

# THE AUTOCAR

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

EDITED BY H. WALTER STANER.

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## THE AUTOCAR.

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### "THE AUTOCAR" SUBSCRIPTION RATES.

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## Notes.

### Alcohol Fuel.

There is no doubt that Dr. Ormandy's paper on the question of alcohol as a motor fuel, read before the Automobile Club, has effected a great deal of good in focussing attention upon the matter. Last week *The Engineer*, in the course of a leading article devoted to the subject, expressed the opinion that in addition to the excise difficulties, which have already been dwelt upon in our columns, there was the very serious difficulty that the manufacturers of high-speed internal combustion engines depending upon liquid fuel did not trouble themselves to design and make motors which would run satisfactorily with alcohol. At the present moment petrol was obtainable and not exceedingly dear, and therefore the motor makers were content to

leave well alone, and to ignore the warnings of Dr. Ormandy, Dr. Redwood, and others. As to the possibility of a shortage of petrol in years to come, our contemporary is perfectly right in assuming that the British makers have not devoted much attention to the building of engines for alcohol fuel, but this goes to emphasise our belief that the Automobile Club should take the matter up energetically.

We do not think the motor manufacturers can fairly be blamed for devoting little or no attention to alcohol engines while no attempt is being made by the club or any other representative society or association to obtain the necessary alterations in the excise restrictions. That is to say, it is of little use for the engineer to trouble himself about making engines for a fuel which, on account of excise duties, is hopelessly costly as compared with petrol. On the other hand, if the motor engineer once saw that the club was working hard and trying to obtain the removal of the restrictions which prevent the use of home-made fuel, there is no doubt whatever that he would set about the production of an engine which would consume that fuel as satisfactorily as his present motors consume petrol. Not only so, but, of course, when the club had once started upon an active course in favour of alcohol fuel, it would not content itself by appealing to the powers that be; it would offer certain inducements to the makers, as the French club has done.

As is well known, in many of the trials and races which have taken place in France for some years, special classes and prizes have been reserved for engines using alcohol instead of petrol. Not only so, but the cars in these special classes have many times distinguished themselves, and in more instances than one have borne off the honours of the day.

### Three-seated Cars.

We find that a very large percentage of those who contemplate buying voiturettes want a third seat on the car. From enquiries which we have made among the manufacturers, it appears that they too find this is the case, as they are almost always asked if a third seat can be fitted. In other words, the cry of very many of those who are thinking of going in for a voiturette is for a three-seated vehicle at least, preferably, of course, a four-seated one. Those who have two-seated machines very often carry a third person on the step, or uncomfortably mounted on the tool boot at the back, or standing on the space behind the front seats when there is no tool box. There always seems to be a tendency to overload cars, but it is very much more pronounced in the case of two-seated vehicles: in fact, there is no doubt that nine out of ten of these are frequently put to harder work than that for which they were originally designed. The owners argue that the engine is 6 h.p., and that that ought to be sufficient to carry a load of three people. And so it is, but not always with the gears provided for a car designed for two only. If it is to take three, a lower gear should be fitted, and the driver should be content with a lower speed. When from eight to twelve stones extra are

put upon a little light vehicle, the strain it is called upon to bear is very considerably increased, particularly on rough surfaces. There is, as we have said, a tendency all round to overload, and it is equally common to overdrive cars. Because it is possible to make them compass a certain speed, they are always kept at that speed, if at all possible, or as near to it as they can be thrashed, and the consequence is they have a short life. When this is supplemented, as it so often is, by overloading, it cannot be said that the car gets fair treatment. It may be argued by some that a hundredweight more or less should not be a serious matter, but those who think this should remember that it is a very considerable increase on a small light vehicle; it is not merely like putting another passenger into a railway carriage. As this desire for three seats at least is so very general, it seems to us that it would in many respects be advisable to make it the standard for the voiturette rather than two seats; we mean so far as gears, strength of tyres, axles, and other parts are concerned. The only objection to this is that it would slightly increase the cost, but it would undoubtedly be more satisfactory for the maker and the user in the long run, though even then there would always be a certain proportion of thoughtless people who would persist in packing four people on to the car. As a matter of fact, no machine should be built which is not strong enough to carry three people or their equivalent, two and luggage. From a touring point of view, two and luggage is the limit of loading for a voiturette, and this is all right. The third passenger is only carried by the majority for out and home day and half-day runs, when no luggage is wanted.

The people who use a voiturette, as well as a four-seated car, are satisfied with two seats, as they use the little vehicle as a runabout, and take the larger car when they want more than one companion. All, or nearly all, whose only car is a voiturette, seem to want three seats at least.

### The Side-slip Trials.

To some extent the interest in the trials of devices for the prevention of side-slip, which are now being conducted by the Automobile Club, will flag till the judges' report and awards are published. It is only after the 1,000 miles has been completed and the test for efficiency as side-slip preventers on the prepared track has been made, that the trials will be closely looked into by automobilists, though there is no question whatever that the side-slip test at Ladbroke Grove will be most interesting to watch. Because little interest is being taken in the trials at the moment it must not be imagined that we infer they are any less valuable; far from it. It is merely felt on all sides that only the favoured few who are actually taking part daily in the trials can gather much information from them likely to be of use, and, therefore, interest is centred on the judicial report. The inventors and makers of non-skidding devices deserve every credit for taking part in the trials, as some of them at least will gain nothing but experience. There is no question that the knowledge which will be available when the trials are concluded will be most valuable, not only to automobilists generally, but to all inventors who hereafter set themselves to devise an apparatus which shall prevent side-slip.



A HANDSOME CAR. Enthusiastic automobilists are Co. F. C. Ord and Mrs. Ord, of Bristol. Although comparatively new converts to automobilism, they have already had a 14 h.p. Daimler and a 20 h.p. Talbot, which latter vehicle we illustrate. The main intent of the body design is to combine detachable top and side entrance to the back seats without lengthened wheelbase. This is done very neatly, and it will be observed that a step is provided above the rear mudguard so that Colonel Ord's man can get into the car without opening the side entrance. 120 mm. tyres are fitted to all four wheels, as the owner of the car thoroughly realizes the value of the large tyres. In our illustration, Mrs. Ord is shown at the wheel with Colonel Ord by her side.

## USEFUL HINTS AND TIPS.

### A Sparking Plug Joint.

Often on the road it is found that a loss of compression is taking place past the copper washer beneath the spark plug flange, and that a spare washer is not available. An excellent substitute can be made by cutting a piece of  $\frac{1}{16}$  in. copper wire the right length and bending it round circularly so that the ends overlap. Heat the copper and plunge it into water to soften it, and then give each of the overlapping ends a tap with a hammer to reduce the thickness to about one half, and so that they fit together fairly. On screwing up tightly it will be found that this will make a first-class joint.

### Panhard Crank Case Lubrication.

Recently a user of a Panhard who is very careful with his car asked what quantity of oil should be put into the crank case of a 7 h.p. We have ascertained from Messrs. Panhard and Levassor that the quantity is a pint and a half. After washing out the crank case it is recommended that oil should be pumped into the engine until smoke is seen to be coming from the exhaust box, when one may be quite sure that there is sufficient oil in the chamber. With a four-cylinder Panhard about three pints of oil is needed to bring it up to the right level.

### Testing the Acid in Accumulators.

It is a good practice to occasionally test the specific gravity of the acid in one's accumulators by the aid of an hydrometer. This is a simple and inexpensive instrument, consisting of a weighted glass sealed tube, provided with an index. If when tested the acid shows a low specific gravity, a little more acid should be added to the cells until the hydrometer shows 1.190 on the index, being level with the surface of the acid. When it becomes necessary to add some acid to the cells, that known as *brimstone sulphuric* should be used. It is well to note that when making up new solution to replace that which has been in the cells for some time, distilled or clean rain water only should be used, and that the acid should be added to the water. In making up new solution it should be done in a clean glass jar and the acid added little by little to prevent overheating. The solution should only be tested when cool. The approximate proportions of acid to water are one to four.

### A Valuable Tyre Tip.

Some months ago we mentioned that when touring in Italy M. Paul Meyan, owing to the exceedingly bad roads, had a great deal of trouble with his tyres. He practically ruined one set of covers; he then put on new covers, and used some old ones over them as a protection, with very satisfactory results. Many motorists were interested in this, but have been prevented from trying the experiment, as it was understood that it was impossible to make a neat job of it unless they obtained old covers of a larger size, so that the old covers would go over the new ones without having the sides slit. An extract, therefore, from a letter sent us by the Cambridge Autocar Co., Ltd., will be of very considerable interest and use. They say: "An old and therefore stretched cover of the same initial size as the normal cover may be used by cutting off its edges and simply placing it over the latter when this is deflated, and then blowing up hard. Our director, who tried this, found this method of attachment not sufficiently secure. The obvious extension of the idea was to

sew straps to the old covers and secure these to alternate spokes in a manner that will suggest itself to anyone. We can assure you the result is most surprising and satisfactory. Any saddler can sew on the half-dozen or dozen straps for a few shillings, and the old cover so secured is perfectly firm. Even if it is badly cut, the cuts do not gape (though it is advisable to place canvas behind them), and, of course, there is no wearing surface equal to that of a properly vulcanised rubber one. Owing to the severance of continuity between the attached cover and the ordinary cover, puncturing objects that pierce the former are turned at the surface of the latter. We have a sharp nail 3in. long that was picked up at the first trial, pierced the outermost cover, and then simply passed in between the two for a distance of a couple of inches, where it was tightly held. We are convinced that this method of using up old covers will be more than a boon to every driver who makes use of it."

### Trembler Fatigue.

We are quite convinced that ignition troubles are occasionally caused by trembler fatigue. A case in point has lately occurred to us. The engine would drive for from forty to fifty miles perfectly, running the car up all such grades as lie between London and Guildford on its fourth speed; but shortly after that distance had been covered, one of the cylinders would begin to fire irregularly, and nothing would improve it. Coil trouble was suggested, but we were loth to believe this was at the root of the evil. Subsequently we purchased four new tremblers. Since our last faulty run the erring cylinder would not drive the crankshaft alone, when the tremblers of the other three cylinders were prevented from vibrating, although either of these three would perform fairly well by itself. No sooner was the new trembler fitted than the aforesaid weak cylinder ran merrily by itself, and we were moved to replace the remaining three old tremblers with the new ones. These replacements have greatly improved the firing and pull of all the cylinders, so that we imagine that the old tremblers which have been in constant use since last July wanted a rest.

### Commutator Troubles.

Good as rolling contact commutators undoubtedly are, yet, nevertheless, trouble may arise from them and within them which the automobilist may be long in diagnosing if he has not been apprised that its happening is within the bounds of possibility. After considerable use the friction of the roller over the metal contacts flush with the surface of the fibre ring within which the earthing roller ended lever on the end of the commutator shaft rotates has the effect of wearing off small particles of the metal and gradually laying these in the form of an embedded train, which will ultimately connect one contact with the other, so that the current will short all round, and whether two or four cylinders are served, current will pass to all the sparking plugs at once. If this has happened, the only thing to do is to detach the fibre ring and scrape the inlaid metal from its surface. In order to prevent this as far as possible, commutators of this type should be kept well lubricated with clean oil, and washed out from time to time with petrol sprayed in. The above remarks apply with even more force to the commutators made on similar lines, but which have a rubbing in lieu of a rolling contact.

## CYLINDER DIMENSIONS AND ENGINE SPEEDS COMPARED.

By J. W. Roebuck.

### The Speed of the Motor.

At the present time there is no fixed rule that can be taken to determine the number of revolutions at which a petrol engine should run.

An investigation of the entrants for the last thousand miles reliability trials shows that a number of engines are run at speeds in the neighbourhood of 800 revolutions per minute, these engines being chiefly of the multi-cylinder type, whilst those running at speeds exceeding 1,000 revolutions per minute are principally of the single-cylinder type, having a small bore and equal or slightly longer stroke, with a few notable exceptions, where a very large bore is used in conjunction with a long stroke.

The tendency at the present time is to increase the revolutions of the slower speed engines and decrease that of the higher speed, so that probably as time goes on most engines will run at an approximate normal speed of 1,000 revolutions per minute.

With a well-balanced engine this appears to be quite a feasible and reliable speed at which to run, and the all-round efficiency of an engine running at this speed appears to be quite satisfactory. There is less liability to overheat the cylinders, bearings, and valves than with higher speeds, and not so much wastage of lubricating oil.

A great many engines are made either with bore and stroke of equal dimensions, or the stroke of the piston longer than the diameter of the cylinder.

If a high rate of revolutions is combined with long stroke, the piston speed becomes high relatively to a short stroke engine. The result is the long stroke engine does not lend itself to racing much above its normal speed for any length of time. As the heating effect on the cylinder increases rapidly, much more lubricating oil is required, and invariably after a time

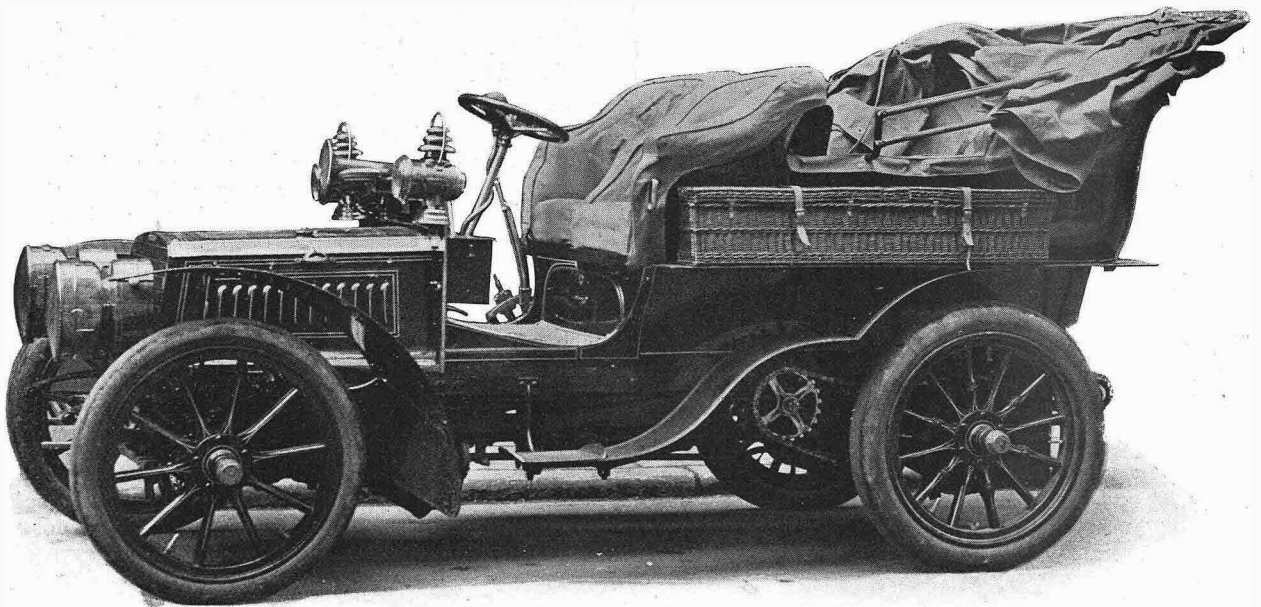
"knocking" ensues; the engine then exerts less power, slows down, and stops altogether, however efficient the cooling water arrangements are. With a small bore, long stroke, slower speed engine, more advantage can be taken of the expansive force of the gases in the cylinder, whilst the large bore, short stroke, high speed engine depends much more on the "impulse" effect of the explosion on top of the piston. For a given power developed, there should be less internal friction in a large bore, short stroke engine, and hence a more efficient engine should be obtained.

Again, taking the relative piston areas of a 4in. diameter and 5in. diameter engine, it will be seen that, since areas vary proportionately to the square of the diameter, although the diameter has only been increased by one-quarter, the area has been increased in the ratio of twelve and a half to nineteen and a half, or by nearly two-thirds the total. Hence all bearings and wearing surfaces should be increased in the same proportion, and also by a further amount due to the increased number of revolutions of the high speed engine over the low.

This is a point frequently overlooked by designers, in which case arise the complaints that the large bore, short stroke, high speed engine is a type that rapidly wears out or knocks itself to pieces. When properly designed, both high and low speed engines have their particular field of action, wherein by various circumstances one or the other is best for the special object in view.

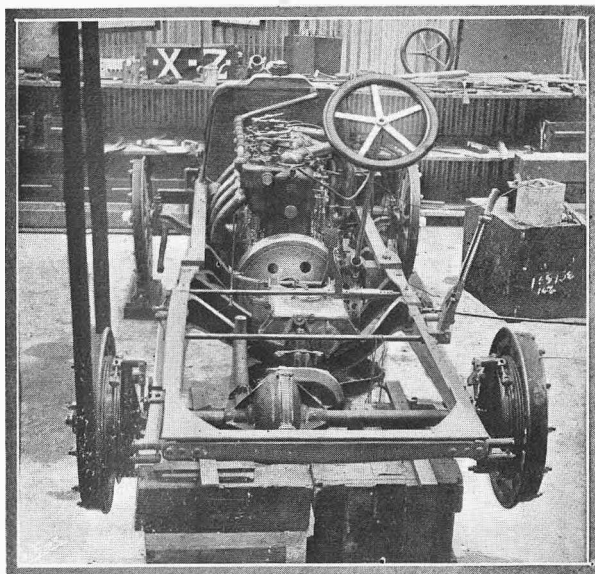
### Single Cylinders.

For motor cycle and voiturette work, a high speed, small bore and stroke engine is mostly used, because small overall dimensions can easily be obtained, the enclosed flywheel type of engine lending itself particularly well to compactness, neatness, cheap manufacture, low cost of upkeep, economical running, and is



A BIG TOURING PANHARD. A splendid example of the modern touring car de luxe is illustrated above in a 24-32 h.p. Panhard and Levassor, which has recently been turned out from the London depot, 14, Regent Street, S.W. This car, it is stated, is capable of attaining very high speeds uphill.





The chassis of one of the Darracq Gordon-Bennett cars. The photograph depicts the rear axle being "run in" by a belt from a line of shafting.

easily adapted to fit in wherever required. Excessive labour is not required to work over the compression at starting, owing to the small cylinder dimensions, and the effect of each explosion is not felt when running at anything approaching the normal speed, but rather a uniform turning effect, owing to the small interval which elapses between successive explosions.

A small weight of flywheel is required, owing to the high speed at which it runs, a large reserve of energy thus being stored up in a comparatively small and light flywheel rim.

When larger power engines having more than one cylinder are employed, the number of working impulses per cycle of two revolutions transmitted from the piston to the crankshaft is increased by the number of cylinders added, if firing is carried out consecutively; in this case, the turning effect becomes more uniform and more closely approximating to that of a steam-engine, and the engine will run at low speeds without the force of each explosion being noticed.

With a single cylinder of large bore, when required to run at slow speed, a large and heavy flywheel must be provided to get over the compression stroke, otherwise the engine would slow up and refuse to do this. Slower speed means lower power in practically direct proportion to the reduction in the number of revolutions; therefore the area of the cylinder must be increased again, and thus again the flywheel must be increased. Hence it follows that a large bore, long stroke engine running at a slow speed must come out larger and bulkier, as well as heavier, than a similar power engine of smaller bore and stroke, but running at high speed.

#### Ratio of Bore to Stroke.

On heavier cars, where every pound of extra weight is not of such vital importance, multi-cylinder engines are used in conjunction with lower speeds, heavier flywheels, medium bore, and longer stroke.

The relation between the proportion of bore to stroke and how they affect the power developed has not yet been fully thrashed out.

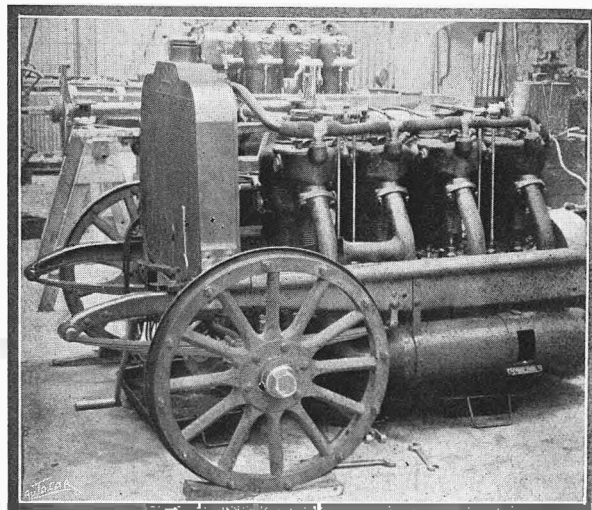
Assuming equal compression in all cases, and taking an engine having cylinders 4in. bore  $\times$  6in. stroke, it is certain that for steady continuous scale readings

on the brake test a more uniform and higher horsepower is obtained than with an engine having the same cubical capacity but the bore area and stroke so proportioned as to give the ratios of 4in. bore area and 6in. stroke inversely, *i.e.*, approximately 6in. bore  $\times$   $3\frac{1}{2}$ in. stroke, or 5in. bore  $\times$   $3\frac{3}{8}$ in. stroke.

For the varying conditions of road work, where the power taken from the engine is very variable, the long stroke engine proves superior for long pulls over hilly country, but for shorter stiff stretches which may be rushed the short stroke engine is superior, for it can be accelerated for a short time to much above its normal speed without damage; but the long stroke engine is more sluggish in its action, and cannot be accelerated to anything like the same extent, and is also prone to vibrate excessively. Hence speed gear changing must be oftener resorted to. After all, the proportions of bore to stroke are not of vital importance, but have interest more from the scientific and specialist's point of view.

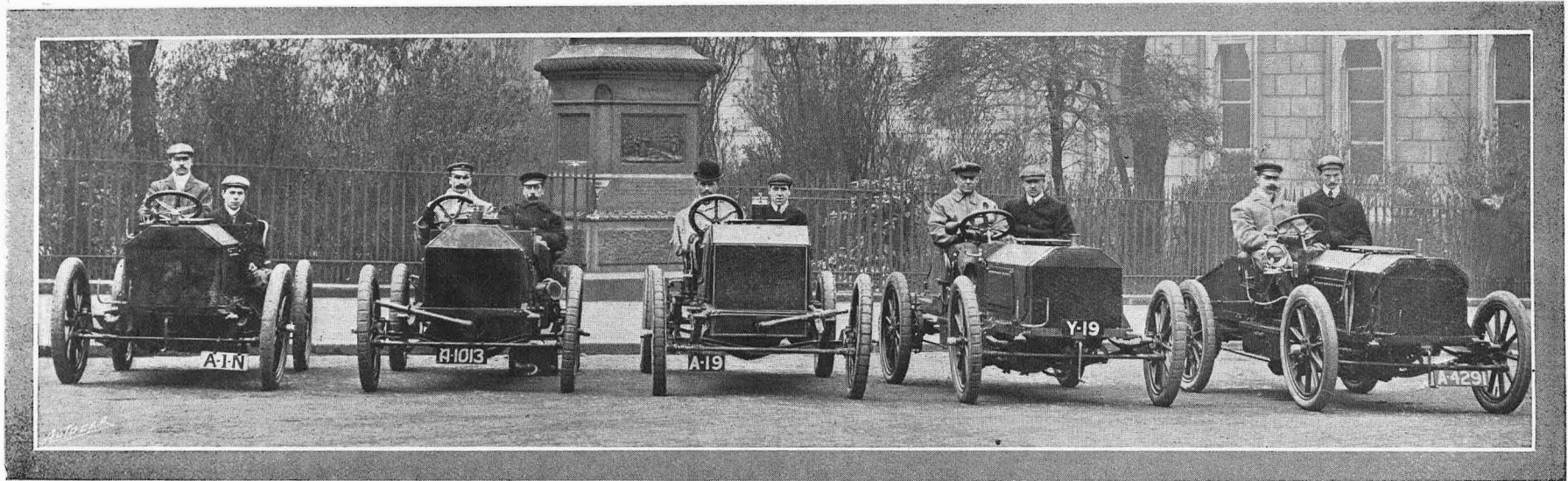
What the general public require is to be assured that a motor will do all that is desired in the way of performances in actual work, *i.e.*, the points to look for are: Reliability, freedom from excessive wear, freedom from vibration running light or under load, simplicity and sound design, no tendency to overheat under ordinary conditions of working, accessibility of all parts likely to require examination or renewal, economy in running, both in petrol and lubricating oil, and fair price for value in the motor.

To expect to obtain the above points in one particular brand of motor is not unreasonable, and they can be obtained, provided one is willing to pay fairly for them. In this case, the extra first cost is never regretted, and such a motor is bound to give pleasure and every satisfaction in use.



A side view of one of the Darracq Gordon-Bennett engines.

The Earl of Carnarvon, one of the pioneer motorists in the country, has just purchased a Hotchkiss car from the British Automobile Commercial Syndicate. It would be interesting to have a record of the cars which the Earl has owned, as there is scarcely any well-known make with which he is not thoroughly acquainted.



THE FIVE GORDON-BENNETT NAPIERS

Mr. W. Clifford Earp,

Mr. S. F. Edge.

Mr. Mark Mayhew.

Mr. John Hargreaves.

Mr. J. W. Stocks.

## THE WEIGHING AND INSPECTION OF THE GORDON-BENNETT CARS.

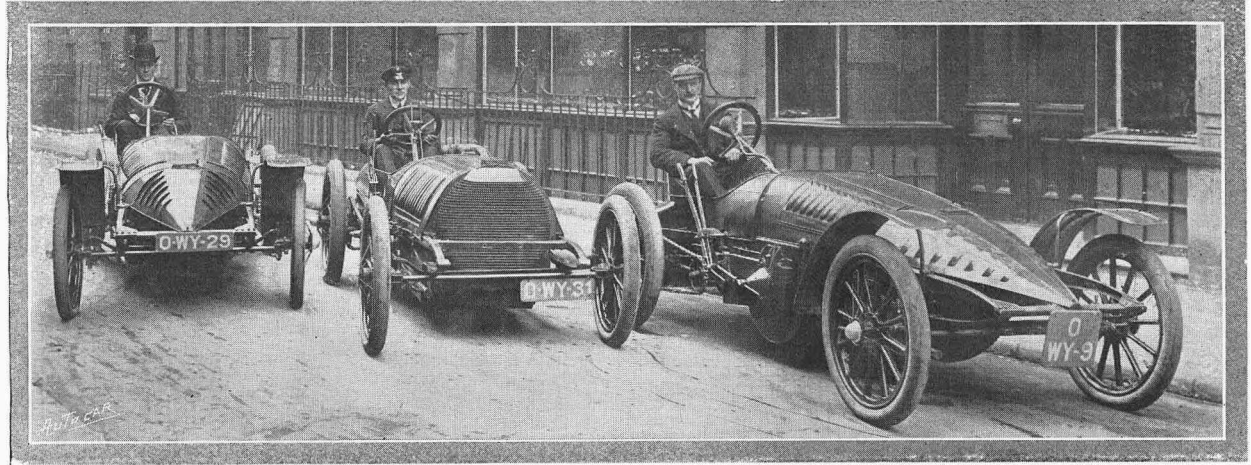
**A**S is well known to our readers, Saturday last until noon was the time appointed for the arrival of the racing cars which are to compete next month over the Isle of Man course for the honour and glory of representing Great Britain in the Gordon-Bennett race in Germany on June 17th. The three Wolseleys arrived betimes, and when the majority of those interested reached the garage had already been hoisted on the lift to the first floor, where they were found together at one end, looking in all their fascinating ugliness like huge green scarabs endowed with wheels. The Napiers—five in all, to wit, Mr. Mark Mayhew's 100 h.p., upon which he did so well at Nice, and upon which he drove to and fro from north to south

of France, with Mrs. Mayhew only for company (a plucky proceeding on both their parts); Mr. Edge's 90 h.p.; Mr. Hargreaves's and Mr. Earp's 65 h.p.'s; and the 55 h.p. which will be driven by Mr. Jack Stocks—were all in the garage a few minutes after ten, their arrival attracting a large crowd in the narrow width of Down Street, for speed monsters of this type are not among the common sights of Piccadilly. Mr. Mayhew's machine is the most imposing of the batch, and, seeing how far back the driver sits and how the radiator cuts off his view of the road in front for a considerable distance, one was obliged to ponder the manner in which he will take some of the sharp bends on the Isle of Man course. The Napiers having entered the garage, the waiting crowd settled themselves to attend the arrival of the Darracqs, which we learnt had left Glasgow the night before by special

train, as there was not time to drive them. When the hands of the clock pointed to a quarter to twelve, anxious questions were asked as to what had befallen the British productions of French models, and fears were expressed that they might not arrive in time. It had been made known some time previously that the three Huttons could not put in an appearance, and it seemed likely that if the rules were to be strictly adhered to the already diminished fleet might yet suffer a further shrinkage of three. But it had barely turned the three-quarters when a cry went up, "Here they come," and round the top of Down Street appeared, urged by willing hands, under the direction of Mr. Rawlinson, the long, low, grey-painted speed machines of racy appearance, and all alike as peas in a pod. The Darracqs had arrived in the nick of time, and the situation, so far as they were

concerned, was saved. Given the passage of the weight and inspection tests, there would then be eleven starters certain for the eliminating trials. At twelve o'clock the garage was cleared, the gates closed, and the judges present, viz., Mr. J. Lyons-Sampson (scales), Major Lloyd, Mr. O'Gorman, Mr. E. H. Cozens-Hardy, Captain Nugent, Captain Bowman-Manifold, Mr. Claude Johnson, Mr. Worby Beaumont, and Colonel Crompton, proceeded with the work of inspection. Lieutenant-Colonel Holden, the chairman of the club committee, was in attendance during the latter part of the proceedings. The following statement of the weights of the several cars presented has since been issued by the club secretary: The five Napier cars weighed respectively 2,182 lbs., 2,111 lbs., 2,199 lbs., 2,177 lbs., and 2,144 lbs. The three Darracq cars: 2,205 lbs., 2,219 lbs., and 2,205 lbs. The three Wolseleys: 2,163 lbs., 2,157 lbs., and 2,191 lbs.

It will be remembered that the maximum weight limit laid down by the rules of the race is 1,000 kilograms, or 2,202 lbs. It will be noted that the Darracqs are all slightly over the weight, but this is no doubt due to the hasty manner in which



THE THREE GORDON-BENNETT WOLSELEYS. On the left is Mr. Jarrott on a 96 h.p. car, on the right is Mr. Campbell Muir on a 72 h.p. vehicle, while in the middle is the 72 h.p., driven by Mr. Girling.

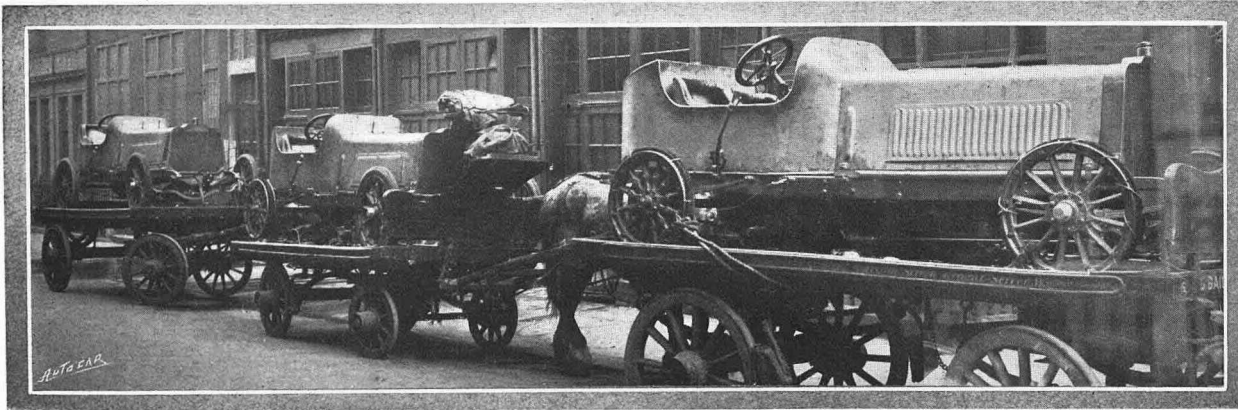
they were finished, and there will be no difficulty in bringing the weight down to the stipulated maximum.

The drivers of the Gordon-Bennett trial cars are as follow: 100 h.p. Napier, Mr. Mark Mayhew; 90 h.p. Napier, Mr. Selwyn F. Edge; 65 h.p. Napiers, Mr. J. Hargreaves and Mr. C.

Earp; 55 h.p. Napier, Mr. J. W. Stocks; 96 h.p. Wolseley, Mr. Charles Jarrott; 72 h.p. Wolseleys, Mr. E. Campbell-Muir and Mr. S. Girling; 90 h.p. Darracqs, Mr. C. Rawlinson, MM. Henri and Edmond, the two last-named being of French nationality.

Constructional feats have been accomplished by each one of the competing makers. The drawings for the Wolseleys were not commenced till January 1st, while the Darracqs were built in the factory of Messrs. J. and G. Weir, of Glasgow, by men who had no previous experience in motor building, though their work was superintended by two qualified motor engineers, Mr. T. C. Pullinger (the designer of the Sunbeam) being one and Mr. Hugh Kennedy the other. Messrs. Marston are certainly to be congratulated on placing Mr. Pullinger's services at the disposal of the builders of the racing Darracqs.

Mr. Orde very rightly reserved the club garage on Saturday after midday solely to the inspection and weighing committee and those gentlemen intimately connected with the eleven cars submitted.

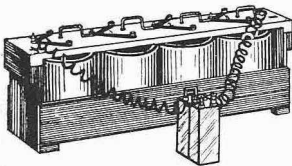


ON THE WAY TO THE CLUB. The three Gordon-Bennett Darracqs. These cars were sent by special train from Glasgow, and only reached the Club garage just in time.

## CHARGING ACCUMULATORS AT HOME.

Car owners whose residences or motor houses are innocent of a continuous current electric light installation, and whose engines depend upon a high-tension current for ignition, are always at more or less inconvenience in getting their accumulators recharged. They have to be taken to places where current is available, and confided to the tender mercies of operators who in the natural order of things cannot be expected to feel an equal interest in them with their owner. It must not be presumed that there are not establishments in plenty whereat people honestly perform the work they charge for, and give the accumulators every attention. Nevertheless the knowledge that one can charge one's own accumulators and keep them fully charged is a great comfort, particularly as the inconvenience of carrying accumulators (not in themselves very light articles) about is thereby avoided.

In an endeavour to achieve this desirable condition, we some weeks ago installed a Fuller double-carbon cell mercury-bichromate battery, and by its agency have ever since kept our two sets of three two-volt cell accumulators always up to concert pitch, with a minimum amount of trouble. When making out-and-home



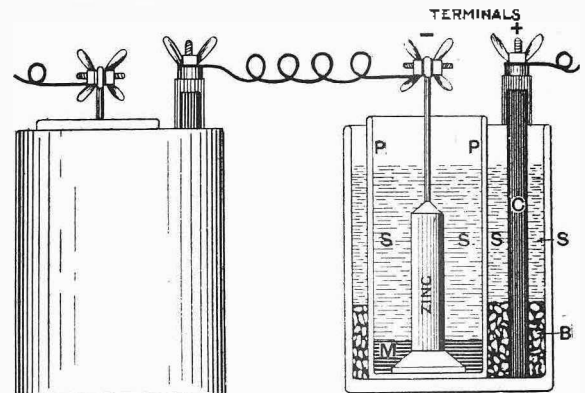
A set of Fuller cells at work.

runs, we now invariably go out on one set of accumulators and return on the other, and after putting up the car we connect one of the sets of three cells to the primary battery for two or three hours, subsequently giving the other set a similar refresher at our convenience. The primary battery is set up on a small bench in the motor stable, so that everything is quite handy, the wires attached thereto being of sufficient length to attach to the accumulators without the trouble of withdrawing them from the accumulator box on the car.

The battery was submitted by Messrs. John C. Fuller and Son, of Woodland Works, Bow, with a supply of charging paste and mercury, the setting up and charging being easily and correctly performed by the light of the comprehensive instructions contained in "The Fuller Booklet," which accompanied it.

The nearest chemist supplied us with a third again as much four to one solution of sulphuric acid as was

necessary for charging for 3s., sufficient bichromate paste cost 2s. 6d., while the mercury for the porous pots (which, by the way, last indefinitely) cost 4s. The zincs—which the makers say outlast three charges



Two Fuller cells—complete and in section.  
B, bichromate paste. C, carbon plate. P P, porous pot. M, mercury.  
SS, solution.

of the battery—cost 1s. each. Therefore the alimentation may be put down at 10s. 6d., and, having regard to the fact that 9d. or 1s. at least must be paid whenever accumulators go outside to be charged, and, as we have suggested above, have to be carried backwards and forwards, we think both the capital outlay for the battery and the expense of charging materials is money well spent.

Our two sets of three two-volt cells accumulators have been on the battery now three or four times each, for several hours each time, and the battery itself shows as yet no particular loss of voltage.

With this battery, the zincs do not require to be removed from the fluid, although it is easy to fix two pegs in the wall against which the battery is placed upon which to hang up the top slab to which the zincs and carbons are attached. The battery can be left out of action for long periods, and will yet be found to start charging directly it is coupled up. To car owners living in the country, or who are otherwise inconveniently situated with regard to accumulator charging, this simple and effective charging plant should prove a great boon, particularly when it is remembered that accumulators are much better for being kept charged up.

## ROAD TRAFFIC AND MOTOR CARS.

Sir J. H. A. Macdonald, Lord Justice Clerk of Scotland, president of the Scottish Automobile Club, at the annual meeting of that club the other day, referred to the question of road traffic as affected by motor cars. It was not surprising, he said, that many railways had already taken up the application of motor traction, not only on their branch lines, but by the establishment of omnibuses and carriages for the purpose of bringing passengers from outlying districts. He was not very sanguine at his age about many things, but he was sanguine that within the next three or four years it would come home to the public mind that there was no worse way of carrying locomotion into the country than by turning the roads into railways. Tramlines in the country roads would be voted a public nuisance, and it would come to be realised that vehicles which could run upon a good road at a good pace, and

could accommodate themselves to the traffic, would confer the greatest possible benefit upon the public. The public would not in the future be content with the roads they had at present. As regarded the dust nuisance, he had no doubt some invention would be found to meet the difficulty. It would take some little time, but in a very few years he believed they would have some means of applying material to the roads which would make them practically dustless. Those who had been interested in the automobile movement should realise more and more that it was going to be of vast commercial benefit to the country. What he would suggest to his brother automobilists was that they should have a courageous spirit of propaganda in them, and that they should simply make people understand that this movement was to effect a great benefit in their social, commercial, and national condition.



## A TRIP TO DEVONSHIRE ON A 24 H.P. CAR.

This was my first experience of a F.I.A.T., and, therefore, I wished to take it on a tour which would enable me to judge both of its speed and hill-climbing capacities, for which purposes Devonshire offers unique opportunities. The tour mapped out was:

First Day: London to Salisbury.

Second Day: Salisbury to Bideford, *via* Exeter, Moreton Hampstead, Dartmoor, Tavistock, and Okehampton.

Third Day: Bideford to Barnstaple, over Exmoor, Lynmouth, and Porlock to Minehead, and thence to Bridgewater, Wells, and Bath.

Fourth Day: Bath to London.

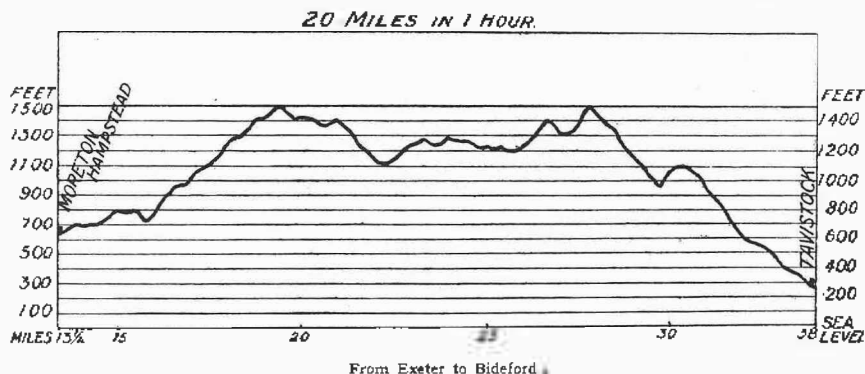
Thus the first and last days gave opportunities for testing the car on good and level roads, whilst the second and third days gave us ample opportunities to judge of its reliability and hill-climbing capacities.

The first day offered nothing of interest to comment upon, but the performance of the car on the second and third days was sufficiently remarkable. The journey from Salisbury to Exeter was done in good time, although the roads were very skiddy and not particularly good between Salisbury and Sherborne. Dartmoor proper and the really hilly roads may be considered to commence at Moreton Hampstead, which we reached at 4.35. We proceeded without stopping over Dartmoor to Tavistock, which we reached at 5.35, thus covering the twenty miles in exactly one hour, and accomplishing an ascent of 900 feet, a descent of 400 feet, another rise of 400 feet, and a descent of 1,200 feet, as will be seen from the adjoining profile of road, extracted from Inglis's "Contour Road Book of England." The roads over Dartmoor were very fine indeed, and most of the hills were climbed on the third speed, the first speed not being resorted to in a single instance. The road continued to be very hilly to Okehampton, and this was covered in even better time. The total distance for the day was 175 miles, done with comfort and ease on the top speed throughout.

The third day, in which it had been planned to travel from Bideford to Bath, was curtailed, owing to our staying with some friends, who wished to go for a motor drive in the morning. We therefore started at 1.30, and modified our plan to push on to Bath by proposing to spend the night at Wells. The road from Bideford to Barnstaple was very poor, but thence over Exmoor it was good, with the exception of the precipitous descents at Parracombe, Lynmouth, and Porlock. The descent into Parracombe was so loose

and steep (one in seven) that the wheels of the car locked by the brakes skidded, and the whole car seemed inclined to descend the hill like a sleigh. The same thing occurred at the descent into Lynmouth (one in five). The rise from Lynmouth to Countisbury (two miles of one in seven) was tackled on the first speed, and the car went up well for about two hundred yards, when the petrol failed to reach the carburetter, and, therefore, we had to turn the car round, put the reverse gear in, and run up backwards, which was accomplished with the greatest ease. The distance from Bideford to Minehead—44½ miles—was covered in two hours and fifty minutes, an average speed of about fifteen and threequarter miles per hour.

From Barnstaple to Porlock, a rise of 1,000 feet was succeeded by a descent of 400 feet, another rise of 400 feet, a descent of 1,000 feet, a rise of 1,000 feet in two miles, a further rise of 300 feet, and a descent of 1,200 feet. The accompanying contour drawing will give some indication of the nature of the road.



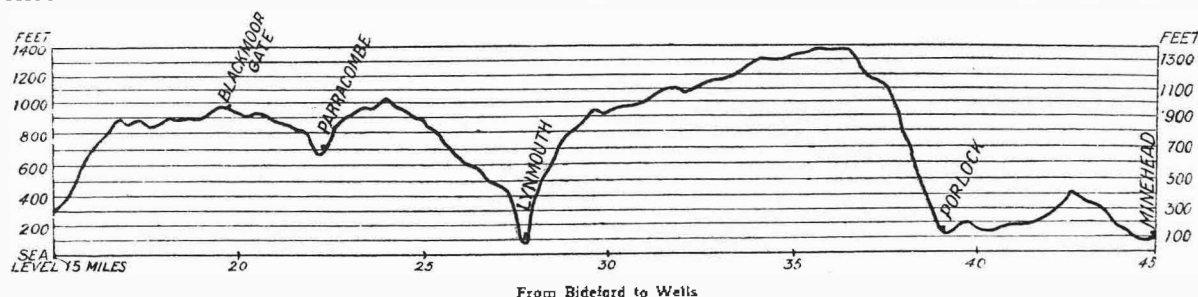
The road from Minehead to Wells was rough and tedious, owing to constant stoppages necessitated by shying horses. Notwithstanding all these delays, Wells was reached in good time, the total distance for the day being 92½ miles, which were covered in four hours and forty minutes, thus showing an average speed of about nineteen and threequarter miles per hour.

The fourth day's journey—from Wells to London, *via* Bath (about 130 miles)—offered nothing worthy of comment, except that opportunity was given for some fast travelling on a good road as a final test.

I can advise all owners of cars who wish to satisfy themselves as to the quality of their machines to try them on the above-mentioned route, and to endeavour to check the times mentioned.

We were most fortunate as regards our tyres, which were 870 x 90 Dunlops, for, although we took two spare outer covers and three new inner tubes, we had not the slightest tyre trouble over the whole 490 miles.

E. DE RODAKOWSKI.





## AUTOMOBILE CLUB TIMEKEEPING.

NOW THAT THE RE-FORMED COMMITTEE OF THE AUTOMOBILE CLUB HAS BEEN SUB-DIVIDED INTO ITS SEVERAL DEPARTMENTS THE WRITER DESIRES TO DIRECT THE ATTENTION OF THE RACES COMMITTEE TO THE NECESSITY OF ORGANISING THEIR TIMEKEEPING ARRANGEMENTS IN A MANNER MORE ADEQUATELY SUITED TO THE REQUIREMENTS OF THE CASE THAN HAS HITHERTO BEEN IN VOGUE.

We are afraid that there is too much tendency to regard accurate timekeeping as a matter of mere didactical sentiment. The impression seems to prevail that a race is a race, wherein the first past the post is the winner. This sentiment is no doubt perfectly correct in the case of races conducted, for example, like the race for the Derby, wherein the time test is absolutely negligible, the contest being decided solely by the positions at the winning-post, the time occupied in covering the course having not the slightest effect upon the result. The same result accrues when two or more motor vehicles race against each other side by side, both starting together, and the winner being the one who in a fair run first arrives at the destination. But in the majority of automobile competitions it is not practicable to start the competitors together and decide the result by the order of arrival at the destination. The starts have to be made at pre-arranged intervals, and not only must allowance be made for the differences of times of starting before the correct order of arrival at the finish can be determined, but in the case of long-distance road competitions the times spent in controls have also to be allowed for, so that the correctness of the timekeeping throughout is absolutely vital to the just determination of the results.

These principles have to some extent been realised by the Automobile Club of Great Britain and Ireland; but the manner in which the eliminating trials at Welbeck Park last year were conducted was open to grave objections, whilst the system adopted for timing the Gordon-Bennett race in Ireland was, as we pointed out at the time, fraught with risks of the most serious description, and the club's arrangements for the other contests held during the automobile fortnight in Ireland were of so crude and imperfect a character as to call for the most serious consideration of the Races Committee, with a view to averting a repetition of the scandals associated therewith.

### Abundant Precedents.

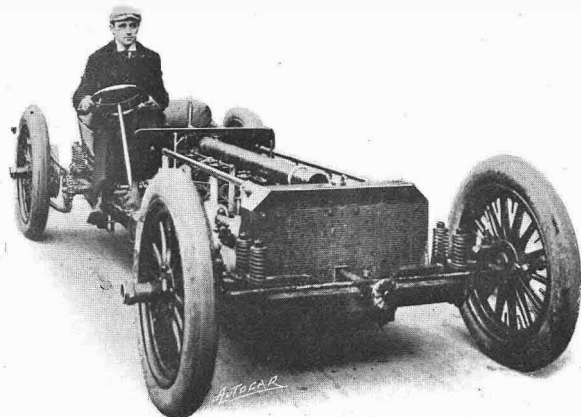
Cyclists have provided motorists with abundant precedents for the arrangement of all kinds of competitions. The system of handicapping, starting, checking, judging, and, above all, timekeeping of automobile competitions is mainly based upon the experience gained by cyclists in their road races. The avoidance of error and the checking of unfair practices in motor races on the road are the result of two decades of experience in the promotion of road races on cycles, since first the National Cyclists' Union and then the Road Records Association instituted rules and regulations designed to ensure perfect fairness and invariable accuracy in the conduct of such competitions. Particularly in connection with the twenty-four hours' road races conducted for so many years by the North Road Cycling Club has the system of checking and timekeeping been brought to a pitch of refinement which has eventuated in absolutely every such competition ever held being determined without a single protest, objection, or whisper of inaccuracy being introduced. This fact has been recognised by the circumstance that every one of the official timekeepers

appointed by the Automobile Club had previously attained to a position of acknowledged expertness in connection with cycle races, until last summer the arrangements for the timing of the Gordon-Bennett race in Ireland came before the club committee, when (for some reason that has never been published) that committee perpetrated the first of its many blunders by ignoring the whole of its accredited honorary timekeepers, and appointing one of its own members—a gentleman who many years ago had had a not altogether successful connection with the timekeeping of sports—to take entire charge of the arrangements for timing the Gordon-Bennett race of 1903.

### The Welbeck Arrangement.

Prior to this, however, the eliminating trials at Welbeck had been conducted in accordance with ideas that seemed to us to be totally at variance with the fundamental principles that should dictate all such arrangements. Some of the club's honorary official timekeepers were, it is true, engaged to conduct the timekeeping of the trials at Welbeck, but to this day it is a fact that not one of those timekeepers can vouch for the accuracy of the returns; not one of them, nor any two or more of them, can say that the published results were correct, because the instructions that were given to them were that each timekeeper was to time either at the start or at the finish, and to hand the times he had recorded in writing to some official or another of the club. But it was left to some official or other of the club to determine, by comparison of the times thus handed to him by various officials, what were the times actually accomplished between start and finish, so that, in effect, the official timekeepers of the club did not certify the times accomplished by the various competitors. It was only the unknown officials of the club who received the various details and compared the different figures with each other who decided what were the results. This we regard as being utterly wrong in principle, although we do not suggest that in practice it resulted in any inaccuracy. We consider that the official timekeepers of the club are appointed not merely because they are experienced in reading and manipulating chronographs, but because they are gentlemen of unquestionable integrity, whose dicta may be implicitly relied upon. The dictum of an official timekeeper depends upon his perfect *bona-fides* as well as upon his manual and mental skill in manipulating and reading his watch, and competitors have a right to know that their performances are not only checked, but are vouched for by gentlemen of unblemished reputation, whose perfect impartiality and fairness, as well as their skill, may be depended upon. But at Welbeck last year we had the spectacle of veteran timekeepers such as Messrs. Woollen, Griffin, and Wilson at the start and Messrs. Swindley, Coleman, and Straight at the finish placidly and mechanically taking their times, writing them on slips of paper, and handing those slips to some gentleman who had been deputed to collect them—the club having stipulated that the timekeepers should keep no copy of the times they thus recorded—and the written

slips thus handed to the club officials by the timekeepers were subsequently dealt with by some unknown individuals who announced the results. In addition to this, there was an electrical timing apparatus, which



A front view of the Buffum car which shows how the car is carried on four coiled springs to each axle.

very infrequently, and only by good luck, recorded the times at which the cars broke a thread stretched across the track, but generally recorded the moments at which some individual had inadvertently broken the thread by walking across it, the records so produced being presumably suitably analysed by the unknown officials in charge, and compared with the records written down and handed in by the human automata above-named.

#### This Year's Gordon-Bennett Eliminating Trials.

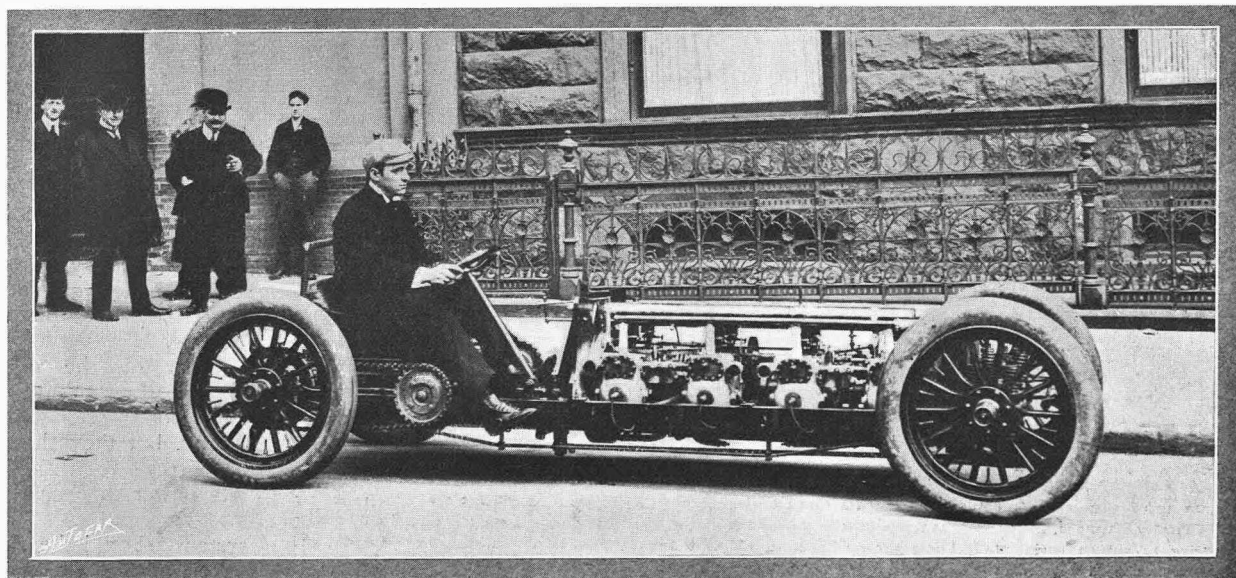
The eliminatory trials for the Gordon-Bennett race which are to take place in the Isle of Man this year will, however, partake more of the character of the actual race that was held in Ireland last year than of the mile and kilometre trials at Welbeck, so that it is more to the purpose that we should consider the manner in which the race in Ireland was timed; and, therefore, we would direct attention to the circum-

#### Automobile Club Timekeeping.

stance that last year the Automobile Club committee were understood to have intended to call together the official timekeepers of the club in order that those experts might arrange a system upon which the race should be timed, but the matter was allowed to remain in abeyance for so long that eventually the club's official timekeepers were absolutely ignored, and the whole of the timing arrangements were entrusted offhand to a gentleman whose only qualification seems to have been that he was a member of the committee, and that he had invented an electrical timing apparatus many years ago, which (it was acknowledged) was quite useless for the purpose of the Gordon-Bennett race. This gentleman was forthwith appointed an honorary official timekeeper of the Automobile Club, and invested with supreme control over the veteran officials who had for years loyally served the club without fee or reward—gentlemen who had previously attained to positions of recognised authority as expert timekeepers of races on cycles. The scheme that the committee, unversed in the subject, approved of was a scheme which we criticised frankly and openly at the time, and, although one or two of the club's official timekeepers asked us then not to include them as concurring in our emphatic disapproval of the scheme, we are able to say without the slightest fear of contradiction that not one of the official timekeepers of the club approved of that scheme, but that most, if not all, of them perfectly agreed with us in our expressions of alarm at the prospect of the scheme for timing the Gordon-Bennett race breaking down, and thus rendering nugatory the whole of the arrangements for the race—rendering the race utterly void. For the reasons which led us to this conclusion, we need only refer to our article in *The Autocar* dated June 20th, 1903.

#### Delay in Declaring the Results.

It has been said that even if our anticipatory forebodings were justified, yet the circumstance that the race was satisfactorily carried through justifies the author of the scheme in his confidence in its practicability; but we do not acknowledge that such is the



THE NEWEST AMERICAN RACER. The car depicted above is the product of the Buffum Company, of Abingdon, Mass. It is propelled by an eight-cylinder motor in which the cylinders are opposed—in fact, it consists of four two-cylinder engines with the cranks shafts coupled together by flanged coupling. The valves are mechanically-operated and placed above the cylinders. A separate carburetter is fitted to each pair of cylinders, the throttle valves being connected together. Four pumps are employed in the water-cooling system. In fact, everything is duplicated apparently with the idea of giving as much trouble as possible.

### Automobile Club Timekeeping.

case, because, for one thing, the article which we published had the effect of putting everyone on the *qui vive*, so that every official engaged was keenly alert in order to avert any of the possible sources of failure which we pointed out. There were also auxiliary timekeepers—some appointed by competitors, and others, we believe, appointed by the club—engaged in counter-checking the times. But, despite all these precautions, the result of the race was not known until some twenty-eight hours after it had finished, and then the time that had been first given out was altered as regards the winner, so that it is excusable to conclude that the International Committee entrusted with the investigation of the various timekeepers' returns found some points upon which discussion, deliberation, and adjustment were necessary before they could agree to the results that were ultimately published as regards the first, second, and third of the competitors. Even had such not been the case—even had the results been quickly ascertained and pronounced without any hesitancy—the fact that the timekeeping was satisfactorily carried out upon the system adopted would not alter the fact that it was a system which everyone conversant with the subject must recognise as a system fraught with the utmost risk of failure, the odds being in favour of failure, even although it happened that failure did not eventuate. For justification of our opinion upon this point, we are perfectly willing to hear the expressions of opinion of the whole of the club's official timekeepers as to whether they consider that the plan adopted in Ireland last July was a plan that they would willingly adopt again under the same circumstances.

### The Phoenix Park Arrangement.

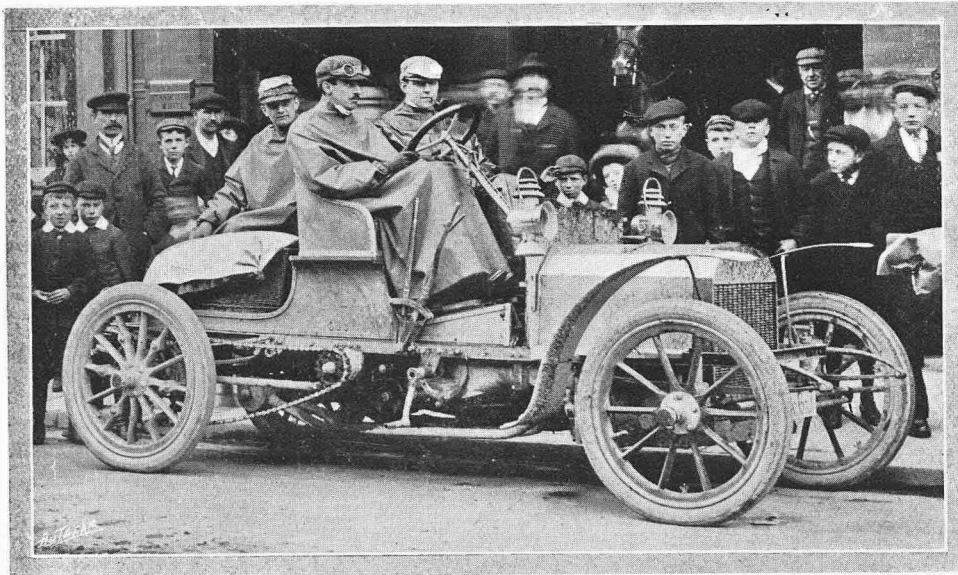
The unwisdom of appointing an inexperienced timekeeper to take charge of the club's chronographical arrangements was further exemplified at the whole of

the other competitions held by the club in Ireland last summer. At Phoenix Park the imperfections in the timekeeping arrangements have already been pointed out, and the discourtesy with which some of the club's honorary official timekeepers were treated was exemplified by the circumstance that such veteran officials as Messrs. Coleman, Swindley, and Woollen—who did the real work of the timekeeping—were absolutely ignored upon the programme, the list of officials containing the name only of Mr. R. E. Phillips as timekeeper. At Castlewellan, at Cork, and in Kerry there was a deficiency of official timekeepers, because Mr. Phillips had in the exercise of his supreme discretion informed at least one of the club's honorary official timekeepers that his services would not be required, so that we had the spectacle of this official standing idle upon the ground whilst the programme announced that Mr. Siddeley, "honorary official timekeeper, A.C.G.B. and I."—an office to which Mr. Siddeley had never been appointed—was the official timekeeper in conjunction with Mr. R. E. Phillips, although, as a matter of fact, Mr. Siddeley was not on the spot, but a Mr. Crawley officiated as timekeeper at the start. We think such blunders and omissions should not be permitted to recur.

### A Committee of Official Timekeepers.

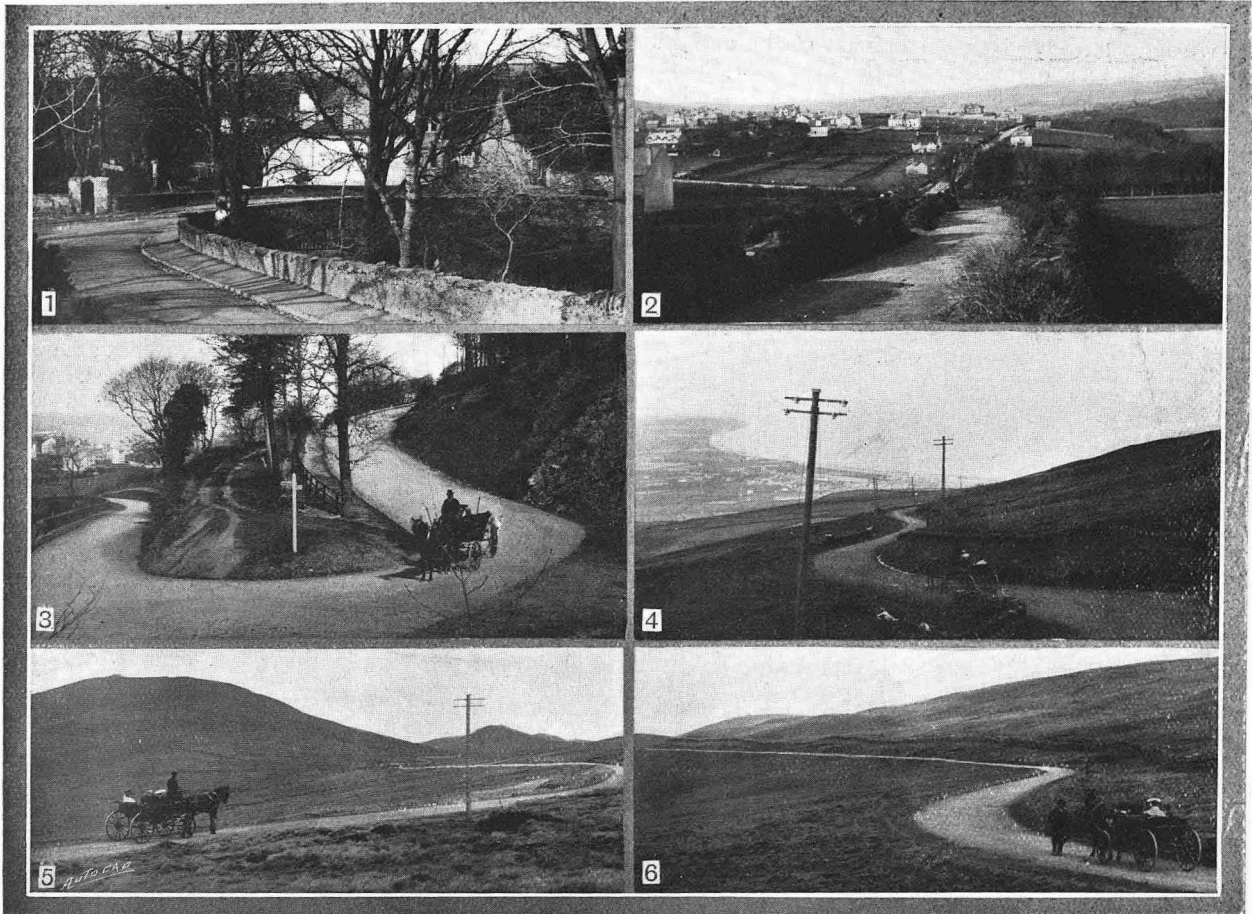
In conclusion, we urge that the Automobile Club should regard its official timekeepers as a body of expert and trustworthy gentlemen, to whom should be entrusted absolutely the timekeeping arrangements at all of its competitions wherein the time test is of moment. The committee themselves are not expert on the subject of timekeeping, and although last year's committee may have considered that Mr. Phillips's scheme sounded plausible and satisfactory, they were not in possession of the expert knowledge of the subject

which was necessary to enable anyone to form a proper appreciation of the practicability of the scheme. The club's official timekeepers should be regarded as a body of gentlemen to be invested with the same absolute authority as the bodies of judges who are appointed to determine the reliability and other trials of the club. They should not be regarded merely as so many human automata, or be ordered about by any inexperienced member of the committee who volunteers to look after the timing, but they should be entrusted with absolute power to decide as a committee what system should be followed in the timing of each particular competition, and their report of the results should be absolute, and not subject to revision.



A RUN ON A TEST CAR. Our illustration was taken from a snap shot at Exeter of an 18 h.p. four-cylinder James and Browne car with 8 ft. wheelbase and a rough testing body. The engine made its first revolution in the car on Thursday afternoon, March 31st, as it has been found possible in the James and Browne factory by careful and accurate gauging to put an engine straight into a car without previously testing it. Mr. Martineau, who drove the car, and his friends stopped a few miles beyond Salisbury the first night, only stopping once or twice to adjust things up to concert pitch. Next day they ran back into Salisbury and on to Shaftesbury, Yeovil, Crewkerne, Chard, Honiton, and Ottery St. Mary, to Budleigh Salterton. The next day Exeter was made *via* Exmouth. On Easter Monday the car was driven straight back to town by Sidmouth, Lyme Regis, Dorchester, Winchester, and Basingstoke. The first speed was only used once on Bowd Hill, outside Sidmouth. The total distance covered was just over 400 miles, and the run was without incident except on the return journey when a soldier, who had met with a cycle accident, was taken to a doctor. From Hartley Row to Hammersmith the speed was not changed once.

THE ISLE OF MAN ELIMINATORY TRIALS.



VIEWS OF THE ISLE OF MAN ELIMINATING TRIALS COURSE.

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| <p>1. The starting point at the Quarter Bridge Hotel.</p> <p>3. A sharp turn leaving Ramsey.</p> <p>5. At the foot of Snaefell.</p> | <p>2. The finishing point near the Quarter Bridge Hotel.</p> <p>4. The road overlooking Ramsey.</p> <p>6. Another view on the Snaefell Road.</p> |
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Those of our readers who may be going over to the Isle of Man to witness the British eliminator trials for the Gordon-Bennett Cup race on May 10th will be glad to be informed on the following points:

The only steamship route which will be open to the Isle of Man in May is the Liverpool-Douglas route (Isle of Man Steam Packet Co.), and the rate of charges for freight of motor cars is £2 each way.

The best course for spectators wishing to see the start and also some hill-climbing later would be, after seeing the start at Douglas, to take the electric car to Ramsey, where, from a point near to the Albert Tower, they could command a good view, covering a long distance, of some of the steepest points on the course.

One of the best road maps of the island is that published by Brown and Sons, Ltd., Times Buildings, Douglas. Another map on a larger scale, though with the roads less distinctly coloured, is published by Phillips and Son.

No difficulty will be experienced by visitors in obtaining storage room for their cars in Douglas or the other principal centres in the island. Prospective visitors who contemplate bringing their cars may communicate with Dr. W. Keig, 2, Coronation Chambers, Douglas, stating storage space required, and he will put them in touch with persons having such accommodation to let.

The courteous secretary of the Official Information Department (established by the Manx Government) intimates that he will be pleased to furnish prospective visitors with guides, road maps, steamship arrangements, lists of hotel and boarding-house accommodation, or any other information required, upon application to the Official Information Department, Douglas, I.O.M.

The head-constable of the Isle of Man is said to be recruiting five hundred stalwart countrymen as special constables for keeping the course during the eliminating trials.

The London Motor Garage Co., Ltd., inform us that the three Pipe cars which will represent Belgium in the forthcoming Gordon-Bennett race will be driven by Lucien Hautvast, George Augière, and Baron Pierre

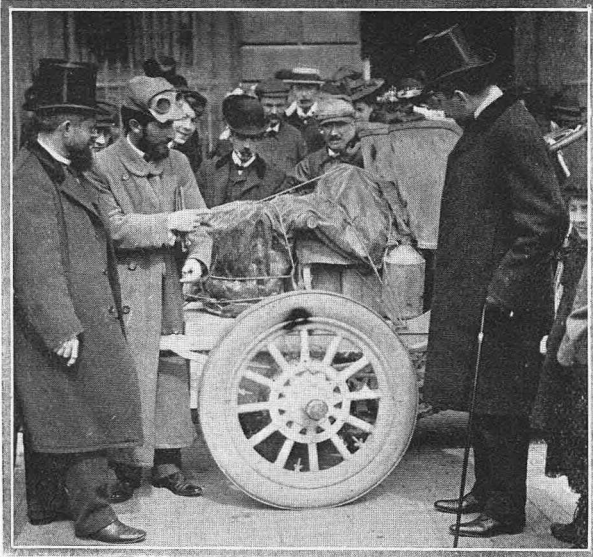
De Crawhez. Augière was until lately the holder of the world's kilometre record, and, as is well known, Baron De Crawhez finished first in last year's Circuit des Ardennes.



## CONTINENTAL NOTES AND NEWS.

### The Anti-skid Trial Paris-Nice-Paris.

We have already given our opinion of the anti-skid trial which was organised a little time ago by the Automobile Club of Seine-et-Oise, and which was held near Versailles. We spoke as approvingly as we could of this trial, crowned with success as it was, which enabled the public to see the qualities of the different



Examining a non-skid device. M. Bouvier de Sant Chaffray, the organiser of the trials calling attention to the weight over the rear axle.

apparatus presented in the competition. There were two points, however, in which this competition was incomplete. One was due to the difficulty of producing a surface sufficiently greasy for the trials, and the second was that the distance travelled by the cars was not sufficient to prove the lasting powers of the apparatus presented. To overcome this last difficulty it was decided to organise, in addition to the 800 kilometres covered by the competing cars, a trip from Paris to Nice and back, for although after the 500 miles nearly all the apparatus were in excellent condition, it was necessary to see how they would stand a long journey and in what state they would come back. The competition to Nice and back was, therefore, most useful and interesting from the point of view of the user, for an anti-skid apparatus to be successful, it must not only prevent skidding, but also protect the tyre and present a surface which will last, and be at least not more costly to replace than the indiarubber tyres. Amongst the different causes of bursts and punctures of pneumatic tyres, there are three, as will be well known, against which the driver can do nothing—that is to say:

- (1) Tears caused by sharp stones, pieces of glass, or sharp pieces of iron.
- (2) The effect of applying the brake suddenly.
- (3) The wear and tear from prolonged usage.

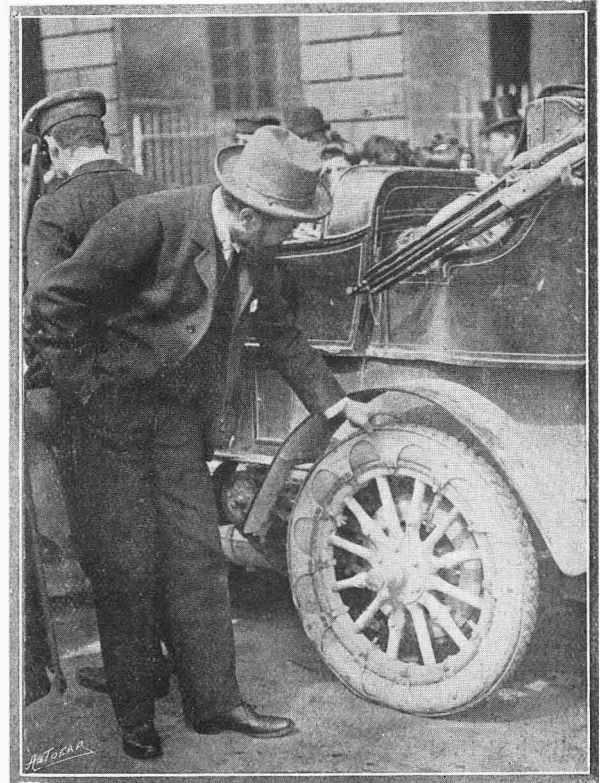
All three of these difficulties combine in different proportions to destroy the tyre, and the worst of it is that the basis to resist all this is made of indiarubber and is very dear. The expenses of putting on pneumatic tyres is in France very much more than the money spent in buying petrol, and rubber is still going

up in price. It is, therefore, in everybody's interest to economise tyres and to reduce their rapid deterioration, and this is where anti-skid tyres come in. But it was necessary to prove this to the public, and this proof has been furnished by the competition from Paris to Nice and back, along a difficult and heavy road.

After a successful journey the competitors have just returned to Paris, and the following is the list of the different anti-skid apparatus that have come through this trial in good shape. In the first class there are anti-skid apparatus fixed to the covers. There were four cars in this class, namely, Samson I., with three passengers and luggage, Panhard and Levassor 12 h.p. motor, weighing altogether 31 cwt. 0 qr. 16 lbs.; Samson II., with three passengers and luggage, De Dietrich 24 h.p. motor, weighing 30 cwt. 3 qrs.; Samson III., four passengers and luggage, Chenard and Walcker 18 h.p. motor, weighing 31 cwt. 1 qr. 20 lbs.

The above three cars had 120 millimetre tyres on the back wheels, provided with Samson covers. The fourth was a Herault 14 h.p., with five passengers and luggage, weighing altogether 31 cwt. 2 qrs. 16 lbs., and having 100 millimetre tyres on the back wheels provided with anti-skid apparatus.

The second class consisted of movable apparatus. There were two cars in this class, namely, a 20 h.p.



M. Michelin examining one of the anti-skid devices after the completion of a 500 miles run.

Prunel, with five passengers and luggage, weighing 33 cwt. 2 qrs. 25 lbs., with 100 millimetre tyres, provided with a Billet-Couverchel et Cie. anti-skid arrangement; and a Mutel 14 h.p. car, with three passengers and luggage, 30 cwt. 0 qr. 23 lbs., provided with

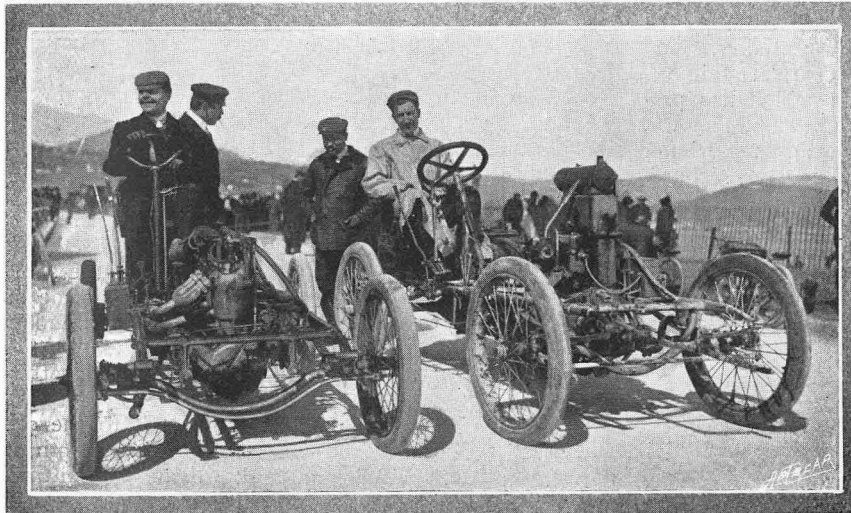


120 millimetre tyres, with an apparatus made by Fouilloy.

The tyres in all cases were marked with a red-hot iron "Nice et retour." and signed, and the stamps that had burnt these marks on them were kept in Paris. In addition to these, there was an observer on each car to prevent any irregularities. The result of this long trial has been most satisfactory. The anti-skid apparatus has come back in perfect condition, and we can give no better proof than the photograph of the wheel of one of the competitors, when it arrived at the Automobile Club, Place de la Concorde.

#### The Gordon-Bennett Cup.—The French Trials.

The drivers for the different houses which are to take part in May next in the eliminating trials for the choice of the French challengers of the Gordon-Bennett Cup are definitely chosen. As can be readily seen by examining the list which we publish below, the French eliminating trials will put into the field the kings of the steering wheel, and the competition on the Circuit des Argonnes will be particularly interesting, and some great speeds ought to be produced. Gabriel Jarrott, De Crawhez, Achille Fournier, Rigolly, Duray, etc.,



AT THE NICE SPEED TRIALS. Two Passy-Thellier voiturettes which competed in the Nice races. It will be seen that each chassis is fitted with a different type of motor—that on the right being a Gobron-Brillie, while that on the left is of the more usual type.

are no novices, but dangerous competitors and splendid drivers.

The following is the complete list of the drivers:

De Dietrich: Gabriel Jarrott, Baron de Forest.

Darracq: Baras, Béconnais, Wagner.

Mors: Salleron, Léger, Lavergne.

Serpollot: Le Blon, Chanliaud, Pelzer.

Hotchkiss: Baron P. de Crawhez, Achille Fournier, Amblard.

Turcat-Méry: Rouger and De la Touloubre.

Georges-Richard-Brazier: Théry, Staed, Caillois.

Bayard-Clément: Henriot, A. Clément, jun., Guders.

Gobron-Brillie: Rigolly, Duray, Alexander Burton.

Panhard and Levassor: Teste, Tart, H. Farman.

Henry Fournier has retired from racing. As will be seen by glancing over the list of drivers in the French eliminating trials, the name of Henry Fournier, the winner of Paris-Berlin and Paris-Bordeaux does not appear. Fournier has decided to leave the racing field, and to devote himself entirely to business. His co-directors in Paris Automobile have put a veto on his racing, as

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they think, in the first place, that it will take him very much away from business; in the second place, they do not want him to run any risks. Baron Pierre de Crawhez will take his place at the steering wheel of a Hotchkiss. But everybody will regret not to see his familiar face once more at the wheel of a Panhard.

M. Clément has long since given up racing, but he has got a son who is taking his place, and whose name will be noticed in the list of drivers. It is his *début*.

#### The German Eliminating Trials.

Germany will have no eliminating trials for the Gordon-Bennett Cup. The German Automobile Club, not having been able to come to an understanding with the local authorities for organising the route, has abandoned the project altogether, and there will be two Mercedes cars to defend the Gordon-Bennett Cup in Germany, and the third car will be either a Benz or an Opel. The organisers will have to choose between these two makes.

#### Lessons from the Monaco Motor Launch Races.

The Monaco motor boat week is over. It has, indeed, been a conquest of the sea by the light motor boats, and a repetition of the conquest of the road after the same doubts and fears, the same anxieties, the same official mistrust and disdain, and it has brought about the same pacific revolution with a brutal frankness similar to the explosion in the cylinder of one of the motors that has produced it.

It is curious to-day to look back upon the contempt and to remember the expressions of disdain which were uttered when the little motor boats arrived at Monte Carlo, and to think that now a 26ft. boat has attained a speed of twenty knots an hour, and a 32ft. 9in. boat has even exceeded that speed, whilst almost all these little toy-like craft upset all existing theories and cut through the water as well as the great Transatlantic liners. It was said that it was impossible that these boats should be seaworthy; they might do for the Seine, but not for the sea, and old sailors shook their heads and said they knew that there could be only one result, and they were quite sincere in this, just as those interested in horse-drawn carriages were certain beforehand that the automobile would never be practical or popular on the road.

Before the inauguration of the meeting doubts went even further, and competent people affirmed that the Trèfle-à-Quatre was utterly unseaworthy, and one of them—a famous yachtsman of great experience—even went so far as to interview the organising committee before the race and implore them not to let the Trèfle-à-Quatre compete, because the boat would certainly founder, and with it would founder the regatta on which such great hopes had been laid. The Trèfle-à-Quatre, however, has proved itself a marvellously rapid craft that skims the surface of the smooth water, for we have seen it out at sea in the wind. We passed it in a steamer which was tossing right royally, as the sea was rough. The Trèfle-à-Quatre literally flew from

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wave to wave on their crests without any effort. The foam seemed to fly from it as sparks in all directions, as if it had been red-hot and had struck the water a blow, and so loud was the noise of the spray that one could no longer hear the "ron-ron" of the motor.

How often have we heard it said in Paris: "Don't think that you can ever successfully put an automobile motor into a hull. You are confusing a car with a boat. They have nothing in common. An automobile motor is much too delicate for the sea. It turns much



The picquet boat at Monaco from which Prince Albert witnessed the motor launch races.

too fast to be able to drive a propeller. What is needed for the water is a special motor, heavy and slow. You are simply working at what will be a complete failure." What, however, has been the motor which has produced the fastest boat? A simple automobile motor, and nothing else. The motor with which the winner was furnished was a four-cylinder Georges-Richard-Brazier—one of the motors which has been made for the French eliminating trials of the Gordon-Bennett Cup—and not only this, but the boat was fitted up with practically the same mechanism as will be used on the automobile. The steersman had everything at his hand, just as in the automobile, and had complete command of all the manœuvring. He had no longer need to give orders to the engineer—orders which are more or less easily heard, and more or less promptly executed—but he had complete charge of everything in his own hands.

The motors for the boats which won the races not carried off by the Tréfle-à-Quatre were also ordinary automobile motors. For instance, La Rapée III. and the Princesse Elisabeth were driven by 45 h.p. motors as used in the Panhard-Levassor cars, and the Lutèce was driven by the 85 h.p. Panhard and Levassor Paris-Madrid motor; and again, in the cruiser class, the motor which drove the 26ft. boat to success, and made an average speed of nearly fourteen miles per hour, was simply an 18 h.p. Peugeot of the type so well known. And even the cat-head boat which won its category was driven by a two-cylinder 10 h.p. Peugeot.

Contrary to everything that had been expected, the little motor, regular though rapid, robust though light, has proved its utility on the sea. For small boats to-day great progress has been made. It has been proved that heavy, slow motors are not necessary, and it has been proved that a propeller can be turned at a rapid speed with best results, and, therefore, that it is useless to have large heavy propellers taking a big draught of water. It has been proved as well that there is much to be done in the form of the hull—that there is another way of attacking the wave besides breaking it—that is to say, flying over its surface.

The meeting at Monte Carlo has undoubtedly been a complete success. It has attracted the attention of the world, and has brought spectators from all parts.

It has made known to the public a new industry, and it will be prolific in its results. If in the racing classes there have been a considerable number of boats unable to come up to scratch or to finish their race, there has been in the cruiser class a most remarkable regularity. Every day has produced almost the same result. Nothing seems to have affected them. On the first day five out of six completed the race; on the second day ten out of ten; on the fourth and fifth days four out of four and two out of two. This is a record of regularity, and a proof to the public that the automobile boat can be relied on.

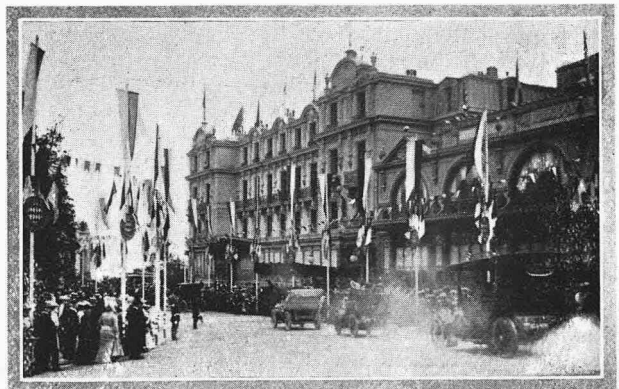
The following is the list of the prize-winners at the meeting which has just come to a close: Tréfle-à-Quatre, won £698 and the Prince of Monaco Cup; Lutèce, £400; Peugeot, £344; Princesse Elisabeth, £332; La Rapée III., £256; Vasa, £244; Mercedes, £170 15s.; Titan II., £160; Rotch, £200; Marguerite, £140; Allo VI., £100; Dubonnet, £96; Titan III., £68; Arion II., £56; France, £64; Le Nogentais, £112; Bavard II., £56; Dalifol, £56; Loodit, £40; Allo III., £40; Napier Minor, £40; Allo I., £28; La Rapée II., £25; Usona II., £32; Amédée Ancel, £20.

Prizes have been adjudicated to the makers of hulls and to the makers of motors, among whom are the firms of Georges-Richard, Panhard and Levassor, Delahaye, and Peugeot.

In addition to the prizes awarded to the proprietors of the boats, Tellier, who has made the hulls of nearly all the racing boats, receives £120, and Pitre receives £80.

### Next Year's Motor Boat Meeting.

Already next year's meeting is being organised. It will be held just about the same time and at the same place, and in its details it will be much the same as the meeting which has just terminated. On Sunday, the 2nd of April, 1905, it will be inaugurated by the opening of the exhibition, and for some days afterwards the boats will be obliged to remain in the exhibition on view. From the 4th April to the 9th trials will be made on the sea. On Sunday, the 9th of April, the races will begin, and, weather permitting, they will finish on April 16th, when the mile race will be held. In all probability there will be a class reserved for boats employing burning oil, alcohol, or any other product less inflammable than petrol. The hexagon course will be replaced by a parallelogram of the same dimensions. Four thousand pounds in prizes will be distributed at the meeting.



A thoroughfare in Nice during the procession of autocars.

## 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.

## RECKLESS DRIVING.

[8698].—I notice a discussion has arisen in your correspondence columns about the reckless driving of certain motorists, and I see that your correspondent who signs himself "Car Lover" seems to think that the majority of motorists are of the "reckless" order, judging from the number of unsafe roads in his district.

I think that most of these cases of inconsiderate driving are due to the indiscriminate persecution of motorists, which dates from 1896. We have had quite enough to exasperate us against the enlightened legislators who have attempted to stamp out motoring with the present Motor Cars Act. I think we all know the "lover of horses" who seems to think that a motorist has no right on the roads at all, and ought to stop his car for every horse and apologise for his existence.

Your correspondent "XZ 42" evidently does not know that if the "reckless" professional driver did slow down, as he suggests, for every farm team, he would probably be saluted by a torrent of foul language from the somnolent cartier who is generally in charge. On the day after Easter Monday I met several types of the "lover of horses" in the Birmingham district. One of them called on me to stop my engine, and treated me to the usual style of abuse with which motorists are beginning to associate the British farmer.

I suggest that this sort of thing is the cause and not the effect of inconsiderate driving. The same enlightened person is to be found on nearly all the rural district councils, etc.; and, under the pretence of protecting the public, does his best to drive motors off the roads by imposing the ridiculous speed limits.

Might I draw the attention of "Car Lover" and "XZ 42" to a paragraph in your last issue, in which a Parliamentary candidate was stopped twenty-seven times by these anti-motorists, and grossly insulted by a clergyman. Is not this sort of thing sufficient to try the patience of the most even-minded person?

I suggest that cases like the above are the rule, and not the exception. M 404.

[8699].—May I have the use of your columns to bring forward a suggestion to prevent the wicked and reckless behaviour of some motor car drivers? It is common knowledge that the worst offenders are the irresponsible paid hands (very frequently French, and of that class of French who are unable, from their very characters, to obtain a situation in their own country), and also, it must be admitted, the "trade car." I drive fast at times (alas! I too am a victim of Sergeant Jarrett!) but always carefully, and the criminal recklessness that is seen round corners, at cross roads, or when children are about makes one wonder the police are so tolerant. My suggestion is that all private owners, careful drivers, should themselves take the numbers and report to the police of the district, and also to the Automobile Club, any wanton driving. This would make all drivers careful if their own brethren "gave them away," as at present a policeman is the only person some are afraid of, and in this way much might be done to avert the animosity felt by many of the public—in some cases, it must be granted, justifiably—to all motorists, when it was seen that there was a determination on the part of reasonable drivers to put a stop to the scandal which has caused so many fearful accidents, always, or nearly so, from the twin causes, recklessness and carelessness. 16 DE DIETRICH.

[8700].—Noting your correspondent's remarks concerning myself, I take the opportunity of informing XZ 42 that I am not one of the "competent men with an inflated idea of my own value." I simply spoke on behalf of the many able drivers who are being ousted *pro tem.* by the "things" which your correspondent terms "shuvvers." I am quite prepared to admit the inability of many so-called "competents," but there are numbers of good men needing berths.

Your correspondent is right in condemning men who maintain a total disregard for other users of the road. This is, however, not done by any real driver. There is the horsey publican who drives his trap with the same vile manners, and he is quite as dangerous. Then there is the woman who "drives" all over the road and causes infinite discomfiture to everyone. There is also the horsey idiot on the "old plug," who thinks he can ride, and when a motor car comes along of course it rests with the driver as to whether he keeps his seat or not.

I may say in conclusion that, personally, I shall never require either "a chance or a salary," such as your correspondent could offer me if he felt so disposed.

W. S.

[8701].—With regard to the letters 8676 and 8677 on this subject, the matter is certainly one that should be taken up, but as certainly handled with care.

For instance, my own experience of one or two accidents with horses is that to stop or slow down is often a bad thing. I make a practice of it where ladies or children are driving or riding, as it quiets any nervousness they may exhibit, but I am not at all sure that it is the best thing, because once the car is past the horse ceases to think about it. There is the problem, too, of the silly driver, who directly a car approaches jerks the reins, and so startles his horse to begin with. On the other hand, it may be said that cars whizzing by him on previous occasions, allowing the "eighth of an inch," may have given him ample cause to be nervous. Personally I either stop and switch off or else approach fairly fast, and then go by as hard as ever I can, giving the nervous one as wide a berth as possible.

Then, again, I am not sure that the driver-mechanic is always the chief sinner. On the whole he usually exhibits a certain amount of judgment. Is not the worst sinner usually the son of some wealthy tradesman—the rich outsider?

As for dealing with the matter, I think it can be done, and should be by co-operation with the police. I am on the committee of my county's motor union, and when it has finished fussing about "police persecution," etc., I propose bringing forward some resolutions dealing with the trouble.

Roughly, these are as follows:

(1.) All paid drivers in the county to be eligible as associates without subscription. Each when vouched for by any member of the committee to be given a certificate, on which anything reported against him at any time would be noted; also any good reported of him. His pay and prospects would thus depend on how he behaved, and every good chauffeur would profit largely by the institution. It would not be a matter of any difficulty to keep it going. A chauffeur who offended badly would be reported to the local police, who would also have a list of those who had not applied for certificates.

(2.) Members of the Union should bind themselves to observe certain road courtesies, and a definite list of these, together with the names and number of members would be given to the district police.

Much has been written about the prejudice of police and magistrates, but my own fairly wide experience in connection with "traps" has not borne this out. On the whole they are very reasonable, and I certainly think they can be relied on to differentiate between reasonable and unreasonable motorists and between those who merely break the letter of the law and those who break its spirit. The first we must all do; the latter we need not.

It may be objected that a scheme of this sort would amount to a boycott of non-unionists, but in view of the issues at stake I do not think that that matters. As things are at present, every inconsiderate and reckless driver helps to create public animus, which results in complaints to the police and a heavy fine for the next motorist who is caught. Twenty to one he has never done anything to cause complaint, but when it is a case of "someone must be fined," one cannot blame the police for dropping on the handiest victim. But were that victim a member of the Union able to prove that he was pledged to being considerate and careful, were it clear that had he ever been seen to offend by carelessness the offence would have been reported to the Union and after an adverse verdict by it to the police, then, I am tolerably sure, the victim's license would remain unendorsed, while the few road hogs unable to prove such things would get things as hot as they deserve. In other words, the innocent would no longer suffer for the guilty.

(3.) Circulars should be distributed where horse people

*Correspondence.*

would come across them, setting out advice as to meeting cars, etc. Union cars could perhaps bear some special distinguishing mark—a red star or something of that sort—something to indicate to the rest of the public that they need not be afraid of them. It would mean something like, "You may rely on me to stop if necessary."

Such a use of motor unions is not exactly that for which they were designed (though the one to which I belong has some rule mildly suggestive of the second of these propositions), but unless some strong stand is made soon the next silly season will see a big anti-motor agitation.

I hope other readers of *The Autocar* will give their views upon these suggestions, which, of course, are merely cast in a crude form here. In essence they are what the new Act aims at doing.

The difficulty will be to frame the clauses as to what constitutes "consideration for others"—though every decent motorist knows what it means, it is not easily reduced to black and white. Still, it should be possible to do it. Of course, there should be no hypocritical clauses about promising not to exceed the legal speed limit, etc. Possibly the red star would suffice as the sign manual of the considerate, and if the police could be persuaded to have a hand in the granting of the sign, those who sought protection in an illegitimate use of it could easily be dealt with.

In conclusion, I wish to draw attention to the following passage on page 513, column 1, of *The Autocar* for April 16th, in the account of the record run of the 10 h.p. Argyll. The italics are mine:

"We were travelling down a slight incline at a pretty considerable speed, when a large sheep dog, without even a warning bark, dashed out of a gate and charged headlong at us. When it met the car the relative speed of the two moving bodies must have been a good sixty an hour. The dog appeared to be thrown up in the air for a moment, striking against the radiators, and then dropped underneath the car. Looking backwards we saw the poor beast make one last effort to rise on its forelegs, and then sink lifeless on the road. Our skilful skipper stuck to the wheel like grim death, and *we never swerved or slowed up for a moment*, though he complained afterwards that the steering appeared to have become a trifle stiff."

Common humanity would have made any decent person stop and assure himself that the poor beast was dead, and if necessary put it out of its misery, record or no record. No one can help running over dogs now and again, but anyone can behave decently and humanely in the matter. I can only characterise the "three men on a motor car" as road hogs of the worst description—exactly the sort of bounders who bring motoring into public detestation. If decent motorists do not act themselves in these matters, public opinion is certain to do so. Personally, if I heard that the dog's owner had tried to get his change out of the Argyll's crew I would subscribe to his defence; and so, I am convinced, would any other motorist who is fond of dogs.

Road hogs who kill and maim animals and rush on without pity or regret are responsible for all the police traps.

FRED T. JANE.

#### HOW TO BECOME A MOTOR VET.

[8702.]—I have read with great pleasure the correspondence you have lately published and Mr. Phillips's article of last week. The thanks of trade and public alike ought to be due to him for his breaking through the usual rule of consulting engineers not being allowed to advertise. Thanks also are most certainly due to you for asking a gentleman of his undoubted experience to write on the subject. There can be no doubt that the time has arrived when this matter of advising the public regarding the purchase of machinery, representing so much to our industrial and social community, must be taken up by trained engineers, and not left in the hands of servants in the ordinary sense, however honest they may be otherwise. This, of course, applies especially in the case of upkeep. If I may, I should like to tell my own experience of setting up as a motor expert, especially as I have been in a measure successful in doing so. And by this latter I mean that no one can call himself so unless he commands the respect of builders, agents, chauffeurs, and, of course, his employers. As Mr. Phillips says, it is obvious one has to be trained as an engineer. Having qualified in several branches, I set out to "ken ahoor motors." A works having been taken I bought and sold without an agency. Naturally this attracted work for repairs. Then, as a better knowledge of the trade generally was acquired, we got ambitious and thought we could build cars as well as any Englishman or Frenchman. We did so up to 16 h.p. We did not say it paid

us with a limited capital, but we got a thorough experience. My lease expiring, I thought that it was a suitable time to start as a consultant. I may say in passing that I am also practising in another branch of engineering, viz., electrical, and the one undoubtedly helps the other. So I took a central office at a small rent, and was soon appointed inspector of motors to two well-known insurance companies. At present I have an offer from another. This manifestly helps in getting business. Then I found, owing to the number of cases arising in the courts, that here was another field. And it is with sincere pleasure that I had a case sent me lately from a firm of agents who in their covering letter say that they think this is more in my line than theirs. Now a few years ago these same dealers frequently appeared as technical witnesses in the courts. So that shows how the wind may be setting.

Of course, one must belong to the Automobile Club, or, better still, the new Institution of Automobile Engineers, which my friend Mr. Marshall and myself have now got to the stage of being put in practical shape. (I get ourselves this advertisement without consulting him, as I think he suffers from over-modesty.) If any of your readers are hesitating in starting on this career, useful alike to trade and society generally, I shall be pleased to give full particulars, which the limits of your space at this time of the year prohibits.

T. MUNRO CAIRNS.

#### TYRE TROUBLES.

[8703.]—In reply to 8691, in my opinion a small car of the make you mention should not be fitted with solid tyres; the vibration would be too great, and there being some very reliable detachable motor tyres for small cars now on the market, I can only recommend 8691 to use pneumatic tyres on a small car.

I hear that the Continental Caoutchouc Company is now manufacturing detachable tyres in American sizes, and this being the case, it would no doubt save your correspondent a lot of trouble and expense in rebuilding the wheels.

It would be necessary to convert Oldsmobile wheels if you should adopt the standard English sizes for pneumatic tyres.

T. H. S.

#### PNEUMATIC TYRES—SHUTTER ON THE AIR INLET—PETROL CONSUMPTION.

[8704.]—There has been lately a large correspondence in the motor papers concerning pneumatic unreliability. I have this year had my tyres (810 x 90), although in good condition, fitted with extra treads by Messrs. Capon-Heaton, Ltd. I thought it would be useful information that, contrary to theory, this has not affected either resilience or speed. Moreover, the quality of the rubber is so good that it does not cut, while it would require a formidable instrument to puncture. My car is a fairly heavy one, and I attribute my record of "no punctures on motor tyres up to date" to the fact that I keep back tyres at 90 lbs. and front at 80 lbs.

Users of Longuemare carburetters will find it a great improvement to fit a shutter (hinged) on the air inlet, close to the carburetter. It is very easily made, and has even given me more power. The air lever can be left further open and the shutter will actually govern my engine (Aster).

I can vouch for the possibility of the economy quoted in *The Autocar* by Mr. F. T. Jane, as I have done over seventy miles (Cotswold district) on less than two gallons, two passengers, engine two-cylinder Aster (88 x 110), which, by the way, never gives any trouble.

THOMAS HALLEWELL.

#### BORON CHARGING CELLS.

[8705.]—Replying to "Oxon" I may state that my accumulators are two volts forty ampere hours. These I have connected in series, converting them into one four-volt cell. If the accumulators have been in any way exhausted, and I can afford time, I leave them charging overnight, but if, on the other hand, they have been employed for short runs only, I find about four hours contact with my Boron cells is ample to restore them to perfect freshness. Of course, if your correspondent's accumulators have not been previously charged they must be left charging a considerable time in the first instance in order to bring the plates to life. Or, if they have been previously charged from electric mains, a suitable suggestion at once presents itself in the form of damaged plates by overcharging. I have experienced all this, both in this country and U.S.A., where I am shortly returning, and where I shall most certainly recommend my cells to anyone who

may not have heard of them. I would strongly advise "Oxon" to write to the manufacturers, explaining the supposed defect, as when purchasing these cells I was totally ignorant of electrical matters but received the greatest courtesy when soliciting further advice from the company. In conclusion, I would note that, although "Oxon" asks the ampère hours of my accumulator, he for some reason does not state the discharging rate of his own, which, of course, would be the sole point when ordering a charging set. EUSTACE MORGAN.

[8706].—In reply to "Cantab," I will state I have had considerable experience of these and other primary batteries. I like the Boron best. If "Cantab" only requires small lights for a short time there is no difficulty. I will mention what I do with four cells. I keep the accumulators charged for two cars and three launches, I light up the bedrooms of a houseboat (four lights), and three lights in house (seventeen accumulators in all). But I use only small four-volt lamps, and the lights are in places where they are only required for short times, and therefore a great success. If one expects the main lights of a house from these cells they will be a failure. (The Sunbeam Acetylene Gas Co., of Belfast, can supply a gas plant that is about perfect.) Accumulators can be fully charged with little difficulty. I should advise the zincs to be obtained from a zinc works, and the single strand copper wire (not flexible) to be soldered on to zincs, not screw terminals. I get better connections in this way. The solutions should be kept mixed in jars, say four gallons, so as to save the messing job of small quantities. E. ESTCOURT.

[8707].—As a very old user of Boron cells, I have read with considerable interest the comments of late. I purchased at the start a six-cell charging set, which I use for charging my sixty ampère hours accumulator. I have also a supposed forty ampère hour accumulator, which I had some difficulty at one time in charging, but on having it tested by an electrician he pronounced it to be a sixty ampère hour accumulator, and which I have been recently charging with the six cells. The cells have given me the greatest satisfaction, and I would strongly advise anyone purchasing a petrol car to acquire one of these sets. I also feel fully assured if Oxon enquires into matters the right way he will find that the fault is not with his cells at all. J. O. JONES.

#### HORNS AND SYRENS.

[8708].—In reply to "Siren" [3569], it may interest him to know he can purchase a gas whistle for fitting to a motor car, particulars of which can be obtained from the Gas Engine Whistle Co., 1.133, Broadway, New York. In reply to "Edwin Gray" [8621], I enclose a sketch of a two-note horn which I think will meet his requirements. A. TROUGHTON.



#### THE RYE ACCIDENT.

[8709].—You will no doubt have noticed in a recent paper a very alarming accident between a motor car and waggonette near Hastings.

As the accident was connected with a Napier car, I have had very careful inquiries made in regard to same, and find that the total damage done to the waggonette, which was reported in the daily press as having been smashed to pieces, has been settled at a cost of under £5 (five pounds), and, instead of the occupants of the brake being injured as reported, I find that on the day on which my inquiries were made, which was two days after the accident, all the occupants of the brake were about doing their usual work in the ordinary way, and as to the Napier car, you can imagine how little damage was done when I tell you it was driven back to London, and returned again a day or two after by road to take the insurance people down to see the extent of the accident.

I thought it as well to let you have this information, as from reading the report one would have thought that a very serious accident had taken place.

The accident, as it was, occurred through a very slippery hill and the waggonette being on the wrong side of the road. S. F. EDGE.

[8710].—Having seen a report that you have inserted in *The Autocar*, I am writing to tell you that there is no truth whatever in it. In the first place, it was Easter Sunday and not Easter Monday. You also state that our waggonette was

driven by a *small boy*. Do you call a youth of nineteen a small boy? And you say we were on the wrong side of the road, which is false. We were on the *left* side of the road within four feet of the fence, allowing for two cars to have passed had they been going at a reasonable speed. Why do you state that the waggonette and car were not damaged when it was from two to three hours before the car could proceed? And if the waggonette was not wrecked, why did the representative that called on me offer to pay for the repairs to waggonette, which were £6 10s., and also offer the owner £3 for loss of hire? You state also that no one was injured, when my wife was very much hurt, as she had to keep her bed for nearly a week, and has not been able to leave the house until to-day (16th), making fourteen days; she has not been able to do her usual work, having had her head cut, also one finger, and her back hurt badly. I have three doctors that can prove the same. I myself was not able to do anything for a week through the shock. My son was badly bruised, and the nurse with baby was thrown across the road, the baby being rendered insensible for twenty minutes, and the nurse bruised, having to have medical attendance for a week. The only excuse the driver of the car had to give when he visited me was, that the roads were in a very slippery state and the brakes did not answer. Would a firm that were entirely in the right, as you state, offer compensation for damage and injury done, and pay it to me, if they were not in the wrong? G. SIMS.

#### MARINE MOTORS.

[8711].—I was much interested in the article on page 474 of your issue of the 9th inst. on marine motors.

You are no doubt correct in saying that the "motor launch as we know it to-day would not have reached its present development but for the motor car engineer," but in the subsequent statement made I think that you overlook the fact that I was making and selling light motors for vehicles before the advent of the motor car, always assuming that this may be dated from the passing of the Act in 1896, and I exhibited such an engine at the Stanley Show in 1894. This engine weighed 84 lbs. only. J. D. ROOTS.

#### THE NON-SKID TRIALS.

[8712].—Referring to a letter of Mr. Jane's *re* the above, I notice he takes exception to the forthcoming competition being unfair for two types of devices. I fail to see why the competition should be unfair for one more than the other. For instance, the Sainsbury anti-skidder can be put out of action in a couple of minutes, but it would be manifestly unfair to allow this to be done in a competition where the object is to ascertain all the merits of the various devices. I understand that the point which Mr. Jane raises would come under the head of endurance, and, personally, I consider endurance in an anti-skidder is of the most vital importance. It is, therefore, self-evident that all devices should be well tested under this heading. W. R. McTAGGART.

#### HORSE-POWERS.

[8713]. I have read the letter in your column *re* discrepancies in horse power, and thought that perhaps the following formula might be of use to your readers. It is not absolutely accurate, but gives a rough estimate.

Area of piston in square inches x stroke in feet x revolutions: 1,000 for four-cycle engines and 600 for two-cycle engines.

Thus the horse-power would be:

88 mm. x 130 mm. at 950 revs. = 15.02 h.p.

88 mm. x 130 mm. at 1,000 revs. = 15.84 h.p.

88 mm. x 130 mm. at 1,100 revs. = 17.42 h.p.

88 mm. x 130 mm. at 1,200 revs. = 19.00 h.p.

and

110 mm. x 130 mm. at 1,000 revs. = 24.8 h.p.

110 mm. x 130 mm. at 1,500 revs. = 37.2 h.p.

EDWARD A. NESBITT.

#### THE HOLDEN MOTOR.

[8714].—I must say I was surprised to see in my *Autocar* of the 9th inst. the regrettably inaccurate and personal remarks on page 482, under the pen name of "The Autocrat," bearing on Lieut. Colonel Holden and the Holden motor bicycle. With regard to the personalities, which, if I may say so, are singularly foreign to the usual tone of your journal, and might have been omitted, I do not propose to deal, but with regard to the Holden bicycle I can say a few words, unless Lieut. Colonel Holden himself should elect to correct the writer, of



*Correspondence.*

course. Your contributor speaks of the Holden bicycle having been made "some years since," and he may be surprised to know the date—1895 a time when most people would have said a motor propelled bicycle was impossible. Not only was I personally familiar with this first machine, but with those which followed, and it is a pity the writer of the paragraph in question commits himself to a statement, "as far as he remembers," as to the practical manufacture of these machines not being considered, because he is utterly wrong. The Holden bicycle was one of the first motor bicycles, if not the first, to be manufactured in quantities with proper plant and tools for interchangeable reproduction, and was certainly made at a profit thereby, notwithstanding the innuendoes of "The Autocrat." Furthermore, the very first machine, as well as later ones, embodied the following points, everyone since gradually recognised as right and adopted by makers: (1.) Four-cylinder engine. (2.) Engine forming part of frame. (3.) Single coil synchronous ignition. (4.) Mechanical lubrication. (5.) Handle-bar control. (6.) Exhaust valve lifter. (7.) Silent exhaust. Surely a machine with these points made in 1895 merits recognition, particularly in the oldest motor paper. When, however, your contributor speaks of a "special petrol plug," I must admit complete mystification, although familiar with every part of a Holden bicycle, but whatever it may be, if he will endeavour to give it a name by which one may follow him, no doubt the reason for its particular construction can be made clear, even to "The Autocrat," for the parts of the machine were designed with the object of best fulfilling the duties in view, and not because "anything would do." This, however, is not inconsistent with inexpensive and profitable manufacture.

In conclusion, I would say this letter is written out of a desire for fairness only, in which spirit I trust you may be able to find a corner for it in your invariably fair journal.

HARRY PARSONS.

## REPAIR CHARGES.

[8715.]—The following estimate for repairs from a London firm may perhaps be of interest to some of your readers: Replacing casting containing worm, etc., of steering gear, replacing H.T. wires, grinding valves, putting a few rivets in exhaust box, and adjusting governor, £14 5s. The casting is the only thing which really requires any time spent on it, and is worth, I should think, at an outside price £2. Comments are needless. Of course, the estimate was refused.

SIMPLEX.

## THE DECAUVILLE FORTIFIED BACK AXLE.

[8716.]—I notice the announcement of the Motor Car Co. and their remarks regarding this special axle.

It may interest your readers generally to know that this axle was patented by Mr. Frank Elliot, of Braintree, more than ten years ago. I worked with him in the design and construction of this axle, and I can say that it was absolutely similar to the one now used by the Decauville Company. It must be highly satisfactory to the inventor to see his work so well copied and highly appreciated, as it is doubtless one of the best things that have been seen in automobile practice.

W. S.

## DUST PREVENTION ON ROADS.

[8717.]—In reply to your correspondent "Sympathiser with other Road Users," I think he would find Westrumite the most suitable material for his purpose. The cost would be £30 per mile, this to include eight treatments, which would last a whole year. The agents for this material are Messrs. the Eddison Steam Rolling Co., Ltd., Dorchester, who could give him further particulars no doubt.

J. H. DE MATTOS.

## TRUING UP PLATINUM CONTACTS.

[8718.]—In the April 16th issue of *The Autocar*, your contributor of "Useful Hints and Tips" gives illustrations of jigs for fixing trembler screws and blades, and suggests taking a file and deliberately filing down expensive platinum contacts to produce flat surfaces. As foreman of a motor repair works, I have always considered this wasteful practice to be characteristic of the "incompetent shuvver," who of late has suffered so severely at the hands of your presumably competent correspondents.

Without any personal desire to be unduly critical of the advice given, I would warn your readers against adopting it, unless they are prepared to frequently purchase new platinum contacts.

My procedure for truing up defective contacts is as follows: Suppose the platinum contact is pitted with a black concavity about the centre, take off the blade or screw, wash it in petrol, and then scrape the "black" away with a penknife. Now take a very small hammer and a small steel punch, known in the trade as a "cup" punch. This punch has a small countersunk hole in one end, barely large enough to admit the platinum contact, and therefore when gently punched down upon it the soft valuable platinum will tend to close in to fill up the concavity. Next the surface can be gently flattened with the hammer, and it will be seen that by alternately "cup" riveting and judiciously hammering a defective contact it may be brought up to a good flat surface again without removing a particle of platinum. I keep several small "cup punches" designed to close in contacts of various sizes.

W. E. CORCUTT.

## BRAKES ON CHAIN-DRIVEN CARS.

[8719.]—There appears to me to be a very grave fault, and one which does not seem to have been given any special attention by motor car manufacturers, in that all important point, the efficiency of the brakes of, at any rate, certain types of chain-driven cars. I am referring in particular to a car of great reputation with which I happen to be acquainted. My point, however, applies, I imagine, to the majority of chain-driven cars. It is this, that in the event of the chain breaking or coming off and fouling the brake on the rear wheel, and this is by no means an unlikely sequence of events, in proof of which I may state that it has twice occurred to cars on which I have been during the past six months. The car is left entirely without brake control, owing to the fact that the second or foot brake is fitted to the countershaft, and therefore becomes useless once the chain has gone.

Only those who—as I have recently done—have gone through the nerve-shattering experience of descending a steep hill without any brakes acting at all can fully realise what it means to be in a heavy motor car without having any control whatever of its rate of progress.

The manager of a large motor car firm when interrogated on this point said that it was so extremely rare for chains to come off that he did not attach much importance to the subject. The fact remains, however, that, as before stated, during the past six months the chains of two different cars on which I have been *have* come off, and in both cases have incapacitated the rear brake in doing so.

R. D. C.

## SUMMARY OF OTHER CORRESPONDENCE.

**TYRE TROUBLES.** The Collier Tyre Co. write asking whether "Tyre-tired" was not using single-tube tyres, as they do not think that any good tyres should behave as his have done. They are certainly justified in this opinion, as the 4,000 miles tyre trials of the Automobile Club in 1902 was a convincing demonstration of the durability of the Collier tyres. There are also the figures to which we referred recently, in which it was shown by a very carefully-kept record of a private owner that he had used these tyres for 15,306 miles at a cost of 4-5d. per mile.

**MOTOR JOBMASTERS.** We have to thank a number of firms in various parts of the country who are making a feature of hiring out cars for sending us their names and addresses. These will be most useful, as we shall be able to refer enquirers to the motor jobmasters which are nearest to their particular locality. It is interesting to note that the horse jobmasters are in communication with the motor jobmasters, and we are informed in two instances in London that they have already booked contracts with the motor firms. Another interesting feature is that in both the 'Varsity towns there is a good selection of vehicles for hire.

**DISCREPANCIES OF HORSE-POWER.** We have received a letter from Messrs. J. E. Hutton on the subject of the Mercedes horse-powers. This is to all intents and purposes the same as the one published under the initials "C.H.M." last week, in which the dimensions and horse-powers of the various engines of the 1903 and 1904 types were given. The only difference is that the 60 h.p. is described as 1904 by "C.H.M." and as 1903 in Messrs. Hutton's letter.

**TYRE REPAIRS.** Mr. Wilfred Hill, writing in reference to Mr. H. Maitland King's letter [8683], says: Mr. King appears to have been using Hill's motor solution for repairing cuts in motor tyres. The manufacturers (the County Chemical Co.) do not recommend the solution for this purpose, but make a special preparation for repairing tyre covers known as the G.B. tyre stopping.

## Flashes.

Messrs. Montague Hawnt and Co., 146, Clerkenwell Road, E.C., inform us that they have been appointed wholesale agents for the United Kingdom for Wilburine and Valvoline oils.

\* \* \*

Following the introduction of the motor omnibus in Birmingham, it is expected that motor cabs may shortly be seen. A proposal to this effect has already been made, and enquiries concerning the subject have been instituted in official quarters.

\* \* \*

In the course of his honeymoon tour, Mr. Jay Phipps, an American, has introduced the motor car into many out of the way corners of our Indian Empire, and even driven through the famous Khyber Pass. Mr. Phipps and his wife covered, between January and March, 4,000 miles in India. The journey began at Bombay.

\* \* \*

An unfortunate motor car accident occurred in Liverpool on Friday last week, resulting in the death of an old lady. The evidence given at the inquest showed that she became flurried on seeing the car approach, and actually stepped in front of it as she was crossing the street. A verdict of "Accidental death" was returned, and no blame was attached to the driver, John Reece, who was driving the owner, Mr. J. A. Brodie, the city engineer, home from the office.

\* \* \*

It is satisfactory to note that Mr. I. U. Truman, who was convicted of driving his motor car to the common danger (as mentioned in *The Autocar* of April 9th, page 495), has successfully appealed against the decision of the Beaconsfield Bench, who fined him £2 for knocking over a dog belonging to Major-general Upton-Prior.

\* \* \*

A project is on foot for holding a motor boat race meeting on the Thames, over a suggested course from Kew Bridge to Erith—a distance of about twenty-five miles. A committee was appointed at a meeting on Monday evening to arrange details. The date provisionally fixed for the event is May 14th. Three prizes have been offered, and several entries have already been received.

\* \* \*

One of the very lightest radiator tubes we have handled is the production of the Coventry Presswork Co., of Coventry. This consists of an aluminium tube, around which are a number of gilled discs pressed from thin sheet steel. These are made self-locking on to the tube by the engagement of six V-shaped points which result from the stamping out of the disc centre. A ferrule placed at each end of the tube prevents the discs breaking away. It is claimed that these tubes are forty per cent. lighter than any other tube on the market, and have an efficiency equal to any other form of radiator at present in use.

The bill to permit the Gordon-Bennett race to be run in the Isle of Man will be promulgated, according to ancient custom, in the open air on Tynwald Hill, St. John's, on May 5th.

\* \* \*

The "motor car accident" near Maidstone is now stated to have resulted from the fact that the pony concerned bolted, and put one of its legs in a wheel of the motor car, which was stationary at the time.

\* \* \*

The following additional members of the Motor Volunteer Corps have been enrolled: Mr. G. S. Burge, April 12th; Mr. G. E. Watson, April 13th. On the 12th inst., Mr. Leith drove Field-Marshal Sir E. Wood, V.C., commanding Second Army Corps, on the occasion of his visit to the Dover Garrison. The following members of the Corps were employed under the General Officer commanding the Eastern District, on a staff ride from the 13th to the 15th of April: Messrs. W. Bloomfield, F. S. H. Dyer-Bennet, and G. E. Watson.

\* \* \*

On June 1st a system of railway motor cars will be instituted between Pontypridd and Caerphilly by the Alexandra Docks and Railway Co., running over the Pontypridd, Caerphilly, and Newport line. Six cars are in course of construction by the Glasgow Engineering Co., and a trial trip is to be made on May 28th. The cars will be of immense public convenience, as many of the small towns which will be served are two or three miles from the existing railway stations.

\* \* \*

At the Birmingham County Court, before Sir Richard Harington, Tobias Cornberg claimed £50 damages from the Birmingham Motor Express Co. for personal injuries through alleged negligence. The Railway Passengers' Assurance Co., of 64, Cornhill, London, who indemnify the Motor Express Co. in respect of third party claims, were the real defendants. The judge found for the defendants. The Birmingham Motor Express Co. are now running some Milnes-Daimler cars, carrying thirty-six passengers.

\* \* \*

At the recent Agricultural Hall show the Buffalo motor boat, built by Messrs. Claud and Nichols, attracted some attention. A few days ago we were favoured with a trip on the Thames from Chiswick on one of these boats. The motor used was of 10-12 h.p., adapted for and fitted to a 25ft. pinnace. The three-bladed screw makes about six hundred revolutions per minute, and the consumption of petrol works out at about a gallon per hour at 10 h.p., or one-ninth of a gallon per horse-power per hour, the speed (still water) being eight and a half to ten miles per hour. There is very little vibration and scarcely any smell. The boat runs smoothly on an even keel, and the compact nature of the motor allows far more room for passengers or cargo than would be possible on a steam launch of the same size, where so much space is taken up by the boiler and fuel bunkers.

**THE "AUTOCAR" DIARY.**

April 23.—Yorkshire A.C., run to Doncaster.  
 " 23.—Scottish A.C. (W. Sec.) run to Callander.  
 " 27.—Annual Meeting Roads Improvement Association, Westminster Palace Hotel, 5.0.  
 " 28.—South Lincolnshire A.C. meet at Boston.  
 " 30.—A.C.G.B.I. Parade of Motor Delivery Vans, Thames Embankment, 3.0.  
 " 30-May 12, Antwerp Salon.  
 " 30.—Leicestershire A.C., run to Rugby and Daventry.  
 " 30.—Sheffield and District A.C., run to Snake Inn.  
 " 30.—Yorkshire A.C., run to Boroughbridge.  
 May 1.—Carburettor Trials, A.C. de France.  
 " 1.—St. Louis Autocar Show opens.  
 " 1.—Gloucestershire A.C., run to Nailsworth.  
 " 1 to 12.—A.C. Bordelais Automobile Fortnight.  
 " 3.—Herefordshire A.C., run to Dinmore Hill.  
 " 7.—A.C.G.B.I. 100 Miles Quarterly Trials.  
 " 8.—Erelburg Hill-climb (A.C. Austria).  
 " 10.—Gordon-Bennett Eliminating Trials, Isle of Man.  
 " 12.—Perigueux Hill-climb (A.C. Dordogne).  
 " 14.—Nottinghamshire A.C. Hi Iclimb.  
 " 19-20.—Glasgow to London Non-stop Reliability Trial.  
 " 20.—French Gordon-Bennett Eliminating Trials.  
 June 11.—Ranelagh Club Motor Car Races.  
 " 17.—Gordon-Bennett Cup Race.  
 " 21-23.—Midland A.C. Whitsun Tour to Bettws-y-Coed.  
 July 30.—British International Cup for Motor Boats.

*Flashes.*

Messrs. Hooper and Co., Ltd., the carriage builders of St. James Street, S.W., have received an order to build a large new motor car body for His Majesty the King. This body is to be carried upon the new 28-36 h.p. Daimler; in shape and style the body will be similar to that built some time ago for H.R.H. the Prince of Wales. The rear portion will accommodate six persons facing forward, while the driving seat will afford places for two persons as usual. The whole of the car will be covered by a canopy, while the rear portions will have windows, forming a complete closed carriage with entrance by two side doors.

One of the most intemperate articles we have seen on motoring appeared in the last issue of the *Observer*. One would imagine from it that motorists were in the habit of tearing about the country and leaving maimed and injured people behind them by the dozen. Unfortunately, articles of this kind are apt to mislead. For instance, the fact that a motorist would have his license endorsed for omitting to have his back lamp lighted, but would not suffer similarly if he were convicted of tearing through crowded streets at high speeds, is mentioned in such a way that the average reader who did not know anything about motor law would imagine that there were no heavy penalties to which motorists are subject if they drive to the public danger, while if through their carelessness any one of their number should do hurt to other users of the road he may be, and in all probability would be, sent to prison. Some people speak as though common law did not apply to the automobilist, and it would be imagined from their writings that reckless driving was permitted to them without punishment, but not to the drivers of horse carriages. In fact, the law is very much harder on the automobilist. As an instance, it is only necessary to mention the fact that it is specifically stated that he shall stop if an accident can be traced to the presence of his car on the road. There is no similar, though much more necessary, stipulation made in regard to horse carriages, as these carriages are not numbered.

\* \* \*

An order for a 14 h.p. Decauville, which has just been placed with the Motor Car Co., Ltd., is, we are informed, a direct result of the 1,900 miles non-stop run made by the 5 h.p. Decauville four years ago. The incident made so great an impression upon the gentleman at the time that he was in constant attendance at the track during the two days occupied by the performance, and now places his first order.

Mr. W. D. G. Goff, chairman of the Irish Automobile Club, has placed an order with Messrs. E. H. Lancaster for a 1904 20 h.p. Clement car.

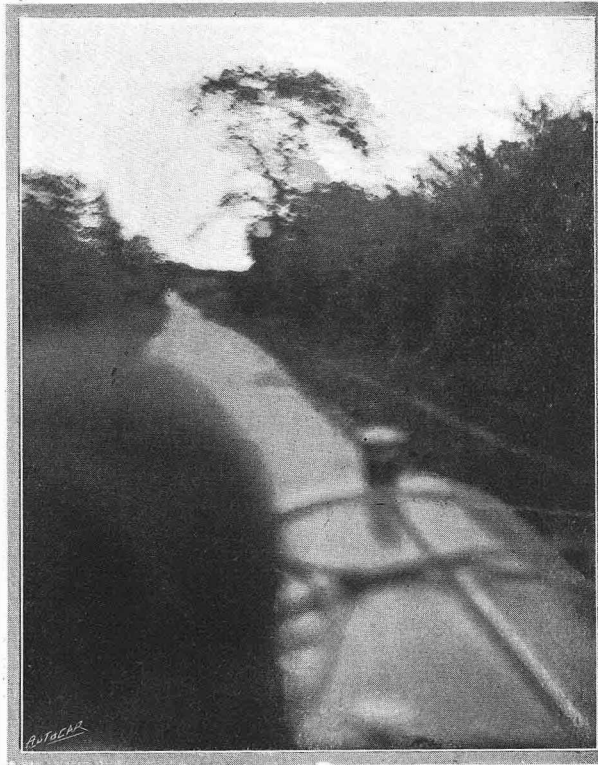
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A curious point arose at the Brentford Police Court recently, when Messrs. Whiteley were summoned for failing to carry scales in a bread van. The van in question, however, was a motor-driven vehicle, and the Chairman pointed out that the section of the Act only applied to "cart or other carriage drawn by horse, mule, or ass." Under the circumstances he could do nothing but dismiss the summons; which goes to show how extraordinarily complicated is the law.

\* \* \*

The dangers of the road are not by any means due solely to recklessness on the part of motor car drivers, or even to reckless drivers of horses. The sleepy driver

of horses is a serious menace to all kinds of traffic, and especially to motor cars. A case in point came before the Essex county magistrates at Epping on April 8th, when a hay carter was summoned and fined for driving on the wrong side of the road, and for having no light on his vehicle at night. He was discovered to be asleep on his cart by Dr. A. Butler Harris, who was driving behind him in a motor car, and had great difficulty in avoiding a collision. As it was, he was obliged to veer his car sharply off the road, and go and awaken the carter, who, when aroused, was impudent, and refused to give his name and address, or to render any assistance, until compelled to do so by force. The Epping district appears to be infested with sleepy drivers, and motorists will be well advised, for their own safety, to carry powerful



A snapshot from the footboard, of Mr. Higginbotham's 60 h.p. Mercedes at sixty miles an hour. This speed was not compassed on an English road, though accomplished within the limits of the United Kingdom.

headlights at night, notwithstanding that such lights may be deemed by non-motoring people an intolerable nuisance. The fault, it would appear, lies at the door of the employers of these sleepy men, who, we learn, are sometimes compelled to be on the road for as many as thirty hours at a stretch. If some means could be devised for getting at the owners of the horses instead of inflicting merely nominal fines on the men themselves, a stop might perhaps be put to this constant danger to all users of the road.

\* \* \*

The fact that the King's motor cars are exempt from exhibiting a registration number is responsible for the issue to the police all over the country of a full description of all His Majesty's cars, with instructions that all facilities are to be given them in their progress over the King's highway.

The Monmouthshire County Council have decided not to ask for any speed limit on motor cars below that authorised by the Act.

\* \* \*

The three English-Scotch built Darracq cars which will take part in the Isle of Man Gordon-Bennett eliminating trials have gone to France to be tuned up, and brought *juste au point* over French roads.

\* \* \*

By the brief account of the Paris to Nice and back run in La Concours d'Antiderapants, we note by the account in our contemporary, *La France Automobile*, that the 18 h.p. Chenard and Walcker, which was one of the three cars fitted with the Samson non-skidding bands, made the entire run without any stop, and, although travelling over the Alps by rutty and flinty roads, frequently averaged over forty-two miles an hour. This, like so many performances that have gone before, maintains and supplements the high reputation these cars possess for regularity and reliability.

\* \* \*

The Eastern District Committee of the Stirling County Council, on applying to the Scottish Secretary (Mr. Graham Murray) for the imposition of the ten-miles speed limit, received in reply a communication refusing the application, in similar terms to that which the right hon. gentleman sent to the Western District of the same county, as reported in *The Autocar* of April 9th, page 483. The Eastern District took the rebuke in good part, and withdrew their application, though not without a struggle on the part of several anti-motorist members of the committee.

\* \* \*

Out of consideration for motorists, it is said, the Bucks County Council are experimenting with a dust-preventing composition on the main Oxford and London roads in the Beaconsfield district.

\* \* \*

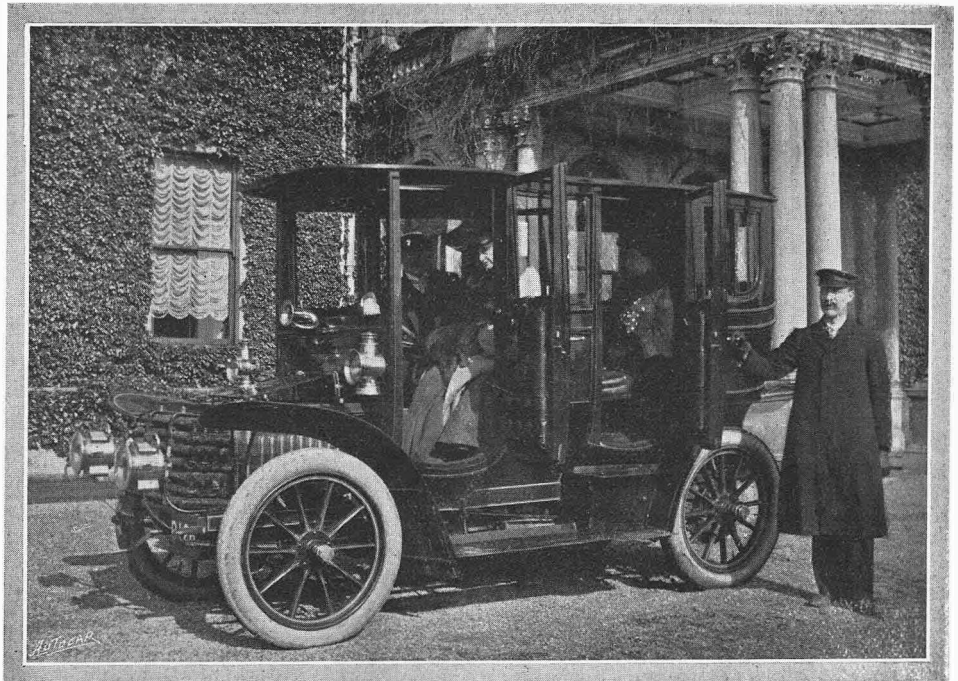
The Cardiff Corporation, who have had two motor vehicles in use for some time for scavenging work, are delighted at the success attained. The waggons are so constructed as to be convertible into water-carts when desired, and by the aid of a revolving sweeping brush (fixed in front) they can be utilised for cleaning wood pavements. A sand-spreading van is also attached when required immediately behind the brush. The motors not only carry their own loads, but are capable of hauling, in addition, three refuse tip-waggons. The Corporation believe that the motors will effect a great saving in the expense of refuse collecting and street cleansing. The vehicles, which are built by Messrs. Mann, of Leeds, do their work with very little noise.

*Flashes.*

The Burnley and District Automobile Club has forwarded a petition to the Local Government Board in opposition to the application of the Todmorden local authority for the imposition of the ten miles speed limit within their district.

\* \* \*

Complaints as to unduly fast driving continue to reach us. This applies particularly to the districts around London. There is no doubt that if automobilists, or rather the few who offend, are not checked very serious harm will be done to the movement.



A CAR FOR COMFORT. On the 5th of March last, we recorded the building of a very fine double brougham bodied 24 h.p. De Dietrich, by the Burlington Carriage Co., for the Hon. Ernest Guinness. The illustration above depicts this very fine car, which reflects great credit on the designers and builders.

Peach's Motor Annual. In furtherance of their hire purchase system, Messrs. Frank Peach and Co., Ltd., have issued an annual which forms really a most complete guide to the motor cars at present upon the British market. Any car the name of which is known can be immediately looked up, the work being most completely indexed. An alphabetical list gives style of body, number of seats, h.p., b.h.p., and price. Waggonettes, omnibuses, delivery vans, waggons, lorries, and motor launches are also included. To facilitate correspondence postcards and order forms are bound up with the work. Particulars, as mentioned above, are given of no less than 473 types of cars, nine types of waggonettes, ten of motor omnibuses, twelve of delivery vans, forty-two of motor waggons and lorries, and two of motor launches. One hundred and twenty-five cars are illustrated, as are five electric carriages, twelve steam cars, four public service vehicles, six tradesman's vans, eight lorries, and one agricultural motor. A considerable section is devoted to motor bicycles, of which no less than seventy-six types are excellently illustrated and fairly described. We cannot say too much or compliment Messrs. Frank Peach and Co. too highly on the conception and finished turnout of this work, which will, we are sure, always prove a treasured book of reference for the automobilist's table.

# THE 20 H.P. HUTTON CAR.

(Concluded from page 531).

## The Brakes.

In the Hutton system of braking, the double rear brakes are applied manually and by oil pressure, the first being expanded within the brake ring in a manner entirely similar to the clutch, except for the manual application, and the second by hydraulic pressure through an oil ram attached to the two free ends of the half brake bands, the oil under pressure being admitted to the ram by means of a lever set upon the steering wheel.

## Steering.

In the matter of the steering axle head, the weight of the fore end of the car is carried on a ball race in the head, while all side stresses which might interfere with the entire freedom of this bearing are eliminated by means of the central pin upon which the swivelling axle turns. The central pin is made hollow, to carry

an ample supply of lubricant. The balls used in the steering wheel bearings and the construction of the bearing races are similar in the large diameter of the balls used and the form of the races to those shown in the section of the driving wheel hub (fig. 4, *The Autocar*, April 9th). Nickel steel tubes of large diameter are employed for the steering rods, the steering arms, and the tubes of the steering pillar.

## The System of Control.

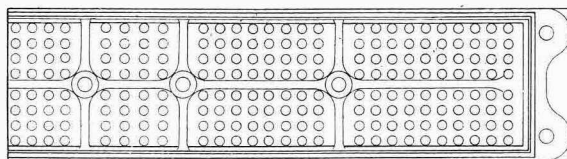
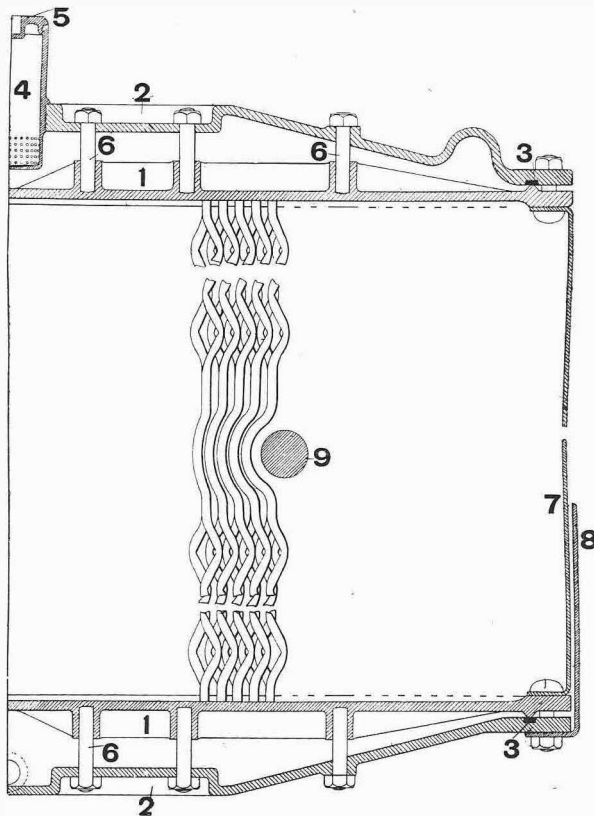
As has been already suggested, the valves for the hydraulic control of clutch and external gripping ring brakes are actuated by rods attached to the lower ends of the tubes within the steering standard, and are controlled by levers set at the top of the steering column. There are three such levers—one for the ignition, one for the clutch, and one for the brakes aforesaid. The levers work over a segment marked—BRAKE: ON—OFF. SPEED INCREASE—DECREASE. SPARK ADVANCE—RETARD.

The engine is started from the rear side of the vehicle. A shaft passes across the frame at right-angles to the crankshaft, carrying a bevel-toothed wheel at its inner end, which wheel engages with a corresponding bevel wheel set on the front face of the flywheel. It is therefore possible to start up the motor and then step straight into the car without walking round from the front of the car, as in the majority of types. A stud is pushed into engagement with the flywheel when it is desired to start the car, which stud frees itself automatically so soon as the engine fires.

## The Oil Pressure Feed.

The oil accumulator is placed upon the dashboard, and consists of a cylindrical metal chamber in which a spring is confined between two pistons. One end of this chamber forms a storage for oil under pressure, which is distributed to the portions of the gear operated thereby, while the other end forms an elastic device for taking up the shock when letting in the gear. This end of the chamber, so to speak, is placed in series, with the cylinder contained in the speed gearshaft (see fig. 10), so that the strap and links of the gear-increasing and decreasing device are operated by an elastic medium.

From the illustrations and description which we have devoted to this car, it will be admitted that much thought and ingenuity have been bestowed in its design and production. We may say, therefore, that it is with more than the usual amount of interest that we are looking forward to a test run on the road.



THE HUTTON RADIATOR. This particular radiator is double the depth of that usually employed on the Hutton cars, as it is the large one specially constructed for the 20 h p. Gordon-Bennett car. Otherwise it is similar to the cooler of the ordinary touring vehicles.

- |   |  |
|---|--|
| 1, header plates for radiator tubes     | 5, cap to filling tube                               |
| 2, top and bottom covers for water tank | 6, studs holding 2 2 to 1, 1 side plates to radiator |
| 3, water tight packings                 | 8, support to frame                                  |
| 4, filling tube                         | 9, starting shaft                                    |

The other day one of the local registers of motor cars, which are now obliged to be kept by local authorities under the new Act, served a useful purpose in a way that was not contemplated by its originators. The incident will be best told in a correspondent's own words: "A friend of mine while on an unexpected flying visit to the town in which I live wished to call on me, but did not know my address, nor could he gain any enlightenment from the antiquated local directories. He was about to give up the quest when, remembering that I was a motorist, the happy thought occurred to him to consult the local register of motor cars. He applied to the police, who allowed him to look at the register, and in that way he found me."



## STEEL WHEELS FOR AUTOCARS.

Pressed steel work is coming more and more into use in the manufacture of mechanical as well as domestic ware every day, and it is therefore not surprising to find it making strong headway in autocar construction. One of the latest uses to which pressed work has been put in connection with motor mechanics is the production of road wheels—first for heavy vehicle

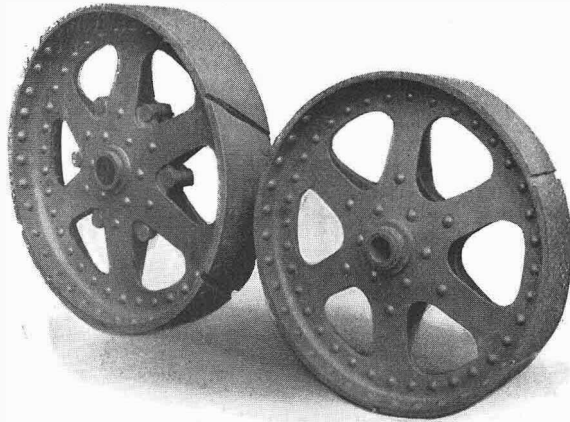


Fig. 1.—Toward's heavy motor vehicle wheels.

use, and later for pleasure carriages. One of the earliest firms in the field in this direction of manufacture was Messrs. T. Toward and Co., of St. Lawrence Works, Newcastle-on-Tyne, and their products are here illustrated and briefly described. The sectional drawings serve to show the details of construction.

In fig. 1 two types of wheel suitable for motor lorries carrying heavy loads are shown. It will be seen

that the spokes and felloes are pressed out of one sheet of steel of a thickness and design suitable for the weight to be carried. The pressed side plates, as they may be termed, are hydraulically riveted, or bolted, as the case may be, to the axle box of the wheel, which may be provided with suitable means of attaching chain or spur gear wheels as desired. One form of attaching such chain or gear wheels is shown by the rear wheel in fig. 1, the wheel being attached to the bosses which form part of the axle boxes.

A similar type of wheel is illustrated in fig. 2, which depicts a sectional elevation of a wheel suitable for omnibus or heavy touring car work. One half of the section is shown fitted with a single solid rubber tyre, the opposite section showing a twin tyre. This further illustrates Messrs. Toward's method of construction.

A form of wheel for light passenger vehicles is shown in section by fig. 3. By this it will be seen that a corrugated form of disc is employed, and that the rim provides for the use of the usual beaded edged tyre. Such a wheel as this should give great lateral strength in combination with light weight.

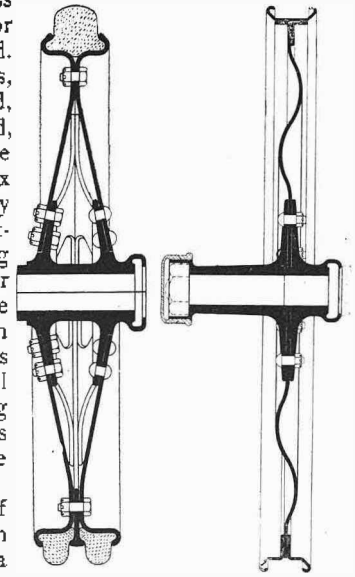
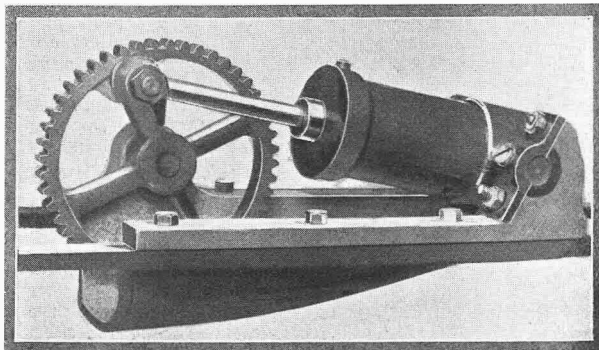


Fig. 2.

Fig. 3.

## THE SCLAVERAND MECHANICAL TYRE PUMP.

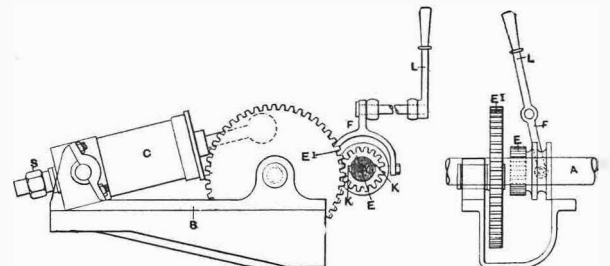
The pneumatic tyre has not yet reached complete perfection, for the automobilist is still at the mercy of a puncture or a burst. He is then obliged to repair on the road and reinflate the tyre. What is there more tiring than to pump up a tyre in the hot sun? The



The pump as fitted to a car.

Sclaverand mechanical pump for pumping up the tyres is driven by the motor, and is designed to replace hand pumping. Thanks to this system, the automobilist can pump up the biggest tyres in less than three minutes without fatiguing himself at all. This pump is light, as it only weighs, with its framework and pulley, about six pounds. It does not require much upkeep, but only greasing now and then with vaseline, just as one

would oil a hand pump. The pump is worked by a toothed wheel geared down from the motorshaft, and, therefore, cannot get out of order. The cog wheel E<sup>1</sup> is keyed on to its shaft and fixed on the framework, and driven by the cog wheel E, fixed by means of two keys on the motorshaft. These two keys allow the small pinion to slide longitudinally. Worked by a lever E



Drawings showing the actuation of the pump.

and a forked drive, it can therefore be easily put in or out of gear. The pulley E can be easily placed on the drivingshaft between the clutch and change of speed gear, so that the pump can be put in and out of gear without stopping the motor and without risking breaking the teeth of the pump wheel, and in order to work the pump all that it is necessary to do is to take out the clutch, put the change of speed gear at the dead point, put the pump in gear, and put in the clutch. The system is simple and practical.

# A SUCCESSFUL PARAFFIN MOTOR.

(Continued from page 537.)

## The Atomiser.

As the oil or spirit is withdrawn from the reservoir 14 a partial vacuum is formed in the upper part thereof above the surface of such oil, the effect being that the atmospheric pressure will act upon the oil or spirit in the tube 15, and will cause it to fall until the atmospheric pressure outside the reservoir 14 balances the height of oil or spirit therein plus the pressure of air on its surface. When this balance has been established the height of the oil or spirit in the pipe 15 is stationary except for the limited gravity supply to the valve 6, and this supply will be maintained at a constant pressure, and will be entirely independent of the height or quantity of oil contained in the reservoir. The pressure of oil at the nipple 4 will therefore equal the

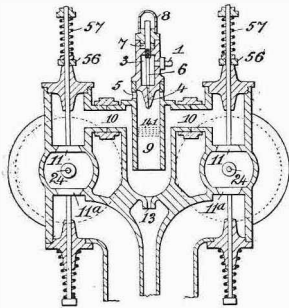


Fig. 3. End section of double cylinder motor, showing single vaporiser serving both cylinders.

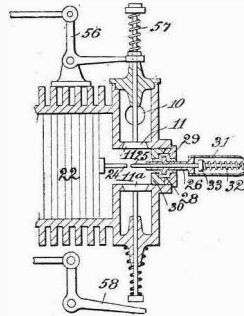


Fig. 4. Longitudinal section through cylinder, showing firing device.

weight of oil between its level in the pipe 15 and the nipple plus the difference of pressure due to the partial vacuum in and around the nipple and the full atmospheric pressure in the pipe 15. The gravity supply having been limited by the needle valve 6, the regulation of the ultimate delivery from the nipple will be effected automatically by the rapid or slow production of a partial vacuum in and around the nipple caused by the increased or decreased piston speed of the engine.

This condition of regulation is attained after a few strokes of the engine, and the oil or spirit continues to fall in the pipe 15 until it is below the bottom end thereof. Immediately this happens the reservoir is placed in communication with the outside atmosphere, and a bubble of air will then pass from the lower end of the tube, which is preferably bevelled off or inclined somewhat. This air bubble rises up through the oil or spirit in the reservoir, and lowers the partial vacuum in the upper part of the reservoir, thereby allowing a proportion of oil or spirit to pass into the pipe 15 until the balance is again effected between the oil or spirit in this pipe plus the atmospheric pressure and the partial vacuum in the reservoir plus the height of oil or spirit therein. This intermittent supply of air to the reservoir is proportionate to, and is regulated by, the piston speed of the engine, and therefore the charge of oil or spirit which is delivered to the vaporiser is automatically and accurately adjusted for every stroke of the engine in a simple manner and without the aid of pumps, floats, or other mechanical contrivances. It will be obvious that with this method of supply the only variation in the pressure of the oil or spirit supplied to the nipple will be merely that caused by the slight rise and fall of oil or spirit in the tube 15. (To this point figs. 1 and 2 (see page 537) are referred to.)

## The Ignition.

The contrivances which I use for firing the explosive charge electrically consist of two contact pieces 24 and 25, the former being mounted rigidly upon the piston 22, as shown in fig. 4, and the latter projecting through a metal sleeve 26 having a flange 27 at about its centre. The cylinder cover is bored out as illustrated at 28 to receive a packing 29 of asbestos or other fire-proof or heat-resisting material, which is also a non-conductor of electricity. A screw plug 30 is fitted into the recess 28, in which the packing is placed so as to jam same tightly around the metal sleeve 26 and its flange 27 in order to hold the same rigidly in position and at the same time insulate it from the metal cylinder. The contact piece 25 projects into a metal cap 31, which is screwed on to the upper end of the

sleeve 26, and contains a spiral spring 32 adapted to bear upon a shoulder 33 on said contact piece, so as to normally hold it in its projected position. This metal cap 31 also serves to prevent the escape of explosive mixture around the contact piece.

With this construction of igniter the piston 22 is electrically connected through the cylinder or otherwise with one pole of a battery, whilst the metal sleeve 26 is connected with the other pole, a coil of wire surrounding an iron core being inserted in the circuit to produce a current of self-induction on the circuit being broken between the contact pieces 24 and 25. It will be evident that this igniter will explode the charge only after the dead point has been passed, and consequently is only adapted for use on slow-running engines. It is, however, simple in its construction, and by using the self-induction coil above described instead of a Ruhmkorff or secondary induction coil the spark can be produced by a current of low voltage, and the insulation can be accomplished by asbestos. For quick-running engines or where it is necessary to vary the time of the explosion, instead of arranging contact pieces 24 and 25 in the end of the cylinder I mount them in the explosion chamber proper. The movable contact piece 25 is in this case carried on the end of an arm projecting from a spindle, which is passed through a metal sleeve, and is formed with a conical or valve-shaped collar to form a tight joint against the end of the sleeve. This latter is held in position by a screwed plug and gacking of asbestos or other heat-resisting electric non-conductor. A spring serves to keep said conical collar against its seat. The outer end of the spindle is fitted with a projecting arm, the end of which is connected to a vertically sliding rod by a non-conducting block. This block serves to electrically insulate the arm from the rod, that is, it insulates the firing from the timing mechanism. The lower end of the rod is arranged to bear against a curved lever having an inclined surface, against which a cam secured upon a suitable countershaft driven by a two to one gearing from the mainshaft is arranged to act at the desired period of the stroke of the engine. In order that this period of ignition may be varied as required I provide means for adjusting the position of the inclined surface around the shaft, so that the cam acts upon it sooner or later as the case may be. For this purpose I mount the lever upon a carrier, which is pivotally supported upon the countershaft, and is capable of being turned around upon the same.

A modification of this electric firing and timing mechanism is shown in fig. 5, which represents the upper end of a vertical engine in section, together with the electric connections, etc., for timing and operating same. In this case three contact pieces 24, 24a, and 25 are employed. The first is fixed upon the piston, and the second is carried by an arm on the spindle 35; but, unlike the contact piece 25, shown in fig. 1, it is bent upwards, and contacts with a projecting arm 25a on the contact piece 25. This latter projects upwards through a metal sleeve 26 fitted with a cover 31 containing a spring 32. The metal sleeve 26 is secured in position in the same way as described by reference to the firing device illustrated in fig. 1. The spindle 35 carrying the contact piece 24a is fitted on its outer end with an arm 37, which is insulated electrically from the spindle, but otherwise is rigidly secured.

It will be obvious that by coupling up one pole of an electric circuit to the metal sleeve surrounding the spindle 35 and the other pole to the sleeve 26 that the circuit will be completed through contact between the two arms 24a and 25a. This circuit will be broken when the pin or projection 24 on the piston comes in contact with the lower end of the spindle 25, so as to raise same, the effect of breaking such circuit being to cause a spark which therefore fires the explosive charge, which has previously been compressed within the explosion chamber in the ordinary manner. By turning the spindle 35 the arm 24a can be raised, thereby raising 25, and causing the projection 24 to engage with said spindle at a later part of its movement, thus breaking the electric circuit between 24a and 25 at a later period. By this arrangement the timing of the explosion of the charge can be varied before the dead point. Instead of taking the circuit through the spindle 35 and arm 25a the circuit might be completed through the cylinder, piston, and contact piece 24, in which case the circuit would be broken after the dead point. The exact moment at which this takes place can be regulated as

before by turning the spindle 35, and thus raising the contact piece 25.

**An Alternate Method of Ignition.**

The two methods of coupling up the electric firing appliances above described will be readily understood by reference to fig. 5, in which 45 represents a battery or electric generator, and 46 a self-induction coil arranged to produce

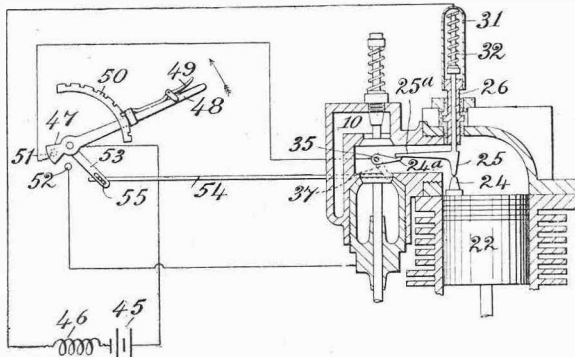


Fig. 5.—A double system of electric ignition.

a current of self-induction when the circuit is broken. 47 represents an insulated switch or cut-out actuated by, but insulated from, a hand lever 48 fitted with a spring catch 49 engaging with the teeth of a quadrant rack 50. One pole of the battery is coupled up to the switch 47, and the other to the metal cover 31 or to the sleeve 26. 51 and 52 are contact pieces, one of which is coupled up to the spindle 35, whilst the other is coupled up to the cylinder or other convenient part of the engine in electrical communication with the piston, and therefore with the contact piece 24. The switch 47 is constructed so that it can be placed in contact with either 51 or 52 by means of the lever 48. This lever has an arm 53, which is connected by a rod 54 with the arm 37 on the spindle 35. These various contrivances are so constructed and arranged that if the lever 48 is in its lowest position the switch 47 will engage with the contact piece 51, and the circuit will therefore be through the spindle 35, arms 24a and 25a, and vertically sliding spindle 25. This latter will also be in its lowest position; consequently, the piston will break the circuit between 24a and 25a at a comparatively early part of its stroke; consequently, the explosion will take place considerably before the arrival of the piston at the dead point. If the lever 48 is moved forward in the direction of the arrow the spindle 25 will be correspondingly raised; consequently, the explosion will take place nearer but still before the dead point. These are the conditions which would be suitable for an engine running at a high velocity.

Upon the lever 48 being moved still further forward the switch 47 will be withdrawn from the contact piece 51, and will be placed in contact with 52. The circuit will then be through the piston and the contact pieces 24 and 25.

The effect will now be that as the piston rises it closes the circuit until its return, when at a certain point contact between 24 and 25 will be again broken, and an electric sparking will take place between 24 and 25, which will explode the charge. In this way a much weaker explosion is produced suitable for a slow revolution of the engine when, for instance, the car or the power transmission gear is not in use. Upon continuing the movement of the lever 48 the arm 24a begins to return to its lower position, because the rod 54 is connected with the arm 53 through a connection, which slides along the slot 55, because said arm 53 is at such an angle as to effect this result. This movement lowers the contact piece 25, and correspondingly lengthens the time which elapses between the dead centre being passed and the explosion taking place.

By means of the firing mechanism above described and the appliances used for timing the firing I am enabled by the movement in one direction of a single lever to ensure the firing taking place at any desired moment either before, at, or after the dead point.

Fig. 3 shows a vertical transverse section illustrating a modification of the vaporiser and mixer above described for the supply of a pair of cylinders in such a way as that the one automatic supply suffices for both cylinders. 4 represents the nipple to which oil is supplied through the tube leading from the reservoir 14, as

shown in fig. 2. Vapour passages 10 lead from the mixer 9 to the inlet valves 11 of each cylinder. 11a 11a represent the exhaust valves. 56 represents a bell-crank lever, which is used for the purpose of adjusting the pressure on the springs 57 acting upon the suction valves 11, so as to manually vary the amount of charge drawn into the cylinders. A bell-crank lever 58 or other suitable mechanism is provided for operating the exhaust valves 11a, said lever being primarily operated by a cam mounted upon a spindle driven by two to one gearing from the mainshaft or spindle of the engine. When the inlet and exhaust valves are arranged as illustrated in figs. 1 and 2, the gear may be used for regulating them in the manner described, the spindles of the exhaust valves being acted upon directly by cams 59 on a spindle 60 driven by a two to one gear from the main shaft.

**The Variable Inlet.**

In order to adjust the quantity of the charge fed into the cylinder without affecting its quality I use the means illustrated in figs. 1 and 2 comprising a bracket or support 61 between the two cylinders, and arrange a rod 62 so that it can slide longitudinally through it. A T-piece 63 is secured upon the end of this sliding rod 62, as illustrated in fig. 1. The ends of this T-piece are fitted with tubes 64, which slide freely upon the spindles of the inlet or suction valves 11 11. On moving the rod 62 outwardly by means of a bell-crank lever 65 the springs of the inlet valves will be compressed, and therefore their tension increased. The T-piece 63 on the end of the rod 62 is so arranged that when said rod is pulled back to near its furthest extremity the T-piece contacts with the lower end of a lever 66 pivotally supported upon the bracket 61, and acting upon a collar 67 on each of the exhaust valve spindles, thereby holding said valves open and preventing any charge from being drawn into the cylinder. By means of this mechanism it will be obvious that a movement in one direction of a single lever or its equivalent increases the tension on the springs of the inlet valves,

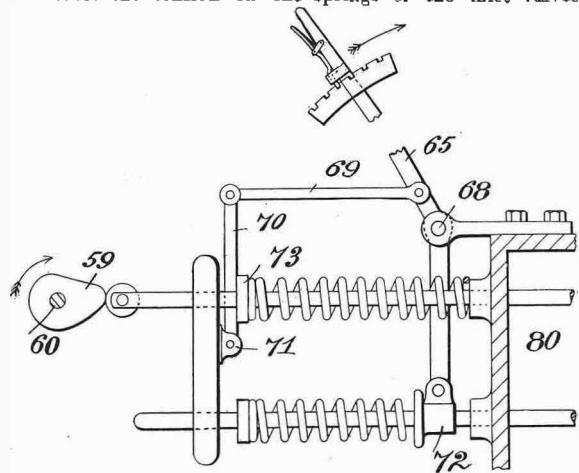


Fig. 6.—The Sutton valve lifter.

thereby gradually diminishing the suction, whilst the continued movement will entirely stop the suction by opening the exhaust valves.

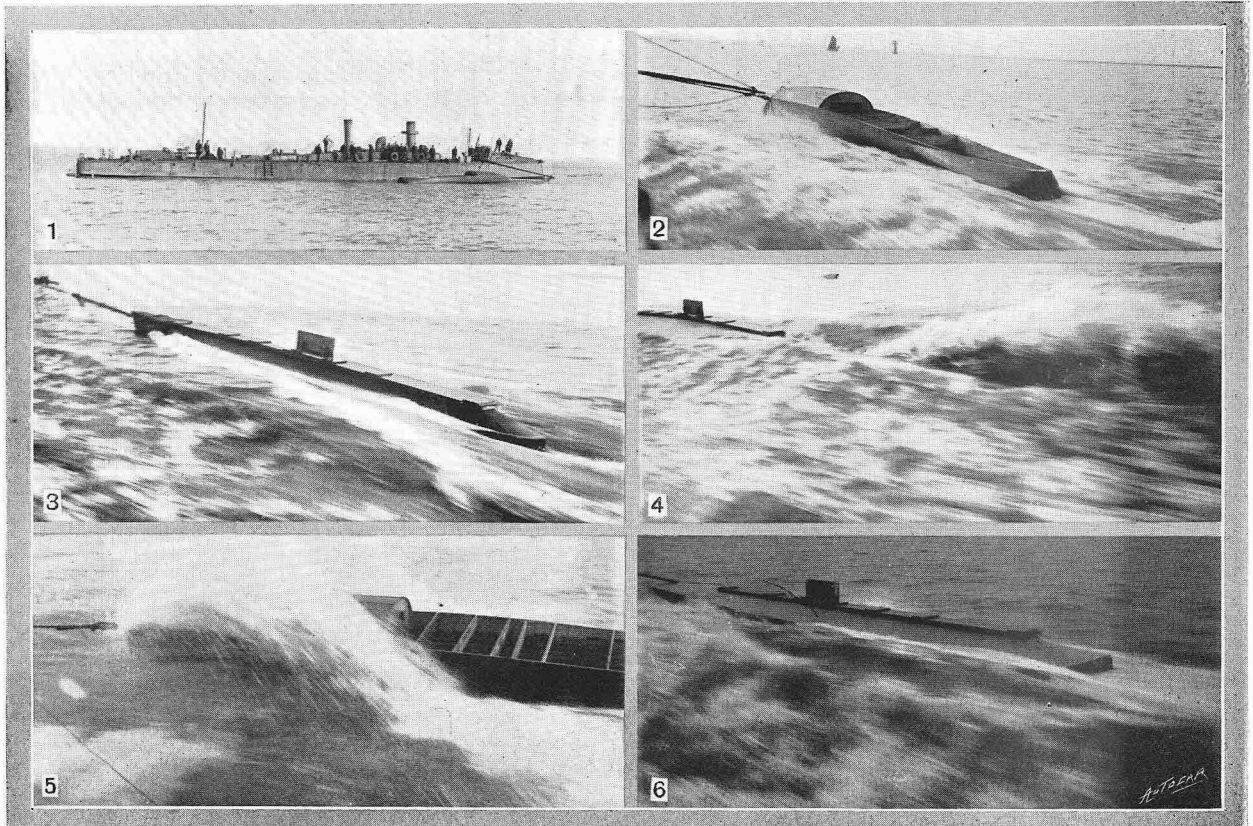
A modification of the above-described arrangement is shown in fig. 6, in which 65 represents a comparatively long lever mounted upon any convenient support, as illustrated at 68, and connected by means of a link 69 with a shorter lever 70 fulcrumed, as indicated at 71. The lower end of the lever 65 is connected with and operates a sliding block 72 acting upon the spring of the inlet valve. The lever 70 is arranged to act upon a stop piece 73 on the rod or spindle of the exhaust valve. By moving the lever 65 in the direction of the arrow the spring of the inlet valve will be compressed, and therefore the charge drawn into the cylinder will be diminished in quantity without being affected in quality. The continued movement of the lever 65 will move the lever 70 into contact with the stop piece 73 on the spindle of the exhaust valve, which will therefore be opened, the effect, of course, being to stop the working of the engine.

[Other modifications are given, but space prevents their publication.—Ed.]

## MOTOR LAUNCH BUILDING.

The present holders of the Gaston-Menier International Cup for racing motor launches—Messrs. S. F. Edge and Co.—do not mean to leave the construction of their next launch, which will endeavour to retain the trophy won last July in Cork Harbour, to any chance, they having been very actively engaged for some time past in experimenting with different forms of boats. At the same time, the designing and building of the engines and gearing have been pushed forward at Messrs. Napier's works at Acton, and some photographic reproductions of the sea trials are given

below. These were carried out by Messrs. Yarrow, who are building the hull, by the aid of a new torpedo boat, which is seen in the illustration (1). It is needless to say that the construction of such models and their testing is alone a source of heavy expenditure, and we feel sure that all automobilists, whether they be ordinary users of an autocar or lovers of the motor as a means of sport, will join us in congratulating Messrs. S. F. Edge and Co. on their endeavours to uphold the marine prestige of the Empire in what gives high promise of a truly interesting sport.



SOME TEST PHOTOGRAPHS OF MODELS.

1. The torpedo boat with a model attached with the towing boom forward.
2. In this model there is but a small bow wave, and a remarkably clear run from the stern, but she is no good in a rough sea.
3. The present Napier model at a twenty knots speed.
4. The same boat as in No. 3 at a twenty-five knot speed. Note the stern wave.
5. A theoretically perfect model makes a wet boat at sea, and one which would swamp itself at speed.
6. The best model tested. This gives a small bow wave and an exceptionally good stern run.

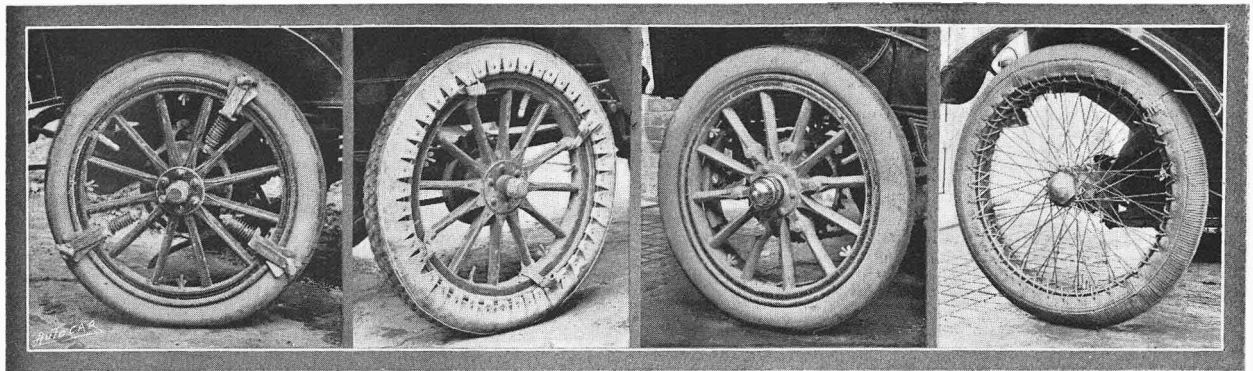
## A GOOD HILL-CLIMBING PERFORMANCE.

One day last week a 16 h.p. Georges-Richard was driven down to Porlock, which is commonly described as the worst hill in England. It easily ascended the hill, and was then taken over to Lynmouth, where it climbed, with three persons up, into Linton. Next day an official observer from the Automobile Club went down to check the performance of the car, which was driven by Mr. J. T. Overton. Unfortunately, rain had fallen heavily in the night, and Porlock was very bad. However, a set of the Parsons non-skid chains was fitted, and with four persons up, the hill was easily climbed, over three miles from the Ship Inn to the signpost at the summit being covered in eighteen minutes, or over ten miles an hour. The hill from Linton to Lynmouth was then attempted, not successfully on the first trial, but at the next attempt the car ran up with one on

board. The car was not specially geared for the work, having the ordinary medium gear usually provided for the 16 h.p. car.

The following extract from Messrs. Gall and Inglis's "Contour Road Book" will unquestionably be of interest: "Ifracombe to Minehead—the worst main road in the South of England. From Barbrook Mill—the road then descends to Lynmouth by a sheer descent, with an awkward twist at the bottom—about the most dangerous hill in the country. The road then descends to Porlock by another sheer descent, with two twists near the bottom; there is scarcely any surface to this part of the road—it is more like a river bed. Gradients are given as Lynmouth 1 in 5, and the other side 1 in 7 for over two miles, Porlock 1 in 10, 1 in 8, and 1 in 6."





Sainsbury,

Billet,

Wilkinson.

Crown (Jenkinson).

### THE SIDE SLIP TRIALS.

The following cars fitted with the non-slip devices which were described in our columns last week (pages 534-5) were despatched from the Automobile Club garage by Mr. Basil Joy, the technical secretary, on Monday morning last to participate in the side-slip competition organised by the A.C.G.B. and I. The first car left at 9.30 for a run to Margate and back, which was the journey allotted for that day. The cars left the garage at short intervals:

- 1.—Butler (15 h.p. Panhard), flat discs on tread held on by steel stems passing through the cover.
- 3.—Hunt (8 h.p. Wolseley), double rough-d discs running on ground between back wheels.
- 4.—Edwards (10 h.p. Royal Enfield), detachable leather band fitted with steel segments riveted thereto.
- 6.—Nicholson (12 h.p. Star car), steel blades on back wheels with springs, not touching tyres, and lifted from contact with road by lever.
- 7.—Vivian (12 h.p. Parsifal), tread consisting of alternative sections of hard and soft rubber.
- 8.—Wilkinson (12 h.p. Wolseley), fine steel wire staples embedded in tread.

9.—Jenkinson (10 h.p. Lanchester), detachable leather ribbed cover.

11.—Sainsbury (Argyll), spring fork carrying blades each side of tyre supported on rim.

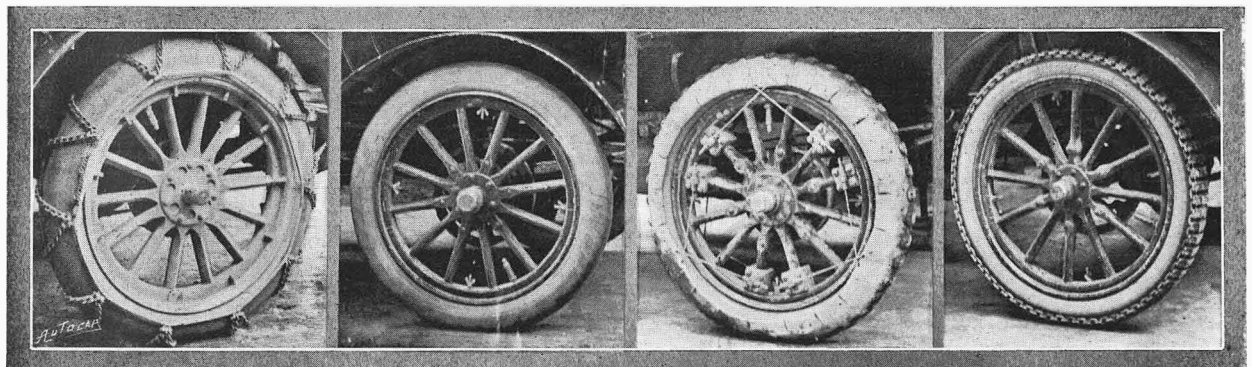
12.—L'Empereur (12 h.p. Georges-Richard), steel plates connected by links fitted on tread, detachable, and kept on by inflation of tyre.

14.—Parsons (10 h.p.), detachable chains on tread.

15.—Civil Service Motor and Cycle Agency (10 h.p. Service), detachable leather cover fitted with steel studs (Billet).

Five of the devices entered did not start, three of these having been previously withdrawn, the others not being ready in time.

The secretary was somewhat put to it to find accommodation for observers, as he had more of these hard-working gentlemen than he knew what to do with. Owing to the secessions amongst the starters, some of the cars carried two observers, in order that the surplus gentlemen might not be deprived of the pleasure of a run on so glorious a day. The route followed was by New Cross, Blackheath, Bexley, Dartford, Gravesend, Rochester, Sittingbourne, Canterbury, Sarre, and Margate, returning by the same way.



Parsons.

Vivian.

Edwards.

L'Empereur.

An explanation of the non-appearance of the Cavendish non-skidding device which was entered for the side-slip trials is to be found in the fact that the inventor's 12 h.p. Darracq car to which it was fitted is reported to have been stolen. The car was at the Osmonde motor works when a fire broke out there, and was rushed across to a neighbouring yard for safety. On the following day the place was visited by burglars, and the car was thenceforward missing.

Mr. Charles Jarrott has already made close acquaintance with the green scarab-looking 90 h.p. Wolseley he will conduct in the eliminating trials, by driving it from London to Birmingham in the very early hours of Monday. He expresses himself as very pleased with his mount, and says that the machine is the easiest speed car to sit and steer he has as yet had under his hand. Mr. Jarrott will drive a De Dietrich in the French eliminating trials.

## CLUB DOINGS.

### Glasgow to London Reliability Trial 1904.

The committee of the Scottish Automobile Club will be glad to have the names of members of the Scottish Automobile Club or others who are desirous of acting as honorary observers in the above trial, which will take place on May 19th and 20th. It will be necessary to have places marked with banners or otherwise. The committee would be glad to have the names of members of automobile clubs or other automobilists who would be good enough to undertake the fixing of these on the day of the trial. Names should be sent to Mr. R. J. Smith, 59, St. Vincent Street, Glasgow.



Joint meet of the Leicestershire, Derbyshire, and Nottinghamshire Automobile Clubs at Ashby-de-la-Zouch, on April 9th, outside the Royal Hotel, Ashby, reported in "The Autocar" last week.

### Gloucestershire A.C.

Mr. J. W. Roebuck gave a lecture on "Motors and Motor-ing" to the members of the above club at Cheltenham on the 30th March. The lecture was fully illustrated with a fine series of slides, some of which showed earlier types of motor vehicles, kindly lent by a member of the club. A further series illustrated the principles and salient parts of petrol engines, gears, carburettors, etc., a number of these being specially lent by *The Autocar*. There were also exhibited an air-cooled cycle engine in section, showing all the working parts, lent by the Humber Co., and a fine example of water-cooled engine with sliding gear box by the Standard Motor Co., as well as induction coil parts and ignition apparatus with details of carburettors, etc. Photographs of various makes of heavy vehicles were shown, and some useful information was imparted as to the working costs of these vehicles.

### Scottish A.C.

The annual general meeting of the Scottish A.C., as briefly reported in last week's issue, was held on Tuesday, 12th inst., the Right Hon. Sir J. H. A. Macdonald, K.C.B., Lord Justice Clerk of Scotland, president of the club, in the chair. Sir John Macdonald was re-elected president, and Messrs. Edward

J. Brook (of Hoddam), J. B. Talbot Crosbie, J. H. Irons, Norman D. Macdonald, J. R. Nisbet, J. H. Paterson, H. Prosser, John M. Ross, W. L. Sleight, and Wm. Weir were elected members of council.

### Lincolnshire A.C. Dinner.

The third annual dinner of the Lincolnshire Club, held on Saturday, was a great success. Sir Hickman Bacon, Bart., president of the club, was in the chair, and there were about a hundred present. Among the cars which brought guests were: Mr. Ross Browne's 24 h.p. Georges-Richard that recently made the 1,000 miles non-stop record; Mr. E. H. Arnott's new light 15 h.p. Napier; Mr. A. A. Padley's 6 h.p. De Dion; Mr. C. H. Seely's 12 h.p. Daimler; Mr. Parsons Wright's 6 h.p. Regal; Mr. G. Linnell's 10 h.p. Wolsley; Dr. Husband's 8 h.p. Wolsley; Mr. J. D. Sandars's 12 h.p. Siddeley; Mr. C. A. Moreing's 12 h.p. National; Mr. Godson's 6 h.p. M.M.C.; and Dr. Benson's 8 h.p. Peugeot.

The loyal and patriotic toasts having been duly honoured, Mr. J. D. Sandars, J.P., D.L., gave the "County and City Magistrates." He thought the attitude of the Lincolnshire magistrates very proper. As soon as the roads were used for records they took prompt and decisive action.

Mr. Footman, Mayor of Lincoln, in the course of his response, humorously remarked that he looked forward to the time when a Marconi instrument could be used on cars to communicate with friends or "wire" to a repairer.

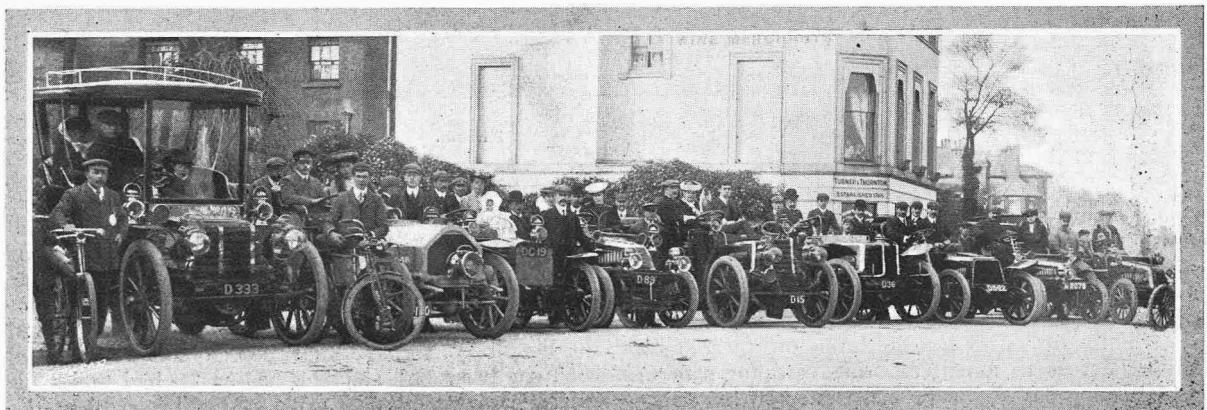
Mr. C. A. Moreing, in proposing "The Club," said it was the most distinguished of all, and had done more good work than, or as much as, any other. He admired the club for the stand it had made for a proper affiliation. He was pleased to see that no roads in Lincolnshire were to be scheduled.

Captain J. A. Cole, J.P., gave "The Visitors," and referring to the dust nuisance, said a Lincolnshire surveyor was experimenting to make a road free of all dust. He felt sure that the elimination of dust would remove a lot of hostility. Mr. Jeffreys also replied, and said he believed in the "pacific penetration" policy for the club, and hoped the A.C.G.B.I. would be able to check reckless driving. He was sure that the use of buses and other commercial vehicles would entirely convert the public to automobilism.

Captain Mitchell Innes, chief constable of the county, in responding, described his method of educating his superintendents in motor matters by taking them out on his car.

### South Lincolnshire M.C.

The opening meet of the above club took place on Easter Monday, and proved a very great success. The rendezvous was the White Hart Hotel, Spalding. As it is some years since a "motor meet" was held in the town considerable interest in the occasion was evinced. During the afternoon the cars were arranged in front of the hotel, and a photograph was taken by Mr. Beales (this was the picture reproduced in *The Autocar* last week on "Club Doings" page), after which an excellent tea was provided by Host Harper, about forty members and friends sitting down thereto. This new and energetic club commences its career with every prospect of success. The next meet will take place at the Red Lion Hotel, Boston, on Thursday, April 28th.



THE KENT AUTOMOBILE CLUB. Meet of members at the Mount Ephraim Hotel Tunbridge Wells on Saturday, April 16th.

**Midland A.C.**

The opening run of the Midland A.C. took place on Saturday last, the headquarters being the Shakespeare Hotel, Stratford-on-Avon. Thirty-six members were present, several of whom afterwards went on to Alcester. Good weather prevailed, and the roads were in excellent condition.

**Yorkshire A.C.**

On April 9th the first meet of the Yorkshire Automobile Club took place at Aberford, when about fourteen cars participated. On April 16th the meet was at Ilkley with headquarters at the Middleton Hotel. There was an excellent muster of Yorkshire members to meet the members of the Burnley and District Club, and in all there was a gathering of about sixty persons. Amongst the cars belonging to the Yorkshire Club were Mr. Kirk's 60 h.p. Mercedes and Mr. Hepper's Belsize.

**Gloucestershire A.C.**

The April general meeting of the Gloucestershire A.C. was held at Gloucester on the 7th inst., the president, Mr. Algernon H. Wyatt, in the chair. The president briefly referred to the past work of the club, and alluded to what it was hoped to accomplish in the future. He also pointed out the advantages which alone accrue from combined action. The inconvenience and danger to motorists arising from unrolled metal on the highway was discussed, and a motion was adopted calling the attention of the Highways Committee

of the County Council to the unsatisfactory condition in which the roads are left overnight, particularly from Saturday to Monday, and respectfully requesting that steps be taken to see that all metal placed upon the highway is rolled in before work ceases for the day. In regard to the lighting of vehicles, a request was framed for the adoption of byelaws by Gloucester, Cheltenham, and Tewkesbury similar to that in force in the county, and a resolution was passed expressing the opinion that, owing to the increased number of motor vehicles on the highway at night, it would add to the safety of all users of the road if the byelaw at present in force in the county relating to the lighting of timber waggons were extended to every vehicle on the highway at night time.

**Burnley and District A.C.**

On Saturday last the members of this club had their first run to Ilkley, and there met the members of the Yorkshire A.C. Tea was served to both clubs at the Middleton Hotel. The members with cars joining in the run were: Messrs. C. Atkinson, chairman (7 h.p. New Orleans), J. Ridehalgh (16 h.p. Belsize), A. P. Threlfall (Clement), R. Cox (6 h.p. De Dion), F. Clarke (Vinot), T. G. Parkinson (7 h.p. Turrell), G. H. H. Clement (5 h.p. Simplex), T. W. Hargreaves (10 h.p. Decauville), Hartley Nelson (10 h.p. Decauville), A. Hartley (11 h.p. Clement), R. Riley, L. Watson (10 h.p. Pick), and J. Hurtle (8 h.p. Lancheater). The secretary, Mr. Smith Lawson, was prevented from driving his car by an injured hand, and attended as a passenger on Mr. Hurtle's car.

**THE PHOEBUS VOITURETTE.**

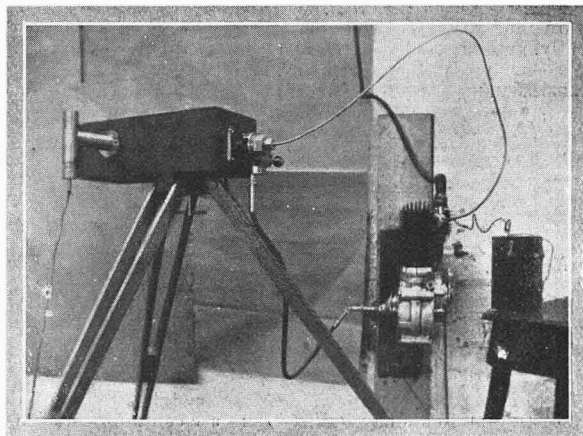
Phoenix Motors, Ltd., of "Trimo" fame, have lately introduced into the market a voiturette known as the "Phœbus." It is fitted with a 6 h.p. genuine De Dion engine, Panhard type of gear, giving three forward speeds and one reverse, and two brakes, one operated by the right pedal and the other by a side lever, as is usual in this type of vehicle. By an ingenious arrangement the clutch is thrown out, and the exhaust valve raised when either of the brakes is applied. Also



the fact of withdrawing the clutch automatically performs the same slowing operation. Another interesting feature which we observed on this little car was a leather protector slung under the bonnet and gear box, which should efficiently guard the nether working parts from contact with mud and dust. Comfortable bucket seats are fitted, as is also a roomy compartment for tools and spare parts, which is situated to the rear of the car. A back seat can be attached which, when folded up, strongly resembles the above compartment in appearance. The arrangement of the body gives plenty of room between the seats and the dashboard—a deficient point on many voiturettes, while the provision of a third seat will be appreciated by the majority of perspective users.

**THE CARPENTIER MANOGRAPH.**

We have previously mentioned that one of these instruments was shown at the Agricultural Hall by Messrs. Van Raden and Co. The illustration shows it at work indicating a small engine. Without going into details, it will suffice to say that this apparatus overcomes many of the troubles of high-speed indication. The variation of pressure in the cylinder is traced by means of a spot of light upon a ground-glass screen. When the engine is stationary, only the single spot is seen, but as soon as it commences to run the spot



moves upon the ground-glass so fast as to trace a line. When a permanent record is required, a photographic plate is used in front of the glass screen, and so a permanent record of the pressure in the cylinder is obtained.

For the information of motorists who may be passing through Uttoxeter, and who may wish to obtain petrol, or other necessaries for their cars, but who may be unable to reach Messrs. Huggins and Chambers's place in High Street owing to the roads being up for the relaying of sewers, we are asked to state that this firm will, on receipt of a message, be pleased to send out by hand any supplies that may be needed.

## THE WIDENING OF A ROAD.

A Parochial Comedy.

The peace of the usually quiet district of Tisbury, Wilts., has lately been disturbed by a commotion arising out of a provision contained in the old Highway Act of 1835, which has been brought to light by the Motor Car Act of 1903. The affair originated in the passing of a resolution by the District Council, during the absence of a motorist member, to the effect that all the roads under their control are "unsafe for motor traffic and should be closed to motor cars." Had such a motion taken effect it would have absolutely prevented any motorist in the district leaving his own front gates, but happily the County Council intervened. The next move was on the part of a local motorist, Sir James Pendar, who complained to two enlightened justices of the peace that the road between his house and the station was too narrow for the traffic upon it, and asked the justices in question to put into force Section 82 of the Highway Act of 1835, by which two magistrates had power to order a road to be widened to 30ft. if upon viewing it they are of opinion that such road is not sufficiently wide for the traffic passing over it. Sir James Pendar, however, at the request of one of the justices, altered his demand to another road, in the widening of which no difficulty would arise in purchasing land. The justices' order was made, but by reason of an informality in "viewing" the road separately instead of together, the order was quashed on appeal by the Rural District Council to Quarter Sessions. The curious part of the business, however, is that in the interval between the serving of the order and the hearing of the appeal the District Council obeyed the justices' order and widened the road very considerably, taking, without leave, part of the bank belonging to the adjoining owner, who is one of the justices concerned in making the order. The action of this arrogant body of farmer councillors is inexplicable, unless it may be attributed to the idea, which evidently possesses them, that they are great men beyond the influence of motives which ordinarily regulate the conduct of inferior mortals.

## ROAD REPORTS.

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

Maindy Dip, on the highway north of Cardiff, is at length to be rendered safe. Cyclists, motor cyclists, and, more recently, autocarists, have been agitating for this for over twenty years—truly a victory for perseverance.

Automobilists driving Andover way should have a care as they approach Wallop cross roads. A well-known and recognised careful driver—a member of the Automobile Club—asks us to give warning as to this point.

## POLICE TRAPS.

*Now that fine weather has come and the roads are again in first-class condition, automobilists will be well advised to be on the alert for the detection of police traps. We shall be pleased to receive early intimation as to the exact locality of such traps as may be noticed by our readers, so that we may give timely warning of their existence.*

Motorists passing through Leeds should be aware of the police trap at Roundhay Park. There are constables stationed near the police station and again at the old entrance to the park, and on Sunday last they were to be seen busily taking the numbers of the passing cars and the times at which they passed.

All motorists should be exceedingly careful when proceeding along the Addison Road. The recent traps have been re-laid on the east side of the railway bridge near Addison Road Station. Any motorist stopped by the police here should at once demand all particulars of his alleged offence, and should examine both the stop watches and take a note of the same at the time.

Mr. R. Moffat Ford fell into a police trap in Bayswater Road on the 2nd inst., and appeared at Marylebone Police Court to answer a charge of driving his car at a speed exceeding twenty miles an hour. Although evidence was adduced by Mr. H. J. Swindley, official timekeeper to the A.C.G.B.I., to prove that the policemen's watches were unreliable, Mr. Plowden, the magistrate, inflicted a fine of £3 and costs.

## THE GLASGOW TO LONDON RELIABILITY TRIAL.

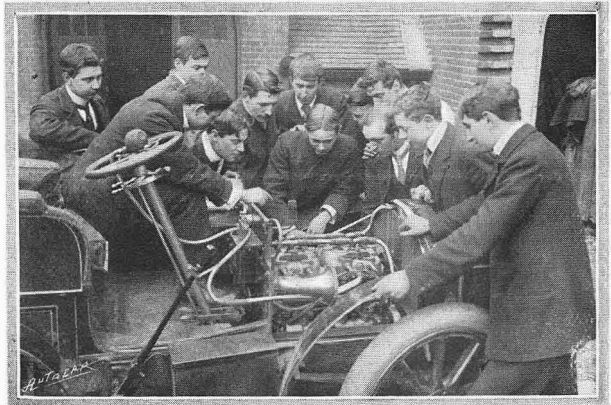
The following cars have been entered and accepted by the committee for the Glasgow to London reliability trial on May 19th and 20th:

CLASS A.—6 h.p. Vauxhall, 6½ h.p. Cadillac, and 6 h.p. Light Wolseley.

CLASS B.—12 h.p. Gladiator, 10 h.p. Argyll, 10 h.p. Ryknield, 12 h.p. Richardson, 12 h.p. Eagle Light, 12 h.p. Arrol-Johnston, 12 h.p. Siddeley, 12 h.p. De Dion, 16 h.p. Maxim, 6 h.p. Crouan, and 8½ h.p. Humber.

CLASS C.—16 h.p. Sunbeam, 14 h.p. Renault 1904, 12 h.p. Argyll, 16 h.p. Argyll, 16-20 h.p. Martini, 24 h.p. Eagle Light, 12 h.p. Sunbeam, 12 h.p. Pipe, 16 h.p. Rochet-Schneider, 20 h.p. Spyker, 16 h.p. Delahaye, 18 h.p. James and Browne, 18 h.p. Baudouin-Dechamps, 20 h.p. Thornycroft, and 18 h.p. Siddeley.

A number of other applications were received, but owing to their not being in conformity with the rules and conditions they were not accepted.



A POLYTECHNIC MOTOR CLASS. The overhauled class at the Battersea Polytechnic receiving instructions in the tuning up of a four-cylinder car.

At the annual meeting of the Cycle Engineers' Institute, on Thursday next, at the Grand Hotel, Birmingham, a proposal, which has already been approved by the council of the institute, will be made to alter the title and scope of the institute so as to include motor engineers.

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