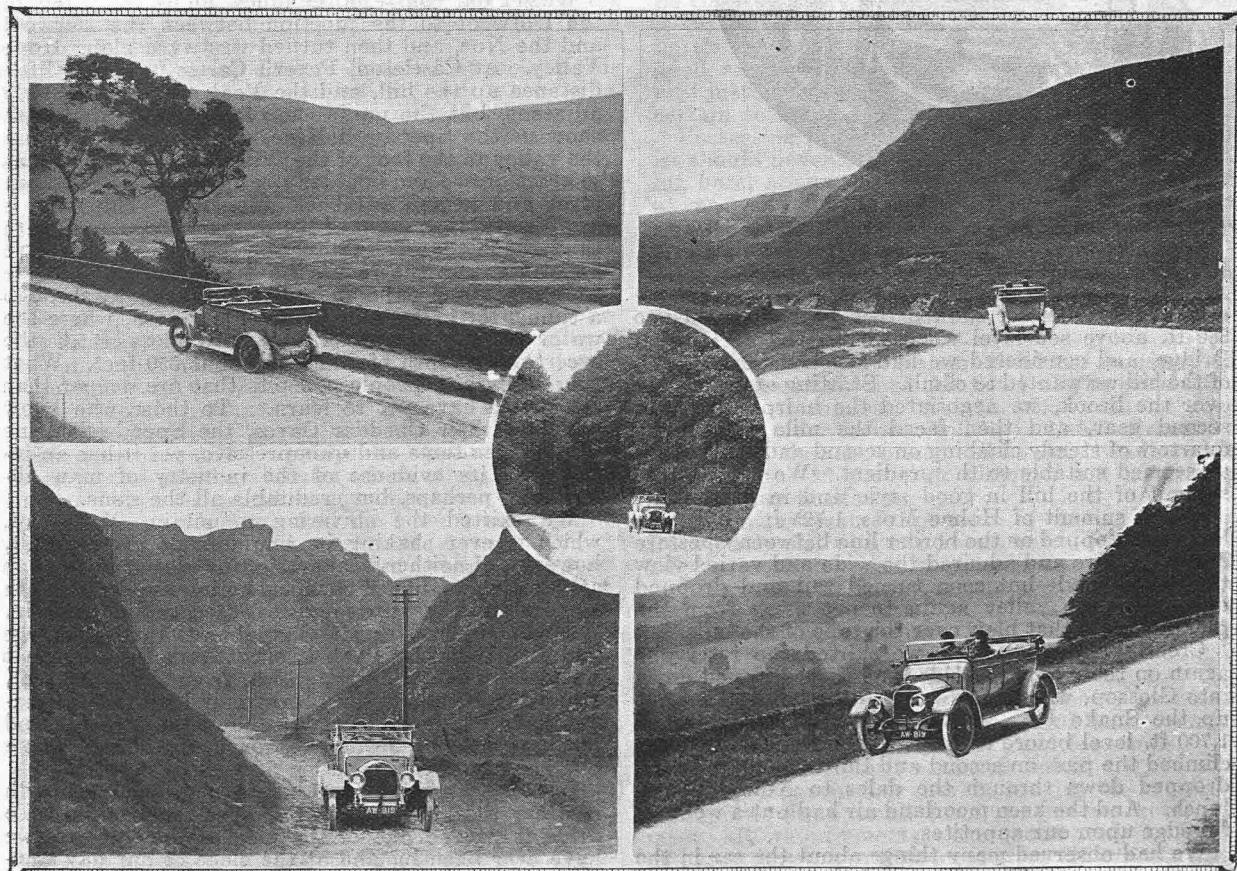
high gears, when to do so would impose undue strains upon the mechanism. With this we fully agreed, but it has always seemed to us that the reason why so many motorists continue "on top gear" in circumstances where a lower gear is desirable is the difficulty that occurs in changing gears on some cars. We noticed the sweetness of Mr. Slaney's changes, and put it down largely to the fact that he was not only an old hand at driving, but that he knew his car, and, inwardly, we doubted our own ability to approach him in style. So our pleasure, when we took the wheel ourselves, and went from first to second, second to third, and third to top without a suspicion of a sound, was doubled, to be quadrupled, however, when a stiff hill faced us, and the changes down (always more difficult to manage than the changes up) were made with equal silence. The credit of being able to effect gear changes in silence is nearly always due to the car. True, there are some drivers who never learn to understand what is going on in the gearbox when the gears are disengaged, and who, therefore, seldom or never get the gear wheel speeds equal before engaging a gear, but we have driven many a car that called for semi-scientific consideration whenever a gear change had to be made if noise and failure were to be avoided. The fault in many cases is the weight of the entering member of the clutch; in others the fierceness of the clutch brake. In the case of the Armstrong-Whitworth, three or four factors were at work in enabling the gear changes to be made silently. One was the use of the plate clutch, another the absence of a clutch brake, another the employment of four speeds, thus giving closer gear



The varied flywheel, clutch, and gearbox. At the forward end of the secondary shaft is the air pump for creating pressure in the petrol tank.

ratios, and again the careful calculation of the gear wheel diameters.

Traversing the suburbs, over road surfaces that varied as frequently as a woman's whims, we noticed the silence of the engine and gears, and also the silence of the car generally. It is quite a common fault that mudguards and other attachments to the chassis constitute innumerable sources of sound, and we always consider that the elimination of these extraneous sounds is an indication that the manufacturers take a pride in their productions, and an assurance that they apply the same care to the more



ENCIRCLING THE DERBYSHIRE PEAK ON A 15-20 h.p. ARMSTRONG-WHITWORTH CAR.

Longdate reservoir—dry and grass grown

Mam Tor, the shivering mountain.

Near Chapel-en-le-Frith.

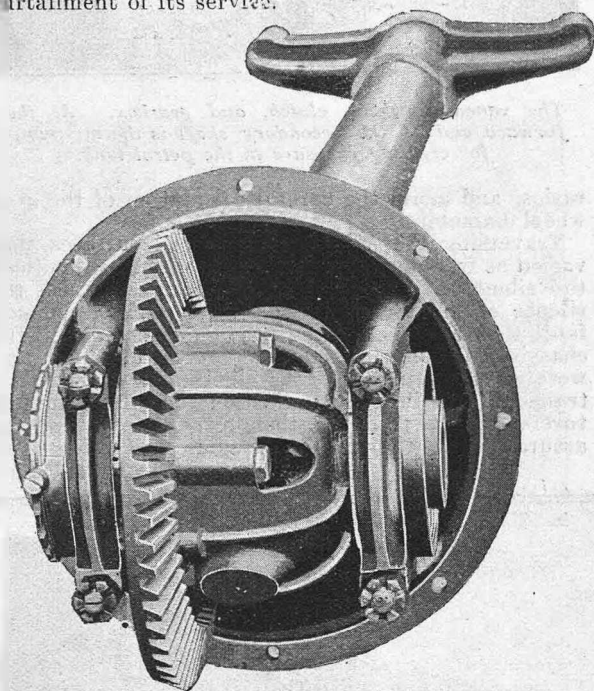
The eastern end of the boulder-strewn Winnats Pass.

Looking across a Derbyshire valley near Chapel.

ENCIRCLING DERBYSHIRE PEAK.—Contd.

important parts of the car. Out upon the quiet roads, far from the haunts of man, this same silence was equally to be noticed.

We traversed Longden dale for two reasons, the first being to test the capacity of the car upon a long climb generally, and, in particular, upon Heyden Bridge Hill, the second being that we wished to see the empty reservoirs from which Manchester had hitherto drawn part of its water supply. Two of the series were absolutely empty, grass had grown on the bottom, and cattle were feeding thereon. The others were very low; in fact, Manchester had just three weeks' supply in sight, and was submitting to a curtailment of its service.



The bevel gear drive and differential mounted upon the front portion of the axle casing integral with the propeller shaft cover and torque tube.

Our altitude meter showed that we had climbed to 880 ft. above sea level when we arrived at Heyden Bridge, and considered we had reached the "foot" of the hill we wanted to climb. Starting at the bridge over the brook, we negotiated the hairpin bend on second gear, and then faced the mile and three-quarters of steady climbing on second and third gears as seemed suitable to the gradient. We reached the summit of the hill in good style and in good time.

At the summit of Holme Moss, 1,725 ft. above sea level, we stopped on the border line between Cheshire and Yorkshire and admired the wide and varied view to be obtained—but soon turned tail and dropped down into the valley again to get away from the piercing wind that blew over the tops of the hills.

Crossing Longden dale, we skirted the reservoirs again on their opposite side, and then dropped down into Glossop, where we swung to the left and set out up the Snake Pass, which takes one nearly to the 1,700 ft. level before it drops to the Snake Inn. We climbed the pass on second and third gears, and then dropped down through the dales to Ashopton and lunch. And the keen moorland air had put a wonderful edge upon our appetites.

We had observed many things about the car in the morning's run. The silence of the mechanism we have referred to, but it was obvious that more than the usual amount of trouble had been taken to secure this attribute, for the carburetter gave forth none of the sucking or whistling sound that one so often hears.

On examination of the monobloc engine, we found, first of all, chain drive to the camshaft and magneto shaft, and, secondly, we found that the air intake was through three gauze-covered apertures in the cover that protects the valve stems. The air passes through a passage cast through the water jacket into the carburetter, which is attached without any intermediate pipe to the other side of the engine casting, the gas then passing through a branch pipe to two internal gas ways to the valve chests. Thus very little induction piping is visible, and the air on its way to the valves reaches and is maintained at a certain temperature. We must say that we have never found a White and Poppe carburetter better behaved than was the one on the 15-20 h.p. Armstrong-Whitworth car. It was perfectly even and regular in its operation, and no unfair throttle action appeared to affect the regularity of the mixture, whilst we understood that the petrol consumption was very low—the figure given us being so creditable that we should like to carry out a consumption test with this type of car.

Silence of clutch-withdrawal mechanism is only secured by good design and work, and the same applies to absence of gearbox noises and universal joint rattle. A possible source of noise is the bevel drive to the rear axle, and one of the illustrations we have had specially prepared gives one reason for the quietness of the Armstrong-Whitworth bevels. In the first place, accuracy of cutting of the teeth and avoidance of the evil results of warping are essential, but a lot depends upon the careful meshing of the crown wheel and pinion, and, as will be observed, the whole of the bevel and differential gear are carried on the end of the propeller shaft tube which forms the torque tube, and, after being carefully mounted on a bench, a silent drive is ensured.

We set our course, after lunch, along the valley of the Derwent to the junction between the Derwent and the Noe, and then turned westward along Hope Valley. At Castleton, Peveril Castle is seen a little distance up the hill, and the Peak Cavern is closely adjacent, but the guide—he of the lens—wanted to show us the Speedwell Mine, so we went a mile up the valley to the foot of the Winnats Pass (which was so grass-grown and boulder strewn that we spared our tyres and turned our back upon it). The mine is approached by a flight of 160 slippery steps, and, with the light in the wrong direction, they are not easy to negotiate. At the foot a boat awaited us, and we were taken along the underground waterway through a tunnel for half a mile or so to a cavern, where the water thundered into the "Bottomless Pit," the ascertained depth of which is about 350 feet. What the Derbyshire people call pits that are deeper than 350 ft. we have yet to learn. To those who know and love their Cheddar Caves, the Speedwell Mine would seem tame and unimpressive, yet it has an interest in its evidence of the industry of man—ill-requited, perhaps, but creditable all the same.

We skirted the shivering mountain, Mam Tor, which is ever shaking its boulders down—a result, however, of neither weakness of foundations nor of an attack of ague, but of chemical action upon the strata as each fresh mass becomes exposed to air and rain. Back to Manchester via Chapel-en-le-Frith—and we had encircled The Peak itself. From the rear seat we tested the springing, which, from the front seat, seemed to be above the average, and we found it exceedingly comfortable. We found the steering and the brakes to be beyond reproach, the brakes being particularly sweet in action as well as powerful.

In every sense the 15-20 h.p. Armstrong-Whitworth is a car that is calculated to give satisfaction. To drive it proved one of the most delightful cars we have ever been in, and at the close of our day's experience—all too short, but extremely varied and comprehensive when considered as a test of a car—we were able to say, as our honest opinion, that the makers have every reason to be proud of their production.

THE HOTEL QUESTION.

Some Further Details of the Thoroughness with which the Great French Touring Organization has looked after the Interests of Travellers in France.

(BY OUR PARIS CORRESPONDENT.)

AS soon as the motorcar emancipated the tourist the problem of hotel accommodation came forward in a pressing manner, not only at home but in all foreign countries. We are not all such enthusiastic travellers that the delights of the open road, the glories of hill and dale, stream and forest, can cause us to overlook ill-prepared food and be indifferent to dirty sleeping quarters and slovenly service. With some of us, unfortunately, the memory of a dingy bedroom and the after effects of a tough steak will remain more tenaciously than all the glories of nature.

It is to the credit of the Touring Club of France that at the outset of its career it realized this weakness of human nature and for over twenty years has been endeavouring to raise the standard of hotels to such a level that there will be nothing to shock our susceptibilities and to mar our pleasure when touring.

Conditions are so entirely different in France and England that it would be foolish to attempt slavishly to copy the methods of the Touring Club of France in our own country; nevertheless very much can be gained by an examination of their work and the adoption of the principles which have guided them so successfully.

When the Touring Club of France first took up this work the hotels of its country left very much to be desired. Being a nation of gourmets, food was generally good, and whatever out-of-the-way corner was visited one could always rely on a well-cooked meal at almost any hour of the day.

In making comparisons between English and French hotels it should be borne in mind that the Frenchman has a natural gift for cooking and possesses a palate that has been rendered sensitive and critical by long devotion to the culinary arts. But while the French hotel proprietor inherited the art of preparing an excellent meal at short notice and at low price, he also had handed down to him some most unwholesome ideas regarding cleanliness, sanitation, and general hygiene. Wall papers which were changed every ten years, microbe harbouring curtains and tapestries, inadequate washing accommodation, and sanitary fittings which might have been modern when the world was young—these were some of the defects which marked the French hotel at the beginning of the touring movement.

On the principle that the cobbler's children must be badly shod, the hotel proprietor whose business it is to receive travellers, very rarely travels himself. Thus it was necessary to convince him that his fittings were out of date and his hotel generally dirty and unhealthy. The Touring Club of France did this in a very practical manner. They got out booklets describing how a modern hotel should be fitted up. They showed that painted walls, polished carpetless floors, metal bedsteads, plain furniture and adequate washing accommodation were not only preferable from the standpoint of the traveller, but cheaper to provide than the usual old-fashioned fittings of a bedroom. Not content with describing these modern bedrooms and apartments in which cleanliness, airiness, and simplicity predominated, they fitted up rooms in this manner in public exhibitions and even in some cases gave financial assistance to proprietors of hotels who were willing to transform their hotels on recommended lines.

Prejudices of a lifetime are not readily broken down, and many a hotel proprietor, when urged to modernize his establishment would reply that these plain, severe fittings might please cranky motorists but would never give satisfaction to the regular run of customers. But they were not long in being undeceived, and when "Touring Club" rooms had been installed they were always taken in preference to the others not only by tourists from a distance but by the more local and old-fashioned clients. When at least four rooms of the hotel had been modernized in the manner recommended by the club and all other departments were equally satisfactory, the proprietor would be given a diploma and medal in addition to the club's sign carrying with it the club patronage and mention in the handbooks.

The basis of the work of the Touring Club of France has been the inculcation of principles of cleanliness and simplicity in fittings. But they have not stopped here, and at the present time the Touring Club of France has a list of 4,000 hotels all of which can be honestly recommended and all of which have entered into an agreement regarding prices to be charged. The most valuable feature of this work is that the organization is a live one. The affiliated hotels may not all be luxurious, but they are all good, and so powerful is the influence of the club that any justified complaint on the part of a member is certain to bring about an immediate remedy.

Possessing the handbook of the T.C.F. the motorist should never have any reason to complain regarding hotel accommodation. Just to take an example at random, under the heading of Remiremont we find two recommended hotels with the following information given about one of them:—

Breakfast, 1 fr. ; lunch, 2 frs. 75 ; dinner, 2 frs. 75 ;
bedroom from 2 frs. 50 ; for two persons from 3 frs. ;
two-bedded room from 4 frs. ; 10 per cent. discount ;
garage.

Although he may be an absolute stranger, the motorist is certain that this hotel will be satisfactory regarding cleanliness, that the food will be good, that wine, cider or beer will be included without extra charge, that the prices will be strictly adhered to, and that the 10 per cent. discount will be granted without any hesitation.

After many years' experience of touring in France I have only met with two hotels which did not strictly adhere to the charges mentioned in the handbook, and that my case is not exceptional is shown by the fact that this year only 150 complaints—many of them of a trivial nature—have been received from the 125,000 members of the club under the heading of hotel charges. It must be borne in mind, too, that this season has been exceptional not only by reason of the number of holiday makers but on account of the all-round increase in the price of foodstuffs.

In negotiating with affiliated hotels the Touring Club of France has never sought to create a monopoly. In a small town, where one hotel will meet all requirements, one hotel only will be affiliated, but the proprietor is given clearly to understand that the patronage of the club can be given to other hotels if it is considered necessary or desirable. In towns of some importance an effort is made to secure two or three classes of hotels, all good, but differing in their prices and the nature of their appointments. Even among the recommended hotels

THE HOTEL QUESTION—Contd.

distinctions are made; thus one establishment is preceded by two stars, indicating that it is a high-class, somewhat luxurious establishment; others have one star, indicating that they enter into the category of good, well-recommended middle-class hotels; others are followed by the mention "Chambres Touring Club," indicating that the bedrooms are fitted up in the approved Touring Club manner, while the mention "Premier Prix Concours du Bon Hotelier" is a sure guarantee that the table will be first-class and the rooms leave nothing to be desired.

The remarkably good feature of the work of the Touring Club is that it has never sought to secure a uniform mediocrity. For several years past competitions have been held in various parts of France

for hotel proprietors. The competition is held among the recommended and affiliated hotel proprietors in a determined district whose inclusive charges do not exceed 8, 10, or 12 francs per day, as may be decided on. A special committee composed of officers of the club and a certain number of private members pay surprise visits to the hotel during the period of competition and it is on their reports that the awards are made. In addition to really substantial money prizes, the successful competitors have the advantage of free mention of their success in the club handbooks and the right to advertise the possessions of their "Good Hotel diploma." These competitions have undoubtedly been of great value in stirring up hotel proprietors to further effort towards the improvement of their establishments, for the award is substantial and lasting.

A NEW BODY.

Napier Torpedo Pullman Body which has been Designed to Provide Comfort without Noise, Smell, or Excessive Heat.

THE excessively hot summer through which we have passed this year has brought about many complaints concerning the heat of enclosed bodies.

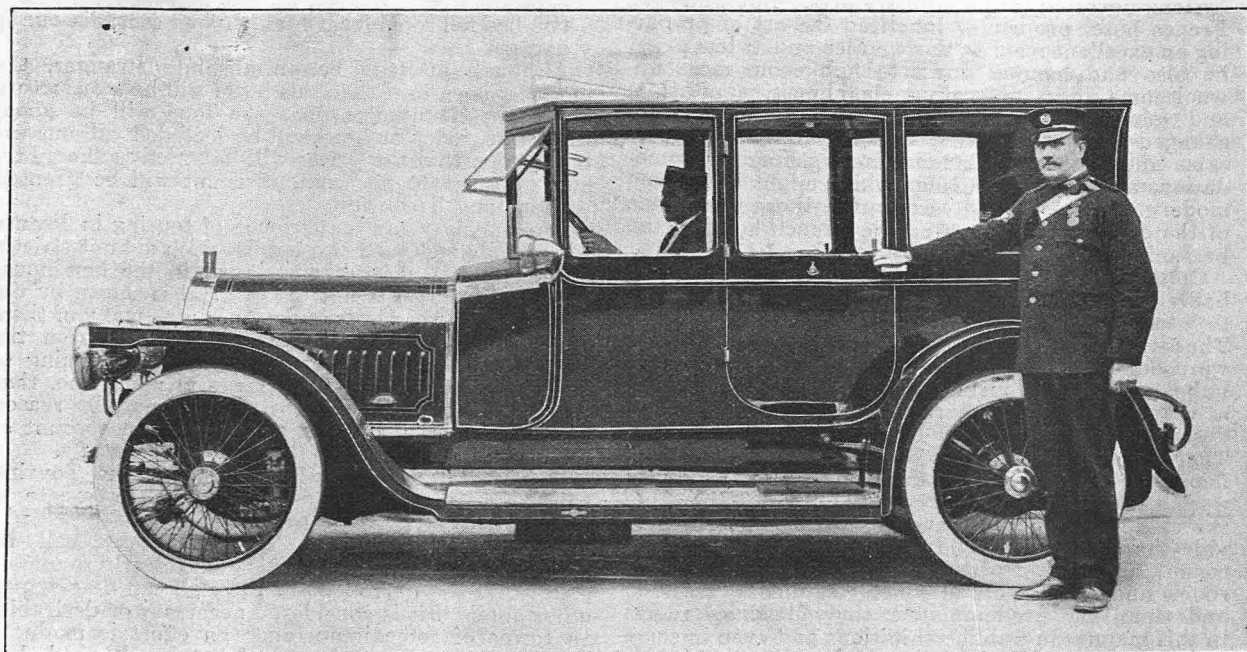
Many body designers have set about to remedy this defect, and, acting upon his own personal experience, Mr. S. F. Edge has had designed the Torpedo Pullman illustrated on this page.

It is claimed that this body, which is fitted on a 30 h.p. six-cylinder Napier chassis, is not excessively hot, and that it has all the advantages of the torpedo type without its original disadvantages. To make an open car fulfilling these requirements was comparatively speaking easy, but the next step was to make a closed car of the torpedo variety which should be noiseless, i.e., without drumming sound, without smell, and without excessive heat.

It will be noticed that there is plenty of room above the driver's head, also how very low the complete car

is by comparison with the commissionaire standing by its side, and with this there is still ample clearance underneath the car so that dust raising is reduced to a minimum. The driver's seat is made adjustable, so that people of varying height and length of limb may each put the driving-seat in the position that suits their measurements.

Mr. Edge uses a car of this type, and writes, "A particular point that was absolutely necessary to me in this car was perfect suspension, as, although it is a car for my own driving, at the same time a great deal of its useful work is for the purpose of taking me from London down to my home in Sussex. These trips are frequently made at night, and business necessity causes me to read a great deal. The two hours necessary for this trip are usually occupied in reading, and I find one of the finest tests for comfortable suspension of any car is to be able to read at night in it."



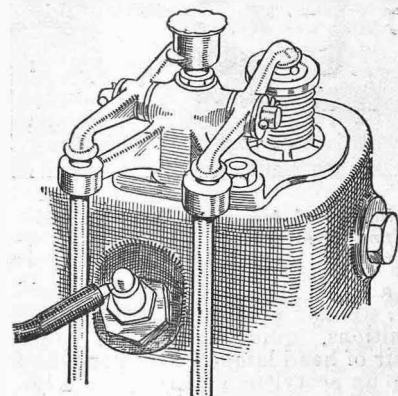
New 1912 Napier Torpedo enclosed Pullman body which has been designed to avoid excessive heat. It contains some interesting features which are set out above.

THE 1912 MODEL 15-18 h.p. BEDFORD CAR.

Several Detail Improvements in the Chassis. Epicyclic Gear Abandoned in Deference to the Requirements of the Public.

WHENEVER a firm happens to give up a certain feature which has been a strong point in their chassis, the ordinary man in the street is very much inclined to say, "There you are, I told you so," having in all probability, never previously given the subject matter of his remark any particular consideration at all. That, however, is but human nature, and when a firm does give up a particularized feature in favour of something which is more conventional, the reason for their so doing is generally because of the inefficiency of the offending piece of mechanism. In

the case of the new model 15-18 h.p. Bedford chassis, the epicyclic gear, as hitherto fitted, is now a thing of the past, the ordinary type of gearbox with gate change having been adopted. This is an alteration rendered advisable purely by public sentiment and demands, as the epicyclic gear, on the car in question, has always proved itself to be



The arrangement of the overhead valves and rocker arms, and also the guides for the tappets. Note the neat, though somewhat unusual, position of the sparking plugs.

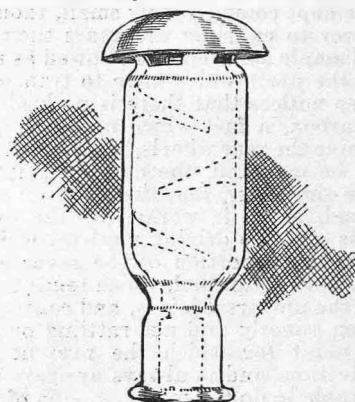
quite satisfactory, and in our experiences with it we have always found it well up to its work, and very efficient. Perhaps this change in construction is the most noticeable one in the new model, and, having briefly defined the reasons why this alteration has been made, we may now turn our attention to a general description of the chassis under consideration.

In outward appearance, the engine, which has its four cylinders—95 mm. by 95 mm. bore and stroke respectively—cast in pairs, has quite a neat appearance, and has that peculiar undefinable look which

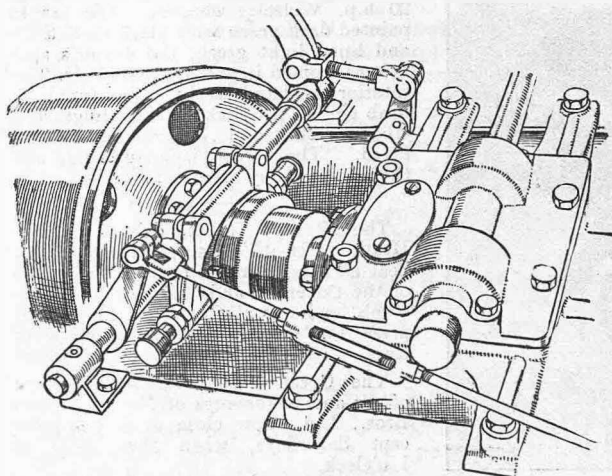
always seems intuitively to tell the expert that when it gets to work it means business. The valves are all placed directly over the piston, which is in accordance with last year's practice, but we notice that the arrangement of the tappet rods is altered slightly, the adjustment now being at the camshaft end, the top end being minus the forked extension which it previously had, having now only a hard steel extremity, whilst the top of the rod is provided with a guide, to take the place of the pin connection to the rocker arms here

tofore used. The illustration which we reproduce of this part of the mechanism conveys in a clear manner the points referred to, and it must be admitted that the arrangement is both simple and readily accessible.

The arrangement of the valves just referred to permits of the valve and its cage being removed as a single unit in a short space of time, whilst the valves themselves are of generous dimensions, and are all interchangeable, being operated, of course, from one camshaft. For the purposes of examination, or for taking up the big-end bearings, or any kindred work the bottom half of the crankcase can readily be removed by slackening the studs which attach it to the top half, as the crankshaft bearings are held in position by the upper portion of the crankcase itself; all the bearings are lined with a special anti-friction metal. Dual ignition is fitted as standard, and this consists of the magneto and an accumulator system, in combination with the latter being a push bottom self-starter. The magneto, itself, is advanced or retarded by means of a lever mounted on the steering wheel, whilst with regard to adjustments there is nothing but the contact screw to be attended to. The two-way switch, which is mounted on the dashboard, has an ingenious arrangement by which, when neither the accumulators nor the magneto ignition are connected, the key can be withdrawn and placed in the waistcoat pocket or other place of security, whilst at the same time it is of a reasonable size, so that there is no danger of its getting mislaid inadvertently. A new carburettor has been fitted—one of the Schebler types to wit—and when the engine is throttled down it certainly runs very quietly and smoothly, and in this respect is, we should be inclined to say, an improvement on last year's model. On the dashboard a simple glass dome tell-tale is fitted to inform one as to the correct functioning of the lubrication system, the pump which forces the oil from the reservoir to this dome being gear-driven off the camshaft. From this tell-tale the oil flows down by gravity to the troughs beneath the big ends, and a constant level is maintained in the said troughs, as beneath them there is the reservoir, so that any excess of oil overflowing goes into this receptacle, whence it is again strained and circulated. The approximate consumption of oil, we understand,



The internally staggered vent-pot for the crankcase, which, although kept short, does not permit oil to be blown out.



The new three-speeds and a reverse gearbox and clutch mechanism. Note the width of the flywheel.

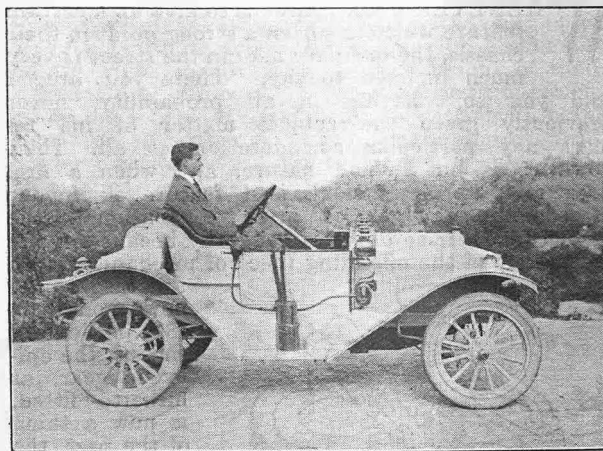
15-18 h.p. BEDFORD CAR.—Contd.

is in the region of one gallon to 1,500 miles. A centrifugal pump driven off the camshaft completes the equipment of the engine, the water being passed into a large gilled tube radiator, behind which is an ordinary fan.

When one comes to examine the clutch one's attention is instantly arrested by the exceptional width of the flywheel itself, and also the long face and gradual angle of the clutch, a combination which should ensure both longevity and an easy engagement for the latter. An indication of this part of the mechanism is to be obtained by reference to the sketch, in which the gearbox is also shown, the train of gears provided, giving three speeds forward and a reverse. The selection of the different gears is effected by means of a Daimler type of gate, and ball bearings are freely used in the gearbox. The external dimensions of this new gearbox are kept commendably small, though on removing the cover to examine the gears themselves we find that an ample sufficiency is allowed as regards the strength of the parts which have to transmit the power. One also notices that there is no brake at the rear of the gearbox, a fact which naturally prompts one to examine the rear wheels, where the two brakes are found to be mounted, the one being internal (operated by the side lever) and the other an external contracting band, which is worked by the ordinary pedal. In this way the driving mechanism is relieved of by far the major portion of the reversed strains when the brakes are applied, which tends towards the longevity of the universal joints, and consequently to their running sweetly and not rattling or squeaking. This is a point for which the present writer has a predilection, and it always appears as though it is preferable to do the major portion of the braking directly on the wheels, although, of course, the higher speed of the gear shaft, when the car has to be brought to a sudden stop when running comparatively slowly, certainly has its advantages. The frame is made of pressed steel with three cross members, the engine and gearbox being mounted on a sub-frame, which is also made of pressed steel, and between this sub-frame and the main frame a sheet of steel is riveted, so as effectively to preclude dust and other impervious matter coming into the regions of the moving parts of the power unit. The springing of the chassis is the same as before, the springs at the rear being

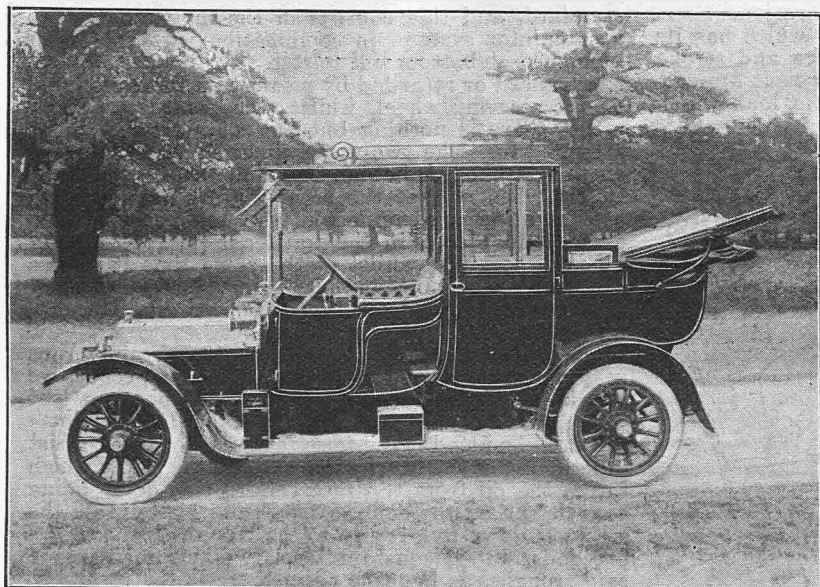
full elliptic with oscillating attachments both to the axle, and to the carrier pin attached to the frame; the ordinary type of springs are used in the front.

This general description may be considered as applicable to two models of Bedford productions for the 1912 season, the chassis as described with 102 in. wheelbase being sold at the same price as before, viz., £175, whilst a special model small two-seater



The 15-18 h.p. special model, two-seater Bedford, with complete equipment, to be sold for £235.

car, complete with a 93 in. wheelbase, is to be sold at £235. This price, we may point out, includes high sidedoors, two ignitions, quick detachable rims, Michelin tyres, a pair of head lamps, side lamps, and a tail lamp, and also an acetylene generator, in addition to a jack, pump, horn, etc. An ordinary hood and a fixed screen necessitate the outlay of an extra £10, whilst with a victoria hood and an adjustable screen the price is £250. On the standard model it should, however, be pointed out that £5 extra is charged for the detachable rim flanges, and, as was the case last year, this price does not include tyres. The first of the new model Bedford cars is now on view at the commodious premises of Messrs. Bedford Motors, Ltd., 135-137, Long Acre, London, W.C.



A 16-20 h.p. Wolseley limousine landaulet which has just been delivered to the Right Hon. H. H. Asquith

The Premier's New Car.

We give an illustration of a new car which has been supplied to the Premier, the Right Hon. H. H. Asquith. It is a limousine landaulet on the popular 16-20 h.p. Wolseley chassis. The car is painted dark green with black mouldings and lined light green, the driver's seat being trimmed in green buffalo hide. The interior is handsomely upholstered in drab cloth with pockets, arm slings, and elbow rests, and electric lamps are fitted. The screen is adjustable, and there is a canopy extension.

The 12 h.p. Talbot, driven by Mr. Heath, of Heath's Garage, Birmingham, beat all other cars on formula in Class 3 of the Coventry and Warwickshire Hill-climb, and was also awarded the special prize for fastest time irrespective of class.

The Great Eastern Street (London) offices and warehouses of Messrs. Brown Bros., Ltd., now close at 6 p.m., except Saturdays, when they close at 1 o'clock.

The 50-mile race for 15.9 rating chassis at Brooklands next Wednesday will start at 4.5 p.m.

DRIVING NOTES.

Interesting Experiences on the Road, from which Instruction may be Gained— An Incident on Portsdown Hill—Removal of Back Wheels.

"Give a Dog a Bad Name."

Some little distance out of Southsea, on the way to London, one encounters Portsdown Hill. It is neither a particularly steep hill, nor is it an exceptionally dangerous one. At the same time, however, it behoves the motorist to exercise some little caution when negotiating the descent, as it is a fairly long hill, and there is frequently a considerable amount of traffic on it. Let us add that we know the hill and road under consideration quite well, in fact, thoroughly, and that on a recent week-end jaunt, we had journeyed to Southsea for a glimpse of the sea and a "breath of the briny," and on a fine Sunday morning were returning to town.

As we took the bend at the foot of the hill in a leisurely fashion, we were somewhat startled to see in the distance a cyclist coming down the hill at a terrifying pace. In the matter of a few seconds we saw that the cyclist was a young lady, and with that intuitive instinct which reasons out an action without the knowledge of having done so, we drew to the side of the road and stopped. More seconds pass, and one's horror is increased by seeing that the road just in front is both rough and greasy. Will she negotiate the bad patch successfully?

No! Too late she sees the treacherous nature of the road at the side, and in endeavouring to come more towards the centre of the road, the cycle skids badly and the unfortunate girl is thrown into the ditch.

As we ran to her assistance, we were rather fearful as to the condition in which we should find her, as the tumble looked rather a bad one. Youth and good luck, however, had each performed its quota in minimizing the evil effects of the fall, and a quick examination revealed the fact that beyond being stunned, bruised, and badly shaken, no serious harm had befallen her.

After a short while, when she had more or less recovered, we suggested driving her home in the car, and at this juncture a dogcart arrived on the scene, with two sporting-looking gentlemen in it. One of them was evidently accustomed to relying on the powers of perspicuity with which Nature had blessed him. He addressed us.

"Why the Dickens don't you look where you're driving? You might have killed the poor girl." And one or two more sentences in the same strain.

Now the point is a small one, but it "gives one to think." It only needed someone similarly constituted to the gentleman referred to, to pass on and tell his friends, and we can then well imagine the local Press being led to publish a thrilling account of a "Bad Motor Accident on Portsdown Hill: Motorcar Throws Lady Cyclist into the Ditch," and so on ad libitum ad infinitum.

In justice to the gentlemen in the dogcart, it should be stated that when they discovered their mistake, they made complete amends; and—"All's well, that ends well."

Removal of Back Wheels.

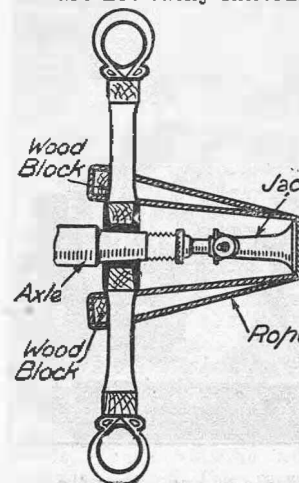
Many complaints have been heard of late of the loosening of spokes of wheels, particularly back wheels. For this, the unexampled spell of hot, dry weather has been responsible, and its effects have been particularly noticable in the case of old cars. Many owners have been, and are still, waiting for a

succession of wet weeks to supply a natural remedy, but it is doubtful if the policy is a wise one, for there is always a certain amount of "working" in loose spokes, and this movement must inevitably produce wear, which can only be taken up by a swelling of the wood to an abnormal extent. In short, neglect of a wheel may mean its permanent injury.

All of which will be easily understood, and the obviously correct course is to take the wheels off and immerse them in water. The difficulty, however, in the case of back wheels is to remove them. Usually they are driven on a square, taper end of the axle, and are not easily shifted.

The expedient of hitting the end of the axle with a heavy hammer, though effective, is not to be recommended, for it throws undue stress on the thrust bearings of the differential gear, besides leading to burred threads, and the necessity for running the dies over them before the security nut can be replaced.

A far better method is to draw the wheel off with the aid of the ordinary jack carried on every car, the only additional tackle required being some rope and a few pieces of wood. Reference to the accompanying sketch will make the system clear. The head of the jack is placed against the end of the axle, and



Showing method of removing rear wheel with jack and rope.

its base is given an anchorage by means of the rope, which is carried round pieces of wood behind the spokes and securely tied. All that is then necessary is to screw up the jack in precisely the same way as if a wheel were to be raised off the road, and unless the wheel be very hard set on the axle it may be drawn off without much difficulty. In order to avoid putting undue strain on the spokes, it is, of course, advisable to keep the pieces of wood round which the rope is taken as near the hub of the wheel as possible. In cases where the wheel is very hard set and cannot be moved by screwing up the jack, it would probably be possible to shift it by wetting the rope after the jack is strained as far as possible. The shrinkage of the rope would exert a very great additional pressure, and, we should imagine, would start the most refractory wheel, though we have never had occasion to employ this method.

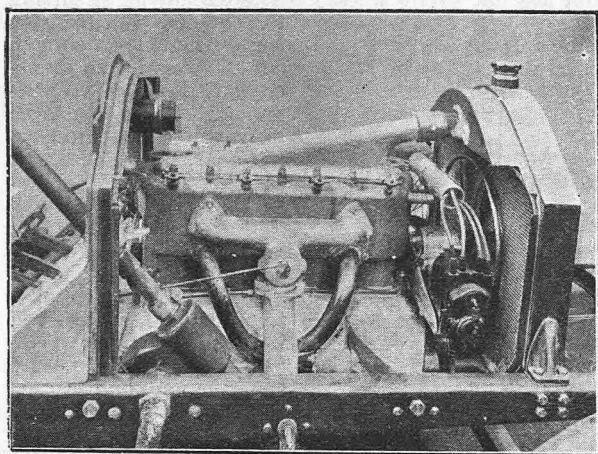
Death of M. Gobron.

It is with considerable regret that we have to announce the death of Senator Gobron, the head of the firm of Gobron and Co., late Gobron-Brillie. Although 65 years of age, M. Gustave Gobron appeared to possess the strength and activity of a man in the prime of life. While taking a rest at his country seat at Buzancy, in the Ardennes, he became indisposed and died last Thursday, after a very brief illness. M. Gobron played an active part in the racing movement of France from 1893 to 1909, and on the road met with considerable success.

THE ABERDONIA CAR.

A New High-class English Chassis with Many Excellent Features.

IT is an accepted fact amongst those who are interested in automobile matters that a new chassis is interesting per se, and even should one find it necessary to be rather stinted in one's praise of the new production or even to criticise it somewhat, the interest remains all the same; in short, anything new is interesting in a greater or lesser degree, according to its intrinsic worth. On this basis, and speaking with reference to the car which we are about to describe, one could state with accuracy that the new Aberdonia chassis is remarkably interesting, as it is not only in the tout ensemble that it appeals to one, but it has also a number of very clever yet simple improvements in relation to sundry details, whilst at the same time in the whole structure there is no



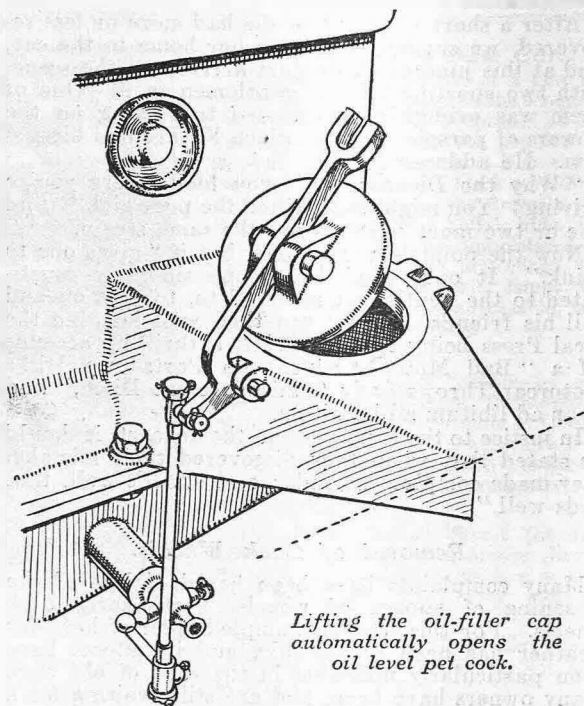
The new 16-20 h.p. Aberdonia engine. Note the accessibility of the magneto, the gear-driven fan, and the cast aluminium dashboard.

departure whatsoever from accepted mechanical principles or recognized automobile practice. Speaking as engineers to engineers, we should epitomize a description of it as a "fine, healthy-looking job." It is, perhaps, anticipating the reader's decision on this chassis after a perusal of the description if we state that the chief idea remaining in one's mind after a complete and critical examination of it is to the effect that it has been designed by people who are thoroughly acquainted with every phase of the work; and not only is this statement applicable to the mechanical portion, but it is even true with regard to coachwork, as each chassis is built with special bed-brackets, ready faced, and attached to the frame to receive the body.

In the design of the engine there are many excellent features; the h.p. rating selected is one sufficiently powerful for all ordinary work, that is to say, it is a four-cylinder monobloc engine, having a bore and stroke of, respectively, $3\frac{1}{2}$ in. by 5 in. Nominally, it is rated as a 16-20 h.p., and the bore-stroke ratio is such as largely to retain the charm of the flexibility obtaining with a "square engine," whilst at the same time there is just sufficient advantage given in the length of the stroke to gain the extra power thus obtainable without too great an engine speed. A reference to the photograph of the motor will show that it is of robust appearance, and this is one of the main desiderata in the minds of designers and producers, namely, to make a chassis which will stand up to hard work, and when one finds that the hollowed crankshaft is $2\frac{1}{2}$ in. diameter and

runs in five generously-proportioned bearings, it is seen that the theory finds materialized effect in practice. The cooling of the engine depends on a thermosiphonic circulation, and the fan at the rear of the radiator is gear-driven. Rather an interesting point in connection with the water circulation is that the offside forward bracket hanger, cast integrally with the upper portion of the crankcase for carrying the engine on the main frame, constitutes in itself a water pipe, as the connection from the radiator passes through this bracket arm carrier to the inlet pipe, the outlet on the top of the engine being a casting of good diameter and gently sloping, so as to ensure a minimum of frictional resistance in the water circulation. All the valves are placed on the one side, enclosed by an easily-removable cover plate, and this cover plate itself is quite "tricky," as the simple act of unscrewing the two milled hand nuts automatically withdraws or replaces the cover plate. The camshaft, like the crankshaft, is hollowed, and every bearing of both the shafts is under forced-feed lubrication, a remark which is also applicable to every working part in connection with the engine. A particularly happy idea is the ingenious, yet very simple device incorporated in conjunction with the oil-filler orifice. As will be seen in the sketch, the mere act of opening the lid of this orifice to pour the oil in operates a small rod, which automatically opens a pet cock, through which the oil begins to flow when the right level has been attained, and on closing the lid this overflow tap is at once shut off. In this way the trouble frequently necessary in reaching down to turn on an overflow tap, and also the possibility of forgetting to close it and so losing a quantity of oil, is entirely eliminated.

The carburetter is also ingenious, though it has a commendable lack of complication, and on referring to the illustration of this, which we reproduce, it will be seen that it is of the three-jet variety, and that the piping connecting the carburetter proper to the throttle and inlet manifold has three copper pipes inserted to correspond with choke tubes over the jets alluded to. The ignition of the engine is by

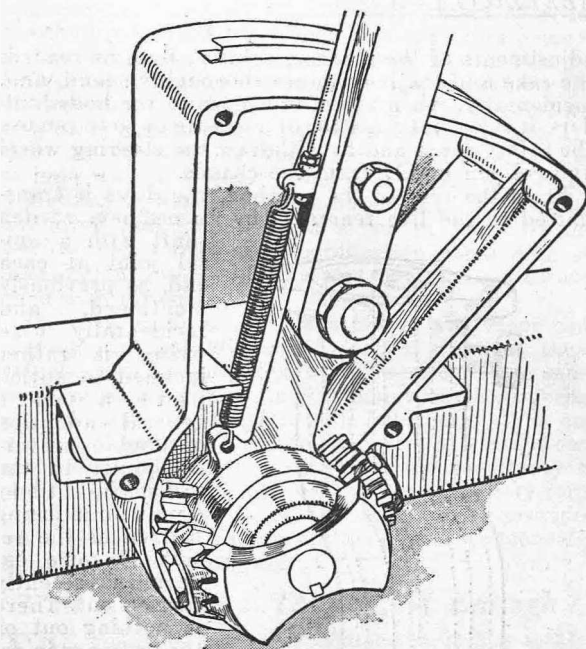


Lifting the oil-filler cap automatically opens the oil level pet cock.

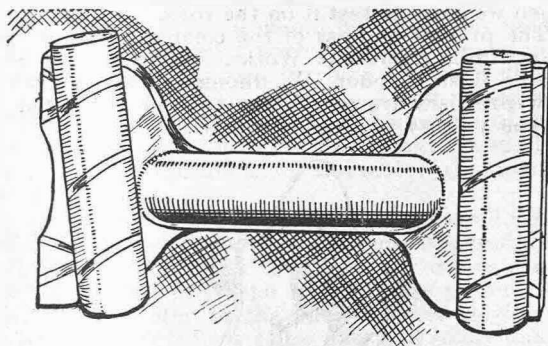
ABERDONIA CAR.—Contd.

means of a high-tension magneto, with automatic advance and retard, and the magneto itself is so contrived as to be in an exceptionally accessible position.

The power from the engine is conveyed to the three-speeds and a reverse gearbox by means of a disc type of clutch, which is very simple in design and has fewer parts than the ordinary type, and the universal joint connecting between the clutch and the gearbox is quite distinctive in appearance, similar joints being provided both at the forward and rear end of the tailshaft, and a general idea of the construction of this joint may be obtained by reference to the illustration. The gearbox has also several very good features, and is mounted throughout on ball bearings; but perhaps the cleverest piece of design in reference to it is the fact that, should occasion demand, the whole of the gearbox can be removed without interfering with the gate and selector mechanism. The lid of the gearbox is held in position by a single spring bar, and the selector rod mechanism is automatically lubricated from the gearbox direct. The gate change is more or less on normal lines, but the side-brake lever carries at its lower end a small bevel differential gear to compensate the pull on the brake rods to the rear wheels; this



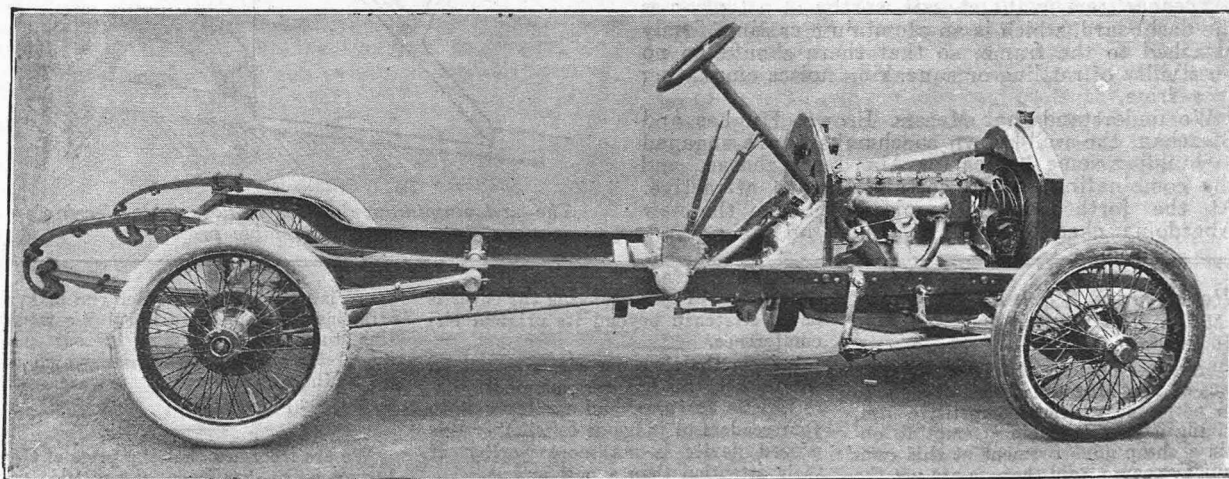
The cover of the gate mechanism is removed to show the small differential gear which compensates the pull of the lever on the two brake-rods.



The flat plate type universal joint between the clutch and the flywheel, with its phosphor-bronze bushes.

small differential gear is mounted in a little dust-proof case at the bottom of the gate casting, which casing may be traced on the photograph of the chassis which we reproduce. It is interesting also to point out that a complete range of adjustability is provided for the convenience of the driver, and be he tall, aver-

age or short, it takes but a few minutes to alter the various components of the control mechanism to suit his personal requirements. For instance, all the pedals, including even the acceleration pedal, are adjustable, both as regards the distance of the pedal from the driver and the angularity of the pedal plate itself. Then, again, the steering wheel is adjustable, both as to its rake and to its length, and in addition to this, the side brake lever and the change-speed lever are also adjustable. Now, in so many bald words, these various adjustments might perhaps sound as though they would necessarily entail somewhat complicated adjustments, but such is in no wise the case, and they are arranged in a thoroughly mechanical and equally simple manner. There is a small circular disc with an eccentrically-mounted fulcrum pin, and although the amount of eccentricity on this pin is only, at a guess, about three-eighths of an inch, an adjustment of no less than 3 in. in the position of the pedal is obtained by merely altering the position of this attachment; then, again, the



A general view of the new 16-20 h.p. Aberdonia chassis.

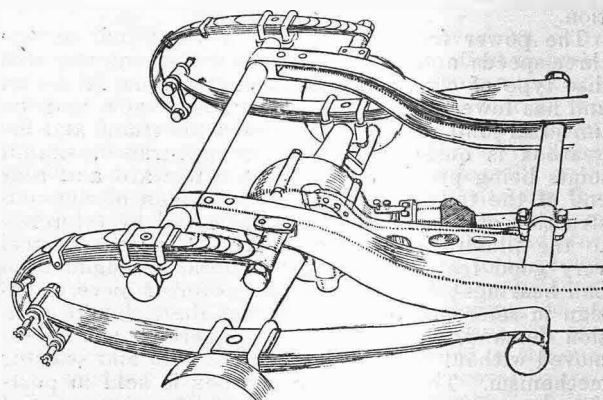
ABERDONIA CAR.—Contd.

adjustments of the steering column, both as regards the rake and the length, are thoroughly sound, and, incidentally, when the chassis goes to the body-builders, it takes but a matter of a minute or so to remove the safety catch and to withdraw the steering wheel and column bodily from the chassis.

From the rear of the gearbox, the drive is transmitted to the live rear axle by an ordinary cardan shaft with a universal joint at each end, as previously mentioned, and incidentally the writer is rather inclined to anticipate a more general adoption of double universal joints to the tail-shaft, this opinion being formed as the result of some experiments recently carried out. There is nothing out of the ordinary in regard to the back axle, which is of the floating type, substantially cascd, and it is fitted throughout with ball-bearings.

When one comes to the springing of the chassis, however, this is "distinctly distinctive," and the general arrangement may be gathered from the illustration reproduced, and both the upper and the lower springs are free to oscillate respectively on the carrier pin and the

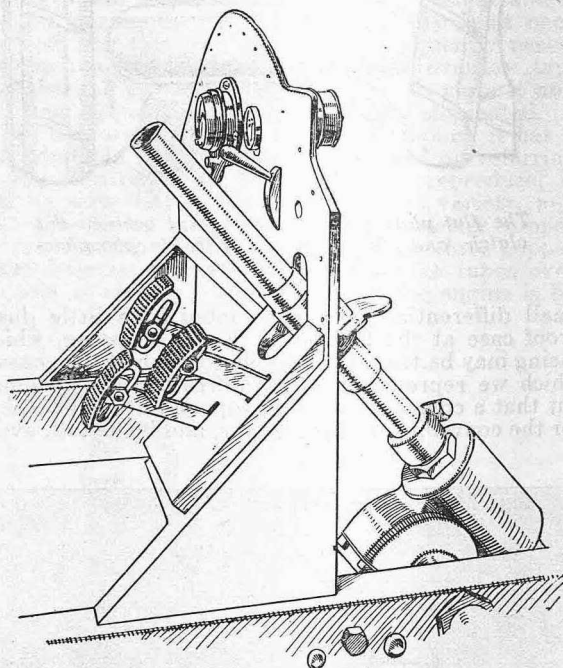
and we are of opinion that it will prove to be one of the things to be examined, and we think that those who study its many neat features—its simple and sound construction—will agree with us that its construction reflects the greatest credit on those who



The rear springing is quite distinctive, being a cross between the ordinary types of three-quarter elliptic and full elliptic springs.

are responsible for its design. For ourselves, we are certainly enamoured of it, and anticipate good results when we come to test it on the road.

The present address of the company is Aberdonia Cars, Ltd., Aberdonia Works, Aldine Street, Shepherd's Bush, London, W., though some commodious new premises are now being erected and fitted out in the vicinity of the metropolis.



The cast aluminium dashboard, adjustable steering column, and adjustable pedals.

The three-jet carburettor and special three-way connecting pipe to the inlet manifold.

spring pad. Theoretically, this design of springing appears to us to possess some very good points, and we shall be interested to notice how it works in practice, and on rough roads.

Another item in the chassis worthy of attention is the dashboard, which is an aluminium casting, firmly attached to the frame, so that there should be no possibility of rattling or squeaking noises emanating therefrom.

We understand that Messrs. Brown, Hughes and Strachan, the well-known coachmakers, are engaged in building some bodies for Aberdonia chassis, and the combination should certainly prove attractive. At the forthcoming Olympia Exhibition the new Aberdonia chassis is to be staged on their stand,

Reply from Warland Rim Co.

Messrs. The Warland Dual Rim Co., Ltd., write as follows:—

"A letter on page 284 in this week's issue of THE MOTOR has been brought to our notice, in which a competitive firm, making a very laudable attempt to obtain a cheap advertisement at this company's expense, said that we are not the only firm who can now advertise that, whilst our rims are of standard size, by

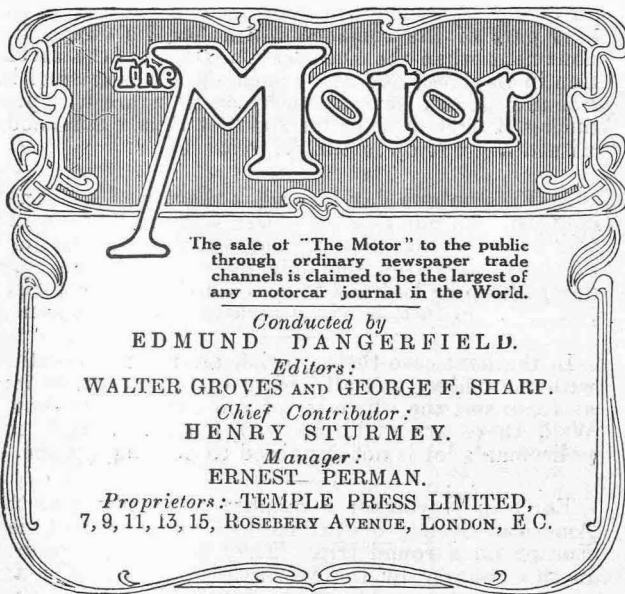
our method of tyre changing the cover is never stretched beyond its original circumference.

"From the time our rim was put on the market, this has been one of its characteristic features, and we leave it to your readers to judge as to whether this proved device is not more worthy of their attention than a new article.

"It is interesting to notice that the Warland lead is being followed, and

there is no doubt that other rim makers will have to come into line. We would like to add, particulars of our new model for the coming season, which retains this characteristic feature, will shortly be published."

We are informed that the price of Carburine spirit has been raised 3d., and that the price of Shell spirit is 1s. 2d. per gallon.



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.

Editors:
WALTER GROVES AND GEORGE F. SHARP.

Chief Contributor:
HENRY STURMEY.

Manager:
ERNEST PERMAN.

Proprietors: TEMPLE PRESS LIMITED,
7, 9, 11, 13, 15, ROSEBERY AVENUE, LONDON, E.C.

Cross Ridging of Roads.

WE have had an illuminating discussion in our columns recently concerning the formation of pot-holes, and in this issue Sir John H. A. Macdonald replies to some criticisms of his recent interesting article. We will leave him and his critics to fight over the pot-holes and to decide amongst themselves whether horses initiate them and motorcars accentuate them.

In our recent wanderings off the main tarred roads, we have been interested to note something quite distinct from pot-holes. It is not by any means a new point, but it has not been raised in the present discussion. We refer to the curious cross ridging of roads, which we believe to be due, and solely due to motor traffic. This will be found in very marked degree on many gravel side roads. It is a transverse ridging, and where it is once set up it becomes worse and worse with constant motor traffic.

Those of our readers who remember the Castelnau Road from Hammersmith Bridge to Barnes before the present excellent wood pavement was laid, will recall that, when the motorbuses commenced to run over the old macadamized road this cross ridging was very marked; indeed, it became so bad that cycling over it was almost dangerous. Efforts were made to patch it but without success.

Last week we turned off the Ripley Road at the bottom of Red Hill, taking the road to Weybridge, and we found exactly the same ridging on parts of the road.

What causes it?

State Subsidies for Cars.

THE announcement by the War Office that motor lorries are to be subsidized by an annual payment, so as to be available for mobilization purposes, may be regarded as but the preliminary to a wider employment of automobiles in the national service. To the modern army the light motorcar is practically as indispensable as the lorry; and as time goes on, the need for the fast passenger car will be the more clearly recognized. It will be no easy problem to devise a satisfactory system, whereby private automobiles can be made available in national emergencies, but a scheme has already been put into operation in France, and the minor defects in it should guide us to draft a really effective arrangement.

England has undoubtedly a greater extent of roads to each square mile of surface than any other country in the world, and this circumstance means that far better use of motorcars could be made here by the military than in other lands. We also have considerably more cars than any other country in Europe, and these two factors, if intelligently availed of, should go to improve our defensive system in no small degree.

Mobility is one of the greatest assets of the present-day army, and England, with a fleet of light cars and lorries always ready for mobilization could fling an overwhelming force on any part of the coast threatened with invasion.

It is not made clear in the official statement concerning the subsidizing of lorries whether these vehicles will be liable for foreign service. The same point must be clearly understood when considering any scheme in connection with light cars. It is one thing to respond to a call to convey troops to our own coast line, but when it comes to the possibility of one's car crossing the sea with an expeditionary force—and expeditionary forces in time must be provided with motors—the car owner will have to consider the matter very carefully.

Tool Kits: Are They Good Enough?

THE policy of many manufacturers in the matter of tools and accessories is altogether wrong. We speak from experience, because so many cars go through our hands for trial, and, therefore, we are compelled to compare the equipment of a car as it reaches us with the standard which we have set up for ourselves in relation to the equipment of our own cars. Perhaps, our complaint applies chiefly to the matter of tool kits and such implements as are provided by the makers to enable the owner to carry out essential work and emergency operations on a car. It is a rare thing to come across an equipment that excites our admiration. Usually, it is far from complete, by no means well thought out or selected, and invariably the quality of the tools is not the best.

The attitude of the car manufacturer is this: "The car buyer, in selecting his car, does not examine into or even consider such a detail as the quality and selection of the tools given with the car; therefore, the tool equipment is something which we have to give away, and we cannot be expected to give expensive presents." This attitude is at the bottom of the trouble.

In the first place, no part of a car or its equipment is "given" to the customer; it is bought by him. In the second place, the customer is certain to be offended when he realizes how badly he has been served. If he be experienced and qualified to judge, he will condemn the tool equipment straightaway, and, replacing it with another, conclude that he has been overcharged two or three pounds. If he be inexperienced, he will soon find out the shortcomings of the kit, the absence of essential tools, the discomfort of using poorly-made tools, and their weakness when put to the test of work, and he will lose his confidence in his car, because the small matters upon which he is able to form a judgment have proved defective. The car maker, in other words, suffers.

We could, off-hand, name half-a-dozen makes of cars which, when they have reached us for trial, have undergone this process:—The whole of the equipment is turned out upon a bench. The tyre inflater proves of poor quality, perhaps is minus a gauge; the jack is obviously cheap, not easy to operate, and certain to soil the hands; the tools are poor. The whole lot is placed upon one side, and our own inflators, jack, and tool-kits substituted for them. These tool-kits would not be parted with, as the tools have been purchased separately, each is of the best quality, the range and variety of shifting spanners is such that no task is beyond their scope, there are no unnecessary tools,

EDITORIAL.—Contd.

and every adjustable tool is easy to manipulate and free from faults. Such a selection of tools is a pleasure to work with and a comforting thing to possess, because experience has created confidence in its ability to deal with any emergency short of a repair that calls for workshop facilities. One could carry on the complaint so that it included lamps, horns, etc., but the average customer is better enlightened upon such matters, and looks for the name of the makers upon them. Our advice, given with all seriousness, is that the tool equipment of a high-grade car should be equally high-grade and absolutely complete, and, if the cost of it must be cut down, the car manufacturer should give the customer good tools and leave out the letter wallet that, in nearly every case, costs more than the average set of tools contained in it.

EVENT AND COMMENT.

It is not unusual for M.P.s in this country to indulge in flights of fancy when visiting their constituents. In France a senator, M. Reymond, has set a new fashion by actually flying on a Blériot monoplane from Etampes to Montbrison, his constituency. In England a "flying visit" to one's constituency is merely one of many figures of speech.

We find it very difficult to make headway with the "Petrode." If we point out that it generates no electric current, the makers say the "run-down" condition is just what they require. If we say it can have no electrolytic effect upon petrol, they say it is not intended to act upon the petrol but upon the impurities in the petrol! In the meantime, those who are testing it can report no effect, and, consequently, no economy. We suppose it will now be said that we have struck a vein of pure petrol! It's a hard world.

The "vestibule suburban" body is described as one of the new types of carriage design produced by an American firm for 1912. We may soon expect the "corridor car," the "city and suburban," and the "country house" models.

A reverend gentleman, the Rev. J. P. Bacon-Phillips, to be precise, has been denouncing motoring and aviation as "the curses of the age." This is very dreadful, but it is followed by a layman who advocates a law against the licencing of cars that can possibly exceed 18 miles per hour. In support of this he tells what we—degenerates though he will call us—must describe as a good sporting story. Here it is:

A few days back two motorists found themselves racing along the high road. They were both bound (unknown to each other) for a certain police court to answer summonses for previous breaches of the speed limit. Both were fined; their roads home coincided, and one of them actually challenged the other to race him back to London!

Some motorists are never satisfied. A friend of ours who has just taken over a Silent-Knight-engined car says he cannot stand the "swish" of the steel-studded tyres!

Mr. Charles Y. Knight, the inventor of the Knight sleeve valve motor, is now in his native country, the United States, where he has arranged to deliver a series of lectures on his motor in New York, Detroit and Chicago. How Mr. Knight invented the sleeve valve motor in America many years ago, how he built several cars there, and yet failed to arouse attention amongst American

automobile engineers or American motorists, is the first part of the romance which had its happy denouement when the Daimler Co. took up the invention in England, and made such a great success of it. For next season several American firms are now producing Knight engines for the first time. Somebody missed a great opportunity, years back!

At Preston one day last week there was a strange contrast. In one case an officer said that a motorist was so courteous when the car was stopped that one of the officers told the defendant he was the most decent chap he had had to deal with among motorists. . . . in fact, it was a pleasure to report him.

In the next case the motorist, after a conversation with the officer, was alleged to have said: "So far, as I can see, the whole lot of you ought to be shot." Well, there are motorists and motorists, and the policeman's lot is not supposed to be a happy one.

Early in November a number of members of the American Society of Automobile Engineers will visit Europe on a round trip. They will be entertained in this country by the Institute of Automobile Engineers, and in addition to visiting Olympia, they will inspect the Wolseley, Austin, Daimler, Armstrong-Whitworth and Humber factories, and carry out tours in Warwickshire—Stratford-on-Avon not being missed. In London the American engineers will hold a joint technical discussion on one evening with members of the Institute of Automobile Engineers, and will visit some of the cab garages as well as that of the London General Omnibus Co. Brooklands will also be inspected. From England the American engineers will go to France to inspect some factories there.

One finds it difficult to cavil at the way in which news is served up in these days. It is so written that it appeals to the meanest intelligence. For instance, an evening paper had this illuminating item the other day:—

"The naval airship at Barrow is now much lighter than it was, having been relieved of much of its weight."

Wonderful how these changes are brought about nowadays, and what marvellous results from little causes spring!

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FINANCE & BUSINESS

The motor share market of the Stock Exchange has been a little more interesting this week, and business has expanded somewhat, but there is still plenty of room for further trade. The Birmingham Small Arms report has been issued, but, notwithstanding the excellent figures therein disclosed, the price has hardly moved. There have been some heavy dealings in the shares, and at one time they touched 49s. 3d., but only to slip back to 48s. One would have thought that the shares of a company of the standing of the Birmingham Small Arms would have responded more to such a splendid showing as the directors are able to make this year. But, although there has been some good buying, there have been plenty of sellers to counteract its influence. Much of this effect must be due to "intelligent anticipation," preceding the official announcements of the directors. Humbers have been actively dealt in during the week and the price has improved to 6s. 4½d., whilst the preference have also hardened to 9s. 9d. S. F. Edge shares have been slightly inquired for and have improved to 15s. 6d., and are a good market at this price. Rovers are weaker and Argylls are quiet. The other active shares have remained steady throughout the week.

The effect of the purchase of the whole of the undertaking of the Daimler Motor Co. is shown in the balance-sheet, just issued, of the Birmingham Small Arms Co., Ltd. The issued capital has increased by £249,757, and the amount of money invested by £339,246. The profits have risen from £93,775 15s. to £232,818 0s. 5d., but, of course, it is not possible to ascertain from the balance-sheet exactly how much of the increase has come from the Daimler branch and how much from the improvement of the B.S.A. business. The profits of the old business improved from £84,086 in 1908-9 to £98,775 in 1909-10. The B.S.A. car has ceased to exist this year, but if we guess at about £110,000 as the B.S.A. share of the profit we arrive at the figure of about £120,000 as having been brought in by the Daimler branch—a very good return upon the amount invested therein by the B.S.A. Co. To deal with the other items in the B.S.A. balance-sheet, the amount brought forward from last year was £47,229 19s., making the sum of £230,047 19s. 5d. available for distribution. The dividends of 5 per cent. per annum on the preference shares and 10 per cent. with a bonus of 5 per cent. on the ordinary shares absorb £124,612 5s. 7d. It is

proposed to transfer £100,000 to reserve, which will then amount to £240,000, and to carry forward the sum of £55,435 13s. 10d. We observe from the report that Mr. Lincoln Chandler has been elected to a seat on the board.

We were glad to find Mr. Edward Genna back at business the other day fully recovered from his unfortunate accident at the Sutton Coldfield speed trials last July. In his capacity of sales manager of the Sunbeam Motor Car Co., Ltd., he has now resumed his calls upon the various agents handling this popular make of car.

Mr. J. F. Hammersley, who has done so much recently in the way of popularizing British cars abroad, has now joined the Deasy Motor Car Manufacturing Co., Ltd., and will travel on behalf of Deasy cars. He is a hard worker, and one in whom Mr. Siddeley has long had ample faith.

Mr. E. A. Lamb, who is well known throughout the motor and cycle trades because of his 17 years secretaryship of the Stanley Show, has established himself at 519-520, Birkbeck Bank Chambers, High Holborn, London, E.C., as an advertising contractor, printer, and publisher.

One of the features of the week has been the declaration of a small dividend of 1 per cent. by Thomas Smith's Stamping Works, Ltd., the first since 1897. This is after wiping off a debit balance on profit and loss account of £5,310, the profit for the year having amounted to £7,393, and as the company should do as well, if not better, next year the prospects of a larger dividend are very favourable. The shares are about 7s. 3d. Inasmuch as this company manufactures largely for the motor trade, the above may be of interest to our readers, as showing how the motor industry has brought renewed prosperity to such of the old-established concerns, as show enterprise.

The balance-sheet of Messrs. Drake and Gorman, Ltd., for the year ending 30th June last shows a net profit of £7,184 7s. 6d., which, with the carry forward of £1,242 4s. 9d., makes a total of £8,426 12s. 3d. available for distribution. It is proposed to appropriate this as follows: by paying a dividend of 4½ per cent. per annum, £5,625; by writing off part of underwriting commission, £1,500; and by carrying forward the sum of £1,301 12s. 3d.

Messrs. Brown, Hughes and Strachan, Ltd., have just completed their new factory situated on a large tract of land purchased outright by them at Park Royal, Middlesex, and the whole of the staff of employees assisted the other day at the opening ceremony. The directors can see so much business ahead that they are fully prepared to be called upon to extend the works, particularly as it is intended to embark upon the construction of flying machines.

"THE MOTOR" SHARE LIST.

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

All the shares are fully paid except Alldays £5 ordinary shares.

SHARES.		NAME.	Dividend.		Previous Prices.		Prices.		
I-ssued Capital.	Paid Up.		Last.	When payable.	1910.	1911.	2nd Oct.	2nd Oct.	
£					High.	Low.	High.	Low.	
45,000	£3	Aldays & Onions	5%a	Mar./Nv.	34	31	32	32	31
50,000	£5	" " Cum. Pref. 6%	8%	Mar./Nv.	57	54	55	55	54
209,802	10/-	Argylls, Ltd.	nil	Nov.	7/6	4/-	6/6	4/-	4/6
107,843	£1	Belsize Motors	6%b	May/Nv.	25/3	19/3	27/3	23/9	25/-
767,225	£1	Birmingham Small Arms	10%a	Ap./Oct.	50/-	33/-	37/-	46/6	47/3
73,000	£5	Brampton Cum. Pref. 6%	6%	Oct.	43	39	41	41	40
100,000	£1	J. B. Brooks & Co.	8%	Mar./Nv.	22/6	20/-	27/-	28/-	30/-
100,000	£5	" " Cum. Pref. 5%	8%	Mar./Nv.	53	51	52	52	51
100,000	£5	Brown Bros. Cum. Pref. 6%	6%	Ap./Oct.	42	40	43	43	44
854,000	£1	Charron, Ltd., Par. Pref. 7%	5%	Jan./Jul.	10/6	6/8	9/-	6/6	6/3
275,000	£1	Darracq (1905)	7%	Jne./Dec.	20/-	19/6	23/6	17/4	17/10
375,000	£1	" " Pref. Ord. 7%	7%	Ap./Nv.	18/3	14/-	20/-	18/-	17/4
41,621	6/-	Deasy Motor	nil	Oct.	10/-	4/6	8/10	6/9	6/10
159,239	£1	De Dion-Bouton (1907) Pref. 7%	3%a	Nov.	8/-	6/6	12/6	6/11	10/-
105,000	£1	Deahaye & Co.	20%	July	14	12	14	14	13
60,000	£1	" " Pref. 7%	10%	Jan./Jul.	25/-	22/-	26/6	20/6	21/-
800,000	£1	Dunlop Rubber Co.	8%a	Ap./Nv.	82/6	75/-	82/-	68/6	69/-
200,000	£1	" " 6% Pref.	7%	Nov.	23/-	20/6	23/3	20/11	21/-
312,786	£1	" " French I. Stock	24/-	18/9	24/-	18/9	24/6	20/6	21/6
624,896	£1	Dunlop Tyre New Cum. Ord. 8%	8%	May/Nv.	18/3	16/9	18/-	16/10	17/4
991,990	£1	" " Cum. Pref. 5%	5%	May/Nv.	22/6	17/3	24/3	20/9	21/6
499,962	£1	" " New Deferred	7-8%	May/Nv.	28/6	17/9	24/3	20/9	21/6
215,842	£1	S. F. Edge, Ltd.	6%	Ap./Dec.	15/9	8/-	16/6	13/9	14/9
75,000	£1	Friskwell (1906)	nil	Jan./Aug.	2/3	1/11	2/6	2/-	2/6
50,000	£1	" " Cum. Pref. 6%	nil	Jan./Aug.	8/6	3/-	8/6	3/-	3/6
292,904	£1	Humber	nil	Nov.	10/11	5/9	8/4	6/6	5/3
331,495	£1	" " Cum. Pref. 6% (New)	nil	Nov.	12/3	8/6	11/9	8/9	9/6
100,000	£5	J. Lucas, Ord.	10%	Ap./Nv.	52	48	51	48	51
100,000	£5	" " Cum. Pref. 5%	5%	Feb./Oct.	54	51	52	51	52
96,490	£1	Rolls-Royce, Par. Pref. 6%	15%	Jan.	97/6	12/9	10/6	14/-	14/3
188,668	£1	Rover	5%	Nov.	20/6	19/3	19/6	14/-	13/6
70,000	£1	Star	8%	Mar.	11/9	5/8	15/10	11/9	12/-
69,157	£1	" " Cum. Pref. 7%	7%	Mar.	24/3	12/6	18/3	16/-	15/6
87,550	£1	Stepney Spare Wheel	20%	Nov.	30/6	23/6	38/-	27/3	35/-
70,000	£1	Sunbeam M.C. Co.	16%a	Nov.	82/-	77/6	87/-	77/-	87/6
80,000	£1	Swift	6%	Apr./Nv.	28/6	17/-	21/6	16/10	17/6
100,000	£1	" " Cum. Pref. 6½%	64%	Apr./Nv.	18/3	16/3	17/3	16/-	16/6
148,500	£1	Thornycroft, J. I. & Co.	nil	May/Nv.	3	30/9	18/9	3	3
198,800	£1	" " Cum. Pref. 6%	15%a	May/Nv.	4	20/7½	18/9	29/-	37/-
80,000	£1	Triumph Cycle Co.	12½%	Nov.	82/6	19/6	40/-	29/-	37/-
50,000	£1	" " Cum. Pref. 5%	6%	Nov.	15/3	14/9	21/-	17/11	20/6

a Plus 5% bonus, b Interim, c Plus 3% arrears. d On account of arrears.

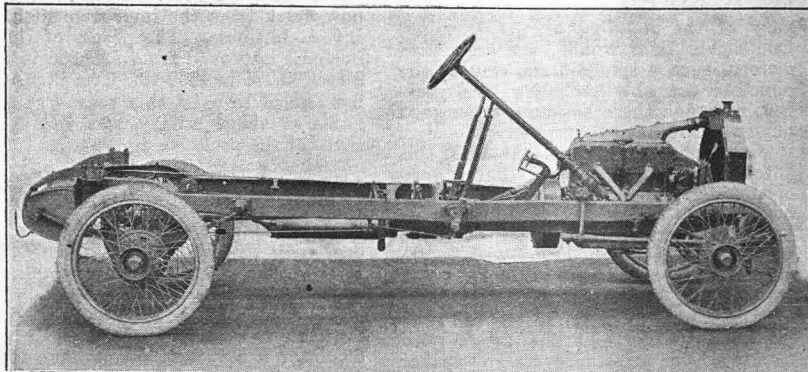
HUMBERS FOR 1912.

Three Entirely New Productions by the Famous Beeston Company.

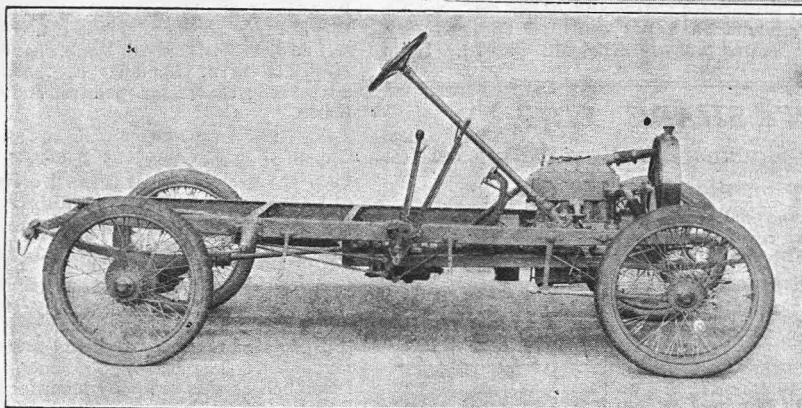
WE have already given, briefly, the 1912 programme of Humber, Ltd., and we are now able to supplement the information with fuller details of the models and photos of the new chassis. Entirely new productions are the 11 h.p., 14 h.p., and 20 h.p. cars, whilst the 12-20 h.p. and 28 h.p. cars are only altered in minor details. The features of the new designs are the single camshaft to the engine, thus bringing all the valves on one side, and the employment of a transverse shaft to drive the magneto on the 14 h.p. and 20 h.p. models. The 11 h.p. has its cylinders cast monobloc; the other models have their cylinders cast in pairs butted close together. The engine dimensions are:—11 h.p., 68 mm. bore by 120 mm. stroke; 14 h.p., 78 mm. bore by 110 mm. stroke; and 20 h.p., 90 mm. bore by 120 mm. stroke. Thermosyphon cooling is employed throughout the whole range of models, as also is the leather-faced type of cone clutch. On the 11 h.p. and 14 h.p. cars three forward speeds and a reverse are pro-

vided, whilst on the three larger models four speeds are given; the gear lever working in a gate in each case and so positioned that the gear lever comes inside the panel of the car. On the 20 h.p. and 28 h.p. models, the frame on the driver's side is swept out, so as to bring the gate quadrant inside the frame. The clutch on the 20 h.p. model is entirely enclosed, and on this model also the en-

gine and gearbox are carried on a dished frame. On the 20 h.p. model the propeller shaft is carried in a torque tube bolted by flanges to the rear axle casing. Three-quarter elliptic springs to the rear axle are employed on the three largest models. The 14 h.p. and 20 h.p. models have worm-driven back axles, all the other models being bevel driven. The engine control in the case of each model



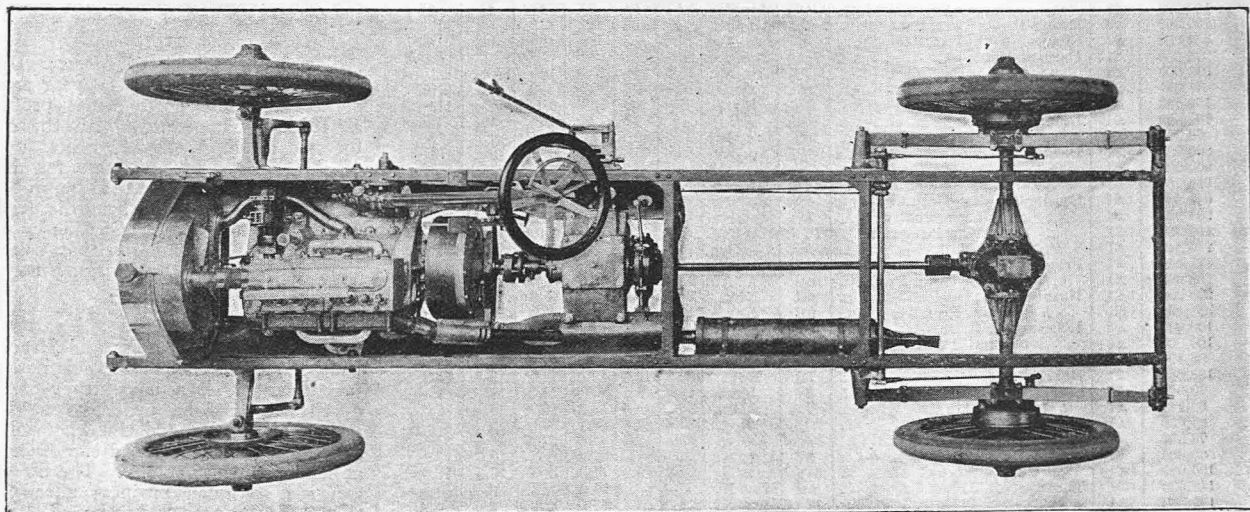
The 20 h.p. 1912 Humber chassis.



The 11 h.p. 1912 Humber chassis.

is effected by means of ignition and throttle levers carried in the quadrant above the steering wheel, and an accelerator pedal working in conjunction with the throttle lever but entirely independent of it. Throughout the whole range of models wire wheels of the Humber detachable pattern (except in the case of the 11 h.p., the wheels of which are not detachable) are employed, although we believe that if required wood wheels can in some cases be supplied.

We understand from inquiries we have made among the trade and users that during the past year Humber cars have given every satisfaction the policy of the new management being to place quality above all other considerations.



Plan view of the 1912 14 h.p. Humber chassis.

HISTORICAL LANDMARKS.

Sale of Tattershall Castle to an American Millionaire Inspires the Suggestion that the R.A.C. Should Combine with other Bodies to Ensure Preservation of Historical Buildings.

OF all those wayfarers who travel through England for pleasure the motorist should be the most concerned in the preservation of those landmarks and historical associations which make the country famous.

Those of our readers who have travelled over the fenland of Lincolnshire have seen Tattershall Castle, and those who reck something of their country's history as well as of the speed of their car know its story. It has weathered the storms of near upon five centuries. It was built by Ralph Cromwell, Lord High Treasurer of Henry VI., and not only was it a masterpiece of the builder's art, but it has played a part in English annals which should have ensured its preservation as a National treasure for all time. Yet, what is its fate?

At present it is dismantled, despoiled of its interior treasures, and it is presently to be ruthlessly razed to the ground, and shipped to America and there rebuilt.

Tattershall Castle has been sold to an American millionaire!

This is a crime and a crime of which Englishmen may well be ashamed.

Well may the writer of "The Letters of an Englishman" in "The Daily Mail" pen this scathing comment:—

"... To find a purchaser for the body of a building may be profitable enough. What punishment will be reserved in the Inferno for those who destroy a building's soul?"

"... Never was there so absurd a phantasy devised. Tattershall, once the glory of our fenland, is to make sport like a shorn Samson for the Philistines of Rhode Island or New Jersey. The casual visitors at some 'summer hotel' will, if rumour be credible, stand amazed at its beauties in a foreign

land. It will be paraded the captive of dollars, as kings and queens were once bidden to show themselves in the triumph of a Roman Emperor. A sorry spectacle for fools to gape at! The spectacle of a poor carcase, from which the spirit of life and age has fled! Under the open sky, looking out on the far horizons of Lincolnshire, it had an august beauty that was all its own. What value will it keep in the backyard of an American 'cottage,' even though the sacred wealth of a multi-millionaire has purchased it?"

Here, it seems to us, is a chance for our Royal Automobile Club to do something which will show that the motorist has a soul for something more than speed.

We of all road travellers desire, and should do all in our power to secure, the preservation of these priceless historic treasures.

To see them should be the object of our pilgrimages: to play some part in preventing further flagrant acts of vandalism should be our ambition.

England, shorn of other of its historic treasures, will be a sorry spectacle for the tourist.

The R.A.C. has built for itself a palatial home in Pall Mall. It no longer encourages motorcar racing and quite rightly so. But why cannot it co-operate with other bodies in an endeavour to avoid further raids upon this country's historical buildings by the relic-seeking American millionaire?

We are quite sure that the R.A.C. would have the support of all its members and, indeed, of all motorists if it would initiate some move in the direction indicated.

It should be emphasized that the matter is one of greatest urgency. These acts are performed quickly and we only know what has happened when it is too late to take action. If we are not careful, before we are aware of it, other treasures will pass out of the country.

New, Low-priced Arrol-Johnston.

Famous Paisley Firm to Market a New 11.9 h.p. Car at a Moderate Price.

For some time past, rumours have cropped up with regard to a new small car in process of construction by the Paisley firm. Details have now come to hand which would seem to indicate that the indefatigable Mr. Pullinger is about to upset values in the small car market by the simple process of offering a standardized small car at a price that sounds relatively almost absurd.

The new car, several examples of which were tested over the Scottish reliability course during the recent Arrol-Johnston Agents' Meeting and came through without a single mishap, and which scored so heavily in the Scottish A.C. hill-climb, is of 11.9

h.p., the four-cylinder engine following closely to the practice shown in the very well-known "15.9." Four speeds and reverse are provided with detachable wheels, 760 mm. by 90 mm. tyres, two independent sets of brakes and foot control. The price, which includes a very smart four-seater torpedo body, is £265. The material employed is standardized to the usual Arrol-Johnston quality.

The chief point of the matter is that the car is built to last, and offered at the ordinary price of a car with a life-limit of only one or two years. It is a very easy matter to prophesy large sales for the latest "point-nine" with such a design, and with the Arrol-Johnston reputation to back it.

The Riley in the Coventry Hill-climb.

The performance of Mr. Arthur Cox with his privately-owned 12 h.p. Riley car (he was first on formula in Class 2) in the Coventry and Warwickshire Motor Club's hill-climb on Sainsbury Hill last Saturday week was notable because he was able to win the class in

which he competed without any assistance from the works, whereas some of his nearest competitors enjoyed that privilege. This would go to show that Riley cars are turned out from the works in so efficient a condition that the amateur driver and owner can, even in exceptional circumstances, secure the best possible results without troubling to go back to the manufacturers.

Crossley and Wridgway Join Crossleys.

We are able to announce that Mr. Robert Crossley, whose intimate connection with Belsize cars is well known, has joined Crossley Motors, Ltd., of Manchester, as travelling representative. Mr. C. G. Wridgway has joined the staff as commercial manager.

NEWS AND NOTES.

The Late Mr. Bernard Redwood.

The many friends amongst our readers of Sir Boverton and Lady Redwood will, we feel sure, share with us a sense of the deepest sympathy with them in the loss—on Thursday last, from pneumonia—of their only son Bernard. The late Mr. Bernard Redwood was one of the youngest founder members of the R.A.C., and was most prominent in marine-motor circles.

Kent A.C.

On Saturday last, at the County Hotel, Canterbury, the new eastern headquarters of the club, committee and general meetings of the Kent A.C. took place under the chairmanship of Mr. de Barri Crawshay. An informal luncheon was also held, and the guests included Mr. Shrapnell Smith and Captain Hume, representing the R.A.C. Examinations of drivers and owners were conducted during the day by the R.A.C. examiners.

Coventry Hill-climb: Results on Formula.

In the Coventry and Warwickshire hill-climb on Saturday week most of the prizes were awarded for formula results, only one prize being awarded for time. The figures of merit in Classes 2 and 3 were as follow:—

Class 2 (for petrol cars not exceeding 16 h.p. R.A.C. rating).—1, Mr. Arthur Cox's 12 h.p. two-cylinder Riley, 102 by 127; weight, 3,136 lb.; time, 3 min. 57 sec.; figure of merit, 1.226. 2, The Earl of Shrewsbury's 12 h.p. Talbot, 80 by 120; weight, 3,030 lb.; time, 2 min. 54½ sec.; figure of merit, 1.381. 3, Mr. G. O. Herbert's 15 h.p. Singer, 80 by 130; weight, 2,800 lb.; time, 2 min. 43½ sec.; figure of merit, 1.521.

Class 3 (for petrol cars not exceeding 25.8 h.p. R.A.C. rating).—1, The Earl of Shrewsbury's 12 h.p. Talbot, 80 by 120; weight, 3,030 lb.; time, 2 min. 14½

sec.; figure of merit, 1.066. 2, Mr. A. Cox's 12 h.p. two-cylinder Riley, 102 by 127; weight, 3,136 lb.; time, 3 min. 55½ sec.; figure of merit, 1.215. 3, Mr. G. O. Herbert's 20 h.p. Singer, 90 by 130; weight, 3,360 lb.; time, 2 min. 40½ sec.; figure of merit, 1.393.

Found.

The occupants of one of the cars from the Lanchester Motor Co.'s works, Armauer Mills, Montgomery Street, Birmingham, picked up, on Sunday, the 24th inst., a Dependence tail lamp which was found lying upon the road between Coleshill and Lichfield. The Lanchester Co. will be pleased to hand the lamp to its owner upon application.

Warland dual rims will be exhibited at Stand 287, in the gallery, at the Olympia Show next month. The stand is that allotted to Messrs. Grose, Ltd., of Northampton.

IN THE STELVIO PASS.



A fine view of the road through the Stelvio Pass. At the point shown the road is 8,000 feet high. There is a hair-pin curve to the right, and the car shown (a 25 h.p. Spyker) had to be reversed in order to get round.

The Paris Bus Fatality.

An Accident which Provides a Lesson for all Motor Drivers.

Our Paris Correspondent writes:—

There is a lesson for both the private car owner and the public authorities in the unfortunate motorbus accident in Paris, which cost the lives of 14 persons. The driver of a new bus, perfect in every respect, had to make a blind turn from the riverside on to a narrow bridge paved with greasy cobble stones. The road, being banked the wrong way, the driver was unable to make his turn close, and the view of the bridge being obstructed by a wooden building which ought never to have been erected at this spot, he found himself in the middle of the entrance to the bridge with another bus approaching him head on. A sharp turn of the wheel to the right resulted in a bad skid, and before the driver could correct it the heavy vehicle had mounted the footpath, broken down the light railings, and dropped into the river. When it is added that the man had been left a widower two days before, we have the full explanation of the accident.

The responsibility primarily rests with the municipal authorities. They insist on fast mechanical traction, and notwithstanding the reports of experts continue to leave the streets in a condition altogether unsuited for modern traffic. In this particular case, and it is only one of a number to be found in Paris and other cities, the road sloped downwards from the riverside, and the bridge itself was arched and paved with rough cobble

stones. At the corner was a wooden building which made it impossible for a driver to see if the bridge were clear. As every expert driver is aware, on attempting to make such a turn the tendency would be for the car to skid outwards or towards the left, thus instead of making the turn close to the right-hand footpath, it would be made wide, and would finish with the vehicle either in the middle or on the left-hand side of the bridge, facing on-coming traffic. This has happened to me personally on several occasions on these same bridges, and although having a motor quite powerful and flexible enough to get round on third, I generally slip into second as a matter of prudence. A private driver can afford to lose a few seconds, but the man in charge of a motorbus has to run to a time table, and is frequently obliged to save fractions of seconds in order to finish his journey on time. It is most unsatisfactory that conditions should be such that a slight indisposition on the part of the driver—toothache, indigestion, or mental depression—should be all that separates the driver of a public vehicle from a most serious accident involving many lives. In this case it had been recognized two years ago that the approach to the bridge was dangerous. There had been several accidents, and as if as a supreme warning a taxicab had gone over into the river only last January. Yet nothing had been done to remedy matters.

Grants to Highway Authorities.

During the months of July, August and September, 1911, the Road Board, with the approval of the Treasury, have made advances amounting to £131,764 from the Road Improvement Fund to County Councils and other other highway authorities as follows:—

For the improvement of road crusts (including grants towards tar macadam, etc., and surface tarring) ...	£111,555
For road widenings and improvement of curves and corners ...	9,120
For road diversions ...	7,308
For construction and improvement of bridges ...	5,781

The total grants up to the 30th September (including those contained in the lists published on 11th February, 29th April and 29th July last) amounted to £407,154, as follows:—

For the improvement of road crusts ...	£321,445
For road widenings and improvement of curves and corners ...	44,856
For road diversions ...	16,906
For construction and improvement of bridges ...	23,947

In addition, the sum of £8,173 has been advanced by way of loan.

The work of putting down trial lengths of 23 different kinds of road material on a section of the London-Folkestone road between New Eltham and Sidcup has now been completed.

MOTORBUS IN THE RIVER SEINE.

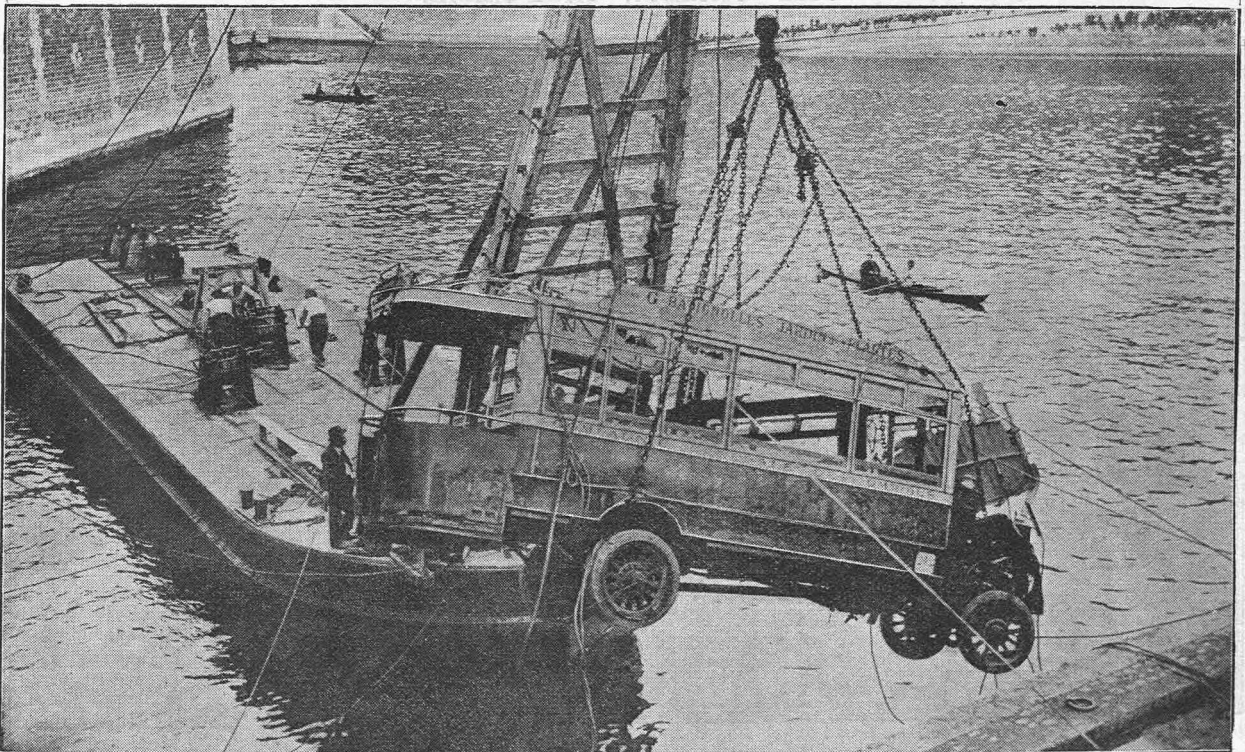


Illustration shows the motorbus being removed from the River Seine.

Gaillon Hill-climb.

No Startling Performance in the 12th Annual Climb up Celebrated Hill.

Despite the 77 entries, no very startling performances were witnessed at the 12th annual climb up Gaillon Hill last Sunday afternoon.

The fastest time of the day stands to the credit of Gaste, with the now somewhat ancient six-cylinder Rossel, which recently secured first place at Mont Ventoux hill-climb. It went up the kilometre hill at Gaillon in 32½ sec. By way of comparison, it may be mentioned that the record, created last year by Erle, on a Benz, stands at 23 sec. Thus the fastest time to-day was not very impressive to those who have attended previous meetings.

The second in the general classification is a 1908 Grand Prix Mors, driven privately by Rohan-Chabot, its time being 35½ sec. The following places were rather keenly disputed. Barriaux drove an Alcyon up the hill in 39½ sec., thus easily securing first place in the light-car class, and third in the general classification if we ignore these petty divisions. His car was one which had been specially built for the Boulogne race, having an original type of motor, with four valves per cylinder. Although giving good results on the bench, and very fast for a short distance, it had been produced too late to show up to advantage at Boulogne.

A big Pipe touring car, stripped for racing, was fourth in the speed section, its time being 42½ sec. Fifth place went to Goux, with the freakish long-stroke

twin-cylinder Lion-Peugeot, built for the voiturette race of a year ago. The car created a most curious impression as it came up the hill, for, owing to its unusually high bonnet, no driver was visible when viewed head on; even the steering wheel was hidden, thus giving the impression of a car rushing up without control of any kind. Goux, who handled his car excellently, had driven over direct from the factory, on the eastern frontier of France, only the day before the race.

The Lion-Peugeot was followed closely by a Bayard-Clement, built for the last Vanderbilt cup race. The car had done well when practising, and was looked upon as the fastest of the lot; but when called upon to make its official test, something went wrong with the carburation, for the racer came up the hill in 43½ sec., the driver the while shrugging his shoulders in a characteristically despondent fashion.

Zuccarelli, the Spaniard, who is now a Lion-Peugeot driver, had charge of one of the Boulogne light-car racers, with which he was classed seventh in the general list, his time being 44 sec. It is interesting to note that this car was beaten by one second by its team mate, the two-cylinder model, although this latter had a smaller cylinder area and was of less recent construction.

Henry Depasse and his Ford were rather disappointing. The French agent for this American car had the

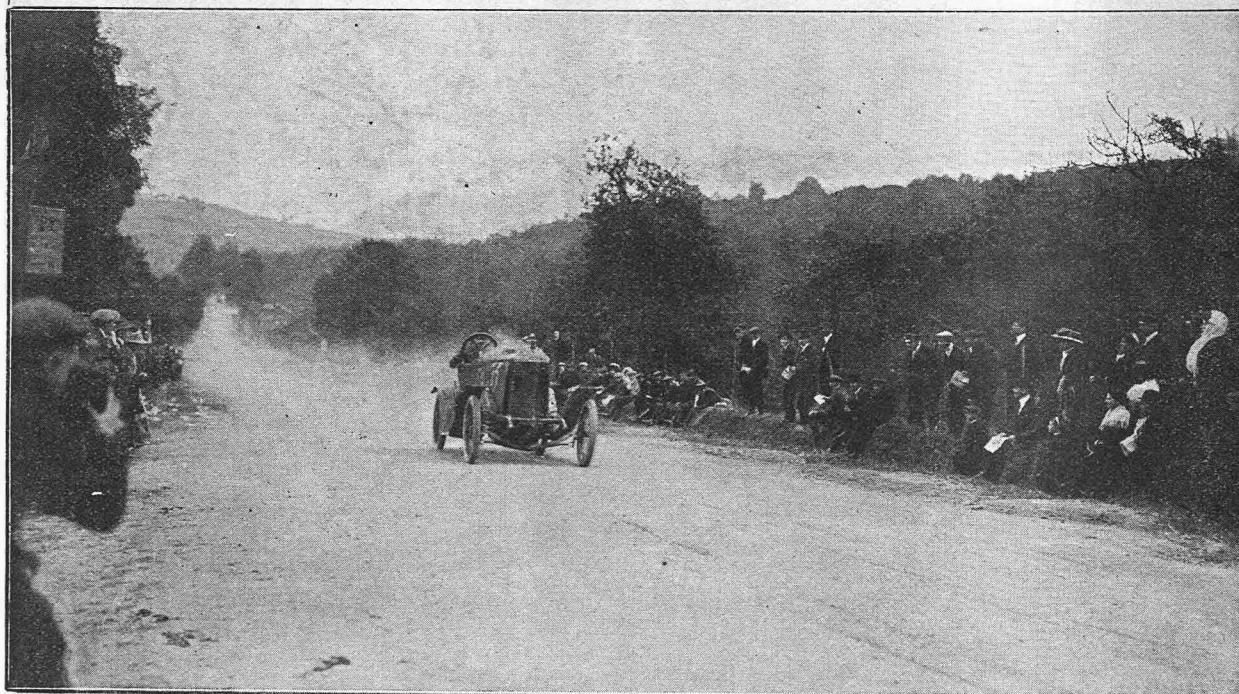
model which had been specially prepared for the Boulogne race, and which came in second at Mont Ventoux. Gaillon air, however, did not appear to suit it, for, to the surprise of everybody, it occupied 50½ sec. to get up the hill, notwithstanding the fact that it was stripped to such an extent that one wondered how the two men managed to hold on to the bare frame.

Roisan, on the little Bugatti, came ninth in 57½ sec., which is a fairly good performance in view of the fact that the four-cylinder motor has only 60 mm. bore. The two-cycle school, represented by a couple of the Boulogne race Cote cars, made a very poor show, one of them occupying nearly 2 min. in getting up the hill.

There were 14 distinct classes for touring cars, and as in some cases there was only one entry, interest was not very great when considered class by class. The best performance of the day among the tourists, if we ignore the Laurin-Klement, really a disguised racer, was made by a Hispano-Suiza driven by Grua. This is really a standard model, copied on the lines of the racer which won the 1910 voiturette event at Boulogne, but having a four-cylinder motor of 80 mm. by 180 mm. bore and stroke. With a three-seater body, all seats being occupied, it climbed the hill in 41½ sec., beating even the biggest cars by a substantial margin. The formula classification has not yet been worked out, but it is evident that the car must stand first.

The most powerful touring car to be entered was a Motobloc, in the class for machines of more than 140 mm. bore (four cylinders). Evidently some of the cylinders were not in first-rate condition,

THE GAILLON HILL-CLIMB.



A view of the hill at Gaillon last Sunday, when the annual contest took place. Photo shows a Laurin-Klement at full speed on the hill.

NEWS AND NOTES.—Contd.

for the time for the kilometre was 52 sec. In the 131 mm. to 140 mm. class there was a duel between a Lorraine-Dietrich and a Pipe, in which all the glory went to the Pipe, its time for the climb being 43½ sec. The Lorraine-Dietrich's performance was not creditable to the firm, the car being an old one and in the hands of an amateur.

A Mors was the winner in the 95 mm. class, time 47 sec., followed by a genuine touring Delaunay-Belleville, with all accessories, full number of passengers, and even a dog, in 1 min. 42 sec. A second Delaunay-Belleville followed in 1 min. 46½ sec.

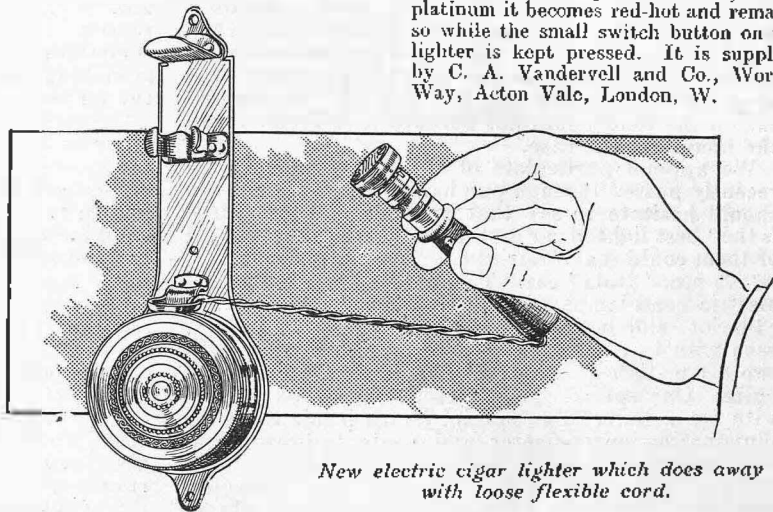
Although entered as a touring car, it was difficult to see the connection between the Laurin Klement and the cars most men prefer to use for pleasure. It was entered in the 90 mm. class, and had the full bore allowed under the rules, a stroke of 250 mm., four enormous valves per cylinder, and a solid-touring body. With this equipment it climbed the hill in 40½ sec., naturally securing first place in its class, and being fastest of the tourists. Its rivals were a six-cylinder Gregoire, which came second in 1 min. 2½ sec., with an Excelsior a close third in 1 min. 2½ sec.

In the 80 mm. class the order of merit was Grua, on the Hispano-Suiza, Boillot, on the Lion-Peugeot Boulogne racer converted into a touring car.

A Useful Refinement.

The lighting of a cigar or pipe in an open car by the orthodox method is usually a matter of considerable difficulty. The invaluable aid of electricity, however, may be called in, when the

attached to the lighter winds up automatically, is artistically chased. The lighter consists of a fine platinum wire laced several times through a mica disc screwed to a small metal cap or mount. When a current at 12 volts pressure from an accumulator passes through the platinum it becomes red-hot and remains so while the small switch button on the lighter is kept pressed. It is supplied by C. A. Vandervell and Co., Worples Way, Acton Vale, London, W.



New electric cigar lighter which does away with loose flexible cord.

operation becomes at once a simple and certain one. The fitment here illustrated is an electric cigar or pipe lighter, and apart from its usefulness is at the same time a very artistic refinement for any car. It has an oxidized silver finish, and the drum into which the flexible cord

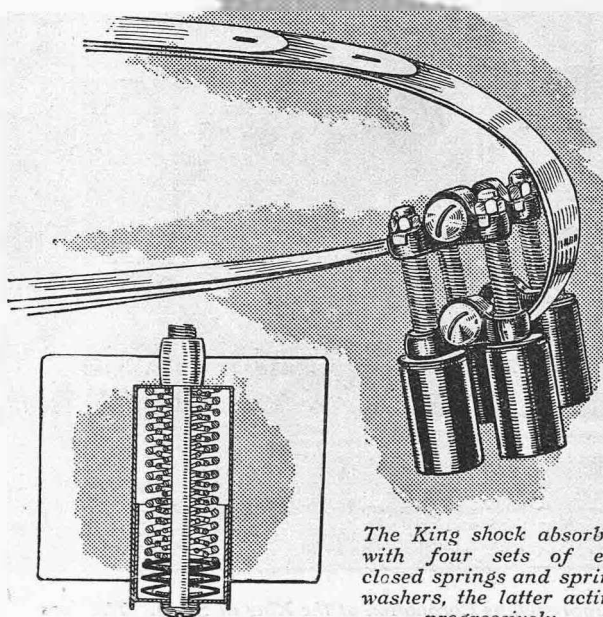
The graduates of the Institution of Automobile Engineers are organizing a Bohemian concert, to take place at the Holborn Restaurant (Council Chamber) on Friday, 13th October next, at 8 p.m., and a very interesting programme has been arranged.

THE KING SHOCK ABSORBER.

INTERMEDIATE springs to absorb the minor shocks set up by road inequalities have gained quite a hold during the past year, and the fact that they have done so may be taken as evidence of their efficacy. The one which we illustrate is not, by any means, a copy of any system already on the market, as it was patented so long ago as July, 1909. It differs from others in that a progressive action is secured, and one which tends to damp the spring

action and thus reduce the waves of vibration to a practical and comfortable minimum.

The device is known as the King Shock Absorber, and it is made by the Progressive Spring Co., of 6, Alwyne Square, London, N. It takes the places of the rear shackle between the end of the spring and the spring hanger, or between the upper and lower parts of a three-quarter elliptic spring. Four cylinders are mounted in pairs connected rigidly by bridges, and they are placed two on each side of the ends of the spring blades, cross-bolts passing through the eyes of the blades. The end of the lower part of the spring is bolted to the two upper-bridge pieces of the shock absorber, to which are attached the traction rods that pass through the cylinders and end in a closed cap or inverted piston. Mounted upon the traction rod in each cylinder is a series of springs shown in our sectional drawing. At the bottom are a set of three pairs of dished steel washers, the component washers of each pair bearing upon each other at the periphery and having their concavities facing each other. Each washer has a radial split in it to allow it to flatten, and a fibre washer is placed in each concavity to prevent crushing. The lowest pair is of lighter gauge than the next above it, whilst the topmost pair is heaviest of all. Above these, which are, because of the increasing thickness of the washers, progressive in their action, are mounted three concentric spiral springs. The rebound of the spring action, thus created, is checked by coiled springs placed upon the external ends of the traction rods and between the two pairs of bridge pieces. Adjustment to load is secured (after the correct size of shock absorber has been chosen for the weight of the chassis, four sizes being made) by means of the nuts above the upper bridge pieces. The King Shock Absorber is extremely neat, and, as it is well made, it should be popular, the retail price being from £4 to £7 per set of two.



The King shock absorber with four sets of enclosed springs and spring washers, the latter acting progressively.

OTHER WELL-LIGHTED CARS.

We have received the following from Messrs. Bleriot Ltd.:-

"We notice on page 277 of this week's MOTOR a paragraph dealing with the 'Best Lighted Car on the Road,' and while we do not deny that the scheme of lighting is very suitable and very complete for a car of this kind, we think that the term of 'best-lighted car on the road' does not perhaps give credit to all the factors in the case.

We append particulars of three cars which have recently passed through our hands, and although we should hesitate to say that any one of these three is the 'best lighted car on the road,' we think that all of them could make fair bid for such a position.

"75 h.p. 'Itala' car. This car had two 'Bleriot' electric head-lamps with 70 c.p. electric bulbs, four 'Bleriot' side-lamps, two on dash and two on pillars, each with 12 c.p. bulbs. One double tail-lamp with two 8 c.p. bulbs. Two dash-lamps each with 8 c.p. bulbs. One special speedometer-lamp on dashboard with 8 c.p. bulb. Two special lamps inside body for illuminating speedometer and route indicator and two special quadruple roof-lamps each with four 12 c.p. bulbs. Two electric cigar lighters. One electric siren, and one 'Klaxon' horn, and one illuminated route indicator on dashboard.

"The total current consumption of this car was 280 watts, the whole of the current necessary being supplied by an ordinary 'Bleriot' dynamo, which we might say in passing is the only motorcar dynamo offered which could cope with such an output.

"The total projected candle power from the head-lamps and two pairs of side-lamps was over 10,000 taking no account of internal current consumption or of the electric horns which as is well known will not run on small current supplies.

"40 h.p. 'Metallurgique.' This car was specially equipped for one of our clients and had exactly the same equipment as on the 'Itala' car with the exception that only one electric horn was fitted, there were no roof-lamps, and instead of the small steering column, dash or speed indicator and route indicator lamps being all separate, the whole of the necessary work was done by two lamps of similar character. In addition it was fitted with a 'Bleriot' patent petrol-oxygen head-lamp (with which it is possible to read a newspaper at one mile from the

lamp), the lamps being 11½ in. in diameter. The electric equipment totalled about 10,000 candle power and the petrol-oxygen lamp gives 400,000 candle power. We venture to think that a 40 h.p. car with something like 10,000 candle power per horse power is making a fair bid to be considered the best lighted car on the road.

"Another car we have in mind had the same equipment as the 'Metallurgique,' that is to say, it had a complete electric outfit, a complete petrol-oxygen equipment for the big centre light, and has been known to run in addition, two 10,000 c.p. acetylene head-lamps of our manufacture, making 430,000 candle power on a 14-20 h.p. 'Wolseley.'

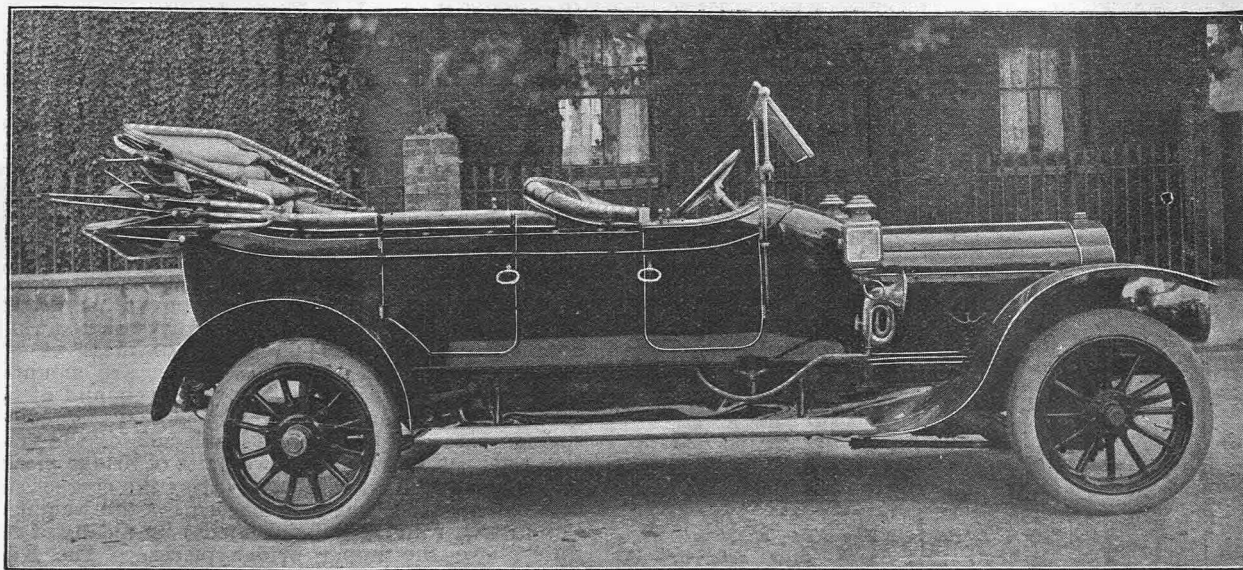
"We have recently supplied an outfit to Mr. Justice Warrington which has the same electric equipment as is cited on the previous cars, but in addition has mounted on it a charging board with an adjustable resistance so that it can be used for charging small batteries for ignition and similar purposes.

"We express no opinion as to the desirability of such lighting arrangements for ordinary use, but simply cite them as examples of well-lighted cars now running.

"If the quantity of light provided qualifies the car for consideration as the best lighted car on the road, we can only suggest that any car fitted with a 'Bleriot' dynamo which is capable of providing 10,000 candle power through electric lamps (which is at least twice the amount of light that can be provided by any other dynamo for similar purposes) can fairly claim to be considered as in the very first flight, and certainly we think that the figures given will warrant us in this assumption."

Russian Reliability Trial: Vauxhall Wins its Class.

The results of the Russian Reliability Trial are not yet to hand but we are given to understand that of the 63 cars which started, only about 43 arrived at Sebastopol, thus giving some indication of the severity of the trial. We also learn that the 20 h.p. Vauxhall car driven by Mr. P. C. Kidner, that competed in class 4, completed the trial without loss of marks and gained first prize in its class.



A 20-30 h.p. Leon Bollee car, one of two supplied for the approaching Coronation of the King of Siam. The cars are provided with a complete electric lighting equipment by Messrs. Bleriot Ltd

"PETRODE."

Now Claimed to Act on Impurities in Petrol—Some Further Criticisms.

Regarding the recent article, "Overheard at the Club," we have read this with much appreciative amusement, but is it quite fair to the proposition to insist upon the point that the action of the "Petrode" must be capable of immediate scientific explanation? We are prepared to prove the action by absolute comparative test. We are not prepared to give a full chemical or analytic reason for the action which takes place, but we guarantee it to the extent of returning money if the buyer be not satisfied that there is 15 per cent. economy of petrol effected at least. "Scientist" insists on some tangible explanation of the action of the "Petrode." Well, he is a scientist, and therefore, presumably, more capable of finding out the action than most of us. But it is well known that there are many actions for which scientists are unable to account, and when driven into a corner for explanation, learnedly use the word "catalytic," and there's an end of it.

Now we ask "Scientist" why he takes it as granted that "there must be a large expenditure of energy," and has he tried any experiments with a "Petrode"? He can always do so for seven days without any expense; if he gets no results, we take his word for it and return his money on receipt of the "Petrode" undamaged.

And "Electrical Expert"—"Zinc has no action on petrol." We are in agreement with this statement, but who said it had? The "Petrode" acts on the impurities.

Yes, "Electrical Expert," there are in the "Petrode" cardboard, zinc, copper discs and other things, which even go beyond your philosophy.

BRITISH PETRODE, LTD.,
ALFRED WRIGHT,
General Manager.

"Its Perfect Purity—That's the Point"— Petrol Advt.

It is rather unfortunate that my letter headed "Theoretically Without Foundation" should appear under that of the British Petrode, Ltd., in which entirely-different claims are made, and I hope a further explanation may be permitted me. The claims which I described as being (and still maintain, without any reservation, to be) entirely without theoretical foundation were the following, which have already been stated in THE MOTOR to have been put forward by the Petrode representative in the interview:—

1. That the Petrode causes electrolysis of pure petrol, i.e., the mixture of paraffin hydrocarbons already referred to.
2. That hydrogen is produced from the petrol (i.e., from the hydrocarbons) by electrolysis.
3. That no change takes place in the zinc discs in the process.

Claim 3 is in itself incompatible with claims 1 and 2, but all three are untenable.

The inventors have in their letter very wisely omitted these fallacious claims, and put forward others which will admit of discussion on scientific grounds. The factor not previously disclosed (by them) turns out to be the one suggested in my first letter, viz., impurity in the petrol. They admit my contention that, with chemically pure petrol the Petrode could not act.

If the presence of an impurity capable of acting as an electrolyte is granted, the whole problem is not "how can it work?" but "how far is it worth while?" Even the electrical expert, I presume, would admit the possibility of chemical action occurring when an

electro-positive metal like zinc is placed in contact with an electro-negative metal, such as copper and immersed in a suitable electrolyte. So far, many of the arguments have turned on the absence of anything to act as an electrolyte, because the petrol has been assumed to be chemically pure, whereas, according to the claims quoted from the patent specification, the main function of the Petrode is the removal by electrolytic means of these very impurities and not any action on the hydrocarbons. This is a perfectly sound line of argument so far as it goes.

Now for the electrical side of the question. It may not be generally known that pure zinc is not acted upon by pure sulphuric acid, and if a plate of copper and one of pure zinc are partly immersed in sulphuric acid, no solution of the zinc occurs until the circuit is closed by connecting the plates with a wire. The zinc used in ordinary cells, however, is not sufficiently pure to show this clearly, and action usually occurs when the zinc is placed in the acid, but the action is greatly increased when the circuit is closed by the wire. This wasteful action on open circuit is the "local action" of the text-books, and is usually explained as being due to particles of impurity (as, for instance, a less electro-positive metal, such as iron) playing the part of the copper plate and forming a small closed circuit. Now it is only when the circuit is closed that a current actually passes and the zinc dissolves. In such a minute closed circuit there would be no external evidence of the passage of a current beyond the visible chemical action and the heat evolved.

The bearing of all this lies in the action of a metallic couple. I referred to the Gladstone-Tribe zinc-copper couple because this is a particularly active form of this combination of metals. If anyone wishes to see a common example of electrolytic chemical action, he need only examine an old iron railing which has been fixed into a stone socket by means of lead. He will find that at the junction of the lead bedding, the iron railing is very thin, often corroded almost entirely away. Iron is electro-positive towards lead; "dirty" water—in a chemical sense—possibly containing carbon dioxide, is the electrolyte, and the more electro-positive metal of the two is always the one to be attacked.

Of course, any chemical action must be accompanied by a change in the electro-positive element of the couple—e.g., the zinc.

Assuming, then, that the decomposition of the impurities occurs through the couple, the real crux is how far is this likely to economize petrol? Too much, I think, has been made of the hydrogen said to be generated. The amount produced could not be great, and if this were the sole function of the Petrode, a 15 per cent. economy would be out of the question. Personally, I think this is so in any case. There is, however, one other possibility, and that is this: an impurity may be merely inert, or it may have an actually deleterious effect; in the latter case, its removal would mean a greater gain than in the former.

To sum up: With chemically-pure petrol the Petrode would theoretically and practically be useless.

With impurities present capable of acting as electrolytes, no contradiction to chemical or electrical theory would be involved in its action.

Any action occurring would be limited to that occurring with the impurities present, and the zinc discs must necessarily be acted upon. If they are only slightly acted upon, then the chemical action must be small. If they are acted upon to any considerable extent, the way is opened for the formation of jellies or deposits in the petrol tank. Is the game worth the candle? Practical tests must answer this. A.A.

CAR WITH NOVEL FEATURES.

Interesting Body Built to Order of a Reader who has had Some of his Original Ideas Embodied in the Design.

WE give on this page some photographs of an extremely interesting design of body.

The chassis is a 12-14 h.p. La Licorne supplied by Messrs. Pike, Berwick and King, 18, Berkeley Street, Piccadilly, and the body has been built by the Southsea Automobile Co., Granada Road, Southsea.

The design, however, is that of the owner himself, Mr. Herbert Ashley, and the following are some of the distinctive and somewhat unique features:—

There is a single seat, which is 4 ft. 5 in. in length,

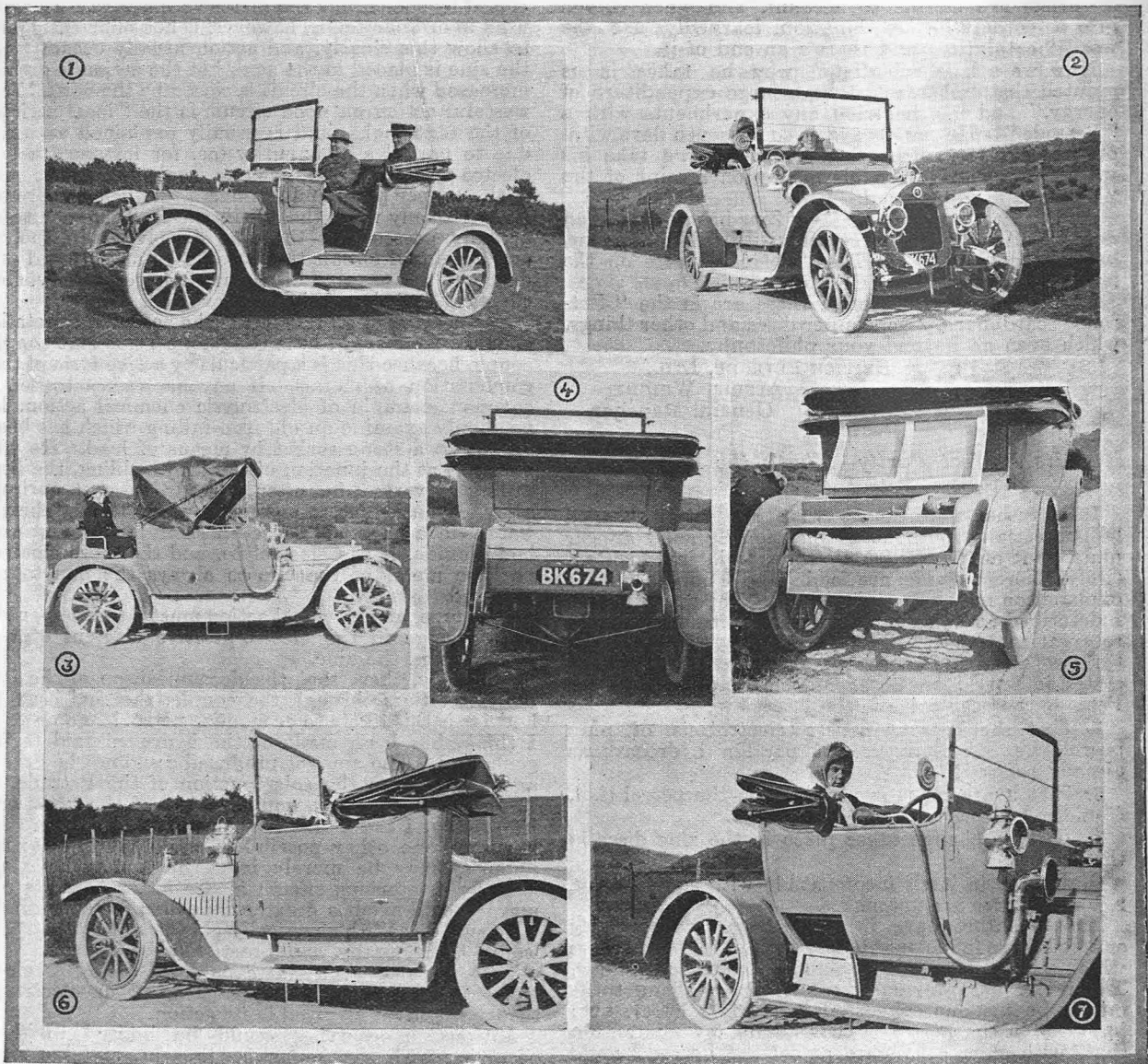
and is therefore of ample width to accommodate three adult people easily sitting side by side.

There are high side doors, and the gear and brake levers are all inside.

The door on the driver's side is made to open and access to the driver's seat is extremely easy.

The leg room is ample, and within the scuttle dash and on each side is framed a vertical cupboard with suitable shelves and mahogany door somewhat after the style of the cupboards on the early Daimler cars.

Between these two cupboards, and fitted right under the scuttle dash, is the petrol tank, of seven



CAR WITH NOVEL FEATURES.

- (1) Showing commodious seat and wide door. (2) A three-quarter view of the car. (3) With hood and screen up, and rear seat in use. (4) Showing rear, closed. (5) Rear, open, showing receptacle for spare tyre. (6) A side view. (7) Showing side cupboard open.

CAR WITH NOVEL FEATURES.—Contd.

gallons capacity. Underneath this petrol tank and between the two vertical cupboards referred to above, is a sloping footboard, providing a very comfortable position for the feet.

The fitting of the dash is all done in mahogany, nicely polished, and there is nothing whatever mounted upon it except a clock and speedometer, giving a singularly neat appearance.

A mahogany-framed two-fold screen is provided and a black leather victoria hood lined with dark blue cloth inside, fitted with a "clash" buttoning over to the top member of the screen, so as to prevent rain driving in between the top of the screen and the hood itself.

The back box of the car is made to serve three purposes. The forward part contains a folding "dicky" seat, giving ample leg room, and behind this is a toolbox fitted with trays, every one of which is exposed by lifting up a second lid, and is readily accessible at all times. Underneath the toolbox is another compartment fitted to take a Stepney wheel. Access to this compartment is obtained by a small door, on the face of which the registration number is painted. This door drops down vertically, thus enabling the Stepney wheel to be pushed in horizontally.

In the boot of the car underneath the seat is arranged a space for luggage. Access to this is obtained by two doors (one on each side of the car), which drop down on to the running board. The length of this opening is 4 ft. 6 in., and two specially-made tin boxes of the uniform case type are made to slide in. This compartment for luggage is absolutely

dustproof, and access can be obtained to it at any time without disturbing any passenger.

Underneath the overhang of the car on one side, and just above the running board, a long box, fitted to receive umbrellas, sticks and so on, is built, with a long lid falling down on to the running board, giving ready access to it.

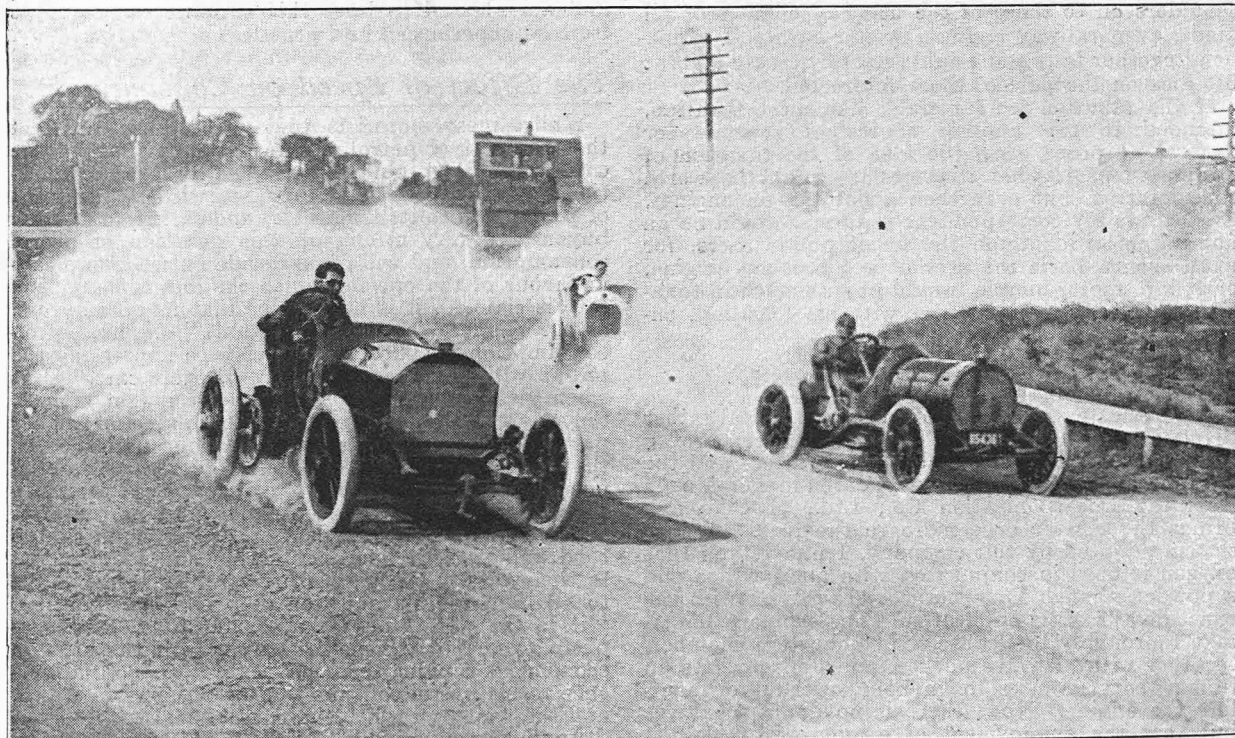
Underneath the footboard of the car and between the gearbox and the side frame, is fitted an open wooden box, exposed when the footboard is lifted up, and in this are carried some of the heavier tools such as jack, tyre levers, and so on, which are not often wanted, and to which, therefore, instant access is not necessary.

*The back box of this car, serving a triple purpose as it does, the arrangement for luggage in the boot of the car underneath the seat, and the umbrella box framed under the overhang of the car, are somewhat unusual features, and are the result of an effort made to utilize more than has been done all the available space about the chassis of a car. The stowing away of the Stepney wheel horizontally in the back box avoids the disfigurement caused by hanging it in some way or another to the outside of the car, as it is, of course, entirely out of sight.

While everything is made of ample dimensions so as to afford the maximum of comfort and even luxury in the seating accommodation, etc., there is no space whatever unutilized.

The photographs show the general appearance of the car and many of the details referred to above, and it will be agreed that the general appearance is good.

Imagine High Speeds on a Track like This!



Can it be wondered at that we are constantly hearing of ghastly smashes in races held in America? Though the above illustrates a scene on the track in Delorimies Park, Montreal, it is characteristic of many American tracks. The track at Montreal measures half-a-mile, is of dirt, and has no banking. The photo. shows Kirkpatrick, Burman and Knipper on one of the dangerous bends.

MY WAY OF THINKING.

By HENRY STURMEY.

The Taxation Question.

A CORRESPONDENT sends me a note upon the much vexed question of taxation, suggesting that all difficulty would be avoided if the motorist paid just the usual carriage tax, and that a tax of one guinea should be levied on all and every engine throughout the Empire, whether used in car, boat, factory, railway or workshop. My correspondent thinks that this would bring a higher return than the present motor taxation, and he further thinks that it would be absolutely fair to everyone.

Now, I have my doubts as to whether such a system of taxation would produce anything like the same amount which the aggregate taxation of the motorists produces to-day. But, quite apart from that, I think my correspondent rather loses sight of what is really at the base of the whole question, and that is the purpose to which the tax is applied. We must not forget that the motor tax and the petrol tax are, I believe, the only taxes which are specifically applied to the benefit of the persons paying them, to wit, in our case, the improvement of the roads. Of course, this benefits other people as well, it is true, but we who pay the tax derive the benefit along with the rest. To shift the taxation from our shoulders on to those of the users of engines of all kinds, even railway engines, would hardly, I think, be altogether fair, and would certainly create a great big kick on the part of those interested.

If the taxation were merely, like most taxation, intended to tap another source of revenue for general purposes, then the idea of the taxation of power—which is what it comes to—might be worth consideration, but even then a flat tax on engines, as such, as my correspondent suggests, would be an unfair imposition upon the small power users, for upon such a basis the user of a $\frac{1}{2}$ h.p. gas engine, or 2½ h.p. motor-bicycle, would pay as much in taxation as the big manufacturer with his 1,000 h.p. engines.

The Removal of Carbon Deposit.

The attacking of carbon deposit by chemical rather than mechanical means has, by this time, been proved to be a practicable and a simple operation, and the advertisement which recently appeared in THE MOTOR from the Decarbonisation Co., Ltd., of Clapham, brings the matter once more to the fore. In the system adopted by this company, I understand that oxygen is used in conjunction with another gas and a powder, though I am not yet acquainted with the exact details of its application. The company undertake thoroughly to cleanse the combustion chamber, together with all valve pockets and plug pockets, in from twenty minutes to an hour, without dismantling the engine. Now, there is no doubt whatever but that the employment of oxygen will "do the trick." Not long ago a method was introduced by which a jet of oxygen was turned into the cylinder and practically blown upon the carbon deposit through the plug aperture.

The liquid known as "Casso" also acts by means of oxygen, the effect of its combustion in the cylinder head being to release a large amount of this gas,

which, under the great heat of combustion, combines with the carbon, which is thus dissipated and passes out through the exhaust valve as a gas with the other products of combustion.

Either of these methods is infinitely preferable to the tedious and unsatisfactory plan of pulling down the engine and chipping off the hardened deposit.

Pot-holes.

I have had a very interesting letter from my old friend, Mr. J. S. Whatton, one of our amateur champions of the old high ordinary bicycle days, whose road experience has been continuous from 1877, embracing 30,000 miles covered by the bicycle, followed by 70,000 miles of car use, and, with me, he remembers very well the pre-wood-paving days of London:

"It was," he says, "ruts on the gravel and a sea of billows on the wood roads like Regent Street or Portland Place—the latter till quite recently—and, with an ordinary solid-tyred bicycle, one knew all about it."

This in reference to my contention that, before the advent of the motorcar, whilst we had bad roads, we had not the pot-holes as we know them now.

Mr. Whatton adds, "The producer of pot-holes is the too sudden acceleration at the approach of a hill," and I am very much inclined to agree with him, and am pleased to have this support of my views from so experienced and practical a roadster.

The Effect of Speed on Consumption.

Whilst most motorists to-day recognize the fact that the cost of petrol is one of the smallest of the costs of running, the importance given to the question by many intending purchasers still remains out of proportion to its true scale, and seeing that many buyers are very strong on this question of petrol consumption, and will often decide between two cars in favour of the one for which the less consumption rate is claimed, it is no wonder that manufacturers, as the Yankees say, "put up stunts" on this petrol-consumption question, with a view to impressing the public with the great economy of their cars. But when giving these high mileage per gallon results, they take very good care, as a rule, to give no further particulars in regard to the conditions under which the test was made, and, as I have before now pointed out in this column, speed is a very great factor in the question, and we have only to look at the tests which are made by the R.A.C. of the same car on road and path, to get indubitable and independent testimony as to the truth of this, which brings home to all that, in this question of petrol consumption, "it is the pace that kills"—or, rather, that uses petrol, and that the motorist whose mind is bent on economical running, can make miles an hour difference to his petrol consumption by the way in which, and the speed at which, he runs his car.

Another striking illustration of this fact is to be found in the report of the R.A.C. trial of the 16.9 h.p. Napier which was published last week. Here we find the car giving 29.04 miles per gallon on the road test, which was made, I believe, at a speed at or about the legal limit, whereas, when the same car got on the path at Brooklands, and was sent for a lap or two "all out," the speed going up to 53 miles

MY WAY OF THINKING.—Contd.

per hour, the consumption rose to 15.81 miles per gallon, or an increase of nearly 100 per cent. for the added speed.

It will be recognized, therefore, that the man, who, in his negotiations with the salesman, clamours for a car which can do its 50 miles an hour, and at the same time asks, or thinks he is going to get, his 25 or more miles per gallon, is hardly likely to be able to combine the two.

The Wear of Spring Bolts and Shackles.

A very common and, indeed, an almost universal source of trouble and consequent repair, necessitating expense, is to be found in the wear of spring bolts and the shackles upon which the springs of our cars work. Wear generally takes the direction of practically cutting through the bolts at the two ends, and at the same time elongating the holes in the links which work upon them.

Various plans have been suggested for getting over this trouble, and it can be greatly minimized if the construction be such that the wearing surfaces can be kept constantly lubricated. But even this will not entirely prevent wear, and Mr. W. S. Clayburn, who is with the Cleveland Garage in Darlington, sends me particulars of a little device of which he has fitted a number, with results which, he says, have exceeded his expectations. Naturally, those in charge of large garages are in a better position than anyone else to know the weak points which may be said to be more or less common to all makes of car, and, at the same time, to discover the weak points of particular models.

The little fitment to which Mr. Clayburn refers, is the outcome of this experience. It is a combined shackle-bolt and shock-absorber, which is claimed to be dust-proof and self-lubricating, whilst the wear is automatically taken up. This fitment takes the place of the usual links and bolts, the links being formed in two halves, bolted together upon cones embraced by rubber pads, which take the intensity of the shock and act to a certain extent as shock absorbers, whilst very ample arrangements are made for the lubrication of the working parts. The idea strikes me as being practical enough, and attention to these "little things that matter," go to make up satisfaction in the use of a motorcar.

A Run on a Rover.

I went over to the Saintsbury Hill-climb of the Coventry Motor Club recently on a 15 h.p. Rover, the first time I have had the opportunity of trying this very excellent car, and I was extremely pleased with its performance. Although of quite moderate power, it showed up well on top-gear performance, the gear not having to be changed once the whole of the run down from Coventry to Weston-sub-Edge, and only three times on the journey back. The car also went up the trial hill with four up and a heavy load of baggage, without a hitch or a falter, and, whilst it rode nicely and comfortably, its powers of rapid acceleration and retardation were all that could be desired.

Doubtless something of this can be placed to the credit of R. Brown, the driver, who handled the car excellently and in a manner to which the most critical could not take exception. I mention this because, as a rule, one finds trade drivers, with whom familiarity has bred contempt, are apt to take risks and indulge in speeds which are scarcely justified by the road conditions; but in this case the car was driven with the utmost consideration for all other road users. There were no undue stresses thrown upon the tyres, springs and chassis by swinging

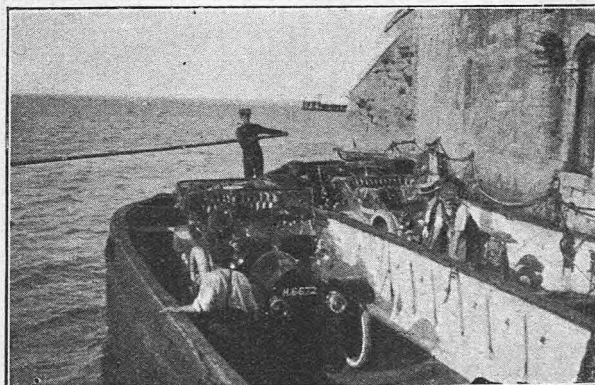
around corners at too high a speed, and throughout the drive there was not the smallest suspicion of any risks being taken. I am sure that, if drivers of demonstration cars would handle their vehicles on these lines, rather than attempt to show off merely the pace of their cars and their own smartness in handling them, a very much better effect upon the intending purchaser's mind would often be produced than is frequently now the case, and in the combination of R. Brown and the 15 h.p. Rover, the manufacturers have a very excellent and telling means of practical demonstration of the merits of their productions.

Tarred Road Surfaces.

Upon the run alluded to in the last paragraph, I noticed one thing about some of the tarred road surfaces over which we passed, which is quite new to me. Some of the stretches of road surface were not by any means in good order, that is to say, there were holes very much after the style of pot-holes; this in the neighbourhood of Stratford and, indeed, in one place the road was quite bad.

I have not noticed the formation of pot-holes on a tarred road surface before, but the particular form of destruction which I noticed and which caused me to commence this paragraph was not wear, but "flaking," if I may so term it, that is to say, solid chunks of surface appeared to have been removed bodily. I do not know whether the road surface in this instance had been merely tar dressed, or whether it was made on the plan described a little while ago in *THE MOTOR*—the Gladwell system—of laying a paste of stones embedded in bitumen on the top of the road surface. If it is the latter, then I can well understand this chipping out of chunks, as the treated portion forms a solid layer, but if the particular road I noticed was a tar-sprayed road, then I am rather at a loss to account for this type of destruction. In any case, however, where this occurs, whatever the individual cause may be, the result is sure to be bad for the road, because, where these chunks are removed, holes are formed with steep sides, in which the water can collect and penetrate down through the supporting water-bound road material, and when the frost comes, this will rise and burst the surrounding portions of the tar-treated top layer.

There is no doubt that the only really efficient method of road construction is entirely to re-make the road surface to a depth of 6 in. or 7 in. with tar-treated material.



HOW CARS ARE TAKEN TO THE ISLE OF WIGHT.

The barges "swing" into the landing stage—some planks are placed across from the land to the barges, the cars being driven up under their own power. It is not necessary to turn out one's petrol, etc., for this trip across to the Isle of Wight.

FRENCH HOTELS.

Interesting Experiences in Tours Over 25,000 Miles—Growing Popularity of British Detachable Wire Wheels in France—Aeroplane Trials—Big Money Prizes.

(By OUR PARIS CORRESPONDENT.)

NOW that the active touring season (though not the motoring season) is nearing its close, the moment seems opportune to review my hotel experiences. During the past two seasons I estimate that I have travelled by road a distance of not less than 25,000 miles, and have come in contact with 50 hotels in various parts of France for the first time. This list consists entirely of hotels selected haphazard or on the recommendation of the T.C.F. handbooks, and excludes all establishments with which I had had previous experience, or which were known to me by reputation. Thus my experience was practically that of a foreigner travelling in France for the first time, and obliged to select his hotel from the guide books with the hope that he would alight on a good one; indeed, on several occasions, having no means of comparing the Hotel du Commerce with the Lion d'Or, I have asked the opinion of the policeman on point duty and patronized the hotel which he considered the best.

Out of the 50, I have marked off two of the hotels as bad. One was at Rouen, and was a non-recommended establishment selected in ignorance, for I had unfortunately set out without my Touring Club handbook. It was decidedly dirty, the food was poor, and the beer flat. There was the redeeming feature that, observing one of the ladies was unable to eat the dinner, the proprietress voluntarily deducted the price of the meal from the bill.

The second hotel with a black mark against it was at Orange, in which town we had landed about 8.30 on a March evening, after a run of 200 miles, to find that the dinner was cold and indifferently cooked. The bedrooms were not dirty, but they were so cheerless as to confirm the first bad impression of the place. Two others, at Dieppe and Boulogne, have been marked off as poor. In both towns the best hotels were very expensive, the idea evidently being

to give the minimum and get the maximum out of the clients.

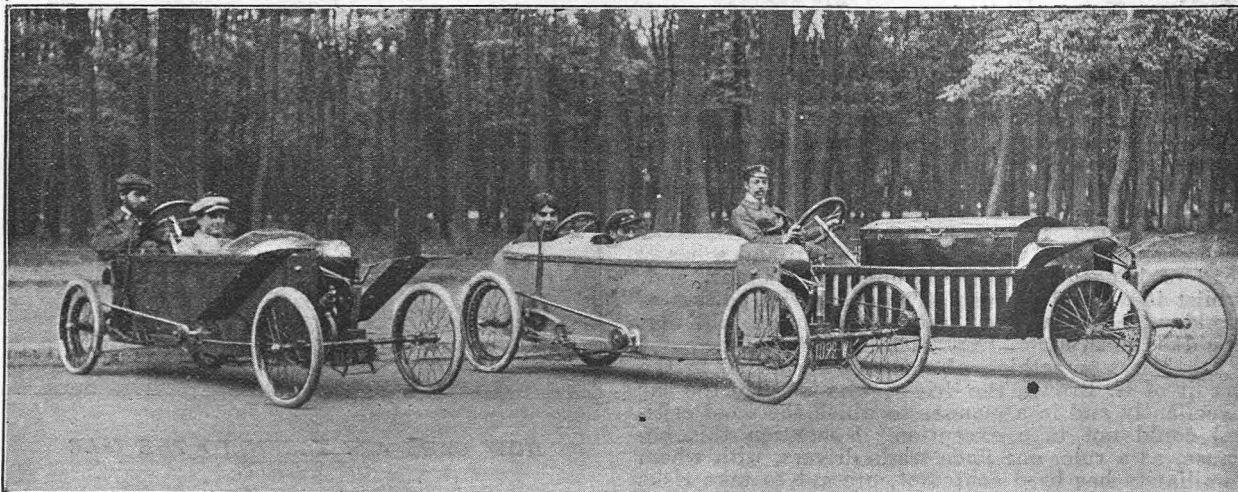
The cheap hotels were decidedly bad. Two more, at Mourmelon and at Sangatte, near Calais, have been marked off as rough, having no refinements and very poor sanitary arrangements; but the food was good, and the healthy motorist, who could spend most of his time out-of-doors, had no real ground for complaint. Out of the 50, there remain 44 which could all be classed as good, some of them as excellent.

A few reservations must be made: at Fontainebleau and at Chalon-sur-Saône there was an increase of 50 centimes on the T.C.F. handbook price for dinner, the excuse in one case being the increased cost of food, and in the other that we had dined at a private table. Quiberville and Veules, two holiday resorts between Havre and Dieppe, made themselves conspicuous by charging one franc a day for garage. Monaco did the same, but in view of the difficulty of obtaining garage room of any kind in the principality, the charge could not be objected to. Chartres is marked off as the town which provided a good dinner at 3 francs 50 per head, and made wine an extra; it was the only provincial town at which wine was not included.

The high-water mark of excellence was reached by the Touring Hotel at Auxerre: a dinner fit for a prince, good Burgundy wine, a spotlessly-clean bedroom with electric light, hot and cold water and simple but modern fittings, a free garage and good attendance, very moderate prices and the Touring Club discount, this place could be set up as a model of how hotels should be conducted.

Among the group a little hotel at Villefort, a village of two or three hundred inhabitants in the heart of the Cevennes mountains, stands out rather conspicuously. We had run in at dusk, afraid to push on through the mountain passes without headlights;

SPIDER-LIKE MACHINES FOR GAILLON.



The three Bedelia cars which took part in the Gaillon Hill-climb on Sunday. The one on the right is equipped as a light delivery van, the centre one is a special racing model, and the third an ordinary touring vehicle.

NEWS FROM PARIS.—Contd.

yet, although unexpected, we and a party which came in ten minutes later were provided with a good, hot dinner and a plain, whitewashed, but perfectly clean bedroom. Two francs for the dinner, wine included, and 1 franc 50 for the bed, with 10 per cent. discount as members of the Touring Club (we were ashamed to accept it), was the moderate price charged.

There was a similar case at a tiny village in the Auvergne mountains, reached after a cold morning's run over snow-bound roads. We were entirely unexpected, yet within half an hour a fire had been specially lighted for us and a hot dinner served, with fresh river trout as one of the most important dishes. Prices varied: a dinner might cost as low as two francs, but very rarely went above four. In small towns inclusive terms were as low as seven francs per day; on the Riviera they could easily run up to 20—a good average would be 12 francs per day.

The most important feature is that out of 49 T.C.F.-recommended hotels, only one saw us leave in a dissatisfied condition, while about 80 per cent. gave us no room whatever for complaint. Hotels play such an important part in the life of the touring motorist that it is most gratifying to find the general standard so high in France, thanks largely to the national Touring Club.

Detachable Wire Wheels in France.

Reference has frequently been made in these columns to the growing popularity of dismantlable wire wheels in France, and as this device is undoubtedly a British production, its success in France cannot but be flattering to our national pride. Proof of this increasing popularity is to be found in the establishment of a factory at Courbevoie, on the western suburbs of Paris, for the production of Riley wheels. The establishment is under the control of Mr. L. L. Faure, who for a number of years has been connected with the Gregoire Co., and to whom credit must be given for the introduction of the Riley into France.

The outlook is so promising on this side of the Channel that Mr. Faure has secured the patent rights and made arrangements with the Riley Co. for the building of their wheels in France, thus effecting a saving of carriage and customs duties and being able to make conversions from wood to dismantlable wire wheels much more rapidly than is possible when supplied by a factory abroad.

The conversion of private owners' cars is to be one of the features of the new factory, such arrangements having been made that the wooden wheels of any of the leading makes of cars can be replaced by a set of dismantlable wire ones in 48 hours. The French motorist appears to have been more fully convinced of the value of the dismantlable wire wheel than the French manufacturer; hence the necessity of making arrangements for changing private cars.

Several of the big manufacturers, however, have come over to the English idea, chief among them being Delaunay-Belleville, who equip the majority of their cars with wire wheels of British construction; Panhard has been converted, the private cars of nearly all the heads of the company having wire wheels; Renault, on the other hand, remains obdurate.

The makers of popular cars, such as Gregoire, Delage, Peugeot, and Sizaire, are all in favour of wire wheels, and will either supply them as a standard equipment or have them fitted as an extra. Although wire wheels are more expensive than wood ones, they are being fitted just as freely for moderate-priced as for the more expensive grades of cars.

Up to the present the United States, having the advantage of abundance of high-grade hickory at very reasonable prices, has not been interested in the dismantlable wire wheel. It is not likely, however, that

this state of affairs will continue, for I have knowledge of several influential persons who are making arrangements to introduce the wire wheel into the States. There is certainly a most important opening here for British enterprise.

Aeroplane Trials: Big Prizes.

Last Sunday the most important aeroplane trials ever held in France commenced on the military ground at Rheims. The amount offered in prizes and purchase money totals no less than £48,000, of which £24,000 may be won by the most successful constructor. Beginning on the first of the month and continuing until the last day of October, the object of the trials is to discover the most suitable type of aeroplane for military purposes.

There will be a preliminary test, consisting of a technical examination of the machines; three distinct flights with a useful load of 661 lb., followed by landings in clover, ploughed fields or on grass land; a speed test under full load at a speed of not less than 37 miles an hour; two altitude tests, also under full load, with the obligation of rising to a height of not less than 1,640 ft. in 15 minutes.

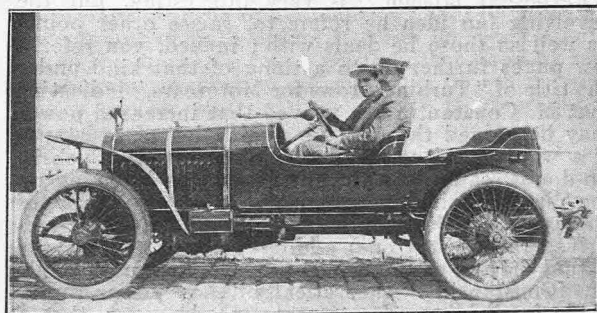
The whole of the preliminary tests must be made with one machine, all the essential parts being stamped at the commencement of the trials. If any part has to be changed, the whole of the trials must be recommenced. The final test will consist of a flight of 186 miles with the full load of 661 lb., at an average speed of not less than 37 miles an hour, and without a landing being made.

The winning machine will be purchased outright at the price of £4,000, and an order placed for 10 similar machines at £1,600 each, with an increase of £20 for every kilometre in excess of the minimum of 60 necessary to qualify. Prizes are offered on a similar scale to the makers of the machines classed second and third in the competition.

The Army and Navy being by far the most important customers of aeroplane manufacturers and builders of aero motors, every effort is being made by the leading French firms to score well in the trials.

No Paris Show.

This year there will be no motorcar exhibition in the Grand Palais, the leading French manufacturers being of the opinion that they can sell cars without the expense of a public show. The aeroplane manufacturers are not of the same opinion, and had hardly closed their second annual show before they announced that a third would be held. The opening day, originally fixed for 8th December, has now been changed to Saturday, 16th December, the show remaining open until the evening of Tuesday, 2nd January, 1912. It is announced that all the space on the ground floor has already been taken up by exhibitors of aeroplanes, and arrangements have had to be made for housing machines in the large halls on the upper floor.



Hispano-Suiza 80 x 180 four-cylinder car which took part in the Russian Reliability Race from St. Petersburg to Sebastopol. The car, which is fitted with Rudge-Whitworth wire wheels, is practically a copy of the Boulogne light racer.

OTHER PEOPLES' VIEWS

NOTE.—These columns are set apart for the discussion of motor topics by bona-fide readers of *THE MOTOR*. The Editors are not responsible for opinions expressed by correspondents in this section. Correspondents are asked to keep their letters as short as possible.

Wind Resistance and Power Recuperation.

There are very few things which are entirely new, and what is often the newest is often only another way of looking at an old object.

The windmill of childhood is as old as observation and constructive ability. The application of the idea to increasing the speed of motorcars is a new way of looking at it, but the sail area or vane area necessary to move a standing car is too great for employment for such a purpose.

Some years ago, when the new Post Office buildings on Mount Pleasant, at the back of the offices of *THE MOTOR*, were in course of erection, an arrangement of surfaces, to give a descriptive name to what could not be called a machine, was attached to a cylinder and dropped from the top of the building and timed. A similar body, without this particular arrangement of surfaces, was also dropped and timed; the re-arranged body dropped in an appreciably shorter time than the other, showing that it is not so much the form of the entering surface of a body as that of the leaving surface that is of importance in considering the effect of wind resistance on the speed of a moving body.

This arrangement of surfaces was brought to the notice of the late Lord Kelvin, who considered that sufficient had been demonstrated to justify further and more exhaustive examination. Up to the present this, however, has not been undertaken. How far a motorcar body would have to be modified in form to take full advantage of such a re-arrangement of the surface as greatly to reduce the effect of wind resistance could not be stated, without some experiment. Surely, with so many corporate bodies in connection with the advance of the science of motorcar construction, and the National Physical Research Laboratory at work, it might be possible to determine the perfect form for the rear portion of a moving body.

A REGULAR READER.

Mr. Sturmeys recent article under the heading, "Perpetual Motion," is very interesting, but the revolving fan idea he refers to, raises other points as well as those he deals with; indeed, you refer a few pages further on to a thing of that kind under the title of "Turbine Prows for Motorcars," indicating that M. Constantin has proved that increased power may be gained through the diminution of resistance if a wind wheel or small turbine is fitted. Such is, no doubt, caused by the revolving fans breaking up the direct impinging action of the air in front of the car. Mr. Sturmeys laughs at the idea of a wind-driven fan (or turbine) adding any power to the actual driving of the car as a mechanical unit, while M. Constantin "theoretically" has power applicable for driving. It seems to me, however, that a compromise would settle both and "make good," as Americans say. It is well known that a heavy body when it is well in motion considerably assists through the weight of its mass, hence a car will run for some little distance if the engine is shut off, which would

be a slight set off to the small additional weight the front fan would add, and were it even in an inert condition, reduces the resistance below what is experienced when one is not fitted, the car would apparently gain power through less resistance—but the compromise I suggest is to have such fan or turbine fitted with a "free-wheel" in its hub, and the shaft connected suitably to some part of the driving mechanism of the car, hence, if the car were going slower than the fan, it would (if free) be revolved by air resistance under M. Constantin's plan, and it could by means of the "free-wheel" race on its spindle, that allowing it to be effective still as a "resistance diminisher," but if the car happened to be considerably faster than such normal speed, then it would make the "resistance diminisher" become a "tractor screw" or propeller as used on aeroplanes, and so serve both purposes. Naturally, it would absorb a little of the mechanical power driving it, but, on the other hand, it reduces resistance and should also produce some "pulling power" too—both of which might more than counterbalance the power absorbed from the car. Mr. Sturmeys also refers to using power from exhaust gases from the silencer, and indicates how absurd such idea is owing to the extra back pressure caused on the engine—but has he thought of two methods of using the exhaust which would not cause back pressure?

One is to have an outer jacket over the regular silencer, and fix it to a "hot-air engine" (I do not say it would be hot enough, but it might—I have not tried it). The second is, to have a water-jacket over the silencer, which could have a coil of copper tubing round the exhaust pipe from engine, and might be employed in a sort of little turbine (no extra weight, Mr. Sturmeys) by fitting the engine flywheel with suitable vanes around it, and having such encased, to make the cylindrical part of such turbine. The reduced friction resulting from the absence of air resistance alone (it would be in a partial vacuum) might give greater power, and so soon as water in the jacket of silencer generated steam, it (the steam) would convert it into a turbine. HUGH HIGGINSON.

Taxation Concessions.

It is now some time since you called for suggestions on the above subject. Mr. Lloyd George and his Finance Act have been referred to by some of the writers who responded to your invitation.

I think it is fair to point out that Mr. Lloyd George put on a license duty which was about £1 per cent. on the cost of new cars, and that he cannot be held responsible for the taxation of old cars on an undue proportion of their value which decreases from day to day.

I suppose that the system of taxation by horsepower is admitted to be unsatisfactory, and that a system taking one per cent. on the catalogue price of new cars complete and ready to take the road (without fancy extras), with a 10 per cent. per annum system of rebates would meet with approval.

O.P.F.—Contd.

It seems to me that Mr. Sturme's idea of taking 10 per cent. off every year during the life of a car might be improved by fixing a minimum licence of £1 1s., as less would be hardly worth collection.

I think, also, the present petrol tax should be left as it is, and that there should be an extension of the 5s. driver's licence to all persons driving on the roads, motorists or others, and their licences should be liable to endorsement for offences in the same way as motorists.

With reference to the article by "P.H.M.," "The Wear and Tear of Our Roads," I think the author omits to notice the great amount of extra dust raised by steel-studded non-skid covers.

He also refers to the great wear and tear at corners, but he does not notice that this is most noticeable at right angle corners; and if those corners were opened up as they ought to be to accommodate the fast traffic, that source of wear would disappear, and as this is being attended to by the road authorities it may be hoped that it will soon be cured.

I have motored for seven years, and my opinion is, that with fully inflated smooth tyres, travelling under the legal limit; the dust does not exceed what is raised by an iron-tyred four-wheeled carriage, with two horses, travelling 10 m.p.h. on the same road.

On the other hand the dust raised by scorches travelling 20 to 40 m.p.h. with steel studs on all wheels is disgraceful, and ought to be dealt with by the Societies representing motorists as a danger and annoyance to the great body of law-abiding motorists, and the general public.

CHARLES OWER.

Curing Wobbling Front Wheels.

I have noticed at various times inquiries from readers as to curing wobbling of the front wheels, and how I did so may be of interest to them.

In the first place I made certain there was no shake in either the worm and segment or the steering connections, and while this cured any rattling there was, it did not stop the wobbling.

I then noticed the front springs were very much curved, so had them almost made straight, and by doing this I have got over the difficulty and wonderfully improved the car both for steering and holding the road. The fault, of course, was that the axle being fixed to the springs and the front of the springs to the dumb iron, each bit of rough road the wheels went over caused the spring to flatten, i.e., lengthen, and the axle to be jerked backwards. The ball joint at the front of the steering arm could not at the same time go backwards owing to irreversible steering, this resulting in the wobble being transmitted to the wheels. It also caused the steering wheel to shake, owing to the steering not being absolutely irreversible, and on a very bad bit of road it was sometimes jerked out of my hand. However, by straightening the springs I have quite cured the fault, and the car

can now be steered with ease on the roughest roads, which it certainly could not be before.

W. D. HEYWOOD.

A Reply to "Aeromot."

In your issue of the 19th ult. I notice that your contributor "Aeromot" indulges in what many will regard as some rather cheap sneers at what he calls the "Royal Association." I presume he means the "British Association for the Advancement of Science," and that his remarks refer to the recent meeting at Portsmouth.

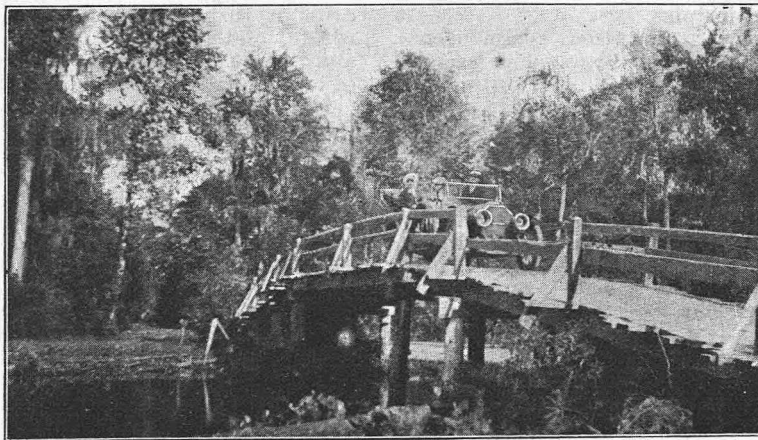
"Aeromot" is, however, quite wrong in saying that "our champion aero-theorists have proved by their mathematics that Transatlantic flight is out of the question." What really happened was that Mr. Algernon Berriman, in opening the discussion on "Aeronautics" merely stated the approximate conditions which, in his opinion, a machine of the existing type must fulfil to accomplish such a flight. As to the possibility of constructing such a machine no opinion was expressed.

Regarding his dictum that the meetings were "chiefly composed of titled and untitled scientists whom no steel works or other commercial under-

taking would employ at a couple of pounds a week," I would remark that "Aeromot" is obviously in ignorance of the status of the men who attend these meetings—at any rate those of the Engineering Section. If it is worth while for men like Sir William White, Colonel Crompton, Mr. Alexander Siemens (President Institution of Civil Engineers), Captain Sankey, Captain Marriott, Mr. Worby Beaumont, etc., to attend these meetings, something more than the "rather

funny" things that "Aeromot" suggests must be discussed.

His statement that "text books and lectures are out-of-date before they are printed or delivered," is true only in a very limited sense. That a review of the present position of aeronautics would be in many respects out of date before it could be printed and put on the market is true. On the other hand by far the largest proportion of text books which are written contain statements which for the most part are as true and as unlikely to be disproved as the familiar dictum that two and two make four. That for instance the brake horse-power of an engine can be determined by a rope brake in such and such a way is a truth that is not likely to go out of date, and a number of such truths collected in book form and constituting a text book might be acceptable at the price of a few shillings to some to whom this sort of thing does not come as a Heaven-sent inspiration. Debatable and uncertain points are no doubt dealt with in text books but the limitations of our knowledge on these points are in general clearly pointed out. But one does not rely entirely on text books. What, I ask, is the function of the current technical Press if not to keep abreast of new developments?



A SHAKY BRIDGE.

A reader of "The Motor" sends us this interesting photo. He writes: "This bridge is on the road from Jacksonville to Florida. The bridge swayed inches when my car passed over it, and I thought it would collapse. The trail leads through the natural jungle or forest, which is sub-tropical, with palms, long-leaved pines and creepers, and almost impassable without cutting a path."

O.P.V.—Contd.

"Aeromot" further remarks that he has "spent over twenty years proving text books to be elementary liars." All I can say is that his efforts appear to have been singularly futile, since the opinion cannot be said to be widely held and I for one have never heard it advanced before.

Finally, "Aeromot" says that "the men who know do not write and hardly ever lecture." This is a sweeping assertion which I think he would find it difficult to justify. One has only to look at the current technical press and the reports of the proceedings of the various Engineering Societies, the Institutes of Civil, Mechanical, Electrical and Automobile Engineers, to read the opinions of men who most emphatically do know.

This mistaken feud between theory and practice is a long-standing one. Some men there always will be who will use their theory in the wrong way and bring true theory into disrepute, while it will always be possible to find other men spending time and money in futile schemes and experiments which a little theoretical knowledge would have saved. But this does not alter the fact that in general the most rapid progress is made where practical effort is guided by scientific principles.

True theory is merely organized commonsense. Frequently scientists make statements which are subsequently proved to be wrong and are withdrawn. But no one will assert that practical men are immune from this sort of thing and that mistakes are never made. No one will learn to fly by making calculations, and no one proposes to, but many knotty and unsolved problems in aeronautics will be helped to a solution by the theoretical analysis of the practical experimental results.

I must apologise for the length of this disclaimer but in a short article "Aeromot" raised many points calling for comment, and it has been difficult to deal with them in a few words.

ARTHUR A. ROWSE,

Secretary of Section G (Engineering) of the
British Association.

The Brun Alternating-Rotary Motor.

Referring to the description of the above in issue of 12th September, with all due respect to the writer of same, I cannot appreciate any features of which it is possessed to warrant the invention being called "a very remarkable one."

After closely considering it, I am of the opinion that, whether for slow or high speeds, no matter what primary power is being transmitted, it will not prove as efficient as many of the types of power transmitters at present in every-day use.

In the first place, it is fairly obvious that it is the pistons which exercise the turning effect by direct mechanical contact, and as such contact is a "rubbing one" and is spread over such a considerable surface, it is bound to produce corresponding friction. Further loss must also result from there being two cylinders to revolve—only one of which is utilized for power transmission.

To my mind there is no difficulty in appreciating that a rotary movement is obtained. Take the lower of the pistons (K). The drawing shows it in direct line—vertically and horizontally—with the axis of the cylinders. Now, assuming that the engine is working, the power being provided by one or more of the other pistons, which are necessarily in a position to act tangentially, the piston under notice is turned so that it, too, acts in a similar way, and at this moment the water is admitted to it and at once fills up the whole of the available area in the piston and the equal portions of the cylinder in which the piston works. Now, in considering the power being exercised at the corner or angle of the piston, we find that there is a vertical pushing effect in the vertical portion of the

piston, according to the pressure of the water. The pressure in the horizontal portion of the piston, being the same at all points in that portion, is therefore really in equilibrium so far as any vertical pushing effect is concerned. Therefore the piston rises, and necessarily turns the upper cylinder. In exactly the same way does the horizontal portion come into effect, promoting, without obstruction, a horizontal pushing or turning effect on the lower or vertical cylinder.

I think you will agree that the drawing indisputably proves that the turning effect is produced by the pistons, because, were it not so, it will be seen that there would be no need for them, their place being taken by fixed waterways between the cylinders and a suitable arrangement of "ports" on the latter.

H. R. LEWIS.

With reference to the description of the Brun motor which appears in *THE MOTOR* for 12th September, and the difficulty mentioned which some people have in convincing themselves that the motor would turn if supplied with fluid under pressure, I think the following simple explanation may be of interest to your readers.

In the first place it is clear that, when the motor is not supplied with fluid under pressure, if one drum is turned by hand, the other drum will also rotate, and that the L-shaped pistons will move to and fro in the drums, each piston coming further out of or moving further into both drums simultaneously.

Now, imagine fluid under pressure to be admitted to the motor. For the sake of simplicity, suppose that one drum is vertical and the other horizontal, as shown in your figure. Consider the vertical limb of a piston which happens to be emerging. It is thrust upwards by the fluid pressure, and therefore the horizontal limb of the piston is applying a lifting force to the part of the horizontal drum into which it fits. Similarly, this horizontal limb is being forced outwards by the fluid pressure, and is therefore applying a turning thrust to the vertical drum by means of the vertical limb of the piston.

Secondly, the effective thrust on the pistons is independent of the thickness of the walls, since the thrusts of the fluid at the bends are unbalanced; the effective thrust is therefore equal to that on a solid piston of the same diameter. Large bore pistons can therefore be used.

The Brun motor is an ingenious adaptation of a mechanical-transmission mechanism, which has been known for years; drawings are to be found of the mechanism in such books as "Hiscox's Mechanical Movements."—Yours faithfully,

W. H. GLASER.

Protecting a Car from White Ants

I do not think that G.C.P., who recently inquired about protecting a car against white ants, need be anxious if the floor of the motor house is made "pucca." Three inches of lime concrete, with a floor of brick on edge over that, set in lime mortar and cement pointed, will be all that is required. On this floor the car should be fairly free from damp, and a floor of this kind can easily be kept clean. White ants will not go through it. They never work in the open. To come across the floor to the car they would have to build their little tunnels as they went. They are very unlikely to set out on a march of such a kind across such a floor, and if they do, they will be visible to anyone who goes into the motor house. A car must not be left to take care of itself, at all events in the rains. If it is, mildew will grow in a day or two all over any leather work. Also the engine should be turned round daily. If it is not, small parts will be found to have rusted up, such as the rocking arm of the magneto contact-breaker. I have found it best to jack a car up off its springs when laying it up for any length of time.

ANGLO-INDIAN.

O.P.V.—Contd.

The Manchester Hill-climb.

With reference to your paragraph in "News and Notes" re the Manchester Motor Club's hill-climb, I shall be glad if, in fairness to myself, you can publish these few facts.

My Vauxhall car was the identical one with which I won the club's hill-climb earlier in the year, and with which I competed so successfully in the Manchester Automobile Club's reliability run and hill-climb, also in the Yorkshire Automobile Club's hill-climb at Pateley Bridge. I therefore considered that my car was eligible to compete again. As no objection was made before the start, I was somewhat astonished to hear, after the result had been announced, that my car, which by the way is fitted with an exceedingly roomy and comfortable torpedo body, had been disqualified, on the grounds that it "did not conform with the committee's idea of a touring car and was inefficiently silenced."

In a hill-climb where the prizes are awarded on a system of handicapping, which penalizes cars of well-known capabilities, and which is adopted by the Manchester Motor Club, the announcement of the winning of prizes may be somewhat misleading. In this connection, since my car is disqualified, the Vauxhall driven by Mr. Hollingdrake has a better figure of merit than the car which is now awarded the silver cup and gold medal, by reason of receiving a start of 20 per cent. in efficiency.

This is the reason, therefore, of the conflicting statements in your advertisement columns.

R. WILKIE.

Wire v. Steel Wheels.

As the earliest manufacturers of steel wheels for pleasure cars, we read with interest a letter in your issue of the 8th ult. from Mr. J. V. Pugh on Wire v. Steel Wheels, and in your succeeding issue a rejoinder from Mr. G. H. Sankey. Mr. Sankey is to be commended upon the terseness of the questions his letter contains. They will bear repetition. "How? When? Mr. Pugh would propose to demonstrate the accuracy of some of the statements he makes in his letter. Where?" To our minds the whole matter is summed up in these questions, for it would appear that the same injustice that has been done in the past to first-class wood wheels is to be perpetrated on steel wheels. We believe it is a fact that the statements and figures concerning the relative strengths of wood and wire wheels, as given to the public, were adduced from data accumulated and furnished by Mr. Pugh on the tests made by his own particular methods. We predict that the time is fast approaching when a discerning public will want further substantiation. To suggest that steel wheels cannot be built lighter than wire wheels, is absurd and untrue, for it is a fact that wire wheels are heavier than steel, whilst wood are now lighter than wire. (Mr. Pugh used to claim otherwise.) Steel wheels can, nevertheless, be built capable of withstanding double the lateral or skidding strain that wire wheels will stand. As we are equally interested as manufacturers of each of the three varieties of wheels, we know we shall not be accused of being biased.

THE GOODYEAR MOTOR WHEEL CO.

Your correspondent "Cama" refers to our advertisement stating that Rudge-Whitworth detachable wire wheels lengthen the life of the tyres by 70 per cent. This is not a statement lightly made, but one based on the evidence which is given in full in the same advertisement, viz., the results of carefully-recorded experience of the Daimler Company.

It may be useful to add that the cars on which the tests were made were not only similar, but were identically the same cars first fitted with wood wheels

and then with Rudge-Whitworth detachable wire wheels; 50 tyres were tested in each case. You will recognize that the data obtained from such extensive tests show a better average than would be obtained from the test of four single tyres on four wheels.

Your correspondent offers to have his wood wheels replaced by Rudge-Whitworth detachable wire ones, and to pay for the same on our undertaking to refund him the cost should his new tyres (Kempshall) not have their life lengthened by 70 per cent. compared with when used in conjunction with wood wheels.

The mileage he has obtained is unusual, but in spite of that we are quite prepared to accept his offer subject to the records which he has kept of the behaviour of his tyres, the distances run, and the state of the tyres when they were taken out of test being of a character that will make a useful comparison possible. While we must, of course, see this data ourselves we would be quite willing to leave the decision with yourself or with the engineer of the Royal Automobile Club.

In conclusion, we do not wish it to be supposed that the saving in tyres is the only advantage which your correspondent may look to gain; his wheels will be stronger and lighter than wood wheels and he will be saved the inconvenience of tyre delays.

For RUDGE-WHITWORTH, LTD.

JOHN PUGH.

With regard to the criticisms of our tests and our proposed tests, we are quite prepared to agree to such tests by independent observers as will, we think, satisfy Messrs. J. Sankey and Sons, Ltd. We suggest, however, that the definite terms will require so much space for their settlement that it would be unfair to ask you to devote that amount of your space to this purpose, and we are endeavouring to do this by direct correspondence with Messrs. J. Sankey and Sons, Ltd.

Meanwhile, we think we are entitled to say with regard to Messrs. Sankey's alleged superiority of their wheel that we have already published tests which show that the Rudge-Whitworth wheel is as much stronger than the Sankey wheel as the Sankey wheel is stronger than the Rudge-Whitworth wheel tested from the weak side.

As to Messrs. Sankey's complaint that we are not entitled to judge our wheel from its strongest side, we would remark that it is quite well known that the greatest strains on motor wheels all arrive from the outside, and he might just as well complain that the defence of Great Britain is inadequate because all the coast guns point towards the sea.—Yours faithfully,

JOHN PUGH.

A correspondent writes:—

While motoring along the Addingham-Skipton (Yorks) road on 15th September, I dropped a light waterproof coat with check lining. On retracing my steps, I was told that it had been picked up by a motorcar which followed soon after. I shall feel obliged if you will insert a notice to this effect in your paper, THE MOTOR, and ask that it should be returned to my home address as below. I shall be pleased to pay any expenses.—G. F. COOPER, 1, Bainton Road, Oxford.

On Saturday, 23rd September, at Hardelot, Leblanc flew the new No. 27 Blériot—which has flat planes and a much-reduced fuselage—at a speed of 93½ m.p.h. The breeze, it is true, was favourable, but not so greatly as not to show that the new Blériot is not a remarkably speedy and efficient machine, especially as its Gnome motor is only one of 50 h.p. and the lifting surface is only 12 square metres.

In spite of his successes attained in aviation, Cagno, the well-known racing driver, has quitted it for good, and returned to motoring.

INFORMATION BUREAU



SPECIAL NOTICE.

We are at all times pleased to answer any queries put to us by our readers, or to receive correspondence from them 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. Plain writing. Type-writing for preference.
2. All letters to be written on one side of the paper only.
3. Questions to be clear, terse, and to the point, without tedious preamble.
4. Should an immediate reply be required, 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.

Heat Effect on Magneto.

J.W.N.—The efficiency of a magneto is not affected by variations of temperature as obtained under ordinary conditions; that is to say, you can rely upon it sparking on a frosty day as on a day when it is 90 degrees or more in the shade. The only condition which would affect it would be extreme heat sufficient to damage the insulation of the armature.

Converting a Magneto.

T.L.—Q.—My car at present has coil ignition. It is a four-cylinder engine, and I propose to fit a high-tension magneto. It happens that I have a good make two-cylinder magneto by me, and the question is whether I could utilize this machine without having it altered? Is there any method of connecting it up to fire four cylinders.

A.—You will have to have a distributor fitted and certain alterations made to the contact breaker to be able to use the machine for a four-cylinder engine.

Engine Lubrication.

E.A.—Q.—I have recently experienced engine knock, which I know cannot be due to worn bearings or carbon deposit in the cylinders, as the engine was overhauled some short time ago. The knock is more evident just after starting; when the engine has been running some time I do not notice it. Can you suggest a reason?

A.—This is probably the result of there being insufficient lubrication of the cylinders till the engine has been running some time. If, as it presumably is, a mechanical system of lubrication, it may be that the supply of oil in the base chamber is not quite sufficient to ensure enough initial lubrication.

B28.

Danger in An Empty Petrol Tank.

C.H.—Q.—Is it safe to try and solder up a loose filler on a petrol tank from which the petrol has been drained out? I propose to use a spirit blowlamp to effect the repair.

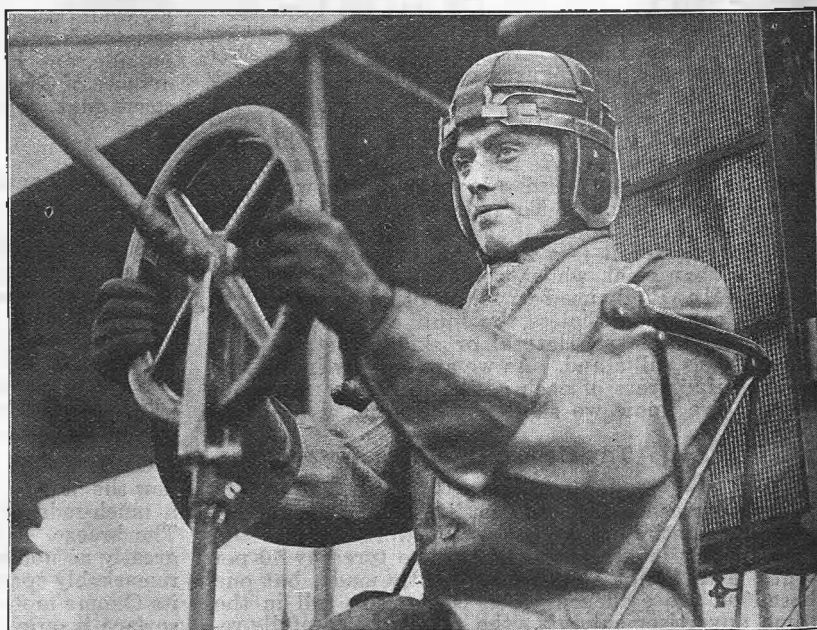
A.—No, we do not by any means consider it would be safe, as the tank would be fully charged with explosive vapour. You would have to drive this out in some way, such as by pumping air through the tank. There would be no danger if you were to use an ordinary copper soldering bit, as this would not reach a temperature sufficient to ignite the vapour. It would not, however, be easy to make a repair neatly with a copper bit.

Exhaust Valve Trouble.

J.H.D.—Q.—The exhaust valve of my engine gives me a great deal of trouble in consequence of something which appears to be a kind of dust sticking to the valve and lodging between it and the seating. The engine then stops, as all compression is lost, and it will not start again until I have taken out the valve and cleaned it. This trouble occurs in every 30 miles or so. I should have stated that the deposit adheres very firmly to the valve, and I have to remove it by scraping with a knife. I

have taken down the cylinder and cleaned it, but found there was very little carbon on it. This cleaning makes no improvement, as the same trouble occurs again. The lift of the valve is $\frac{3}{8}$ in., and a piece of notepaper will just pass between valve stem and tappet, so, presumably, the clearance is correct. The bore and stroke of cylinder are 100 mm. by 120 mm. Thermo-syphon cooling is used. I should feel thankful if you could suggest a remedy?

A.—This deposit may be ordinary "scale" or oxide, which forms on a valve sometimes if the ignition timing is at fault; that is to say, late firing will cause "scaling," but it is more likely that the deposit consists of particles of carbon, due to running on too rich a mixture. These particles become embedded in the surface of the valve, especially if the valve is of rather soft metal. With a nickel steel valve it is less likely to occur. On the other hand, it may be that the particles are actually grit from the road dust, which enters the engine via the air port of the carburetter. The remedy in this case is either to alter the position of the carburetter, so that it is less liable to draw in dust, or else fit a fine gauze screen over the air inlet. The disadvantage of this plan is that there is a tendency to cause throttling of the air supply to the carburetter.



AVIATOR WHO IS TRYING TO FLY ACROSS AMERICA.
Aviator Ward leaving Governor's Island, on 13th September, in an effort to fly across the United States.

BUREAU.—Contd.

Leaking Needle Valve.

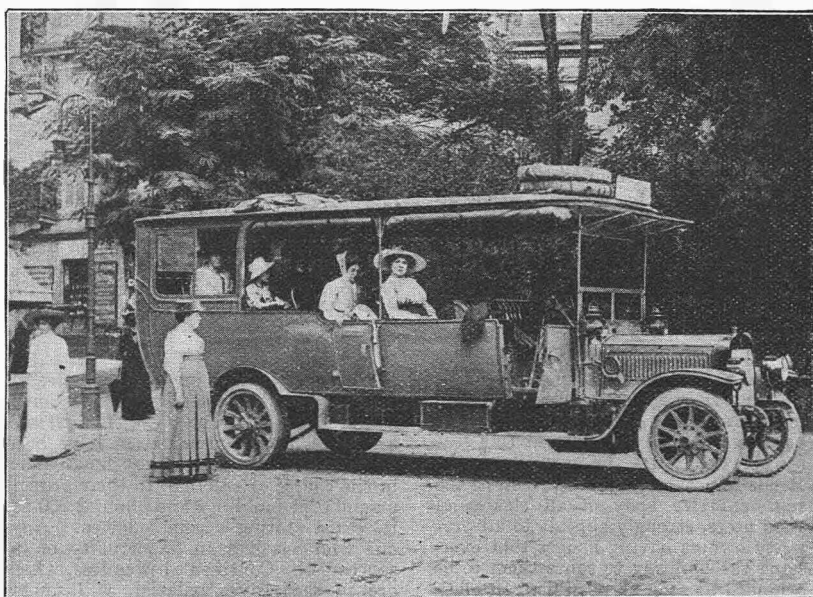
C.T.—Q.—I have a Longuemare carburetter on my car which is given to flooding. Whenever the car is stopped petrol drips from the carburetter, though I believe when running this excess is taken up into the engine. The needle valve has been ground in and the float is in order. No adjustment of the float makes any difference. When the car is stationary, with the engine running, the vibration causes the top of the needle valve to rise and fall, which can be seen when the cap is removed. Can anything be done to steady the needle valve on its seating as I believe this vibration is the cause of my trouble.

A.—There would be no difficulty in steadying the stem of the needle valve. The plan of fitting a stop to the cover of the float chamber, so that it can be adjusted to the top of the needle valve and limit its movement, can be recommended. There is a possibility of the petrol level in the jet being too high, and if this be the case it will mean having the position of the collar on the needle valve altered. This collar is usually made a driving fit on the needle valve stem and can easily be moved a trifle higher up.

Water in Petrol.

R.M.—Q.—What are the indications of water being present in petrol? I have a pressure tank on my car, and always take special care that any vessel I use to hold petrol is clean. The running of the car suggests that something is wrong with the petrol. There is nothing else which I can see to account for it.

A.—Frequent misfiring and difficulty in starting up are likely if water is present in the petrol. It may get into the tank from the exhaust unless an efficient intercepting valve, having a fine gauze filter, be fitted on the pressure pipe. There ought also to be an efficient filter between the tank and carburetter from which any water can be drained out from time to time. These filters are readily obtained and fitted.



NEW MOTOR SERVICE IN BLACK FOREST.

One of the cars leaving Baden for Gernsbach.

A Starting-up Problem.

O.V.—Q.—I have a 15 h.p. car, which was new a few weeks ago, and is fitted with high-tension magneto ignition. It started up fairly well at first, but has gradually become worse in this respect. To start up, it sometimes takes me half-an-hour, and on one or two occasions I have had to start by taking the car to a hill and let it run down. Wiring and contacts of magneto seem all right. The compression is not particularly good, but the car runs very well after it is started. I might add that I cannot get a spark by laying one of the plugs on the outside of cylinders and turning engine as quickly as possible, should I be able to do so?

A.—The magneto contacts may require

adjusting. If the gap or break is wider than 1-50th in. it would cause such a difficulty as described. It is equally important that the gaps of the plugs should be kept to standard, viz., 1-50th in. or half-a-millimetre. The plugs certainly should show a spark on turning the engine round sharply if everything is in order. If the magneto has variable timing it may be necessary to advance it as much as can be safely done. The magneto, obviously, cannot be seriously at fault, otherwise the engine would not run so well once it is started up, so that, failing any improvement, it would be advisable to discover whether the carburetter can be re-adjusted so as to give better carburation. The mixture may be rather weak at starting. On some cars there is a tendency for this to occur owing to the automatic air valve spring losing tension slightly.

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 90 readers.



NEW MOTOR SERVICE IN BLACK FOREST.

Leaving the Hotel at Forbach, Schönmonsach.

MISCELLANEA

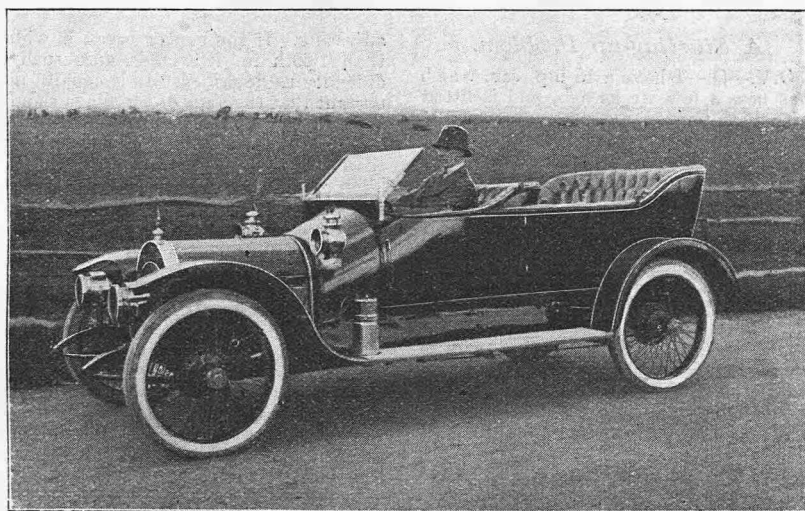
Overhanging Hedges.

Representations having been made to the Roads Improvement Association in regard to the number of overhanging hedges in various parts of the country at the present time, the council of the Association at its recent meeting unanimously passed the following resolution:—

"That, having regard to the serious danger caused to the travelling public by the prevalence of overhanging hedges on the roadside, especially at corners and road junctions at this season of the year, the council of the Roads Improvement Association, as the representative body of all classes of road users, strongly appeals to all property owners having hedges that overhang the highway to cause them to be trimmed as soon as possible. In addition to the menace to the public safety, the drip from overhanging hedges considerably damages the road surface."

amount of special information, based on practical experience of a wide range with every class of coil and magneto. The 109 diagrams and section illustrations are simple and clear, and the printing and binding are up to a good standard. The publishers are Spon and Co., 57, Haymarket, London. The net price is 3s.

We hear that, owing to the increased demand for Continental tyres, the Continental Tyre and Rubber Co., Ltd., Thurloe Place, South Kensington, have been obliged to add a four-storey house (now in the course of erection) to their present magnificent buildings and about 2,000 sq. ft. extra storing accommodation. Any one who has had an opportunity of inspecting the Continental premises, which are in themselves palatial, will understand how well these tyres are in favour to enable this company to make such extensive additions.



Mr. D. E. Williamson, of Eastbourne, who won the Acceleration Test at the Eastbourne Gymkhana recently. Mr. Williamson's 12-18 h.p. Riley competed against cars up to 20 h.p., so the performance was particularly meritorious.

New Text Book on Ignition.

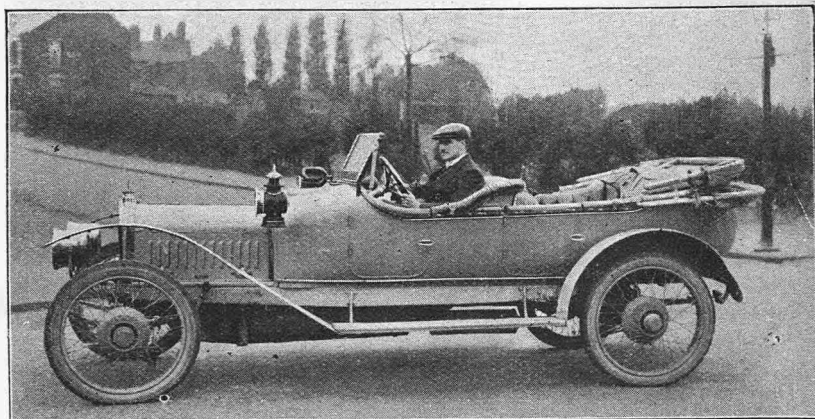
The demand for detailed information on the subject of ignition has led to the publication of still one more text book. This work is well in advance of the average run of such text books, and shows evidence of much care having been taken in the preparation of the text and illustrations. The author, Mr. M. A. Codd, has the advantage of possessing a thoroughly practical acquaintance with all phases of the subject, so that it is not by any means the production of a theorist. The text, which is as up-to-date as is possible in a science which is making such rapid progress as electricity, consists of 11 chapters, the opening ones dealing with elementary principles in an explicit manner. Switches, coil, auto-tremblers, distributors, magneto ignition, faults, remedies and repairs are very fully treated in the remaining chapters. The repairs section in particular contains quite an

Hardened Rubber.

Does the average motorist call to mind the luxurious running of his new car; and does he attribute it entirely to the feeling of joy in the possession of a new thing? How often does he give any credit for the silken progress to the freshness of the tyres? Yet everyone knows that easy pliability of good unused rubber, and the hardness of the stale and much used article. The man of fine sensibility, who is an expert in analysing the joys of motoring, will tell you of the keen pleasure of running on new tyres of the best grade. There is a generous responsiveness in the substance, a resiliency that gives new "life" to the car, and one can only truly estimate the change by raking up that fond memory of the cycling days when one first changed from the solid tyre to the pneumatic.

And the relevancy of all this? Well, hardened rubber is said to be usually brought about by the action of light and air on the tyre. We have had a remarkable summer of dry heat and brilliant sunlight. Every tyre in use, or unprotected, has been exposed to abnormally intense rays of sunlight. It might be well, then, for the careful motorist who suspects a "deadness" in the running of his car to examine the tyres and find if they have gone hard. There seems to be no method of restoring the lost pliancy, but a lesson might be taken from the matter to give increased attention to the storage of reserve tyres, for it is highly probable that many a good tyre is hard baked before it goes into use at all. We note a good many motorists about who give no protection whatsoever to their spare tyres, and the utility, durability, and resiliency of these reserves are adversely influenced by neglect.

German trade organs are immensely pleased with the "booking" for the Berlin Motor Show from 12th to 22nd October, organized by the Imperial Motor Club in co-operation with the German Automobile Makers' Association after a interregnum of four years. And, indeed, they have solid ground for satisfaction, as every German firm of any consequence, as well as foreign agents, figure on the list of exhibitors. In order to keep down expenses, the show committee are arranging for a uniform scheme of simple but effective decoration in both halls.



Mr. E. Genna on his 12-16 h.p. Sunbeam which has won several important events. Mr. Genna had a bad accident in the summer, but is now happily recovered.

IF THERE WERE NO SPEED LIMIT.

Some Cogent Considerations of the Pros and Cons. of an Interesting Proposition.

It is always interesting to foretell what might be the state of affairs if the millennium came about. In the following article the writer gives the pros and cons. of the abolition of the speed limit in this country. The case for and against the speed limit from the point of view of the anti-motorist and the motorist are set forth.

IT is interesting to anticipate the adverse criticisms which will arise from anti-motorists if, and when, our legislators see fit to follow the example of our Gallic friends across the Channel and do away with a speed limit for motor vehicles; and although not difficult to put one's finger on their various more or less reasonable objections, they are merely of such a nature as time would cure, and the advantages accruing to the general community should be obvious to the most prejudiced; as obvious, I hope, as they theoretically are to-day.

Seeing therefore that the Editor has asked for readers' opinions on the above subject, I propose, with his permission, to set forth—without bias or favour if possible—both the disadvantages and advantages of such a step. The former are the views of the average non-motorist (be he pedestrian or otherwise), while the latter are the views of the user of mechanical traction—naturally.

The case against.

- (1) *Dust.*—This trouble will, under a no-speed limit regime, naturally be intensely aggravated, especially in the country districts where roads are not tar treated. Other traffic will be rendered almost impossible, while pedestrians will be driven from the highway altogether.
- (2) *Noise.*—When the speed increases above, say, 25 to 30 m.p.h., the noise begins to become very noticeable, and the higher the speed, the greater the "fuss."
- (3) *Wear and tear of roads.*—The faster a vehicle is driven, the greater the strain upon the road surface from which the driving grip is obtained. If speeds of 40, 50, and 60 m.p.h. are indulged in, we may expect to see the roads deteriorate far more rapidly than ever, which means added expense of maintenance.
- (4) *Danger.*—Nervous pedestrians will be more hurried than ever in their walks abroad, expecting to be hustled out of existence, while parents with offspring of tender age will be more hostile than ever in expectation of less consideration for the protection of the young and thoughtless than obtained under the 20 m.p.h. maximum. Deaths from motor traffic will be far more numerous.
- (5) *Road hogs' millennium.*—Road hogs will have free rein, and will assuredly avail themselves of it—owing to their lack of the finer instincts. Dust, and mud and water splashing by the above "gentlemen" will become an accentuated trouble, further alienating the sympathies of those already hostile, and doing much to add to the numbers of the anti-motorists' ranks.

Taking seriatim the above arguments against the limit abolition, No. 1 pre-supposes an habitual increase in the speed of the vehicle, an assumption natural enough perhaps in a person who is not only

a non-motorist, but who is more or less ignorant of the conditions governing road travel. As a matter of fact, however, speed would not increase to any marked extent even in the open country, for many reasons, chief among them being the increase in personal discomfort and in tyre upkeep.

The present legal limit has been an acknowledged farce since its inception, vehicles travelling at the perfectly safe speeds of from 30 to 40 m.p.h. in the open country when not under the eye of the professional trapper; in fact, speed in such spots has been purely a matter of choice. It is therefore but logical to argue that, although the law now gives us leave to travel at what speed we wish (compatible with safety), no advantage will be taken of it, save in a few isolated cases. Indeed, the concession—if it is ever granted—would be more useful as a measure for saving the face of the Government than as an urgently-needed piece of legislation, for so far as the average motorist is concerned, his remark at the innovation would assuredly be "Thank you for nothing."

Criticisms Nos. 2 and 3—concerning noise, and wear and tear of roads—are therefore met by the same contention disposing of No. 1, speed being the evil in all three cases; but although one cannot so easily reassure the infirm and nervous ones, the fact that the speed of traffic was no more alarming or dangerous than before would soon become evident to them, and calmness would return. The only criticisms with any real logic in their composition are those under No. 5 regarding those courtiers of the roads to whom manners are as a sealed book. These bounders, of whom no one more than motorists would gladly see an end, could, under the assumed removal of a speed limit, make things more uncomfortable than ever for their fellow creatures upon the road and for those with property abutting thereupon—while apparently keeping within the letter of the law. But (and it is a very big "but") restrictions, provisos, etc., would, of course, remain with us under a new step of this nature, and the conditions of travel obtaining in any but the open country would, being unchanged, undoubtedly and very necessarily—be hedged about with the present safeguards, such as 10 m.p.h. limits, etc.

Moreover, additional controls of, say, 20 m.p.h. would probably become numerous under the new order of things, thus forcibly protecting the outskirts of populous districts, added to all of which, the fact that the onus of accident would be entirely with the motorist should obviously make for safe—if not courteous—driving. Nevertheless, stringent action should be taken against every one of this class of gentry whenever detected in their ill-mannered and reckless behaviour on the road, action not only by the law of the land, but by the powerful motoring bodies—whenever the delinquent happens to be a member of such an organization—for any serious breach of good manners brought to their notice. Fortunately these cads are by no means numerous, and I fancy their identity is more or less known, and marked, to-day.

Heavy terms of imprisonment, or fines in the region of £500 to £1,000, should be rendered possible so far

IF THERE WERE NO SPEED LIMIT.—Contd.

as the legal aspect is concerned, and should, moreover, be pitilessly inflicted when occasion presents itself. Failing measures of this sort, a permanent suspension of their licence should meet the case. There are doubtless, however, many alternative and equally effective methods available for the stamping out of these enemies to the motor movement, and it is not necessary further to pursue the point here.

Against the foregoing opposition arguments I have the following counter-points to place before (let us say) the jury, and I feel that they by no means exaggerate the other view of the man in the street, but will be accepted by all moderate thinkers:—

- (1) Motorists would be held responsible for all accidents, at any speed, the removal of the 20 m.p.h. limit doing away—to a certain extent—with a form of shelter from behind which many a reckless and reprehensible piece of road work has been successfully pleaded. This revision would undoubtedly act as the strongest possible deterrent to the inconsiderate driver.
- (2) Present special speed limits, and many additional ones, will probably be in force, safeguarding all those spots which now require protection, while, in addition, the present limit of 20 m.p.h. will most likely be retained on the outskirts of populous districts.
- (3) If the present cause re traffic which "might be expected to be upon the road," etc., be retained, the increase in speed which might otherwise be expected in the open country would be no more legalized than it would to-day.

The above points "for" the case needing no explanatory comments from me, I would now supplement them by the following motorists' views in favour thereof, views which partly find expression in my

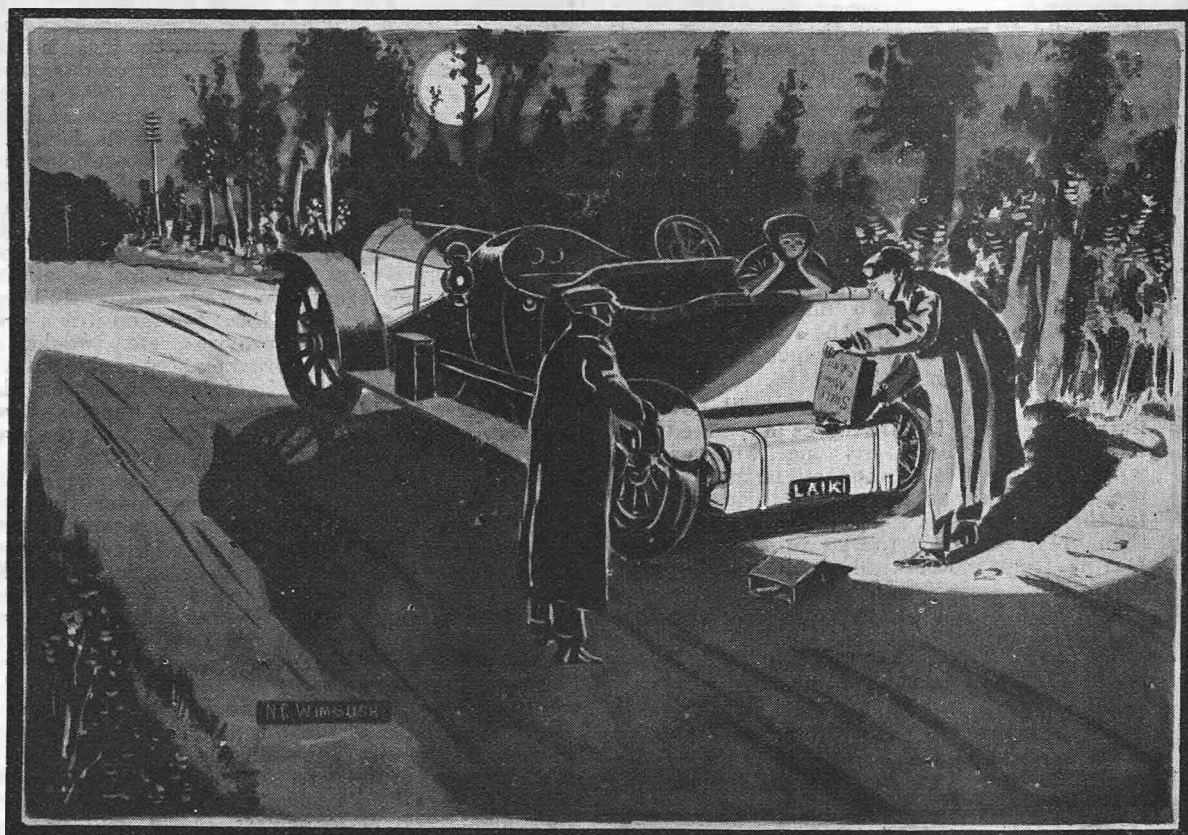
comments upon the non-motorists' objections. They are:—

- (1) The certain absence of any material acceleration of motor traffic, either in populous parts or otherwise.
- (2) The cessation of the pin-prick policy of frivolous and vexatious charges in connection with infractions of the present speed limit, without any discrimination between a glaring case and a harmless or unintentional one.
- (3) The cessation, by the police, of the objectionable practice of stopping and delaying cars in connection with the above.
- (4) Being put, in a sense, upon their honour to behave with both safety and consideration to other road users, motorists would not be backward in showing that their courteous instincts are quite as strong as those of other folk, and would give no cause for disappointment in this direction.

While, however, anti-motorists do not seem ready to admit the existence of any points in favour of the speed-limit abolition, motorists, for their part, can adduce no good reason—try they never so honestly—why the limit should not be abolished! Thus do circumstances alter cases, the different points of view inevitably warping the judgment, though unconsciously.

Well, well; time will show, and we shall see what we shall see, but quite apart from the above points, I can only repeat with emphasis what my betters have already stated on the subject, viz: that if France with her longer road experience than ourselves—so far as concerns motor traction—has decided that such a step is desirable, and in the public interest, then it is not for us to turn the proposition down and condemn it without a hearing. Rather should our part be one of emulation, or at least one of open-mindedness and investigation.

P.H.M.



Night Troubles: Run Dry.

THE ROAD PROBLEM.

A Reply to Recent Criticisms on the Subject of Road Wear and Tear, and the Effect of Pneumatic Tyres Upon Road Surfaces.

By SIR JOHN H. A. MACDONALD.

I AM glad to see that there is a real interest in the road problem, and perhaps you may not grudge space for its further elucidation. In replying to Mr. Sturmey and other friendly critics, I may give the assurance that I appreciate to the full the desire which is expressed by the style of their criticisms that discussion may elicit truth.

To Mr. Sturmey I am grateful for taking so much trouble to set out points of interest, and to challenge my views where he cannot see his way to accept them. I reply to him with the same friendly good feeling he shows.

I must point out that when Mr. Sturmey says that I admit a "lifting action" of the pneumatic tyre, he must be quoting erroneously from memory. What I did say was that the displacement forward of the part of the tyre of the driving wheel which was down on the road might cause a slight brushing action as the tyre resumed its shape on leaving the ground. But I held that this was very minute in degree, and the facts founded on prove, I think, that it is so. I can see no ground for admitting any "lifting" action.

When he speaks of potholes, and says that they were unknown until about a decade ago, and that "it is, therefore, manifest that the motor traffic is responsible for their creation," I venture to dispute the conclusion. Their creation results from the same cause from which the old well-known puddle took its origin—the picking-out action of animal traffic and the crushing action of heavy horseshoes and iron tyres. They will cease to be created as horse traffic becomes rare and dirt is no longer used in making roads. The almost deserted road of the 19th century is the road over which hundreds of vehicles now pass daily, and, of course, the greatly increasing use of the roads caused by the advent of the motor vehicle aggravates the evil for the time being, but it does not create it. The peculiarity of the small pothole as distinguished from the large puddle is caused by the diminution of horse and iron tyre action, and the immense increase of motor traction. Given practically only rubber tyre motor traffic, and there will be no holes in the road, if the roadman does his duty.

Again, Mr. Sturmey says that the dust "*commences from the point of impact on the ground of the back wheels.*" (The italics are his.) It looks as if there was a fallacy here. Why should the first impact of a hind wheel have a different effect in the front of the wheel from that produced by a front wheel?

The action of the forward part of the wheel at any moment is exactly the same as that of the front wheel. If no dust rises in front in the latter case, there is no reason why it should do it in the former. Any effect of the motive power applied bears only on what comes under the wheel. That which is coming on to the ground and has not reached it can have no action on the material of the road until it presses on the ground. The fact that the cloud of dust appears to begin in front of the back wheel seems to me to be easily accounted for. Distinction must be kept up in the mind between the cloud of dust formed and swirling, and the rising dust or mud of which it is formed.

If a wheel merely rolling under traction does not

raise mud or dust, as Mr. Sturmey seems to state, then no horse-drawn vehicle can raise dust or mud from its wheels, which, as Euclid would say, "is absurd."

Further, it must be remembered that as the hind wheels reach the spot where the front wheels have first rolled in a fraction of a second when the vehicle is travelling at a dust-raising speed, the dust may appear to be raised by the front of the hind wheel, when it really was raised when the front wheel passed, but has not had time to rise high or to swirl into a cloud. It is the air closing in behind the front wheel, meeting the air pushed in front of the hind wheel, which together catch the dust just as it rises from the current of air passing along the front wheel, and causes the swirling cloud.

Both wheels are travelling fast and disturbing and displacing air, and so disturbing and displacing dust, just as natural wind would do, only the disturbance is more complicated, the swirls being thrown into and across one another, and so being thrown in cross directions, and then into the partial vacuum at the rear of the vehicle, then being still more thrown about, and eddying into the car itself.

The speed of the car produces a current equal to a wind of 20 miles, 30 miles or 40 miles an hour, and this necessarily brings more dust off the road from the space between the wheels, and so the terrible modern cloud of dust is thrown out behind. That this cloud is in any tangible degree driven up by brushing action of the tyres seems to me to be not a tenable idea. It is not a mechanical throwing of dust, but an air action—an action which is quite sufficient to produce all we see, as long as dust is provided as a road carpet, by the use of dirt to fill up the spaces between the stones. And that the case of the wet road amply confirms what has been said. For be it noted that after the car has passed over mud, the part of the road which is most free from loose mud is the wheel track, which could hardly be the case if it were true that the wheel threw out the detritus from its surface straight backwards.

There would necessarily be loose pieces of mud in the track, which there are not in point of fact. In the case of both mud and dust, the state of the track after studded or grooved tyres have passed over it, belies the idea that the tread of the tyre throws up from the track either the one or the other. Outward and upward squeezing throws up the mud, air draughts raise the dust cloud.

Mr. Sturmey will excuse me for saying that in dealing with this matter, he seems unconsciously to shift his ground. For after making the proposition that the dust first rises in front of the driving wheel, and that none is raised by the front wheel, he goes on to say that the dust "rises directly from the back wheels," and that it is plain that there is a "kicking out behind of the dust going on all the time." This is an important point, and one difficult to elucidate.

My proposition is that the clean, flat, well-marked track left after the vehicle has passed is inconsistent with the idea of throwing out behind what the wheel passed over, and that what is thrown up is what is outside, swirled up in dry weather and squeezed up in wet weather.

It seems to me not to be sound to say that the

THE ROAD PROBLEM.—Contd.

driving wheels take hold of and throw out backwards not only the dry sand, but in wet weather the mud out of the holes already made in the road. How can a smooth tyre, whether of iron or rubber, take hold? It is pressing down with tremendous force. What can adhere to it to be thrown up off its face? If a substantial quantity were lifted by the rising wheel tyre, it would necessarily leave a broken and ragged track, for it cannot be contended that it slices off a flat tape of mud and throws that off behind. It would of necessity be broken mud, and would fall more or less on the broken track, which it never does. The mud, if soft, is all squeezed up on either side of the track, or, if nearly dry, is thrown out laterally at practically right angles to the track in broken pieces. In the case of dust it could not leave a flat, pressed-down surface, with clear-edged impressions of studs or grooves or hollows, as it certainly does.

Lastly, as to the alleged kicking action, I agree that the driving tyre being pushed forward by the

moving power when on the ground, has to return to its normal condition, and in doing so may have a brushing action. But that it is very trifling is proved by the fact that stud marks are not elongated into oval, but remain with round and sharp edges. A marked brushing action would destroy the stud mark at the side furthest from the forward-going vehicle, and this would necessarily happen and, be it observed, whether the speed was high or low, for the kick caused by the rubber coming back to its original position would be the same in every case.

Therefore, while I admit that there is a slight brushing action, I am unable to accept the idea of a kicking action in any real sense, or a sucking action. I hold to my view that it is a squeezing action which forces the detritus out of the road, and that it is the action of high-speed-producing currents which throws up that mud in clouds after the water has left it, and it is dried up into dust. I fear my pen runs too freely. I will at a later day take notice of some of the interesting matter of other correspondents' letters.



[With apologies to the late Phi May.]

AN INVITATION.

HILARIOUS INDIVIDUAL (looking over wall, to motorist who is endeavouring to start his engine): "Ha! Ha! won't it start?"

MOTORIST: "No, it won't."

H. I.: "Ha! Ha! Of course it won't. You haven't lit it yet!"

MOTORIST: "Haven't what?"

H. I.: "You haven't lit it yet. Come inside!"