

THE AUTOCAR

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

EDITED BY H. WALTER STANER.

No. 441.] VOL. XII.

SATURDAY, APRIL 2ND, 1904.

[PRICE 3D.

THE AUTOCAR.

(Published Weekly.)

Registered as a newspaper for transmission in the United Kingdom.

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

EDITORIAL OFFICES:

COVENTRY.

PUBLISHING OFFICES:

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

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Notes.

A Timely Warning.

The letter which is published in our correspondence column from the Mayor of Bromley, Kent, will, we hope, be taken to heart by the automobilists to whom it refers. So far only Winchester and Dover have applied to the Local Government Board for powers to insist upon the maximum limit of ten miles an hour within their jurisdictions, but if the style of driving referred to by the Mayor of Bromley is continued there will be further applications, and, we fear, many of them. The letter we publish, although it refers only to a district, is typical of complaints which have been made in many other towns. We do not infer that in all cases they are reasonable, or that the view is as friendly and temperate as that taken by the chief magistrate of Bromley. On the other hand, there is no doubt whatever that many automobilists drive too fast through towns. It cannot be said that their driving is very dangerous, because so few accidents occur,

but it is much too fast for public sentiment just now. There is absolutely no need for it, and every man who indulges in fast driving in towns is a curse to the motor movement at the present time, and a fool to his own interests if he does not wish local restrictions to be imposed. There is no doubt that the present regulations as to motor driving are amply sufficient, but, while there is a possibility of their being made stricter, that power will be taken advantage of by the various local authorities if there is any reasonable excuse for this to be done. It does not matter how well disposed high officials may be, they cannot stem public opinion in these matters, and, therefore, we urge every automobilist not only to drive slowly through populated areas, but—and this is a most important point—to insist that his driver, if he employs one, drives quietly when his employer is not in the car with him. In nine cases out of ten, the complaints which come to hand are on investigation found to be due to the inconsiderate driving of some motor man unaccompanied by his master.

The Supply of Petrol.

Automobilists and the automobile manufacturers of this country owe much to Dr. W. R. Ormandy for so strongly emphasising their position with regard to the question of petrol supply in the immediate future. Taking into consideration the fact that the use of automobiles is increasing in this country so rapidly that the consumption of petroleum spirit as a source of propulsive power for road vehicles this year is likely to be the double of what it was in 1903, Dr. Ormandy pointed out that already, in order to meet the demand during the height of the last driving season, the specific gravity of the spirit sold by the largest vendors had been considerably increased, and that, if this year a similar, or a worse, proportionate advance was made, we should soon be purchasing paraffin in petrol cans. He indicated that it is well to remember that only about two per cent. of the world's output of petroleum is suitable for the distillation of motor spirit, even if the whole of this percentage could be collected, which is by no means the case. Also the fact that the supply was practically in the hands of one huge corporation, and that that corporation bailed from a country in which petrol consumption was already advancing by leaps and bounds, until not only is it probable that the spirit bearing oil would cease to be exported from the New World to the Old, but that the New World would itself become a competitive buyer in the Eastern Hemisphere. Further, he suggested that a corner in petrol was far from an impossibility, while a combination of the limited number of producers to raise prices, and to maintain them when raised, was a palpable probability.

The Possibilities of a Fuel Famine.

In the course of his paper, read on Thursday evening of last week, before a regrettably sparse attendance, at the Automobile Club, Dr. Ormandy struck a note of warning which should stir the club and the

industry to their depths. He asked what would be the prospects of the motor industry if it were known that next year petrol would be two shillings per gallon, with the certainty of becoming more later on. He gave it as his opinion, and quoted Dr. Meyer in support, that unless some new supply is discovered or developed prices are bound to go up, and that seriously, leaving the possibility of an artificially engineered increase in price out of the question altogether. Serious as Dr. Ormandy showed the situation to be, or likely to be within the immediate future, he nevertheless clearly and forcibly pointed out the obvious remedy—a remedy which the Automobile Club and kindred associations, backed up by the whole automobile community, should lose no time, and spare no effort to effect. Germany, which has absorbed so much of our trade, and has become so keen a competitor with us in the markets of the world, has already shown the way, by the strenuous and sustained effort her enlightened officials have made to facilitate the production and popularise the employment of technical alcohol for the production of power, light, and heat. The object of the German Government has been to render their country entirely independent of imported petroleum spirit, and this, to judge by the alcohol production statistics placed before the club on Thursday, they certainly appear to have done. If our readers will turn to the brief *precis* of Dr. Ormandy's important and valuable paper, which appears elsewhere, they will find Dr. Ormandy shows that to place petrol and alcohol upon an equal footing with regard to power production, we must be able to purchase alcohol at 1s. 1.2d. per gallon, taking petrol at 1s. 3d. Now, in Germany, motor alcohol containing ten per cent. of water can be purchased in quantities of forty gallons, casks free, but returnable, at tenpence

per gallon, and profuse and careful experiments carried out by Dr. Meyer, of Charlottenberg, in 1902, showed that at this price alcohol was a considerably cheaper source of power than petrol.

Home-made Fuel.

The exigencies of space forbid us repeating here the proofs deduced from the German and other experiments by Dr. Ormandy to show that as a motor spirit alcohol was altogether a more satisfactory and reliable substance than petrol. That if it is not better, it is at any rate quite as good, and under commonsense legislation could be produced in this country just as well and just as cheaply as it is in Germany. Moreover, the supply would be unailing, and capable of extension commensurate with the demand without an increase in price. In the commencement of these notes we indicated what, for lack of a better term, we may style the "petrol peril," and briefly the manner in which the industry may be, and we fear will be, affected by the fluctuation or manipulation of the petrol market. Therefore, it behoves everyone interested to move and to move earnestly, but that movement must be, and for obvious reasons can only be made in the direction of persuading the authorities to readjust fiscal matters as they affect the production of technical not potable alcohol. Motor builders cannot be expected to produce motors capable of working with alcohol while the price and character of the alcohol purchasable in this country is too costly and unsuitable for the purpose. They might just as well have built automobiles ten years before the passing of the Act of 1896. But steps should be taken; indeed, it appears to us, must be taken, as in Germany, to foster the production and use of technical alcohol if the disastrous effect of a shortage

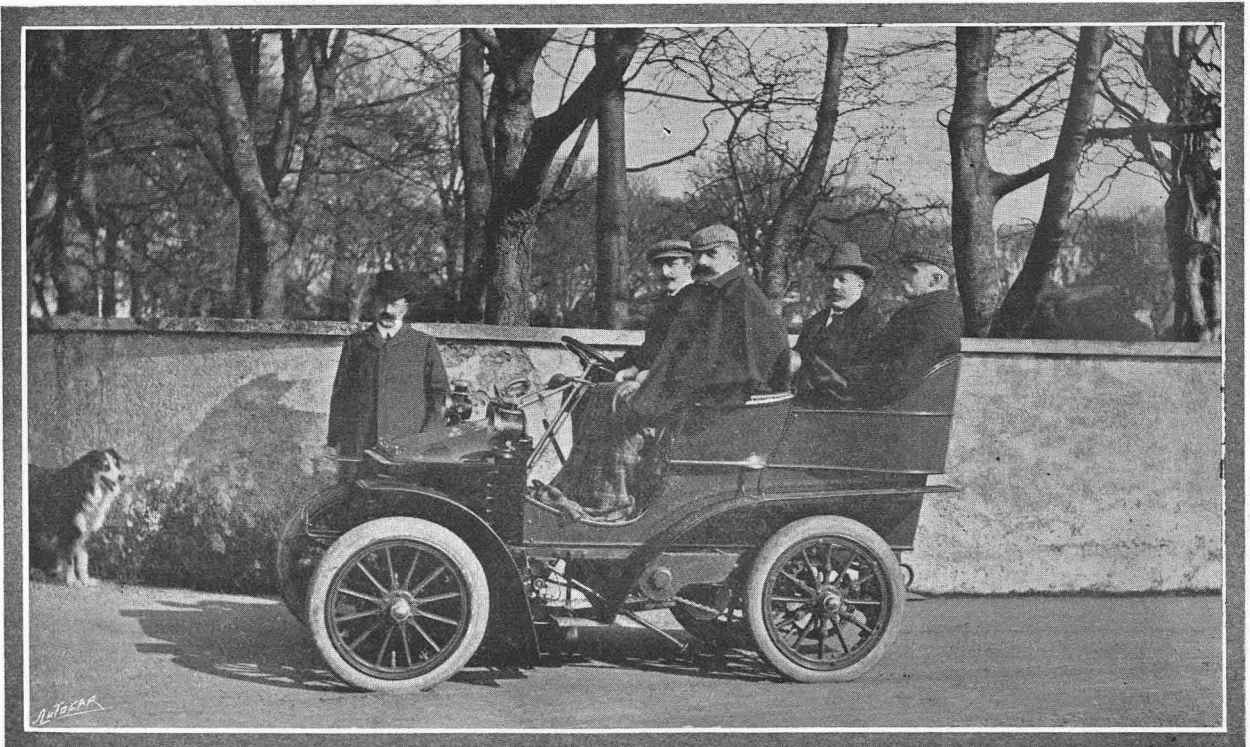


Photo by

Collister.

ON A TOUR OF INSPECTION. His Excellency the Governor of the Isle of Man, the Chairman of the Highways Board, the Chief of Police, and Mr. Julian Orde, the secretary of the Automobile Club, setting out on a tour of inspection round the eliminating trials course.

or stoppage of petrol is to be avoided. And, finally, there is yet another aspect of the matter which should recommend it, and urge it upon all who look with fear upon the deplorable manner in which the land in this country is going out of cultivation, and the agricultural population is flocking into the all-congested towns. As in Germany, there are vast areas which will produce roots suitable for alcohol production and little else, and did the Legislature but allow its distillation in this country, as in Germany, the enormous quantities used for industrial purposes here might be produced at home in lieu of its purchase from abroad at ninepence a gallon, with an imposed duty of another ninepence. It is not for us here to enter upon the exact nature of the

propaganda to be followed in this most important and insistent matter. Surely, what Germany has done, England can do, and in the interests of the automobile industry, among others, should do without any loss of time. There is no doubt that the alcohol fuel movement should be headed by the Automobile Club. We have before advised this, and we hope that under the new conditions the club will commence the work which it should have begun at least two years ago. Many demonstrations and much diplomacy will be required before the position is fully understood by the authorities, and the work is essentially one which the club should undertake, as it is not only for the benefit of automobilists, but also for the country at large.

USEFUL HINTS AND TIPS.

Automatic Carburetters.

Owing to the carburetter of my 12 h.p. car not being satisfactory as regards petrol consumption (causing engine to overheat), I fitted an automatic air valve on the inlet pipe. This valve gives practically the same results as the Krebs, without the complications and large cost of the latter. Since the valve has been fitted, a saving of twenty-two per cent. of petrol has been effected, while the engine has never overheated, and is now considerably quieter. It has never given me the slightest trouble, and I thoroughly recommend it in every way.—SATISFIED.

Ignition Voltage.

Purchasers of certain French built cars will frequently find them provided with six two-volts accumulators, each three connected in series, so that a primary current of six volts is delivered to the coil. Now, we would advise these gentlemen just to disconnect one accumulator from each of these triplets, and using the four-volts current then produced for ignition to run their cars over a well-known stretch of road, and see if the lower voltage current makes any appreciable difference to the pull of the engines. If it does not, let them stick to the four volts, whereby they will save themselves much trouble in the matter of the carbonisation of the platinum contacts on trembler blades and screws. To say nothing of having a spare set of accumulators always in reserve, in addition to the two sets wired up to the two-way switch. The writer has suffered somewhat of late from the devastating effect of the six-volts current, and, having returned to the four, to find it equally efficient, hereby counsels others to do likewise.

The Exhaust Cut Out.

Silencers are known power-eaters. Some are better than others, the new, as a rule, better than the old, but practically all are steadfast offenders in this direction. It is a very simple matter to fit an exhaust cut-out to a car, whilst the difference in "life" from the engine is very great. There are many ways of doing it, of course, but the simplest method is to fit a flap door to an opening in the exhaust pipe in front of the silencer, normally keeping the door closed by means of a spiral spring. A wire from this door to the dashboard would provide a means of opening. We know of many cars to which the fitting of a cut-out would prove an inestimable improvement as regards power, whilst the difference in the life of the exhaust valves would be most marked. Where a cut-out is fitted, an obstructed silencer giving absolute quietude is no objection, even at the expense of considerable back pressure. It will

be found that the noise with the cut-out open is only appreciable when the engine is picking up and working hard. When running at any set speed, the sound of the exhaust is not so audible as one would imagine.

Braking.

The fact that there are two brakes to every car seems to have escaped the notice of many drivers, for in ninety-nine cases out of every hundred the hand brake is used solely as a sort of stand-by. The foot brake is used always, the hand brake rarely, with the result that the first is unduly worn, whilst the wheel drums are hardly ever called into play. Now, apart from the fact that this is not economy, it is very bad driving policy, in that the driver, never using his hand brake, does not cultivate the instinctive operative faculty, with the result that in cases of urgent need thought is necessary before he can apply his "emergency" brake. Now, on many of the old pattern cars this was perhaps excusable, for the lever was frequently exceedingly awkward to reach and cumbrously unhandy. On the newer cars, however, this has been altered. In the majority of cases, the hand brake lever is pivoted to and swings over a parallel quadrant to that for the change-speed lever, so that it is within convenient reach of the driver.

The Rational Method.

Beyond this, many makers have gone a step further, and so arranged that their brake lever pulls back towards the driver, in place of the older push forward motion. This is the rational action, since, should it be necessary to apply the whole braking power the car possesses, the driver would be pushing with his feet and pulling with his hand, each force exerted transferring its reaction to the other brake, thus rendering the motions both more efficient and more natural. With almost all wheel brakes, compensating devices are fitted, so that the retarding action on each wheel is the same, and all the strain is taken by the hub of the wheel. Where the countershaft brake or brakes or the propeller-shaft brake is used, there is all the slack in the chains or the lash in the teeth to be taken up before the action takes place, or, in other words, there is a reversal of strain from the brake backward. If you want your car to last, use the hand brake for ordinary driving more widely. It is only a question of use. Use is second nature, and the cultivation of the hand brake may save the motorist many a serious accident. In the interests of public safety also every driver should accustom himself to the instant use of all his available braking power.

HOW TO BUY A MOTOR CAR.

By Lieut. W. G. Windham, King's Messengers

(Concluded from page 409.)

BEFORE PERUSING THE CONCLUDING PART OF THIS ARTICLE WE WOULD ADVISE THE READER TO REFER BACK TO THE POINTS FOR CONSIDERATION WHICH ARE GIVEN IN "THE AUTOCAR" OF MARCH 19TH, PAGE 382, AS BY SO DOING THE VALUE OF THE PRESENT ARTICLE WILL BE GREATLY ENHANCED.

Change-speed Levers.

18. The position of the change-speed levers, and the ease with which one can shift them from one position to another, should be taken into account. I knew an officer who years ago bought a Renault, and had to sell it almost immediately, as he could not easily use his left arm in controlling the car. However, since that time changes have been made. In some cases the speeds require some force to change them. This should be borne in mind if a lady is likely to drive it.

19. The colour is usually selected by the purchaser. It would be as well to see some other cars before deciding. All light colours show the oil much more easily, but as a rule look smarter and do not show the dust so much as dark colours. A car painted white is much more readily noticed (especially by the police), there not being so many of them in use.

Weight and Horse-power.

20. In many cases the weight is not in proportion to the horse-power, and retards the pace of the car, especially uphill.

It is necessary to fit tyres according to weight, allowing about 12 st. average for each seat in the motor, plus the weight of the car. The principal tyre makers give in their list the relative strength of the tyre for the weight per wheel. (See tyres, No. 28.)

21. The name of the car is a very important item. With a popular make less difficulty in selling the car will be found, and less difficulty in getting spare parts, more especially with French makers.

22. A car should be constructed so as not to require to change the lubricating oil or the circulating water for at least twelve hours at a time.

Space for Spares.

23. Space in a car is very necessary for carrying spare parts, etc. Should it not be fitted with sufficient, baskets can be made to fit above the splashboards, these being as long as required, but not wider than the splashboard, and painted the same colour as the car. Another idea which I have had fitted to my own car is handy, and does away with the baskets, which are very expensive to buy, and get out of shape very easily, and hold the wet and dust, and are very difficult to keep clean, and help to make the car top heavy. Between the front and back mudguards I have had a box built, about four inches in depth and a foot in width, divided into three compartments—the centre one to hold a foot pump, the other two for holding spare parts, tools, rags, etc. The top is covered in rubber and beaded round with brass. This makes a nice step: it looks smart, and is very handy.

Speed on Hills.

24. The speed uphill is a very important item, as it is uphill where the speed is required, not on the flat; by it a great deal of time can be gained.

Many makers advertise their cars to go up an almost impossible gradient in a definite time (number of passengers not stated), but when put to the test with four people in it the car refuses duty. A car should be tested on some well-known hill of known gradient, allowing a 12 st. average for each seat, and the time taken. One should always have "a little up one's sleeve" in hill-climbing, as should the weight exceed 12 st. average, a little extra luggage, the roads in bad condition, or the wind against one, or the motor not working at its best, the occupant will have to get out and walk—possibly push.

Brakes.

25. Brakes are a very important item, especially the back brakes. Some are not sufficient to hold a car from running backward. They hold going forward, not backward; going backward tends to slacken them and not to tighten them. Special band brakes to hold both ways must be used. Sprags are not altogether reliable; they are very unsightly, they have the habit of sticking up when required, and are useless on a soft-metalled road, or mud, as the car will over-ride them. Sometimes pawls are fitted in the hubs; these as a rule act well if they are kept in order. The best test of good brakes is to make the car run slowly backward down a steep incline; if it will not stand this test the car is not to be trusted. The band should be absolutely clear of the drum when "off"—a point where many fail, even good cars. A rod fitted with a right and left-handed screw for tightening or slackening the brake, and one which takes the band a good half-inch clear of the drum, is the right and practical idea of an efficient brake, and one which makers would do well to devote their attention to. A brake which is continually rubbing must some time or other become useless, or snap when suddenly applied.

26. The detachable tonneau body is a good idea, as the car can be used for touring with two or three people in front and the luggage strapped on behind. The tonneau bodies can be made to take off, and save the upholstery and paint getting rubbed.

27. Whether buying new or second-hand cars, a list of all extras should be supplied with the estimate.

Tyres.

28. Tyres are a very important item, and great care should be exercised in choosing them. There are many good tyres on the market, but the chief points to be remembered are that the tyres must be of sufficient strength to carry the entire weight of the car plus the weight of the passengers, and that the tyres will not come off the wheel if deflated. At least one spare tube should be bought, remembering to have a long valve if the car is fitted with wooden wheels, and see that the nozzle on the rubber tubing of the pump fits it. If one does not wish to carry a spare inner tube, it will be as well to carry some ready and easy form of vulcanising

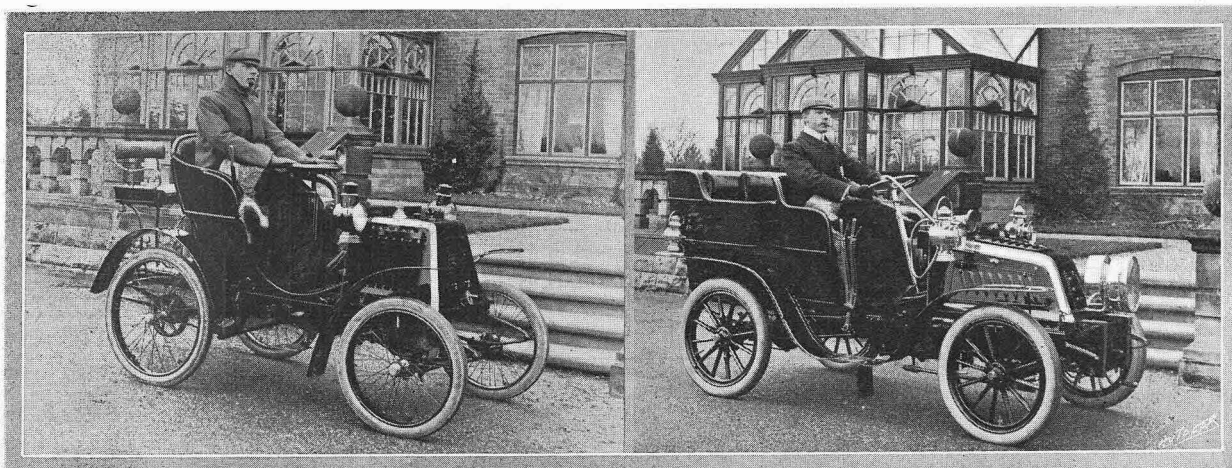
device which does not depend upon strong and destructive acids to accomplish the work.

Radiators.

29. Radiating tubes are also a point in a car's manufacture which are very much neglected. This is chiefly due to the fact that very few makers of the motor car make their own radiators. These are bought by the yard, irrespective of the class of pump used, and fitted on to the car to suit the look of it. Six feet of radiating tube should be used to every horse-power. Makers now, judging by the last Paris Show, are imitating the Mercedes pattern, with very poor results, and the adoption of large fans behind, which not only draw the hot air off the radiators on to the engine, but the dust from the road too. This cannot be good for the valves and working parts of the engine. Besides, I believe in each cylinder being separately cooled by water, not allowing the cool water to flow through one cylinder, getting hotter and hotter till the fourth is reached. The De Dietrich system appeals to me, and I wish more makers would adopt it.

30. Every bolt or nut on a car should be pinned or otherwise thoroughly secured against vibration. See that the tool kit includes spanners, keys, and any special tool for taking off, fitting, or adjusting every movable part of the car. Before finally pur-

chasing, make arrangements that you have so many lessons, or, better still, so many hours in driving and learning the why and the wherefore of every part of the mechanism. I cannot too strongly express my adverse opinion to the modern form of combined water tank and radiating tubes. Makers often advertise their motors as being protected against the mud, water, etc., from the road, and then "invite" the dust on to the valves and all the delicate and fast working parts of the engine by fitting a large fan behind these tubes. This sucks in every particle of dust, which not only destroys all the working parts, but is most difficult to clean and get rid of, especially when mixed up with oil, etc. I cannot see any use whatsoever in fitting this class of radiator in preference to the old form, except that it might take up less space; but even with this I doubt if an extra tank has to be fitted, which is usually the case. It costs far more than the ordinary tubes to fit, and if it gets broken or leaks it is very difficult and expensive to repair. If makers find it necessary to fit a fan for cooling purposes in traffic, etc., why do they not partition off the engine from the fan and radiator? After once the hot air is drawn past the hot water, it is useless for cooling the engine, and if partitioned off it could be thrown outwards with the dust, etc., through the sides of the bonnet.



A GREAT SOURCE OF ENJOYMENT. For the last three years, Mr. Oswald J. Bamford, of Hawthornden Manor, Uttoxeter, has been an enthusiastic automobilist. During that time he has covered several thousand miles in the Midlands, and his first machine was a $4\frac{1}{2}$ h.p. Renault, one of the most reliable little two-seater cars made. Later, that was supplemented by a two-cylinder 11 h.p. Clement-Talbot. The owner refers to his car as a great source of enjoyment, and this is a reference which every automobilist will endorse most heartily.

Those interested in service vehicles or heavy transport vans, which they desire to run on rubber tyres, should seriously consider the duplex Clincher motor tyre, made by the North British Rubber Co., of Edinburgh. Upon the wooden felloe of the road wheels are shrunken two flanged steel rims side by side, in which are set two heavy clinched solid rubber tyres. The running and wear of these duplex tyres under heavy loads are remarkable, as is proved by the experiences of the Hastings Motor 'Bus Co., who say that they are the only solid rubber tyres they have found that will really stand the wear and tear ensuing upon their traffic, roads, and gradients. The wheels upon which this duplex tyre is fitted is built with twin spokes, the butts of which broke joint in the nave.

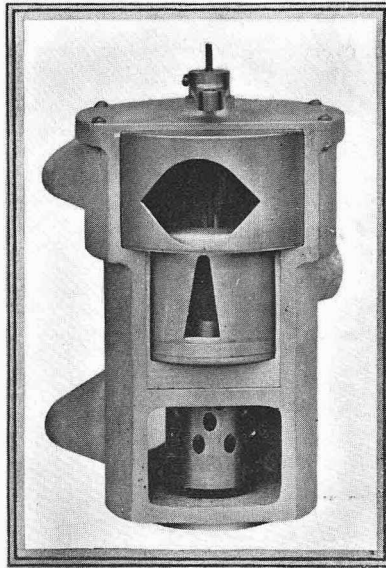
One day last week we spent a few minutes examining some of the cars in the premises of Messrs. Friswell, Ltd., in Albany Street, W. There was no sale in prospect, and, consequently, Mr. Friswell regarded the place as empty, but there were a number of interesting cars to be seen notwithstanding, some of them old, some of them nearly new, varying from a Mors of the Petit Duc type, which distinguished itself more or less in the 1,000 miles trial of 1900, to a monstrous Panhard racer of recent date. As usual, at Albany Street, the bricklayers and carpenters were at work; alterations are ever being made. The place always strikes us as a remarkable demonstration of the widespread nature of the movement. A visit to Messrs. Friswell's establishment is a liberal education to the observant automobilist.

THE ROVER CARBURETTER.

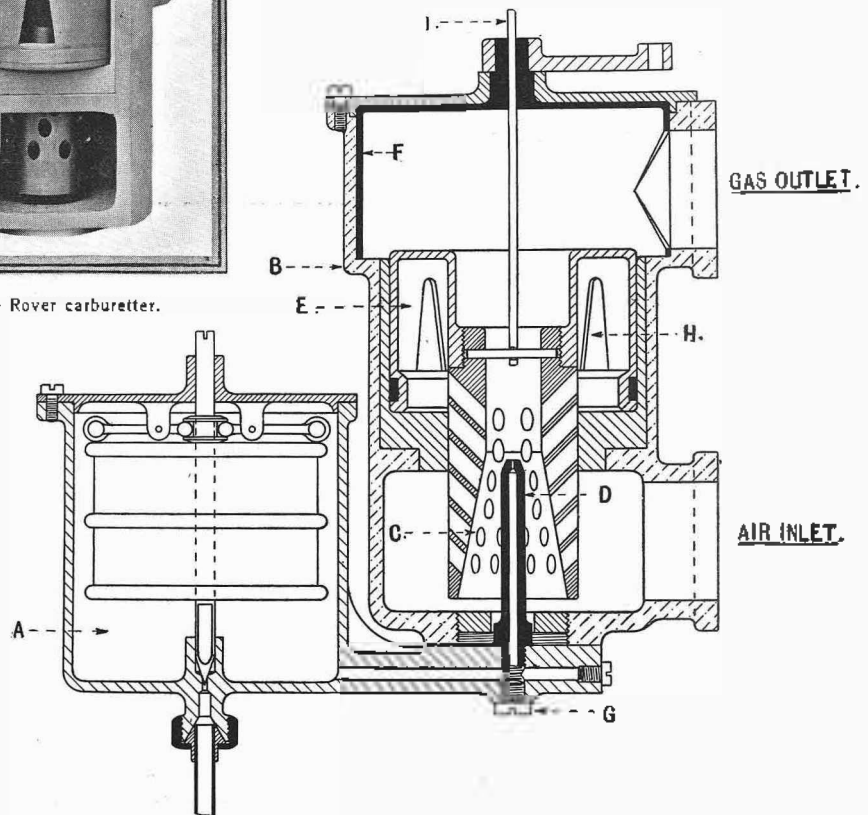
During the past twelve months the automobile engineer's best efforts would appear to have been given to the question of carburation, with the consequent result of a large number of devices being placed before that part of the public who are more or less interested in the autocar and its means and methods of propulsion. Incidentally, it may be remarked that the attacking of each problem of the automobile in this way is undoubtedly a method which will place the autocar beyond the realms of practical invention, so that nothing short of discovery will permit further progress.

Returning to our subject, the illustration herewith depicts a section of a new automatic carburetter designed by Mr. E. W. Lewis, and called the "Rover," from its being manufactured by the Rover Cycle Co., of Coventry. The principle to a certain extent is novel, in that not only is the additional air admission regulated, but that passing the jet is also regulated in volume and velocity. Referring to the drawing, A is the float chamber, which is of the usual construction. B is the body of the carburetter containing the mechanism for the automatic action. This is constructed so that there is a partition between the jet chamber and the mixing chamber above. The body B contains a brass liner, which is accurately bored to receive the plug C, and its upper portion is fitted to the piston E, having a single ring packing at its lower edge. E is free to move vertically in the liner, and is screwed to the plug C, the two being attached to the rod I by a pin transverse to the plug, and passing through the boss in the carburetter cover. The piston E has triangular air ports H cut in it, which are proportioned very accurately for their purpose. The plug C is made heavy, and gravity is substituted for a spring in order to return the plug and piston to their normal position in which they are shown. Through the plug C are drilled the oblique radial holes, there being six rows of these, each row containing more holes than the one above it. It will be noticed that the two upper rows are above the level of the jet D, and open into the mixing chamber between the piston E and the

base of the liner. When the engine is running, the reduction of pressure, or rather partial vacuum, in the mixing chamber raises the piston E and its attached plug C, thus increasing three proportionate dimensions of the carburetter, viz., the number of holes, or, if the difference is small, merely the area of the holes immediately beneath the liner through which air is drawn past the jet; the cross-sectional area of the orifice between the jet and the walls of the plug through which the initial air has to pass; and, lastly, the area of the additional openings at H, and, therefore, the quantity of mixture which is sucked through the four triangular openings which increase the area of the outlet to the engine in proportion to its speed. Thus a difference in pressure immediately distributes itself into a vacuum balance affecting directly the volume of the air admitted to the carburetter, and, beyond this, equally important, the velocity at which such



A section of the Rover carburetter.



Longitudinal sectional elevation of the Rover carburetter.

A, float feed chamber. B, carburetter body. C, sliding tapered plug. D, petrol nipple. E, floating chamber. F, throttle valve. G, drain plug beneath spray nipple.

air is admitted. Hence not only does the carburetter equalise and proportion accurately the feeds of petrol and air, but it corrects in a simple and efficient manner the Venturi tube effect found with almost all carburetters, which so often forms the indefinite factor of failure of perfect automatic action. As regards actual constructional detail, this carburetter has the great advantage that it is quite independent of a spring, gravity providing the governing effort limiting the lift of the regulating piston E. From reports which have come to hand, this carburetter appears to have special powers of adaptation, the running of engines of entirely different design having been very considerably improved by its use.

OCCASIONAL GOSSIP. *By the Autocrat.*

A rumour has been circulated to the effect that Her Majesty the Queen had ordered a 12 h.p. two-cylinder petrol car. This is not a fact. At the present time the Queen has not decided which make of petrol car she will have, but in any case it will be a four-cylinder vehicle.

x x x x

I am sure there is something in my belief that while two or more motor shows are held there will always be exhibitors who will be firmly convinced that one or other of the particular exhibitions is the best for them, although it is quite likely that they will take part in every show of the winter season. It was announced last week that the National Show, which has taken place in November each year in the Crystal Palace, would no longer be held, and now I am told that some of the few motor makers who exhibited there are expressing great sorrow, as they state that this show was the best of the three. That is to say, they sold more cars there than at the Crystal Palace Show in February, or the Agricultural Hall Show in March. It would, therefore, appear that the only way to satisfy everybody would be to have a show every month. As this is impossible, the opposite course seems the best, the one which has been so long advocated, *i.e.*, one show a year.

x x x x

I was very glad to hear Dr. Ormandy's arguments in favour of alcohol fuel at the club last week. Although the matter of a home-made fuel is of great interest and importance to motorists as users of automobiles, it is a very great deal more than this. I feel most strongly from a patriotic point of view that every effort should be made to obtain a fuel which is made in our own country. There is very much to be done before this can be regarded as an accomplished fact, but the results will be well worth the effort. There would not only be commercial advantages of no mean importance to the country, particularly to the agriculturist, but, as was shown by Dr. Ormandy, the roots from which the alcohol was made would provide a reserve of food-stuffs which might stand between the nation and starvation in time of war. This is really more vital than any other phase of the question, and every effort should be made to bring home the national importance of the matter to the authorities. At the moment many regard this as hopeless, but it was hopeless at one time to think about using autocars on British roads; in fact, any good cause can be carried if sufficient persistence and ability be used.

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Automobilists have played an important part in the inquiry which is being conducted by the Royal Commission on London traffic, and some exceedingly valuable suggestions have been made. I was surprised, however, to see that no automobilist appears to have made any reference to the river. We hear a great deal, and rightly, about the space which could be saved in the streets if the heavy traffic were made to keep to the kerb, and if motor vehicles were more generally used in place of horse vehicles of approximately double the length, but no one seems to remember the river, or what could be done upon it if a fleet of motor boats were to be launched and properly run for the conveyance of passenger and light goods traffic. No little heavy traffic is already carried by the river, but something altogether more up to date than the old passenger boats or the present tugs and barges is required.

On the few occasions in which I have heard the evidence given at cases in which motorists have been accused of exceeding the legal limit, I have been struck with the insolent, not to say bullying, demeanour of the police inspector or superintendent towards the accused in court. I do not say this is an invariable attitude, but there is no question that these men are permitted by the magistrates to be needlessly insolent in many cases, particularly when any sort of doubt is thrown upon the police evidence. Another thing which has struck me on these unhappy occasions has been the cringing demeanour of the solicitor engaged by the automobilist if he happens to be one who usually practises before the bench in question. This is a matter for which there is, of course, no general rule, but in very many cases the local solicitors are positively in terror of the magistrates. They are inclined to condone the insolence and bullying of the inspector when he cross-examines on behalf of the constable in a manner which would be spoken of indignantly as un-English if the accused were indeed a criminal, and not a mere automobilist who, according to police timing, had exceeded the legal limit by a mile or two an hour. This shows the advisability of making sure of your man when you engage a solicitor. As I have said, I would be the last to infer that all are of the cringing, uncombative order; but I must say, at any rate from my observations, that too many are this way inclined.

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Possibly they are right; it may result in a smaller fine being inflicted, but they do not seem to realise in the majority of cases a motorist who is falsely accused and wrongly convicted would rather have, in sporting parlance, a run for his money. He would like his legal adviser to tell the bench a few home truths, and he would rather have the satisfaction of knowing that he had made a good fight than that by abject kow-towing he had saved himself a pound. However, there are two sides to this question. I have seen instances in which the motorist's solicitor has started to rage and to bully from the beginning of the case. He has assumed, without waiting for proof, that the bench, the police, and everybody connected with the charge against his client, are a set of prejudiced, if not perjured, ruffians, and he is in his way at least as objectionable as the unduly phant solicitor who worships rather than pleads before the bench.

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In all matters of this kind some small amount of judgment is required. There is nothing like getting in the first blow, but it is as well to assure one's self before this is administered that one is not hitting a friend. There have been cases in which several members of a bench have been very favourably inclined towards a motorist, but, owing to the injudicious attack made upon them by his legal representative, they have felt bound, in honour to their brethren on the bench, to decide against the automobilist. Of course, the moral of all this is that, directly a sign of prejudice on the part of the bench or falsity in the evidence on the part of the police is seen, it should be ruthlessly exposed, but up to this point the case should be conducted as far as possible pleasantly, and with the ordinary respect and courtesy which the average magistrate expects and is entitled to, so long as he behaves himself as a gentleman, and sees that gentlemen who are brought before him are not treated as ticket-of-leave men by the court or police officials.

THE NEW DE DION CARBURETTER.

Nothing that issues from the drawing-office or the works of Messrs. De Dion-Bouton et Cie. can be without interest to automobilists at large, from the amateur owner of a car to the works manager and other officials of an automobile works. Consequently we are pleased to be able to present to our readers generally, and to those who use or contemplate the use of De Dion cars particularly, an illustrated description of the latest De Dion carburetter for the 10 h.p. and 12 h.p. two-cylinder motors.

The object kept in view in the design of this apparatus is to provide a carburetter which shall serve

reduced to the point at which the petrol delivery ceases to be continuous through the jet, the carburation control is particularly difficult. So Messrs. De Dion-Bouton, Ltd., say, and the carburetter now illustrated and described has been designed by them to overcome the objections just mentioned.

Fig. 1 is a vertical section of a De Dion carburetter designed for use on a two-cylinder motor. In this figure, A A¹ is the annular float, capable of vertical movement within the body of the carburetter B B¹. The jets therein are marked C C, to which petrol gains access from the float feed chamber through the passages D D. These jets are placed as near the centre of the apparatus as possible, in order that the movement of the spirit within the chamber B, due to road vibration, may affect the level of the petrol in these jets as little as possible. Upon the suction stroke of the engine, air enters the carburetter by the openings E E, and passes down the outside of the channel J J¹ to the space F F, whence it turns and travels upwards around the jets, as shown by the arrows. Being thus carburetted, it passes on to the cylinders, up the interior of the passage J J¹, and through the channels G G¹. A certain amount of supplementary air is admissible at will into the uptake above the jets by the openings I I¹. The volume of air so gaining admission to the uptake of the carburetter can be varied at will, as the internal member J J¹ is capable of vertical movement in the body of the carburetter H H. This vertical movement is brought about by means of the lever M, to which the parts J J¹ are attached.

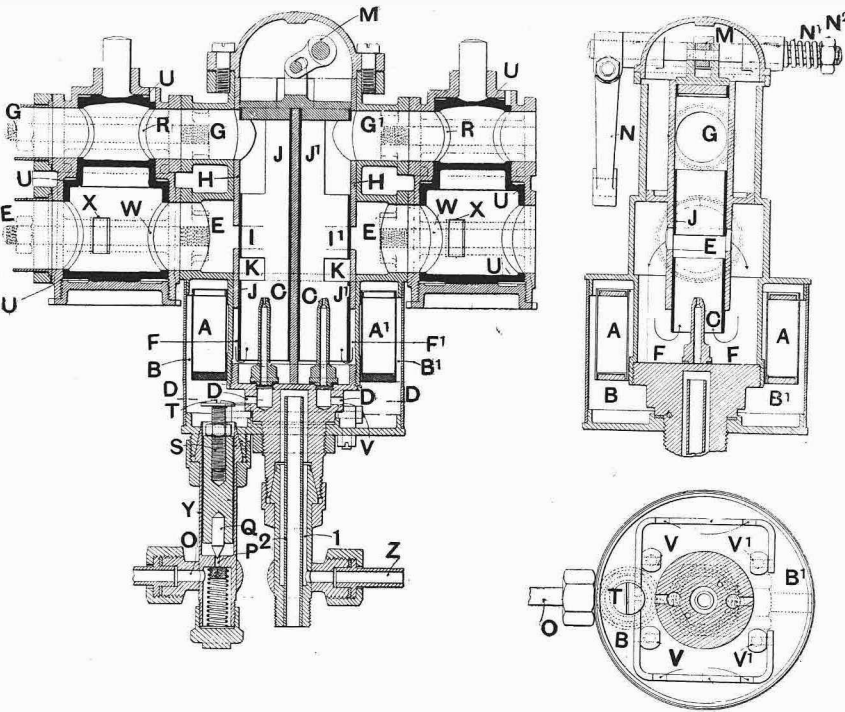


Fig. 1.—Sectional elevations, and plan of the De Dion carburetter.

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|--|--|--|
| A A ¹ , annular float | K K, slots in tubes similar to I I ¹ | T, head of adjusting screw looking over float contact levers |
| B B ¹ , float chamber | M, lever actuating the sliding tubes | U (repeated), throttle valves |
| C C, jets | N, regulating lever | V V ¹ (repeated), float contact levers |
| D D, petrol passages | N ¹ , spring locking the nut N ² | W W, air throttle openings |
| E E, air inlets | N ² , lock nut | X X, extra orifices in air throttles |
| F F, air passages past the jet | O, petrol inlet pipe | Y, float balance weight |
| G G, outlet pipes | P, needle valve seat | Z, hot water inlet pipe |
| H H, parallel bushes | Q, needle valve | 1, hot water ingress |
| I I ¹ , slots communicating with E E | R R, throttle valve openings | 2, hot water egress |
| J J ¹ , mixture passages, formed by sliding tubes | S, adjusting screw | |

explosive mixture to a two or four-cylinder engine in as perfect a manner as possible. With but one or two exceptions, the practice hitherto followed has been to provide multiple cylinder engines with a carburetter to each cylinder, or with a single carburetter having but one jet. The De Dion carburetter as here presented will have as many jets as the engine has cylinders. The employment of multiple jets for this purpose affords certain advantages over a single jet, particularly on the score of proper proportionate feed. The inventors of this carburetter claim—and there is much in their contention—that in the case of a four-cycle two-cylinder engine with its cranks set at 180° the induction with one jet only is not performed under like conditions for each cylinder, while with a four-cylinder motor the inductions are so frequent as to be practically continuous—an effect difficult of control when the engine is running at high speeds. On the other hand, when the speed is

Reference to fig. 2 shows very clearly the attachment of the parts J J¹ to the lever M and the outside lever N, by which the movement of J J¹ is brought about. It will thus be seen that the openings K K in the parts J J¹ can be made to wholly or partially coincide with the openings I I¹ in the body of the carburetter H, and so control the extra air admission to the volume of carburetted mixture passing to the cylinders. The spring N¹ compressed by the nut N² serves to keep the parts J J¹ in any position in which they are set.

The proper petrol level is maintained in the float feed chamber B B¹ in the following manner: The petrol feeds from the petrol tank through the passages O P (fig. 1). The orifice P is closed by the needle valve Q set in the lower end of the plunger Y. At its opposite or upper extremity, this plunger carries a screw S, of which the head T rests on the ends of balance levers, which levers can oscillate on their spindles V V¹ V V¹ (plan). Reference to this shows these levers lying in the bottom of the float feed chamber B B¹, and there looking like a pair of handles. These levers have bosses formed upon them upon which the float A A¹ rests. When the level of the

petrol in the chamber BB^1 descends, the float, of course, descends with it, and bearing upon the small bosses causes the ends of the levers beneath the head of the screw S to lift the latter, and with it the plunger Y and the needle valve Q . Petrol then flows through the passage P , and up into the float feed chamber BB^1 by the annular space between the plunger and the cylinder containing it. When the float again rises, the plunger falls in the cylinder by its own weight, and closes the orifice P .

The carburetter is as seen in the elevation (fig. 1), fitted with a common but duly proportioned twin throttle valve to the air inlet E and induction outlet G of each jet chamber, which are actuated synchronously. The air inlet and induction outlets in these twin throttle valves have been carefully proportioned to each other on the following grounds:

It is well known that when an explosion engine is first throttled, the passage of the mixture to the cylinders must be arrested rapidly—that is to say, the volume must be quickly reduced in order to avoid too great suction over the jet. To achieve this result, the orifices in the upper and lower parts of the throttle valves do not present equal dimensions, as may be seen in the sections. Moreover, experience has shown that to obtain satisfactory results and avoid misfires, it is necessary after the preliminary rapid throttling of the mixture to thereafter render the further throttling of the air and mixture passages proportional, and this is done by a further rotation of the twin valve. Further, to prevent overflow, or what is known as the petro? "hunting," owing to too great a vacuum being caused in the jet chamber, as the engine is still further throttled additional air must be admitted, as the throttling movement is nearly complete. To admit this necessary quantity at the proper time for the purpose, the twin throttle valves have small supplementary ports

XX , which admit air to the jet chamber when the throttle is almost closed.

The carburetter is heated by the circulation of hot

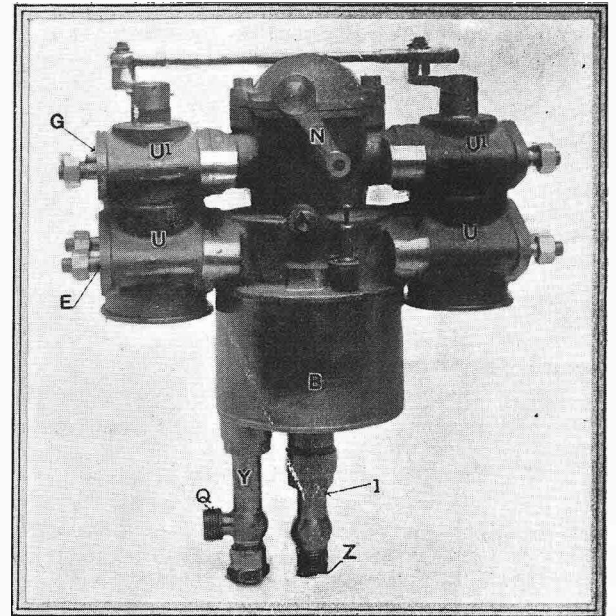


Fig. 2.—General view, of the De Dion carburetter.

B, float chamber. E E, air inlet tubes. G G, mixture outlet pipes. N, regulating lever. Q, petrol inlet pipe. Y, level regulating mechanism case. Z, hot water inlet. 1, hot water passage.

water from the cylinder jackets by the tube Z (fig. 1), up the annular space 1 , returning by the tube 2 , as shown by the arrows.

CONTINENTAL NOTES AND NEWS.

The Gordon-Bennett Cup.

The racing committee of the A.C.F. at one of its last meetings requested M. Tampier, the official time-keeper, to go to study the new French Ardennes Circuit, where the French eliminating trials for the Gordon-Bennett Cup will take place. The commission asked him to give a detailed report on the course. The following are the principal points upon which M. Tampier's report (which is now before the committee) touches:

It will be necessary (says M. Tampier) to tar the roads wherever they traverse villages, and also on the hills and on the turnings. It will be easy to do this, and absolutely indispensable, for the reason that then there will be no dust to make it dangerous for the competitors in the turnings, and it will also in some measure prevent accidents through skidding round the corners in the dust. On the other hand, in every village the streets through which the cars pass should be railed off with metallic fences, with openings every fifty yards to allow of crossing; but each opening should be in the charge of a functionary, whose duty it will be to only allow crossing where it is absolutely necessary. At the entrance of each village two buglers should be posted, who would announce the arrival of each competitor by a bugle call. In order to carry out these plans, it will be necessary to tar a total distance of about nine and a half miles. All along the roads the

route should be absolutely stopped, and no one should be allowed on the road, the public taking their places to watch the races behind the hedges at each side of the road. Every fifty yards a man should be posted along the road, one on one side of the road, and one on the other, and it should be their duty to stop anybody crossing the road, and for this service 3,000 men will be required.

M. Tampier says that two neutralisations will be required—one at Rethel, the other at Vouziers. There will nevertheless be five stops of one minute each—one at the bend in the road at Chemery, one at the cross roads of Flize, one at each of the railway crossings of Bellay and Novy, and one at the bridge at Chesne. These neutralisations and stops will require for each car exactly twenty-nine starts—just the same number that will be required on the German Taunus course of the Gordon-Bennett race. One hour and forty-five minutes will be taken up in neutralisations and stops for the whole race. The road is in excellent condition, all except perhaps one kilometre between Poix and Crêtes de Poix, but the authorities are already taking precautions, and are beginning to tar the road.

The Starting Point.

The starting-place is not yet fixed, but it may take place in the straight line between Rethel and Vouziers, and it is most probable that the starting-place will be as near as possible to Vouziers, so as to give all the cars

Continental Notes and News.

which may be together in the neutralisation at Rethel a chance of struggling for victory on the best part of the road, and it will doubtless be on the road between Rethel and Vouziers, where the greatest number of the public will be present to see the competitors going past at full speed. This is the best and least dangerous part of the course.

With regard to the level crossings, they will be closed during the race, so that there will be every security for passers-by, and the racing committee have decided that International signals shall be placed where necessary.

The Drivers in the Race.

The two Turcat-Méry cars entered for the eliminating trials will be driven by Rougier and de la Touloubre. The latter is one of the most brilliant officers in the French service, and has often been a competitor in automobile races.

The following is the definite composition of the German and Austrian Mercedes teams: For Germany—Jenatzy (the winner of last year's cup) and the Baron De Caters. For Austria—Werner, Braunn, and Warden, on whose skill it is not necessary to enlarge; they have already given their proofs. Should in the German eliminating trials the cars entered not give an average speed sufficiently high, the German Automobile Club will authorise a third Mercedes to be entered for the race, in which case there will be six Mercedes cars striving for the victory.

The Board of Directors of the Fiat have just definitely fixed on the choice of their three drivers who will pilot their cars in the Gordon-Bennett race. They are to be Vincent Lancia, Louis Storero, two drivers very well known in Italy, and Georges Cagno, the mechanic of the Duke of Abruzzi.

Keeping the Course.

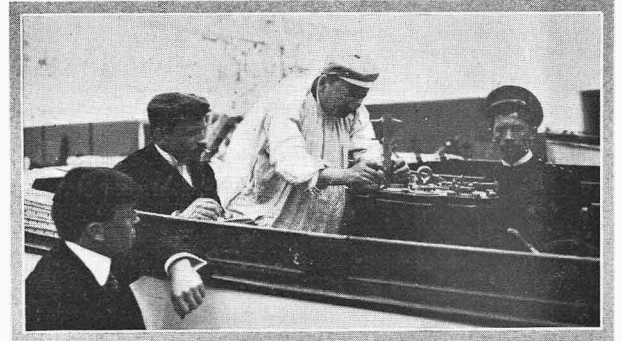
In order to keep good order on the Taunus road on the day of the cup, the burgomaster of Homburg has decided that horse traffic shall take one route and automobiles quite another. There will be telephones between the stands and the park, where the results will be written up on a board.

In only one stand there will be reserved seats; in all the others the seats will be free to ticket holders. There will be about 2,500 seats and places for about 500 people standing. It was at first decided to erect a stand in the shape of a bridge, as was done in Ireland last year, but this idea has been given up.

The Fiat Co. are building three cars of 65 h.p. and three cars of 105 h.p., and they have not yet decided which they will enter for the race.

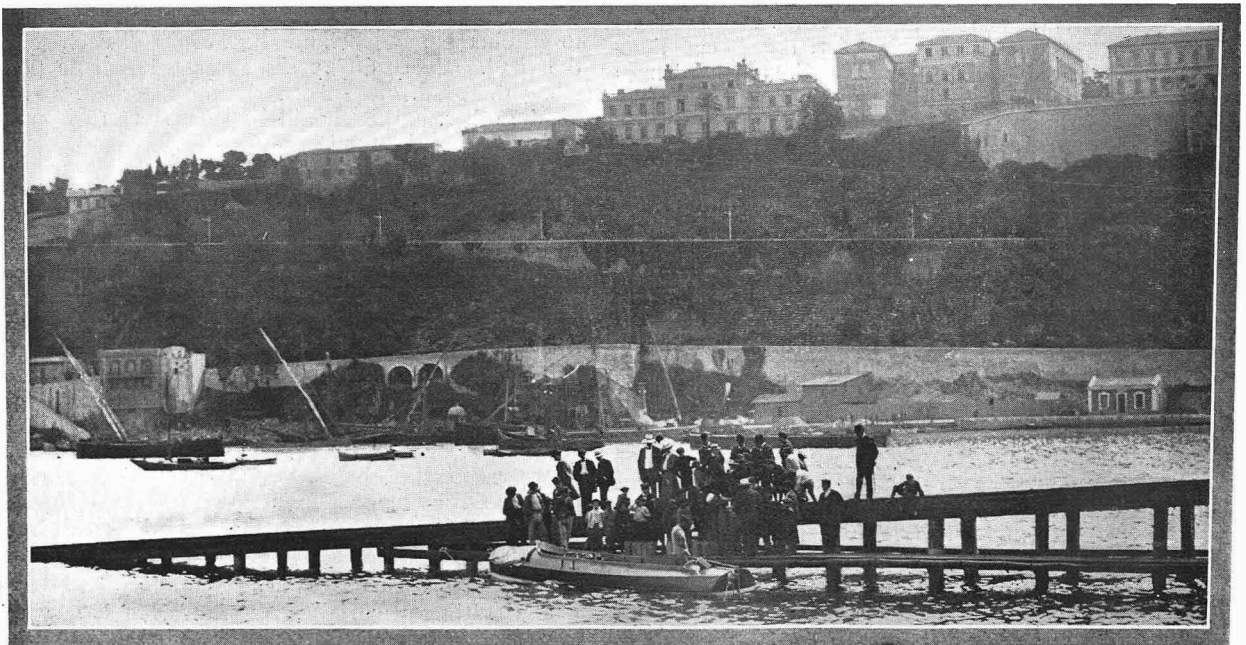
The Meeting of Automobile Boats at Monaco.

The greatest excitement prevails at this moment in sporting circles at Monaco. We are, in fact, approaching the opening of the great meeting of automobile



Measuring the cylinder capacity of the engine cylinders on the competing launches

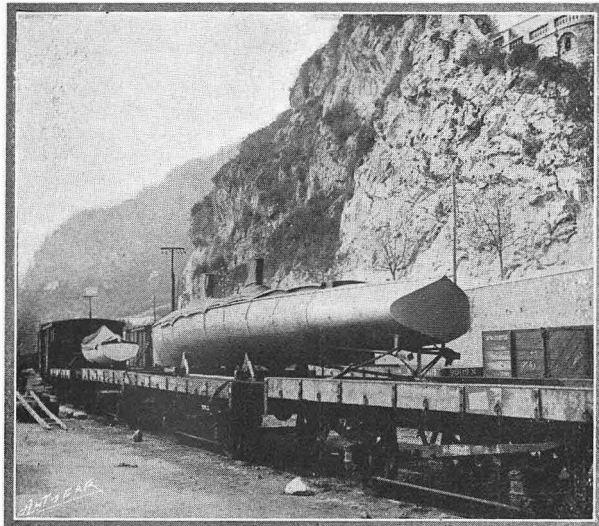
boats organised by the International Sporting Club. Most of the racers and cruisers have already arrived at Monte Carlo, and some of them during the last few days have already been launched. Trials have successively been made with the gigantic Piouitt IV. (which was a motor by Turcat-Méry of 150 h.p.), the little Bayard III., the Napier, the Mercedes, the Peugeot, the Ader, the Delahaye, etc. All have done splendidly, and behaved perfectly on the sea. The races, therefore, will not only be of the greatest



The slip way for the motor launches which competed at Monaco.

interest, but the struggle also promises to be a very keen one. The last details of the organisation have just been completed, and the question of the starts has been solved in the following manner: The competitors will start in one line, each holding a double string. On the starting signal, a man, sitting in a barge which is moored to a fixed object, and to the starting boat, will let the string go, and the boats will be free. For the handicap starts with chronometer, the competitors will be ranged in the order of departure, and it is the time-keeper, M. Tampier, who will give them their starting signals.

All the great sporting nations will be represented at this international meeting of automobile boats, held under the presidency of His Highness Prince Albert I. of Monaco. Amongst the members of the committee of patronage we will cite Admiral Humann (president of the Yacht Club of France), Baron Van Zuylen of Nyevelt (president of the Automobile Club of France), Marquis De Dion (president of the Chambre Syndicale de l'Automobile), Henri Menier, Count Riscaretti di



Some of the competing boats arriving at Monaco.

Ruffia (president of the Automobile Club of Turin), R. T. Dixon, His Highness the Duke of Ratibor (president of the German Automobile Club), Mr. C. Gray Dinsmore (representative of the Automobile Club of America in Europe), His Highness the Duke of Santo-Mauro (president of the Real Automobile Club of Spain, and General Besobrasow (president of the Automobile Club of Russia). The Executive Committee is composed of MM. Camille Blanc (president), H. F. Gabirau, H. Sauerwein, and Georges Prade (secretary).

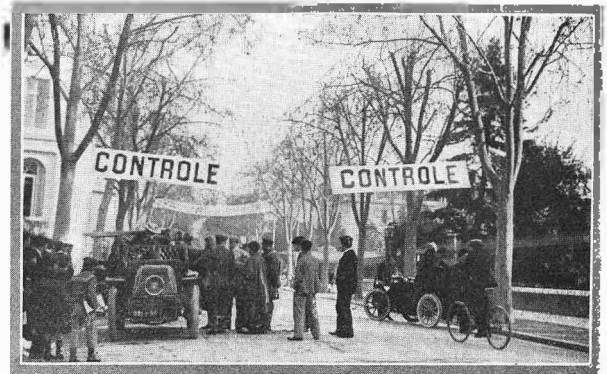
The Nice Automobile Week.

The great automobile week at Nice opened officially with a touring competition. There were thirty-one entries, and out of these twenty-one started, with all sorts of makes, and principally gentlemen drivers, which, of course, considerably increased the interest shown in the competition. On the first day the route was difficult, both for the cars and for the drivers, but, notwithstanding this, nineteen out of twenty-one completed the journey.

The following is a list of the arrivals, without classification, in the same order as they left. The first car left in the morning at six o'clock, and the last at 8.36: Parran (40 h.p. Berliet), 3.38; Garin (16 h.p. Rochet-

Schneider), 11.21; Gueyraud (14 h.p. Renault), 3.51; Prince Lubecki (60 h.p. Mercedes), 2.37; Rosset (20 h.p. Pilain), 3.16; De Millo (14 h.p. Renault), 2.26; De Martini (16 h.p. Martini), 2.38; Ernest Cuénod (16 h.p. Martini), 2.22; Clerissy (16 h.p. Rochet-Schneider), 2.29; Marcel Cote (20 h.p. Pilain),

Continental Notes and News.

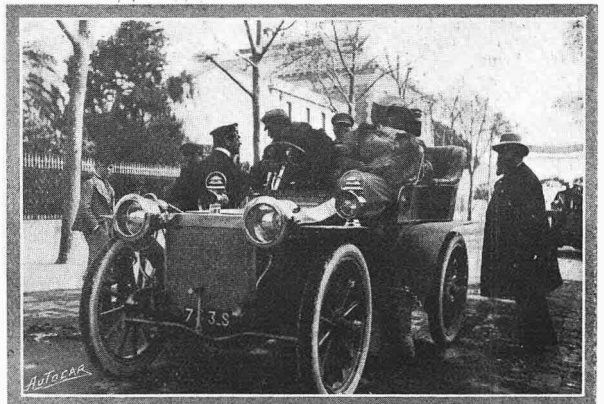


The Controle at Morocco.

2.59; Count d'Arco (Neue Automobil Gesellschaft), 3.36; Thorrand (8 h.p. De Dion-Bouton), 3.29; Gaston Liegard (10 h.p. Peugeot), 4.21; Giraud (40 C.G.V.), 3.17; Guidi (14 h.p. Renault), 3.18; Barillon (12 h.p. Mors), 3.29; Albert Gautier (8 h.p. De Dion-Bouton), 5.1; Thyssen (16 h.p. De Dietrich), 3.18; Duranhy (8 h.p. Renault), 4.19.

There was, of course, no attempt at speed in this trial, and the programme simply consisted in covering the road at an easy speed. The route was from Nice to Puget and back.

On the second day, the course lay over the classic Esterel road and the new Corniche road, which at this season of the year is most picturesque. The road was harder and better than on the first day. There were nineteen starters, and eighteen of these cars completed the day's run, which was—Nice, Cannes, St. Tropez (lunch), Le Muy, Esterel, Cannes, and Nice.



One of the competitors in the automobile events at Monaco. It will be noticed that a somewhat curious curve is given to the top of the motor bonnet.

We learn that the exclusive agency for the Charron, Girardot, and Voigt cars—C.G.V.'s, as they are known colloquially—has been secured by the London Motor Garage Co., Ltd., of 33-37, Wardour Street, W. Although not hitherto vigorously pushed on this side of the Channel, these cars nevertheless enjoy a sound reputation amongst automobilists in this country.

AGRICULTURAL HALL SHOW.

A Review of the Principal Novelties. (Continued from page 427.)

INDUSTRIAL VEHICLES.

AN improvement in tipping gears was noticed in the tip wagon shown by the Lancashire Motor Co., of Leyland. This consists of a large coarse-threaded screw engaging in a gunmetal nut swung on trunnions on the front of the vehicle. Working inside this screw is one of a smaller diameter and finer pitch. On the end of this screw is a stop, which abuts against a sleeve on the bottom of the large screw when in operation. The finer pitched screw slowly lifts the load, gradually emptying it. When the body has been tilted to about half its full angle, the large screw comes into operation and quickly ejects the remainder of the load. There was also staged a brewer's dray for carrying a four-ton load, this vehicle being the third of its type which has been supplied to one firm.

The only example of a water tube boiler to be found in the

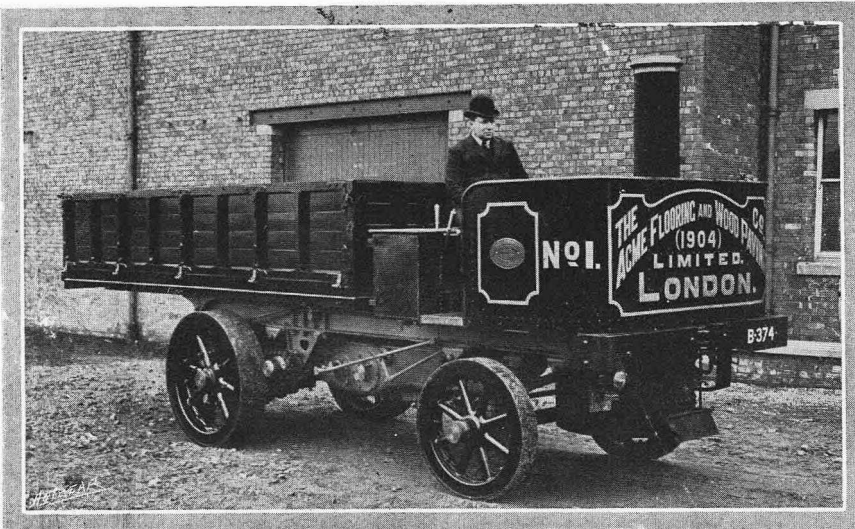
travel is given to the eccentrics. The clutches then come into operation, and the vehicle moves off. The increase of speed is obtained by giving more travel and a longer engagement of the clutches. The constant drive is obtained by having a double action on the clutch, so that, while one has finished its useful travel, the other is just beginning. So that in this way they are alternately taking the load. A compensated front axle was also to be seen on this vehicle. The front girder section axle works in horn plates, and the weight of the vehicle is supported on semi-elliptical springs. One very useful feature we noted was the fitting of lubricators to all steering joints.

The special feature of the five-ton lorry exhibited by Messrs. J. Robertson and Son, of Fleetwood, is the boiler. This is of the vertical type placed over the front axle, and is centrally fired. The horizontal fire tubes pass from the fire box through the boiler shell, which is encased in an asbestos lagged circular smoke box, so that all the products of combustion pass from the central fire box through the tubes to the outer smoke box, and thence into the atmosphere through the usual funnel. The general design of this boiler is very similar to that fitted to the De Dion steam tractors. Apart from the boiler no very special features were noticeable, though a good word should be said for the general workmanship exhibited by the display of certain of the vehicle's component parts.

A petrol engine propelled lorry of good proportions was shown by the Motor Emporium, Ltd., W. At the time of our visit the stand was in charge of itself, and therefore any detailed particulars could not be ascertained beyond what were evident from personal inspection of the vehicle. The engine is of the two-cylinder vertical type with mechanically-operated valves and Longuemare

carburetter, the induction pipe from which passes through an exhaust box which is directly connected to the engine. Above this box is placed an additional air valve and a throttle governor. The drive is taken through an internally-coned clutch to a change speed gear giving three speeds forward and reverse. From the change speed gear the drive is through a propeller-shaft and bevel gearing on to a rear live axle. The driver's seat is placed over the engine, so that the largest possible amount of platform space is obtained.

In *The Autocar* of March 19th we gave illustrations of two of the motor waggons which have recently been delivered

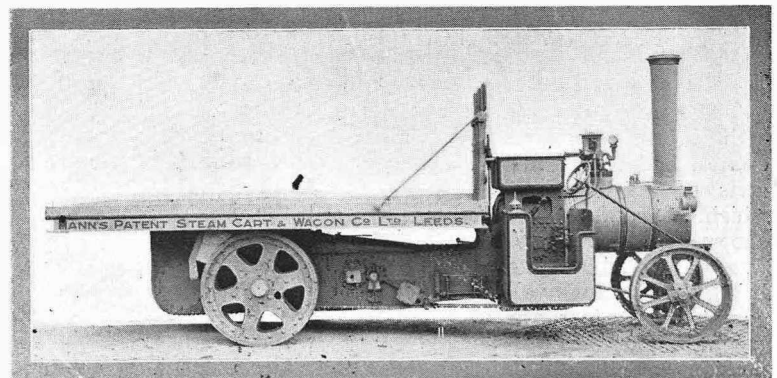


A Leyland lorry.

show was that seen on the vehicles of Messrs. Savage Bros., of King's Lynn. This has its water container on the right-hand side of the boiler, and the water-circulating tubes pass through the fire box to the left. A small receptacle placed above the water container serves as a steam collector, whence the steam is passed to the usual type of compound engine. Starting from cold, we are told that using bituminous coal, steam shows at the gauge in the short space of ten minutes.

The illustration which we give of Messrs. Mann's patent steam wagon practically serves to describe this vehicle, the specially noticeable features in it being the compensated front axle and the enclosing of the whole of the running gear, protecting it from dust and dirt. A four-speed pump is placed on the outside of this casing so as to be in a readily accessible position. The vehicle illustrated is constructed for a three-ton load.

A three-ton wagon propelled by a 16 h.p. four-cylinder petrol engine, communicating its power to the road driving wheels through the agency of a variable ratchet gear, was seen on the stand of the Empire Hazen Motor Wagon Co., of Sheffield. The engine is placed in a forward position under a bonnet, which gives a somewhat curious appearance to the vehicle. It drives through a spring arrangement to a countershaft driven by bevel gearing. This countershaft is in constant operation so long as the engine is running. When standing, the eccentric gearing is placed in such a position that no travel is given to the clutches on the rear live axle. By operating a side lever a



A standard type steam lorry built by Messrs. Mann, Leeds.

Show Report—Commercial Vehicles.

to the War Office authorities by Messrs. Stirling's Motor Construction Co., of Edinburgh. The waggon exhibited was precisely similar in all its details to those previously mentioned, it having a two-cylinder 12 h.p. petrol engine placed beneath the driver's seat. Power is transmitted through the usual clutch and change-speed gearing to a countershaft, which is rotated by means of a bevel gear actuated by propeller-shaft. On the ends of the countershaft are pinions engaging with gear wheels attached to the rear road wheels. Suitable provisions are made to keep the pitch line of the pinion and gear wheels always constant. A passenger omnibus, giving accommodation for sixteen passengers inside, was also exhibited. The details of this vehicle are precisely similar to those of the waggon. A 24 h.p. Mutel engine, fitted with a Xenia automatic carburetter, was also to be seen on this stand. This engine may be fitted to lorries or passenger waggons where exceptionally high powers for increased speeds or for traversing hilly country are necessary. Some fine examples of motor launches were also exhibited on this stand, the motors of which are of the two-stroke type, this type of motor being found preferable for this class of work for lower powers. The principal feature calling for remark was the silencer. This consists of a rectangular tank divided into compartments. The hot exhaust gases pass through a series of tubes placed in these compartments, which contain water, the result being that the gases are reduced in temperature, and so leave the silencer noiselessly and without causing any back pressure whatsoever on the engine.

A new comer was seen in the waggon exhibited by Messrs. J. and F. Howard, of Bedford. This vehicle follows generally-accepted practice, and the only particularly noticeable feature we discovered was the springing of the vehicle as to its front axle. The two front semi-elliptical springs are connected by a transverse girder bar, which is hinged to the forepart of the channel iron frame at its centre, thus allowing the front wheels to pass over obstacles without giving a lift to the front of the waggon. The general outlines are well depicted in the illustration which is given herewith.

On a tradesman's van chassis Messrs. Hayes and Son, of Stamford, showed a two-cylinder (inclined) m.o.v. engine, 44 by 4, with reducing gear forward of the crank chamber. The rear proper was shown at the Crystal Palace, and described in our report.

The Yorkshire Patent Steam Waggon Co. exhibited one vehicle fitted with their patent double-ended multi-tubular boiler. This is a particularly simple type of generator, and one which is perhaps more accessible for cleaning purposes than any other boiler which has been placed to similar use. The boiler is placed in the horizontal position across the front of the vehicle, the fire box being at the centre. Fire tubes run outward from the fire box and pass back again

to a smoke box placed above the fire box, but this is not directly connected with the latter, due allowance being made for expansion and contraction. Exhaust steam is projected into the return fire tubes by means of nipples, thus creating an induced draught for running purposes. The engine of this vehicle is of the compound type, with an arrangement for admitting high-pressure steam to the low-pressure cylinder for starting purposes, and for emergencies calling for an increase of power. The company's vehicles have, we understand, given the greatest satisfaction to their owners, and have proved extremely economical in running owing to the excellent steaming powers of their boilers, which will be readily seen by our mechanical readers.

A particularly interesting vehicle was the Hercules waggon. This is manufactured by a company of the same name, with works situated at Levenshulme. This vehicle was also a new comer to the show, and repaid careful inspection. The boiler is of the vertical fire tube type placed in front of the platform, but in the rear of the front axle—a feature wherein it differs from many cars of a similar type. The propelling power is



The Howard lorry with a four-ton load on board.

derived from a compound engine, which is fitted with the usual two-way cock, admitting high pressure steam to the low pressure cylinder when it calls for extra power to be exerted. The front compensated axle is the particular feature of this vehicle. This is arranged in a highly ingenious manner to permit of a considerable amount of movement being given to the front axle when travelling over rough ground without materially affecting the level of the platform body, thus giving great steadiness in running. A new type of metal wheel was also shown on this car. Its centre consists of a cast steel hub and spokes (the latter being hollow and in one with the rim). Fitting deeply into the rim are wood felloes, over which are shrunk the iron tyres. A drum is bolted to the spokes of the driven wheel, and the chain wheel is in turn attached to this. A special feature is made of dispensing with loose keys, all keys being formed as an integral part of one or other of the parts to be fixed together. Chain driving is employed, and in the event of a chain breaking or other accident happening an arrangement is made whereby a key, which is always carried in the box, can be inserted into slots in the ends of the chain sprockets. This serves to lock the differential gear, enabling the waggon to continue driving through one chain only. We were told that a distance of fifteen miles has been traversed with a load, driving through one chain without showing any signs of distress. We may incidentally say that the chains fitted are by Hans Renold.

Other firms who were exhibiting commercial vehicles at the Agricultural Hall, but whose exhibits have been previously dealt with in our report of the recent Crystal Palace Show, are the following: Messrs. Foden, Ltd. of Sandbach; Messrs. W. Tasker and Sons, Ltd. Andover; Messrs. Wallis and Stevens, Basingstoke; and the Cadogan Garage Co., which latter firm was represented in this section by a 34 h.p. Cadogan lorry. The details of all the exhibits of the above makers were dealt with generally in our full report of the Crystal Palace Show, which appeared in *The Autocar* of February 20th, there being no difference in any of the details of the machines exhibited at the Agricultural Hall which call for special comment.



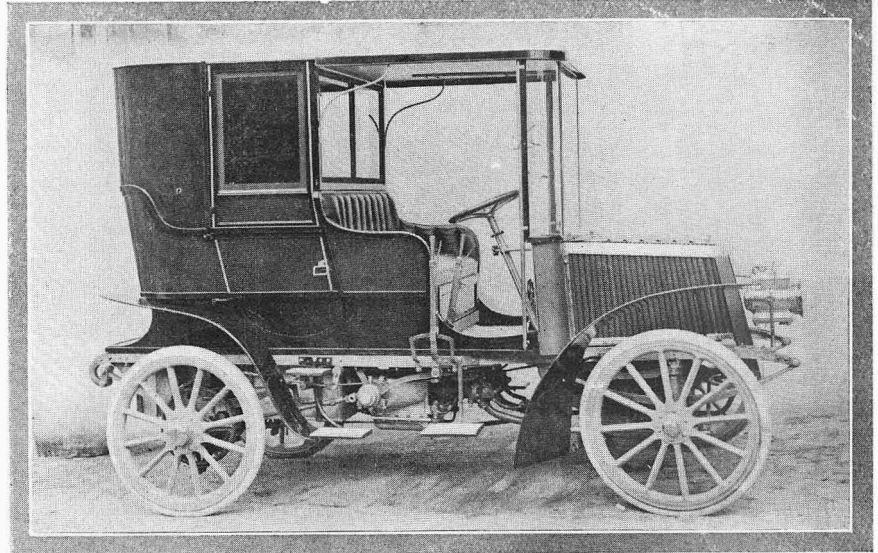
A single-cylinder engine Orion waggon on its way to the Agricultural Hall Show. The same waggon has during ten working days transported 104 tons of coal, distributing it around the suburbs of London.

STEAM AND ELECTRIC CARS.

LOVERS of steam cars made a point of examining the Cremorne, of which a chassis was shown. It is a most ingenious system, extremely well carried out, and it is impossible to do full justice to it without reserving a special article to the car itself. We will, however, attempt to deal with it broadly. To take the frame first, it is of the pressed steel variety and follows petrol lines; in fact, so far as the outline of the car is concerned, it would not be distinguished from a petrol car by the average observer. The boiler is of the multitubular type under the bonnet in front, and it is fired by the Cremorne paraffin burner. The engine is underneath the floor a little behind the dashboard, and is horizontal. Four single acting cylinders drive on to a four-throw crank. The steam is distributed to the four by a single shifting eccentric, the position of which is controlled by a lever at the side of the driver, taking the place of a change speed lever on a petrol car. There is a single D slide valve to each pair of cylinders, and by the shifting of the eccentric the travel of the valve is altered so that the steam can be used expansively and the engine reversed in the ordinary way. Within the crank chamber, which is oil tight, the gearing for the water feed, water return, and paraffin fuel pumps are placed. The water on being pumped from the tank passes through a feed heater just in front of the boiler, this feed heater being kept hot by the steam from the exhaust. From the feed heater the water passes into an economiser or coil, which is in the smoke box above the boiler, so that the waste heat which has passed through the fire tubes of the boiler is also utilised to increase the temperature of the water before it passes to the boiler. After doing its work in the engine the steam passes to an oil separator, then through the feed heater into the condenser, which takes the place of the ordinary radiator in front of the car; in fact, the three sides of the boiler case or bonnet consist entirely of condenser tubes. The water is then returned to the tank after passing through a steam separator. The throttle is actuated by a pedal; the transmission from the crankshaft is by a single chain to a live balance geared axle of very strong construction. A point which users of steam cars will appreciate is a jaw clutch on the end of the crankshaft which can be unlocked in a moment

if wished, so that the engine can be run independently of the car. This is a useful thing when by carelessness one has allowed the water level to get too low, and saves any necessity for any feverish hand pumping. Altogether the Cremorne is a splendid example of the modern type of steam car, which may be described as a type in which it has been endeavoured to blend the strong points of the steam and petrol systems.

Anti-vibrator, Ltd., were showing electric broughams, which have a special form of spring suspension. The batteries are carried underneath the driver's seat, and a simple form of



The Cremorne steam car with landaulette body.

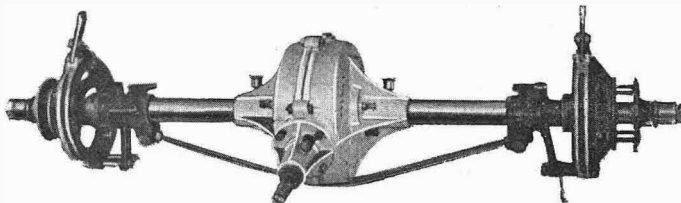
controller of their own design and construction is fitted.

Electric cars were shown by the London Electro-mobile Syndicate and Morgan and Co.

To the visitors interested in steam cars the chassis of the Turner-Miesse steam car presented features worthy of attention. We dealt with this vehicle at the time of the Crystal Palace Show, and would refer our readers who may be contemplating the use of the steam car, and whose attention may have been attracted by this vehicle, to our issue of February 20th.

PARTS AND FITTINGS.

THE provision of forgings and flexible steel parts for motor vehicles is undoubtedly a specialised branch of manufacture, and therefore the exhibit of Smith, Parfrey, and Co., of the Pimlico Wheel Works, Hammersmith, was interesting, both from a manufacturer's point of view and from the standpoint of the man



who is interested in the actual manufacture of his own car. This firm showed a very full range of axles with the steering pivots and hubs attached, springs in almost every conceivable form, and a specially well-designed live rear axle, with a series of artillery wheels from the smallest size upwards. Bent woodwork, such as employed for car wings and bodywork, formed a feature of this exhibit, and some extremely smart feats of bending were on exhibition.

The centre lever control for cars was very much in evidence on the stand of the F. M. Bowden's Patents Syndicate, where a great number of different methods of accomplishing the control from the steering wheel were shown, comprising fittings for two up to any required number of levers. Both patterns were shown—those in which the levers move with the wheel, and those in which the levers are always stationary, and the wheel moves separately. As regards the actual motions, almost every form hitherto employed on up-to-date cars has been reproduced, in addition to which one or two new methods were exhibited.

The application of the Bowden wire mechanism to the control of an autocar was well exemplified on two Talbot cars and a quadricycle on the stand of Messrs. Bowden, Ltd. Some improvements in the details of the fittings were noticed, and as a consequence much easier working was found.

In some of the Alpha motors having mechanically-operated valves a special feature is made of the plugs, which close the holes through which the valves are withdrawn. Another special feature is easy accessibility. (Johnson, Hurley, and Martin.)

Parts finished and in the rough were shown in considerable profusion by that well-known Sheffield engineering firm, Messrs. Durham, Churchhill, and Co. Their three-speed and reverse gear, with direct drive on top speed, and locomotive double

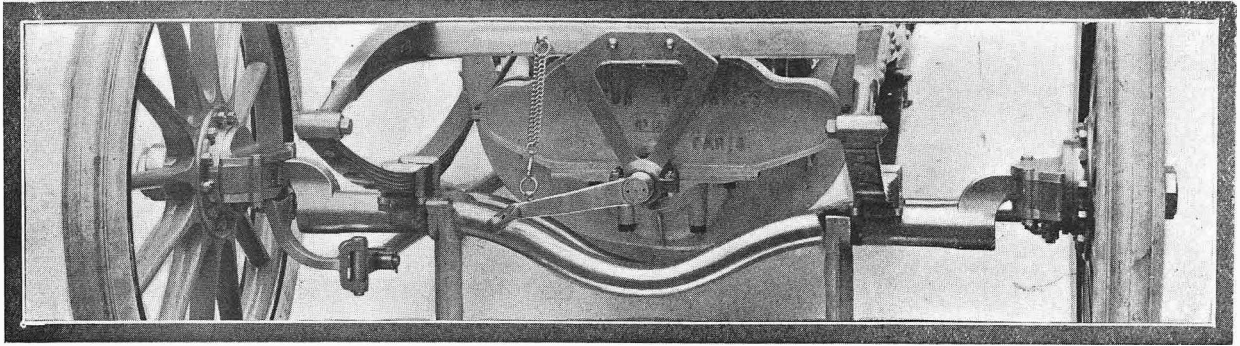


Photo by

The front axle and steering joints of the Hotchkiss car.

Argent Archer

shoe brake, by which all strain is taken by the shoe bearers and does not gain access to the shaft bearings, is a well-designed and well-made arrangement. The dustproof and oil-tight clutch, specially designed for engines which have no external flywheel, should be particularly enquired into by makers, as it contains many good features. Another fitting, particularly applicable to light vehicles driven by high-speed low powered motors, is the two to one reducing gear made in connection with the live axle driving bevel pinion, enclosed in a case bolted to the differential gear box. A special line of brass-armed steering wheels was also a feature of this exhibit. In the matter of propeller-shafts Messrs. Durham and Churchill now have dies for the stamping of universal joints, and samples of stampings from such dies were shown in the rough and finished. In their special line of parts Messrs. Durham and Churchill are introducing a triple ball bearing for the driving bevel pinion spindle of live-axle cars. The pinion is well supported by the three lines of balls, and the bearing is excellently produced of the best and most suitable materials. A live axle, differential gear, etc., were shown for building into a 30 h.p. to 40 h.p. car.

On Van Raden's stand a very neat petrol level indicator and drip tap were shown. These are made suitable both for petrol and lubricating oil tanks, and are supplied ready for attachment to existing tanks. The illustration given here depicts the largest size made.

Good examples of pressed steel frames complete and in their separate members were shown by Messrs. Wm. Beardmore and Co., Ltd., of Park Head Forge, Glasgow. Other samples of pressed steel work were exhibited, and also test specimens of the various classes of steel employed by these manufacturers.

A very strong and light steering wheel in aluminium was shown by Mr. R. W. Coan, of 219, Goswell Road, E.C. The rim of the wheel may be covered with rubber or leather

as desired, or it may remain in its metallic form, in which case it is heated by passing hot water from the engine through the hollow arms and rim, the water being led thereto by means of flexible tubing.

A most interesting display of ball bearings for other purposes besides those connected with automobiles was made by the Hoffmann Manufacturing Co., of Chelmsford. The particular feature of interest was a collection of ball-bearing hubs for automobiles.

The Auto Machinery Company, of Coventry, also exhibited ball bearings for every class of work. Their name in connection with the manufacture of such bearings is so well known that any eulogistic mention of it is unnecessary. It may interest some of our readers to know

that this firm also manufacture balls in gunmetal for use in pumps.

The light four-cylinder Forman engine is now being made in a new form, as the cylinders, as well as the heads, are water-cooled. The dimensions have been slightly increased, and an automatic carburetter is now fitted. (Forman Motor Co., Ltd.)

A very large variety of engines, parts, and fittings were displayed by the Begbie Mfg. Co. The engines are, of course, Asters, and the new pattern with the mechanically-operated inlet valve was shown. All the valves are on one side, and are actuated by a single camshaft. On this stand there was almost everything that is required for building a complete car.

The Vortex radiator, shown by Mr. John Russell, has vertical tubes connecting up to headers. The tubes contain a wire core, which is twisted at intervals into loops, the object being to break up the current of water thereby.

Four different sizes of four-cylinder engines suitable for either car or launch use were exhibited by Mr. F. C. Blake, of New Gardens, S.W. Examination revealed careful workmanship and good designing. In the largest sized engines shown the mechanically operated valves are actuated by two camshafts.

One of the useful items in the tyre section was the Frost steam vulcauiser. It consists of a hollow cradle, which is filled with water, and in this steam is generated by means of a gas burner underneath it. The cradle is shaped to the exterior of the tyre cover, over which it is placed when in operation. A mandrel somewhat the shape of a short length of an inner tube is placed upon the inside of the cover when in position. This mandrel is hollow, and is fed with steam from the hollow cradle by means of a flexible tube. Thus a patch or any repair to the cover is vulcanised on both sides. By a slight modification the vulcauiser may be used for treating patches on air tubes and valve seats. There should be a great demand for this appliance by all repairers, as they can effect even large repairs on their own premises at a small cost, provided they know just the requisite amount of heat and the right time required for the completion of the work in hand—a very important point.

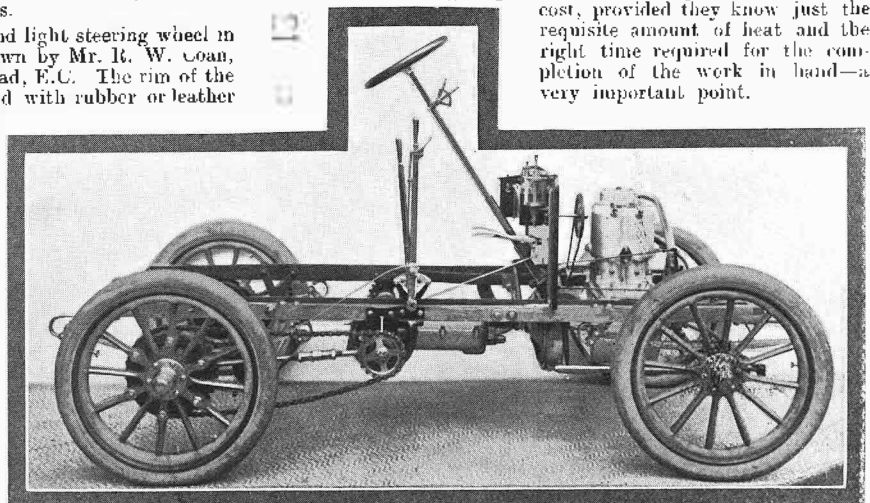
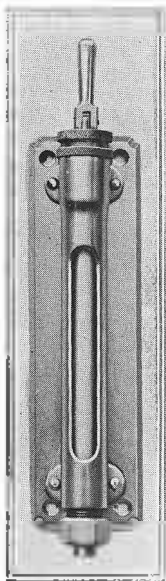


Photo by

The chassis of the 7 h.p. two-cylinder Star.

Argent Archer.

TYRES.

MANY firms seem to be making a speciality of non-skidding bands for vulcanising to existing tyres. The Imperial Tyre and Rubber Co., of Brook Street, Holborn, are selling a flat corrugated tread for this purpose, so that an ordinary smooth tyre can be converted into a non-skid. Beyond this they showed a tyre having a metallic insertion tread. The non-slipping properties of this tread are obtained by two endless chains encircling the tyre and built on to the canvas foundation of it, so that they are not dependent upon the rubber for support. The links of the chain have square heads formed on them, these heads protruding through the tread of the tyre. Vulcanising patches to inner tubes are another speciality of this firm.

The Dunlop Tyre Co. made their usual display of tyres, rubber goods, and waterproof clothing. Their manufactures are so well known that comment upon them is entirely superfluous. It may be remarked that a large number of cars exhibited were fitted with Dunlop tyres.

One of the most interesting exhibits on the stand of the North British Rubber Co., Edinburgh, was the semi-solid tyre, which follows closely on the lines of the old cushion tyre for cycles. Beyond this the firm are making a speciality of motor clothing, and one particularly useful garment is the "envelope" rug, which is made with a rubber base for the user's feet and a waterproof rug wrapping round the figure. They showed the Ducasble solid rubber tyre, which has been known for some time in France, but which, we understand, the great Scotch house are now manufacturing. This tyre is mechanically secured to the felloe in such a way that it cannot be detached, while from the section of the abuttal produced by the form of the flanges of the rim and the section of the tyre itself, cutting or cracking cannot result.

The Wilton Cox puncture-proof band is adapted to be attached to the inside of any outer cover. It comprises a couple of layers of horse hide specially treated. One layer is attached to the inner side of the cover. The second is

The solid tyre was very much in evidence at the exhibition, and one of the most ingenious is that of the Williams Tyre Co., of 4, Denman Street, Piccadilly, this being perhaps the only completely detachable tyre in the show. The rubber has a rectangular passage running completely through it, and through this passage a flat steel band is passed. One end of this band carries a hollow ferrule, and the other end enters this ferrule, so that the two ends register. The ferrule is slotted, and a second slot is cut through the extremity of the band. The tyre is put on the wheel with the band threaded

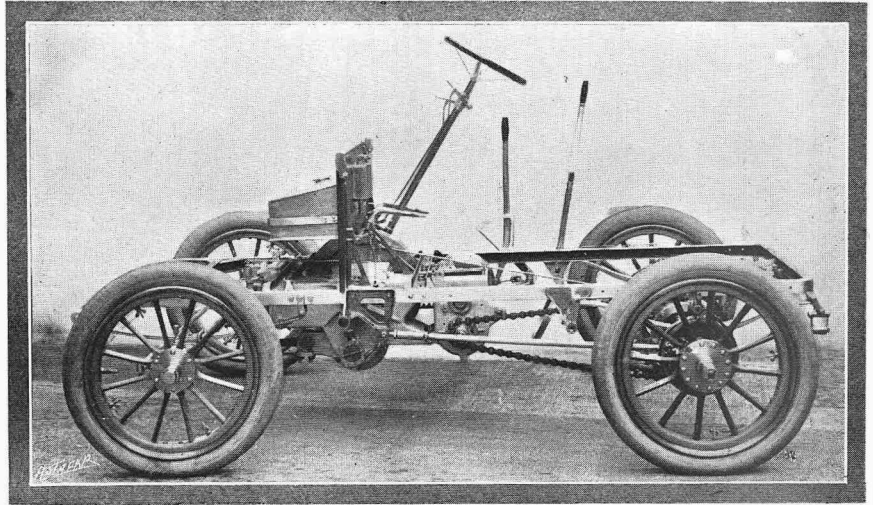


Photo by

Chassis of the 6 h.p. Siddeley two-seated car.

Argent Archers

through it and the ends registered by means of the ferrule, and an oblique bolt having a hooked end is then inserted, the hook engaging the slot in the end of the band. By tightening the bolt the band is gradually pulled up, the tyre being thus securely fastened to the rim of the wheel. The makers claim that this tyre has an eight per cent. compression, so that it should be both resilient and durable. One of the tyres shown that has run a considerable distance, although showing signs of wear, is rendered conspicuous by the absence of cuts and gashes.

Another solid tyre which has a few novel features is the production of Hopkinson and Co., Ltd., of 121, Cromer Street, W.C. The specialities are as follows: First, the tyre is fixed to the rim by means of two flanges held by bolts through the felloe in the same way that many pneumatic tyres are now fixed. The tyre beds down into a recessed steel band, completely encircling the wheel, and instead of the grooves in the side flanges coming directly on to the rubber at their points of contact, there is a canvas covering built into the tyre at the corners of the bead, so that there is little or no danger of cutting the rubber. The form of the tread, too, is rather novel. It is called by the manufacturers the "twin tread," and consists of a deep groove completely dividing the contact of the tyre with the ground into two points. Yet another feature is the fitting of these solid tyres to existing pneumatic rims, so that there is no need to have the wheels changed, and if it is desired at any time to return to pneumatic the same rims will serve.

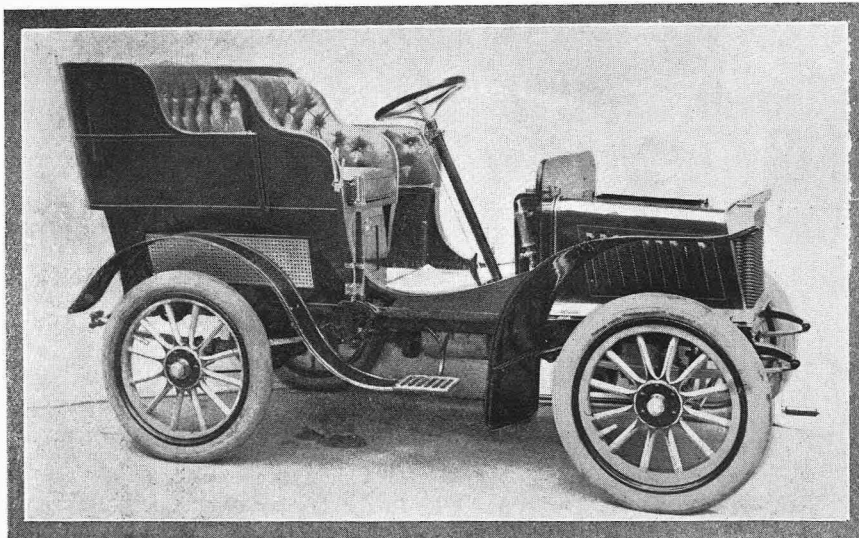


Photo by

The three-seated Allday voiturette. The entrance to the tonneau is on the left of the driver.

Argent Archer.

attached to the first by its edges only, so that any articles which find their way through the outer cover are collected in the chamber formed between the two layers of horse hide. It protects the air tube, but does not save the fabric of the cover from damage.

The Grappler tyre in its usual form and variety was shown by the Hyde Rubber Works, Ltd., of Woodley, near Stockport, but there are no differences from the former tyre. This firm, however, make a speciality of re-rubbing any make of tyre.

Show Report—Tyres and Non-skids.

The corrugated flat tread seems to have taken a firm hold in the tyre world, both for reliability and non-skidding properties. The Clipper Continental stand had an exhibit of tyres of this pattern, and they struck us as being particularly well made articles. Besides these, the company showed their usual range of tyres and tyre accessories.

Eyre's anti-skidding appliance, which was shown on the Star Co.'s stand, consists of a series of loops of steel wire cable attached to clips fixed to the spokes of the wheels. When in use, the wires are placed with the loops outward from the wheel, so that they come into contact with the ground. When not in use, they are folded back with the loops towards the hub of the wheel.

The Goodyear tyres are again being introduced to this country by Mr. A. C. Hills, 15, Clifford's Inn, Fleet Street. The tyre is practically the same as heretofore, but a new model with a flat corrugated non-skid tread was shown.

The Palmer cord tyre was shown in many sizes, but no alteration has been made in it since we last described it. It will be remembered that no canvas is used in the cover, the cover being constructed entirely of specially-prepared cords tangentially placed with regard to the rim.

The Collier tyres differ but slightly in actual construction from the previous models, but the makers were showing a new and ingenious method of fixing. The felloe of the wheel has a steel band encircling it, and in this band are made at intervals slots from the centre outwards. The wire through the

tyre has bolts attached to it, each bolt carrying a nut. These bolts slip into the slots in the band, being contained within recesses in the felloe, and are tightened by ratchet key. Side flanges held by bolts through the felloe complete the retaining device. It is quite impossible for one of these tyres to come adrift when running, even if absolutely deflated.

Non-skidding bands formed the bulk of the exhibit at the stand of the See Motor Car Supply Co., 8, Snow Hill, E.C. These bands, which have already been described in these pages, are exactly the same as those shown at former exhibitions, consisting of a toughened chrome leather cover, completely enveloping the tyre, and having a steel-studded leather tread.

The Samson leather tread, provided with steel studs for anti-slipping purposes, was exhibited by Capt. Theo Masu, on the same stand as the Germain cars. These treads are now made in a variety of patterns according to the weight of the tyre, it being, of course, necessary to fit a heavier tread for a weighty car on account of the increased tractive resistance.

Solid tyre users found in the Reilloc tyre a departure of somewhat unique form. This tyre is made up of an outer cover with spiral wire insertions in the beads, flange held in the recessed portion of the wooden felloe. The cover embraces an oval shaped rubber pad of very soft flexible rubber which rests upon a steel band on the outer periphery of the wooden felloe.

The Michelin outer covers with non-slipping steel studs vulcanised into the rubber tread were also shown.

(To be continued.)

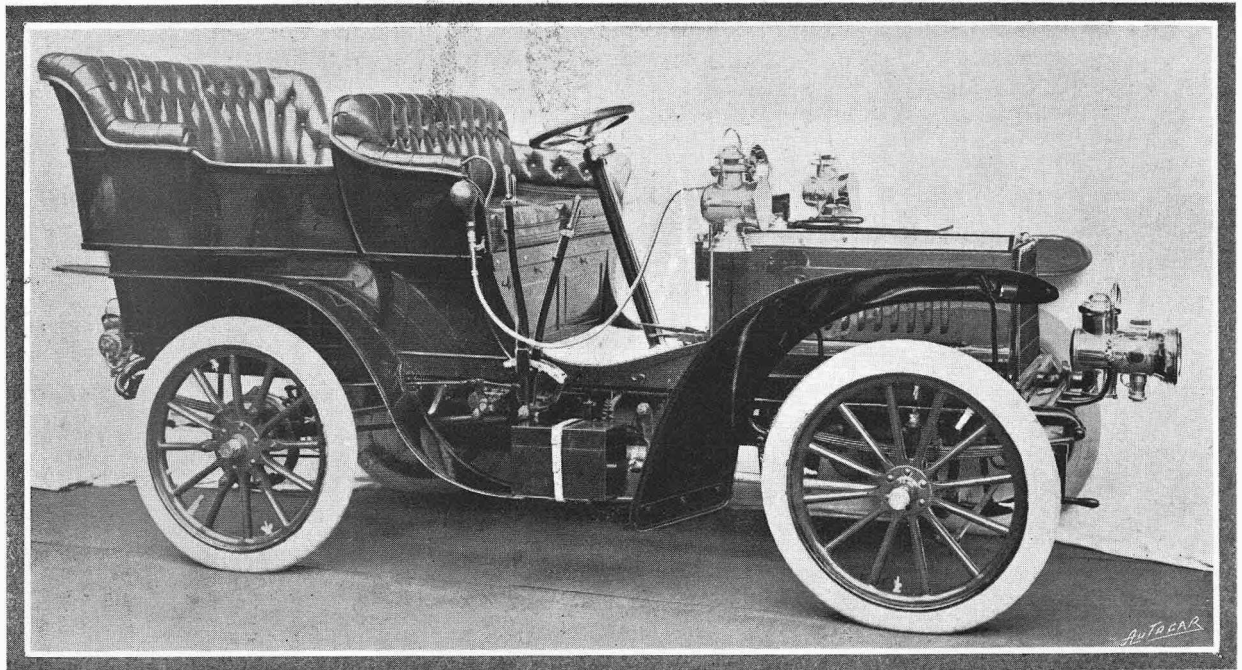


Photo by

The 12 h.p. Richardson car, with tubular frame.

Argent Archer.

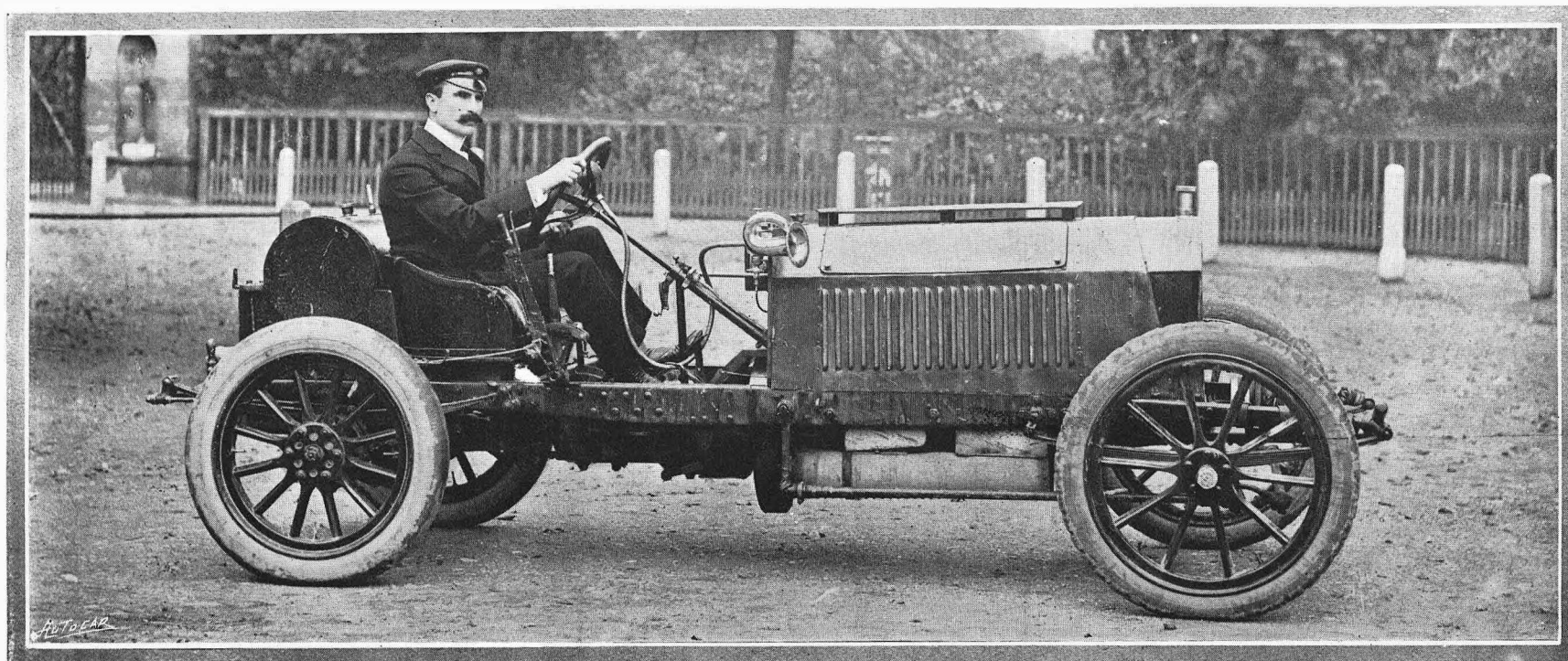
The Continental Caoutchouc and Guttapercha Co., of Hanover, have just published the second edition of "The Automobile Guide" for Germany. The book for 1904—containing over nine hundred pages—is even more complete than the edition for 1903, and contains no less than 1,400 towns, with full particulars of petrol stations, repair places, garages, etc.

* * *

In accordance with the new federal law, the Governor-General in Council in Australia has decreed that patent applications can now be formally made at the Custom House of the capital city of each State. Applications so filed will be marked with the date,

hour, and minute of receipt, and will be subsequently recorded at the Patent Office as having been filed on that date. Not only will they be filed in order of their dates, but so far as regards novelty they will be held to be dated from the actual date of filing at the Custom House, unless dated under the Convention. In the Convention nearly all the principal countries and colonies agree that a patentee who has filed an application for a patent in one of the countries or colonies has his patent considered dated equally with the date of his original first application. The application in Australia can either be a provisional one or complete. Fees and stamp duties are double those for Great Britain or Ireland.

THE SECOND AND THIRD 1904 GORDON-BENNETT RACERS.



THE 80 H.P. NAPIER.

ON January 16th we illustrated the first of the British cars—Mr. Mark Mayhew's Napier to be ready for the eliminating trials. The second, a Napier (shown above), is the one which Mr. S. F. Edge will drive. The 80 h.p. engine has four cylinders, and only weighs some 500 lbs. It differs from Mr. Mayhew's, inasmuch as the Napier multiple port suction valves are atmospherically operated instead of mechanically, as Mr. Edge thinks that there is more life in a four-cylinder racing engine with the automatic inlet valves than with the mechanical. We are told that the engine is exceedingly flexible, so that the car can be run from twenty to eighty miles an hour on the top speed. It is, of course, provided with the Napier high-tension synchronised ignition, which gives absolutely correct tuning to all four cylinders. This car has three speeds forward and reverse. The drive on the top speed is direct to the live axle, which has now become a recognised feature of the Napier racers. The clutch is of the metal-

to-metal variety, like that of the six-cylinder car exhibited at the Crystal Palace Show. The pressed steel frame is tapered at both ends, while the exceedingly long springs are carried right outside the frame both for back and front axles. The wheels are 34 in. in diameter, with 120 mm. tyres on the back and 90 mm. on the front, and the weight of the complete car is 963 kilos that is, 37 kilos inside the maximum weight permitted. The driver sits very low, and every effort has been made to turn out a vehicle which shall start and stop very quickly, as the ability to do this is most important on a course which is very far from straight.

THE 72 H.P. WOLSELEY.

CLOSE on the heels of Napier II., the 72 h.p. Wolseley entered for the British Gordon-Bennett eliminating trials has appeared. The horizontal engine has four cylinders, and is suspended from the frame immediately below and in front of the dashboard. It is so placed that the footboard man or

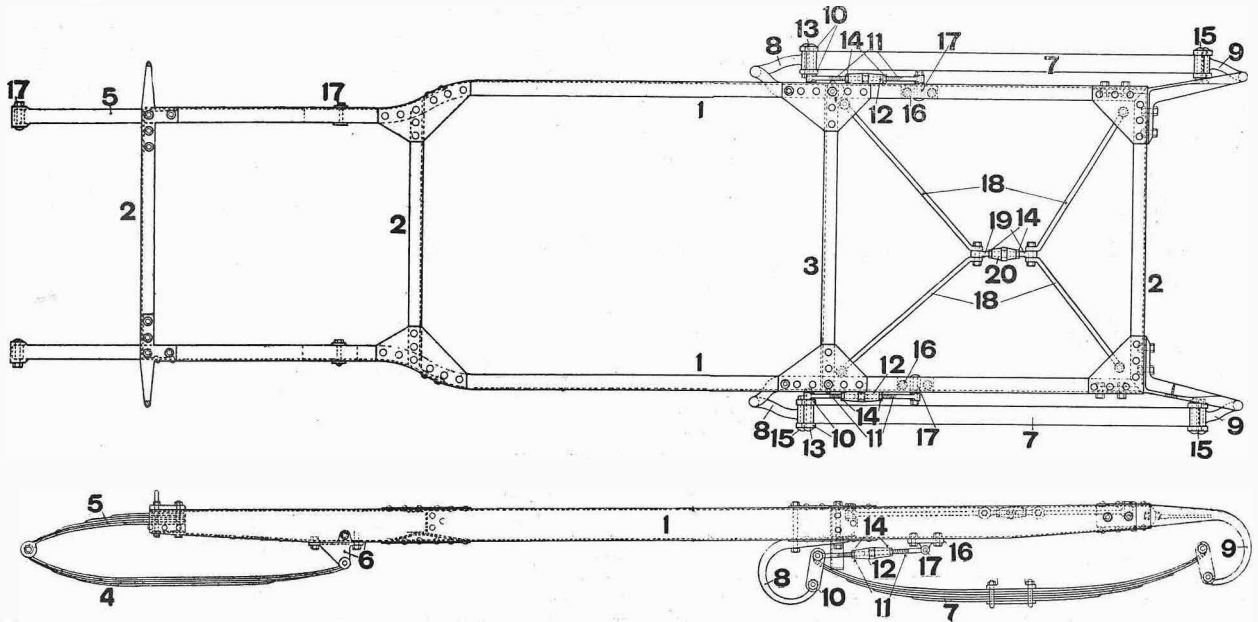
mechanician can make adjustments while travelling. A single jet equalising carburetter is employed. The fly-wheel is of very large diameter, and the motor can be quickly accelerated. The radiator is in the form of a nearly circular nest of tubes surrounded by a water tank. The fan for inducing the draught is gear driven. The change-speed gear gives four speeds and reverse, and the box is suspended from three points. All the gear runs on ball bearings. H section axles and a stamped steel frame are used. The weight is well distributed, as the engine is considerably behind the front axles. The wheels are strengthened by wire spokes, which run from the outside flange on the hub to the inside of the rim. These are designed to increase the lateral strength of the wheels with a very small increase in weight. The petrol and oil gauges are all in sight of the mechanician, and everything has been done to make the car as easy as possible to drive and control. We understand it has given every satisfaction in its preliminary trials, being remarkably stable at high speeds. This car forms the subject of our supplement this week.

THE 20 h.p. HUTTON CAR.

In this issue is commenced an illustrated description of the 20 h.p. Hutton car, which, in regard to the fact that cars of from 20 to 30 h.p. are now coming into general use for touring, and that they call for a good deal of nerve and muscular power to control, has been designed and is being constructed in accordance with a number of patents granted to Mr. T. W. Barber, M.I.M.E., which have for their object the simplification and ease of such control. While it is obvious that

Britain, and in accordance with methods approved by the latest mechanical knowledge.

Figs. 1 and 2 show a side elevation and plan of the frame respectively, by which the general arrangement of the members can be gathered. The frame, etc. is of mickel steel, hydraulically pressed to shape, and riveted together at the cross junctions with gusset plates. The dumb irons carrying the forward ends of the front springs are of an elastic nature, practically



Figs. 1 and 2.—Plan and side elevation of the 20 h.p. Hutton car.

- | | | |
|-------------------------------------|----------------------------------|----------------------------------|
| 1, side members of the frame | 9, rear scroll for back springs | 15, special bolts for springs |
| 2 and 3, cross members of the frame | 10, spring shackles | 16, brackets for chain adjusters |
| 4, front spring | 11, chain adjusters | 17, bolts attaching 11 to 16 |
| 5, spring horn | 12, chain adjusting nuts | 18, frame stays |
| 6, bracket for front spring | 13, special bolts for spring | 19, adjusting screws to 18 |
| 7, rear springs | 14, lock nuts for adjusting nuts | 20, tensioning nut to 19 |
| 8, front scroll for back springs | | |

nerve cannot be supplied by mechanical devices, it will be seen before this description is complete that one of Mr. Barber's aims in designing this car has been to provide mechanical means by which the gear may be varied and the brakes applied by the simple pressure of a finger.

All means of control are concentrated upon the steering wheel—a thing already achieved in part in other automobile mechanical economies, but herein wholly and entirely obtained. The car is claimed to be constructed of the very finest material obtainable in Great

forming portions of the springs themselves—a feature of the Mercedes practice, and one which all who have ridden on the German cars so made will allow adds considerably to the light and easy running of the vehicle.

Cross members are placed where the twisting strains due to the attachments of the springs are delivered to the frame proper, and it is the thoughtful disposition of these members which has enabled the frame to be fashioned of material of such light section, while its rigidity is thereby considerably increased.

(To be continued.)

One of the best and certainly one of the most closely considered of all the four-cylinders cars we took trial runs in at the Crystal Palace was the newly introduced 12 h.p. four-cylinder New Orleans, the detail of which we gave at some length in our report of the Twickenham Co.'s stand. Although the engine had admittedly not been tuned quite up to concert pitch, the manner in which the car tackled Anerley and the special trial tit-bit out of Farquhar Road was most gratifying to its constructors and those who rode in it. The drive on the top speed was everything that could be desired, the fact that all gears except the bevels on the live axle are out of mesh when the third is in being, no

doubt, largely responsible for the sweetness of the drive. We should say that high-priced cars of great renown notwithstanding, it would be difficult to find a quieter engine, either loaded or running light. The control is of the simplest, and the new light aluminium detachable clutch seems capable of driving anything. We met Mr. Astell one day last week driving this same car, but fitted with a new carburetter, the action of which appeared to be of a most sensitive character. Should this apparatus fulfil all that is expected of it, it will be the subject of a patent, and will form a leading feature of the New Orleans cars at some future date, when we hope to illustrate it.

CORRESPONDENCE.

EDITORIAL NOTICES.

No 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.

BRITISH AND FOREIGN CARS.

[8638].—With reference to the correspondence opened by Mr. S. F. Edge regarding foreign-made parts used in the design of so-called English-built cars, I notice with surprise Mr. A. E. Cohen's letter, No. 3,587, in which he declares that only a novice, and not an expert, would buy an English-built car. I notice also Mr. Maurice Clarke's letter, No. 3,589, in which he says the reason why so many motorists declare Continental cars superior to the English is that so many of the English makers use foreign made parts of bad material—rather different views and broad statements.

That a few years ago the foreign motor car was far superior to the English, I don't suppose anybody will deny, but that the English manufacturer of to-day cannot turn out as reliable and good an article as the foreigners is a rather funny statement to make in view of the trials, etc., that have been held in the last years, but the same trials have even shown that the English manufacturer is certainly not the only master of the automobile trade.

I myself have in the last seven years been engaged in the motor trade in England, and I am a foreigner. In my opinion the reason of a great deal of the difficulties and troubles of the English trade has been that many of the managers in the different firms have had to learn their trade after they had arrived to that position. Cycle makers, gun makers, locomotive builders, Nottingham bootmakers, auditors, clerks, and directors' nephews are all believed to be competent to manage a motor factory. When it is considered what a great deal of special knowledge is required in the motor trade, and what an amount of capital is generally at the mercy of the manager's capabilities, this state of things is so much more surprising.

I may mention that I myself personally have had nothing to complain of through this condition of things.

FOR THE GOOD OF THE TRADE.

DISGRACEFUL CONDUCT.

[8639].—This evening I saw a motor car run over a dog in the Worcester Road, one and a quarter miles from Stour-bridge. The road is narrow, and there were two dogs running with a cart, and a lady on the footpath had a terrier with her. The car did not slow up, and ran over the terrier, breaking its leg. Neither of the two men in the car looked round to see what had happened, though the dog made a considerable noise, and when the car passed me about sixty yards further on, they were both laughing as if at a good joke.

I have driven in this district for nearly four years, having had the first motor owned here, and I must protest strongly against having my favourite sport being brought into disrepute by men who should better know how to conduct themselves on the road.

I know what dogs are like, but I think under like circumstances a driver should stop and express regret, at any rate.

A B 15.

DISCREPANCIES IN H.P.

[8640].—I noticed that at the Automobile Show held at the Agricultural Hall, 18 h.p. Mercedes cars were being quoted as 18-28 h.p.'s, and anything more extraordinary I have not heard of, as it is the first time to my knowledge that I have ever heard of a nominal 18 h.p. giving off 10 h.p. more than it was originally designed to.

The fact of the matter is—these 18 h.p. cars are 18-24 h.p.'s, and there is a new car that is 24-28 h.p. Now, as the cylinders of the 24-28 h.p. have far bigger dimensions than the 18-24 h.p., it stands to reason that this latter car cannot be given the definition that is being given to it by the anxious salesmen who are handling them. The cars that are being put on the market this year by the Cannstatt works are as follows: 24-28 h.p., 34-32 h.p., 40-45 h.p., 60 h.p.

As regards the 18-24 h.p., to give it its proper definition, I hold a letter which contains the following paragraph in French, the translation of which I give herewith: "I declare equally that the production of 1904 Mercedes at Cannstatt will be the following types: 24-28 h.p., 40 h.p., and 60 h.p., and that the other types will not be made at Cannstatt."

It will therefore be seen that not only are the 18 h.p.'s wrongly described, but they are not even made at Cannstatt; they are, to the best of my knowledge, Berlin made.

It is a great pity that all this hawking and misrepresentation goes on with such a famous car as the Mercedes, and in writing you this letter, I have done so—not so much with the intention of running down the misrepresentations that are being made, as with the object of warning the public of what they are getting.

D. M. W.

REPAIR CHARGES.

[8641].—I should be glad of the opinion of some of your readers owning a similar car to mine, viz., a 7½ h.p. Wolseley.

In November last I had a fitter from a large West End firm to examine one cylinder for faulty compression. New rings were fitted, but no inspection whatever was made of the liner. The charge amounted to over £2. Finding matters no better I took the car down to the same firm's garage and was advised to have the cylinder liner drawn and inspected. It was found to be very slightly oval. The other cylinder needed no attention, the compression being excellent. To my astonishment I found when calling next day that both liners had been removed. Here is the account:

	£	s.	d.
Drawing liners, regrinding and repacking same, making watertight (liners found to be slightly oval); these were scraped and new piston rings fitted and engine reassembled	8	4	0
Six rings		15	0
Liners do.		1	0
Waste		6	3
Exhaust washer		1	3
Three dozen split pins		9	0
	9	2	6

The work was begun on a Friday (mid-day) and finished the following Tuesday (mid-day). The account seems to me excessive, and I should be obliged for opinions on the subject of such repairs.

S. L. C.

THE LODGE COIL.

[8642].—Seeing in last week's *Autocar* that the Autocrat has pointed out some queries which people are making with regard to the "Lodge Ignition," I may say that three sizes of the coils are in course of manufacture, so that both bicycles and cars will be able to be fitted.

Messrs. Muirhead and Co., Westminster, electrical engineers, are making the largest type.

As to high tension magneto ignition, it will be quite possible to adapt the Lodge system to this form, and with the same advantages.

Although the spark is of such a fierce nature, it practically takes no more power from the accumulators than any other coil.

ALEC. M. LODGE.

THE CLUB AND THE TRADE.

[8643].—As the question of the trade element in the Automobile Club of G.B.I. has recently been the subject of keen discussion, I should like to raise a point which has just come to my notice, and which, I venture to think, requires explanation.

A well-known member of the club recently read a most interesting and instructive paper on valves and valve mechanism of internal combustion engines, and in this paper he fully describes a particular valve of his own invention. So far, so good. Having read his paper, the author proceeds to send circular letters, together with a copy of his paper, to the leading manufacturers, quoting them a royalty for the use of his valve. Now, I would ask the readers of your valuable paper, is this a fair and proper use to make of the Automobile Club?

Another point of interest concerning the trade element in the club is this. It is one-sided. If advertisements are going to

be allowed in club papers, etc. everyone should have a fair chance. A case in point. Some time ago a gentleman, not in any way connected with the trade, read a paper before the club concerning "Cars for Men of Moderate Means," and in his paper he mentioned one particular car, giving the user's experience of it, but the name of this car was suppressed throughout the report, although that of another car was frequently mentioned. Why? J. LISLE.

TO SPORTING MOTORISTS.

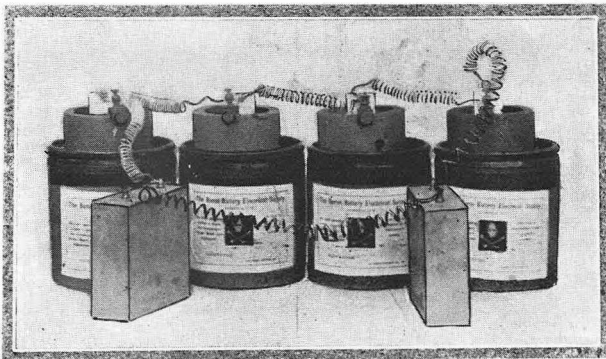
[8643].—A long distance road walking match will very shortly take place between two well-known clubs (in each of which are several Stock Exchange members). Motors are urgently wanted to convey officials and pressmen. The offer of help from any sporting car owners will be much appreciated. The start will be at a very early hour to avoid interference with traffic, etc. Saint Oswald's, Putney. H. HEWITT GRIFFIN.

CHAUFFEURS.

[8644].—I am much interested in the storm I have raised on the above subject. I have not noticed many letters from owners speaking up for chauffeurs; the letters seem to be mainly from a class of men who find they have killed the goose that lays the golden eggs. To follow out the logical deductions from your correspondents' remarks, a chauffeur ought to be an M.I.M.E. and an M.I.E.E. to take care of a car properly. Possibly, also, he ought to be an M.I.C.E., because then he would be familiar with road construction. In practice, however, an intelligent coachman, gardener, or ploughman (perhaps it may astonish Mr. "Shuvver" to know that a good ploughman is a rare bird) can be taught all that is necessary to know as regards driving and running repairs in a month to six weeks. With regard to "razor stropping," it was delightful to see the "shuvvers" fall into the trap. A man who can put a good edge on a tool is not to be despised, especially when the man has picked it up naturally without special training. The fact is the "chauffeur" is doomed, and that is why he is so angry at my remarks. Let him return to the works whence he came out, where he is under the eyes of his works manager. For my part I shall never employ "chauffeurs" again. I prefer to pay a moderate wage for civility and willingness to learn, rather than a quite disproportionate wage for conceit, ignorance, and dirty ways. I may say that in each case I was extremely careful as to the character of the men I engaged. The three chauffeurs were dead failures in every way. My groom has been a success as a driver and mechanic from the start. A BAS LES CHAUFFEURS.

EXPEDITIOUS CHARGING OF ACCUMULATORS.

[8645].—As owner of two large cars and one motor tricycle, I have for several years had more than an ordinary experience with respect to accumulator charging for electrical ignition. In all I have fourteen accumulators which I keep charged by means of my Boron cells, four in number. I obtained these through the advice of a friend of mine who



A set of Boron charging cells.

had discarded the various dry cells as useless and was about to adopt accumulators. I had previously tried two makes of primary cells which had been much advertised in other papers, but which only gave me incomplete results. Since employing this as a means of electric power, I have never had any trouble with my accumulators. I would most emphatically

advise any owner of a car or tricycle to invest in one of these sets, but let him not be persuaded to take the cheaper articles which have lately been advertised, which are all right at the start, but which simply leave one disappointed as I have been. I have no interest in the Boron Battery Co. save that of a satisfied user of their cells.

EUSTACE MORGAN, M.D.

PARAFFIN OR ACETYLENE.

[8646].—I should be much obliged if any of your numerous readers would give me their experience as to the comparative merits of paraffin and acetylene lamps for motor cars.

IRELAND.

SPEED INDICATOR.

[8647].—Re latter paragraph of letter (8621) in *The Autocar* of March 19th, I should like to inform Mr. Edwin Gray that I have had a Winter speed indicator running on my car (a 15 h.p. New Orleans) since Christmas last, and the Odometer now registers over 1,700 miles.

The indicator works perfectly, and is quite correct, as tested on several occasions with chronograph, and as far as I can see should wear indefinitely, as turning so slowly (about sixty times in a mile at twenty miles per hour) makes the work very light.

I have no interest whatever in the Winter, but think it deserves to be better known, as it does not, like nearly all others, depend erratically on centrifugal force and flexible shaft. F-12.

A DOUBLE DRIVING, DOUBLE STEERING OMNIBUS.

[8648].—I should be interested to know how Mr. Barker Lake manages to couple his two pairs of driving wheels on the bus which was illustrated in *The Autocar* of March 26th (page 415), and also to steer the back pair without introducing extreme complication. As far as can be seen from the drawing it would necessitate a balance gear to the back axle, and one in the connections between the back pair of drivers and the forward pair. This would not be all the extra complication needed, but I need say no more, as any mechanical engineer will be alive to it. The idea of the four coupled double steering vehicle is all right, and there are certain practical points to recommend it, but it appears to me that Mr. Lake has attempted to obtain them at too great a cost in added complication. D. D.

THE OLD KENT ROAD—AN APPEAL.

[8649].—As mayor of the newly incorporated Borough of Bromley (Kent), and as an experienced motorist, I beg you to publish the following appeal.

Bromley has a very narrow and crowded High Street, and is situated just beyond the first stretch of favourable road from London after the difficulties encountered in the Old Kent Road and Lewisham have been left behind.

In their relief from their previous restrictions motorists are in the habit of driving through the town of Bromley at a speed which causes discomfort, and even fear, to the other users of the High Street, and the traders (mostly paying heavy rates) are naturally apprehensive that their best customers will do their shopping in streets less frequented by motor cars.

If motorists will be good enough to run through the town on a "throttled third" they will then find that under normal conditions the legal limit is possible until Sevenoaks is reached.

The Bromley Borough Council has adopted a very moderate attitude in the matter of motor traffic control, and the official caution notices which are already in position really mean what they indicate—"Motorists are requested to drive with extreme caution through the town."

I therefore appeal to your readers using this great South Eastern artery of traffic from London to drive with extraordinary consideration until the further caution notice is passed. FRANK GRIFFITH.

PETROL CONSUMPTION.

[8650].—I should like to ask Mr. F. T. Jane whether he has not made a mistake in stating (*The Autocar*, March 12th, page 347) that the petrol consumption of his car averaged thirty-seven miles per gallon. If the statement is correct I should like to know the conditions under which the results were obtained—whether they were ordinary or extraordinary. In regard to vibration, also, I do not understand why the car when throttled down should shake, as the reverse of this should be the case. R.

Correspondence.

DUST PREVENTION ON ROADS.

[8651.]—I am anxious to put some material on a main road which I frequently use to prevent the inconvenience caused by the dust to houses and people on the roadside. I am sure if other automobilists would do the same in their immediate neighbourhood a good deal of the present prejudice against them would be done away with. I shall be glad to know, firstly, what is the most suitable material to use; secondly, the approximate price per mile for material; thirdly, cost of putting on; fourthly, how long its dust-laying properties may be expected to last.

Perhaps some of your many readers will be good enough to give their experiences.

A SYMPATHISER WITH OTHER ROAD USERS.

INCOMPETENT EXPERTS.

[8652.]—"D.M.W.'s" letter in your issue of the 19th ult. was so characteristic of the writer that I did not deem it worth while taking up the valuable space in your journal by replying to it, but I cannot allow his letter in your last issue to pass unnoticed. With his characteristic want of discernment "D.M.W." by his letter in your issue of the 26th ult., gives me the very advertisement he states I am seeking. Needless to say, I have neither sought nor desired any self-advertisement, and your acceptance of my letters under my own name are to me a sufficient denial of your correspondent's insinuation to the opposite.

I started the correspondence on "Incompetent Experts" with the hope that it might be instrumental in bringing into existence a class of men, whom, for want of a better title, I have styled "motor car vets." feeling convinced that automobilists as a body will welcome the advent of a class of men who are competent to give sound, independent, and unbiased advice relating to motor vehicles.

Not having the time to carry on a controversy in the press on this, to my mind, most important subject, I have embodied my views in an article, which I proposed—as foreshadowed in my first letter—to send you for publication, but in view of the want of good faith imputed to me by your correspondent, I now have no alternative but to withhold it.

ROBERT E. PHILLIPS, M.I.Mech.E., Assoc.M.Inst.C.E.

[Our correspondent is mistaken in withholding his further communication on the subject, as it is one which should be ventilated.—Ed.]

PEGAMOID.

[8653.]—Our attention has been called by several motor car body builders to the article appearing in your number of the 26th ult., entitled "How to Buy a Motor Car," by Lieut. W. G. Wyndham, in which it is stated that "Pegamoid does not wear well, and loses its colour if rubbed much." We cannot understand how such a statement has been published in your paper, as it is a grave accusation, and liable to do us a good deal of harm, more especially as it is utterly unfounded. We might point out that Pegamoid brand cloth is well known to wear well, and does not lose its colour, although imitation Pegamoid cloths could well be accused of this defect.

NEW PEGAMOID LIMITED.

[We also have a further communication from New Pegamoid, Ltd., in which it is stated that Pegamoid is not a generic term of a certain category of goods, but a trade mark, the property of New Pegamoid, Ltd., under which they sell a certain imitation leather manufactured by them. They inform us they have been very successful with this, and that their Pegamoid brand leathers have a high reputation among leather cloths, which contention is proved by the increasing business they are doing with railway companies, tram-car companies, and upholsterers generally. It is hardly necessary to say that among automobilists the term "pegamoid" is loosely used, and is taken to mean an imitation leather, but not that manufactured by New Pegamoid, Ltd., unless specifically stated.—Ed.]

THE STEAM CAR.

[8654.]—Referring to query 8,633, the Stanley steam car is very similar in build to the majority of American runabout cars. I am not aware that anyone has complained of the reliability of these light American cars when new, but they do not seem to last long, and they certainly appear to be at a discount. If you refer to the advertisement columns in *The Autocar* you will find that all the firms or agents who sold these runabout cars a year or so ago have disappeared from your columns or taken to sell petrol cars instead. At the present moment the steam car is evidently not in fashion. The Serpollet, the Turner-Miesse, and the White appear to

be the only cars left. A few new experimental steam cars have been shown lately, but whether the motorist will take to these is another matter. The reliability of the above three named cars appears to be beyond dispute; but no one can deny that the steam car is not in demand. Why, it is rather difficult to say. It may be fashion only. I think, before the steam car can compete with petrol cars, manufacturers will have to put in a paraffin burner that will entail no more trouble than an ordinary gas jet—that is to say, it must be always ready, without smoke or smell, able to be lowered and raised as a gas jet, and remain so for an hour or less at the minimum of consumption of paraffin; also the fuel and water supply must be proportioned so that the generator tubes are not overheated or the fuel wasted (this latter appears to be now done on the new Simplex Serpollet).

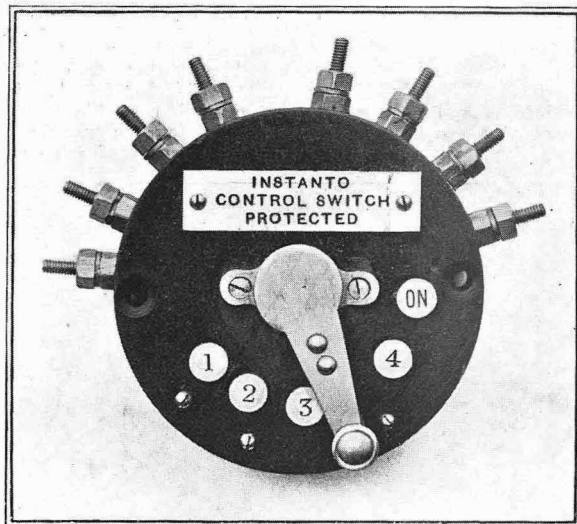
Referring to the reliability trials of the White and the Serpollet—both of which received medals—as far as I am aware no figures were given of the amount of fuel consumed. This is a serious omission. How much spirit is used to initially heat the vaporising coils of these two cars? What is the consumption per hour of paraffin on the Serpollet and of petrol on the White cars? Perhaps the manufacturers and the users of Miesse, White, and Serpollet cars will give us figures, and let us make comparisons as to cost of running. Owners of steam cars would throw a great deal of light on the matter if they would state definitely what trouble and what delay they have (if ever) experienced with their cars, and the type of car. We hear a great deal of how many thousand miles someone's car ran without a hitch, but it is time we heard from those motorists who have had trouble and delay (if any exist). Showing up defects is really more useful than showing up good points. The manufacturers can always do the latter. The owner is the only party who cares to mention the former.

PROGRESSION.

SUMMARY OF CORRESPONDENCE.

TYRES. Mr. F. J. Barnett writes in reply to "J.M." that the Pytchley Autocar Co., of Northampton, fitted the tyres of his Fiat car with the Wilton-Cox device, with very satisfactory results.

HOTCHKISS CAR AGENCY. Mr. Henry Fournier writes that the statement in the last issue that Messrs. Mann and Overton are the sole agents for the Hotchkiss car is a mistake, and that from the 28th March the British Automobile Commercial Syndicate, Ltd., are the sole representatives of the Paris automobile, and have the sole right to sell Hotchkiss cars in the United Kingdom of Great Britain and Ireland.



A TESTING SWITCH. Many owners of multi-cylinder engines will be glad to learn that an easy method of testing each cylinder individually without removing any connections has been made by Mr. Eardley Billing, of the Carlton Garage, of 5, New Burlington Place, W. This takes the form of a four-way switch, with internal contacts and wiring so arranged as to enable any one of the four cylinders to be tested by moving the lever over the number disc corresponding to the number of the cylinder to be tested. The advantages of such an arrangement are many, but chief among them is the ability to tune up each coil trembler with the greatest ease and certainty.

Flashes.

Messrs. W. Watson and Co. have recently removed from Hoylake to more commodious premises in Newington, Liverpool. They claim to be the oldest established motor firm in Liverpool. Three years ago they ran a public service of cars in Chester, and have been running cars for hire ever since. The firm's new premises, which are in the centre of the town, provide ample room for storing cars.

* * *

In *The Autocar* of the 14th November last, we gave a short description of the Vita sparking plug, which we then had had in use for some considerable time. Mr. J. A. Riley, of 23½, Martineau Street, Birmingham, who is the British agent for these plugs, tells us that they have been received with remarkably good results by automobilists generally, and that a large number are now in use, thus further proving the excellence of this very moderately priced article.

* * *

The barracks around which the Prince and Princess of Wales and the Royal party were driven on the 13th ult. in five Humberettes were by a clerical error wrongly located in a paragraph in the last issue of *The Autocar*. It should have been stated, of course, that the barracks were the Royal Naval Barracks at Portsmouth.

* * *

The lovely valley of Aosta, one of the most unfrequented spots in Italy, is now to have its motor omnibus service, so that it can be opened up to tourists.

* * *

Mr. Oliver Stanton, through whom the Prince of Wales secured his first motor car, has received from His Royal Highness a diamond scarfpin as an acknowledgment of the pleasure that His Royal Highness has derived from automobilism.

* * *

Messrs. A. W. Heybourn and Co., who were first to take up the motor trade in Maidenhead, and who have been appointed official repairers to the Automobile Club, have recently increased their workshop and garage accommodation. When fully settled, they inform us, they will have a well-equipped works, two inspection pits, wash-down for cars, facilities for charging accumulators, vulcaniser for motor tyre work, and good stocks of motor supplies and accessories.

* * *

At Milverton Police Court last week, Mr. C. N. Paterson, a Kenilworth motorist, summoned two men who were in charge of a furniture van for ignoring his warning and not allowing him room to pass. The case, however, was dismissed on the strength of the extraordinary statement that the manager of the furniture removing firm, who was not present at the time of the occurrence, succeeded in tracing the marks of the van two days afterwards (rain having fallen in the interval), and professed to be able to state that in his opinion there was plenty of room for the motor to pass!

His Majesty the King has just ordered one of the latest type 1904 British Daimler cars of 28-36 h.p. This is the sixth vehicle of the same make that His Majesty has had. His Majesty is a great believer in a long wheelbase, and his new car will be no less than eleven feet between the centres of the wheels.

* * *

Mr. Basil Joy, technical secretary to the Automobile Club, informs us that the club is organising a parade of motor delivery vans, to be held, probably on the Thames Embankment, on Saturday, April 30th, at three o'clock. The object of the parade is to encourage motor van drivers to pay careful attention to their vehicles, with a view to the reduction of wear and tear and the cost of upkeep. Prizes to the amount of £50 will be given to drivers for the best-kept vehicles, and up to the present very favourable replies have been received to a circular letter which has been sent out to owners, who, even if they are unable to take part, have been good enough to wish the event every success.

* * *

The motor car is being put into the service of the French postal administration. As a first experiment, the outlying villages of Cambrai will receive their letters by means of a motor car.

* * *

It was stated at a recent meeting of the London County Council that 4,294 motor cars and cycles had been registered under the new Act, and that applications were coming in at the rate of thirty-five per day. The County Council have taken £5,158 in registration fees.

* * *

Commander C. J. Scott, R.N., is the inventor of one of the side-slip devices entered for the Automobile Club competition, but, owing to the

change in the date, the car which had been promised him for exhibiting his device before the judges will not now be at his disposal. Commander Scott, whose address is Sharrow Grange, Sheffield, would be glad to hear from any gentleman or member of the trade who is sufficiently interested in these side-slip trials to loan him a car for the demonstration of his invention.

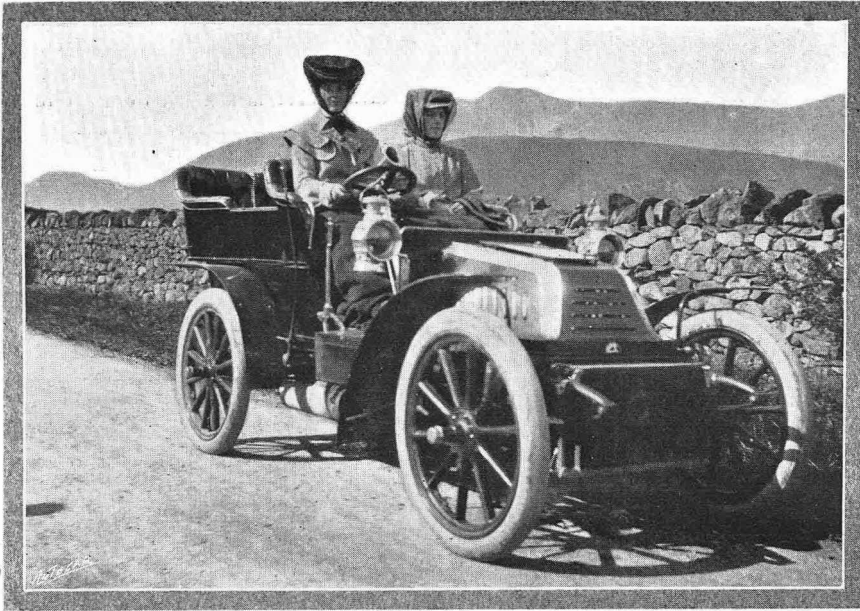
* * *

A Brentford motorist was fined 60s. and 25s. costs on Thursday last week for furiously driving a motor car to the common danger. He ran over a valuable dog, and then raced off to evade the law; but, remembering his number, came back.

* * *

The serious charge brought against Mr. Paddon for driving to the danger of the lives and limbs of passengers on the highway, which has been before the West London Police Court several times, has now been dealt with. It appears that Mr. Paddon was driving a motor car along the High Street, Kensington, when the car knocked down a lady who was crossing the road. Fortunately, she was not seriously injured, but the police proceeded against Mr. Paddon. After hearing a large number of witnesses, the magistrates dismissed the case. Mr. Staplee Firth represented the defendant.

"THE AUTOCAR" DIARY.	
April 1.	Ladies' A.C. removes to new Headquarters, Claridge's Hotel.
" 4-9.	A.C. America Commercial Vehicle Trials.
" 9.	Hertfordshire A.C. run to Kbayader.
" 9.	Yorkshire A.C., run to Aberford.
" 15.	Lincolnshire A.C. Annual Dinner.
" 16.	Yorkshire A.C., run to Ilkley.
" 16-31.	Vienna Motor Car Show.
" 16.	Examination of British Gordon-Bennett Cars by A.C.G.B.I.
" 17.	Coupe Meyan, Motor Boats.
" 18.	Entries close, Glasgow to London Trials, Scottish A.C.
" 18.	A.C.G.B.I. Side-slip Trials, Ladbroke Grove.
" 23.	Yorkshire A.C., run to Doncaster.
" 30.	A.C.G.B.I. Parade of Motor Delivery Vans, Thames Embankment, 3.0.
" 30-May 12.	Antwerp Salon.
" 30.	Burnley & District A.C. Opening run.
May 1.	Carburettor Trials. A.C. de France.
" 1.	St. Louis Autocar Show opens.
" 7.	A.C.G.B.I. 100 Miles Quarterly Trials.
" 10.	Gordon-Bennett Eliminating Trials, Isle of Man.
" 19-20.	Glasgow to London Non-stop Reliability Trial.
June 17.	Gordon-Bennett Cup Race.
July 30.	British International Cup for Motor Boats.



IN LAKELAND. A lady at the helm of a 16 h.p. Ariel, from a photograph taken during a tour in the Lake District

In the April number of the *Badminton Magazine* Mr. Claude Johnson gives his experiences in trials with three low-priced cars.

* * *

Motor engineers who had not seen the Carpentier Manograph had an opportunity of examining the instrument last week at the show, as Messrs. Van Raden had one at their stand in the gallery. This ingenious indicator, which is the invention of the same Dr. Carpentier whose name is well known in connection with the trembler coil, is an instrument which appears to have overcome the difficulty of obtaining diagrams at really high speeds. It has also possibilities in the hands of an ingenious operator which we do not think have yet been fully tried.

* * *

Dr. Henryk Arctowsky has made a suggestion. His proposal is to start in a motor sledge from such latitude as that reached by the English South Polar Expedition, and run from this spot to about latitude $82\frac{1}{2}$. With attention to details, the remaining distance to the Pole will, the energetic doctor thinks, be easily accomplished. The journey should offer great inducements to those motorists who find the restrictions to rapid travelling in thickly-populated districts irksome and inconvenient.

* * *

For their next year's exhibition the directors of the Liverpool Cycle and Motor Show, Ltd., have secured one of the large markets, with yards for trials of motors. The show (which will be held early in March, 1905) will again be under the auspices of the Liverpool Self-propelled Traffic Association. The trials for the Jones Challenge Cups, for one hundred guineas and twenty guineas, will also be open for competition.

Mr. G. A. Kessler, of New York, is credited with having made a record trip on his 60 h.p. Mercedes from Biarritz to Madrid. He is said to have covered the distance in the running time of 11h. 10m., beating the Sud express train by four hours.

* * *

Mr. Henry Sutton, a motorist, of Melbourne, Victoria, informs us that he will have a heavy oil motor car at the St. Louis Exhibition. The car has been manufactured by the Austral Otis Engineering Co., who have the largest engineering works in Australia, employing 1,100 men. The same firm will shortly be putting on the market a large number of heavy oil cars constructed on Mr. Sutton's system, they having already made very successful engines for dynamos on the same plan. The system has

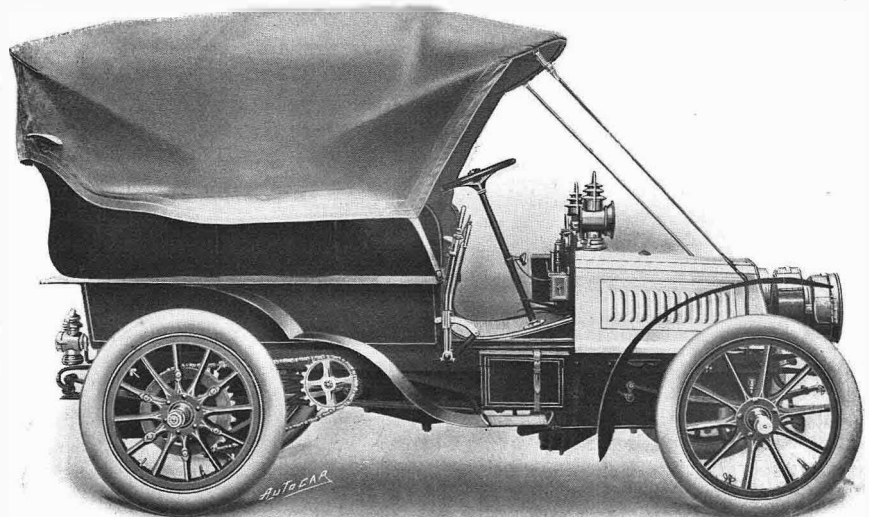
many points of interest, and amongst the advantages claimed for it is that greater power of running is obtained than with petrol, and this without either smoke or smell. We hope to describe the device at an early date.

* * *

Lord Londonderry has just ordered a 24 h.p. Panhard from Messrs. Panhard and Levassor. It is to have a large body to seat eight. He is also going in for a 15 h.p. landau of the same make.

* * *

In addition to the three-cylinder car with large bore and short stroke which the Maudslay Motor Co. showed for the first time at the recent Crystal Palace Show, a new two-cylinder design is being evolved. This will have the same bore and stroke—5in. \times $3\frac{1}{2}$ —as the three-cylinder engine, but the motor will be smaller and lighter, with three speeds, direct drive on top speed, while provision will be made for either chain or live axle and bevel drive. It will, of course, be a less expensive vehicle than the larger Maudslays.



A 24 h.p. Panhard with Cape cart hood raised and side curtains in position

SOME QUERIES AND REPLIES.

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

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

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

CHARGING FROM BATTERIES.

Can you inform me whether the Boron battery is reliable? and what advantage there is in using it to charge accumulators rather than using it direct on the car itself attached to the primary coil?—T.R.S.

Provided that the small amount of attention necessary for keeping the cells clean and in good order is bestowed upon them, and the cells are well charged, the Boron battery gives every satisfaction and is a reliable and convenient medium for recharging accumulators where access to a continuous current is not possible. Owing to the nature of the charge in the cells and the battery, and to the fact of its being of a liquid form, the battery is unsuitable for direct use upon the car itself. If such a battery were used it would not require to have so many cells as are necessary for charging purposes, as a slightly higher current has to be put through the cells than is given out.

HORSE-POWER.

My engine is a 4½ in. bore and 4½ in. stroke. What h.p. will this develop at 800 and 1,200 revolutions per minute?—A.H.W.

The powers which should be given off with the dimensions and speeds named are as follows: 4½ in. bore by 4½ in. stroke, two cylinders, 800 r.p.m., 10.734 h.p.; ditto, 1,200 r.p.m., 14.18 h.p.

SNOW IN THE CARBURETTER.

When we start our car, a 10 h.p. Panhard 1903 model, there is always a thin coating of, as it were, hoar frost over the carburetter, especially the pipe leading from it to the inlet valves. And it takes about a quarter of an hour or more to get the engines running properly. It is true that the carburetter has not a water jacket, but the coach-house in which it is kept is warmed by hot water pipes. Can it be owing to the petrol, as it used not to do so formerly even in the coldest weather?—CARBURETTER.

The formation of hoar frost in the induction pipe of the engine at starting is due to the moisture in the incoming air being converted into snow by the cold petrol projecting upon it while passing through the carburetter. If perfectly dry air could be taken in no such formation would occur. The best way to overcome the trouble when it occurs is to wrap the body of the carburetter with cloths, and to keep them saturated with hot water for about five minutes before starting the engine. This will warm up the carburetter sufficiently to prevent the formation of snow, and easy starting will result.

TUBE IGNITION.

I should be obliged if you could answer the following questions re old 6 h.p. Daimler engine. It has tube ignition and two cylinders: What size should the small hole from cylinder into platinum tube be to give the best results? I find that if I reduce the amount of air supplied to the carburetter by twisting the slotted collar of the air bottle it increases power. Is this a sign that sprayer of carburetter is not large enough, thus letting in too weak a mixture if full open?—H. J. CLIFFORD.

The size of the hole in the nipple of the platinum ignition tube is about one-sixteenth of an inch in diameter. The relative position of the nozzle to the tube regulates the time of firing. When the nipple is screwed further in towards the tube the time of ignition is advanced, while by screwing it outwards the reverse is the case. By slightly increasing the size of the hole in the nipple the period of ignition would be advanced. It should also be remembered that a deposit of soot inside the ignition tube also seriously affects the rapid ignition of the charge. The increase of power obtained by opening the air inlet to the carburetter wider denotes that the engine has previously been running on too rich a mixture, so that the correct proportions of air and petrol vapour were not

drawn into the cylinder. This is the reverse of your diagnosis of the trouble.

CHARGING DIRECT FROM AN ALTERNATING CURRENT.

Can you tell me where I can get a handbook describing how to make the "Noden valve" for charging accumulators off an alternating current? I know it consists of four cells and certain salts and aluminium plates, which, when an alternating current is switched on, turns it into a continuous current.—H.H.

We are unable to give you the title of any book which will describe how to make the Noden valve. This is a perfectly simple and satisfactory apparatus, and consists of a glazed earthenware jar containing a fifteen per cent. solution of phosphate of ammonia. In this is placed a carbon plate 5 in. long, 2 in. wide, and about ⅜ in. thick, opposite to which is placed an aluminium plate of similar dimensions. The positive wire of the alternating circuit is attached to the carbon plate, while a wire attached to the aluminium plate is coupled to the positive terminal of the accumulator. The resistance lamps are placed in the negative wiring. The number and candle power of these depend, of course, upon the voltage of the current. This apparatus undoubtedly derives its name of "valve" from the fact that the aluminium plate performs the same functions as a valve, and only permits of the positive impulses from the alternating current being passed completely round the circuit, the negative impulses having no effect on the aluminium plate.

A QUESTION OF HORSE-POWER.

In the interesting comparison of engine dimensions in your issue of March 12th there are two engines, both of which profess to be 14 h.p., viz., the Aster (Gladiator) and the Talbot. Now I should very like to know which of these engines—if either—is correctly named "14 h.p." In dimensions the Gladiator engine beats the Talbot very easily in nearly every point. Is the Gladiator too modest, or is the Talbot too boastful?—W. W.

A CARBURETTER QUERY.

I have a 9-11 h.p. 1902 type Clément car, automatic inlet valves, which is very noisy while standing. I shall be obliged if you or any of your readers can suggest a remedy. The noise seems to be at the entrance to carburetter, and is somewhat like a trumpet sound; the chatter of the inlet valves has something to do with it. I have fixed a kind of silencer at the entrance, but this has not reduced the noise much. Would any kind of valve carburetter answer? I shall be glad of any suggestion.—M.R.C.S.

TO REPAIR A CRACKED WATER JACKET.

A correspondent in the query column asks how he can effectually repair a cracked water jacket. This can be done by a solution of sulphate of copper, which will deposit metallic copper on the surface of iron. Close the bottom water passage, and pour it in from the top, and as it leaks through the crack dip it up and pour in again until the crack becomes permanently closed.—HARRY G. BELL.

SOOT IN CARBURETTERS.

I have been having trouble with my carburation on my 14 h.p. two-cylinder car, and on recently dismantling the carburetter for cleaning purposes found the mixing chamber and the induction pipe coated internally with a fine layer of tarry, sooty deposit. The valves are atmospheric, and have apparently nothing wrong with them. The springs, too, are of the normal strength. I have cleaned the carburetter thoroughly twice, but the same thing always happens. Beyond the fact that the carburation is faulty, I cannot account for it. Can any of your readers assist me?—B.T.U.

ALCOHOL AS A MOTIVE POWER.

A most interesting and complete paper was read on Thursday evening last week by Dr. W. R. Ormandy before a sparse but attentive audience at the Automobile Club. Mr. Ormandy prefaced his remarks by referring at some length to the agitation which has been and is still going on to induce the Government to still further consider the position of those who employ alcohol for chemical purposes. The author intimated that Messrs. Jos. Crosfield and Sons, Ltd., of Warrington, with a view of obtaining the fullest possible information upon the subject, had sent members of their staff to various continental countries where alcohol is used in quantities for chemical and technical purposes.



There are as yet comparatively few high-powered Simms-Welbeck cars to be seen, so that the one we illustrate above is not without interest. It belongs to Mr. John T. Lewis, J.P., the chairman of the Hub Two-speed Gear Co., Limited, of Manchester.

Alcohol for Power, Light, and Heat.

In considering the information so gleaned, Dr. Markel, the managing director, had realised that the largest consumers of alcohol on the Continent were the industries connected with the development of power, light, and heat. So important did the matter thus appear to him that he urged his firm to go much farther than they previously intended, and strive for the co-operation of all interested. That the technical use and chemical use of alcohol are not synonymous was proved by the fact that in Germany the technical consumption was one-third and the chemical one-fifteenth of the total production. The lecturer collected a considerable portion of his information, and in so doing was much impressed by the ever-increasing quantities of alcohol used in Germany for motive purposes and as a source of light and heat.

Efficiency of Alcohol in Motors.

The relatively high price of the unsuitable methylated spirit of this country was the reason why few attempts had been made here to utilise it as fuel for combustion motors. Information on the subject had therefore to be sought on the Continent. France had done much, but the amount of alcohol used in Germany is undoubtedly larger, as alcohol is regarded as fuel for slow-running motors of from 2 h.p. to 30 h.p. Professor Hartmann's experiments in 1895 with a motor by Grob and Co. showed the relative behaviour with petrol and spirit. The consumptions worked out at 426 and 839 grammes per b.h.p. hour respectively, corresponding to efficiencies of 13.6 and 12.2—the former a fair result for a much more up-to-date petroleum engine.

Later tests with a Korting motor by Professor Slaby showed consumption of 550 grammes per b.h.p.—a great advance. Between 1897 and 1901, alcohol motors running on consumption of 390 to 440 grammes per b.h.p. were built.

Alcohol was long neglected as a source of power for internal combustion engines by the difference in the relation of its heat of combustion from that of petrol. The heat of combustion of alcohol is about 5,500 degrees, and of petrol and paraffin about 10,250 degrees. At first sight comparison of the two would appear hopeless, unless the price of alcohol was approximately one-half that of petrol. If the value of a fuel were measured by its heat of combustion that would be the case, but, fortunately, it was not so. It depended upon the number of calories converted into work. The gradual develop-

ment of German alcohol gas-engine production illustrated the development. The solitary case quoted showed efficiency of 12½ per cent. on the brake only, but in 1902, of ten machines entered in a competition no less than three gave efficiencies of from 32.7 to 50.9 per cent. on full load—an astonishing result, placing the alcohol motor high as an economical converter of heat to work. The tests of these motors were carried out by Professor Dr. Meyer, of Charlottenburg.

Higher Compression.

The degree of compression, though varied, was very much higher than the average compression of the petrol engine. Compression of 153½ lbs. per square inch and an explosion pressure of 495 lbs. per square inch were in some cases obtained. From figures deduced by Dr. Meyer it appeared that the higher efficiency of the alcohol motor was due to the higher compression that could be used. Why could these high compressions be used with alcohol and not with petrol? During compression of the mixtures heat was given out, and at a certain point a temperature was attained at which the mixture fired. This point of automatic explosion fixed the absolute limit of compression possible to be used, otherwise preignition resulted. Temperature of mixture of gases attained on compression depended largely on specific heat of substance in mixture. In petrol this was very low, with alcohol much higher, and the spirit used contained moreover ten per cent. of water. The presence of this percentage of water permitted much higher compression, as shown in the case of the Banki motor, where injection of water with paraffin permitted compressions of 150 lbs. per square inch to be obtained without preignition. Without such injections 75 lbs. per square inch of compression only was a safe limit. In the new Vogt motor, using coal gas and air in the presence of steam, compressions of 375 lbs. per square inch had been reached before preignition took place.

Water in Petrol.

The study of Professor Meyer's work showed the increased efficiency of the alcohol motor to be attributable to increased compression, due first to low inflammability of alcohol air mixtures; secondly, and in a higher degree to water contained in alcohol. The question raised was why not, therefore, use more water and higher compression, as Mr. Exner, of Vienna, had proved that increased efficiency followed. But Meyer had shown that added water without increased compression had a disadvantageous effect. Maximum explosion pressure was reduced, combustion diminished in velocity, and the diagram pointed to comparatively slow burning rather than



The car we illustrate above is the first of the new 12 h.p. Gladiators to be seen in South Africa. It was photographed outside the Johannesburg Motor Mart, which belongs to Messrs. A. R. Atkey and Co., whose name is so well-known to Nottingham automobilists.

operation. The increased effect was not due to presence of water after explosion, which was the effect to be expected on theoretical grounds. The statement of Mr. Griffin in regard to his 50 h.p. hydro-oil engine, referred to by Captain Longridge in *The Engineer*, August 7th, 1903, that "during combustion the water vapour decomposed and burnt in combination with the oil vapour, the added heat of the burning

water gas aiding complete combustion of the whole of the heavy hydro-carbons," was not borne out by Professor Meyer's results, the amount of heat necessary to split up the water being exactly equal to the amount given out on recombination of the elements, so that was not surprising. Increased compression permitted the use of alcohol containing an increased percentage of water, and a more useful effect accrued, but the percentage gain attained by compressions beyond 150 to 180 lbs. per square inch was so small that, coupled with increased uncertainty of ignition and added cost of the motor, it was not worth having.

Converting Petrol Motors.

From the above conclusions it was evident that a petrol motor could not be converted into an efficient alcohol motor simply by altering the carburetter. To render alcohol explosive required other means than in the case of petrol. Heat required to evaporate alcohol was two and a half times more than petrol, and the ten per cent. of water present required five and a half times as much as petrol by equal weight. At first sight this appeared to present serious difficulty in the use of alcohol, but the actual amount of heat necessary to evaporate a certain quantity of alcohol containing ten per cent. of water amounted to only five and a half per cent. of the total heat of combustion of the same amount of alcohol calculating heats of combustions (it being understood that the heat given out by water vapour in products of combustion condensing from steam is not considered). Thus five and a half per cent. of heat necessary to convert alcohol into vapour can readily be abstracted either from exhaust or from hot jacket water, and here we have some resemblance to the chain of events taking place in a modern blast furnace, where waste gases were used to heat up air fed to the furnace, achieving great economy. By experiments the necessary temperature of air passing to the carburetter could be determined, in order that an alcohol and water mixture could pass to the cylinder without any constituent being suspended in the form of liquid.

Temperature of Air required.

It was found that a temperature of 190° C. was required only when the maximum amount of alcohol consumable by oxygen present passed to the cylinder—an undesirable state of things. Excess of air was always preferable to ensure complete combustion. The motor working with the poorest mixture with most economical results required air to be heated to a temperature of 125° C. to carry alcohol and water as vapour. It was presumed that the air used was saturated with watery vapour at a temperature of 15° C.—a condition not often attained here. It had also been proved that in using unheated air it was only necessary to heat the mixture of air and alcohol spray to a temperature of 30° C. to obtain complete evaporation of liquid. Contact of the sprayed mixture with sufficiently large surface at 35° C. would give the final vapours a temperature of 30° C., which was sufficient. That was easy to effect.

Lower Compression Results.

It was found that motors working with a highly heated mixture at lower compression compared less economically with motors working with a cooler mixture and higher compression. The most economical results would come from a carburetter delivering mixed air and alcohol vapour at a temperature as little as possible above that necessary to retain alcohol in the form of vapour, because then safe working at highest possible compression was possible. The lecturer was not of opinion that the problem was capable of solution by means of an engine of the Diesel type. Motors built to work with high compressions must be specially designed to ensure equal cooling of the cylinder walls. One extra hot projection or surface would determine the limit of compression and so regulate thermal efficiency. Also the admixture of spirit and air should be as intimate and as cool as possible, because all else being equal, the pressure and temperature of self-ignition is lower, the hotter and richer the original mixture.

The Heat of the Engine.

Another point in efficiency of spirit-driven engines lay in the temperature of jacket water. It had been found impossible to run some motors with jackets supplied with water at temperature 0° C. This was not understood until Fehrmann showed that in some cases a motor with a half-load required 100 per cent. more fuel when the jacket water was at 15° than when at 100° C. During the trials of ten motors it was proved that a varying strength of the mixture influenced consumption. A motor at full load on fairly weak mixture, giving two to three per cent. of misses on the

Alcohol as a Motive Power.

hit and miss governor, would have sixteen per cent. less consumption than with the same load on a richer mixture giving a larger percentage of misses. Comparing alcohol with petrol as power producers, the combustion of alcohol under full load was practically complete and the exhaust odourless. The suggestion that the products of alcohol combustion injured the valves, etc., was proved by years of experience to be incorrect.

Alcohol in Use.

As alcohol is less volatile, and has higher ignition temperature, the chances of fire were reduced. Storage did not need the same stringent regulations, and carriage was not so severely restricted; it was pleasanter to handle, and it was homogeneous, which petrol was not. The composition of the latter was becoming more and more heterogeneous. There was with it an ever-growing percentage of high boiling point constituents, adding to the unpleasant smell of the exhaust and diminishing the already poor efficiency of the petrol engine. An ideal liquid for the carburetter should have a fixed boiling point; then the carburetter could be properly adjusted for its work.

Referring briefly to accurate experiments carried out to determine the thermal efficiency of a mixture containing fifteen per cent. of benzol, those experiments proved such mixture to be equal to results obtained with alcohol alone, contradicting M. Chaveau's assertion that "the efficiency of carburetted alcohol was inferior to that of alcohol alone." So long as the carburetter passed enough air for the oxidation of the benzol compared to alcohol, and the jacket temperature was kept constant, it appeared that at any given compression equal efficiencies were obtainable, but the allowable compression was less the greater the benzol percentage.

The facts above stated and the records of the French trials showed that not only was alcohol a suitable, but the most suitable, fuel for explosion engines. The results considered were obtained with engines running at 200-300 r.p.m., but he could not conceive that increased speed would alter the conclusions drawn, particularly if motor constructors would consider the advisability of trying a somewhat greater ratio of stroke to bore than obtains amongst petrol motors at present. The motors tested with alcohol and giving the best results were made round about 156 stroke by 100 bore.

The Question of Cost.

The average user always asked for the proportion of cost of fuel to work obtained. Petrol and alcohol stood in ratio of 2:1 as regarded heat of combustion, but with alcohol thirty per cent. of this heat was obtained in the form of work, while petrol only gave twenty per cent. Four parts of alcohol or three parts of petrol yielded the same amount of heat in the form of work. Taking petrol at 1s. 3d. per gallon, and allowing for difference of specific gravity, alcohol would have to be purchasable at 1s. 12d. to put both fuels on equal footing. Comparing paraffin oil and alcohol, relative efficiencies 15-30 per cent., these would have to be sold at the same price to give equal results. In Germany, motor alcohol ten per cent. water, 1,500 gallons cost 9d. per gallon, forty gallons 10d., and in small quantities 1s. 3d., at which price it was cheaper than petrol at 1s. 6d. The problem of the supply of alcohol motor fuel, to compete not only with petrol but with paraffin oil, had been solved in Germany. In England methylated spirit cost 1s. 11d. per gallon, and this was not so suitable for motors or lamps. The use of paraffin not having been perfected here, we were condemned to use petrol—a substance of uncertain composition, becoming every day less fitted for its purpose, exceedingly inflammable and volatile, stored under stringent regulations, and subject to carriage difficulty; also vile smell consequent upon imperfect combustion, increased insurance, charcoal-coated pistons, sooty valves and plugs. Very efficient cooling systems become necessary by high temperature, and, principal objection of all, the fact of it being an imported substance supplied from a limited number of foreign sources and distributed to a large extent by one huge corporation.

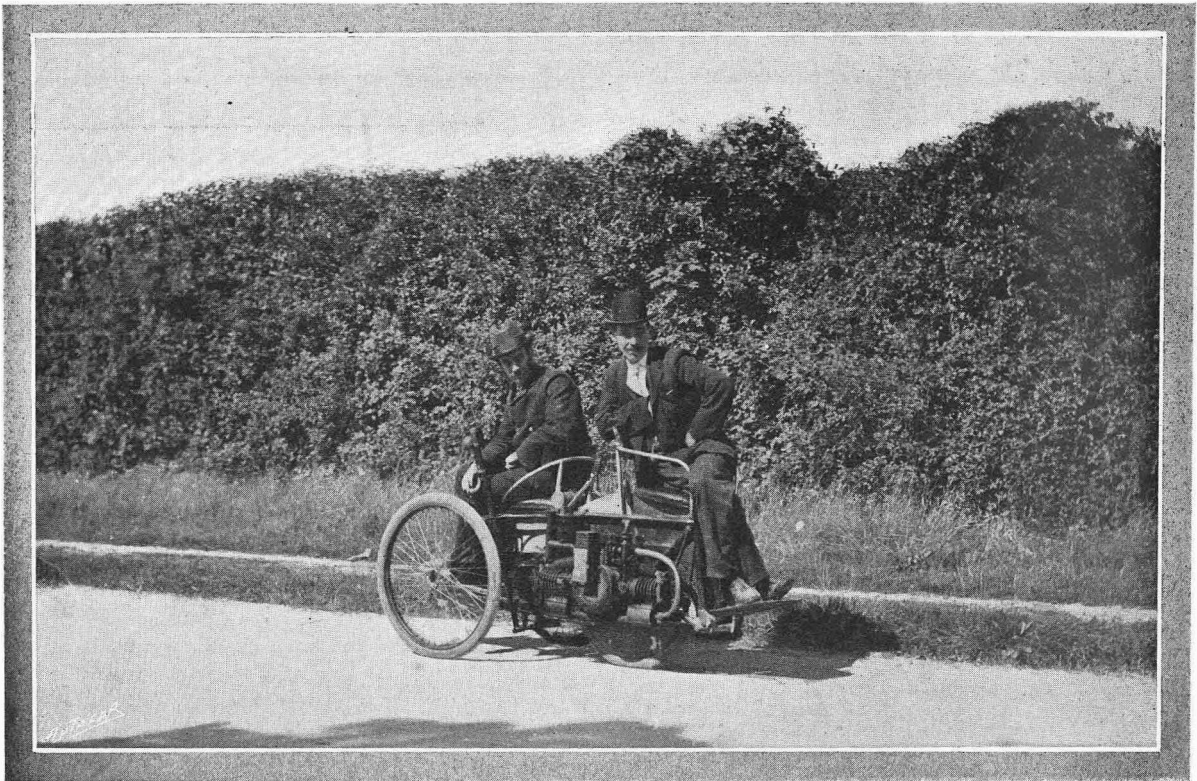
The Price of Petrol.

From all the surrounding circumstances of the case the price was bound to rise, because no reliance could be placed on competition of one source with another. France, Germany, Russia, Austria, and Hungary could, with home-produced alcohol, resist petrol competition and increase of price. Their Governments had fostered alcohol production for years. Referring to the motor industry, the less the cost of the car to the owner, the greater the importance of cost of fuel; also owners of light trade vans would be so, and even more, affected thereby. The motor trade must look in future to buyers from

Alcohol as a Motive Power.

the large middle class and tradespeople, to whom fuel cost is a great item. What would the prospects of the motor trade be if it was known that next year petrol might be 2s. per gallon, and more later on? What was there to prevent such a rise in price? Everything pointed to its probability. Already the specific gravity had had to be increased, and judging from all appearances it looked as if very soon we should be getting paraffin oil in petrol tins. Only two per cent. of the world's output of crude petroleum gives motor spirit. Consider the growing demand here and in America. The Americans would supply their own demands first, and would very likely become a competitive buyer. Unless some new source of supply was discovered prices were bound to go up, and that seriously, to say nothing of the possibility of an artificially engineered increase of price. Our own Government should ardently desire a home-grown substitute for petrol for the motors of their submarines for obvious reasons. The oxygen necessary for the production of an equal amount of power is with petrol eleven volumes, with alcohol seven volumes. Benzol, a distillate of coal, was worse than petrol as a fuel for motors. Alcohol was the most nearly ideal fuel for the purpose. It was sold by millions of gallons as a source of light, heat, and power on the Continent. Why not here, and at the same price? Our

present laws and systems of taxation barred the way. Legislation had robbed us of the lead in the motor trade, but its present further development was in imminent danger from the existence of the present short-sighted laws affecting the technical use of alcohol. Dr. Ormandy then showed how disastrously those laws had affected our aniline dye trade—the first aniline dye being the invention of an Englishman, Dr. Perkin. Now we sent our coal tar to Germany at a nominal price, and bought it back for millions of pounds sterling in the shape of dyes. By fostering the production of technical alcohol, the area of land under potatoes in Germany was four times as large in proportion to its surface as in Great Britain. Dr. Ormandy then referred to the fact of the home production of technical alcohol forming a considerable food factor in the event of our being at war. The potatoes would largely serve for food during such a time. Cheap home-grown alcohol would place the rapidly-growing motor industry on a sound basis. The subject was one of tremendous importance. It was an Imperial question. Our colonies would gain the lead, and the sugar plantation and yarn field could do their part. The Automobile Club and the press could render the motor industry in particular, and the industries of the country in general, huge service by urging this vital question upon both the Government and the people.

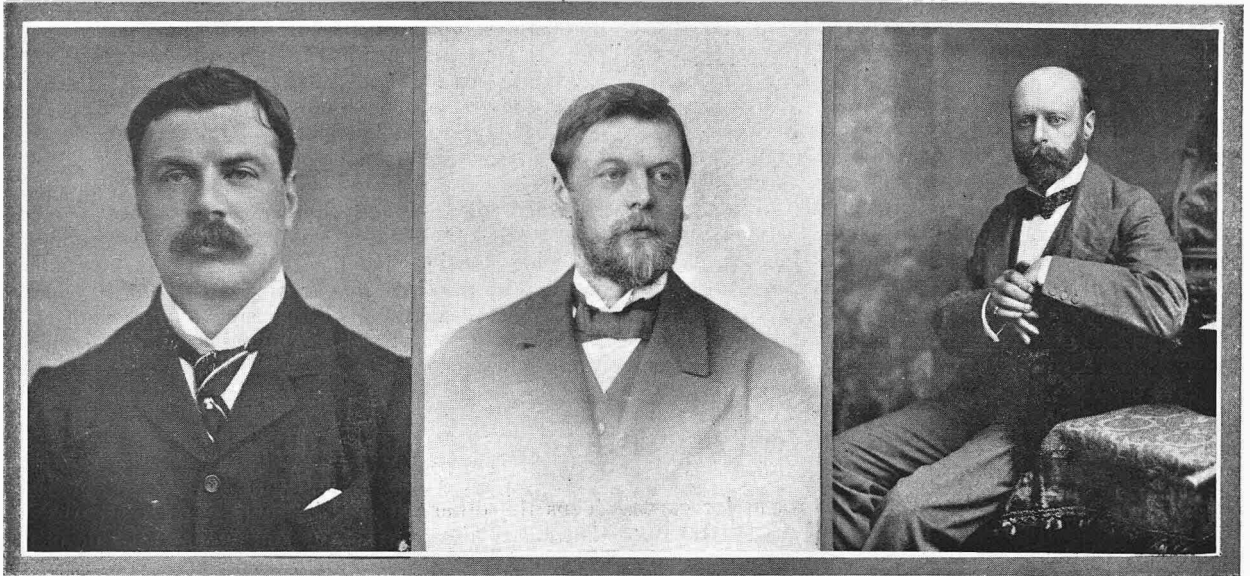


THE FIRST OF THE WOLSELEYS. The quaint vehicle illustrated above is one of the first Wolseley cars built. The photograph from which our engraving is reproduced was taken early in the summer of 1895. It will be noticed that the engine has two opposed horizontal cylinders and is fitted with tube ignition, the lamp case being seen on the left extremity of the crank chamber. Mr. H. Austin occupies the front and operator's seat. It affords a very interesting comparison with the latest Wolseley car, the 72 h.p. vehicle built for the Gordon-Bennett race, and the subject of our supplement plate to-day.

Messrs. A. W. Gamage, Ltd., of Holborn, are issuing a comprehensive illustrated automobile and motor cycle accessory list. They will be pleased to mail this list to any automobilist requesting same of them by postcard. The list also contains an insert dealing with Messrs. Gamage's new motor clothing department, and many of the specially-designed garments there illustrated are particularly suitable for use when motor-ing. The whole range of motorists' necessaries are dealt with in detail.

We have heard a good bit about fancy prices being realised for monster racing cars, but we think the record for small cars has come from Lucknow. A small 9 h.p. Talbot was offered for sale there, and was withdrawn by the owner after 5,000 rupees had been bid. However, a nabob was determined to have it, and bought it for 8,000 rupees, or £533. This, we should imagine, is about the record price for a two-cylinder car, which can be bought in England for about half the money new.

THE PRESIDENTS AND VICE-PRESIDENTS OF THE AUTOMOBILE CLUB.

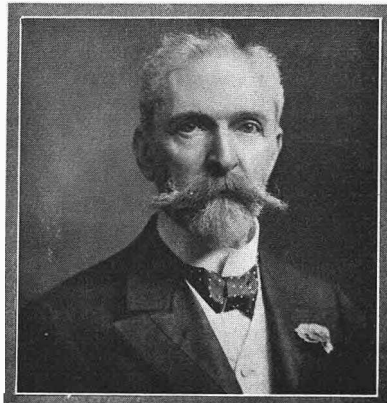


Lord Stanley, Vice-president.

The Duke of Sutherland, President.

The Earl of Onslow, Vice-president.

One of the first acts of the newly-elected committee of the Automobile Club was to choose the president and vice-presidents. The president is the Duke of Sutherland, and the four vice-presidents are Lord Stanley, the Earl of Onslow, the Earl of Dudley, and Sir David Salomons, Bart. Sir David Salomons, who has long been chairman of the Foreign Relations Committee, is one of the pioneer automobilists of Great Britain. He was mainly instrumental in securing that the Light Locomotives Act of 1896, which legalised the use of autocars in this country, should be a workable Act, and his tact and influence did much not only to ameliorate the conditions of the Act, but also those of the regulations which it empowered the Local Government Board to make for the governing of automobile traffic. Not only so, but he worked hard to bring about the necessary changes concerning the storage of petroleum spirit. These were so onerous that the Light Locomotives Act would have been of little use if the then conditions as to the storage of petrol had not been relaxed. He joined the club in 1898. No one has done more disinterested work for the automobile movement, and Sir David's connection with it has been recorded in *The Autocar* from its foundation in 1895. When Sir David Salomons fought so hard for the motorists' Magna Charta there was scarcely another man of position and influence in this country who owned a car, so that he was able to give practical advice to



Sir David Salomons, Bart., Vice-president.



The Earl of Dudley Vice-president.

the authorities which carried weight. Equally sound but interested counsel, had it been available, would have failed. Sir David was disinterested, and able to take the position of the scientific amateur fighting for the freedom of a delightful and newly-found hobby. As there is an erroneous opinion that the new president and vice-presidents have been recently gathered into the club fold, with a view to electing them to high positions, it may be well to mention that the Duke of Sutherland joined in 1901, as did the Earl of Onslow and the Earl of Dudley, the newest member being Lord Stanley, who was elected in 1902. With His Majesty the King as patron of the club and so distinguished a president and vice-presidents, the club should never lack influence in high quarters. No less important—in some respects more important—than the election of the president and vice-presidents was the selection of the chairman of the club, and this fell by a unanimous vote on Lieut.-colonel H. C. L. Holden, R.A., F.R.S., a founder member, who as a reliability trials judge and in other capacities has worked unostentatiously for the club. He is in every way well qualified for the post, both as an individual and as a scientific soldier—the head of the Royal Gun Factory at Woolwich. The vice-chairmen are the Hon. Arthur Stanley, M.P., and Mr. Mark Mayhew, the commanding officer of the Motor Volunteers. Mr. Mayhew is too well known to need any reference to his automobile record. He was a vice-chairman last year.

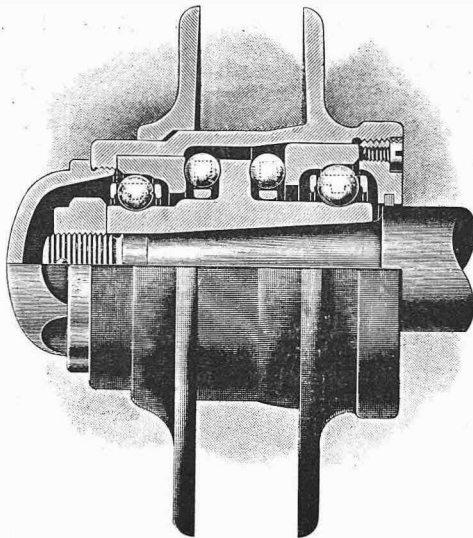
ANOTHER ROUND THE WORLD TOUR.

Mr Charles J. Glidden, of Boston, Mass., whose previous long distance tours have been chronicled in *The Autocar*, has completed his itinerary for a proposed tour of the world, and computes the distance 20,000 miles by automobile. He proposes to start eastward (war conditions permitting) about October 1st. On account of the climate, it is probable that the journey will be made in two sections, the first terminating at Athens at the end of this year, the party returning to Boston and starting from Athens in October, 1905. He will use the 24 h.p. Napier car that has the Arctic Circle record and about 10,000 miles of European driving to its credit. Arrangements have been made for petrol supplies at various points, and for escorts where it may be necessary for safety, also for 18,000

miles steamship transportation for passengers and automobile. The mileage to be traversed in the several countries to be passed through will be as follows: England, 261; France, 812; Spain, 800; Portugal, 500; Algeria, 1,000; Tunis, 460; Sicily, 364; Italy, 970; Hungary, 588; Turkey, 295; Greece, 500; Egypt, 450; Palestine, 300; India, 5,000; Ceylon, 500; East Indies, 300; China, 100; Japan, 2,500; Hawaii, 300; United States, 4,000; total, 20,000. The roads of China are narrow and totally unfit for motoring outside Hong Kong, and the restrictions imposed by the Government make a drive of any extent impossible. If time will permit, and climatic conditions are favourable, the Philippines will be included in the schedule.

THE HOFFMANN BALL BEARING HUB.

The accompanying illustration represents one of the New Hoffmann Co.'s ball bearing hubs for motor cars. It contains four rows of balls, the outer rows taking the load, and the inner pair the end thrust in both



directions. In either case, the load is taken at right angles to the direction of rotation, so that a perfect rolling action is obtained without any spinning what-

ever. The design is such that each set of bearings keeps the other set true in their respective paths, so that any tendency to rub or jam against the side of the bearing is entirely obviated. The makers claim that this perfection of rolling action removes practically all wear from the hub, so that its life is to all intents and purposes limitless. The cone, which fits the axle, is ground out internally to a taper, and is held in position by a nut and split pin. The removal of this pin and nut enables the wheel and bearing complete to be removed together.

To facilitate this a service cap is supplied in place of the usual brass cover cap, which, when screwed into the hub, comes into contact with the end of the axle, and so draws off the cone. All the balls are held in cages, so that if at any time the bearing has to be dismantled there is no danger of losing or misplacing them.

The races are made of special steel, case-hardened by a secret process, leaving the face dead hard, but the interior of the metal only toughened.

Undoubtedly, this hub represents absolutely the very highest form of ball bearing practice as applied to motor car work, and it will unquestionably prove a considerable boon to many manufacturers, since it relieves them entirely from making a portion of the car which is a specialised product, and, to give satisfaction, the work of specialists.

JOHN O'GROAT'S TO LAND'S END.

All previous performances over the classic road from John-o'-Groat's to Land's End have been beaten by a 10 h.p. two-cylinder Argyll driven by Mr. Whitehead, one of the Hozier Engineering Co.'s crack drivers. He was accompanied by Mr. Carlisle, an ex-road racing cyclist, who knows the road thoroughly well, and by an independent observer, Mr. J. E. MacMannus. The attempt was to run from end to end without a single stop. This was not accomplished, though a splendid run was made, the actual running time being 1d. 20h. 52m. for the 880 odd miles, while the total time from the start at John-o'-Groat's till the finish at Land's End was 2d. 4h. 35m. The best previous performance was made by Mr. Stocks, accompanied by Mr. Roger Fuller, who drove a single-cylinder 9 h.p. De Dion in July, 1902, from Land's End to John-o'-Groat's in 2d. 14h.

25m., his actual running time being 2d. 0h. 37m. We hope to give some further particulars of the very fine performance of the Argyll next week.

The End-to-end record, as it is familiarly known, has always been the ambition of bicyclists and motorists. The best bicycle time was 3d. 5h. 49m., by G. P. Mills in 1894—a marvellous feat of endurance which was never beaten till Stocks made his record on the De Dion. The route is a very hard one, exceedingly hilly both at the extreme North and South. Till the dry weather sets in it is in a very bad state in the North, and often the higher levels are covered with snow. After clearing Lakeland on the way South, there are many miles of granite setts and surfaces of indescribable bumpiness, so that the journey on the whole is no light task.

CLUB DOINGS.

Burnley and District A.C.

As a preliminary to the opening run of the season, which is fixed to take place on the 30th April next, and with a view to increasing the membership of the club, the chairman (Mr. Councillor Atkinson, of Barrowford) invited all the members and a number of motorists in the district who had not yet joined the club to a "hot pot" at the Bull Hotel, Burnley, on Friday evening last. The after proceedings resolved themselves into accounts by various members of their experiences and troubles in connection with the management of their cars. As the outcome of the meeting five or six new members were enrolled. A vote of thanks to the chairman for his generosity terminated the proceedings.

Victoria A.C.

The inaugural run of the newly-formed Automobile Club of Victoria (Australia) was held at Aspendale Park on February 20th. The weather was delightful for motoring, resulting in a very large and representative gathering. Great interest was evinced by the public, who turned up in large numbers to witness the cars being marshalled into position. Altogether some thirty odd cars started. Marshalled ahead of the cars, which extended for over a quarter of a mile, was a large body of motor cyclists. It was estimated that over £9,000 worth of motors were drawn up previous to the start, every type of automobile being represented, from luxurious four-cylinder tonneaus to little voituettes and runabouts. A large number of city aldermen and municipal councillors had seats on the cars. Sir Samuel Gillott, Chief Secretary of the State Government, rode on the car of Dr. Merrill, vice-president of the club. This car was a Winton, which uses .825 Russian paraffin, and drove at the head of the procession. The going was not made fast, as the municipal bodies are making byelaws to regulate motors. The general feeling of the councillors was that motors are quite safe, and this inaugural run has done good work in that direction.

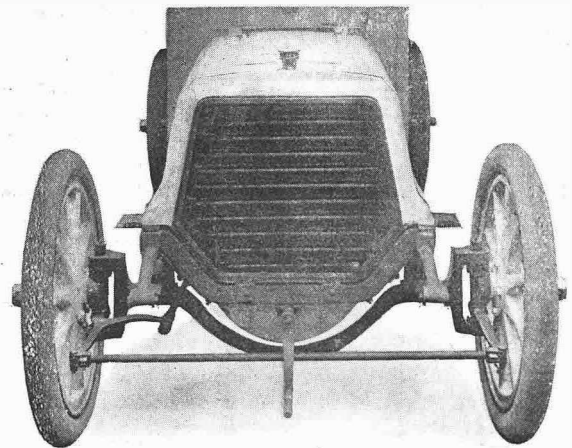
Manchester A.C.

Mr. G. Higginbotham read a paper on March 25th, before the members of the Manchester A.C., on "Some Experiences and Impressions of a 60 h.p. Mercedes." His description of the car was interesting: "Anyone driving a Mercedes car from an 18 h.p. to a 60 h.p. at once becomes struck with the smoothness and absence of noise and vibration of the motor. This is attributable to the very exact timing of the valves and ignition, and also probably to the small diameter of the exhaust pipes and valves. The timing has a very ingenious arrangement of a pointer attached to the cylinder nearest the flywheel and projecting over the outside of the rim, the rim being marked with the position of each piston in its cylinder, this being particularly useful in setting the magnetic timing. In last year's cars there is provided a screw motion to the thrust rods for the mechanical inlet valves, which can be operated from the steering pillar and so throttle the gas inlet by reducing the lift of the valves. So great is the flexibility of the engine that it is possible to run on the fourth speed at almost any speed from about ten miles an hour without touching the clutch up to the full speed. The cooler is also one of the finest examples of workmanship possible, containing many hundreds of square tubes which have a number of minute corrugations, and are spaced less than 1-16in. apart. I have driven my car for ten hours in London after covering ninety miles before reaching the city without stopping the motor, and during part of that time the car has been stationary, but it has not steamed. The other details of interest are the clutch, which consists of a spring about six inches in diameter and six inches long, which has one end fastened to the flywheel, the other being attached to a crank which is operated by a sliding cone on the engine-shaft when in its normal position. This spring just slips loosely round the metal drum on gearshaft, but by being twisted reduces its internal diameter, and so grips the drum. All the bearings in gear box and wheels are of the non-adjustable type of ball bearing, and only require filling with grease about every thousand miles. This makes it possible for one person to move the car a considerable distance, which is not possible with any other car of the same weight with so much facility, and has given the Mercedes a great advantage both for speed on the level, and even more so in hill-climbing. I should like here to mention that with the exception of a brakeshaft, which is very near the front of the car, the chassis has no projections above the channel steel frame. This is a great convenience for arranging and changing bodies, and also greatly adds to the lightness." His first experience

in trying to start the motor is thus described: "We soon realised what starting a big motor with magneto ignition meant, but eventually got her going and pushed her out of the shed, but when I came to let the clutch in the car would not move forward, but would reverse all right, so we got the gear box lid off and found that the interlocking rod from the clutch had stopped the clutch from going in owing to the gear not being fully in mesh, and there were no notches in the quadrant to indicate this, the car being fitted with a new type of quadrant." The other experiences which the author narrated were connected with the Gordon-Bennett race in Ireland and the climbing of the Great Orme's Head.

Scottish A.C. (Eastern Section.)

A lecture was delivered by Mr. R. W. Hogarth on March 21st to the members of the above club, on electrical matters connected with autocars. Mr. Hogarth reviewed three leading aspects of the subject—viz., the use of electricity as a means of igniting the explosive mixture in petrol cars, the electrically propelled motor car, and the combined petrol electric car. In dealing with ignition, the respective merits of the battery and induction coil method, and the magneto method, were discussed, and the recent improvements in both noted. A preference was expressed for accumulators over primary batteries as a source of energy for the induction coil method, and the author believed that many failures of ignition apparatus in the past had been due solely to slipshod work, particularly in regard to details of wiring, terminals, etc. He was also of opinion that the magneto method would shortly oust the battery method, since the sparking was much more powerful and regular, and, moreover, the system lent itself better to the multi-cylinder engines now being made. In regard to electric cars, these were both heavy and costly to maintain, and although great improvements in accumulator detail had recently been made, he did not think much advance would be made until some radical improvement in accumulators was effected. The combination of a petrol engine and dynamo with driving by electric motor had been experimentally tried and promised well, although at first sight the method might appear to be a very roundabout one. This method gave all the well-known advantages of electrical driving and control, and if, as seemed probable, the petrol turbine could be made a practicable machine, there appeared to be a future for the combination. In steam-driven cars it was computed that the efficiency as expressed in the ratio between the energy contained in the fuel burnt and the energy utilised at the tyre was less than four per cent.; in petrol-driven cars about six or seven per cent., and in electrically-driven motor cars (accumulators being originally charged by steam-driven dynamos) the total efficiency was about four per cent.



THE NEW PANHARD RADIATOR. This is much smaller than the old pattern, which was cut off horizontally by the straight front frame. The frame has now been dropped, so that the old and unsightly apron is no longer necessary, and the cooling area of the radiator is considerably increased. A belt-driven fan is placed immediately behind it with an arrangement for instantly tightening the driving belt. The only examples of this new type which we came across in the recent Crystal Palace Show were exhibited by Messrs. Harvey du Cros.

POLICE TRAPS.

The police have laid a trap in the Mortlake district, and have had stop-watches provided to them by the authorities. The Earl of Wicklow fell a victim near Hammersmith Bridge, and was summoned under Section 9 of the Act for exceeding the twenty miles speed limit. He appeared before the Mortlake Bench on Wednesday, March 23rd. The evidence of two police constables was given, one of whom produced a stop-watch. Mr. Staplee Firth, who appeared for the Earl of Wicklow, after a searching cross-examination, submitted that the prosecution had failed to make out a case under the Act—first, because there was no direct evidence of the accuracy of the stop-watch; and, secondly, because there was no corroborative evidence as to the speed. The magistrates, after hearing a long argument, dismissed the case. The Chairman expressed a hope that the question as to the necessity for more than one witness would be thrashed out in the High Court. He thought the intention of the Act was that one witness should not be sufficient, and that there must be at least two. The wording of the Act was so ambiguous that it was difficult to follow.

REVIEWS.

O'Gorman's Motor Pocket Book.

If any book yet produced really deserved the title of the automobilist's *vade mecum*, Mr. Mervyn O'Gorman's Motor Pocket Book is that book. It is a book of introduction, a book of advice, a book of instruction, a motor encyclopædia, and a French, English, and German motor dictionary all rolled into one, comprised in 387 pages and handsomely bound in red morocco. No automobilist, be he maker, amateur, or professional driver, can afford to be without this really wonderfully compiled compendium of automobile information. In addition to being a faithful standby, this little work cannot be dipped into anywhere by the most experienced automobilist without a chance of his dropping upon some item of useful and well-presented information. The opening ten pages, which are concerned with "A Chat with a Non-motorist," contain pabulum most excellent to place in the hands of even the most rabid motorphobist, with every chance of his conversion, to say nothing of the fact that its perusal must interest all. The huge mass of information is given in encyclopædic form, the articles being longer or shorter in accordance with the subject matter treated. For instance, as concerns accumulators, the French and German verbal equivalents are given, and then follow six pages in which all the information necessary to the motorist concerning the characteristics, charging, capacity, discharging, efficiency test, and handling of accumulators is given in an easily comprehensible manner. This applies all through the work, which is plentifully supplied with tables of all sorts and descriptions. The attention given to "Ignition" is most praiseworthy, illustrations and descriptions of nearly every method of wiring and form of contact maker being afforded. If the novice cannot grasp the theory and practice of ignition after perusal of this section he is hopeless. Lubrication is also equally well dealt with. The full text of the 1903 Act and the Local Government Board Regulations interpreting and amplifying it, together with all necessary information about the obtaining of licenses, the procedure in taking cars abroad, duty, freight, etc., the rules and constitu-

tion of all associated bodies connected in any way with automobilism, are not omitted from the pages of this wonderfully complete little work. Further, we find the L.C.C. regulations for storing, sale, and conveyance of petrol, which should be familiar alike to the user and the vendor of motor spirit. A list of the distinguishing letters for county and county borough councils are found just before the particulars of trials and data of cars in the 1,000 miles reliability trials of 1903. As we have said already, every motorist should possess this book, which can be obtained post free 7s. 8d., of Messrs. Iliffe and Sons Ltd., 3, St. Bride Street, Ludgate Circus, London. E.C.

A SHOW AT OLYMPIA IN 1905.

A project is on foot among the members of the Society of Motor Manufacturers and Traders, who recently held their show at the Crystal Palace, to promote next year's exhibition at Olympia, instead of at the Crystal Palace. There is nothing against the Crystal Palace as a building; in fact, there is no building to equal it. Unfortunately, however, it is so very far from accessible, and it is felt by a very large percentage of the manufacturers that automobilists would patronise the show very much more readily if it were held in a more accessible place. The result is, negotiations have been entered into with the proprietors of Olympia, and it appears more than probable that next year's show will be held there. The main open floor of the building provides over 100,000 square feet of exhibition space, while there is almost an equal amount available in the galleries, under the galleries, and in the horseshoe end of the main building. Of course, the building is a better one than the Agricultural Hall, but it suffers from the same objection, inasmuch as there are no grounds or surrounding roads which are particularly suitable for trials. However, the exhibitors think this a less serious objection than the inaccessibility of the Crystal Palace. We do not think automobilists will altogether accept this view. They have grumbled at the Palace, but will be more displeased to find practical trials impossible.

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.

There are several large patches of granite unrolled on the main road in Bushey Herts, and there are several nasty patches in the Elstree district, Herts. The first half-mile of the road outside Coventry on the way to Birmingham is under repair.

"THE AUTOCAR" COLONIAL AND FOREIGN EDITION.

IN ADDITION TO THE USUAL EDITION OF "THE AUTOCAR," A SPECIAL THIN EDITION IS PUBLISHED EACH WEEK FOR CIRCULATION ABROAD. THE ENGLISH AND FOREIGN RATES WILL BE FOUND BELOW. ORDERS WITH REMITTANCE SHOULD BE ADDRESSED "THE AUTOCAR," COVENTRY.

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