

# THE AUTOCAR

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

EDITED BY H. WALTER STANER.

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## THE AUTOCAR.

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### "THE AUTOCAR" SUBSCRIPTION RATES.

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## Notes.

### British Built.

During the last few days we have received letters from several of the British car manufacturers assuring us that every part, or practically every part, of their engines and cars is built in this country, and in some cases entirely in the maker's own factory. The matter is not so simple as it might appear, even so far as a car which is built entirely in Great Britain is concerned. As an instance of our meaning, we will take an example. There are not many cars which are built throughout in one factory, and even in these the frames, if of stamped steel, the springs in any case, and the axles in most instances, are made elsewhere. By elsewhere we mean in some

other British factory, though this does not always apply to the springs, which are often obtained from a celebrated French house, which has devoted special attention to the manufacture of springs for motor vehicles. The road wheels, like the tyres and chains, are usually bought from firms which make a speciality of these manufactures. The larger manufacturers do their own casting, or much of it, but it is often found advisable to purchase the castings from a founder who has had some special experience in the class of work required. We need not go through the car in detail. We have said enough to show that the average car, whether British or foreign, is not necessarily built throughout in one factory. The matter which is of the greatest importance is not whether certain parts of the car are or are not made in the factory from which the completed vehicle is sent out, but the quality of the car as a whole. Its performances and its durability depend upon the care and ability of those who are finally responsible for the complete vehicle, and, consequently, for each part.

### The Best Policy.

Many prefer to know that practically every part of the car they select is made under one roof. At the same time, if the maker of a car thinks that he can buy certain parts of a higher quality from a firm who are specialising upon the particular work, he is well advised to do so rather than to make them himself. So long as he is content to pay a proper price for the best work and to take every precaution to see that he gets it, the user of the car can raise no objection to this proceeding. The maker who buys a part or parts of his motor must be prepared, and usually is prepared, to accept precisely the same responsibility for them as for those parts he makes himself, and, as we have said, so long as individually or as a firm the ideal is high and the utmost care taken to secure sound material and good work, no one has a right to complain. On the other hand, if the manufacturer endeavours to foster the belief that he is making the whole of the car himself when he is not doing so he is guilty of deceit, and if the truth is found out he will be mistrusted, and his productions, too. Quite apart from the moral side of the question, it is never satisfactory to attempt to bolster up a business by false statements, even if they do not in themselves affect the quality of the goods supplied. This is most emphatically the case with autocars which are used almost entirely by people who are critically inclined, and who are qualified in the bulk to form a very fair idea of men and things. It is foolish to attempt to use the methods of business which are, unfortunately, too prevalent when an article is being sold for the consumption of the million. Motor cars are not, and never will be, for the million, and when a man spends any sum from that required for a voiturette up to the figure

of a high-powered carriage of luxury, he will not forget or forgive any attempt at deception on the part of the vendor. He remembers the matter, because the sum is to him a large one.

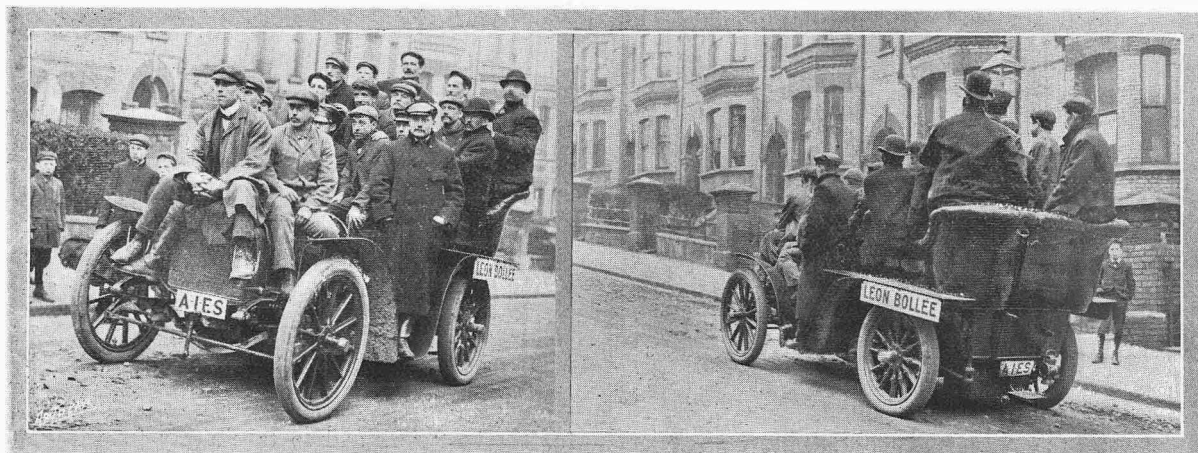
### English, French, or German.

Now, without at the moment attempting to draw any comparisons between British and foreign-made cars, we think it is quite time that some clear understanding was arrived at. At present there are, speaking broadly, three classes of buyers—the one prefers a British car, and the others a French or German. About the two last we need say nothing, but in the interests of the home industry the first should be considered. The majority of British makers take good care to let it be known that their cars are built in this country, but there are others, who, while making no direct statement to the contrary, omit to mention that the engine, gear, or some other vital part is made abroad. They take care to select a good engine, one on which they can rely, and here the matter ends. Whether any people buy their cars under the impression that they are wholly

element into our remarks, because in the long run it will not affect the matter. If the British car is not better than its foreign rivals, or at least fully equal to them, it will not hold its own, as it is not likely to be cheaper. On the other hand, as the home industry is comparatively young, those engaged in it should not only strive, as most of them are doing, to make their cars as good as they possibly can be made, but they should jealously watch and expose any attempts which may be made to rob them of the reputation they have so hardly earned. Above all, those who are now feeling their way, and who are building cars partly British, with the intent of making them wholly so as soon as circumstances permit, should plainly state the facts of the case, and not allow the possibility of any misunderstanding.

### The Gordon-Bennett Eliminating Trials.

That the eliminating trials for the English-built cars entered to compete in the Gordon-Bennett race should be decided on British soil must be the earnest desire not only of British automobilists, but of all



A TRIAL TRIP. A Bollee car with a load of nineteen passengers on board climbing one of the many steep hills which abound in the immediate vicinity of the Crystal Palace.

British, we cannot say, but we have not come across an instance of that sort ourselves. It is generally pretty well-known in motor circles if any important part of an otherwise British car is of foreign origin; but we think in their own interests, as well as those of the purchaser, makers of cars, which are only partly of British origin, should state openly that some particular portion of the car is made abroad, and they should give the name of the maker, as in most cases they do. If their reputation is not great, they say that they find that confidence is established if it is known that one or other of the leading brands of French engines is fitted. The home industry is strengthening every day, and care must be taken to see that attempts are not made to pass off as British that which is really foreign. At the present time these attempts are very few and far between, so few that they may almost be passed over. On the other hand, they will no doubt become more numerous as the home industry gathers in strength, particularly if there be, as there probably will be, a monetary inducement to the unscrupulous seller to palm off as British that which is of foreign origin. We have purposely refrained from introducing the patriotic

sections of the community, whether interested in autocars or not. Consequently our readers will learn with pleasure that the negotiations necessary to the consummation of their hopes, although not completed, are progressing, and have received no check. The Isle of Man, as is well known, caters most extensively for the amusement and entertainment of the public, and did so last year for no less than 390,000 visitors. Now, should the Governor of the island and the House of Keys approve and sanction the event which shall decide the selection of the British champions, that event (which will take place a fortnight or three weeks before the opening of the regulation Manx season) must assuredly attract a special crowd of visitors to the island, and also cause very large sums of money to be spent therein. Motor car races have always drawn huge numbers of sightseers, as has been shown by the speed trials at Bexhill, the Gordon-Bennett race in Ireland, and the Southport trials. Mr. Julian Orde, the club secretary, has driven over a fifty miles course on the island twice, and assures us that, although not everything that could be wished, it will compare fairly with the Irish Gordon-Bennett course, and will prove a fine test



A 25 h.p. Gobron-Brillie climbing the flight of steps near the balloon shed at the Crystal Palace. The boards seen on the middle landing were necessary to enable the flywheel to clear at one part of the climb. The front wheels caused the boards to tip up and tear the back tyres badly.

of both the skill of the drivers and the staunchness of the cars. For those who know the island, or who are sufficiently interested to consult a map, we give the course which the club secretary considers could be used with advantage. The start would be made from a place called Quarter Bridge, somewhat to the west of Douglas, and then the road through Laxey would be taken to Ramsey, where would be the first and only control, then on *via* Ballaugh and Kirk Michael, where the route turns south through Glen Helen, and crosses the main Douglas-Peel road at Ballincraine, and on through Lower Foxdale, Foxdale to the four cross roads north of Malew Church, and back to the point of departure— a total distance of fifty miles. Mr. Orde tells us that though the road is difficult and there are some bad corners, the surfaces throughout are excellent. Some motorists who do not quite understand the facts of the matter are asking how it is that Ireland cannot be visited again, as it was so eminently satisfactory for the Gordon-Bennett race itself last year. The difficulty, however, is that a special Act of Parliament is required before the race can be run in Ireland, whereas Man, having its own House of Keys and Governor, can settle the matter locally.

### Home Production of Alcohol.

Under this heading an article appears in another column to-day which should afford considerable food for thought. We have repeatedly pointed out when dealing with alcohol as a fuel for motor cars, that the great point—in fact, the only point—in favour of it, as compared with petrol, is that it can be produced in this country. In other words, that the preparation of the fuel would provide labour at home, besides, incidentally, in the transitional stage, ensuring the best and most uniform possible qualities of petrol being sold, and everything possible being done for the convenience of the motorist from the fuel point of view. That is to say, while alcohol was being pushed and gaining ground as a motor fuel, it would act as a spur, and there would be fewer complaints as to the uniformity of the quality of petrol, for it should be remembered that, while the petrol available in Great Britain is by no means poor stuff, it is not so satisfactory to use as that which one gets in France or Belgium. However,

alcohol for fuel purposes has raised little enthusiasm in this country, and the people who should be most interested—the farmers' associations—have not troubled to give any attention to the matter. It is perhaps too much to expect the average farmer to take it up, as it deals with problems which are altogether beyond his scope, but the associations which profess to look after his interests, and which are supposed to be on the *qui vive* for fresh outlets for the farmer's products, have fallen short of their duty. Nor has the Automobile Club seen fit to take any steps to push forward a movement on behalf of alcohol fuel, and, as it is inadvisable for the club to take more work than it can satisfactorily perform, it is perhaps not altogether regrettable that nothing, or practically nothing, has been done in the matter of alcohol fuel. On the other hand, people handling the by-products from gas manufacture are much more likely to take up the matter of supplying a motor fuel from a home source than are the agriculturists. It is preferable, of course, in many respects, that the land rather than the manufacturer should benefit, but as the land makes no move in the matter we must look to the more energetic, and perhaps more intelligent, people concerned in the extraction of all that can be utilised from the by-products of coal distillation. This is a more important matter than the possibilities of paraffin. The ability to use paraffin in the engine is a vital matter in certain countries abroad, but at home we should work solidly for alcohol or benzol, because they are much cleaner and pleasanter fuels, besides being produced in this country. In fact, nothing is wanted apparently except some proof that benzol can be satisfactorily used in motor car engines. If it cannot, then we should at once set ourselves to find out why. A home-made fuel is available; nothing is wanted except a system of distribution when proof of its suitability is once established.



A 12 h.p. water-cooled Lanchester climbing a flight of steps at the Crystal Palace. The gradient is about 1 in 3, but the car cleared the steps without boards.

## USEFUL HINTS AND TIPS.

### Compression Defined.

"Bad compression" is the verdict frequently given by the repairer to whom a car is taken for examination when a loss of power has been noticed in the running of the vehicle. We have often heard the query put, "What is bad compression?" but the explanation has not always been quite satisfactory to the querist. To really understand compression, it is necessary for the motorist to be thoroughly conversant with the Otto cycle principle upon which the motor works. A very clear description of the internal combustion engine, illustrated with diagrams, was given in *The Autocar* of January 2nd of this year, and those who seek enlightenment on the question should, before perusing this page further, refer back and carefully study that article, from which they will learn that one of the four operations of the cycle is compression. Briefly, compression arises from the drawing into the cylinder of a charge of gaseous mixture by one stroke of the piston in its downward direction, and then with the next, or upward, stroke compressing the gases into a space of approximately one-fourth of the cylinder's cubic capacity, ready for their ignition and expulsion during the two succeeding strokes of the piston. The compression or squeezing together of the gases naturally gives them greater rebounding, expansive or explosive properties when they are ignited by the electric spark. In this way, the power of the stroke of the engine is produced. It follows, therefore, that the power developed by the engine depends very largely upon the extent to which the gases taken into the cylinder are compressed, that is, upon compression, though this is also a question of the number of revolutions which the crankshaft makes per minute. The limits to which compression can be carried are restricted, however, as the compression of the charge places negative work upon the engine, by absorbing some of the power developed, and thus reducing the effective power of the engine in a certain proportion to the increase in the rate of compression. From this it will be seen that there is a point where power and compression balance each other, and that is the point at which a motor works most efficiently. Any increase of power which is obtained by increase of compression is counterbalanced by drawing on the increased power to overcome the increased compression.

### Loss of Compression—Causes.

One of the principal causes of the loss of compression is a bad seating of the inlet or the exhaust valve. The latter gives more trouble, as a rule, than the former, it having more work to do, and, moreover, has to withstand the great heat to which it is subjected by the outrushing exhaust gases at the end of each power stroke. It should be the invariable rule to examine the valves first. The inlet valve in many engines has to be first removed before the operator can reach the exhaust valve. This gives an opportunity of first examining the inlet valve before passing on to the exhaust valve. In no case should an examination of the latter valve be overlooked if the former is not found to be perfect. Such scamping of the work will only result in further dismemberment of the valve mechanism.

The signs of a worn valve are dark patches or pitting on the conical face of the valve or its seat. In many cases, it will be found that the valve itself will be pitted and marked much more than the seat; the one being good and the other only showing slight signs of imperfection should not be allowed to pass.

Still dealing with causes, where the head of the cylinder is in a separate casting to the cylinder itself, the joint should be very carefully examined if the valves are found to be in perfect order. Even should they not be quite perfect, and the compression is very bad, it would be as well to look to these joints, particularly if they are made by the aid of a copper and asbestos washer. Where a ground conical joint is used, there is hardly any fear of a leakage at this point, and it is not advisable to disturb this joint unless one has very excellent grounds for believing a leakage to be occurring.

The next point at which compression is likely to be lost is the imperfect fitting of the piston and its rings in the cylinder. The ideal conditions for a piston working in a cylinder would be a perfect fit between the piston and the cylinder, but as the question of heat has to be considered it is not possible to attain this ideal fit, for if the piston were too tight the heat generated by its frictional contact would be so intense as altogether to prevent its working. As it is, the difference in measurement between the piston and the cylinder walls does not amount to approximately more than one-hundredth part of an inch. There is this difference to be provided for, however, and although to many of our readers the hundredth part of an inch may seem a small matter, yet it allows of the escape of a very appreciable quantity of the explosive gases from the cylinder before the charge is fired, and is of vital importance in the construction of an engine such as that employed in driving a motor vehicle. The piston, then, having of necessity to be smaller in diameter than the cylinder, it becomes necessary to make a gas-tight joint by the aid of piston rings. For this purpose, three or more rectangular grooves are cut in the upper end of the piston, and into each of these grooves is sprung a cast-iron ring so constructed (being severed at one point) as to have in itself a certain amount of spring which keeps it in constant contact with the walls of the cylinder, and so forms the necessary joint. In course of time these rings will wear to such an extent as to permit a portion of the compressed charge to escape, and, what is more destructive, portions of the ignited gas also escape by them, thus tending to their rapid destruction when once they begin to give way. It is invariably the top piston ring which gives way first, as this does the bulk of the work in preventing the passing of any part of the compressed or exploded charge. The first ring having failed, the remaining ones go in succession, so that the loss of compression is on this account spread over a fairly long period of time. If all the rings went simultaneously, then the loss in compression would be so sudden that one could turn to the engine and immediately go to the piston rings as the cause of the trouble; but as these go successively, the power diminishes very gradually, and it is not until the rings are really bad that one turns to these.

(To be continued.)

## VOITURETTES AT THE CRYSTAL PALACE SHOW.

By the Roving Critic with a Limited Purse (concluded from page 289).

Looking over the 6 h.p. Wolseley—which I did carefully, it being my first opportunity of making a critical examination of this car—the only very noticeable feature was the fitting of the new automatic carburetter, the details of which were given in a recent issue of *The Autocar* (February 20th, page 227). There are also one or two radical departures from Wolseley practice in the voiturette. The conical friction clutch is mounted upon an extension of the primary gearshaft, while a single chain drives from the change-speed gear to the rear live axle; this drive and type of axle have no doubt been adopted on account of lightness and the ability of a single chain to do the work. The contact-breaker is now in a more accessible position, and its examination is not a back-breaking operation, as is the case on the higher-powered cars. The horizontally-placed cylinder is more to my fancy than the vertical, for many reasons, but until a trial has been made between the two types I am not in a position to go into details as to comparative running results.

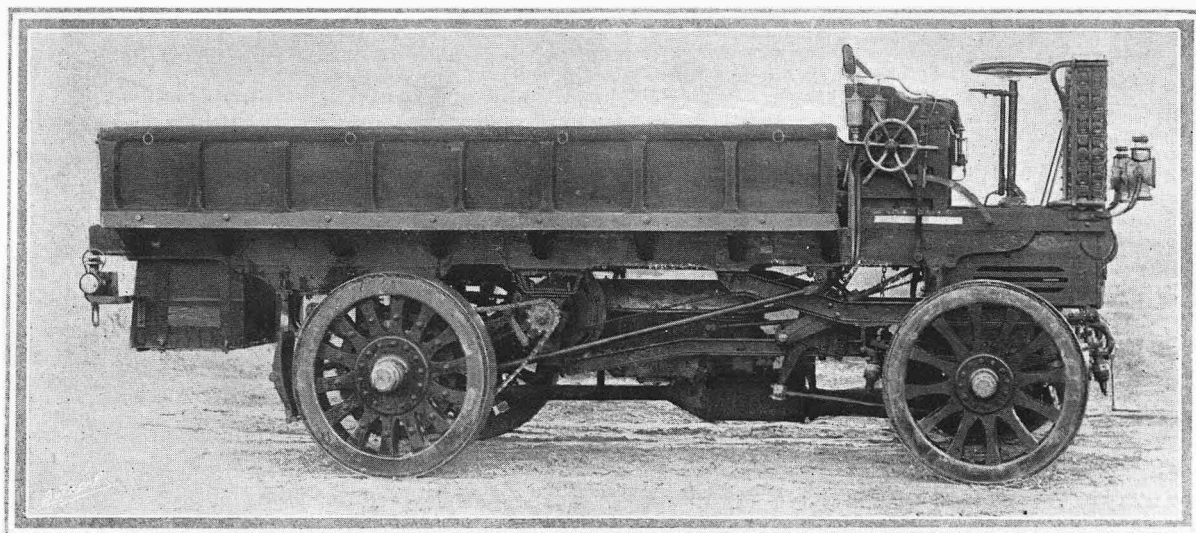
A car which does not differ very materially from the Wolseley is the Siddeley, and as this is constructed in the Wolseley Works this is hardly to be wondered at. The differences are principally in small details, though the more ready access to the engine of this car is more than a small detail to the user, while to my mind the bonnet and radiator of the Siddeley give a smarter appearance than the Wolseley, though this, of course, is largely a matter of opinion.

For a cheap car, the Speedwell was among the best things for the money in the show. No less than four types of the 6 h.p. car were staged, out of which I should have chosen the 155-guinea one. This and the two higher-priced cars have ash and fitch plate frames, carrying a 6 h.p. genuine De Dion engine on

a tubular underframe; a sliding type gear giving three speeds forward and a reverse, direct driving on the top speed, is fitted, and in the matter of brakes the car is well provided, but the rack and pinion steering I do not care for, and by the light of experience I was very sorry to see it fitted to so many of the lower-priced cars. It is poor economy on the makers' part to fine down such an important part of the car. Returning to the Speedwell, the wheelbase is sufficiently long to give comfort to the passengers, while it gives ample platform room behind for luggage or for a third seat, a car at 160 guineas being shown with this. It is a mistake, however, to fit a tonneau body on such a car; it is deliberately courting trouble, which will happen sooner or later. The cheapest car with the 6 h.p. engine is built with a tubular frame, and has only two speeds, with a reverse. It is a neat car and good value for 125 guineas.

The De Dion Populaire, with its 6 h.p. engine and two-speed and reverse gear, attracted the well-merited attention of many visitors, for so long as my visit to the show lasted it was hardly ever without someone looking into its good points. If all the work in the car is equal to the specimen gear which was shown on the stand, then the hypercritical would have some difficulty in finding grounds for a complaint. It is a neat light little car, and its behaviour last year showed it to be most reliable. In other words, it is a thoroughly tried car. The dropping of the radiators below the bonnet is not to my liking, while the wheelbase is just short enough to make one wish there were a little more of it for platform space.

An excellent-looking car is the new Swift, but I have not yet seen it on the road. It is likely to turn out well, but I consider the power of the engine is



**A PETROL ENGINE LORRY.** As recorded in our show report, Feb. 20th, the Cadogan Garage and Motor Co. have introduced a petrol engine lorry capable of dealing with loads of up to six tons on the platform and drawing a trailer with a further three-ton load on board when the roads permit. A Gobron-Brillie motor is placed beneath the driver's seat and, developing 34 h.p., it is capable of an average speed of eight miles per hour. There are four speeds forward and a reverse, the control all being ready to the driver's hands. It is stated to work effectively on petrol of 74 density, the consumption being one gallon per five miles with a five-ton load.

overstated, and that it is more likely to develop 6 h.p. than 7 h.p. But for this and the rigid fixing of the body at the rear end, the Swift is a most excellent vehicle.

A special point was made of making a close examination of the Little Star, and this revealed nothing very extraordinary. Substantial work appears to be the keynote of its production, the only point on which one could reasonably raise a question being the position of the contact-breaker, which is most inaccessible. True, it is of a type which should require the least possible amount of attention, but then, it *does* at times need attention. In this car, the makers have adhered strictly to the lines of their larger cars, as they have employed the countershaft and side chains transmission, while the change-speed gear gives three speeds forward and a reverse. The wheelbase is ample, and the car impresses one considerably, especially as the price asked is £175.

The Achilles car has been drummed into me rather heavily since the thousand miles trials by a friend whom I suspect is not altogether a disinterested party, so I took the opportunity of going over it as thoroughly as circumstances would permit. It is a mistake to pay too much attention to anyone who is surfeited with any one thing, as when it comes within one's own ken the result is likely to be somewhat disappointing. Of its kind the Achilles is a good enough car, and its builders are honest in methods and material, so far as one is able to judge visually; but all the good there is in it does not make itself apparent in its general lines, which are somewhat heavy, lacking that appearance of lightness and gracefulness which are so essential to any car.

Solid tyres fitted to a voiturette one hardly expected to find in an exhibition, yet one car so fitted was found in the Bedford—a 6 h.p. vehicle built to the specification of a medical man. On the top speed about fifteen miles per hour can be done with perfect ease, though as the speed increases comfort decreases. The price of the car is £165.

Some very nicely-finished Humberettes from the Beeston and Coventry works were to be seen on the Humber stand, the chassis giving one ample facilities

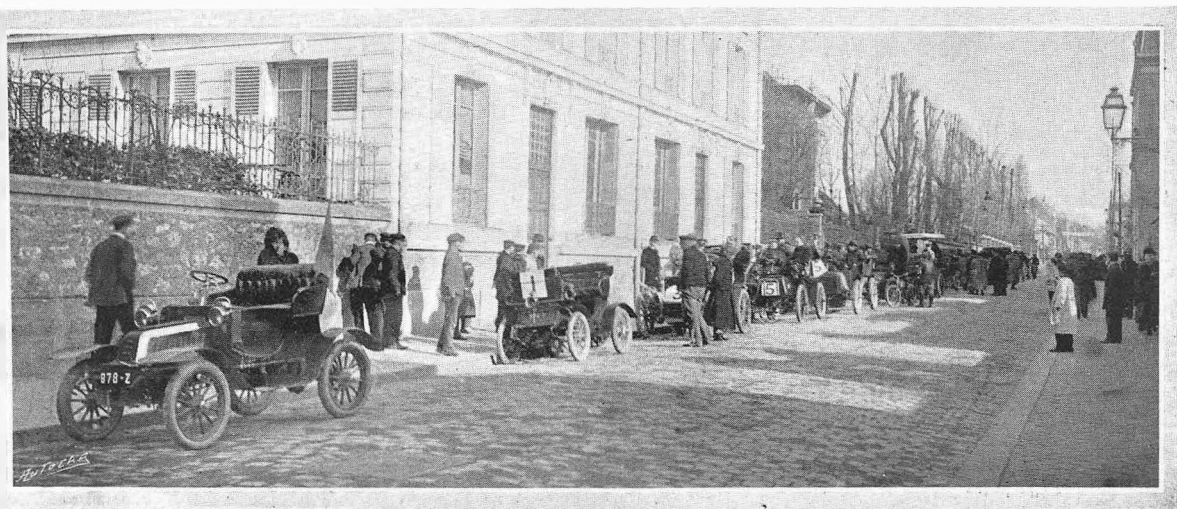


FRENCH ANTI-SKIDDING TRIALS. A car on the weigh-bridge. Bags of ballast are seen in the foreground.

for looking into the constructional features. For my own part, I should like to see nearly every frame dimension enlarged; the steering gear and axles are much too light for lengthy life, and the connections might be enlarged with advantage. Still, as a run-about, the Humberette is an excellent little car, is neat in outline, and is altogether a lady's car.

The American cars, as represented by the Oldsmobile and the Cadillac, are chiefly remarkable for their similarity in mechanism. Both have horizontal single-cylinder engines driving through an epicyclic gear, and single chains to the road wheels. Were my money going to the American manufacturers, I think it would be to the makers of the Oldsmobile.

There were, of course, many other voiturettes in the show which I have not mentioned, as I failed to notice any commendable features therein. There is, apparently, a manufacturer in France who turns out voiturettes by the hundreds, these being bought by people in this country, and with slight alterations and additions of their own are sold under their own particular name. This struck me as being a method which will not do the pastime or the industry much good.



FRENCH ANTI-SKIDDING TRIALS. Some of the cars ready to start for the hill-climbing test on Picardie Hill

## A NON-STOP RUN—LONDON TO EDINBURGH.

From 4.15 p.m. on Friday, the 26th ult., until 5 o'clock on the following Saturday afternoon, Mr. J. W. Stocks unflinchingly controlled the destiny of a 12 h.p. De Dion car on which he was making (with three passengers) a non-stop run from London to Edinburgh. Notwithstanding a severe snowstorm and the very heavy roads which were encountered on the Borderland, the trip was a complete success, the engine running continuously from the moment it was started at the De Dion depot in Great Marlborough Street until it was purposely stopped in Waverley Market, Edinburgh, twenty-four and three-quarter hours later. The run from London through Hatfield, Biggleswade, and Grantham to Doncaster

found, by reason of icebound ruts and snowdrifts from two to four feet in depth, to be impracticable, and retreat was perforce the order of the day, Berwick (1.45 p.m.) being reached at the hour of anticipated arrival in Edinburgh. Happily, the run through the south-eastern corner of Scotland was made under clearing skies and occasional bursts of sunshine, and the road through Dunbar, Haddington, and Musselburgh, although very greasy and holding, was not bad enough to cause the "Seé" band shod tyres to skid to any very alarming extent.

At the motor show organised by the Eastern Section of the Scottish Automobile Club in Waverley Market, Mr. Douglas Croall (who had been



Mr. Stocks on his arrival at Edinburgh with his 12 h.p. De Dion, which is pictorially well known to our readers.

(writes a correspondent who accompanied the car) proved much the most enjoyable section of the journey, the weather, although somewhat cold, being bright and bracing, and the roads hard and dry. The engine over the first part of the route was giving about 2,000 revolutions per minute, and the 169½ miles separating the famous Yorkshire racing centre from the Metropolis were covered in the excellent time of seven and three-quarter hours. North of Doncaster the conditions changed rapidly for the worse, a heavy fall of snow, accompanied by a keen north-east wind, rendering the task of picking out the route one of extreme difficulty and discomfort. A wrong turning taken unwittingly under these conditions occasioned an unpremeditated visit to York and a consequent detour of a dozen miles or so before Durham was reached.

Between Newcastle and Berwick further vexation of spirit was occasioned by an ill-fated endeavour to shorten the distance to the Scottish capital. A mountain road to the westward of Alnwick, which

promised (on the testimony of a truthful-looking signpost) a saving of nine and a half miles, was informed by wire of the party's progress from point to point) was waiting with a large crowd of interested spectators to welcome the travellers, and a cheer went up as the final notification, "Edinburgh, 5 o'clock," appeared on the bulletin board.

A 6 h.p. De Dion (driven by Fielder) left London three hours ahead of the 12 h.p., and made a non-stop as far as Morpeth, where, the carburettor having become choked with snow, it was found necessary to stop for a clearance. The delay, however, was but trifling, and the little 6 h.p., with its two occupants, ran gaily into the Waverley Market at 5.35 p.m.

The Great Western Railway Co. are establishing a service of motor cars between Slough Station and Beaconsfield, *via* Farnham Royal, in connection with the company's train service. The service was commenced on the 1st inst. The cars employed are Milnes-Daimlers.

## THE F.I.A.T. LUBRICATION.

The accompanying illustrations show the components of the F.I.A.T. lubricating device. It consists of a large cast aluminium tank, having two flap lids of considerable size. One of these lids gives access to the oil reservoir, which holds a very large quantity of lubricating oil, and the other provides inspection convenience for the secondary or distributing tank. Beyond this, the actual device may be said to comprise two distinct mechanisms—the elevator and the distributors.

Fig. 1 shows the elevator, sectioned to show its components. The illustration is almost self-explanatory. There are the two tanks T and S, having the bell-mouthed tubes F fixed in the partition between them. T, the lower tank, is simply and solely a reservoir for lubricating oil; S is the distributing vessel into which the oil from T has to be carried and kept at a constant level. The action is as follows: The shaft B is driven from the engine by means of a pulley and belt, and drives the worm A gearing with the worm wheel D. This worm wheel

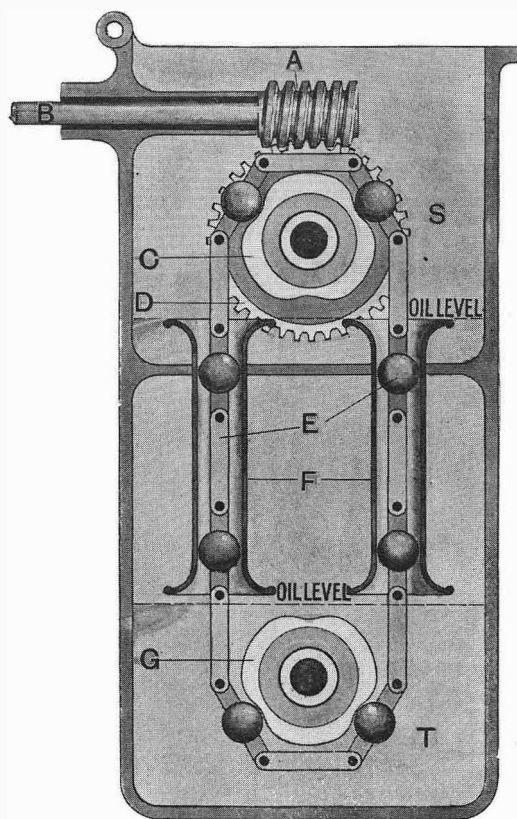


Fig. 1.—The oil elevator.

A, worm on actuating shaft.  
B, actuating shaft.  
C, chain wheel.  
D, worm wheel.  
E, balls on the chain.  
F, oil tubes.  
G, free chain wheel  
S and T, oil tanks.

is carried on a shaft running the whole length of the tank S, and on which the chain wheel C is also mounted, this wheel lying centrally in either direction between the mouths of the tubes F. Over this chain wheel C, steadied by a similar chain wheel G in the reservoir, and running through the tubes

as shown in the ball chain E, the balls being an approximate fit in the bore of the tubes. On the chain wheel being revolved from the worm wheel shaft the balls are, of course, caused to pass up through the tubes, over the chain wheel C (where any oil there may have been carried up runs off

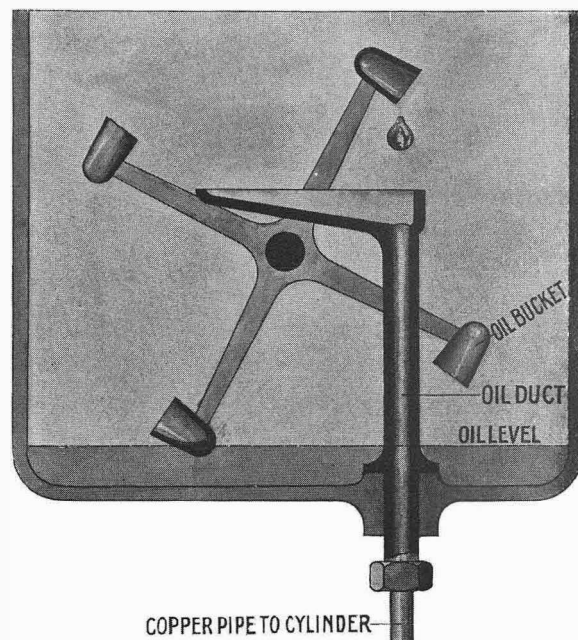


Fig. 2.—The oil distributor.

into the tank), and down again into the tank T, where they pick up more oil and carry it up to tank S. Should more oil than is necessary to keep the level constant at the top of the tubes F be carried up, the downward passage of the ball chain in the return tube simply takes it back to the lower reservoir. Thus, we have a constant level of lubricating oil in the tank S. The distributing device is shown in fig. 2. The worm-wheel shaft driving the chain wheel is continued, and at its other end a small four-armed spider is mounted. At the extremity of either arm a little oil bucket is mounted, and as the spider revolves these buckets in turn dip beneath the surface of the oil in the tank and so become filled. This oil is carried up to the opposite diameter, when it runs out of the bucket and falls into the oil dish, whence it is conducted to the cylinder by a small copper pipe. In the actual lubrication, there are two such distributors—one for either pair of cylinders.

The advantages of the lubricator are obvious—absolute proportioning of feed to the speed of the engine, cessation of lubrication when the engine stops, and perfect certainty and simplicity of action.

An interesting little booklet giving all the salient features of the Richardson car has been produced by the manufacturers, J. R. Richardson and Co., of Lincoln. The booklet is handy in size, and tells the prospective purchaser exactly what he wants to know.

## ELECTRICAL NOTES FROM THE CRYSTAL PALACE

By H. M. Wyatt.

From the point of view of a visitor desirous of studying the electrical equipment of the cars, the show at the Palace presented many features of interest.

In dealing shortly with these, no attempt is made to differentiate between promising novelties and articles which have already stood the test of time, but the interest lies rather in noting the general trend and the marks at which the inventive faculty aims.

**Systems of Ignition.**

The well-known high-tension ignition, involving the use of accumulators and induction coils, still holds its own, and is not likely to be ousted for some time to come. We find efforts being made in at least three directions—accumulators, coils, and wiring.

In accumulators, efforts are being made to overcome the injury often caused to the terminals by the spraying of the acid, and by its creeping up the positive lug. In this respect the Litanode shows to the front. An hermetically-sealed cup containing resin surrounds the lug and prevents creeping, while an ingenious arrangement of tubes and chambers effectually puts a stop to all splashing due to vibration. This latter is particularly neat, in so far that it allows a perfectly free egress to the gases whilst charging, and at the same time prevents the acid from escaping, even when the cell is held upside down and shaken. This cell also enjoys absolute immunity from damage due to short-circuiting, and gives most satisfactory results when under test. In this connection, would it not be well if makers of accumulators could come to some definite understanding as to the rating of capacity of the cells? The stated capacity of many makes is about twice that given under test. It is, in fact, no better guide than was the almost extinct "nominal horse-power" once so commonly used among engineers. A few makes—one of which has been already instanced—give the full number of ampère-hours claimed on the case, but these, unfortunately, are in the minority.

Another fault of accumulators is their habit of running themselves down when at rest, without any useful work being taken from them. An attempt to overcome this is made in the Energy battery, shown by Messrs. Peto and Radford. This battery contains in each cell two positive plates and one negative, thus reversing the usual state of affairs. The capacity is probably not altered much by this change, but the peculiarity of the cell consists in the nature of the negative plate. This is made in the form of a perforated envelope, and of itself cannot maintain a current. By placing a stick of cadmium in this envelope, the cell is rendered capable of giving continuous current. When the cadmium is removed, a very little work causes the voltage of the cell to drop to zero. While in this state, no current can flow, however long the period of rest. Consequently, the cell when required for use again is in exactly the same condition as when last used. It is early as yet to attempt to estimate the value of this battery, but it is worthy of attention.

In coils, a system introduced by Messrs. Wilson and Pilcher avoids undue complication. These

coils, whatever the number of cylinders served, use only one trembler. A second trembler, with its own condenser, is, however, provided as a stand-by, which seems a very wise precaution. Any attempt to simplify the complicated ignition system of multi-cylinder cars will naturally recommend itself. Another method of accomplishing this, which appears to be slowly gaining ground, is that in which a single coil is caused to operate the high-tension circuits of all the cylinders. In this case, the low-tension circuit is reduced to its simplest possible form. Of course, complications on the secondary are to be deprecated. There is no apparent reason, however, why this system should not be absolutely certain in its action, provided the distributor is well designed and avoids sparking where it is not wanted.

**Magneto Machines.**

Magneto machines divide themselves naturally into two systems—the high-tension and the low-tension. In the former, the spark passes between the points of an ordinary sparking plug; in the latter, a mechanical make-and-break is provided in the cylinder.

Of the low-tension machines, the Simms-Bosch and its near relations are very frequently found. The Bergmann system, with rotary armature, is fitted and shown by the Beaufort Motor Co., and appears to be both simple and reliable.

In all there are three distinct types represented. The first have stationary field magnets and armature, separated by an oscillating shield. In the second, the armature rotates, the field magnets being stationary. In the third, a stationary armature lies between rotating field magnets. This latter class is represented by the Lanchester and the Albion. These two differ in detail. In the Lanchester system the field magnets are built into the flywheel, their weight being thus utilised. The soft iron pole-pieces are fixed at the centre of the bar magnets, at consequent poles. The Albion is unlike it in these respects.

Messrs. Jarrott and Letts supplement a low-tension system of the Simms-Bosch type by means of accumulators. These assist in starting and work until the speed is sufficient to enable the magneto to give a good spark.

Of the high-tension magneto systems, the Eismann uses a separate coil of special construction, while the Simms Arc Light combines the coil with the armature windings. The new Bassée and Michel Nilmelior magneto is somewhat similar to the latter.

A special S.B. sparking plug, with numerous alternative gaps, has been designed for use with the Arc Light magneto, but is equally suitable for use with accumulator and coil.

With all these types of magneto machine striving for supremacy, it is difficult to predict the ultimate issue. While the arc light type probably has a great future, the Lanchester system possesses a charm which is all its own, and has already proved its reliability.

**Voltmeters.**

In voltmeters, we have not yet reached finality. The different conditions of use from that of the laboratory or of the central station have scarcely

been grasped. The most useful instrument for the motorist is not a scientific one. It is, in fact, directly opposed to the principle that a voltmeter should take as little current as possible. What is wanted is not accuracy to three places of decimals, or even the rapidity of the most perfect dead-beat voltmeter. It is, rather, an instrument which will give a fairly accurate idea of the condition of a cell with regard to its capacity, and not to its superficial voltage. Instruments of this type already exist, and sooner or later they must come to the front.

Of greater value for ordinary work than the most scientifically accurate high-resistance voltmeter is the ordinary four-volt test lamp. A neat example of the latter, shown by Messrs. Ryley, is the Théo, which is designed for the double use of a test lamp

and an aid to the inspection of machinery at night. This and similar lamps can also be used for steady lighting purposes, such as illuminating numbers, but the heavy current taken is almost prohibitive.

Another cell-testing device, which, if properly used, is of great value, is the hydrometer—an instrument for testing the specific gravity of the electrolyte. These seem to be coming into favour, but unless used intelligently by those who know and care for their cells they are apt to prove very deceptive.

Throughout the show there was nothing to foreshadow the time when electric ignition shall be a thing of the past, and we may well doubt if such a time will come before the petrol motor itself is an extinct object of antiquity.

## THE HOME PRODUCTION OF ALCOHOL.

By J. T. EDWARDS JONES, H.M.I.R.

WHETHER ALCOHOL WILL EVENTUALLY OUST PETROL AS THE MOTIVE POWER FOR AUTOCAR ENGINES REMAINS TO BE SEEN, BUT ITS PRODUCTION AND SUBSEQUENT UTILISATION AS A MEANS OF MOTIVE POWER WILL WELL REPAY INVESTIGATION.

Alcohol, as stated in a previous article, can be produced from various sources, such as malt, grain, sugar, molasses, beetroot, etc. Their average yield is estimated thus:

1 quarter of malt yields	...	18 gallons.
1 quarter of malt and grain yields	20	"
1 ton of beet yields	...	15 "
1 ton of sugar yields	...	200 "
1 ton of molasses yields	...	140 "

Potatoes, which are another source from which alcohol may be derived, are not mentioned, as the cost of extracting the spirit is at present rather high, and not in general use in the United Kingdom. In all the processes a certain quantity of malt must be used, as the diastase which it contains is very active in converting starch into sugar, and assists in the fermentation. As regards the cheapest materials for producing alcohol, it is generally conceded that molasses with a proportion of malt and grain are the best. Large quantities of alcohol at .850 sp. gr. are turned out annually in the manufacture of methylated spirits.

### Water in Alcohol.

Among other properties of alcohol, it is remarkable for its affinity for water. So much is this the case that pure alcohol is rarely found outside the chemist's laboratory. As a general rule, freshly-produced alcohol contains about ten per cent. of water. There are in England and Scotland and some parts of Ireland, however, numerous stills, named Coffey's patent distilling apparatus, which can turn out thousands of gallons weekly at a uniform strength, and containing not more than five per cent. of water, the specific gravity ranging from .820 to .815. How far the proportion of water in alcohol increases its value as a motive power can only be tested by actual experiment. The same remark also applies to the carburation of alcohol. The point remains, however, that if a demand were to set in for alcohol of high specific gravity, there are numerous plants already existing which would meet it.

As to the cost of alcohol at this gravity, I should

estimate that it could be supplied at 3s. per gallon retail. If the consumption per horse-power in the engine proved to be economical, this price would not be regarded as excessive.

### Excise Difficulties Exaggerated.

It is supposed that the most serious trouble in its employment would be the opposition of the Excise authorities. This, I believe, would not be the case if the spirit before being despatched from the distillery were mixed with some other ingredient which would render it unfit for human consumption, as is now done in the case of methylated spirits. In this case, spirits at 50 over-proof upwards are mixed with one-ninth of their bulk of wood naphtha, or methylic alcohol, or some other substance approved by the Commissioners of Inland Revenue. So far from discouraging its use, they would, I believe, welcome it as a means of increasing the revenue, as no doubt the retailers would be charged some small sum (say 10s. per annum) for a license, as in the case of methylated spirits retailers. As the methylic alcohol or naphtha could be of a high specific gravity, say .800, this would not prove any disadvantage.

### As an Aid to the Farmer.

If alcohol were generally adopted in lieu of petrol, it would be an invaluable aid to the British farmer, as a considerable quantity of malt and grain would be required in its manufacture. The West Indian possessions, which produce molasses, and which of late have suffered greatly from competition with foreign bounty-fed beet sugar, would materially benefit. In addition to this, we could produce the article in our own country, and the industry would employ a large number of hands. Thus the introduction of alcohol for use instead of petrol would mean increased prosperity all round. It would give an impetus to trade, employ a large number of hands, and give satisfaction to motorists on account of its uniform qualities. It only remains for the Automobile Club to institute a series of exhaustive tests of alcohol as a fuel, following the initiative of the French club.

## THE AUTOMOBILE CLUB. The Forthcoming Annual Meeting.

The agenda for the annual meeting, which takes place on the 10th inst., at five o'clock, at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W., has been issued to the members. The meeting has been called at the Institution, because it was felt there would be no room large enough at the club to accommodate a representative gathering. In addition to the routine business in connection with the accounts and budget, several new rules are proposed, among the more important of which may be mentioned the confirmation of the unanimous resolution of the Club Committee last month expressing regret at the retirement of Mr. Roger W. Wallace, K.C., who has been Chairman of the Automobile Club since its formation. Confirmation is also sought of the resolution asking Mr. Wallace to become legal adviser to the club for the ensuing year at such fee as the club and Mr. Wallace shall agree upon. The Earl of Shrewsbury and Talbot proposes that no member of the trade or motor journalist be eligible for membership of the Club Committee. Mr. Jarrott has a resolution to the opposite effect, setting forth that the club was formed as a society of encouragement, and very largely by the moneys and energies of those who were or have since become interested in the manufacture or selling of motor vehicles, and that their exclusion from the Club Committee would be unjust and unconstitutional and dangerous to the club as a society of encouragement. The Hon. John Scott Montagu proposes that no member who receives any sort of remuneration for services rendered to the club shall be eligible to serve as president or vice-president, chairman or vice-chairman of the club. Another resolution is in the form of a protest against the action of the club in selling its patronage to one of the shows, and it is sought to pass a rule that the name or patronage of the club shall not be given to any show, exhibition, association, or society without the consent in writing of at least two-thirds of the Club Committee. In addition to this, an attempt will be made to ascertain the whole of the facts regarding the negotiations which led up to the sale of patronage, as it is felt that the account given up to the present is not complete or satisfactory. Another important resolution is to the effect that the president or vice-presidents of the club shall not be financially interested in any way in any automobile firm or company, and that there shall be a supreme council of the club, consisting of the president, vice-presidents, chairman of the Club Committee, and vice-chairman of the Club Committee, to whom the Club Committee, or chairman of the Club Committee, may submit any matter of principle or policy. Not only so, but any decision of the Club Committee to which one hundred members of the club may object in writing should also be submitted to this Supreme Council of Appeal. There are other resolutions of minor importance. At this meeting the ballot papers will be scrutinised, and the elections for the new committee declared. A voting paper has been sent out, and there are ninety names proposed for fifty vacancies. It would be interesting to know on what authority the names of the gentlemen nominated by the Club Committee should be

printed much more prominently than those who have only been nominated by members of the club. It would also be well that some explanation should be given of the condition that no voting paper would be valid which has less than fifty names left upon it out of the ninety. That is to say, every member is compelled to vote for fifty men or his paper will be valueless. It is scarcely a reasonable condition, as it is quite conceivable that many of the country members do not feel qualified to vote for the full fifty, and, therefore, they should not be asked to cast their votes on behalf of gentlemen of whose ability they have no means of forming an opinion. Under the circumstances, all members of the club who have its welfare at heart cannot do better than vote for the gentlemen who are collectively known as the reform party. The complete list of the reformers includes many old members of the club, and quite a number of them have been proposed by the present committee as well as by others. The great point about this list is that as far as possible it contains no names which have been associated with the more serious mistakes which the club has made during the last few months. The list is as follows:

Sir David Solomons, Bart., Sir John Thornycroft, F.R.S., Lieut.-Colonel Mark Mayhew, I.C.C., Colonel H. C. L. Holden, R.A., F.R.S., Major F. Lindsay Lloyd, R.E., Mr. Alfred Bird, Mr. Mervyn O'Gorman, M.I.E.E., Mr. E. Kevnes Purchase, Mr. E. R. Pickmere, Mr. Hugh Weguelin, Dr. Beverton Redwood, D.Sc., F.R.S.E., Mr. C. D. Rose, M.P., Mr. James Ochs, Mr. Frank Butler, the Hon. Stuart Bouverie, Captain H. Deasy, the Hon. C. S. Rolls, Mr. E. Calthrop, M.I.C.E., Mr. J. R. Nisbet, Mr. Frederick R. Strickland, Mr. Edward Cozens-Hardy, Mr. J. A. Holder, Mr. Robert Todd, the Hon. John Scott Montagu, M.P., Mr. Henry Norman, M.P., Mr. George Montagu, M.P., Mr. Paris Singer, Mr. Robert E. Phillips, M.I.M.E., Mr. Lionel de Rothschild, Earl Russell, Mr. J. D. Siddeley, Sir Edgar Vincent, K.C.M.G., the Hon. Arthur Stanley, M.P., Sir Wroth Lethbridge, Bart., Mr. Chas. Shaw, M.P., Mr. Wilson Noble, Mr. W. J. Bull, M.P., Captain C. Skeffington Smyth, D.S.O., Mr. Ashton Jonson, Mr. Stanley Spooner, Captain T. G. Tulloch, R.A., Mr. Henry Sturmev, Mr. F. P. Armstrong, Mr. Frederick R. Simms, Mr. W. H. Astell, Mr. S. F. Edge, Mr. Chas. Jarrott, Mr. Claude Watney, Mr. Theodore Chambers, Assoc. R.S.M., and Mr. Claude Johnson.

Members of the club will have received their list of the ninety names of gentlemen who have been nominated, also the manifesto from the reformers, and if what we hear be true, they will receive a further manifesto and proxy form issued by a section of the present Executive Committee. We understand that this step, which we can only regard as an entirely erroneous one, was decided on Monday evening by the Executive Committee after those members of it which represented the reform party had left. There is little doubt that the average member will be more or less confused by this last action of the club, as he will have received first the official list of the ninety nominations with the club report and other matters, then he will have the manifesto from the reform party, and that will be followed by one from the Executive Committee. However, we can but hope that the Executive Committee will see that it is making a mistake before it is too late. Without going fully into the aims of the fifty gentlemen whose names are given above, it

will suffice to say that they are united in their desire to bring the club back to its former high position, not only in the eyes of automobilists, but also in those of the public, Parliament, the County Councils, and the authorities generally. This means little short of reversal of the club policy of late. To return to the general meeting, it is, of course, impossible for the vast majority of the members to take part, but they will be very ill advised to send their proxies to the Executive Committee, as it might conceivably mean that the party which has made so many mistakes will then obtain the upper hand of the meeting. If proxies must be used at all, they had better be sent to the Hon. John Scott Montagu, M.P., 17, Shaftesbury Avenue, W. He has been at the head of the reform party, and can be trusted to use the power given him in the best interests of the club, and that is more than can be said for the Executive Committee as a whole, however much the

minority on that committee may work to the contrary.

We do not infer that the present committee have not been actuated by the best of motives. We have never questioned their motives. We simply have to look at their acts, and by their acts they have been shown to be incapable of directing the policy of the club as it should be directed, and that is why we counsel the members to trust the reformers rather than those at present in power.

Too late for publication we have received a letter from Lord Shrewsbury asking members of the club who endorse his policy as set forth in the resolutions above to forward him their proxies if they are unable to be present at the meeting. His address is 12a, George Street, Hanover Square.

Mr. Montagu writes us that Major Lindsay Lloyd's name was published in *The Car* this week as a signatory to the reform party manifesto by mistake.

### A TRIUMPH OF MOTOR BODY BUILDING.

During the past week, at the Burlington Carriage Co.'s establishment, 315-317, Oxford Street, there has been on view a remarkable double brougham touring body, elegantly finished in crimson picked out with cream, built by this firm on to a 24 h.p. De Dietrich chassis *élongée* to the order of the Hon. Ernest Guinness. Evidences of extreme thought, care, and workmanship are visible throughout this really superb carriage. The entire front of the car is included within the sides and roof, the only uncovered portion being the bonnet and radiator stack. Access is obtained to the front or driving seat through side doors with drop windows, the front of the car between the roof of the body and the top of the dashboard being shut in by a tight glass screen which slides away overhead when not required. A similar screen intervenes between the front seat and the back, but in this screen (which also slides aloft at will) the central portion is made to swing inwards when the professional driver is at the wheel and it

is necessary to communicate with him from the back of the carriage. The back seat comfortably accommodates three, while there are two convenient drop-down seats from the back of the front seat. The car, therefore, will accommodate seven in all, and when the owner is driving his own party the central glass screen is run up to the roof and all is companionable and pleasant. The drop windows in the doors are framed in bronze, which is most artistic in effect beside being damp-proof. The carriage is glazed all round the back, the windows swinging back, so that the vehicle can be opened practically from front to rear. The very appearance of the car suggests that here is the vehicle which our *moderne riches* would adopt for the purpose of the grand tour. There is ample baggage accommodation on the roof, and storage for tools, etc., in the boot beneath the back seat. The body is of aluminium throughout, and the swelling of the back panel alone is a marvel of shaping.



THAMES DITTON The Angel Hotel, Thames Ditton, is one of the landmarks on the Portsmouth Road, and when The Angel is once passed the outgoing automobilist feels that he has indeed left town behind him.

## CONTINENTAL NOTES AND NEWS.

### The Automobile Club of France.

Baron Henri de Rothschild, Vice-Admiral Dreu-louard, and Mr. O. Doin have been elected members of the committee of the Automobile Club of France.

### The German Emperor and Automobiles.

The German Emperor, though he has become chauffeur for the pleasure which the automobile sport affords, knows at the same time very well how to appreciate the practical services rendered by motor cars. In giving his authorisation to the German Automobile Club to run the Gordon-Bennett cup race on the Taunus roads, he has again proved his great interest in the new locomotion. Further, he has recently ordered six motor waggons, at a total price of 125,000 marks. These have just been delivered, and are destined for the service of the Imperial stables, that is to say, for the transport of goods between the Castle of Berlin and the Castle of Potsdam.

### A New Trade Association.

The French industry of cycles and automobiles has founded within the last few days, a new trade association. At a meeting of the directors of the great wholesale firms, and the agents of general supplies for cycles and automobiles, it was decided to form an association under the name of the "Association of Agents for General Supplies for Cycles and Automobiles." There is no doubt but that this new association will be heartily approved of by all parties interested, its usefulness being attested by the fact that the trade done by the agents amounts to more than twenty million francs per year, and that, up to now, the interests of this corporation have not always been as well understood as they should be. The new association will be managed by a committee of ten members. The Board has been constituted as follows: President, Mr. Vauzelle; vice-president, Mr. Schildge; secretary, Mr. Felix Brosse, treasurer, Mr. Hamard. This new association is said to have the intention of seeking affiliation with the Association for Cycles and Automobiles, the president of which is Mr. Darracq, the well-known French constructor.

### The Gordon-Bennett Cup.

The Gordon-Bennett cup race is more than ever the order of the day, at least as regards the French eliminatory trials. At the present moment, steps are being taken to obtain the authorisation of the Minister of the Interior to run them on French territory, that is to say, on the magnificent route which constitutes the Circuit des Ardennes, which we described in a recent article. In any case, should the Automobile Club of France not obtain the desired authorisation, the Automobile Club of Belgium has put at the disposal of the French competitors the Belgian Circuit des Ardennes, on condition, however, that the request should be made to the Belgian Club on the 1st of March at the latest.

As our readers know, most of the great French automobile firms will be represented at the eliminatory trials of the Gordon-Bennett cup race. At the

present time they are occupied with the *mise au point* of the cars that will compete for the cup in a few months, and there is no doubt but that this year the French eliminatory trials will constitute the most important and most interesting demonstration of French automobiles.

Only one firm up till now have definitely selected their drivers, namely, the De Dietrich firm, who have selected Gabriel, Jarrott, and the Baron de Forest. We might recall to memory the brilliant victory of Gabriel in the Paris-Bordeaux race, first and last stage of the Paris-Madrid race; Jarrott, who for a long time was the undisputed champion of the motor cycle in England, is likewise a driver who has many times distinguished himself and shown his daring spirit. He won the finest race which he has perhaps ever run—the first Circuit des Ardennes—where, on the 526 kilometres of the route, without a stop. Pierre de Crawhez, Gabriel, and Jarrott took the lead successively. Baron de Forest, an incredibly skilful driver, has won innumerable victories, one of his finest performances being the kilometre record at Phoenix Park in Ireland last year.

### The De Dietrich Gordon-Bennett Car.

Some particulars of the De Dietrich car which will take part in the eliminatory trials of the Gordon-Bennett cup race may be of interest. The flanged radiator without fan will remain as before. The cars, for the most part, will be similar to those that took part in the Paris-Madrid race, except that they will be slightly longer. The steering pillar will be more inclined, and the whole car except the wheels will be mounted on ball bearings. As regards the motor, which is still in an experimental stage, we are informed that the horse-power will be more than 80.

### Road Improvements on the Taunus Route.

The road improvements on the Taunus route, which will be the great battlefield of the Gordon-Bennett Cup competition, will be commenced shortly. The dangerous turnings will be rectified, especially those of Allendorf, Esch, Glashutten, and others. It has not been officially decided which towns or agglomerations will be neutralised, but there will probably be ten. The police force on the route will be specially constituted, and in this direction the organisation leaves nothing to be desired. Soldiers, told off from the neighbouring garrisons, will guard the whole route. The members of several great societies will assist the troops, so that the arrangements for the maintenance of order are as complete as can be imagined—just as the Emperor wanted them to be. These arrangements, it is to be hoped, will secure for the competitors, as well as for the spectators, entire and perfect safety. Everything has been done in order to enable spectators to follow as closely as possible the different stages of the race, and stands and enclosures will be erected at Saalburg, providing accommodation for several thousand persons. The Emperor will have a special place reserved for him, sufficiently large to erect thereon a little palace, with drawing-rooms, dining-rooms, etc. At the side of the Imperial stand, a stand will be erected for persons who order their seats in

advance. Lastly, there will be a third stand, to accommodate the general public. Inside and outside of these enclosures there will be plenty of restaurants, bars, etc. A box for six persons can be had for two hundred marks on the reserved stand. Admission to the public stand will cost twenty marks for a single person. Several drivers have already gone

over the route, amongst others the Baron de Caters, Hautvast (who will drive a Pipe car in the race), and Jenatzy (the winner of last year's cup). Their impression is that the route, though containing dangerous turnings, is much better than the route was in Ireland. They say that it is easier, and gives more scope for high speeds.

### A Trial of Apparatus for the Prevention of Skidding.

Amongst the industries that have sprung up suddenly and grown to enormous proportions within the past half generation, the automobile stands without rival. Almost unknown ten years ago, it is to-day one of the great industries of at least three of the greatest countries in the world, namely, France, England, and America. Invention has been piled on invention, improvement on improvement, and one

progress of the industry, has never until now been made the subject of an actual test or trial specially organised for its benefit. We speak of the apparatus applied to pneumatic tyres to prevent skidding. It will be superfluous to enlarge on the use of anti-skidding tyres. Where is the driver who has not suffered from this side-slip? It is not only a danger to one's self, but to passing vehicles and pedestrians,



ANTI-SKIDDING TRIALS. A competing car slipping.

Spreading the mud over the course.

only needs to search the annals of the Patent Office to find that both for touring cars and heavy traction cars the name of these inventions is legion. These improvements have largely resulted from the great trials and competitions, which have brought out the advantages of special features and the disadvantages of others in the cars that have taken part. There is one of the most essential parts of the automobile, however, which, although it has followed the pro-

and even to fixed objects, such as lamp-posts and shop fronts. If the road on which one is travelling should become greasy or wet, the car begins to swing, and has a tendency to go up the street sideways, and should one be travelling only at a reasonable speed and have to put on one's brakes in any sudden emergency, an accident is often unavoidable. This is the weak point of automobilism—a sore spot that needs a cure—and it is particularly interesting to everybody concerned. For this reason, all automobilists ought to be grateful to the authorities of the Automobile Club of the Seine and Oise, who, in organising a competition for anti-skid apparatus, have furnished the public and automobilists an opportunity of discovering the real value of the different appliances presented, which they may purchase to protect them against the arch-fiend of side-slip. It is true that in the beginning of the season of 1901 there was an attempt made at the velodrome of the Seine to hold a competition, but this had nothing in common with the competition which has been organised by the Automobile Club of Seine et Oise, and which has been thoroughly studied, in order that the conditions might be such as may be met with any day.

The following are the main lines on which the International competition above alluded to was held: It was open to automobiles and motor cycles, and each maker of anti-skid appliances might only enter one set of anti-skids of the same diameter, but,



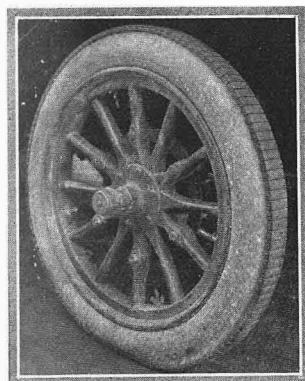
THE ANTI-SKIDDING TRIALS. Scene in the weighing yard.

on the other hand, he could enter as many cars as he liked, furnished with as many apparatus, provided that the diameters of no two were the same. Each competitor had to fit his apparatus on to automobiles carrying four passengers and a total load, including tools, of not less than 300 kilogs., and it was required that the horse-power of the motor should be indicated.

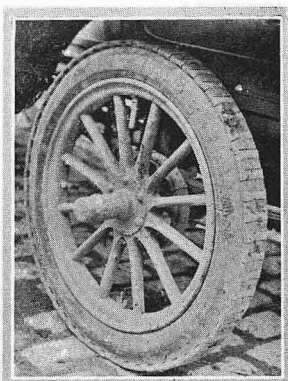
The trials were spread over four days, and took place at Versailles, in the department of Seine and

Oise, and the first trial was held over a distance of 300 metres, followed by the same distance with the anti skids fitted, with the object of showing what difference in running there was between the car with and without the appliances. Next a reliability trial of 800 kilometres, with a different route every day, took place, and last of all a series of experiments had to be gone through at Versailles on two different roads — one a macadam road and the other a paved road, each being covered with a greasy, slimy surface. On

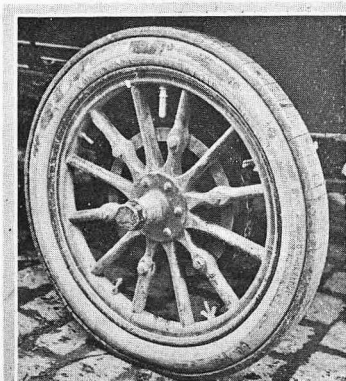
### ANTI-SKIDDING DEVICES IN THE FRENCH TRIALS.



Gallus I.



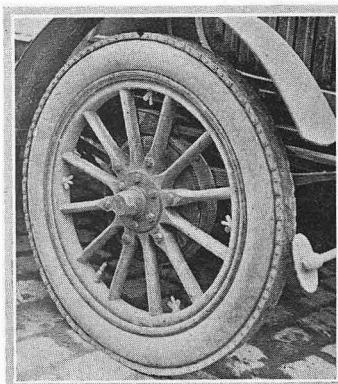
Gallus III.



Chameroy.



Fouilloy.



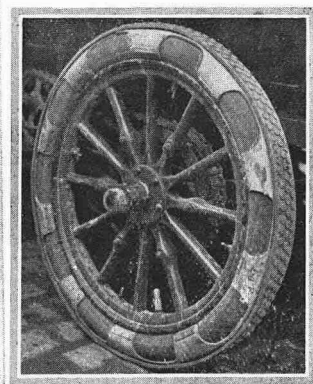
Eyquem II.



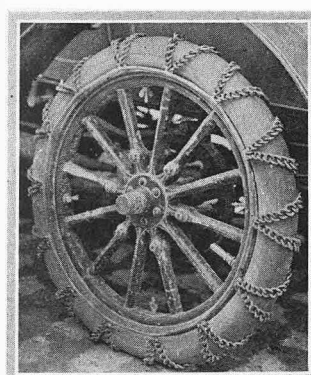
Samson.



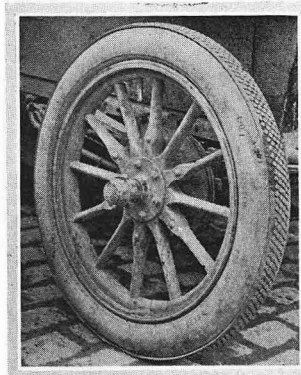
Billet et Cie.



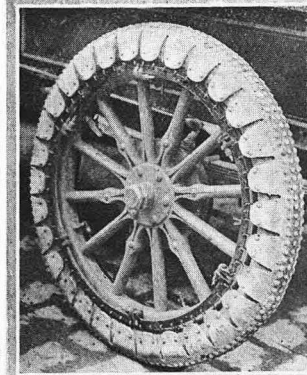
Durandal.



Parsons.



H.D.I. Lempereur.



De Fornier.



Houben

these two roads, trials took place, and cars were obliged to drive at thirty kilometres an hour, and then suddenly apply the brakes or make sharp turns at the same speed at the word of command. These last-named trials were only open to cars that had distinguished themselves in the former trials. After the whole active competition was complete, each apparatus had to be taken off and examined, to see in what state of repair it remained. The results were calculated by the application of the following scale of marks:

Non-skidding when brakes are suddenly applied...	100 marks.
Non-skidding in sudden turns...	100 marks.
Wear and tear	40 marks.
Protection of the cover and inner tube	80 marks.
Loss in road friction	60 marks.
Facility of replacing worn parts	20 marks.
Facility of adaptation and application	20 marks.
Average speed of the car	20 marks.
Catalogue price	10 marks.

This truly utilitarian and practical competition has proved that the anti-skid tyre has been actually realised, and enters into the realm of practical automobilism. The competition has proved right up to the hilt that there exist appliances for the prevention of skidding which are cheap, durable, economical, easily put on, and taken off.

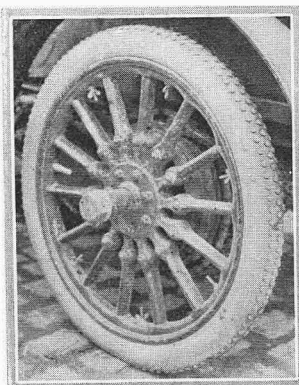
On the first day, comparative trials were made on the well-known Picardie Hill, on the road from Paris to Versailles, and the different cars were compared on the hill with and without their anti-skid apparatus. Each competitor started from the Rond Point des l'Allée de Suresnes, and, driving his car on top speed up the hill, was required to let his car go on without changing speed until the engine on the top speed could drive it no further, and the car would stop. This ordeal was first gone through with ordinary tyres, after which the same trial had to be made by each competitor with the anti-skid apparatus fitted. The following was the result of this trial:

	1st Trial.	2nd Trial
1. Excelsior I.	Distance travelled up hill—657 metres.	534 metres.
2. Excelsior II.	" 755 "	590 "
3. Th. Houben	" 658 "	650 "
6. Durandal	" 790 "	658 "
10. Billet et Cie.	" All the hill.	All the hill.
15. Chamerooy	" 655 metres.	632 metres.
18. Lucas	" 545 "	505 "
19. Lucas	" All the hill.	All the hill.
21. Fouilloy	" 575 metres.	547 metres.
28. Gallus	" All the hill.	All the hill.
30. Anti-skid H.B.D.	" 520 metres.	505 metres.
34. Eyquem	" All the hill.	All the hill.

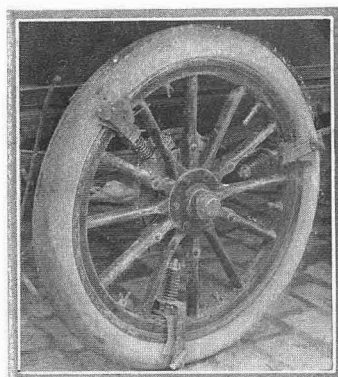
The second, third, and fourth days consisted each in a circuit on the roads, and totalled up to a dis-

tance of 800 kilometres, but the organisers of the competition were of opinion that this trial was not sufficiently severe to test the wear and tear qualities of the non-skidding devices. Those competitors who so desired are allowed to continue the experiments and make a trip from Paris to Nice and back.

The last day, of course, was the most interesting, consisting as it did in the real trial of the non-skidding qualities of the competing devices, but, unfortunately, the rain—which so often mars an automobile trial—this time failed to come and make the conditions as they should have been. It was necessary, therefore, to take steps to supply what the rain had denied, and so the organisers were obliged to manufacture mud and spread it over the roads where the trials were to take place. Nearly all the competitors were able to go through the anti-skidding trials marvellously well. It is too early to talk about the results, for these will not be officially announced until the organisers have had time to study them



Bergougnan.



Sainsbury.

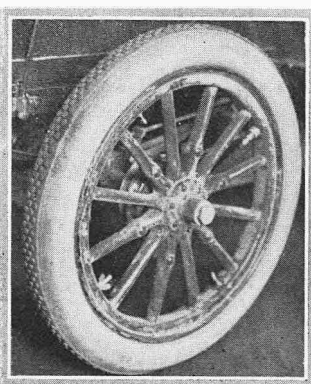
carefully. When this has been done, we shall return to the subject.

### An Unsinkable Automobile Boat.

Interesting trials have been made in Paris with a new insubmersible automobile boat which cannot be stove in or upset. It is the invention of M. Desmonceaux, of Givray. Instead of using the old watertight compartments, which were subject to being stove in and filling with water, and thus becoming a real danger, M. Desmonceaux makes use of masses of cork, which are impermeable and practically unbreakable, and it is for this reason that his boat cannot be sunk, cannot be wrecked, and cannot be smashed. When the boat is full of passengers and also full of water, it is absolutely impossible for it to sink, for it is lighter than the element on which it floats. By the use of pressed cork dust, M. Desmonceaux has been able to make large lumps of this material, and wherever in lifeboats or insubmersible boats hollow spaces have been provided, M. Desmonceaux replaces these hollow spaces by masses of cork. By means of a heavy keel, the boat cannot turn over, but is bound to float keel downwards. There are also placed at the back of the boat wings, which are suspended by chains. These can be let down quickly in order to stop the boat very suddenly in case of danger, and altogether the contrivance opens a new field of utility for the petrol motor.



Clerget



Lucas.

## CORRESPONDENCE.

## EDITORIAL NOTICES.

Letters from members of the motor industry will be published when they deal with subjects which may be regarded as advertisements for the writers' or their business interests. At the same time as many of the most practical suggestions come from those engaged in the motor industry their letters will be inserted when possible, though the names of the firms they represent may be expunged, and the initials of the writers substituted.

Letters of a personal nature will be withheld.

The Editor, although accepting no responsibility for the opinions expressed by correspondents, reserves the right to publish a portion of a letter, and to omit any part which he does not consider interesting or essential.

All communications under a *nom de plume* should be accompanied by the name and address of the writer, not necessarily for publication, but to assure the Editor as to good faith.

Enquirers who ask for the experiences of private owners with specified cars, parts, or accessories are requested to enclose a stamped addressed envelope so that replies which space will not permit us to publish may be forwarded to them. Circulars or letters from interested parties will not be forwarded.

## THE EVANS STEAM CARRIAGE.

[3561.]—Your interesting paragraph is perfectly correct respecting Oliver Evans's steam carriage, which was the well-known "Orukter Amphibolos." Possibly you may be interested in the following particulars from "Galloway's History of the Steam Engine," published 1835, page 303, which contains the description of this fearfully-named but very practical machine in its inventor's own words: "In the year 1804 I constructed at my works, situated a mile and a half from the water by order of the Board of Health of the City of Philadelphia, a machine for cleansing docks. It consisted of a large flat, or lighter, with a steam engine of the power of five horses on board, to work machinery to raise the mud into lighters. This was a fine opportunity to show the public that my engine could propel both land and water carriages, and I resolved to do it. When the work was finished I put wheels under it, and though it was equal in weight to two hundred barrels of flour, and the wheels were fixed on wooden axle trees for this temporary purpose in a very rough manner, and attended with great friction, of course yet with this small engine I transported my great burthen to the Schuylkill with ease; and when it was launched into the water I fixed a paddle-wheel at the stern and drove it down the Schuylkill to the Delaware, and up the Delaware to the city, leaving all the vessels going up behind me at least halfway, the wind being ahead. Some wise men undertook to ridicule my experiment of propelling this great weight on land, because the motion was too slow to be useful. I silenced them by answering that I would make a carriage to be propelled by steam, for a bet of three hundred dollars, to run upon a level road against the swiftest horse they could produce. I was then as confident as I am now that such a velocity could be given to carriages."

It is surprising how absolutely this talented inventor's prophecy (which was no idle boast, but the conclusion of a highly-trained mind) has been fulfilled.

Some additional particulars, with a rough sketch of the "Orukter Amphibolos," are given in *The Scientific American* for April 27th, 1861, Vol. IV. (new series), page 260, but I have not copied these, as I do not like to trespass on your valuable space. I shall be happy to forward these, however, should you think them of sufficient interest.

SIDNEY RUSSELL.

## TYRE INFLATION.

[3562.]—We noticed a letter from Mr. W. M. Inglis in last week's issue asking some questions in regard to the new Pompeii automatic tyre pump. We might mention that the point he raises was carefully considered by the jury who awarded the gold medal to this device in Paris, and that the Pompeii came through the test absolutely satisfactorily. We may mention that the gas as it comes out of the rubber pipe is absolutely cool—in fact, we might almost say cold—and the pressure in the tyre is the same after it has been standing twenty-four hours as at the time of inflation—sufficient evidence in itself that the tyre is not pumped up by heated gas.

The action of the gas itself on the rubber has been carefully tested, and Commandant Renard subjected it to an analytical test, and pronounced that, so far as having a damaging effect on the rubber was concerned, the effect was quite the opposite, and that the carbonic acid gas which is pumped into the tyre has a preservative effect on the rubber keeping it supple.

We might mention, in conclusion, that we have one of the devices working in our showrooms, and if it would interest any of the readers of *The Autocar* to see it working practically, we shall be very pleased to show it working to anyone who may call in to inspect it.

CHARLES JARROTT & LETTS, LTD.,

[It is against our practice to publish *ex-parte* statements concerning a car or accessory, but as the apparatus referred to is an entirely new one, which has not yet reached the hands of the private user, we depart from our custom, particularly as the matter of tyre pumping is one in which many motorists take more than a passing interest.—Ed.]

## COST OF RUNNING.

[3563.]—Last year I sent you the cost of running my single-cylinder car, so it may interest your readers to hear my experience with my 9 h.p. two-cylinder James and Browne. This car I bought second-hand, and after having had it brought up to date by the makers, I have run 4,727 miles without having the slightest difficulty. My costs for this distance have been: Petrol, £14 18s. 10d.; oil and grease, £1 10s. 6d.; accumulators, £1 1s. 1d.; repairs, £5 12s.; tyres, £11 5s.; total, £32 7s. 5d. which comes out at 1.64d. per mile. Petrol works out at 20.5 miles per gallon at 1s. 5½d. per gallon. Accumulator cost is high, as I have to charge with primary battery. Repairs include spare pair of chains (not needed, but I like to have two pairs—one on, and one soaking in oil), and sundry alterations and improvements. Actual parts worn out did not cost 10s. My tyres, which are solids, I have had to estimate, as I cannot say what they had run before I bought the car, but they look good for another four thousand miles. Except for washing, I look after the car myself, and attribute my low repair bill to the fact that I see to any adjustments needed at once—the old saying, "a stitch in time," etc.

H. J. BATH.

## SUNDAY TRIALS OF CARS.

[3564.]—In the course of three or four interviews with motor car manufacturers this month while in quest of a car, I was surprised to receive offers to send cars down on a Sunday to give me a trial, and as these offers were from some of the leading makers, I fear it is becoming a common practice in the trade. Surely, sir, there is no necessity for this form of Sunday trading. Motor users as a class have as much leisure as other people, and probably much more, and need not do their buying and testing on Sunday. I believe the observance of one day in seven as a day of rest and worship has been of untold blessing to this country, and I think we should be very jealous of all unnecessary encroachments upon it. If the pioneers in this new and progressive industry do not set their faces against Sunday trials and Sunday trading in these early days of the trade, the blessings of the day of rest may be lost altogether to the selling departments of their business.

EDWARD ROBINSON.

## AUTOMATIC CARBURETTERS.

[3565.]—I have a 16 h.p. four-cylinder car, but I am not satisfied with the carburetter. I should be very glad if your readers could give me any information as to what good carburetters can be purchased to fit existing cars. I believe both the Krebs and the Napier carburetters are excellent, and many other cars have special carburetters of their own, but they are not to be purchased apart from the cars. Are there any carburetters operating like those named which can be purchased?

ENQUIRER.

## EXPERIENCE WANTED.

[3566.]—Can any of your readers give me their experience of Seddon single-tube tyres? The idea appears a good one, but before embarking on the experiment I should much like to hear what any users of the tyres may have to say.

H. M. C.

## THE AUTOMOBILE CLUB.

[3567].—As a founder member, and one of those who attended the earliest meeting called by Mr. Simms for the formation of the club, perhaps I may be permitted to say a word upon the burning question.

When one attempts to arrive at the origin and the motive of the present agitation, it is difficult to discover any other than the two following causes:

First. The somewhat foolish and too loudly expressed dissatisfaction with the work in Parliament of the motoring M.P.'s after the passing of the new Act. Perhaps it may not be too late now for a tardy reparation of this error by means of a document addressed to the members, thanking them for their Parliamentary efforts on behalf of automobilists, signed by all the club members, which address of thanks will no doubt now have the cordial support of the whole automobile press.

Second. The encroachments of the club into the Manchuria of journalism were tolerated with a more or less bad grace, but with the occupation and fortification of the Port Arthur of the advertisement department, the fleet of the whole automobile press with one accord fires off its big guns and torpedoes at the intruder.

The truth appears to be this. I run a garage, and I object very naturally and very much to the club running one, and very naturally, also, if I run a journal I should bombard with the rest, and that most heartily.

As a general rule the club should do no trading. But certain relaxations might be made in the strict interpretation of this principle, limited by common sense. A small garage should be run by the club for the benefit of country members passing through London, or for town members, for a few hours only. It should be limited in every case to a twelve hours' user. If not, the many are in effect asked to put their hands in their pockets for the benefit of the few. The club should be run for the benefit of all the members and the advancement of automobilism generally, and by this rule the limit of trading could be found. The garage should not be frequently used by those within a short radius. The folly of the appointment of a club engineer has, I think, been recently sufficiently demonstrated. By this rule also the wisdom or otherwise of the club *Journal's* advertisement pages can be determined. The committee should be representative of all club members, and not of any one or two sections of it. Please believe me this is not a platitude in view of the correspondence published and resolutions proposed.

Above all things, not only in the coming election, but always, the members should be jealous of any tampering with the elective principle. The committee and the president and vice-presidents should be elected by the whole body of members.

The comparison made with the Jockey Club was unfortunate. The man who breeds or races horses trying to make a profit is as much a trader as the manufacturer of motor cars. The club should be as representative as possible of the whole body of automobilists if it is to avoid the danger of either becoming fossilised or at least of falling away from its proud position in the van of the movement.

J. D. ROOFS.

## THE CLUB PATRONAGE.

[3568].—Your correspondent Mr. S. G. Goodchild, in a letter headed "The Gordon-Bennett Eliminating Race," talks about the Automobile Club having to "stoop so low as to sell its patronage to a lesser exhibition to fill its coffers." It sounds as if the club had been secretly bribed to connive at some underhand proceedings. Your correspondent is perhaps aware that the action of the club was perfectly straightforward and above board. If people are willing to pay for things, it is an obvious fact the payment is well merited, and the club placed its terms impartially before both parties. One society—the principal one according to Mr. Goodchild—was too mean to produce the sum from "its coffers"; the other accepted the club's terms *in toto*.

As to the terrible crime of granting patronage for a fee, no doubt this might be dispensed with another year if Mr. Goodchild would send along a cheque for five hundred guineas as a donation to enable the club to carry on its work. The much-abused, long-suffering Automobile Club spends a great deal of money in furthering the interests of all automobilists irrespective of class, and all

this cannot be done without money. It would be preferable for Mr. Goodchild to supply it.

## THE KING OF CLUBS.

## HORNS.

[3569].—Seeing the letter from "Toot" on the subject of the "nerve-shattering horn" makes me wonder why the exhaust gases are not arranged to give some sort of pleasant continuous deep-toned warning? I am very anxious to see this power utilised, and feel sure this will happen some day. Surely it would not be difficult to make them sound a siren—nothing of the shrieking order, but a deep sort of "Ah!" sound? SIREN.

## RAISING STEAM.

[3570]. In reply to "Enquirer" re time taken to raise steam on a 10 h.p. Miesse car, with burners full on ten minutes, personally I give the generator about fifteen minutes, as I start with pilot light half on, and prefer to allow the heat to soak into the generator gradually. I have had my car nearly four months, and am very pleased with it. DRIVING OWNER.

## THE HORIZONTAL CYLINDER.

[3571].—Is it not a fact that there has been lately a great increase in the number of horizontal-cylinder cars on the market? Several years ago the horizontal cylinder was in great disgrace, and I think the Wolseley firm were about the only real exponent of this type of motor. Many people at that time predicted that they would soon have to change like the others, and adopt a vertical engine, but then fidelity to the horizontal type quite broke the back of this sentiment at last, and I think it is entirely due to the persistence of the Wolseley Co. that we have any English horizontal motors at all.

Now, however, it is very interesting to collect the names of the modern British horizontal-cylinder cars. We have the James and Browne, the Albany, the English Darcy, the Lanchester, the Arrol-Johnston, the Albion, the Wilson-Pilcher, the Pick, the Lea and Francis, the Vauxhall, the Brooke, which with the Wolseley makes twelve different British cars made by twelve firms fitting horizontal cylinder engines, and this list may not be complete. In France the horizontal cylinder seems to be extinct for the time being, but with so many British firms taking to the horizontal cylinder, I think there will be a general revival everywhere of this type. The Americans are doing well in this way. Witness the popular Oldsmobile, also the Cadillac, and many others.

LEOPOLD CANNING.

## CHAUFFEURS.

[3572].—In reply to "A Bas les Chauffeurs," allow me to give you an example of "shuvvers." My master, employing two coachmen, had reason to dismiss both at a minute's notice. One of them, bent on being a "shuvver," went to a firm of repute in London, obtained a situation, on the plea that he had been helping "shuvver" (without any enquiry being made). He was sent out in about ten days with a valuable car. Result: ran into a wall on the Great North Road and smashed car to atoms. He has since gone back to his proper occupation.

The other went to one of the largest repair works in London, and on the plea that he had been driving for me, he got a start, and is now waiting his turn for a private job (without any enquiries whatever being made), so it behoves all gentlemen who are contemplating the purchase of a car not to engage anyone as "shuvver," but to enquire into his previous character. Of course, if agents send out drivers incompetent to do repairs, it is much better for them, as the repair bill at the end of year is much to their advantage.

In conclusion, may I say that because a man wears a leather cap and coat it does not follow that he is a qualified man, but perhaps a "razor stropper." MECHANICIAN.

[3573].—I do not wish to encroach upon your valuable space, but I think an experience of mine with a "razor-stropper" may be a warning to some of your numerous readers. I am a genuine mechanic, not a speed merchant, and during the past week have had a trying time with a "razor expert," whose car I am overhauling, and whose employer would have saved some £17 in repairs if he had employed a skilled mechanic as driver. As long as

this speed expert confined himself to the usual razor-stropper's pastime—of grinding in the valves—he did no serious damage, but in an evil moment (for his employer) he saw a mechanic stripping and bedding in brasses. Inspired with the imitative instinct of some simian ancestor, he straightway bled him home, and rummaging in the bowels of the crank chamber drew forth his connecting rod brasses, and stripped them, recking naught of flat-bling or the quantity he stripped off. This done, he jammed them together again anyhow, bolted them as tight as he could, and started his engine, with the result that one of his crank pins seized, and the other crank (it is a two-cylinder explosion-balance motor) was twisted half-inch in advance of its unlucky brother, and the shaft itself was badly bent, necessitating a new crank being fitted, costing £12, fitting extra. My imitative friend's employer is entirely ignorant of the true cause of the mishap, and is probably blaming the makers of the car for bad work. However, owners who are near-sighted enough to grudge the extra few shillings a week which would secure the services of a skilled mechanic need not be pitied when they have to pay for their false economy. Hoping the above case may be a warning to "A Bas les Chauffeurs" and his disciples.

GORDON-MAC.

#### THE ASCENT OF SNOWDON.

[3574].—My attention has been called to a letter written by W. Windham (Lieut.) By the time this gentleman is a colonel he will probably have learned to propound a question in a gentlemanly manner, and pending his promotion and better education I have to say that Snowdon, with its telegraph posts, is still in the same position as when I attempted and failed to climb it.

HARVEY DU CROS, JUN.

#### THE FRENCH SHOW.

[3575].—In view of the extraordinarily successful automobile exhibition at the Crystal Palace, and the fact that it was of a far more international character than that held previously in Paris, or, indeed, any other show yet organised, I think the time has come when every English manufacturer should cease to exhibit in Paris.

It is not advantageous to the English manufacturer to show his new models in Paris first, as that merely helps to increase the automobile prestige of France.

The French manufacturers, on the other hand, must show their models in England, because the English market is at the present time one of the largest, if not the largest, in the world; but there is no real necessity for England to go to France to show vehicles. I think, therefore, that the time has come for every English manufacturer to leave the French Show severely alone, and to exhibit at one show only in England. This show will be, as was the recent one, of a distinctly international character.

I shall be pleased, on behalf of the British car in which I am interested, to sign any document that the trade may think necessary to this effect.

S. F. E.

#### TYRE REPAIRS

[3576].—I enclose a photograph of a back wheel of my 12 h.p. Daimler fitted with a rope tyre to enable it to complete a journey, the Connolly solid having come to grief. A brief history of the accident may be of interest to your readers. Early last summer my mechanic and self were driving to Bristol from Dartmoor, where I had been spending a holiday, and where the car had done some excellent work over the hilly roads of that beautiful region.

Probably it was the strain caused by ascending and descending these severe gradients that weakened the tyre. Then when more level roads were encountered and higher speeds maintained, centrifugal force completed the destruction, and the tyre left the wires altogether.

We had made good time *via* Okehampton, Exeter, and Taunton, and were just congratulating ourselves as we spun across the flat road from Bridgwater to the sixteenth milestone from Bristol, that we should be home in time for dinner, when I felt a terrific tug at the steering wheel, and with great difficulty kept the car from swerving off the road altogether. I applied the brakes. The car bumped along for a few yards and finally came to a standstill, the road being level at that point.

We got down and inspected the tangled mass of broken chains, tension rod, and sprocket brakes that the loose end of the rubber had caught in and played havoc with.

However, after examining things critically for some minutes, we set to work to straighten up a bit. This took us about three hours. The sprocket brakes were done for, the chain had to be mended in four places, water pipes straightened, etc. We tied the loose end of the tyre on again with some telegraph wire supplied by a telegraph engineer who came up to look at our plight. About 9 p.m.

we proceeded slowly—very slowly—on our way, but after going about three miles the same thing happened again—tyre loose and chain broken. After unshipping the headlight, and discovering a much-prized bottle of Bass—left over from our picnic lunch—we decided to rip the tyre off altogether and run home on the rim. This, however, proved a tougher job than we anticipated, and at 1 a.m.

we retired exhausted to the tonneau and slept till dawn. Not a soul had passed us either on foot or driving, or we should have begged a lift to the nearest village. Our appearance on waking was somewhat uncouth, and we resembled two tramps more than automobilists. It would have made a good sketch for a comic paper of the anti-motor order. In the morning we found a public house a little further up the road, and after inspecting it more closely we were not sorry that the night had hidden it from us, as I am sure the tonneau furnished a much cleaner and more comfortable roost than the "pub." could have supplied. Whilst devouring some doubtful looking bacon and eggs and some liquid that the landlady called tea, all of which, however, was much enjoyed, as hunger was fairly developed within us, we heard the welcome toot of a motor horn and were delighted to see a well-known face, as luckily for us the Bristol Motor Co.'s foreman was returning along that road from his holiday. We got a lift to Bristol, and the car got a tow as far as Cross, where the level road ceases and the gradients are too stiff for the well-loaded Daimler waggonette to pull the big car as well. In a few hours we returned from Bristol with rope, spare chain links, and sundries to patch up our car, roping the wheel in the manner shown.

The car ran a bit "dead" on the improvised tyre, but well enough to get on the top speed and to do several journeys on it after reaching home until another rubber could be fitted.

I have seen several illustrations in *The Autocar* of roped wheels, but must compliment the Bristol Motor Co.'s foreman and one or two others who helped us on the neat finish and symmetry of the rope tyre here illustrated.

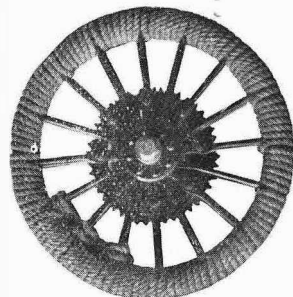
RICHARD HOWARD.

#### NON-SKIDS.

[3577].—I should like to bear testimony to the extreme value of the Samson-Hutchinson non-skidding bands. I have had mine on the back wheels of a 12 h.p. four-cylinder car for about six weeks now, and I can drive over our greasy rotten roads on my fourth speed without the smallest suspicion of a skid, and what I consider of equal importance is that one is entirely free from all danger of puncture, and the life of the tyre is indefinitely prolonged. This, to a poor man like myself, is of the utmost importance. I embarked my little all in my car, and if I had to get my tyres retreaded and mended as often as most users here, my motoring would very soon cease, or I should be in prison for debt. The bands do not slow the cars appreciably, and under conditions of new Act one does not need to mind if they do.

H. G.

[3578].—In reply to "Novice" *re* non-skids, I had Wilkinson's treads put to new tyres by the makers. Before the car had run twenty miles on easy roads these treads began to split and come away at the place where vulcanised on to the tyre cover. I have several times written to the firm, but cannot get the matter rectified, although at the time they admitted they should not have



become detached in this way. My object in saying this is not to run down these treads, but to advise those who contemplate adopting them to have some kind of guarantee from the makers, that if their treads become faulty within a reasonable time they will rectify them at once free of charge.

I note your columns are frequently used by enquirers asking the opinion of some particular manufacture. As a rule only the users who are quite satisfied reply. Probably those who are not satisfied do not like to make public any defects that may exist. In the interests of the motor world generally, I think you will agree that both parties—the satisfied and the dissatisfied—should boldly state their opinions. **PROGRESSION.**

#### NATURAL CIRCULATION v. PUMP.

[3579].—To many it would appear that the last word has been said upon these two systems of water cooling, but the Renault improvements this year have brought natural circulation to such a degree of perfection that has not before been obtained, and which, I have reason to believe, has not been so generally recognised in the motor world as it deserves to be.

To eliminate the pump, whether friction or gear driven, with all its attendant extra parts—revolving, as they must, at high speed, therefore necessarily especially liable to wear, leak, and breakdown from various causes—is certainly a big achievement and another step forward towards simplicity, which, in the opinion of many, is the most desirable end the modern designer can have in view.

Coming to my actual experience, I find that the water is kept cooler, and that after a run, say, of 150 miles, even on the hottest day, not more than a pint of water has evaporated, and that for ordinary town running filling up the tank is a weekly operation instead of a daily one. These are far better results than I have obtained on any of the other various systems with which I am acquainted, and my impression is, although the circulation is not so fast, that herein lies its secret—the water remaining longer in the radiators, returns to cylinder head cooler.

Who has not noticed the water boiling in the tank and steaming at the outlet? and the inference is that the whole body of water being at boiling point, the rapid pumping simply drives boiling water into the water jacket of cylinder.

The old idea of a heavy cast iron water tank surround ing the engine has been done away with, as it made the engine to a certain extent inaccessible. The tank is placed on the dashboard, perfectly clear of engine, the radiators being on either side, the bonnet of engine lifting in the usual manner, leaving all parts of engine readily get-at-able.

I gather from my own experience that, given sufficient radiators and properly connected flow of water, better results and lower temperature of water are obtained with out the pump than with it.

W. E. WHEATLAND

#### TYRES.

[3580].—I had fully decided on no account to buy a motor car except with solid tyres, but after a long consultation with the makers I have ordered one with pneumatics. I may mention that the makers are quite willing to fit solids, but their reasons against them served good enough to me, even from the business point of view.

As most of my driving will be done alone, and I have a wholesome horror of punctures, I have been enquiring into the different devices said to make pneumatics puncture proof. The makers and motor dealers I have spoken to seem to have no practical experience of any of these bands or treads, the expensive non-skidding ones excepted, and as side-slip has no horrors for me in Scotland, I am not interested in these.

Can anyone speak after lengthened trial of Cassel's or Wilton Cox's devices? J. M.

[3581].—In *The Autocar* of January 23rd there is a letter from a correspondent signing himself "Stonyhearted," in which he complains of 2½ in. pneumatic tyres not giving satisfaction on a 14½ cwt. car. If your correspondent allowed the manufacturers to supply such an ill-assorted combination as 14½ cwt. of car and 2½ in. of tyre, he must be very gullible as well as stonyhearted.

After reading his contribution, we may expect something

like the following from similarly dissatisfied users: "I bought a pair of three and sixpenny patent leather dancing pumps. After using them for three walking tours and a mountaineering expedition in Wales, I am disgusted to find that they are already showing signs of wear!" Or, "The juvenile bicycle which I purchased for my nine-year-old son three years ago has given way. Seeing that the machine has had but ordinary use at the hands of my thirteen stone coachman, I think the makers are much to blame!"

Perhaps "Stonyhearted's" pleasant experience with the more sensible combination of 3½ in. tyres on a 15 cwt. car will convince him that his first tiny tyres were more sinned against (in being overloaded) than sinning.

H. W. BARTLEET.

[3582].—In connection with your most useful letters on tyres, I should like to be permitted to revert to a few main factors for a good choice of tyres from the engineering standpoint.

First.—Weight of car loaded. Second.—Wheelbase, i.e., for weight on each wheel at rest and at normal speed for torque. Third.—Diameter of wheels. Fourth.—Extreme breadth between oil or grease cups. Fifth.—Whether stay roads are fitted to axles for chain drive.

Given these points, and a few more that may occur to rubber manufacturers and engineers, it should not be hard to arrive at the best tyres. My own experience is that with anything above 17 cwt. loaded, 5 in. Colliers are far and away the best. True, the cost is rather prohibitive to the man of moderate means we hear so much of. But it is surely more moderate to have a set of tyres costing £52 10s. nett which last, say, three years of ordinary wear (although I have not used mine to this extent as yet) than two sets of cheaper quality which may last a year longer. Of course, I am not fortunate enough to have any interest in this company. I shall be glad to give further details to any of your readers. T. M. CAIRNS.

#### SUMMARY OF CORRESPONDENCE.

BRITISH CARS. We have received from Mr. D. M. Weigel a reply to the portion of Mr. Edge's letter which we extracted last week on the above subject. It may be summarised as follows: (1) Whether in the first Napier cars manufactured much of the mechanism was not made abroad; (2) what items of real utility in the car are of British origin and designed by the Napier firm. He continues: "Some six months back, in a discussion that passed between Mr. Edge and myself, he found fault with everything that was French at that time, but at the present moment he has copied and fitted to his car everything he at that time 'cried down,' yet still with the result that he is one year's design behindhand. I agree with Mr. Edge that a British car should be called a British car, and, as the managing director of a firm who is putting up what is probably the largest motor factory in this country, I appreciate his remarks, but if Mr. Edge wants the truth let us have it on both sides; otherwise I certainly do not think that Mr. Edge is the person to throw stones at others, when he is seemingly living in a glass house." The rest of the letter deals with subjects which were not raised in the extract we gave from Mr. Edge's communication.

On the same subject, "Fair Play" wants to know whether the statement that every part of the Napier is British built includes the axles, springs, radiators, coils, and sparking plugs? Also what proportion of the workmen engaged in the manufacture of the cars are foreign.

Another reader under the same *nom-de-plume* brings up a series of questions about the Crossley, which were answered by Messrs. Crossley's letter last week.

In reference to the comment which appeared in the general article dealing with the Crystal Palace Show about high-tension ignition as well as magneto being fitted, Mr. Archibald Campbell states that so far as the Beaufort cars are concerned high tension is only provided when specially required by users. It is fitted entirely as a supplementary ignition, and not because there is any lack of confidence in the reliability of the magneto. The Beaufort was among the first cars to be fitted with magneto ignition; and, as we have said before, it would appear that history is to some extent repeating itself. When electric ignition high tension was first fitted tube ignition was provided as a stand-by.

## Flashes.

The Motor Agencies, 21-23, Renfrew Street, Glasgow, have been appointed official repairers to the A.C.G.B. and I.

\* \* \*

"The cow saw me coming, and ran into me," was the explanation given by a French chauffeur who was summoned at Hove for driving a motor car to the public danger.

\* \* \*

Mr. E. H. Arnott speaks highly of the small garage of Mr. R. Hatterton, of 13, Canterbury Terrace, Maida Vale. Hatterton lives on the premises, undertakes washing and cleaning of cars, re-charging accumulators, and is able to carry out mechanical repairs, as well as painting and varnishing.

\* \* \*

The thanks of the whole automobile world are certainly due to Mr. Ernest Rodakowski for the thorough and effectual manner in which he fought the charge of driving to the public danger through the wide expansive street of the village of Ripley brought against him by Sergeant Jarrett at Guildford last Saturday. Supported as he was by the opinion and proffered evidence of a Surrey magistrate, Mr. H. F. Lock-King, and Mrs. Lock-King, who were with him at the time, Mr. Rodakowski spared no pains or expense to fight his case, and by the aid of that most trenchant and incisive advocate, Mr. Staplee Firth, was successful in persuading the bench that so heinous and awesome was his act that it merited the fine of 5s., and 5s. only. To suggest that fourteen miles per hour is a dangerous rate of progression in the wide Ripley street, when hansom cabs drive in the London traffic at speeds varying from twelve and a half to sixteen and a half miles per hour, is to indicate at once the flimsy pretext upon which such charges are preferred by a police officer who is said to have had the effrontery to tell Sir Alfred Cooper that before the Woking Bench he (Sir Alfred) might bring 10,000 witnesses without counterbalancing his single testimony.

\* \* \*

Mr. W. J. Maybery, of Ilanelly, informs us that the motor car upon which he and his brother made their non-stop run from Ilanelly to London was a 12 h.p. standard Darracq. Prior to this, the car had been in daily use for five months.

\* \* \*

A brass axle-cap, bearing the name Clément, of Paris, in red letters, was picked up at Buckden recently, and if the owner should happen to see this paragraph he can have the cap forwarded to him on writing to Mr. J. D. Higgin, 3, River Terrace, St. Neot's.

Mr. G. W. Hodgkinson, Compton Buildings, Buxton, informs us that he is in a position to take in any size car for repairs, and that he has garage, with inspection pit, besides being able to supply the needs of motorists in other respects.

\* \* \*

Mr. W. K. Vanderbilt, the well-known millionaire chauffeur, who recently distinguished himself at the Florida Beach carnival, has offered to the American Automobile Association a cup to be disputed for in a road race over a distance of three hundred miles. It is probable that the race will take place on Long Island.

\* \* \*

The Begbie Manufacturing Co., Ltd., has declared a dividend of ten per cent. for the past year, and at the annual general meeting on February 26th the chairman of the company stated that the increase of business for the first months of the new year was considerably in advance of the previous year, and there was every prospect of a very prosperous season.

\* \* \*

From letters we have received from motorists and those interested in motoring in the Isle of Man, it is very evident that there is a general feeling in favour of the holding of the eliminating trials in the island. This feeling is reflected in the local papers, and it is evident that the islanders are not only interested in the event from a sporting point of view, but they realise that it will bring to the island a superior class of visitor, and that, too, at a period when otherwise the island, if not empty, at any rate would be dull from the residents' point of view.

\* \* \*

The Highways Committee of the London County Council report that, in accordance with the provisions of the Motor Car Act,

the clerk of the council, up to February 17th, registered 2,356 motor cars and 1,358 motor cycles, the fees being £1 for each car and 5s. for each cycle.

\* \* \*

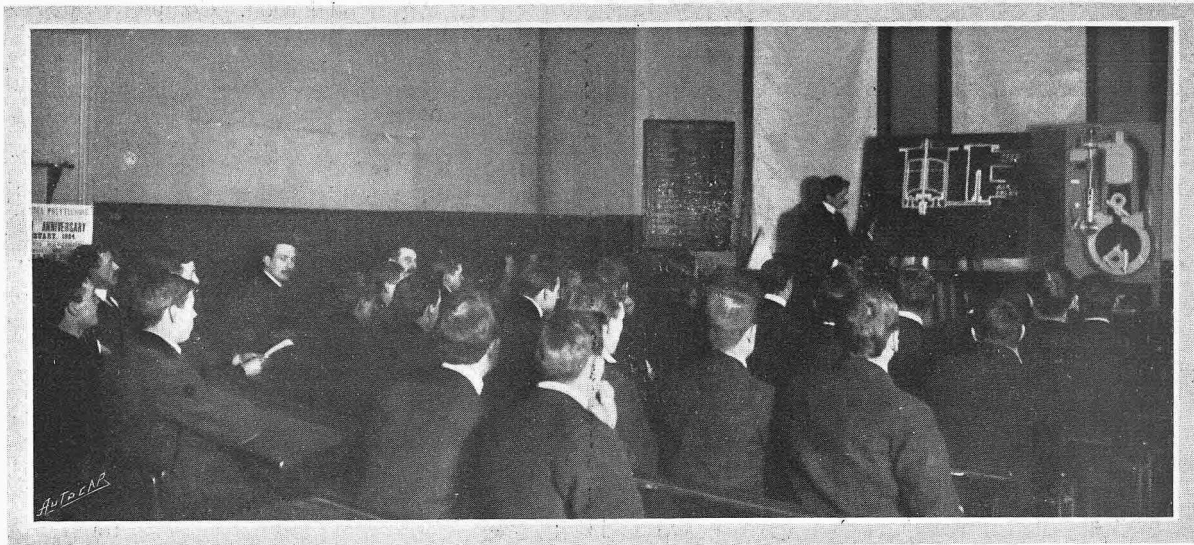
Railway motor cars have become so popular through their convenience in South Wales that several of the district councils are petitioning the Great Western and Taff Vale Railway Companies to augment their motor services.

\* \* \*

In reference to an advertisement which appeared in *The Autocar* last week of a car for sale—in regard to which, amongst other things, the advertiser makes the following statement, "Run 1,000 miles reliability trials, 1903"—a correspondent writes that that particular car is in his (our correspondent's) possession, he having bought it in October last. As only one car of that make ran in the 1903 trials, he adds: "I think you will perhaps feel inclined to give publicity to this matter."

### "THE AUTOCAR" DIARY.

- Mar. 5.—Edinburgh Autocar Show closes.
- " 7-12.—Manchester Motor Show.
- " 7.—Scottish A.C. Paper, "Medical Aspect of Motoring." By Prof. H. Galt.
- " 7.—Motor Union General Committee Meeting (5.30).
- " 10.—A.C.G.B.I. Annual Meeting, 5.0.
- " 10.—A.C.G.B.I. Papers, "On Continental Touring." By Messrs. R. H. Fuller and J. Pennell.
- " 11.—Nottingham and District A.C. Annual Dinner.
- " 12.—Midland A.C. General Meeting.
- " 13-20.—Cannes Automobile Week.
- " 14-19.—Boston, U.S.A. Autocar Show.
- " 15-16.—A.C. America Commercial Vehicle Trials.
- " 16.—Entries close Vienna Alcohol Motor Exhibition.
- " 17.—Paris-Rome Trial commences.
- " 19.—Hertfordshire A.C. Opening Run.
- " 19-26.—Motor Car Show, Agricultural Hall.
- " 19-27.—Frankfort-on-Main Autocar Show.
- " 20-26.—Nice Week.
- " 22.—Motor Union Annual Meeting (5.0), Agricultural Hall.
- " 22.—Manchester A.C. Paper, "My Experiences with a 60 h.p. Mercedes." By Mr. Higginbotham.
- " 22-27.—Trials of Electrical Vehicles, Paris.
- " 24.—A.C.G.B.I. Smoking Concert.
- " 30.—Cheltenham A.C. Lecture by Mr. J. W. Roebuck.
- A.C.G.B.I. Side-slip Trials. Beginning of April.
- June 17.—Gordon-Bennett Cup Race.



**TO TRAIN MOTOR ENGINEERS.** A class at the Battersea Polytechnic attending a lecture on motor construction. The instructor has a diagram of a carburettor on the blackboard which he is explaining. The object of the classes is to instruct those desirous of becoming mechanics and drivers in the elements of motor car construction. It may be remembered that Mr. Mark Mayhew was primarily instrumental in the formation of these classes.

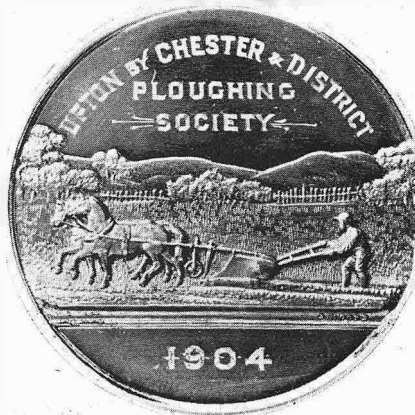
The Dorset County Council have decided to ask for powers limiting the candle-power of lamps used on motor cars. Many of the lights used were asserted to be in excess of the requirements, and to constitute a danger to the public. A maximum candle-power is to be asked for.

\* \* \*

More than one of the tyre manufacturers have taken a count of the number of cars fitted with their particular tyres in the recent show. We do not publish these figures, however, as we never accept *ex-parte* statements of this sort. We do not doubt the good faith of the compilers, but we must confess we have some reason to doubt the accuracy of one return, inasmuch as the number of cars stated to be fitted with one make of tyre is nearly two hundred above that of the total number of cars in the show.

\* \* \*

The first medal to be awarded to a petrol-driven machine in agricultural work fell to the Ivel agricultural motor at the Upton-by-Chester ploughing competition, held on the 24th ult. The competition was previously arranged to take place on February 17th, but owing to a heavy fall of snow which occurred none of the competitors except the Ivel agricultural motor, with a two-furrow plough, arrived at the field where the ploughing was to be done. The motor plough was under the direction of Mr. Dan Albone, the inventor of the machine. Judicial note, of course, was taken of the fact of Mr. Albone being the only competitor present, but he was not called upon to demonstrate the capabilities of his machine upon that occasion. On the day of the trials the machine performed so satisfactorily that a medal (an illustration of which is given herewith) was awarded to the Ivel agricultural motor.



The Avon Motor Co., of Bristol, who were exhibiting a three-wheeled machine in the corridor at the recent Crystal Palace show, wish to correct a statement made to our representative who reported their stand as to the weight and the price of their vehicle. These should have been: Weight, 3 cwt. instead of 4 cwt.; price, £80 instead of eighty guineas.

\* \* \*

During the recent exhibition at the Crystal Palace a number of firms applied for membership of the Society of Motor Manufacturers and Traders, and were elected. To deal with further applications for membership which have been received since, it has been decided to call a council meeting for the 10th of March, and to allow applicants elected then to participate in the benefits of membership, so far as concerns application for space at the society's 1905 exhibition.

\* \* \*

A very useful fitment, and one with which every car should be provided, is a combined switch to the batteries and testing accumulator. Such a combination has been registered and is being sold by Messrs. Meredith, of Birmingham. The switchboard is provided with a two-way switch for connecting up to double sets of batteries, and over this is placed the voltmeter, beneath which is placed a push button. To test the batteries, the switch is put over to the cells to be tested, and the button is pressed, completing the circuit through the voltmeter.

\*

Sarafoff, the young Bulgarian chief of the insurrectionary movement in Macedonia, is reported to have ordered a light, strongly-built motor car for next season's campaign, to enable him to move about more rapidly on the rough roads of the plain.

A car entered by MM. Chenier et Lion for the consumption tests promoted by our contemporary *L'Auto* will run the first day on petroleum, the second day on naphthaline, and the third day on oil obtained from shale. Several of the cars entered will use petroleum.

\* \* \*

At a largely-attended meeting of farmers and others between Udney and Methlick, Aberdeenshire, on Saturday, February 27th, it was decided to petition the Great North of Scotland Railway Co. to inaugurate a motor car service between Udney railway station and the villages of Tarves and Methlick. At present the district is very inadequately served by a system of horse 'buses.

\* \* \*

The secretary of the Cumberland and Westmorland Chamber of Agriculture, who is also a motorist, has found it necessary to make a stand for his principles. His chamber appear to have been seized with a bad attack of motorphobia, and passed a resolution that owners and drivers of motor cars should be held responsible for loss or damage caused by their use. The secretary, whose name we have not the pleasure of knowing, reminded the members that such a resolution was outside their province, and, before it was carried, he went so far as to say that if it were adopted he should not forward it to headquarters. However, the motion was agreed to, and the secretary forthwith tendered his resignation.

\* \* \*

We were somewhat interested to read in an Edinburgh paper in the course of a report of the motor exhibition, which is now taking place in the Scottish capital, a description of the hydraulic carburetter fitted on the six-cylinder Napier, which, like a good many other exhibits, was taken straight from the Crystal Palace to Edinburgh. The car, we are told, "is fitted with a new hydraulic contrivance for the regulation of the pressure of air for the mixture of water and petrol for the engine." This, we are afraid, will be scarcely clear to the average reader, but the description of the Cottureau variable induction valve is good, if considered from the point of view of the reader who knows nothing whatever about cars. "These valves," we are told, "can be worked so that very little pressure is put into the cylinder."

\* \* \*

We have received from Messrs. C. Dent and Son, of Tamworth, some sketches of a system of belt transmission which they have designed for use on light cars, the object primarily being to reduce the price of the popular live axle. The idea is simply to mount three stepped cones on to the engine crankshaft, which runs across the front of the car just in rear of the steering axle. Behind the rear live axle is placed a countershaft carrying three oppositely-coned pulleys, on the shaft of which is a pinion intermeshing with a gear wheel surrounding the differential box. A tubular frame, carrying rollers, and actuated by a screw gear, changes the belt from one diameter pulley to the other, the belt descending the cone of the rear pulley and ascending the opposite cone on the crankshaft pulley, when the gears are changed upwards. When running on the gear required, the belts are not on a conical surface, but on a slightly crowned face, so that no side stress is placed upon them, as would be the case if the pulleys consisted of a straight edged cone.

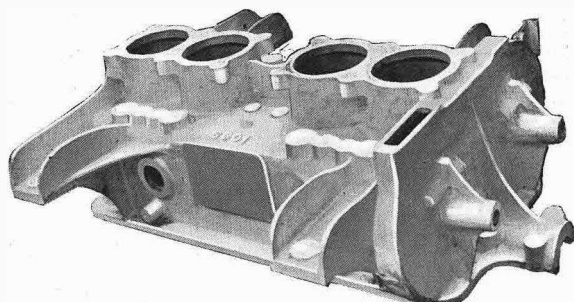
The motor car service which was started by the *Daily Chronicle* for the distribution of that paper in the metropolis and suburbs on Monday last, was carried out by the Great Central Garage, of 300, Marylebone Road, W. Twenty cars were used for the purpose.

\* \* \*

When calling lately at "Automobilia," where the latest Darracqs and Renaults are to be seen, Mons. Fordyce, the managing director, showed us some inner tubes for pneumatic tyres which he claimed to be unburstable. They are lined with a strong but very light transverse fabric of silk and cotton, which, we were informed, is to be used in the construction of Mons. Santos Dumont's next airship. It is certain that these inner tubes, even if accidentally nipped when replacing the cover, would not perforate, and although they are, of course, restrained after a certain amount of inflation, it is evident that they are immensely strengthened by the light fabric lining. How they would behave in work we cannot say, but they should certainly be put to test with as little delay as possible.

\* \* \*

A decision of some importance to motor car manufacturers was given on February 11th in the Court of Appeal, before the Master of the Rolls and Lord Justices Romer and Mathew. The case was that of Sanderson v. Collins, and the facts were that while Collins's carriage was being repaired by Sanderson, who is a coachbuilder, Sanderson lent him another vehicle. This latter was taken out by Collins's coachman, without permission, and, contrary to implied instructions, he took some of his (the coachman's) friends for a drive on Coronation Day. As a result of their frolic the carriage was smashed, and the coachbuilder sued Collins for damages. The County Court Judge, before whom the case was originally tried, found that Collins was not liable for damages resulting from the act of his servant under such circumstances. That decision was reversed on appeal to the Divisional Court, and a further appeal was made to the Court of Appeal. Here the three judges named above concurred in reversing the decision of the Divisional Court and restoring the judgment of the County Court Judge, on the ground that a master was not responsible for the actions of his servant while that servant was outside the master's control.



THE ART OF THE FOUNDER. An aluminium casting of the upper half of a crank chamber for a four-cylinder petrol engine is the subject of the above photograph which was taken at Messrs. Mills's foundry at Sunderland. The number of cored bosses, oil ways, and internal and external webs make this a most difficult casting to produce, yet, as is seen by the engraving, in Messrs. Mills's hands a perfectly clean casting with every feature clean cut is produced straight from the mould.



FRENCH ANTI-SKIDDING TRIALS. One of the bends which the cars had to negotiate at speed.

Alderman Robb, Mayor of Tunbridge Wells, has entered the motor car class at the Technical Institute of that town.

\* \* \*

The German Automobile Club has increased its membership by one hundred and thirty members during the past year.

\* \* \*

On Monday night a Stanley steam car and a Locomobile called at Messrs. Jones and Co.'s works, Lichfield, for slight adjustments, *en route* for Liverpool, and left behind a pump, which the owners can regain possession of by sending their address.

\* \* \*

Really, really, our good friend Georges Prade published the forty-three entries for the consumption tests of his paper *L'Auto* in a very incomplete form. In eighteen instances out of the total, only the name of the entering firm is given, no details of the cars or engines at all being afforded. In ten cases the price is mentioned only, while for the rest the horsepower is given.

\* \* \*

Jasper Road, the very steep though not long hill out of Farquhar Road, S.E., was quite the favourite test hill for the cars running outside the Crystal Palace show. It is stated to be one in five and a quarter, and certainly looks it. It is not only its steepness which makes it hard, but it is approached by a sharp curve, so that it cannot be rushed, as the start has to be made at three or four miles an hour. Further than this, the grade is curved, so that the balance gear is hard at work most of the climb. Another very steep hill is known as Foxhill. It is in quite a different direction from Jasper Road, but it is considerably longer and of about the same steepness. It, too, can only be approached at a crawl, and the surface is much worse than Jasper Road. We came up it on the 18 h.p. Chenard-Walcker with a full load of four, and the car made nothing of it. This vehicle, by the way, has been still further improved since we tried it in Paris during the progress of the Salon last December. The elasticity of the engine has been still further increased, and there seems to be an even greater reserve of power. This has been accomplished without any objectionable results; in fact, the engine runs more smoothly than before, and the carburetter is perfectly silent in action.

The Miesse car in future will be known as the Turner-Miesse car, as it has been found that the name gives some people the impression that the car is of foreign origin, and not built in Wolverhampton. As a matter of fact, it is all English, the only foreign thing about it being certain patents under which it is made.

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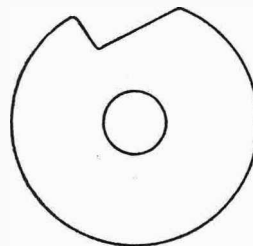
*Apropos* of the Gordon-Bennett race in Germany, the hotel people of Homburg have already made up their minds that the event is to prove a veritable goldmine. The hotel proprietors have formed a league, with a scale of prices, and already £2 10s. per night is being asked for rooms. If the tariff for victuals is to be raised in like proportion, we fancy that hotel and restaurant proprietors will alone form the Gordon-Bennett audience.

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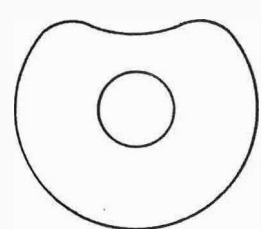
A good opening for the adoption of public service motor 'buses is presented at Perth. The Town Council has just purchased the tramway system, which is described by the local press as "nothing more or less than a lot of old iron." for £21,800, and it is estimated that an expenditure of about £70,000 will be required to electrify the system, and put it in working order. The question has been raised by several of the more enlightened citizens as to whether it would not be wiser to start a service of motor 'buses, rather than sink any more of the rate-payers' money in what is practically a forlorn hope. Electric tramways appear to be altogether unsuited to local needs, and the corporation would be well advised to acknowledge frankly the error of its ways, and to start *de novo* with motor 'buses, which, by the way, are now well tried, and have proved their efficiency wherever they have been introduced. Even the money paid for the tramways may on one view be regarded as not absolutely wasted, as by its means a formidable rival to any motor omnibus service has been extinguished, so that the course is clearer than it otherwise would have been.

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There are, we know, many car owners whose vehicles are fitted with engines having the De Dion type of contact-breaker, which have been supplemented with a trembler coil. In many such instances trouble has been experienced with the ignition after such alterations. Those of our readers who have



Ordinary cam form.



Improved cam form.

so suffered will be glad to know that Mr. W. James, of 166, Borough Road, Birkenhead, has devised a special form of cam which experience has proved to be very effectual on many refractory motors. The illustration given herewith is sufficiently clear to render further explanation unnecessary, though it might be said that existing cams can be converted to the new form.

OCCASIONAL GOSSIP. By the Autocrat.

I hope at the Agricultural Hall show which opens a fortnight to-day there will be less "paper" about than formerly. Impelled by what I think can only be called mistaken generosity, Mr. Cordingley has been in the habit of sending to each exhibitor a very large number of free tickets of admission. These tickets have been distributed broadcast, and the result is that almost every evening, and particularly on Saturday evenings, a most undesirable class of visitor is found at the show in shoals. These people are absolutely useless to the exhibitors, as the majority of them could not even buy petrol, let alone cars, and one wonders how they have found the necessary cash to pay their tram and train fares to the Hall, though it is stated—I know not with what truth—that a very large proportion of the undesirables come from Islington and the immediate vicinity of the building which is affectionately known among motorists as the "cattle shed." There may have been a time when good rather than harm resulted from this wholesale distribution of many thousands of free admission tickets, as the presence of the unwashed may have resulted in their becoming, as it were, educated up to motors to some extent, but I think this time is past, and there is no doubt whatever that the show is now harmed and not benefited by their admission. Mr. Cordingley may say it is not his fault, but the fault of the exhibitors who distribute the tickets so unwisely, but as he knows they do this he should cease to issue them.

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I think most motorists were glad to read the news last week that the size of the stands at the Crystal Palace motor show would be cut down next year. Quite a number of the exhibits were needlessly large, and many cars were shown which were to all intents and purposes duplicates of each other. A representative show must necessarily be large and to some extent bewildering to the visitor who is not thoroughly well up in his subject, but there is no reason why it should be made needlessly extensive, and consequently wearisome. The show which closed last week could, by reducing the size of the stands, have been restricted entirely to the main floor of the building. In fact, I am by no means certain that it would not have been possible to have left the area which is cut up by beds of shrubs at the south end entirely alone. By the way, only those who knew the Crystal Palace well realised that the greater portion of the exhibits at this end were standing above a fountain which had been floored over for the occasion.

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Lord Shrewsbury's proposal that members of the industry should be excluded from the committee of the Automobile Club strikes me as being a somewhat mistaken one, as if it were carried out it would rob the club of the assistance of some of the best and most practical heads which have been concerned in its management and direction. It seems to me that men should be considered on their merits, and that their professional occupation should not enter into the matter, because it is possible for a man to have no direct connection with the industry and yet to be less disinterested than if he had. For instance,

it might be equally reasonably inferred that a consulting engineer who had not a penny directly invested in the industry was not eligible, because from time to time he was called upon to give professional advice to different manufacturers and designers of motors. The same remarks might apply to a solicitor because part of his income was derived from defending members of the club when accused of exceeding the legal limit or otherwise infringing the motor car regulations. Then, again, a military officer who was retained by the War Office to advise it on motor matters might be objected to because he owed his official position to the motor, so far as the War Office was concerned. Many other instances might be cited, but I give those which come into my mind first. It seems to me that if a member of the club is unfit for the committee because of his profession or occupation, he should be expelled the club, as he is not fit to be a member of it.

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My objection to Lord Shrewsbury's proposition to exclude the motor makers from the club committee holds good so far as the exclusion of the members of the automobile press is concerned, and for precisely the same reasons. I can offer an impartial opinion on this matter, as neither the editor of *The Autocar* nor any member of the staff is upon the committee of the club. The editor informs me that this policy has been pursued intentionally, because he regards it as one of his first duties to give the motor world news of interest to it, and if he or anyone else connected with the paper were upon the committees of the club certain items of news which are now published would have to be withheld, because their publication would lay the paper open to the inference that matters had been divulged which should not have been publicly discussed. At the same time, I consider it would be a bad thing for the club if such active and critical members of its committee as the Hon. John Scott Montagu and Mr. Spooner were not permitted to serve, though it might be better for their own professional interests, if only because of the time and energy their club duties absorb.

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After the check administered to him by the Guildford Bench on Saturday last, it is possible that Sergt. Jarrett may discontinue his long range timing of motors, and confine his attention to working up charges of driving to the public danger. I was present in court at Guildford when Mr. Swindley, in the witness-box, tested the sergeant's watch. From the officer's evident uneasiness and his attempt to interfere with the test—which interference, by the way, was naturally resented by the witness—I should not like to say that Jarrett was ignorant of the little peculiarities of his instrument. I do not suggest that he has ever intentionally tampered with it when timing a car, but it is surely high time that the heaping up of evidence (?) against automobilists by the aid of watches which can be absolutely stopped by a slight pressure of the finger should cease. I wonder how many times the chronograph hand of the watch has been accidentally and unintentionally stopped during the timing of a car.

## THE MANUFACTURE AND USE OF PNEUMATIC TYRES.\*

Mr. Siddeley said his object was at the moment to discuss the state of the pneumatic tyre at present reached. In the question of manufacture he would only touch upon that portion of the subject which he thought valuable to the user. A slight knowledge of this kind was undoubtedly useful to the car owner to enable him to get the best results. He therefore steered clear of technicalities. It was his experience that a very considerable proportion of tyre troubles could be avoided if their owner were conversant with certain elementary principles of construction. A certain amount of such knowledge grafted upon practical experience was far better than sheer ignorance. The two important problems before the tyre manufacturers are primarily to produce a casing or outer cover which shall give satisfaction, and, secondly, so to blend a mixture of rubber that when vulcanised the rubber and canvas would become homogeneous, and would withstand the friction created by the running and the driving effort.

### Tyre Materials.

The "casing" was composed of cotton cloth made of long fibre yarn. The quality known as Sea Island was most favoured as having the longest staple, and was therefore the most expensive. Egyptian yarn was also used; indeed, on the whole, there was little to choose between the two. In the early days linen had been used as stronger, but flexibility was what was chiefly required, linen casings invariably cracking at the point of flexion, which occurs a little above the half-way point on the walls of the tyre. That was the dangerous point on all tyres, for there a constant saw-like action was going on. The cloth required the greatest care in preparation; it must be quite dry or trouble resulted in the process of vulcanisation. After being dried the cloth went through the frictioning process, in which it was impregnated with rubber solution of a vulcanising nature. It was quite useless to spread the solution only, as then it did not enter the folds of the canvas sufficiently to make it unite.

Frictioning was forcing the rubber solution into the canvas. "Spreading" consisted of running the fabric between rollers and feeding rubber solution on to it. This served well enough for bicycle tyres, but there was no comparison between the weights and stresses of these and those which motor car tyres were called upon to sustain. Mr. Siddeley was of opinion that this difference would have to be more fully recognised by makers of motor bicycle tyres than was at present the case. After "frictioning," the fabric was cut across the threads at 45° into diagonal strips of tyre lengths. This allows the canvas to adapt itself to the arch of the tyre. It was impossible to use canvas cut upon the straight for this purpose. Cut as just mentioned, the tyre was prevented from rolling from side to side when in position. Further, the diagonally cut canvas provided short strands practically anchored tangentially to the rim on each side, so that, in addition to preventing side roll, the drive to the road was delivered through the threads in the direction of their length. A difficulty in connection with the work was that so much more circumference had to be dealt with in the tread than at the sides. Mr. Siddeley then caused a slide to be thrown upon the screen in which a tyre maker was shown constructing a casing, and the wrinkles formed at the sides of the tyre were plainly evident. The manner in which these wrinkles, or folds, are smoothed out is one of the tests of a good operator. The complicated process of forming the bead of the cover was performed in the operation shown. Upon its regularity and correct spacing at even distance from edge to edge throughout largely rested the durability of the tyre—certainly its power to keep in the rim when inflated to enormous pressure. The bead was composed of hard rubber of vulcanising nature run through a die. The rubber of the bead is so mixed that when vulcanised with the rest it becomes harder to afford the necessary stiffness. The strength of the tyre entirely depended upon the casing, and this was obtained by the number of folds of canvas incorporated in the casing.

The standard types of tyres had folds of canvas as under:

Three folds of light cloth for voiturette tyres.  
Three folds of heavy cloth for light car tyres.  
Four folds of heavy cloth for ordinary touring car tyres.  
Five folds of heavy cloth for heavy touring car tyres.

### The Preparation of the Rubber.

Coming to the manufacture of the rubber from its raw state, Mr. Siddeley remarked that the huge blocks of native rubber frequently shown at exhibitions were quite exceptional and only prepared for show. Mr. Siddeley then gave an interesting description of the cutting up, boiling, and rough rolling of the raw rubber, which latter process is done in company with constant streams of water. The rubber then passed in crinkly sheets to the drying room, whence issues an odour so nauseous as to baffle description. The pipe of Mark Twain's Arab is a mere circumstance to it. The mixing of the cured rubber with sulphur and other vulcanising and roughening ingredients, with its subsequent calendering in huge rolling mills and cutting up into slips for handling by the tyre makers proper, was fully described and illustrated on the screen. The care and skill needed in applying the necessary thickness to the casing to properly fill the mould in which the tyre is finally shaped and finished were next described. The process of vulcanisation or cooking the tyre was then referred to, and the heavy nature of the moulds and the huge dimensions of the ovens pointed out on a screen picture. The heat necessary was, said Mr. Siddeley, obtained entirely through steam. After sufficient vulcanisation the tyre was withdrawn, forced off the former, and was then complete save for a little trimming. If the tyre had to have a tread, it underwent a further cure. The tread was built up separately, and after being solutioned to the casing the whole cover was wrapped upon a former with canvas and underwent a second process of vulcanisation. The process of manufacturing rubber was analogous to making bread. It was kneaded, mixed, and baked, and as the border line of properly toasted and over toasted bread was very fine, so it was between sufficient and over vulcanisation. Hence the danger of tyre repair. A reputable firm would refuse many repair jobs knowing that the tyre could give little or no service after the job was done, but people without any reputation to lose would do the work because they were so instructed. It was a most difficult matter to repair used tyres satisfactorily. As the construction, so the repair of tyres called for great knowledge, skill, and care.

### How Inner Tubes are Made.

The methods of making inner tubes by passing the uncured rubber through a kind of sausage machine through a suitable die, so that it issues in tube form, and also by pulling strips of the uncured sheet rubber on mandrills and joining them up by wrapping with canvas, were next described and illustrated on the screen.

To show how largely steam entered into the manufacture of indiarubber, a view of the boiler houses of the Continental Rubber Co.'s Works at Hanover was thrown upon the screen. Indeed, all the views of rubber handling and machining were from photographs kindly lent by the Continental Company. It was only to such firms as this and other houses that the development of the industry could come, as enormous expense was incurred in experimenting, and to deal with trouble arising from mistakes or slips enormous resources were required. In the early days of the automobile movement the author had to cut up and sell thousands of pounds worth of tyres at scrap prices—2d. per lb.—which tended to make manufacturers conservative. Mr. Siddeley then by means of some excellent slides gave a most comprehensible description of the new Palmer automobile tyre, which was fully illustrated and described in the columns of *The Autocar* of December 26th, page 783, and which a large number of our readers doubtless examined at the late Crystal Palace Show. He showed how the old difficulty of making a cord tyre had been very largely overcome by the use of cord of elliptical section, which stood on its sides at the edges but was turned over flat on the tread of the tyre. He was of

\*A paper read by Mr. J. D. Siddeley before the Automobile Club on February 25th.

opinion that a tyre of this construction was less open to the troubles caused by friction than the ordinary type, for the simple reason that there were only two layers between which friction could arise instead of four or five. What this friction meant had been demonstrated by the Palmer Tyre Co. Two tyres, one ordinary, one cord, both inflated to 80 lbs. to the square inch, were run for fifteen minutes on a testing machine. At the end of that time the pressure on the ordinary tyre had increased to 100 lbs. per square inch, while that in the cord tyre had only risen to 90 lbs. per square inch. The tests on the testing machine were much more severe than any that could be produced on the road. Some experiments had shown, however, that the heat developed in a tyre after running for two or three hours on the road may reach 185° F. There could be no question as to the increased resiliency of the Palmer cord tyre, and there must be an advantage as to comfort and speed over the ordinary tyre built up of several folds of canvas, which must absorb more power. Therefore the author thought this novelty made a step forward in tyre construction. On the other hand, the tyre had not yet been tested in practice as to its puncture-resisting qualities. He had seen tyres which had run 2,000 miles and were still in as relatively good condition as the heavier tyres might be at the same distance. But a lengthened road experience was necessary.

A further point demanding attention was the provision of an effective non-slipper and protector. We were, although we had advanced, still far from the real point of satisfaction. It was hard to indicate the direction of ultimate success. The Concours d'Antiderapants now being carried out across the Channel might point to a solution. The entries showed two forms of purely metal non-slippers, one being the Parsons, three in which steel rivets were combined with the rubber cover, three in which steel plates were combined with the rubber cover, one of iron associated with leather and rubber, and three of iron riveted on leather vulcanised on rubber. Iron riveted on leather independent of rubber formed the largest class, there being six of this description and one of riveted leather without the employment of rubber at all. Finally there were two entries in which the non-slippers

were distinct from the tyres but attached to the rims, and two in which they were attached to the vehicle itself. The tendency was to look to iron or steel mingled with leather or rubber, or both, to provide the necessary article, but the effect of damp on the tyres and rust on the metal should not be overlooked. Notwithstanding, these trials might afford the clue to the effective non-slipper, which would make fast driving on a wet as safe as on a dry road.

Mr. Siddeley concluded his extremely able and most interesting paper with a few hints upon the selection of tyres. They were, briefly, as follows:

*Covers.*—(1.) Many folds of canvas do not necessarily mean strength. The addition of layers of canvas was unskilful. (2.) Beware of wrinkles on the inside of a cover. They showed bad construction. (3.) Never purchase tyres having fat edges; the lips should slope away to a knife edge. Fat or thick edges caused nips and bursts of the inner tubes.

*Tubes.*—The endless variety were always uncertain. Under the best manufacture they must have thick and thin patches—a vital defect. Red tubes were preferable to grey ones, as nips could be seen at a glance. There was no difference in the qualities of grey and red rubber. He strongly advised every motorist to stop and repair any sections cut even at some personal inconvenience. Also to carry a supply of rubber and canvas gaiters. The author introduced these for the first time in the 1,000 miles of 1900, and subsequent use had confirmed their utility. It was easy to lace one of these round a tyre and so avoid a serious breakdown. Lastly, he would advise all to deal only with firms of repute in the tyre trade. There were firms (and the tendency would be for such to increase) who called themselves tyre manufacturers or repairers who were utterly unworthy of confidence, and who would take anyone's money without consideration for the value given in return. The manufacture of tyres was at present surrounded by difficulties, and only houses of established reputation should be patronised by those who relied upon them for what, after all, was one of the most vital spots in an autocar—its tyres.

A discussion followed the reading of the paper.

## PROPOSALS FOR NEW METROPOLITAN ROADS.

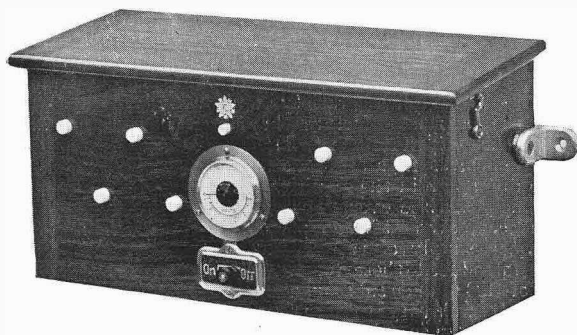
Earl Russell, in his evidence before the Royal Commission on London traffic, after dealing with existing conditions and making suggestions for the better regulation of traffic, made several sweeping proposals. The first of these was the provision of more viaducts similar to Holborn Viaduct, where large volumes of traffic cross at right angles—for example, Fleet Street to Ludgate Hill. Similar to this proposal, though of less magnitude, was the suggestion for carrying foot passengers across streets either by bridges or by subways. The next proposal was what might be called "Balfour" radiating thoroughfares from the heart of the town to the outskirts. Such roadways, he suggested, would have to be 120ft. wide at least, and would cross most of the existing roadways by bridges in order that its traffic might not be obstructed. Four lines of electric tramway should be run under the surface—two for slow traffic and two for fast traffic, with stops at half-mile intervals. The fast traffic line would correspond to an electric tube railway. The surface of the road would be available for slow traffic at the sides and fast motor traffic in the centre. Foot passengers would cross where necessary by bridges.

Mr. Rees Jeffreys' proposals on behalf of the Roads Improvement Association were also of a comprehensive character. In the first place he set forth the necessity for a central authority to lay down a general plan to which owners of building estates and speculators would be compelled to conform. There was a need for a single authority exercising jurisdiction over all the means of communication within a radius of at least twenty-five miles of St. Paul's. As to the formation or *personnel* of the new tribunal, he suggested three alternatives: (1.) That the powers of the Metropolitan Water Board—the only existing body that possesses a representative character—should be extended to roads. (2.) Appointment of a traffic commission, com-

prising representatives of the county councils of London, Kent, Surrey, Essex, Buckinghamshire, Hertfordshire, and Middlesex, and the county boroughs of Croydon and West Ham. (3.) A special commission of experts, which, however, being a merely judicial tribunal, would be unsuited. He suggests the construction of a number of new wide main roads. First in importance, as being most urgently needed, he places what he calls a boulevard round London to relieve the congested central portions of London. Radiating from this encircling thoroughfare which cuts Woolwich on the east and Hammersmith on the west, he proposes the construction of eleven new main roads out of London, these roads to consist of a number of separate tracks—viz., one for electric trams, a second for automobiles and cycles, a third for vans, carts, traction engines, and other slow-going traffic, and a fourth for foot passengers, the surfaces to be covered throughout with dustless materials. The proposed new roads comprise the following: From Goldhawk Road to Slough, Paddington to Uxbridge, Kilburn to Harrow and Pinner, Marble Arch to Elstree and St. Albans, Shoreditch or Cambridge Heath to Snarebrook, Stoke Newington to Walthamstow and Chingford, Lee Green to Eltham, Elephant and Castle to Peckham, Catford, and Bickley, a short road connecting the Old Kent Road with the last named, Wimbledon Common to the Sutton and Brighton Roads, Barnes Common to Epsom, and Richmond Station to Chertsey. The ways and means of constructing these roads are discussed, and the project, though at first blush somewhat Utopian in its character, does not seem, as presented by Mr. Rees Jeffreys, to be altogether outside the bounds of possibility. Indeed, there is no reason why it should not be undertaken by instalments extending over a number of years and paid for as public funds may be available. Such a scheme would prove of advantage in many ways.

## LACOSTE COIL IMPROVEMENTS.

Herewith we give two illustrations of the new Lacoste coil, as constructed for working a four-cylinder engine. Each coil is fitted with a simple form of magnetic contact-breaker, which should require the least possible amount of adjustment, and should work at a very high speed, consisting as it does of two light springs. The principal feature, however, is the fitting of a series of switches (shown in the second illustration), which enable either the high-tension circuit to be interrupted by shorting the



The Lacoste four-cylinder coil box showing the testing buttons, voltmeter, and switch.

circuit and preventing the plug sparking, thus enabling each cylinder to be tested independently, or by the depression of the upper row of buttons the whole electric system of the coils individually can be cut out by a similar method. A voltmeter is provided on the front of the box, as is also a switch, so that when the switch is placed in the "on" position

and the button immediately above the voltmeter is depressed, the instrument registers the pressure of current given off by the batteries. We may say that when the box is closed the distance between the



The Lacoste coil open, showing the high and low tension wire terminals and the spring blades for "shorting" the current when the buttons are pressed.

ends of the terminals and the spring blades to the push buttons is sufficiently great to prevent the formation of a spark gap. The whole of the work is admirably carried out.

## MOTOR 'BUSES FOR LONDON.

Before the Royal Commission on London Traffic, on Feb. 25th, Mr. J. L. Pound, a director of the London General Omnibus Co., Ltd., and Chairman of the London Omnibus Owners' Federation, giving evidence on behalf of the London omnibus proprietors, said every effort was being made by the omnibus proprietors to obtain a serviceable motor in lieu of horse traction. There was every reason to believe that before long they would be in possession of a mechanically perfect and commercially serviceable motor, specially constructed for working in the London streets. This declaration is particularly significant, as it means that the motor 'bus will be spared the necessity of fighting its way into public favour. The fact of its utility being recognised by the directors of a company responsible for the conveyance of so large a section of the community as those who at present use this company's vehicles

will at one bound place the motor 'bus in possession of the streets when the opportunity occurs for the transition to be made from horse-drawn to motor-propelled 'buses. Though not absolutely positive, the statement points to the adoption of a course which the company is convinced will be to its eventual advantage. It could not be expected that the Chairman would say anything that would commit his company, though he clearly indicates the policy that it is intended to adopt. This is by far the most definite statement that has yet been made on the subject, and we may take it for granted that when one company leads off others will not be slow in following suit, so that with horse-drawn 'buses out of the way a great step will have been made towards a more sanitary condition of the London streets, and a perceptible easement of the congestion of the traffic.

As King Leopold's autocar was leaving the Laeken Palace the other day, being driven as usual at a great rate, it knocked down a young man, injuring him somewhat severely. As his friends do not consider that the "divinity that doth hedge about a king" extends to automobilism, they have taken out a summons on behalf of the injured one.

Baron Pierre de Crawhez, the distinguished Belgian automobilist, must possess a very remarkable collection of trophies won in his different races. He has just returned from Algiers with the Sneden cup, gained in the race organised by the Algerian Automobile Club, with his 70 h.p. Panhard. He complains a great deal of the bad state of the roads.

## THE FORTHCOMING SIDE-SLIP COMPETITION.

The entries for the side-slip competition to be held by the Automobile Club about the beginning of April, closed on Monday last and are as follows: Mr. Mark Vivian, the Wilkinson Tyre and Tread Co., the Continental Caoutchouc and Guttapercha Co., Mr. Alexander Nicholson, Commander Chas. T. Scott, Messrs. Rourke and Horsburgh, Mr. Wm. Cross and Sir Chas. Ross, Mr. H. Taylor-Stephens, Messrs. Sainsbury's Anti-skidders, Ltd., Mr. Henry S. H. Cavendish, Mr. E. Midgley, Mr. Wm. Hunt, Mr. Samuel Butler, Mr. W. Maitland Edwards, Messrs. Gare Patent Tyre Co., Mr. Henri David, Messrs. Grose, Ltd., Mr. W. H. Manning, Mr. John Harrington, Messrs. Parsons Non-skid Co., and Messrs. Wm. Jenkinson and Co. We give a brief outline of the majority of the devices entered, so far as we have been able to ascertain particulars.

The device entered by Mr. Wm. Cross and Sir Charles Ross is known as the Skip sprag. It consists of a triangular frame pivoted about the back axle, and pointing backward like an ordinary sprag. The apex of the triangular frame is provided with three or more steel teeth arranged in two or more lines, so that they cannot get jammed in a tramway groove. The arrow is normally kept clear of the road by a spiral spring, which can be depressed by means of a pedal, so as to press the teeth into the road surface when required. The arrangement can also be used as an ordinary sprag, and is stated not to damage the roads. Its weak point appears to be that it is not in constant action, and by the time the pedal is depressed the side-slip, if a bad one, will have gone too far for it to be checked. At the same time, if it is in action there is no doubt that it will prevent side-slip.

The Hunt side-slip preventer is of the form in which gripping discs are brought into contact with the road surface. There are preferably two of these discs carried on a transverse shaft, which works in slotted brackets attached to some part of the car. The shaft is operated by a hand lever within reach of the driver, so that the device can be brought into or put out of action as desired. The lever is held by a ratchet in the required position.

Mr. Taylor Stephens uses a number of fin-shaped plates made of metal, which are riveted to the tyre or to a band secured to the tyre. These metal fins act as teeth, and so get a bite upon the road.

No particulars are available of the Butler arrangement, as the inventor wishes to keep details private till the trials actually come off.

Commander Scott's device consists of a wire woven belt or mat forming an outside covering to the tyre. It also acts as a puncture preventing armour for the tread, as well as a non-skipper. It is constructed of steel spring wire with only four ends, no welding or brazing being required. It is kept on the tyre by hinged side supports of wire or chain connected to an endless ring on one side and to a ring coupled up by a right and left-hand screw on the other. We understand it is quite inexpensive to manufacture, and is now being tested on a 24 h.p. car.

Mr. Cavendish's anti-skid is not unlike the Skip sprag of Mr. Cross and Sir Chas. Ross, but instead of having steel teeth a small wheel is fitted to the apex of the triangular frame or sprag which runs along the ground. This small wheel has two cutting edges upon it, the face being slightly hollowed out. It is put into action by forcing it down on to the ground by a lever by the side of the driver. Arrangements are made for varying the pressure, so that the driver can set 20 lbs. or 30 lbs. pressure upon the non-skidder for macadam, about 50 lbs. for wood, and 100 lbs. for asphalt or stone setts. When not required the lever is pushed forward and the wheel comes away from the ground, being held up by another spring.

The entry in the name of Wm. Jenkinson is known as the Crown detachable motor tyre protector. It forms a complete cover to the tyre and is laced over the rim all the way round. It is made of leather in combination with other material, but it can be better understood from an illustration which we hope to publish shortly. It is claimed to be an efficient preventive of side-slip, besides

affording complete protection for the cover, and, further, that any loss of resiliency is made up by its additional grip of the road as compared with an unprotected tyre.

The Edwards non-skid device consists of a specially selected and toughened chrome leather cover, which has been moulded to closely fit the tyre, and to which it is securely vulcanised. Teeth or transverse projections are riveted at regular intervals round the cover, and project sufficiently beyond the tread to secure a firm and continuous grip of the road. In construction the aim has been, not only to provide a reliable non-skidder, but to introduce one of a more lasting and permanent nature than those now on the market. The makers claim that the Edwards device is scientifically correct, and, moreover, is absolutely non-puncturable, and will run 3,000 miles without any appreciable wear. It is, roughly speaking, a stronger rendering of the Edwards corrugated cover of 1894—the first and original non-skidder for pneumatic tyres. This was very successful—one of the most successful non-skidders ever made for cycles—but the cross teeth or projections moulded in the tyre set up a certain amount of vibration which was objectionable upon a bicycle.

This is all we have been able to gather concerning what may be called the unknown devices, but we hope to say something about the other new comers next week.

To recapitulate the better known ones, the Wilkinson appliance entered is the well-known tread with the steel bristles projecting from it the whole way round the cover. The new bracket non-skid which we illustrated in our report of the Crystal Palace Show, page 262, could not be entered in time. This is certainly a pity, as it is a very promising device.

The Continental is of the stud type, and consists of corrugated metal discs vulcanised into the square rubber tread of the tyre. It has been extensively tried on the Continent, but it is not recommended for touring, as it has been devised as a non-skidder for town use and moderate speeds.

The Sainsbury anti-skidder is a prong arrangement, three to each wheel, projecting on each side of the tyre. It has been fully described in *The Autocar*, but an illustration of it appears to-day in the report of the French side-slip trials.

Mr. Midgley's non-skid takes the form of X chains which are held to the cover all round by steel rings. It was illustrated in *The Autocar* of November 7th, 1903, page 573.

The Grose is a rivetted leather band cemented to the tyre somewhat after the style of the Samson-Hutchinson or See devices.

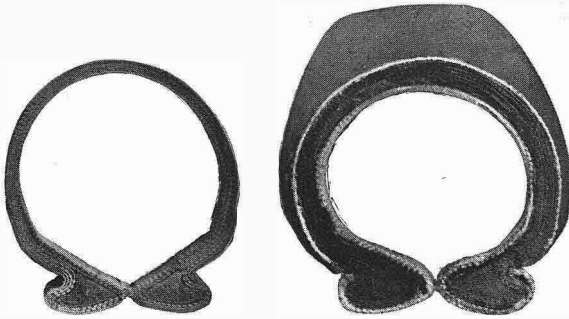
The Parsons is too well-known to need description, though incidentally it is illustrated to-day in the report of the French trials.

## LONDON TO EDINBURGH.

A good demonstration of the capabilities of the new 6 h.p. Wolseley was afforded by one of these cars being driven from London to Edinburgh with only one involuntary stop just beyond Newcastle, where a traction engine was sunk almost up to its axles. It was found the stoppage was caused by the short circuiting of the sparking plug through getting wet. This was put right, and the journey completed. The car left London on Thursday afternoon, the 25th February, at four o'clock, with driver, passenger, and luggage. Stamford was reached the same night. The next day the drive was to Newcastle, where the night was passed, and on Saturday Edinburgh was reached. The roads were bad throughout, and heavy in many places, the snow being particularly trying in Northumberland and across the Border. This run, like the other one we chronicle this week with a 6 h.p. car, shows that when thoroughly well made these little machines are quite suitable for touring purposes as well as for runabout work.

## TYRE REPAIRS.

During the past six months we have received many excellent reports of the tyre repairs executed by the Glasgow Motor and Tyre Co., from whom we have obtained a number of sectional samples showing the manner in which they carry out their work. The accompanying illustrations show a section of tyre fabric from which the old rubber cover has been entirely removed prior to the fixing of the new cover.



By the firm's system, however, before the re-rubbering is commenced the fabric is very carefully examined, and any strengthening which is required is done; in fact, where required the whole of the cover is reinforced by a particularly strong fabric. This, while being light, gives evidence of very great strength.

When the fabric is in a condition to receive the rubber a layer of asbestos cord is laid across the outside of the cover. This asbestos layer is clearly shown in the section of the re-rubbered tyre. The object of the asbestos is to prevent the fabric becoming damaged by the heating which is necessary for the proper vulcanisation of the rubber. As will be seen, the quantity of Para rubber used on the tread is by no means inconsiderable, while the quality is of the best, the rubber showing signs of great tenacity and resistance to damage by cuts. The right-hand section shows the tyre fitted with the Cassell non-puncturable band. This band is laid inside the tyre, and consists of a vulcanised fibre band which, it is claimed, gives sufficient elasticity not to affect appreciably the running of the tyre while it strenuously resists the penetration of any sharp puncturing agent. This band is covered with a complete lining of the canvas fabric previously mentioned, this fabric being continued around the beaded edges of the tyre so that internal creeping is thereby avoided, while bursts, it is claimed, are absolutely prevented. We may say that the prices charged by the company are distinctly moderate in comparison with the quality of the work.

## POLICE TRAPS.

A St. Neot's correspondent writes: "Would you permit me to warn fellow motorists, through your columns, that the police trap at Buckden (on the Great North Road, sixty-one miles from London) is still in existence, and to urge them to drive slowly when in the vicinity of this place? The trap at present is at the approach from the north end, and I have actually seen two constables skulking behind a low wall. The fines, by the way, are very heavy in this district."

## CLUB DOINGS.

### Hertfordshire A.C.

This club has decided to become affiliated with the A.C.G.B.I. under Scheme No. 2. The club committee is also taking active steps to counteract the action of the St. Albans Corporation in seeking to get the ten miles speed limit imposed throughout that borough. A memorial on behalf of the club has been forwarded to the Local Government Board in opposition to the application, and protests from a number of St. Albans residents have also been sent up. Candidates for the county council are also being interviewed as to their attitude towards automobilism.

### Recent Affiliation with the Motor Union.

Mr. Rees Jeffreys informs us that the following clubs have within the past few days joined the Motor Union under Scheme No. 2, which provides for the payment of an affiliation fee of 5s. per member: The Reading A.C., Oxford A.C., Sheffield and District A.C., and the Eastern Counties A.C.

### Southern Motor Club.

The first annual meeting of the Southern Motor Club was held at headquarters, the Lander Hotel, Lander Road, Stockwell, on Thursday, 25th ult., under the presidency of Mr. T. W. Maynard. Ten new members were elected, after which Mr. G. Fisher presented the statement of accounts, which showed a satisfactory balance in hand. On the proposition of Mr. Fisher, seconded by Mr. East, Sir Frederick Cook, M.P., was re-elected president, Mr. J. Howlett was re-elected vice-president, Mr. May was also elected a vice-president, Mr. C. E. Byquase was unanimously elected captain in succession to Mr. King (resigned), Mr. H. Jones was elected vice-captain, Mr. W. L. Lorkin re-elected honorary secretary, Mr. Lloyd was elected treasurer, Mr. Fisher chairman of committee, Mr. W. Howlett vice-chairman, and the following were appointed the committee: Messrs. Billing, Pugh, Pattison, Weston, Fenn, Maynard, and King. Hearty votes of thanks having been passed to the officers for their services during the year, the secretary announced that over £30 had been promised in prizes for competition during the coming season. A vote of thanks to the chairman closed the meeting.

### Herefordshire A.C.

The following runs have been fixed: March 5th, Abergavenny; April 9th, Rhayader; May 3rd, Dinmore Hill, (hill climbing contest, motor cycle); May 21st, British Camp, Malvern (to meet Gloucestershire A.C.); June 4th, Gloucester; June 18th, Chepstow (to meet South Wales and Gloucestershire A.C.'s); July 2nd, Brecon; August 6th, Ludlow; September 3rd, Worcester.

### Sheffield and District.

For Saturday, March 26th, this club has fixed a run to Retford. A long distance competition is also being arranged, for which Mr. James Barber has offered a gold medal.

### Scottish A.C. Glasgow to London Non-stop Run.

We have received from the secretary of the Scottish A.C. (Western Section) a copy of the rules and conditions for the Glasgow to London reliability trial for touring cars, which will be held on May 19th and 20th. Vehicles will start from Glasgow at half-past five on the first day and run to Leeds, whence they will start at six o'clock the next morning. The distance for the first day (Glasgow to Leeds) is 211½ miles, and the minimum time allowed is eleven hours fifty-four minutes. The minimum time allowed for the second day's run (Leeds to London, 201½ miles) is eleven hours one minute. The vehicles will be divided into four classes—A, petrol vehicles with one cylinder; B, with two cylinders; C, with three or more cylinders; D, steam cars.

## ROAD REPORTS.

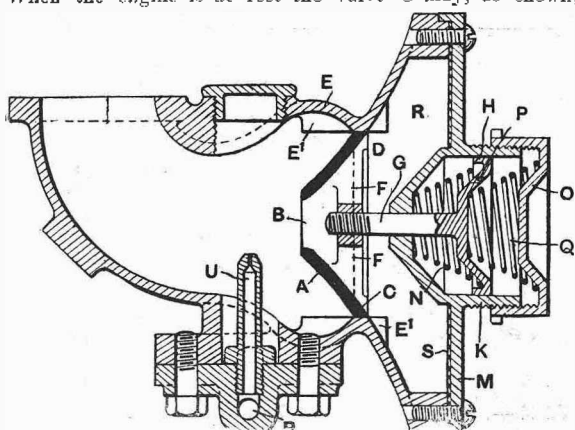
We shall be glad to receive reports from correspondents under this heading as to the condition of the roads both good and bad—in various parts of the country.

The London Road between Daventry and Dunchurch has been newly metalled, and the stones—which cover the whole width of the roadway—are as yet unrolled. Between Dunchurch and Coventry the roadsides are lined with heaps of stones ready for laying down, so that for some little time to come this section of road will be in bad condition.—F. W. WALFORD.

## THE THORNYCROFT CARBURETTER.

The abridged patent specification of the Thornycroft automatic carburetter fitted to those cars of this make which were exhibited at the recent Crystal Palace show is given herewith:

The air nozzle A of the carburetter is made in the form of a dished plate, which has an opening B through its centre, and the outer peripheral portion C of which serves as a valve, and is arranged to work endways in and normally partially close a large air inlet opening D in the side of the carburetter casing E that surrounds the nozzle. When the engine is at rest the valve C may, as shown,



Longitudinal sectional elevation of the Thornycroft carburetter.

completely close the opening D, so that on starting the engine a comparatively rich mixture will, as is desirable, be available. The combined air nozzle and valve A C is connected by arms F to a centrally arranged rod G fixed to a piston H arranged to work endways in a cylinder K formed in one with a perforated plate or support M fixed to the adjacent side of the carburetter, there being arranged between the piston H and the inner end of the cylinder a coiled spring N that serves to hold the nozzle A in its out-

ward position, and keep the valve C more or less closed until the normal speed of the engine is unduly exceeded, when it will be overcome by the greater suction then set up by each suction stroke of the engine, and allow the combined nozzle and valve A C to move inward under the guidance of ribs E' with which the casing E is provided, and so increase the size of the additional air inlet opening around the nozzle. The increase in the size of the additional air inlet and, consequently, of the total effective air inlet cross sectional area is such as to produce at a speed much above the normal an explosive mixture having an air percentage greater than that for maximum explosive energy, and the tendency is therefore to assist the governor in reducing the speed of the engine. The spring N moves the combined nozzle and valve A C in the opposite direction, and so partially closes the opening D, when the speed of the engine decreases. The cylinder K is closed by a screw cover O, and is charged with fluid—for example, air or a liquid—and the piston H is perforated, as shown at P, so that the combined piston and cylinder will act as a dash pot to prevent rapid oscillation of the combined nozzle and valve. Obviously the same effect could be obtained by making the piston to fit the cylinder loosely. The dash-pot action may be assisted by a coiled spring Q arranged between the piston H and the cover O, which may, as shown, be screwed upon the cylinder K to enable the initial position of the combined nozzle and valve to be adjusted and the force of the springs varied. The plate or support M is shown as forming with the side of the carburetter casing E, through which the air nozzle A extends, an air chamber R, the outer end of which is provided with a sheet of fine wire gauze S or the like to filter the air flowing into the carburetter through the large perforations or openings of the plate M. The device for supplying liquid hydrocarbon to the carburetter is of an ordinary kind, consisting of a vertical nozzle U extending upward into the carburetter from a liquid-hydrocarbon supply passage V in connection with a reservoir X provided with a float for controlling the normal height of the liquid hydrocarbon in the nozzle U, which is so arranged that air passing through the nozzle A will pass over it and induce liquid hydrocarbon to flow out of it and become mixed with the air to produce the working mixture in the ordinary way.

## COST OF RAILWAY MOTOR CARS.

### New and Old Methods compared.

The Taff Vale Railway Co. have prepared the following table showing the relative cost of running their new railway motor car and an ordinary train for an equivalent amount of work:

Cost for Running.	Motor car	Engine and four
	cost per mile.	coaches cost per mile.
	d.	d.
Engine coal	1.36	3.03
Water	.12	.36
Oil and other stores	.19	.46
Cleaning	.07	.33
Steam raising, etc.	.09	10
Washing out	.03	.08
Carriage lighting	.12	.32
Carriage cleaning	.10	.55
Carriage oil	.01	.06
	2.09	5.31
Engine repairs, renewals	.95	3.48
Carriage repairs, renewals	.51	2.75
	1.46	6.22
Enginemen's wages	1.37	1.98
Trafficmen's wages	.56	1.45
	1.93	3.47
Total	5.48	15 0

Thus the same amount of work can be done by the motor for 5.48d. per mile as by an engine and four coaches for 15d.



**ILLUMINATED NUMBERS.** The rear illuminated number lamp depicted above has been invented and is being made by Mr. Thomas E. Bladon, of Northwood Street, Birmingham. An oil lamp with a 12in. wick is placed on the right-hand side of a metal box, which is permanently attached to the rear of the car. A reflector projects the light through an opening in the side of the box on to a glass reflector placed at an angle across the box. This throws a light on to a plain opal sheet of glass which is placed behind a metal sheet painted black in which the registered letters and numbers are cut, this giving the regulation white letter on black ground. The number shows up distinctly at night. The lamp also provides the necessary red rear light.

## MAGISTERIAL PROCEEDINGS.

### Fined at St. Neots—Flimsy Evidence.

The St. Neots bench have long enjoyed a virulent motorphobic reputation, and this was never more strongly evidenced than on the 25th ult., when Sir Duncan E. Hay, Bart., of King's Meadows, Peebles, and 42, Egerton Gardens, London, was fined for having driven a motor car at a speed which was alleged to be dangerous to the public at Buckden on the 1st of February last. Sir Duncan was timed over the usual Buckden trap, the clocking constable standing some 550 yards from the point from which the trial quarter mile is measured, round an arc, his line of vision being more or less along the chord of such arc, and his watch struck when, so far as he could tell, the car passed a certain telegraph pole 500 yards away. Even then the officer had to look over three hedges in order to mark the car's passage past the post. It is obvious that the merest approach to accuracy is a sheer impossibility under such conditions—conditions which if adopted by a timekeeper of any sporting body would make him the laughing stock of the entire sporting world. No bench should admit such obviously fallacious evidence. That the absurdity of such testimony is now being appreciated is shown by the recent decisions of the Kingston, Woking, and Guildford benches. Sir Duncan Hay and his sisters, Miss Meliora and Miss D. Hay, testified to the facts that during the passage of this quarter of a mile the car slowed up behind a coal waggon which would not pull to the near side for some considerable time, and again in order to avoid some chickens which were roaming about the road, each time changing down to second speed, and yet the policeman swore that his watch showed that the 440 yards were covered at a speed of 25 miles per hour, which since the new Act came into force appears to be the constant speed of autocars when timed by the police. Mr. H. J. Swindley (*The Autocar*) testified to the large error which must occur in so fallacious a method of timing as that adopted by the police, and the impossibility of the car having covered the distance in the time alleged, having regard to the heavy state of the roads, the two slowings, and the two changes of speed. But in connection with the "opinion" clause in the new Act—a clause which the lawyers in the House should never have allowed to pass, and which is contrary to every precedent in English law—the village postman, who under Mr. Staplee Firth's smart cross-examination, admitted that he could only see the car for the last 170 yards of the quarter, and then while it was coming end on to him, was called to prove nothing, but to say that in his "opinion" the car was travelling at twenty-five miles per hour. The village policeman and the village postman furnish truly a marvellous combination of testimony upon which to inflict fines and endorse licenses. By the result of this case—for in none in our experience were there greater reasons for dismissing the summons—it would seem that the most lamentable clauses in the new Act are to be savagely and vindictively administered in this district. It is to be hoped that Sir Duncan Hay will not fail to appeal, for no effort should be spared to reverse a conviction which was so contrary to the evidence, not only of respectable people, but to the possibilities of the case.

### Sergeant Jarrett's Watch proved faulty.

In a case heard at Guildford last Saturday, the watch used by the renowned Sergeant Jarrett for so long in piling up evidence against automobilists was proved by Mr. Harry J. Swindley (*The Autocar*) to be equally faulty with that of Inspector Marks. The case was heard before the same bench that sat at Woking in Mr. Sibley's case, the charge being for driving a motor car at a speed of thirty miles per hour over the 176 yards measured by Jarrett at the Guildford entry to Ripley village. The defendant had never driven on the road before, and having come across a petrolless automobilist hung up about a mile back was driving to the Anchor Inn to obtain a supply of spirit, and, good Samaritan-like, return therewith to the stranded car. Therefore, as Mr. Staplee Firth (who defended) pointed out to the bench, it was, of course, extremely improbable that his client would drive into a strange village to look for an unknown inn at thirty miles per hour. The Sergeant swore as usual to his time and his methods, and called a constable to testify to the fact that in his (the constable's) opinion, although he could

only see the car for some fifty yards, it was travelling very fast. Mr. Firth then put Mr. Swindley into the box, who showed that the chronograph second hand of the Sergeant's watch could be arrested in timing and let free again by a slight pressure on the plunger, the instrument having exactly the same fault as that of Inspector Marks with which he dealt at Kingston some little time since. The Guildford bench dismissed the summons on the grounds that Sergeant Jarrett's methods were not sufficiently exact to determine the speed of the car.

## New Patents.

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

The following specifications were printed and published on the 25th February, 1904. All notices of opposition to the grant of patents on the several applications should be filed not later than the 10th April, 1904:

1903.

- 2,141. —A. Nicholson. Anti-skid composed of scraping plates attached to the wheel rim.
- 2,539 —A. Nicholson. Anti-skid composed of yielding scraping plates attached to rim.
- 2,996. —J. B. and J. B. Dunlop. Silencer.
- 3,244. —A. Eckstein and H. J. Coates. High-tension commutator for single coil circuits.
- 4,555. —L. Stroud and G. Gittos. Spray carburettor of the valve type.
- 5,012. —T. W. S. Hutchins. Variable speed gear, comprising expanding belt pulleys.
- 6,131. —L. Mellor. Cooling the jacket water by passing the induction charge through the jacket.
- 6,374. —E. Espinasse. Spray carburettor with automatic air inlet.
- 6,770. —C. Challiner. Wheel with inner ends of wood spokes interlocking inside the hub.
- 7,049. —U. Nouard and G. Nouard. Lady's head covering for use on motor cars.
- 7,857. —K. Bergmann. Brake mechanism adapted to disengage or engage when brake applied.
- 12,268. —J. B. Cateau. Explosion motor and means for governing.
- 14,090. —A. Winton. Eight-cylinder car with pneumatic governing system.
- 25,519. —B. Nusch (Frankfurter Gasglühlichtfabrik Gebrüder Michel). Automatic carburetting plant.
- 28,589. —C. V. Childs. Multiple cylinder internal combustion motor.
- 29,729. —H. David. Anti-skid of metal plates in form of sheath to be fixed to tread.

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