

# 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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### CONTENTS.

	PAGE
NOTES: SEVEN YEARS AGO TO-DAY—ILLUMINATED NUMBERS—	
VEHICULAR SPEED IN LONDON ... ..	593-595
MR. F. BOWDEN, OF NOTTINGHAM, ON HIS 24 H.P. FOUR-CYLINDER	
DARRACQ (Illustration) ... ..	594
USEFUL HINTS AND TIPS: LUBRICATORS—A COVERING FOR THE	
CAR—ACCUMULATOR TREATMENT ... ..	595
AN AUTOMATIC VALVE CARBURETTER ... ..	596
THE BREEDLE AIRSHIP (Illustration) ... ..	596
A PETROL RAILWAY LOCOMOTIVE (Illustrations) ... ..	597
THE PNEUMATIC WHEEL (Illustrated) ... ..	598
AFTER 40,000 MILES (Illustrated) ... ..	599
A BOVER CAR STRIPPED FOR RACING (Illustration) ... ..	599
CONTINENTAL NOTES AND NEWS (Illustrated): THE DOURDAN	
RECORD MEETING—THE VIENNA ALCOHOL EXHIBITION—THE	
GAILLON HILL CLIMB ... ..	600-603
THE 1904 GORDON-BENNETT RACE ... ..	603
CORPORATE AUTOMOBILISM ... ..	603
A SAFE STARTER ... ..	603
CORRESPONDENCE: STEAM CARS—THE NEW REGULATIONS—UN-	
OFFICIAL TRIALS—THE OLDSMOBILE MARINE MOTORING—	
PRIVATE TOUTING—FUTURE TRIALS—TYRES—THE MIDGLEY	
NON-SLIPPING DEVICE—LAYING A CAR UP FOR THE WINTER	
FACILITIES FOR OBTAINING REPLACEMENTS—THE MOTOR GAU-	
ABOUT ... ..	604-606
"THE AUTOCAR" DIARY ... ..	607
FLASHES (Illustrated) ... ..	607-609
SOME QUERIES AND REPLIES: SPARKING PLUG POSITION (illus-	
trated)—BAND BRAKE BLOCKS—STEAM CAR MATTERS—	
IRREGULAR FIRING ... ..	610
GOVERNING GAS AND PETROL ENGINES: THE DISCUSSION ON	
MR. DUGALD CLERK'S PAPER ... ..	611-612
EXAMPLES FROM HAMPSHIRE AND ESSEX ... ..	612
MOTOR DUST CARTS FOR WESTMINSTER ... ..	612
A NEW MOTOR TYRE (Illustrated) ... ..	613-615
HEAVY MOTOR TRAFFIC ... ..	615-617
CLUB DOINGS (Illustrated) ... ..	617-618
THE AMERICAN RELIABILITY TRIALS (Illustrated) ... ..	619-620
NON-STOP RUNS ... ..	620
POLICE TRAPS ... ..	620
MANY USEFUL THINGS ... ..	620

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## Notes.

### Seven Years Ago To-day.

On the 2nd November, 1895, the first number of *The Autocar* was published, and a year later, on November 14, the Light Locomotives Act of 1896 came into operation, once more making it lawful for a self-propelled vehicle to be driven on English roads without impossible restrictions in the way of walking speeds and red flags. To mark the occasion *The Autocar* was printed in red, and the celebration run to Brighton by motor was held. Seven years ago to-day the great event was in progress, and many adventures did the pioneer automobilists experience before completing a drive which is now only regarded as a pleasant spin for the interval between breakfast and lunch. Thirty-

five machines started, including motor cycles, and as far as can be gathered—there was no system of official observation—twenty-two of the vehicles reached Brighton that night, thirteen of them being in good time for the commemoration dinner at the Hotel Metropole. Most of the cars which took part in the eventful run were of foreign manufacture, and several were quite unsuited even for so modest a journey, and gave up the attempt to reach the seaboard, almost before they had cleared the Metropolitan area. The run was ostensibly organised by the Motor Car Club, but Mr. H. J. Lawson was really at the back of it. In fact, at that moment he was the head and front of the automobile movement, and had not his financial ambitions outrun his discretion he might still have been a prominent figure in the motor car world. As it was, he bought foreign patents dearly and sold them, or the rights to use them, at still higher figures to one or two companies more or less over-capitalised, which he promoted, and by attempting to claim ridiculous royalties on certain patents which he held he very soon lost the hold he might otherwise have had upon the great movement. Despite his shortsightedness in this respect he deserves credit for acting where other men had contented themselves with talking; and had he been satisfied with more reasonable financing his connection with and influence upon the movement would be regarded very differently to-day. We doubt whether even his name is known to the majority of the automobilists of 1903. All who took part in the memorable drive to Brighton felt that they were assisting in the birth of a national movement fraught with far-reaching potentialities, and there is no doubt that in this they were not mistaken. When we look back upon the crude vehicles which conveyed the pioneers to Brighton only seven years ago we realise to some extent the immense strides which have been made in autocar construction since that time. It is not too much to say that the development of automobilism, as a whole, is at least commensurate with the mechanical advance which has been made during that period.

### Illuminated Numbers.

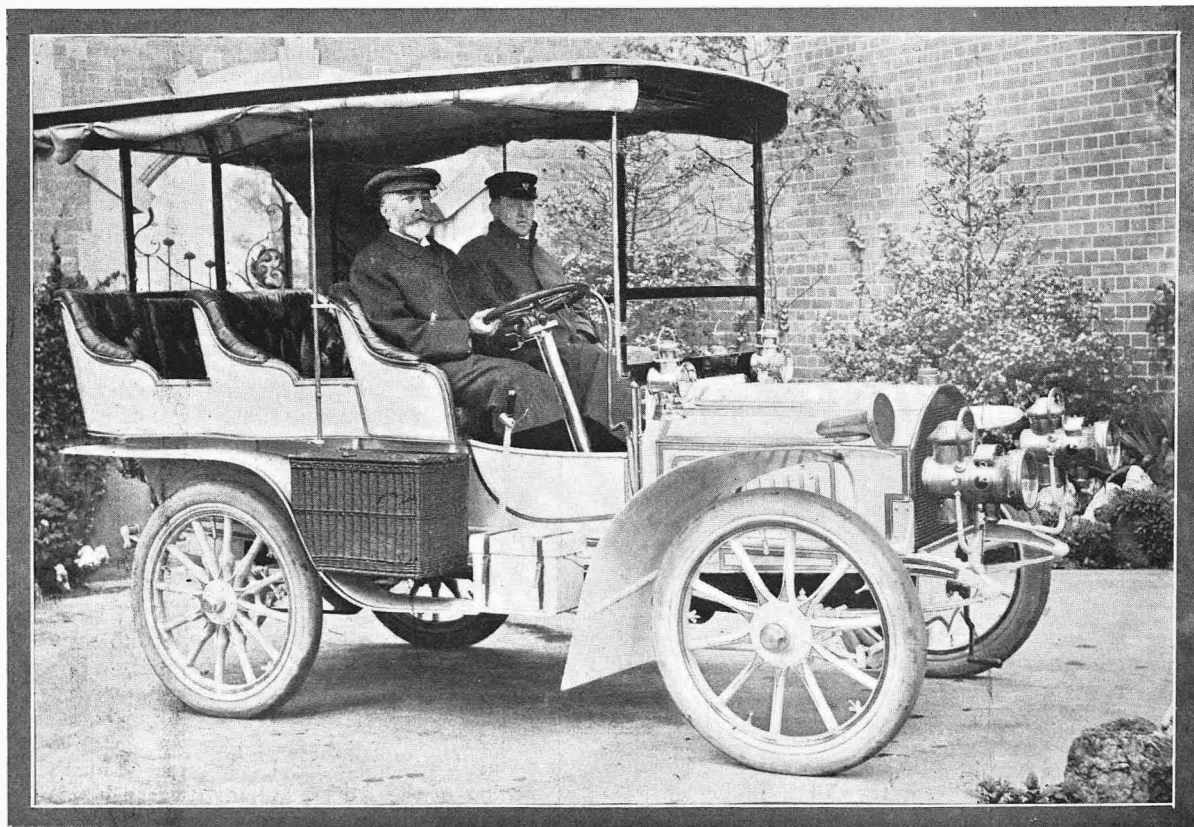
The proposed regulation under the new Act specifying that the car number shall be illuminated at night has caused some anxiety to automobilists, but we do not think it need be regarded as a serious matter, provided that the back number only is to be illuminated. The Automobile Club has taken steps to acquaint the Local Government Board with the fact that there is absolutely no need for the illumination of the front number. It may be that such a number will not be required by the regulations in their final form, seeing that the Act only gives authority for "a mark," and not for two marks, of

identification. Even if the numbers—both front and rear—are insisted on by the regulations, it is doubtful whether, in the face of the clear wording of the Act, they can be enforced. At all events, the club has respectfully notified its intention of contesting to the uttermost any regulation which requires the carrying of more than one number plate. Assuming, therefore, that the back number plate only will be required, and that it must be illuminated at night, we see no great difficulty in the way; it would be quite easy to make a tail lamp serve this purpose. To the tail lamp should be affixed a white opal glass of the regulation size, on which the one or two index letters and the registered number of the car could be painted in black characters of the specified size. This would mean that the transparency would serve as a plainly visible plate by day, and an equally legible distinguishing number by night. The only requirement would be that this illuminated number should be taken as equivalent to the red tail light at present imposed. The red light serves no good purpose whatever, and the arrangement we suggest, although not novel, is extremely simple, and would serve all the purposes of a lamp; the numbered transparency attached would be just as good from every standpoint as a number fixed to the car itself. Not only so, it would be far less disfiguring to the car and much less objectionable to the automobilist. In referring to the good work of the Automobile Club in connection with its appeal to the Local

Government Board to amend the draft regulations, we should add that this work has been most ably seconded by the Society of Motor Manufacturers and Traders, the Automobile Mutual Protection Association, and the Cycle and Motor Trades Association, to each of which the Local Government Board has submitted a draft, so that any clauses to which particular objections may be raised may receive consideration before being finally included in the regulations under the Act.

#### Vehicular Speed in London.

If there is to be a crusade against speed, over and above that of four-wheeled cabs in the streets of London, then it is fitting that such ponderous things as the electric cars of London United Tramways, Ltd., should have their wings clipped. What is sauce for the motor goose should be sauce for the electric tram gander, and at the instance of Mr. Moffat Ford, Mr. Rose, the West London magistrate, has so agreed. By seeking to enforce the strict terms of the law in connection with these elephantine conveyances, Mr. Moffat Ford has sought to do the automobile user a service, as it is by such actions that the absurdity of many of the processes against automobilists will at last be brought home to the public at large. The speeds attained by the electric cars when run under test by Professor Sylvanus Thompson varied between  $12\frac{1}{2}$  and  $14\frac{1}{2}$  miles per hour—a rate of progression quite sufficiently dangerous when it is remembered that in all probability motor cars, so easily



Mr. F. Bowden, of Nottingham, on his 24 h.p. four-cylinder Darracq. By his side is his son, Mr. Harold Bowden, a very keen automobilist, while it will be remembered that Miss Bowden, whose photograph we reproduced some time ago at the helm of her Darracq, was one of the first, if not the first lady to drive a motor in the county of Nottingham.

deflected and so rapidly arrested, will be allowed no greater speed along these same routes. It is surely absurd to place the speed limits for an undeflectable vehicle weighing fourteen tons and perfectly controlled cars of seldom more than a ton in weight at the same figure, but in the ineffable

wisdom of our legislating *alumni* this is what has been and will be done. Mr. Moffat Ford will doubtless feel sufficiently recompensed for all the trouble he has been at in prosecuting his action, when he realises that he has brought this fact prominently forward.

## USEFUL HINTS AND TIPS.

### Laying up a Car for the Winter. *(Continued from page 566.)*

#### Lubricators.

All the lubricators should be drained of any oil which they may contain, and should be thoroughly washed out with paraffin or stale petrol. Where sight-feed lubricators are fitted, or types which necessitate the using of lengths of copper pipe to convey the lubricant from its receptacle to the bearings, such pipes should be removed, and should have paraffin passed through them. For this purpose, a syringe is the best instrument to use, as the cleansing fluid can be passed through the tubes at a pressure which will ensure any obstruction caused by the congealing of the oil, or by other causes, being swept away. If this is attended to carefully and the pipes are reconnected, when the car is taken out again one will know and be perfectly satisfied that all that is necessary for the good working of those parts is a fresh supply of lubricating oil.

#### A Covering for the Car.

Having now taken all the needful precautions for the protection of the car in detail, we next have to consider the vehicle as a whole. Even in the very best of garages it is well to cover the whole of the vehicle, including the bonnet, with a light sheet, the edges of which are provided with tapes to enable it to be tied down into position on the car. Such vehicles as are provided with hoods or canopies present some little difficulty in this way, owing to the immense size of sheet which would be required to cover the car as a whole. Except for the really efficient protection of such cars as are so fitted, two sheets would be necessary, one of which would cover the body completely, slots being cut in the edges of this sheet at suitable points so that the rods supporting the canopy would not interfere with the complete protection of the carriage body. If it is thought absolutely necessary to protect the canopy by reason of its being fitted with expensive curtains a second sheet should be thrown over this, allowing it to hang down to a sufficient extent to meet the sheet which is placed over the car. Leather hoods should not be allowed to remain for any long period in a folded up position, for however good the leather may be, and whatever means are taken to provide for its protection and the retention of its suppleness, it will dry and crack where sharp bends occur in it. For this reason it is well, if possible, to let the hood remain open during such time as the car is standing in the garage. As a matter of fact, we do not believe that the summer automobilist will have his car so fitted, but it may happen that for outside reasons a car which is fitted with a hood may have to lie by for several weeks in succession without any attention, and it is for this reason that we mention hoods in connection with the subject of laying a car by for the winter.

#### Accumulator Treatment.

Having now completed the car, we next have to turn our attention to such parts as were removed from the vehicle in the first stages.

The accumulator forms the principal object for attention among those parts which have been removed from a car, and great care will have to be taken with this for its proper preservation. It should be tested, and if found to be below its full voltage (4.4), it should be recharged until this voltage is attained. The acid should now be poured out from the cells, which should be washed out with clean rain water two or three times so as to remove all the acid, and they should be afterwards filled up with pure clean rain water to a point the height of a quarter of an inch above the top of the plates. The indiarubber stoppers should now be replaced. While washing out the cells the terminals also should be carefully washed to free them from all traces of acid. They should be wiped dry, and given a coat of pure vaseline as a further protection against their corrosion.

As many cells are filled with a semi-solid electrolyte, it is impossible to subject such to the above treatment, and as the acid cannot be removed from the cell, there is only one course of satisfactory treatment open, and that is to have the accumulators recharged every six weeks at least. In the meantime a smaller four-volt lamp should be connected in the circuit, and should occasionally be allowed to remain lighted for a period of, say, half an hour, so as to enable the accumulator to discharge itself to a small extent. This helps to keep the plates in much better order than the mere recharging at stated intervals without any discharge having taken place. The same remark applies to the terminals of this type of accumulator as to those of others.

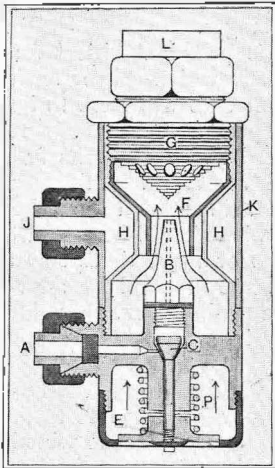
Dry batteries are now so little used that they can be dismissed in a few words. As nothing can be done to assist them in retaining their energy, it is well to take advantage if possible of what current they are still capable of giving off. The cells may be used to energise electric bells, and so save the usual Leclanché cell; or they may be used for a glow lamp or some such purpose.

*(To be continued.)*

A curious typographical error crept into this page last week. In the left-hand column (p. 566), seven lines from the end of the last paragraph under the heading of "Engine Treatment," the word "handle" should of course read "oil." The sentence should have been: "This (the rotation of the starting handle) will prevent them (the cylinders) being stuck should the *oil* oxidise."

## AN AUTOMATIC VALVE CARBURETTER.

The subject of this short descriptive article has been designed with the express purpose of using spirit of high specific gravity. Its construction is easily discerned from the accompanying illustration, which will serve to show its action. The petrol enters the carburetter through the pipe A, and passes into a small chamber, at the end of which is a fine hole, this being normally kept closed by a valve C placed in the bottom of the chamber into which the nipple B is screwed. The valve C is held to its seat



Section of the Barlow carburetter

- A, petrol inlet
- B, spray nipple
- C, fuel valve
- E, air valve and cap to C
- F, air passage round B
- G, atomising stepped cone
- H, hot air chamber
- J, hot air inlet
- K, brass body of carburetter
- L, union joint to induction pipe

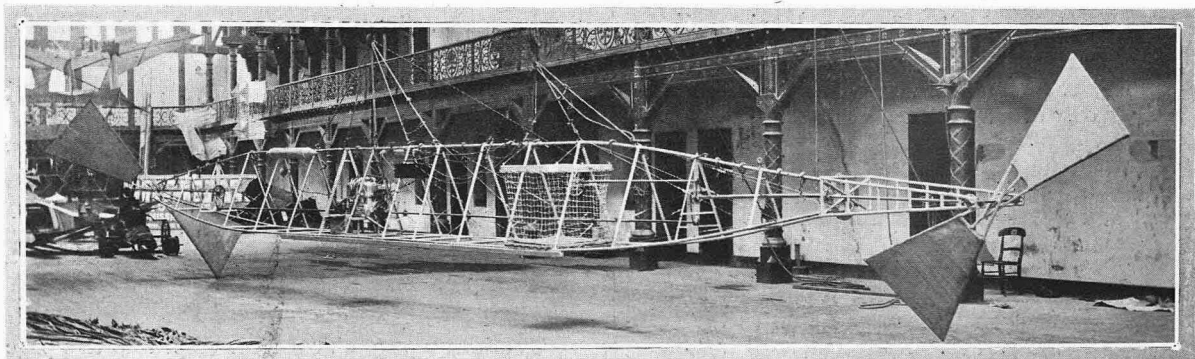
by means of a spring P and a washer stop plate E, which is secured to the stem of the valve. The carburetter consists of a brass body K, provided with a hot air jacket H H, to which a portion of the exhaust gases are passed through the union port J. The carburetter is secured to the induction pipe of the motor by means of the union nut L. In action the suction stroke of the engine causes the washer plate E, which also forms an air valve, to be sucked inwards, thus allowing the valve C to rise from its seat, admitting of the passage of spirit to the nipple B, from which it is drawn by the upward rush of the air through the neck F, as

the fuel and enable it to more completely mix with the air as it passes through the holes in G on its way to the combustion chamber.

The makers' claims for this carburetter are that it is not in any way affected by vibration, that it may be attached to the motor with the nipple in any direction, that the density of the fuel has no effect upon its working, and that a minimum of energy is needed for starting purposes. The following extract from a circular sent out by the inventors and makers of this carburetter (Messrs. Brown and Barlow, 29, Whitehouse Street, Aston, Birmingham) serves to show the line of thought pursued in designing it: "It is well known that in the float feed carburetters the alteration in the weight of the petrol makes a big difference to the height of the petrol in the float chamber and nozzle. Example.—Get some fresh petrol and let your float feed carburetter cut off  $\frac{1}{8}$  in. below the top of the nozzle. Now procure some indifferent petrol (such as is on the market at present), and it will be found that the float now cuts off the petrol from between  $\frac{1}{4}$  in. and  $\frac{3}{4}$  in. below the nozzle top; this, of course, making a serious difference to the running of the engine. In our automatic carburetter the density of petrol makes no difference whatsoever to the quantity supplied to the engine."

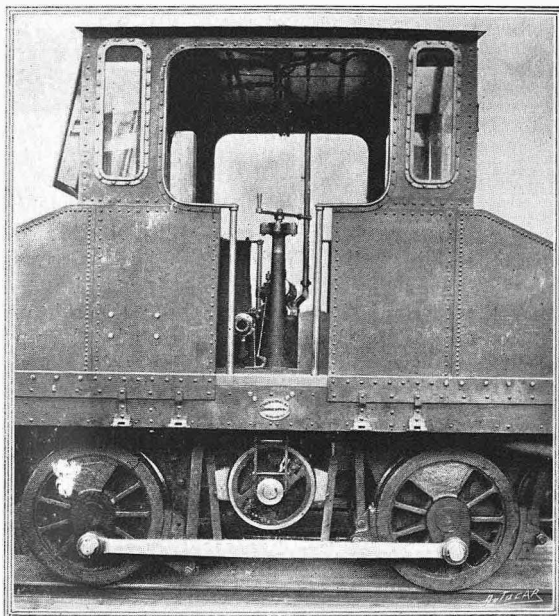
It is very necessary that the size of cylinder should be specified when ordering one of these carburetters, as each is supplied with an adapter to enable it to work efficiently with cylinders of different capacities. The standard carburetter is supplied without the adapter, and is for engines of from twenty-five to thirty cubic inches capacity. The No. 1 adapter is for use on an engine up to fifteen cubic inches capacity, and No. 2 for those having a capacity of between sixteen and twenty-four cubic inches.

We have examined one of these carburetters, and find it to be very well made, neat in design, and light in weight.

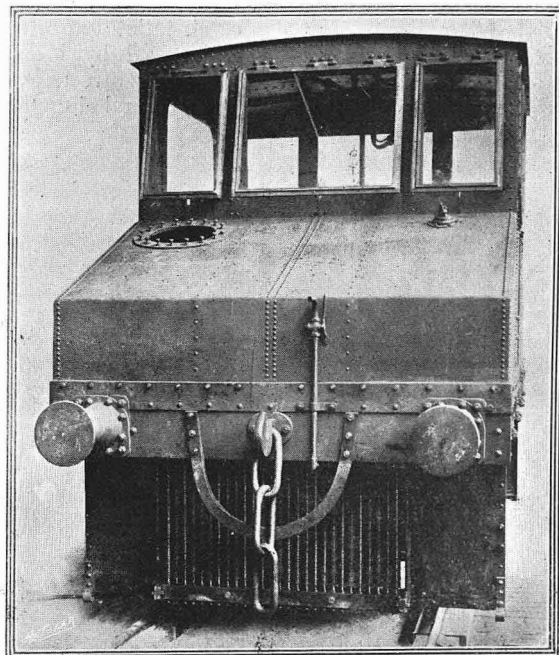


**THE BEEDLE AIRSHIP.** This aerostat contains some interesting features in its principles and construction, particularly with regard to its steering mechanism, which is seen on the right of the picture. This consists of a two-blade propeller, eight feet in diameter, mounted in a rectangular frame, which is capable of rotation at the will of the operator, so that the steering propeller may work at any degree in a complete circle in either direction, so that two opposite movements are available, owing to the reversal of the pitch of the propeller. For propulsion a propeller twelve feet in diameter is fitted at the opposite end of the carriage. The framework of the car is constructed of 26-gauge steel tubes in the form shown above. Like other modern airships, its construction has only been rendered possible by the automobile. That is to say, there would have been no engine sufficiently light and powerful for its propulsion had not the motor car practically created a new school of engineering.

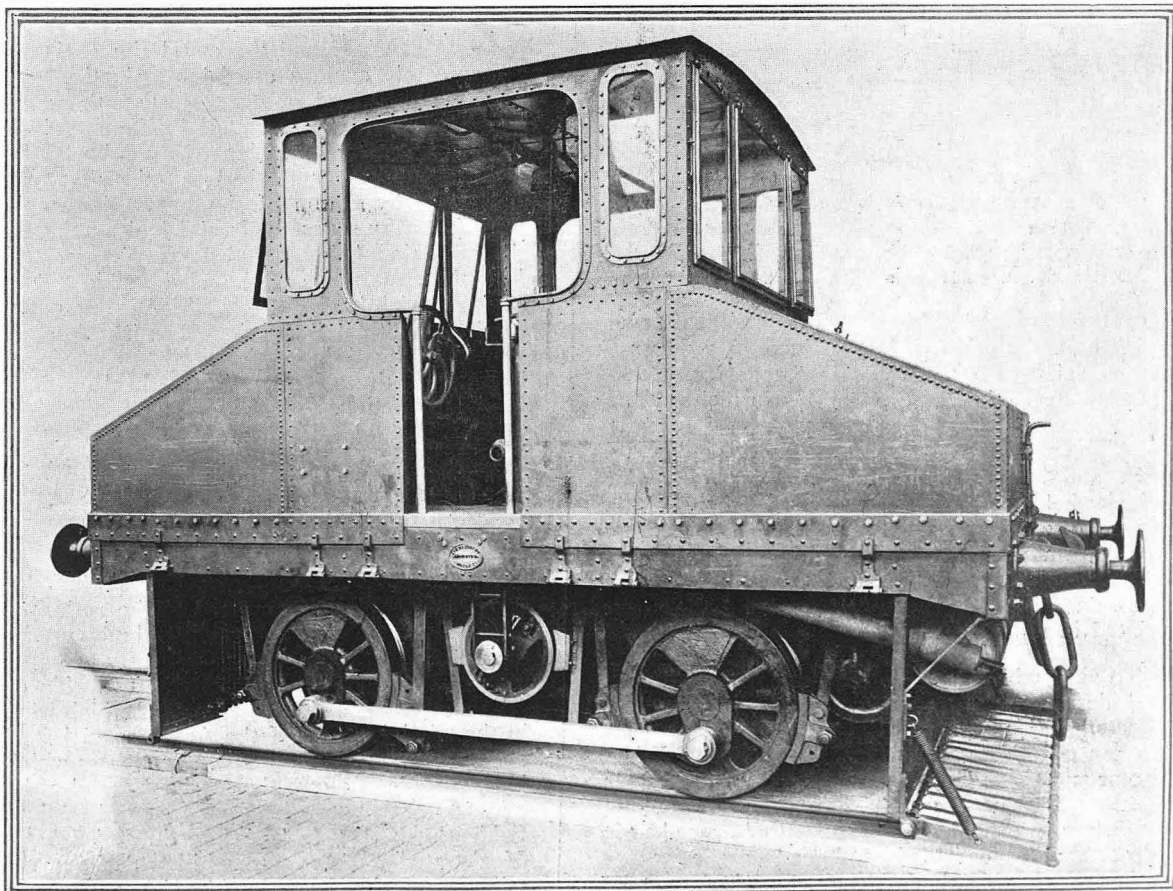
A PETROL RAILWAY LOCOMOTIVE.



A view through the cab, showing the heads of the cylinders, and the clutch actuating handle, immediately beneath which is seen the expanding clutch. The engine was described in "The Autocar" of August 15th, 1903, page 223.



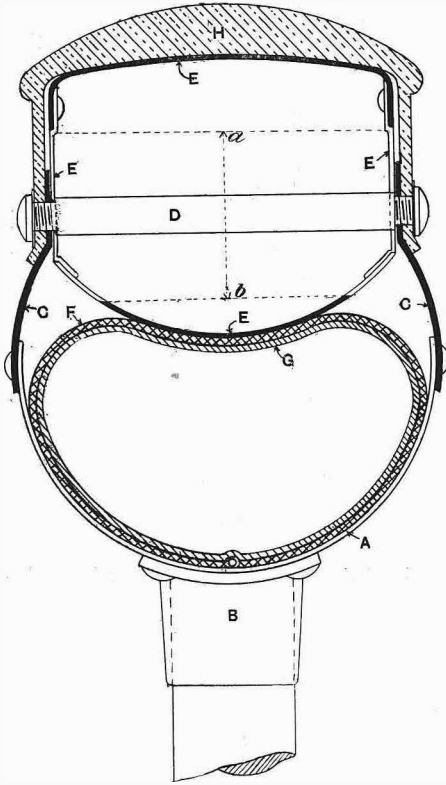
Front view of the Maudslay railway locomotive.



The illustrations on this page depict the petrol engine locomotive which has been built to the order of the London County Council, for use at Deptford, by the Maudslay Motor Co., of Coventry. The engine is of the three-cylinder type, giving 75 h.p. There are two speeds forward and reverse vacuum brakes being fitted in addition to hand-applied brakes. Its working load is to be sixty tons.

## THE PNEUMATIC WHEEL.

Some time ago (August 29th, page 281) we gave a short description of a new combination tyre which has been patented and manufactured by Messrs. R. S. Wood and Co., of Little Peter Street, Manchester. Since that time several structural alterations



A section of the Woods tyre and rim.

- |                                |                      |
|--------------------------------|----------------------|
| A, wheel rim                   | E E, hollow rim      |
| B, socket for spokes           | F, canvas envelope   |
| C C, side plates               | G, inner air tube    |
| D, stud connecting side plates | H, solid rubber tyre |

have been made in the manufacture of this tyre which have the effect of further increasing the properties claimed for it. In the accompanying section A is the steel felloe of the wheel, to which sockets

B are riveted to take the ends of the spokes. Attached to A are two side plates or flanges C C, which are held together at intervals by studs, as shown at D. Working between the flanges C C is a hollow metal rim E E. This in the old type of wheel was made from cast metal, which, needless to say, was an expensive method of construction, and one which added considerably to the weight of the wheels. Messrs. Wood and Co. now form this hollow rim in two sections rolled from sheet steel, which are riveted together. This hollow rim is provided with a covering of rubber H on its outer portion. It may be stated that the method shown of attaching the rubber is but one of many. We see no reason why the upper portion of the hollow rim should not be so spun as to enable it to take any of the well-known makes of solid tyres. The rim E E is provided at intervals with slots, as shown at the ends of D, in which the bolts depicted at D have a vertical movement, sliding between the flanges C C within the broad limits shown by the dotted lines and the letters a b. The metal rim rests upon the air tube G, which is surrounded by a second tube of canvas F, this latter protecting the rubber tube G in a very effective manner. It is very obvious that when the weight is placed upon the wheel, the tubular rim E will compress the air tube G, and so produce a resilient cushioning effect, while mud and dirt are prevented from finding their way into the wheel by reason of the rubber tread H covering the juncture between the metal flange C and the metal rim E E.

We recently made a careful examination of one of these wheels, and we must say that these alterations have made a very material difference in both the appearance and working of the wheel. In its original form the tyre had a somewhat clumsy appearance by reason of the heavy flange plates, giving it a very square and solid look at the felloe. The new rim, being rounded off, very materially alters the appearance of the wheel, which has now nothing unsightly about it, while the new constructional methods entail a saving of no less than 40 lbs. per wheel, thus bringing its weight to within about the same as that of an ordinary wheel of similarly rigid construction.

In addition to their auction sales of motor vehicles held every Thursday, Messrs. Friswell, Ltd., are going to hold a special series on Tuesdays every week, in which every lot will be sold absolutely without reserve. To differentiate from the ordinary sales on Thursday the catalogues will always be printed in red.

\* \* \*

To automobilists residing in the West of London, and desiring repairs or adjustments to their cars effected carefully by skilled and painstaking men, we can confidently recommend the Greatest Wheel Motor and Cycle Co., of 311, King Street, Hammer-smith, W. These people have a well-appointed workshop, provided with efficient tools, an electrically-lighted inspection pit, and good storage for cars. When we say that they perform any job they undertake satisfactorily and reasonably, we are speaking from personal experience.

We shall be glad if the makers or distillers of Whittaker's spirit for motor cars will be good enough to send us their address.

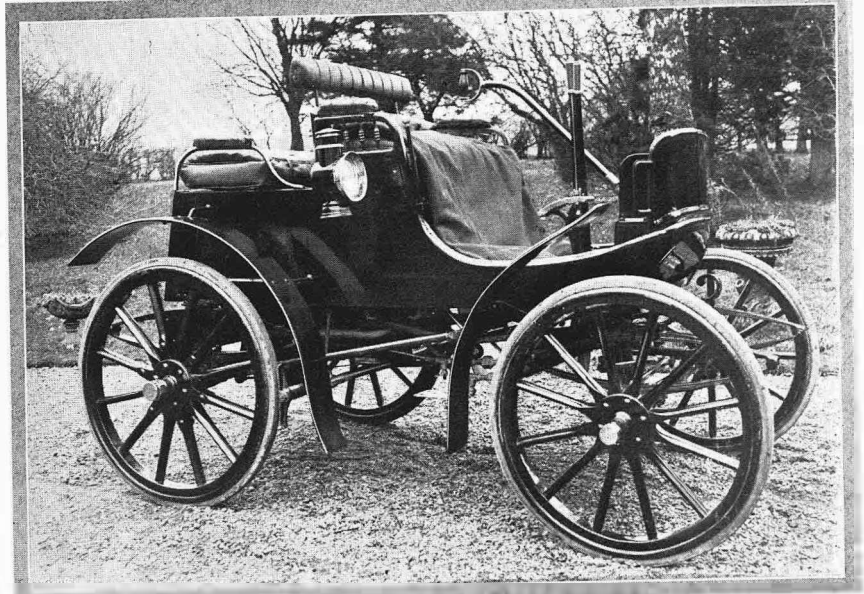
\* \* \*

It is stated that the Motor Union will take the opinion of the High Court as to the action of the Local Government Board if that body persists in their proposal that each car shall carry two numbers—one in front and another in the rear. To enable a lot of doubtful points to be settled which will arise in the administration of the Act, a special fund has been opened to defray the legal expenses which will be incurred. Among those who have already promised to contribute £10 each are Lord Onslow, Mr. Schlentheim, Dr. J. J. Ackworth, and "A County Magistrate." Any automobilist desirous of contributing to this fund should write to Mr. W. Rees Jeffreys, administrative secretary A.C.G.B.I., 119, Piccadilly, W.

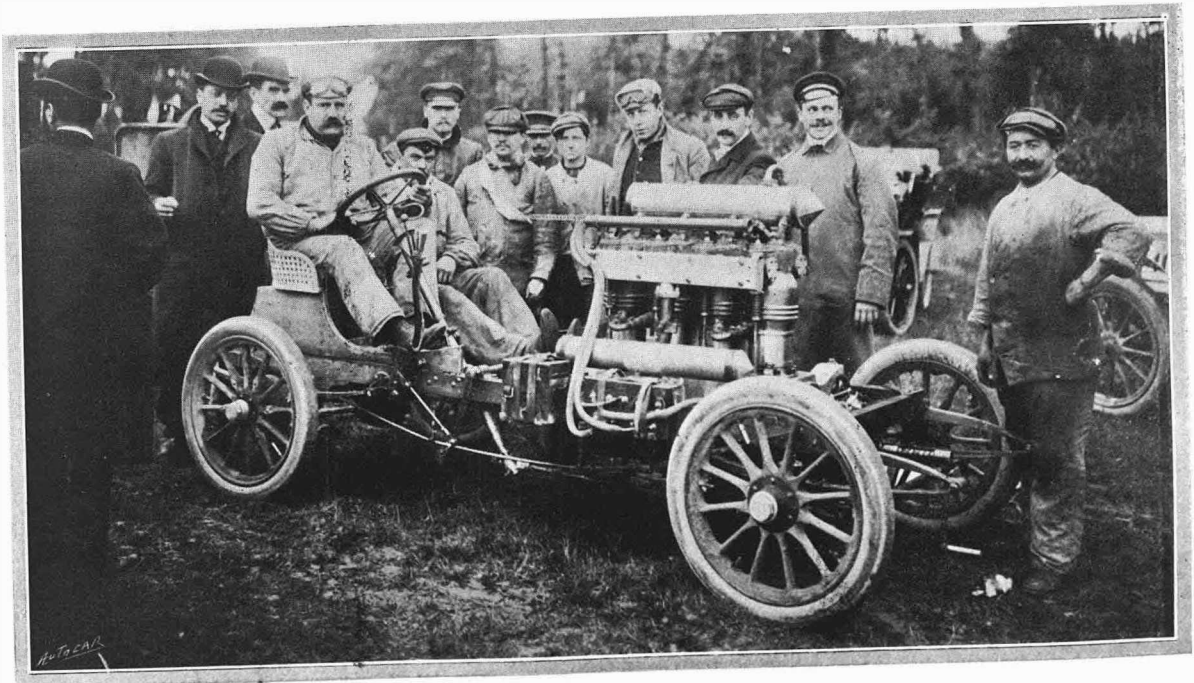
**AFTER 40,000 MILES.**

Those who took part in the Automobile Club trials in 1900 will remember the Albion cars, which performed exceedingly well, and easily did all that the conditions of the contest required. All who examined the cars were struck with the excellent workmanship, and there are quite a number of these machines in the hands of private owners in Scotland which are giving every satisfaction. Of one of these cars, Messrs. Mitchell Bros., of Dumfries, have sent a photograph, which we reproduce. This car has run about 40,000 miles, and, so far as the owners can see, there is no reason why it should not run as many more, though, of course, the upkeep would probably be somewhat larger as time went on, owing to renewals of working parts found necessary. In the two and a half years during which the car has been in use, it has been run daily in all weathers, and the repairs have been very slight, and if the cost of tyres (of which four sets have been worn out) is deducted, the total charge for upkeep and renewals works out at less than a halfpenny a mile. This record, and two or three others which we have given recently, show very plainly that the amount of work which a well-constructed car will stand is remarkable. We should perhaps add, for

the benefit of those who have not seen the latest pattern Albion, that, while the thoroughly sound work which characterised the early types is maintained, the car in its present form is a much hand-



somer vehicle, according to the average motorist's ideas, the engine being in front and the general lines of the car thoroughly up to date. The machine performed very well in the thousand miles trials in September last. Some of its special features were described in *The Autocar* of September 12 and 26.



A Boyer car stripped for racing.

## CONTINENTAL NOTES AND NEWS.

### The Dourdan Record Meeting.

The postponed meeting at Dourdan on Thursday of last week was carried out under conditions that could scarcely have been hoped for after such a long spell of wet and stormy weather, and if the north wind was a trifle boisterous and cold, it did good service in drying up the road and leaving the surface in fine condition for record runs. Blowing across the course at a slight angle, the wind rather favoured the competitors, though to only a very small extent, and the remarkably fast times of some of the cars could not have been due to any assistance obtained in this way. The arrangements carried out in obedience to orders from the local prefect were very strict, the spectators being required to keep on the banks that lined the course on each side, so that they were separated from the road by the grass borders, which give such a great breadth to these forest highways. Instructions had been given to the police that if the public got on the road the trials were to be stopped. The cars competing were the same as those present on the previous occasion. The new Clément-Bayard cars naturally attracted a good deal of attention. The four-cylinder motor is of the classic type with the valves on opposite sides, and the half-time shaft gearing is entirely enclosed, as indeed is everything in this engine. The jacket casing appears to be of aluminium or an alloy of this metal, and it is closed at the top by a flat plate, which necessitates a good many bolts to secure a water-tight joint. A feature is the ample cooling of the valves, which are themselves of large diameter. The big Noe Boyer car has a motor of the Panhard pattern, and its peculiarity is the absence of change-speed gear, power being transmitted direct by an arbor shaft. This, of course, is purely a racing machine, the idea being to utilise the power to the best advantage possible by driving direct. As might have been expected, it entirely failed on the Chateau-Thierry Hill, and it did not show up to any great advantage with the other big vehicles over the Dourdan course. Among the voiturettes there were, as usual, some curious examples of weight stripping, until it seemed really extraordinary that the big motors did not part company with the light frames to which they were simply attached by a few bolts. The Passy-Thellier of Tavenaux had a Gobron-Brillié motor with the cylindrical tank on top rising like a pyramid that almost concealed the driver behind, and the De Boisse was another curious example of the practice of cutting things

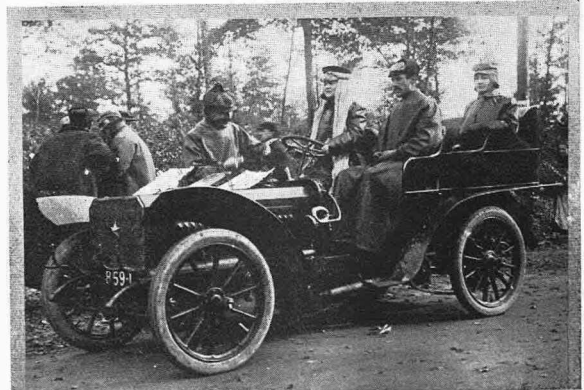
fine, which the French have reduced to the level of a fine art.

The vehicles were sent off on a slightly undulating road on the border of the forest, and as each started the number was telephoned down to the finish. The car had nearly a thousand yards in which to get up speed before crossing the line, where another telephone had been installed with the Mors electrical timing apparatus, and as the competitor crossed M. Gaudichaud depressed the button of his instrument, and telephoned the time down to the finishing post, so that M. Tampier was able to call out the net



A view of the Dourdan course. A Darracq at full speed.

time almost as soon as the car had completed the course. The motor cycles (which were the feature of the meeting), with those that competed in the previous meeting, outnumbered the cars, and the performances of some of these were no less sensational than those of the vehicles themselves. This part



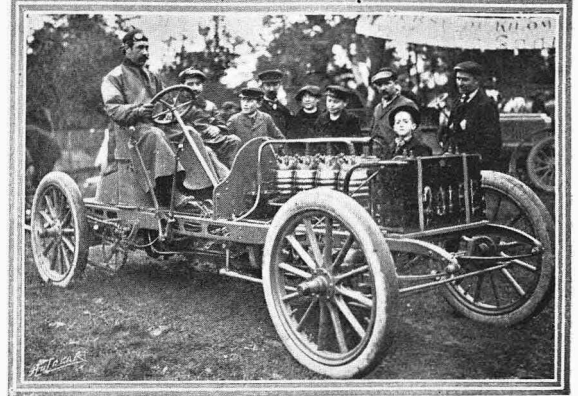
Madame Du Gaste at the wheel of her 20 h.p. Automotrice.





A competing car at full speed. The smoke issuing from the side is the result of an overdose of lubricating oil.

of the trials is fully reported in the *Motor Cycle*. A satisfactory thing about the meeting was the distinction made between the racing and touring cars, and these latter were not, as on previous occasions, merely racing machines disguised, but this weeding out of the speed vehicles left very few touring cars in the trials. Few of them, moreover, were driven by private owners. The touring cars, which, of course, had to carry their full loads, did not show any remarkable speeds, except the Gardner-Serpollet, of Pelzer, who did an average of a shade under fifty-six miles an hour, and only three succeeded in doing the flying kilom. in less than a minute. The racing cars made a perfect holocaust of records, and the meeting was a conspicuous triumph for the Gobron-Brillié, of Duray, which covered the flying kilom. in 26 2-5s., which is equal to 84.68 miles an hour. This beats by 2-5s. the official record of Rigolly on the same type of vehicle at Ostend during the summer. The vehicle was illustrated and described at the time of its first appearance at Nice. Built up of tubes with an abnormally long wheelbase, it is propelled by a 110 h.p. Gobron-Brillié engine with float feed carburetter, instead of the usual positive feed on the smaller types of motors, and a feature of its construction is the double clutch, the



A 40 h.p. Tony-Huber racing car. In this vehicle the side members of the pressed steel frame have been perforated for the sake of lightness.

first metal to metal well greased to allow of the engine being introduced gradually to the load and then the ordinary leather-faced cone clutch. In all the events in which he has taken part Duray has run second to Rigolly, and in the absence of the Gobron-Brillié "crack" the success of Duray was almost a foregone conclusion. Among the light carriages the new Georges Richard-Brasier again showed remarkable speed qualities by carrying off the first two places, the winner in this category doing the flying kilom. at the rate of seventy-two and a half miles an hour, and Wagner's Darracq was easily victorious in the voiturette class with an average of 64.17 miles. The results were as follow:

#### BTG CARS.

Duray (Gobron-Brillié), 26 2-5s.  
Le Blou (Gardner-Serpollet), 27 3-5s.  
Jeandrie (Mors), 29 3-5s.  
Loste (Noe-Boyer), 36 1-5s.

#### LIGHT CARRIAGES.

Danjean (G. Richard-Brasier), 31 3-5s.  
Brasier (G. Richard-Brasier), 31 3-5s.  
Harriot (Bayard), 32 1-5s.  
De Gosselin (G. Richard-Brasier), 32 2-5s.  
Baras (Darracq), 34 1-5s.  
De la Tou'oubre (Decauville), 39s.



Weighing the cars preparatory to the hill-climbing tests at Gaillon.

## VOITURETTES.

Wagner (Darracq), 34 4-5s.  
 Tavenaux (Passy-Thellier), 36 1-5s.  
 Combier (G. Richard-Brasier), 37 3-5s.  
 Barillier (G. Richard-Brasier), 37 3-5s.  
 Denis de Boisse (De Boisse), 41 1-5s.

## TOURISTS.—CHASSIS OF 18,000 TO 25,000 FRANCS.

Dime (Automotrice), 1m. 9 4-5s.  
 Gasté (Automotrice), 1m. 16 4-5s.

## CHASSIS OF 8,000 TO 12,000 FRANCS.

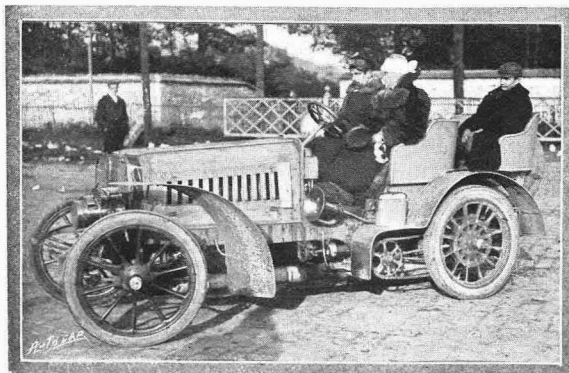
Pelzer (Gardner-Serpollet), 40s.  
 Nielsen (Noe-Boyer), 56 1-5s.  
 Edwards (C.G.V.), 59s.  
 Tranchant (Gladiator), 1m. 6 1-5s.  
 Marnier (Tony-Huber), 1m. 9 4-5s.

## CHASSIS OF LESS THAN 4,000 FRANCS.

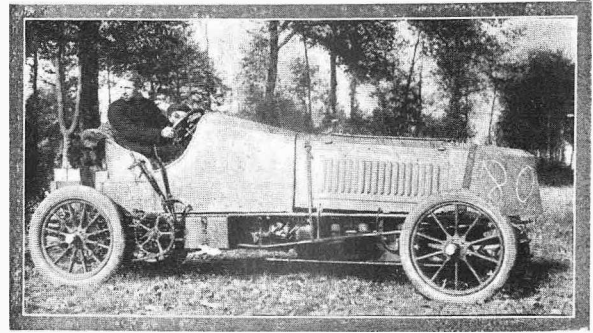
P. Roy (P. Roy), 1m. 26 2-5s.  
 Gachet (Noe-Boyer), 1m. 35 2-5s.

## The Vienna Alcohol Exhibition.

Next year there is to be held at Vienna, in the Rotunda, at the end of the Prater, a particularly important exhibition relating to alcohol, in which there will naturally be special sections for motors and autocars. This is being organised under the patronage of the Austrian Government, which secured the official participation of all the European countries where the alcohol question has been coming into prominence, and the French Government readily accorded its support to the section which has been reserved for French exhibits. The alcohol problem is receiving so much attention in Germany and Austria that the time does not seem to be far distant when nearly all the motors and cars will be running with this spirit, as indeed is already the case with industrial engines; and if the French manufacturers are to retain their business over the greater part of the Continent they must show that they are capable of keeping in the van of progress with alcohol motors. For this reason they cannot afford to let the Germans make a better show than themselves at the Vienna exhibition. Unfortunately, this exhibition coincides with the great manifestation at St. Louis, at which the autocar firms are particularly anxious to be properly represented, and finding it very expensive to send vehicles to the two shows it seems at one moment as if they would abstain altogether from the Vienna exhibition, from which the Government eventually decided to withdraw its support. Thereupon a very active campaign was carried on by the committees



The 60 h.p. Panhard with which Heath won the tourist class, it is to all intents and purposes an ordinary racing car with a tonneau body fitted.



The 110 h.p. Gobron-Brillie which, driven by Duray, covered the kilometre in 26½ seconds, equal to 84·68 miles per hour.

of the rival shows, and the claims of Vienna were put forward so strongly that a number of makers were disposed to abandon the St. Louis exhibition. The situation became so complicated, and was likely to do harm to both exhibitions, that the Government determined once more to patronise the Vienna show; so that it is very probable the autocar firms will make the sacrifice of exhibiting both in Austria and America.

## The Gaillon Hill-climb.

The annual hill climb, which event usually brings to a close the French automobile season, took place on the well-known hill, "Sainte Barbe sur Gaillon," near Paris, on November 8th.

As will be seen from the accompanying table of results, the meeting was a great success, at least so far as organisation, speed, record breaking, and engine endurance are concerned, but, on the other hand, we regret to have to report two very serious automobile accidents. Though they did not occur to actual participants in the race, still as in the first one an actual competitor who was about to compete was killed, and as in the second two foremen of the well-known firm of Gardner-Serpollet met with fatal accidents, it will be easily understood that a very decided feeling of gloom was cast over the day's proceedings.

The 50 h.p. Wolseley, the only English car entered, had the very hardest of luck. It was the last but one to be started in the big car class, and just after starting the Renold chain connecting the clutchshaft with the primary shaft in the change-speed gear box broke. There was only one more car to run, and the officials would not wait while a new chain was fitted. We must say that this was a most unsportsmanlike action on their part, and they might have put themselves to a small inconvenience by waiting a few minutes while another chain was put on. We do not for a moment infer that the 50 h.p. would have beaten the 110 h.p. Gobron-Brillie, but everyone, including the entrants, would have been interested to see how its time compared with that of the other and more normal racing cars. It has come to this now. There are normal as well as abnormal racing vehicles, and the 110 h.p. machine is pretty generally regarded as being in the second class. The results were as follows:

## TOURING CARS.—CHASSIS COSTING LESS THAN £160.

1. Fachet (Noe-Boyer, 6 h.p.), 2m. 37 4-5s.
2. P. Roy (P. Roy, 6 h.p.), 2m. 43 4-5s.
3. Davaux (Prosper Lambert, 6 h.p.), 3m. 3 1-5s.

## CHASSIS COSTING FROM £160 TO £320.

1. Menager (De Dion-Bouton, 9 h.p.), 2m. 12s.
2. Gabreau (Noë-Boyer, 10 h.p.), 2m. 13 1-5s.
3. Williams (Aster, 10 h.p.), 2m. 31 4-5s.

## CHASSIS COSTING FROM £320 TO £480.

1. Pelzer (Gardner-Serpollet, 15 h.p.), 1m. 2 3-5s.
2. Axel Nielsen (Noë-Boyer), 1m. 48 1-5s.
3. Marnier (Tony-Huber), 1m. 49 4-5s.

## VOITURETTES.

1. Wagner (Darracq, cylinder capacity 4½ litres), 40s.
  2. Tavenaux (Passy-Thellier, cylinder capacity 3½ litres), 58 1-5s.
  3. De Boisse (Denis De Boisse, cylinder capacity 3½ litres), 1m. 4-5s.
- World's record, averaging 90 kiloms. the hour. Old record, Thellier 47s.

## LIGHT CARS.

1. Hanriot (Bayard-Clement, cylinder capacity 9½ litres), 38s.
  2. Osmont (Darracq), 43s.
  3. Becounais (Darracq, cylinder capacity 8½ litres), 48 1-5s.
- World's record, averaging 94 kiloms. 736 metres. Old record, Rutishauser, 40 4-5s.

## LARGE CARS.

1. Rigolly (Gobron-Brillié, alcohol, cylinder capacity 13½ litres), 33 3-5s.
  2. Duray (Gobron-Brillié, alcohol, cylinder capacity 13½ litres), 35 1-5s.
  3. Pelzer (Gardner-Serpollet, steam), 36 4-5s.
- World's record, averaging 107 kiloms. 742 metres. Former record, Le Blon, 36s.

## GENERAL CLASSIFICATION.—I. TOURISTS.

1. Heath (Pamhard and Levassor, 60 h.p.), 49 4-5s.
2. Count de Siroganoff (Mors, 40 h.p.), 56 1-5s.
3. Pelzer (Gardner-Serpollet, 15 h.p., steam), 1m. 2 4-5s.

## II. RACING CARS.

1. Rigolly (G. V. Gobron-Brillié, alcohol, cylinder capacity 15½ litres), 33 3-5s.
  2. Duray (G. V. Gobron-Brillié, cylinder capacity 13½ litres, alcohol), 35 1-5s.
  3. Pelzer (G. V. Gardner-Serpollet, steam), 36 4-5s.
- Note.—One litre equals 1¼ pints.

## THE 1904 GORDON-BENNETT RACE.

Our German contemporary *Der Radmarkt und Das Motorfahrzeug* advocates the 1904 Gordon-Bennett race being held over a course which it has mapped out in Westphalia, in preference to the present Homburg route. Writing us on the subject, they say:

"We vouch for the correctness of our assertion that the Taunus stretch is unsuitable for the Gordon-Bennett race on account of the many curves in the decline, and in which the trees do not allow the road to be visible. Those curves prevent a full development of speed, and would in the race give unquestionable cause for accidents.

"On the other hand, the 140 kiloms. (about) stretch between Bielefeld and Paderborn (Westphalia), mentioned in ours of October 10th, is particularly commendable as a racecourse.

"(1.) It goes through a district which is but very little inhabited.

"(2.) It has few and always visible curves.

"(3.) The surface is almost completely free from dust, and dries in a few hours, even if it has been raining before for days.

"(4.) The width of the road is not less than ten metres, and on longer stretches (ten to fifteen kiloms.) as much as fifteen metres.

CORPORATE<sup>®</sup> AUTOMOBILISM.

## Interesting Experiment at Bolton.

The Bolton Corporation are experimenting with a £750 12 h.p. two-cylinder Sterling motor 'bus, which scales two tons without load, and is guaranteed to carry fourteen passengers, averaging ten stone, up an incline of one in eight. At the first trial, however, it only took eight people up a brow of one in eleven; but once adjusted the 'bus behaved magnificently, taking nineteen up the heavy incline which it will have to work over. Several trial runs have been made in the suburbs on some of the worst bits of hilly road in the County Palatine. There are two notorious inclines, which cause most cyclists to walk, between Bolton and Chorley, but the 'bus negotiated them without faltering. The road to Belmont is almost absolutely unrideable on account of its length, gradient, and disgraceful state, owing to the heavy traffic which it carries—indeed, at one point all in the motor 'bus were pitched out of their seats. On one route—to Darcy Lever—where there is a penny train service, and the people have to climb a steep hill to get to the station, the motor 'bus will pick up passengers at their own doors. The Corporation sent a man to the Sterling works for three weeks' tuition, and he with five others—including Mr. Madgwick, the Bolton agent—plus 3½ cwt. of luggage, drove the two hundred miles from Edinburgh to Bolton by road, in indescribably bad weather, with hour after hour of torrential rain, and on very heavy roads. The last ninety-one miles were covered in one day, in less than nine hours' travelling time, coming over Shap Fell from Penrith, and up other steepes such as Lancaster towards Galgate, Preston towards Bamber Bridge, Chorley towards Adlington, and many others. The Bolton Corporation Tramways Committee are anxious to put other suburbs into quick, cheap touch with the town. It will please the rural residents, pay the Corporation (so we hope), and bring money to the town's shopkeepers. At the same time but little can be done with one car. For the work in the Bolton district quite a fleet of cars is required.

## A SAFE STARTER.

A few days since, Dr. C. E. Abbott, of Cheltenham, showed us a very simple and ingenious device, the invention of Messrs. Hughes and Son, of the same town, which he had fitted to the boss of his starting lever on his 4½ h.p. De Dion. This device made it absolutely impossible for the starter to receive what is known as a back kick from the motor should it, by reason of unduly advanced ignition or other cause, fire backward when starting. To demonstrate its efficiency, Dr. Abbott had the ignition fully advanced, and the engine started several times. Fierce back kicks, which would probably have meant a sprained or broken wrist, took place without the least inconvenience to the starter. The device automatically released the handle every time. We are not at liberty to describe the method by which the ends are obtained, but it will suffice to say that it is extremely simple, and once fixed it is practically impossible for it to go out of adjustment.

## Correspondence.

The Editor is not responsible for the opinions of his correspondents.

### STEAM CARS.

[3279].—If Mr. Gooch does not object, I should be much obliged if he would tell me whether he has ever had any serious breakdown owing to the failing of his engine, and whether he has had much trouble with his connecting rods?

Does he think the position of the lubricators on the dashboard and water and fuel tanks, etc., is quite satisfactory?

Will he also mention whether he uses pneumatic or solid tyres, and what make?

I have ridden on an 8 h.p. Daimler and a 24 h.p. French make, about which I have learned a great deal from a friend of mine. It is a petrol car, and runs about seventy-five miles on four gallons of .710 petrol. It is a four-cylindered engine with magneto ignition, and has run for about five months without trouble, averaging fifty miles a day. The usual load is six persons with a Limousine body.

I am very anxious to know about the Miesse steam car.  
SPECTATOR.

[3280].—I am sorry Mr. Frederic Coleman, of the White Steam Car Co., thinks I have criticised their car unfairly and exaggerated the danger of carrying petrol in quantity upon a steam car. Mr. Coleman, I think, will admit that the petrol tank or pipes on their car might accidentally be broken or caused to leak, in which case were the petrol to take fire nothing could save the car and, perhaps, its occupants from destruction. In justice to Mr. Coleman, I admit this danger exists, though certainly not to the same extent, on all petrol cars fitted with tube ignition, or on any petrol car at night when lamps are lighted; also when any light is brought about the car; and the number of cars which have been partially or wholly burnt up through accidentally setting fire to the petrol prove that danger really does exist, and is in no way merely a creation of exaggerated imagination. For this reason alone the makers of both steam and petrol cars should do their utmost to design a car to use paraffin. In the case of the steam car I do not see where the difficulty arises.

As regards the question of cheap fuel, no doubt the White Co. can obtain the B. or C. petrol in London, but this is not procurable in my district, although motors are common here, and the cheapest petrol I can obtain is 1s. 7d. per gallon.

Moreover, I use my car for touring in all manner of out-of-the-way places—for instance, amongst others, some years I have done upwards of two thousand miles per year in Wales. I certainly should not be able to obtain the special grades of cheap petrol there, as there is absolutely no demand for it, so should have to use the ordinary, thus putting myself to considerable expense during a large portion of my yearly mileage.

Paraffin, on the other hand, I could obtain anywhere, and its use would be unattended with any danger.

For the reasons I have given, although believing the White to be a good car, I cannot entertain purchasing one, with its present fuel, as my next year's machine.

I think the White Co. will see exactly how matters stand, and will not now be of the opinion that I have criticised their car unfairly. In advocating the paraffin burner I was only suggesting to the White Co. an alteration which, in my opinion, would greatly improve their car. I can assure them my remarks were written in a friendly spirit, and in no way intended to injure the sale of their car, of which I have a very high opinion.  
H. W.

### THE NEW REGULATIONS.

[3281].—I have twisted the various details of this subject into all manner of shapes, but fail to see how the new regulations are going to work. I presume that the front plate will be illuminated by a light thrown upon it from a lamp supported by an extended bracket or arm, and as this lamp will doubtless shine direct into the eyes of the driver it may seriously interfere with his steering, as it will to a great extent neutralise the effect of the road illumination from his side lamps, and if acetylene be adopted he would be safer off the car. The glare from the back lamp will be unpleasant for the occupants of the tonneau, and in the

case of a car seated *dos-à-dos* or dogcart would be most trying.

In the latter style the plate would have to dangle from the front edge of the footboard, and require some sort of complicated adjustment to admit of being altered whenever the footboard was desired to be hinged up if not in use. Therefore as I cannot so far comprehend the satisfactory working of the affair with its many other annoyances, I have decided on December 31st to jack up my wheels, give my car a good clean down, vaseline those parts liable to rust, and throw a cover over it, or sell it if I can get a satisfactory price. This will enable me to stand by and watch the course of events, the ball of which will doubtless be set rolling by automobilists whose cars have cost between one and two thousand pounds, and by not using my car I need not pay the two guinea licence.

THE BARON.

### UNOFFICIAL TRIALS.

[3282].—I am afraid I cannot agree with Mr. Fred T. Jane's letter in your last issue, in regard to the question of "unofficial trials," particularly "the ones in which only private owners can participate."

Quoting from his letter, he says: "As one of the public and a car user, I wish to say that any trials are of interest, and I do not care a fig whether the Automobile Club puts its blessing on a trial or not." Surely, the latter condition makes the trials more valuable, and protects the private user from being deceived. Apparently, Mr. Jane has taken as little trouble to read the conditions under which the recent Automobile Club's reliability trials were held as he has done to ascertain from results already published whether both the cars he names tried the hill tests. The former would probably convince him that a certain rule makes it impossible for "specially prepared cars" to compete, and the last issue of the *Automotor Journal* gives a splendid comparison of the hill-climbing capabilities of the various types of cars. From this table it will be observed the 10 h.p. M.M.C. is not mentioned (it was not amongst the entries), and the 12 h.p. De Dion compares more than favourably with other cars in its class, particularly when the cost of same is taken into consideration.

The best car made will not do even an average performance in the hands of the private owner who does not thoroughly understand his car, and if he places it in the hands of his *chauffeur* to drive, the chances are that a number of things are overlooked which militate against a good performance.

The manufacturers spend a good deal of money in entering for and competing in these trials, and it is only reasonable that they should protect themselves as far as possible by satisfying themselves that the conditions of the trials are fair for all parties, and that the judges shall be impartial gentlemen with no axes of their own to grind in favour of any particular vehicle.

It will be a bad day for the manufacturers when the public arrive at their conclusions from unofficial trials of cars driven by the present average everyday user.

J. W. STOCKS.

DE DION-BOUTON, LIMITED.

### THE OLDSMOBILE.

[3283].—Would any of your readers who are users of Oldsmobile cars give me their experiences of the same for the past six months, more especially as to reliability, etc., etc.?  
MONTAGUE TENCH.

### MARINE MOTORING.

[3284].—The abstract of the paper on "Marine Motoring," by Mr. Bernard Redwood, appears to be a report of the whole paper, but with all mention of our fast motor launch excluded. Mr. Redwood remarked in his paper that Messrs. Simpson, Strickland, and Co., Ltd., with a 30ft. launch had obtained a higher speed than any launch of similar size in English waters. It therefore seems extraordinary that all notice of the fastest launch in England should be excluded from your report; it strikes me as being very much like the play of Hamlet with Hamlet left out.

I need scarcely assure you that I do not in the least intend to attach any blame to you personally in the matter. I feel sure that it must have occurred unwittingly.

WM. CROSS.

SIMPSON, STRICKLAND, AND CO., LTD

## PRIVATE TOUTING.

[3285.]-All *bona-fide* people are indebted to Mr. Austin, of the Wolsey Co., for his letter in last week's issue of your journal. We have long known of the nuisance referred to, and our only course where no redress could be had was to cut adrift such firms as "tout" to clergymen, officers on half-pay, and all the rest of the hangers-on.

The business is not from a dealer's point of view a lucrative one. We have stock to keep, and it may very likely happen by the end of the season that that stock has dropped so much in value that any profit we have made is lost in this other direction. Often at the end of the season prices for stock have to be accepted much below value, and if makers wish to do business through the *bona-fide* trader they will have to give him better support than they have done in the past.

Makers and dealers before quoting to any firm or individual should satisfy themselves that they are dealing only with those who are in the business, and by that we mean firms who keep stock and a thoroughly equipped repairing shop. A list of these traders or agents in Scotland can be had from the secretary of the Scottish Motor Manufacturers' and Traders' Association, 1, York Buildings, Edinburgh.

It has been our misfortune, and no doubt that of others, to find on introducing a particular make of car that our client has bought it through a small cycle agent less five per cent.—a thing, of course, which the cycle agent could not be blamed for, but exceedingly mean on the part of the purchaser.

The dodging and scheming tried by "touts" to secure business would be amusing if it were not so serious. It remains for the makers and dealers to say if it is to continue.

As dealers, we shall expect to know from the makers, either by letter or by advertisement, who are and who are not the friends of

BONA-FIDE TRADERS.

[3286.]-We do not trouble you much with correspondence, but read with great interest your leading editorial notes of last week and the letter from Mr. H. Austin.

Without commenting on the demerits of the case—which are obviously rotten to the core—we enclose you two copies of stereotype letters which are replies to requests in this morning's post.

For FRISWELL, LTD.,

C. FRISWELL, managing director.

[COPY.]

Sirs.—In answer to your letter of yesterday, our discount to the trade is — per cent., but this discount is only given to agents who actually purchase machines for stock to resell again. We do not give introductory commission under any circumstances whatever.

To shipping agents.

Sirs.—We have to acknowledge receipt of your letter of the 5th inst., but unless the machine is for trade purposes we do not allow any discount whatever for home use.

## FUTURE TRIALS.

[3287.]-In your issue of 7th Nov. I see a most interesting letter from Mr. F. T. Jane which seems to touch a good many points of interest to amateurs. I also am one of those who would like to see all the trials conducted by amateurs with cars taken out of stock, not specially tuned up for the event. As they are at present arranged I take no account of them, nor do any of my motoring friends.

The only way to do this is to have more private users and less motor manufacturers on the committee of the Automobile Club.

Truly the car is for the user.

CLAUDE GOULDESBOUGH.

[3288.]-Owing no doubt to a lamentable lack of oratory on my part, my remarks at the dinner of the Society of Motor Manufacturers and Traders were not correctly given in your last issue. That is, your representative does not seem to have caught quite what I meant to say; though, I admit, there is much excuse for him in view of the lack referred to.

The idea I desired to bring forward was that if reliability trials are still to be held, I would like to see the competitive side of them given less prominence in favour of

a system of "hall marking." Let the tests be as severe as possible; but let all those cars which stand the tests successfully (within reasonable limits—a margin should be allowed for minor accidents which would not count in the estimation of a car user under normal conditions) have a diploma. Those cars which do not stand the tests naturally would be knocked out, and would receive a bad advertisement accordingly. Seeing how much luck enters into these trials, I think it is a pity to give gold medals. One car has a broken plug, and loses a few marks; but no one can say it is thereby inferior on that account.

A. C. HILLS.

## TYRES.

[3289.]-I have just noticed the letter from H. S. (3268), in which he takes the despondent view that after perusing the "analysis" of the percentage of tyre troubles in the recent trials he has written to *The Lancet* advising his professional brethren to have nothing to say to any car which runs on pneumatic tyres. It may be of assistance to your correspondent if I inform him that I drove my 9-11 h.p. Clément, fitted with Collier tyres, from Cheltenham to London (a distance of over hundred miles) with two tyres punctured (one back and one front wheel), driving full speed all the way. On examining the tubes and covers next day, the damage revealed one inner tube with only the original puncture. The other tube had about six small cuts. The outer covers had two small cuts, which were readily repaired. On another occasion I drove twenty-two miles with a back tyre down. No damage was done beyond some rips in the inner tube, which cost 6s. to revulcanise. Now, I am not advising anyone to follow this practice as a rule, but I want your correspondent to realise that there is one pneumatic tyre which a medical man can use with a feeling of confidence on such journeys as he would regularly undertake. Should a puncture occur (which is very rare), he can at any rate reach home without having to stop on the road—perhaps on a dark, wet night—to effect tyre repairs.

The only drawback to the Collier tyres is the length of time which it takes an amateur to remove an old and insert a new inner tube. On the other hand, this can be done at one's leisure in the coachhouse instead of by the roadside. Should any reader like to examine my covers after this usage, he is quite welcome to do so.

Llanely.

BASIL WM. VALENTIN.

[In regard to the analysis referred to of the tyre stops in the 1,000 miles trials, the makers of the Buffer solid tyres point out that they, of course, had no tyre stops. This was made plain in the report of the trials.—Ed.]

[3290.]-There is very little doubt that the expense and worry of pneumatic tyres prevent a large number of people from becoming purchasers of motor cars. The expert motorist as well as the inventor is always looking for a tyre that cannot be punctured, but no one has really produced a tyre absolutely proof against punctures or collapse in some form or other. The greatest objection, in my opinion, to the best pneumatic tyre is its uncertainty. It is of no use to tell customers that this tyre has travelled 1,000 miles, more or less, without a puncture, or without requiring pumping up: I may use this identical tyre and get it punctured in less than 1,000 yards, and there is no guarantee against such failures, which are known without exception to every motorist and to the public generally. Apart from the worry and expense, there is the continued uncertainty of the occupants of the car not knowing what is going to happen next, and where they may be stranded, which no foresight on their part can prevent. This is where the pneumatic tyre differs from the general mechanism, which the public now realise in most high-class cars is perfectly reliable, and that it is simply a question of tyres as to whether they adopt the motor car in preference to the carriage or not. If they felt that the tyres were as good as the motor cars we should have no difficulty in doubling the number of motorists in a very short time.

Some of the manufacturers boldly say that their cars run as well on solids as on pneumatics—those manufacturers appear to be doing the largest business, simply because they are meeting the public demand, and I venture to suggest that the solution of the problem lies in adopting a good solid tyre that is comfortable and reliable at

high speeds—as the Buffer, for instance, was proved to be in the recent Automobile Club's reliability trials—and that such a solid tyre in conjunction with a properly sprung car is what the carriage users require.

Far more attention ought to be given by the manufacturers of motor cars to springs. It is not a question of strength of springs, but a question of length, flexibility, and position, and an excellent addition would be a rubber-lined shackle, as used, for instance, on carriages and hansom. Motor manufacturers are a long way behind the builders of horse-drawn vehicles in respect to springs, for the latter can make a carriage run with every comfort on iron tyres, and the only reason why some carriages are fitted with rubber tyres is because of the silence in running. The springs are so good in some cases that there is little or no difference in vibration whether solid rubber tyres or iron tyres are fitted. Motor car manufacturers should consult well-known carriage spring manufacturers and carriage builders with regard to the matter of resilient springs and the position they should be fitted on a motor car to give the best results. A car properly sprung would run better on solid tyres, and the up-keep would be less, and the comfort and absence of worry more pronounced than with the best pneumatic tyre yet produced, and all that bouncing over holes in the road and level crossings would be done away with. This is one of the greatest objections a carriage user finds. He is generally a man of ease who prefers to be driven at a moderate pace, and not to be swayed to and fro and bounced up and down on pneumatic tyres; he wants a reasonable amount of resiliency from his springs and tyres.

In advocating the abandonment of pneumatics in favour of solids, a great deal of opposition will be met by those interested, but if motor car manufacturers who are not interested in pneumatic tyres will only realise what the public want I feel sure they will produce a reliable and comfortable car, and overcome the prejudice worked up by interested parties against solid rubber tyres, and do the largest business by supplying what the public want in the way of a comfortable and reliable car fitted with a good solid rubber tyre. I notice firms who are working in this direction are progressing most rapidly, both in England and Scotland.

Notwithstanding the prejudice worked up by powerful interested parties—which is keeping many motorists in the dark with regard to the true advantages of solid tyres, and keeping many would-be purchasers from becoming motorists—I am glad to see in recent correspondence in *The Autocar* that the public themselves are experimenting with solid rubber tyres, and have obtained remarkable results as regards speed, comfort, reliability, and reduction in cost of maintenance.

A MECHANICAL ENGINEER.

#### THE MIDGLEY NON-SLIPPING DEVICE.

[3291].—The attention of my directors has been called to your issue of the 7th inst., in which prominence is given to a description and illustration of an alleged improved form of chain non-slipping device which has been designed by Mr. E. Midgley. I am directed to inform you that my directors have been advised that the patents, of which this company is the proprietor, granted to Mr. H. Parsons, fully cover the non-slipping device so described and illustrated, and they beg to request that you will, in the interests of the purchasing public and for obvious reasons, give this letter equal prominence to that which has been afforded to the description above mentioned. Otherwise my directors feel that the interests of and the extensive business done by this company in the well-known Parsons non-skidder will be very seriously prejudiced.

THE PARSONS NON-SKID CO., LTD.

E. J. PILCHER, secretary.

#### LAYING A CAR UP FOR THE WINTER.

[3292].—I notice a series of articles headed "Laying up a Car for the Winter." I respectfully submit that somehow or other the light automobile movement is progressing on wrong lines. No car ought to be laid up for the winter. These articles by the necessity for their appearance show that a great many, if not the majority, of users, look on a motor car as a summer and pleasure vehicle, and that when dirty weather comes on the car is housed and the horse and carriage produced. What will most convince

the public of the utility of motors is the fact that they can be used all the year round. Every car ought to carry a hood capable of being folded up, and a wind shield for the driver. This should be removed easily in fine weather.

So long as pneumatic tyres hold the field, and the present craze for speed holds good, so long will sympathy be withheld from the motor car. If persons can afford to use motors they can have them arranged to do winter work. There might as well be a series of articles in *The Field* on "Laying up Horses and Carriages for Bad Weather." If the motor car will not take people more comfortably and more quickly through adverse conditions than the horse does, then I say the motor car is a fraud and a mechanical toy. I have always used my cars summer and winter, and have a complete cover for winter work which shelters the passengers and carries their luggage.

FOUR YEARS A MOTORIST.

[We entirely agree with our correspondent that it is most unwise to lay up a car for the winter, but if a car is to remain in idleness for three or four months it should be properly prepared for its period of inaction. A car which cannot be driven all the year round is, in our opinion, not worth having. At the same time some automobilists prefer to use machines which, if not unsuitable for winter work, are by no means comfortable unless their users are very warmly clad or very hardy.—ED.]

#### FACILITIES FOR OBTAINING REPLACEMENTS.

[3293].—We have read Mr. W. H. Jane's letter on the difficulty he has experienced in obtaining parts for which he has telegraphed.

As one of the firms who get these telegrams (though we do not recollect ever having received one from Mr. Jane) for goods to be sent to some hotel or railway station many miles away, it is hardly to be expected that we can send off goods in this fashion. There is a far simpler way out of the difficulty than Mr. Jane suggests; that is of telegraphing the money with the order. This is done by many of our clients, and there has then been no complaint of delay.

G. I. RICHES AND CO.

#### THE MOTOR GAD ABOUT.

[3294].—I am looking for a little motor car—a "gad-about"—which can be kept in the entrance hall of my house or near by, into which I can jump whenever I have a mind, and without any notice to anyone, and speed away on my business ten or fifteen miles off, just as I have done on my bicycle for the last twenty years. It must have two seats, and they must be pretty comfortable ones, and there must be also a small seat behind for a page boy if I care to take him, and it should be constructed to carry at least as much luggage as an ordinary tricycle used to carry "in those days," with petrol and water for not less than fifty miles, and after it is possessed of all these things it should be able to stand the highest endurance trial both as regards its engine and its tyres, which had probably better be solids. As to pace, fifteen to eighteen miles an hour is ample, but it must be able to climb every hill in the kingdom, no matter how steep or how stony and rutty it may be. Of course, simple to work, easily steered, and, above all, easily stopped must be a *sine qua non*, for we must never cease to remember that "the public roads are the playgrounds of the children of the poor."

Of the cars which I have seen up to the present, the Oldsmobile, the Vauxhall, the Locomobile, and others of that numerous class, namely, Stanley, Reading, Weston, etc., the Duryea, and the White come nearest my requirements, and especially the Oldsmobile, but I fear the last will not surmount the numerous very steep and rough hills of my district: and the Vauxhall probably will suffer from the same fault, though a neat, serviceable car.

I would take it as a great favour if some of your kind correspondents who have had experience in this sort of car would advise me in the matter either by letter through you or by letter in the columns of your most useful publication, and I would also be glad to hear through you (who have my address) from any in the trade who have such a car as I am looking for to offer and to receive their illustrated circulars with price-list and full particulars.

AN OLD CYCLIST.

## Flashes.

The promoters of the unofficial trial round London, which was to have taken place to-day, have decided, in view of the Automobile Club's ruling upon the subject of unofficial trials, to withdraw the event.

\* \* \*

In a motor car speed prosecution at Lewes, an electrical engineer gave evidence that the electrical timing apparatus used by the police was faulty, and the magistrates, accepting this statement, dismissed the case.

\* \* \*

There is evidently one law for the cumbersome electric tram and another for the comparatively light autocar, as at Lambeth, last week, two tram drivers were fined 5s. and 2s. costs for alleged furious driving, while a motorist for a similar offence was ordered to pay a penalty of 40s. and 2s. costs. This is neither commonsense nor justice.

\* \* \*

It would be interesting to know what the South-sea magistrates regard as convincing evidence against a police constable's statement as to speed. Mr. Thomas Mattinson, of South-sea, was stated by a constable to be travelling at the rate of twenty-two and a half miles an hour on the Havant Road, Cosham. Despite the fact that two independent witnesses both estimated the speed at less than twelve miles an hour, the defendant was fined £2 including costs, as the Bench considered the case proved. In other words, the statement of the constable, apparently unsubstantiated, was believed rather than that of the defendant and his two independent witnesses.

\* \* \*

For some time past we have had in use in one of the cylinders of a four-cylindered motor, a "Vita" sparking plug, the agent for which is Mr. J. A. Riley, 23½, Martineau Street, Birmingham. There are several good points about this plug which are worthy of attention. In the first place, the plug is provided with a stout and particularly well-made porcelain insulator, which is secured in the metallic body of the plug by means of a lock nut and asbestos packing, no cement whatever being used. Around the central insulated conductor is a well formed in the porcelain, which effectually prevents any sooting around this point. This construction, of course, is followed in many other makes of sparking plug, and is one well worthy of adoption by every manufacturer. The plug we have been using has now been running for a period of about three months, during which time it has only been removed from the cylinder once, and this merely for inspection. We may say that, considering the quality and the life of the plug, its price is extremely moderate.

The first annual dinner of the Motor Volunteer Corps will take place on Tuesday, December 8th, at the Trocadero Restaurant, at 8 p.m.

\* \* \*

It is interesting to note that the plate proposed for motor cars in this country is twice as large as the one demanded under French law. In France the letters and the numbers may be in one line—a narrow strip.

\* \* \*

The Northumberland County Council have delegated to the Bridges and Roads Committee the duty of putting in force the new Motor Car Act, the committee to have power to add to their number such members of the Council as have had practical acquaintance with horse and motor traffic.

\* \* \*

In an action brought by Mrs. Nellie Fryer, the wife of a North London doctor, in the King's Bench Division, last week, seeking damages against the Folkestone Motors, Ltd., for personal injuries sustained in a collision with the defendant's motor car while riding in her victoria, Mr. Justice Bigham observed to the jury: "Because in this case the collision is said to have been due to a motor car, do not let that affect you much.

Some people do not like motor cars. I do not drive one. I dislike being driven in them, and I dislike the very smell of them. (Laughter.) But we must not let our prejudices warp our judgment." The plaintiff was awarded £200 damages.

\* \* \*

There was considerable excitement in Guildford the other day when Mr. J. C. Dennis, one of the partners in the well-known motor manufacturing firm, was married, as the bride and bridegroom drove to church

in a motor car accompanied by two other cars containing their friends. Although the wedding was a very quiet one owing to the illness of the bride's father, the three motor cars were more than sufficient to give it an interest of its own. Among the presents were some handsome bronzes presented by one hundred and fifty workmen of the Dennis firm.

\* \* \*

We are asked to note that the Duryea Company are now in occupation of their new works, and that their address in future will be Duryea Works, Widdrington Road, Coventry.

\* \* \*

Balloon v. Motor Chase.—Two balloons will leave the Crystal Palace on both November 21st and 28th at one o'clock precisely, open to members and friends of the Aero and Automobile Clubs and Motor Volunteer Corps. Seats in the balloon are £2 2s. for members of the Aero Club and £3 3s. for guests. First and second prizes will be given from each balloon to the automobilists who first succeed in a capture by touching the balloon car in its descent.

### "THE AUTOCAR" DIARY.

- Midland A.C. Hill-climb (date not fixed).  
 Nov. 15.—German War Office Competition for Alcohol-driven Heavy Vehicles.  
 „ 17.—Aeronautical Club Meeting, St. Bride's Institute, E.C.  
 „ 19.—A.C.G.B.I. Paper, "Motor Vehicles at the Manœuvres," by Mr. F. J. Ochs.  
 „ 20 to 28.—Motor and Cycle Show at Crystal Palace  
 „ 23.—Scottish A.C. (Western District). Discussion, "The Ideal Touring Car."  
 „ 25.—Aero Club Anniversary Dinner.  
 „ 26.—A.C.G.B.I. Paper, "The Dust Problem," by Col. Crompton and Mr. C. W. S. Crawley.  
 Dec. 1.—Cheltenham and Gloucestershire A.C. Meeting.  
 „ 1.—Annual Dinner Auto Cycle Club.  
 „ 2.—A.C.G.B.I. Foundation Members' Dinner.  
 „ 3.—A.C.G.B.I. Paper, "Les Combustibles Liquides employés dans les Moteurs de Voitures Automobiles, leur mélange avec l'air et leur inflammation," by M. Forestier.  
 „ 10 to 25.—Paris Salon (A.C. de France).  
 „ 31.—Entries close for 1904 Gordon-Bennett Race.

The monthly dinner of the Aero Club took place on Tuesday, November 3rd, at the Automobile Club. Among the members present were Mr. Roger Wallace, K.C., Mr. Graham, M.P., Mr. Frank Butler, Mr. C. F. Pollock, Mr. Schneider, Mr. Martin Dale, and Mr. E. O. Pope.

\* \* \*

A motoring resident, having been asked to be local correspondent for the Motor Union at Epsom, at once got into touch with the Urban Council and arranged to take the members, their surveyor, and clerk, round all the local roads at any speed they might wish, in order to see if any regulations under the new Act were necessary for the public safety. Cars were kindly lent by Messrs. H. J. Mappin (14 h.p. Daimler), W. Marden (16 h.p. Clément), E. H. Renton (12 h.p. Darracq), A. S. Harrison (7 h.p. Panhard), and G. T. Langridge (11 h.p. Clément), and they duly met at the Council's offices at 2.30 p.m. on Saturday, when fifteen passengers, besides the drivers and their friends, embarked. Three of the cars were driven by their owners and two by professionals. About forty-three miles were covered by 4.40 p.m., including the High Street (several times) and many other very narrow and tortuous roads. A large amount of traffic was encountered, as might be expected on a Saturday afternoon, including several young thoroughbred horses and some of the Surrey stag-hunters, but all were as usual safely passed. From the general expressions gathered afterwards, the writer does not think any unreasonable restrictions will be asked for here. The absolute control the cars were under, and the acute angles they so easily negotiated, surprised many of the councillors. It is to be hoped that in other districts motorists will endeavour to do their duty in a like manner, and to save the local rates from the unnecessary expense of notice boards and the continual outlay of having them properly lighted up at night.

The third annual dinner of the Aero Club and anniversary of the visit of Santos-Dumont to England will take place at the Carlton Hotel on November 25th. Several prominent members of the French Aero Club have been invited. The Aero Club numbers nearly two hundred members, and premises have been taken at 110, Piccadilly, which will be ready shortly. The subscription is £2 2s. per annum. Particulars and all information can be obtained from Mr. E. O. Pope, secretary.

\* \* \*

In the King's Bench Division of the High Court, before Mr. Justice Darling and a common jury, on Wednesday last week, Miss Dorothy E. Levitt was awarded £35 damages in an action which she brought against Mr. Jas. Allen, contractor to the G.P.O., for personal injuries sustained while driving a motor car along Rosebery Avenue, owing to the negligence of the driver of a mail van. An action by Miss Frankton, who accompanied Miss Levitt in her motor car, was settled by the defendants also paying her £35.

\* \* \*

Last week we gave an interesting illustration of the electric motor tricycle made by Mr. Starley and Mr. Elwell some fourteen years ago. In fact, the date we gave was 1888, but Mr. Thomas Parker, jun., informs us it should have been 1889, and in the course of his letter he says: "My father's partner, the late Mr. Elwell, devoted a great deal of time, and worked very hard in connection with motor vehicles from 1884, until the time he went to Australia, at the close of 1889, and I think it can be truly said that the first practical electrical vehicle was built by him at the works of Elwell-Parker, Ltd., Wolverhampton, in 1885. The design of this vehicle was very similar to the four-wheel hansom cab of to-day, except that the driver's seat was in front. The first electric omnibus was also built by this firm in 1889-90 for Mr. Ward."



THE G.W.R. MOTOR SERVICE. One of the Great Western Railway Co.'s 16 h.p. Milnes-Daimler omnibuses outside Penzance Station. These vehicles accommodate twenty-two passengers and carry a certain quantity of luggage on the roof. The front wheels are shod with Goodyear solid tyres, the back wheels having twin Sirdar Buffer tyres. Side by side with this is given a reproduction of the official time table, which is one of the first dealing with motor vehicles to be issued by any main line railway. We are indebted to Mr. S. W. Taylor, of Penzance, for the photograph from which our illustration is reproduced.

## GREAT WESTERN RAILWAY.

### TIME TABLE OF Motor Omnibus Service

PENZANCE STATION, MARAZION, and NEWLYN,  
Commencing on SATURDAY, October 31st, 1903.  
AND WITH FURTHER SERVICE.

MOTOR OMNIBUS with accommodation for Luggage, will run in accordance with the conditions of roads permitting on Week Days only.

Penzance Station and Newlyn.				Penzance Station, Marazion Station, & Marazion.			
MOTOR OMNIBUSES.		UP TRAINS.		DOWN TRAINS.		MOTOR OMNIBUSES.	
Station at	Penzance Station for Newlyn Bridge at	Newlyn Bridge Station at	Penzance Station at	Marazion Station at	Penzance Station for Marazion at	Marazion Station at	Leave Marazion for Penzance Station at
7.30	7.45	8.00	8.15	8.15	8.45	8.55	9.15
9.20	9.35	9.50	10.05	10.05	10.15	10.25	10.45
11.15	11.30	11.45	12.00	12.00	11.45	11.55	12.15
1.0	1.15	1.30	1.45	1.45	1.55	2.05	2.25
2.10	2.25	2.40	2.55	2.55	3.05	3.15	3.35
3.50	4.05	4.20	4.35	4.35	4.45	4.55	5.15
5.50	6.05	6.20	6.35	6.35	6.45	6.55	7.15
7.0	7.15	7.30	7.45	7.45	7.55	8.05	8.25
8.40	8.55	9.10	9.25	9.25	9.35	9.45	10.05

The Motor Omnibuses will run later on Thursdays and Saturdays if required.

The Single FARES will be as under:

Penzance Station & Newlyn Station 2d.	Penzance Station and Newlyn 3d.	Penzance Station & Marazion 4d.
Marazion Station & Marazion 2d.	Marazion and Newlyn 4d.	Newlyn and Penzance 2d.

TIME TABLES. The Directors give notice that the Company do not undertake that the Omnibuses shall start or arrive at the time specified in the Table; nor will they be accountable for any loss, inconvenience, or injury which may arise from delay or accident.

Passes will be issued on the Omnibuses and used by the holders until expiration of journey.

Through Railway Tickets will not be issued on any of these Omnibuses.

Passengers' Luggage.—Hand Luggage will be carried free. Heavy or bulky Luggage which can be accepted by the Omnibus, without exceeding the weight allowed for the use of the omnibus, will be carried for a special rate.

Parcels.—Small Parcels and Packages will be carried by the Omnibuses between the Company's Stations at Penzance and Newlyn and Marazion, subject to a charge of 6d. each parcel.

For further particulars apply to the Omnibus Conductors or to the General Manager.

**JAMES C. INGLIS,**  
General Manager.



We hear that the Daimler balance sheet will shortly be published, and that a good profit will be shown.

\* \* \*

Messrs. Montague Hawnt and Co. remind us that they are the sole English and Colonial agents for the Motobloc car, which was originally known as the Schaudel motor car, the details of which we gave in our last issue, and which we first referred to in December, 1901.

\* \* \*

The Daimler Motor Co., who already are motor manufacturers by appointment to His Majesty the King, have now, Mr. Percy Richardson informs us, been accorded the same honour in regard to the Heir Apparent, and have been granted the Warrant of Appointment as motor car manufacturers to his Royal Highness the Prince of Wales.

\* \* \*

Evidence is continually being thrust upon us in the daily press of the indifference with which horse accidents are regarded. In one day's paper recently we noticed two fatalities caused by the uncontrollability of horses, both dismissed in a few lines. The bald announcement of one was: "A lad named Mears, in attempting to stop a runaway, was knocked down and killed. The body has been taken to the mortuary." The other report is equally curt. A horse drawing a furniture van took fright. "All the party were thrown out, and a boy of seven was killed outright. The driver sustained fractured ribs and other serious injuries." What columns would have been written had similar accidents been due to motor cars!

\* \* \*

Mr. A. G. Fentiman, the old-time racer and one of the three original founders of the Catford C.C., writes: "I did a round on my Decauville on Sunday—Kingston to Reigate, Crawley, Horsham, Worthing, across Shoreham to Brighton, Crawley, Reigate, and Kingston again, all through rain and mud in grand style—no stop. In fact, I've had the car since February last, and the engine has never failed me—i.e. it has never stopped save when I wished it."

\* \* \*

A miscarriage of justice appears to have occurred at the Cheltenham County Court on the 6th inst., in a case where a motor cyclist was concerned. The motorist—Mr. Garbutt, an engineer—unfortunately knocked down and killed a man, whose widow claimed damages. Before he died the deceased informed his wife that he did not blame the motorist, his own account of the occurrence being that he stepped backwards and the machine went over him. Furthermore, the coroner's jury brought in a verdict of "Accidental death." The County Court jury, however, found for the widow, and awarded her £50 damages. The defendant, we are informed, is not in a very good position, and the suggestion is made by a correspondent that some assistance might be afforded him to enable him to appeal.

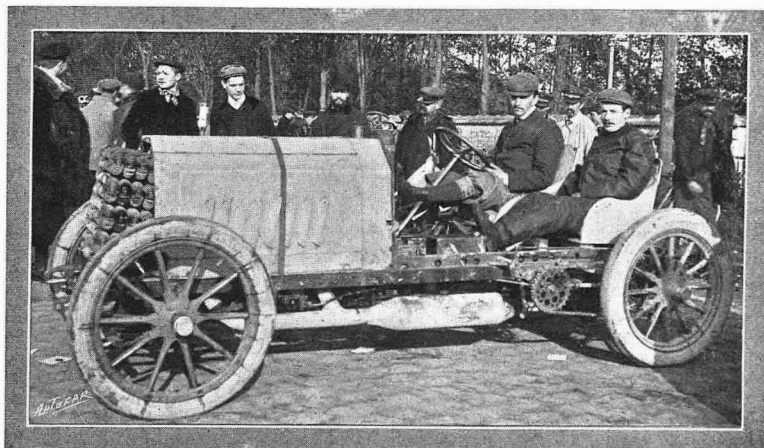
At the annual meeting of the Hozier Engineering Co., of Glasgow, the makers of the Argyll cars, a dividend of ten per cent. was declared for the past year. This is another proof that, given a good design, sound manufacture, and proper management, the construction of motor vehicles has become a reasonably remunerative industry.

\* \* \*

The Traffic Automobile Manufacturing Co., of 21, Great Charles Street, Birmingham, inform us that they have contracted with the Postmaster-General for the carrying of the parcels post by their petrol motor vans within a radius of about fifty miles of Birmingham. The service will be conducted exclusively during the night time. Strict punctuality and reliability form an essential condition of the contract. The service will commence early in December next, and promises to be successful.

\* \* \*

Among the new rules that have been made for the regulation of the Automobile Show to be held in Paris next December is a very salutary one which many visitors to our cycle and motor shows would welcome. It provides that "the use of noisy apparatus, such as trumpets and horns, sirens,



GAILLON HILL CLIMB. A side view of the 60 h.p. Turcat-Mery (Dietrich) which Rougier, who is at the steering wheel, recently drove up Mount Ventoux (see "The Autocar," Nov. 7th, page 580).

musical apparatus, or any instrument or means of advertisement liable to disturb the good order of the exhibition, is rigorously forbidden, under pain of immediate expulsion."

\* \* \*

The Duryea Company make an announcement this week of considerable interest to all who seek the welfare of British industry. It is to the effect that they are introducing for 1904 a new series of "power carriages," as they are pleased to term them, which, whilst retaining all the principal Duryea features, will be built entirely in England—their cars have hitherto been of American manufacture. As the engines and principal machine parts are being built by Messrs. Willans and Robinson, Ltd., of Rugby, it is safe to conclude that the work will be of a high quality, and the firm's exhibit at the National Cycle Show at the Crystal Palace, which will contain the first of the new cars, will doubtless attract much attention. We understand that the new engines will give from 12 h.p. to 15 h.p.

## SOME QUERIES AND REPLIES.

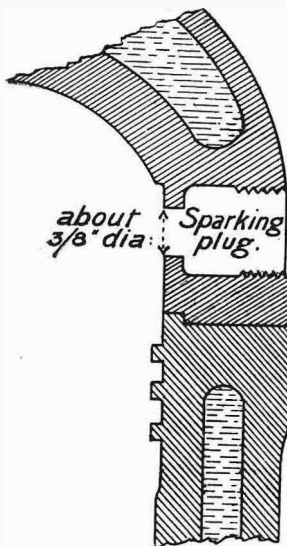
We are always pleased to reply to queries, even if they be of an elementary and untechnical description, under this heading. Only a selection of those which are of general interest will be published, though all will be answered direct through the post, for which purpose a stamped and addressed envelope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

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

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

### SPARKING PLUG POSITION.

I have a 12 h.p. Buchet engine, 100 mm. dia., 110 stroke, in which the sparking plugs are in chambers connected to the cylinders by passages about  $\frac{3}{8}$  in. dia. (see sketch).



Do you think it would improve ignition if the passages were increased in diameter? The plugs are near the pistons when at the top of the stroke, as in gas engine practice.

I have altered the throttle so as to run the engine slowly when the car is standing, or running through town on the top speed. The engine runs well, but I think it might do better if there were not so much cool metal between the cylinder and the plug. I shall be much obliged if you can tell me what is the practice of large firms using high tension ignition? I fancy the passage is small to prevent oil entering, but if it gets in it remains in the chamber. I like to

work with as weak a mixture as possible when the engine is unloaded to prevent smell and vibration, and intend this winter to put a flywheel on the front of engine to help against compression when the speed is still lower than at present.—J. W. G.

The igniting powers of the sparking plug would be greatly increased by the enlargement of the port leading to the sparking plug. The general practice is to place the sparking plug in such a position that it will project well into the combustion chamber—this on account of the fact that the ignition of the charge is not instantaneous but prolonged. The ignition may be likened to the dropping of a stone into water, the waves of ignition being similar to those set up by the disturbance of the water. That is, the waves are rapid at the centre of disturbance and decrease as they expand. The sparking plug of the Buchet engine is, of course, so placed as to protect it from oil. This is effected to some extent, but the protection afforded is hardly in proportion to the rapid ignition lost by the position of the plug. The most usual practice is to place the sparking plug at or near the centre of the motor head, in order to get the best possible effects from the ignition.

### BAND BRAKE BLOCKS.

I should like to have your opinion with respect to my brakes. They are the ordinary band brakes, shod with leather. I find that they require constant adjustment, and that in a comparatively short time the leather gets burnt and cracks. I thought of trying vulcanised fibre, though I am afraid that it also will burn. Do you think so? Could you suggest anything better? Would it be advisable to have them metal to metal, and, if so, with what metals should the band and the drum be respectively lined?—H. W.

The best method of overcoming your brake troubles is difficult to divine without knowing exactly the design of the brake. The leather might be replaced by small sections of either beechwood, vulcanised fibre, or brass.

The last-named is best, as it gives a metal to metal brake unaffected by oil, if the design is such as will admit of this type of block being used. The next best block is that of beechwood, though this is liable to burn away. Vulcanised fibre has a very good retarding effect so long as the blocks are kept reasonably clean, but unless they are cleansed at intervals they take on a very hard surface, which reduces their frictional powers, and is liable to set up squeaking.

### STEAM CAR MATTERS.

I have a 6 h.p. Milwaukee steam car. When on the level I can keep as much as 250 lbs. pressure in the boiler, and the car runs well. As soon as I have to go up the slightest gradient the boiler pressure falls down to 50 lbs., and the car stops. The car is fitted with one of Lamplough's (Albany) petroleum burners.—PUZZLED.

The failure to maintain steam pressure when ascending a hill is due to the fact that more steam is required to enable the engine to pull the car over the hill and to supply this the throttle valve is opened wider. Unless the water by-pass is also opened to allow more water to pass to the boiler, and at the same time more fuel is passed to the burner, the boiler cannot supply sufficient steam to work the engine. Therefore, the pressure drops, and as a natural consequence the car fails to climb the hill. Thus, when ascending hills, more power is required, and this is obtained by passing more steam to the engine, either by altering the cut-off or by opening the throttle valve, or again by a combination of the foregoing. More steam must be generated to supply the necessary power, and for this purpose more water must be converted into steam, and more fuel must be supplied to the burner to enable more heat to be generated to convert the increased water supply into steam.

### IRREGULAR FIRING.

I have a quad the spark of which is very irregular at the plug when laid on the frame. I have rewired the machine as follows: Positive of accumulator to P on coil, M to contact screw, trembler to handle switch, and handle switch to negative on accumulator. There are two brass bands on the coil; these make contact with the frame. I get a lot of current at the contact breaker, and a good flash when inserting the plug at the handle switch. Is the coil at fault? There are only two terminals, P and M, and the plug wire terminal. All the machine is rewired.—E.W.

The wiring on the quad is quite correct, and the irregular firing is probably due either to faulty contacts or to incorrect adjustment of the trembler. The brass bands on the coil should have perfect metallic contact with the frame, as the high tension circuit is completed through earth and through these bands. Also the low tension circuit is completed by the same means. The platinum contacts for the trembler should be perfectly clean, and make contact squarely with one another. If only the edges of the contacts meet during the time that the circuit is completed sufficient current cannot be passed to enable the coil to give a sufficiently strong spark to bridge the gap at the sparking plug and ignite the cylinder charge. The trembler should be so adjusted that the contacts come firmly against one another when the end of the spring trembler blade drops into the notch in the cam. At the same time the adjustment should be such that a high speed of vibration is given by the trembler blade when it is slightly lifted by the finger nail and let go again. The sparking at the contact breaker rather points to bad contacts in some part of the wiring system.

# GOVERNING GAS AND PETROL ENGINES.

## THE DISCUSSION.

(Concluded from page 585.)

At the conclusion of Mr. Clerk's paper Mr. Roger W. Wallace, K.C., who presided, called upon Mr. J. Lyons Sampson to open the discussion.

Mr. Sampson said there was one historical point to which he would like to refer. Who first used the method of throttling the mixture of gas and air in a gas engine? He believed that method was first used in the Benz engine, and gave very good results. Another point about that engine which brought out what Mr. Clerk said was the best arrangement for governing was an arrangement for keeping the compression uniform. The mixture of gas and air was first made and then throttled, and an auxiliary valve admitted air to the cylinder, the mixture in the combustion chamber being, of course, undiluted. The heat from combustion was used for heating the air in the cylinder, and when the engine was working at low power it gave very good results.

Mr. Worby Beaumont said Mr. Clerk's paper was one of the best technical papers that had been read before the club. Mr. Clerk had mentioned the early Daimler engine, and he would draw attention to another early type of Daimler engine in which air was admitted to the cylinder by a valve actuated on the piston. That did not prove a satisfactory arrangement, but it might give good results by means of stratification, ensuring the mixture being rich at the point of combustion, and then spreading and giving the prime requirement of full hot air action. The diagram in which the pressure curve first ran rapidly up, then down to the point of late ignition, might be attributed to loss of heat during the period between the point of ignition and expansion. If that took place in one case it would take place in another, and he thought the Hospitalier diagram was quite right. He believed it was still found that amongst economical engines the hit-and-miss governing variety were the most economical. That might be expected when they saw the loss of efficiency attendant on using what was not quite the best charge, which, burning slowly, had a rather high relative pressure and temperature towards the end of the stroke. They knew that good results had followed improvement of the method of leading the charge into and from the cylinder, and it had been most interesting to see the great likeness between diagrams obtained at different speeds, and to notice the difference in the working of an engine obtained by varying the inlet and outlet of gases. The great necessity in connection with automobile engines was greater simplicity, and although very desirable results could be obtained through valve controlling and governing gears, it was by quite other means that they must hope to arrive at that compromise which would prove most satisfactory in engines which had to work, not under the conditions of the big fixed engines, but under circumstances in which the load varied greatly in very brief periods. That created the difficulty in the choice of a satisfactory method of governing.

Colonel Crompton said the great consideration with which he had been confronted was whether the internal combustion engine was going to take the place of the steam engine, not merely for the motor car, but for the heavy engines for use in our great industries and as the prime movers of commerce. After referring to a competitive test in Germany between the Parsons steam turbine and a large gas engine, Colonel Crompton went on to say that in the recent reliability trials they had seen steam engines competing with petrol engines under circumstances in which the former might have expected to be at their worst and the latter at their best. Yet in the results the steam-driven cars were well up in the list, and some of them very near the top. From his standpoint the internal combustion engine was still most imperfect. In a great number of cases the means by which a driver was given power to spoil his engine were, to him, preternaturally numerous. He would be interested to know from Mr. Clerk what was the actual result of combustion and compression in internal combustion engines.

Mr. C. W. S. Crawley said Mr. Clerk had not told them much as to how they could vary the power obtained from a mixture of petrol and air. Recently a friend of his had obtained a car from abroad, but could not get it to run

properly. He (Mr. Crawley) had experimented with the car, and found that it ran away—practically bolted—time after time. He discovered that this was due to the engine getting too much petrol. He believed a mirror indicator similar to that shown by Mr. Clerk had been invented and used by Professor Perry in this country long before Carpentier. He thanked Mr. Clerk for "driving another nail in the coffin of spark governing."

The Chairman moved a vote of thanks to Mr. Clerk for his excellent paper, remarking that, in spite of Colonel Crompton, he still thought the petrol engine one of the most wonderful products of modern experience and progress. They must remember that when Daimler invented it he relied entirely on empirical chances, and that up to the present there had really been no proper scientific work in connection with petrol engine making. Whether that was because Perry's indicator was being re-invented by Carpentier or not he could not say, but petrol engine builders had had to rely on the manipulations of their fingers, and take their chances as to what happened. He thought, however, that the scientific side of the matter should be studied before proceeding to practice, and he felt that if manufacturers came and heard such papers as Mr. Clerk's, they might save themselves many thousands of pounds spent in making empirical experiments. Anyone who paid a visit to the museum connected with the Deutz works at Cologne would see a wonderful record of ingenuity applied to the gas engine in the shape of hundreds of freaks of all kinds. Often inventions were brought before him at the present time which he could remember to have seen in that museum. He hoped soon to see more scientific methods and invention applied to methods of combustion.

Mr. R. E. Phillips seconded the motion, and said he believed he was giving away no secret in stating that Mr. Clerk was devoting a considerable amount of attention to improving the motor, and he was quite confident no man better knew how to improve the petrol engine.

The vote of thanks was passed by acclamation.

Mr. Clerk, in replying, referred to some of the points raised in the discussion. So far as concerned the Benz engine and the method of allowing air to flow into the cylinder, as described by Mr. Sampson, that was not a very good method, as it rendered the mixture weak. If air was allowed to stream into the cylinder, the effect of the mixture was spoiled. With regard to Daimler's idea, that was, of course, to get the highest possible average pressure. His object was to take air into the cylinder on the down stroke by means of the valve operating on the piston, and to get if possible a pressure of about 100 lbs. to the square inch. The method invited pre-ignition, and the addition of air by that method could do no good, though it might be used for governing; but the arrangement would have to be something different. Mr. Beaumont was correct in supposing that the effect shown in the reflector indicator, to which he had referred, was a real effect. From what they knew of the laws of gases and their expansion, it was clear that nothing short of a complete pull open of the valve would cause such a sudden fall as was shown in that diagram, and, as a consequence, he thought it was undoubtedly an inertia effect, and not due to a real fall in pressure. He would like to see petrol engine makers studying the combustion engine in a more scientific manner. During the recent trials, he had seen many engines with very sharp bends in the pipes. It was impossible to get the full power from such engines. Then, too, they must remember that differences in atmospheric pressure had to be allowed for, and they should never make their engines work under artificially produced atmospheric pressure. He quite agreed that what was good for the large engine was not always good for the small; but he could not help thinking that petrol engine makers should know what the large gas engine makers were doing. The engines represented the same thing under varying conditions, and he thought makers should study both, so that they might have an opportunity of applying the tricks of the gas engine to the smaller engine in a simplified way. What he specially admired about the petrol engine was what might be called the mechanical trickery of it, which

would delight the soul of any engineer who liked mechanical tricks, and he was glad to have had an opportunity of examining the many engines during the reliability trials; but he thought gas engines had nothing to learn from the petrol engine about the cycle. The principal reason why gas engines were not yet quite so economical as steam engines was that they did not use the cheapest form of fuel, such as common slack. Dr. Mond, however, was engaged on that problem, and he wished him every success in his efforts. There were, as Colonel Crompton had said, many defects in motor car engines; but they had this one great advantage, that any man could make a petrol engine work, while it took a rather clever man to get the best out of a steam engine. The fact that it was possible to such an extent to start a petrol engine and "let her rip" was one of its great merits. Colonel Crompton had asked what was the effect of compression. For a long time the great economic advantage of compression was not understood; but the economy of large gas engines had steadily increased, and at the same time compression had gradually gone up. In fact, the whole trend had been to increase compression—many engines to-day had a compression pressure of 200 lbs. to the square inch—and thereby

to attain greater economy in working. In regard to the mixture of petrol and air, his experience was that difficulties were more frequent with a big carburetter, the engine being often overdosed and fuel needlessly burned. The proportion of petrol and air was, of course, most important, and if the best proportion was found out and maintained, the best results would follow. He quite agreed with Mr. Wallace that petrol engine manufacturers had made wonderful advances; but he did not think many of them really knew what went on inside the cylinder. The mirror indicator was most useful in that respect, and it was very beautiful to watch the curve produced. He hoped petrol engineers would take up the use of some such device. There was a great future before the gas engine, and he confidently hoped that they would yet see it used to drive ships, with all the consequent economising of fuel and fuel space which would follow. Recent progress in marine engineering had, he thought, indicated that that day was coming.

At the conclusion of the proceedings, Mr. Clerk, who was assisted by Mr. Adam, gave an exhibition of the working of several types of diagram indicators, including the Hospitalier instrument.

## EXAMPLES FROM HAMPSHIRE AND ESSEX.

At the Hampshire County Council meeting at Winchester on Monday last, the new regulations which are being drafted by the Local Government Board were mentioned, and the following resolutions in connection with the powers which will be given the local authorities under the Local Government Board were passed: (1.) That, owing to the extreme difficulty of any general enforcement of the ten-mile limit, the council do not recommend the Local Government Board that such limit should be prescribed, as they are of opinion that under the enactments of the Motor Car Act, 1903 (independently of Section 9), adequate protection is given to the public. (2.) That favourable consideration be given to the applications of local authorities for the erection by the County Council of caution boards at the entrance to towns or villages, and also at dangerous corners or curves on main or district roads. (3.) That a representation be made to the Local Government Board as to the advisability of adopting some

uniform system of caution boards or signs such as is used in Continental countries. We must compliment the Hampshire Council upon their fairness and commonsense. They realise that with the numbering and registration there is no possible use for the imposition of further restrictions.

Another example of what should be done by county authorities in preparation for the new Act is furnished by Essex. The County Surveyor (Mr. Percy E. Sheldon) has circularised all the surveyors of local authorities within his area asking them to consider what highways—other than main roads—in their districts should be scheduled under section 8. He explains that the expression "16ft. in width" should be taken to mean that where sufficient space exists between hedge and hedge to admit of the roadway being enlarged to 16ft. (should that space not already be metalled or made up), the road, or section of road, should not be scheduled, irrespective of other considerations.

## MOTOR DUST CARTS FOR WESTMINSTER.

The City of Westminster is asking for tenders for light motor waggons for refuse collection, and as the City took over the well-known Strand Vestry's lorries, and the specification now referred to has been drawn by the light of their performances, the stipulative items for the new waggons may prove useful to those interested in such matters, whether makers or prospective users, who will no doubt study them carefully.

The motor is to be petrol driven, to have three gears forward (four, seven, and ten miles per hour), and one reverse (three miles per hour). Nett load not less than two tons, and occasionally three tons, the strength of spring, frame, body, etc., to be calculated to this maximum. Speed four miles per hour, with a full and normal load of two tons on an incline of one in ten and ten miles on the level.

The body to be of steel or wood, with under-frame of channel steel, well stayed with cross channels and angle plates. Wheels artillery pattern, oak spokes, ash felloes, steel naves, and hard gun metal bushes. The motor to develop a minimum of 15 b.h.p., at 800 revs. per min.

Gear wheels to be entirely enclosed in a dustproof casing, and run in oil. The gear wheels to be steel with machine-cut teeth, always in mesh. The clutch of approved type, preferably disc metal to metal running in oil, and arranged to give no end thrust on the engine or gear-shaft either in or out of action. Automatic lubrication; electrical ignition.

The body must tip with either rack and pinion or screw gearing, and to be kept as low as possible.

Tyres solid rubber, the car to be gear driven throughout. Double set of brakes to hold backward as well as forward.

Alternative tenders are required as follows:

- (1.) For the supply of one motor van as above.
- (2.) For the supply of not less than six vans and maintenance of same for seven years. The vans to do one, two, or three shifts per day, and to work if required an average of 125 hours per week. The contractor will be required to keep on the Council's premises during the continuance of his contract, a car of similar design as a "stand by," so that in case of any one of the cars being out of order, its place may be taken without any delay. The said car remaining the property of the contractor and being kept in working order at his expense.

## A NEW MOTOR TYRE.

From the automobilist's point of view, one of the most interesting exhibits in the forthcoming Stanley Show will be the new Palmer tyre, exhibited by the Palmer Tyre, Ltd. This firm's tyres are already well-known in the cycle and motor cycle worlds, and old cyclists well recollect the sensation which was caused some ten or eleven years ago when the first pneumatic tyre, with a purely tangential fabric, was introduced by the Palmer Co. One ride on this tyre was sufficient to convince the most sceptical of the efficiency of the tangential fabric employed in place of the then universal canvas. This increase of efficiency, of course, resulted in greater ease and speed, and these advantages were so pronounced that it soon became recognised that a tangential fabric was necessary to ensure a thoroughly efficient tyre. We should perhaps explain here, as it is not always recognised, that the fabric or lining of the tyre is of vital importance, though this is generally forced home to the automobilist the first time he suffers from a burst tyre. We mean to say that the mission of the cover is not merely to protect the air tube, but also to restrain it, and to afford it such support that it is not strained or deformed. Directly the fabric is seriously damaged, the internal pressure of the air tube forces it through the gap or hole in the lining, and the tube bursts. For some years the Palmer Co. have been experimenting with motor tyres, and we are now at liberty to give some particulars of the results they have secured. The completion of the foreign patents precludes our giving complete details, but we are free to mention that the tyre will be made in two sections, one to fit on the ordinary existing rim, and another which is secured by two detachable flanges, the removal of one of which permits the air tube to be taken out with the greatest ease, and without the employment of any force; nor will any special knack on the part of the manipulator be required in replacing it, as it will be practically impossible to pinch the air tube, and, provided the most ordinary precautions are taken to prevent it becoming twisted, it will be impossible for damage to be done in replacing the air tube and the cover. As the protracted experiments conducted by the Palmer Tyre, Ltd., have been of an exceedingly technical nature, we feel that we cannot do better than give the results as well as the aims of the tyre makers in their own words, and at our request they have been good enough to prepare a report which gives the summary of the results arrived at, and the reasons for the particular system of cover construction which the Palmer Co. have adopted. They say:

"As the result of our experiments it was early found that tyres made with strong approximately straight threads or cords proved greatly superior in every respect to tyres made with woven canvas linings, but the difficulties connected with the manufacture of such cord tyres in com-

mercial quantities appeared to be insurmountable. As a result of persistent experiments, however, a plant is now in operation at the Silvertown works producing tyres differing completely from anything of the kind produced.

"Fig. 1 illustrates the method employed in making a tyre of canvas such as is at present in general use. The canvas is first of all stretched longitudinally at the tread. It is then stretched transversely and pulled towards the smaller circumference of the mould. The 'puckers' or folds which form at the sides are then pressed or rolled down by the tyre builder as much as possible, which has the effect of causing the threads of which the canvas

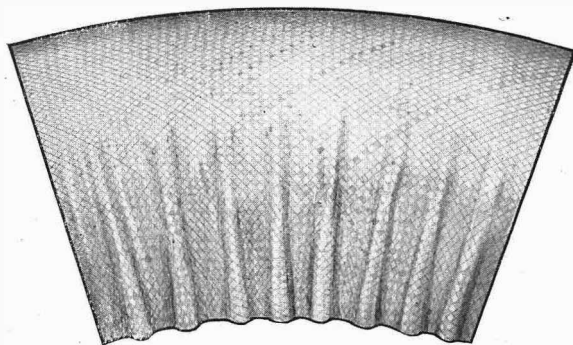


Fig. 1.—An exaggerated example of plain canvas.

is composed to be slack in some places and taut in others. When one layer of canvas has been placed on the mould another is laid in the same manner on top of the first, and so on until the desired number of layers has been applied. Many attempts have been made to overcome the puckering of the canvas by using specially shaped canvas or webbing, but this presented the serious disadvantage of not crossing the tyre diagonally, and tyres made under such methods have proved to be very unsatisfactory, both as regards their running qualities and durability.

"Fig. 2 represents the method employed in the earlier experiments at the Silvertown Rubber Works

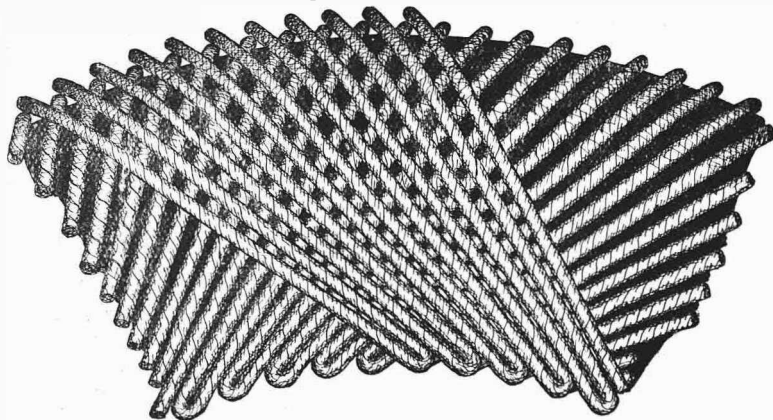


Fig. 2.—Early experiments in building tyres with round cord. Note the spaces between the cords

in building up tyres with cords. It was found that when the round cords were placed close together at the bead, or anchorage, considerable spaces were left between the cords, or tread, or larger circum-

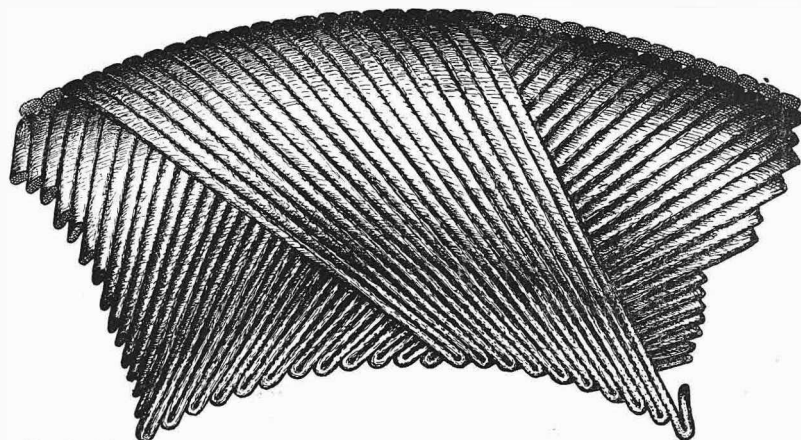


Fig. 3.—Method of building tyre with flattened cord. Fifty per cent. more of this cord can be used than round cord. No spaces—tyre fifty per cent. stronger.

ference of the tyre, and it was necessary to fill up each of these spaces with a shaped piece of rubber when building up the tyre.

"This difficulty is overcome in the new tyre in a very novel manner. Instead of employing the cords in their natural round shape, they are flattened to an oblong, or oval shape. At the anchorage, or smaller circumference of the tyre, the cords are arranged with their wider surface together, and as they approach the larger tread, or circumference of the tyre, each cord is given a quarter turn so that the narrow surfaces or edges are together as shown in fig 3. By this simple means an uniform fabric is made without filling pieces, and, further, the tyre is easier to build, and is fully *fifty per cent. stronger* than if the cords were employed in their round condition; that is to say, about fifty per cent. more of the flattened cords can be built into

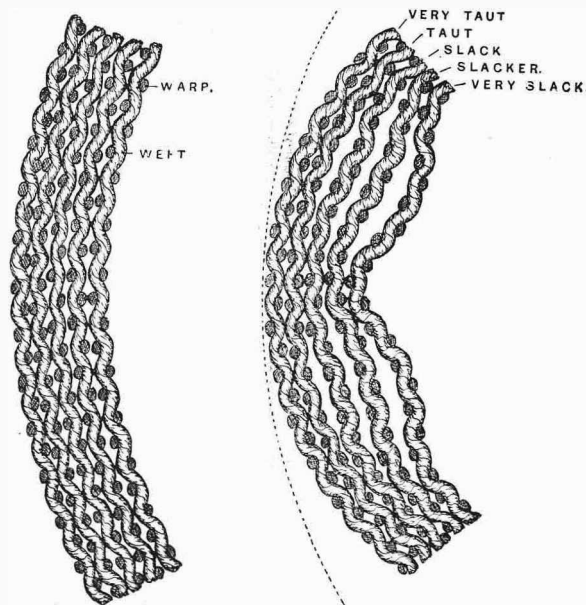


Fig. 4.—Five layers of canvas. Fig. 5.—Five layers of canvas bent)

each layer than would be the case if round cords only were employed. Each cord is entirely insulated throughout; that is to say, each separate strand is coated with pure rubber gum before being built into the cord proper. Thick canvas-lined motor tyres when vulcanised are extremely hard and unflexible. All motorists know by experience there is sometimes a vast difference in the life of canvas-lined tyres supplied by the same firm. This is easily explained. The most experienced tyre builder cannot possibly arrange that the threads warp and weft in the different layers of canvas shall be of equal tension everywhere. Some may be lying at right angles to each other, and the other will be lying at various angles. He may by chance make a tyre in which the slack and taut threads are fairly well distributed, and this tyre will probably last a considerable time,

and the same tyre builder, while using equal care, may make a tyre in which the tensions are concentrated at one or more places, and this tyre would probably soon give out.

"Fig. 4 represents a portion of the side wall of a canvas-lined tyre assumed to be perfectly built, that is, each layer of canvas takes an equal share of the strain.

"Fig. 5 illustrates the fact that when the tyre is flattened by contact with the road the alteration of shape at the side walls changes the disposition of the canvas in such a manner that the major portion of the strains is thrown on the outside layer, while the other layers become slack in various degrees, this just at the time when *they are most required* to transmit the driving power on the road. For the purpose of comparison, it may be assumed that a tyre having five layers of canvas contains ten layers of wavy threads—that is to say, *five running in each direction*.

"In the Palmer Cord tyre (fig. 6), only two layers are employed, *one in each direction*. The shape of the side walls will naturally be altered by the tread making contact with the road, but the strength of the cord fabric is not reduced at this time when it is most required to transmit the driving power to the road.

"It will be seen by figs. 4 and 5 the warp and weft threads in a canvas tyre are bent and intertwined in such a manner that any movement while they are under tension causes each thread to cut or saw its neighbour. This cannot occur with Palmer Cord tyres, because the cords are not interlocked, and for other reasons already stated.

"By reason of the uniformity of the tensions in the new Palmer

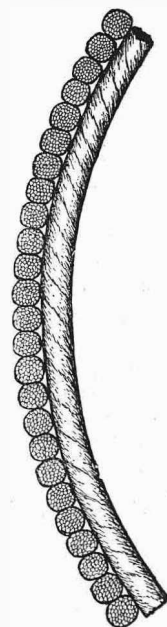


Fig. 6.—Two layers of cord fabric. Retains its full strength when bent.

Cord tyre there are no idle threads; it is therefore possible to make the tyres very much thinner in the fabric than a canvas-lined tyre, and yet very much stronger. The new fabric in the Palmer Cord tyre employed is much stouter than is absolutely necessary, in order to ensure a great *reserve of strength*.

"Provided the thickness and quality of the rubber are equal, the thinner the fabric the greater the resilience and the less resistance in running. A thick canvas lining means lower speed. The power wasted in the fabric takes the form of heat which spells destruction."

We should perhaps add that the fabric is quite

airless, because each strand is coated with rubber under a pressure of two tons, and in such a way that all air is expelled from the cord before the liquid rubber is driven into it, and it will be understood, of course, that when the fabric, or lining, is completed the exterior rubber, or cover, of the tyre is vulcanised to it in the ordinary way. It will also be interesting to add that the cords are each complete. That is to say, one cord is used for the inner fabric, running from left to right round the whole tyre, and another is used for the outer fabric which is approximately at right angles to it, and running from right to left.

## HEAVY MOTOR TRAFFIC.

An interesting paper was read by Mr. Shrapnell Smith at the Automobile Club on the 5th inst., which dealt with some phases of the application of heavy motor lorries to the conveyance of goods on the highways in a particularly able manner. The self-propelled vehicle, designed to transport the load on its own platform, was the special subject of the paper. In opening, Mr. Smith recalled the history of the motor waggon, by reading a chronological summary of the movement which he had prepared. This dated back as far as the meeting held in London on September 10th, 1895, when the resolutions forming the Self-propelled Traffic Association were passed. The chief items, in addition to that just mentioned were:

1896.

September 9th.—Address to Liverpool Chamber of Commerce, "Motor Vehicles for Heavy Traffic," by Mr. Worby Beaumont.

October 1st.—Presidentship of Liverpool Self-propelled Traffic Association achieved by the Earl of Derby. K.C.B.

November 14th.—Locomotives on Highways Act, 1896, came into operation.

1897.

June 10th.—Royal Agricultural Society trials at Crewe. One competitor—a Leyland van.

1898.

May 24th to 27th.—First Liverpool trials of motor vehicles for heavy traffic. Four vehicles competed—Leyland, Lifu, and Thornycroft (2).

1899.

June 15th.—Richmond Show trials (A.C.G.B. and I.); five vehicles competed—English Daimler van, German Daimler (2), Straker, and Thornycroft.

July 31st to August 2nd.—Second Liverpool trials of motor vehicles for heavy traffic; six vehicles competed—Clarkson, D. Coulthard, Leyland, Straker, and Thornycroft (2).

November 6th.—Conference *re* tare limit between Council L.S.P.T.A. and Liverpool Members of Parliament.

November 15th.—Conference at Automobile Club *re* tare limit between Council L.S.P.T.A. and Committee A.C.G.B. and I. Request to L.S.P.T.A. to draw up report and memorial to President, Local Government Board.

1900.

January to June.—Tare limit report prepared and memorial circulated.

May 14th.—Conference of manufacturers in Liverpool regarding conditions for the third heavy motor trials.

October 7th to 13th.—Deputation of Council L.S.P.T.A. to "Les Poids Lourds," at Versailles and neighbourhood.

December 3rd.—L.S.P.T.A. at St. George's Hall, Liverpool, "Heavy Motor Traffic in France," by M. Georges Forestier.

1901.

May 31st to June 8th.—Third Liverpool trials of motor vehicles for heavy traffic. Eleven vehicles competed—Coulthard, German Daimler (2), Leyland, Mann (2), Musker (2), Simpson and Bibby, and Thornycroft (2).

October 25th.—Presentation of judges' report\* on third

Liverpool trials, attended by the Right. Hon. Walter H. Long, M.P., President of the Local Government Board, and representations *re* tare limit at Liverpool Chamber of Commerce.

December 4th to 21st.—War Office trials of motor lorries for military purposes at Aldershot. Five vehicles competed—Foden, German Daimler, Straker, and Thornycroft (2).

1902.

January 8th.—Liverpool Fire Insurance Committee approved use of motor waggons at Liverpool Docks and warehouses, including cotton sheds, without additional premiums.

1902-1903.

Operations of the Road Carrying Company, Limited, in Lancashire.

The above is not, of course, anything like a complete review, but the chief incidents in the sequence of events are given. Mr. Smith pointed out that in advocating the heavy motor waggon, the ground covered by the traction engine and its train of trucks might in part be trenced upon, so he thought it desirable to set out the leading points of difference between the practices as under:

<i>Traction Engine.</i>	<i>Motor Waggon.</i>
Locomotive design.	Lorry design.
Deadweight, eight to sixteen tons.	Deadweight, three to seven tons.
Ribbed or otherwise serrated tyres.	Smooth tyres.
Load hauled in trailers.	Load carried on platform.
Three men in charge.	One man in charge.
Time regulations limit operations.	No time limits apply.
Large trains essential to economy.	Economy with small loads.
Slow average speed.	High average speed.
Distribution at terminus difficult performed.	Each three to seven tons has its own motive power and driver.
License of ten guineas per county per annum, or 2s. 6d. per day.	Nominal license.

The principal distinguishing feature was the general employment of the motor waggon without a trailer, and never with more than one—a limitation which was occasionally found less economical than the traction engine, its trucks and regular loads of twenty tons or more, particularly in the absence of back loads. They must not, however, forget the risks of extraordinary traffic damage by road authorities—an uncertainty generally absent in case of the motor waggon.

After the three Liverpool trials a commercial test became necessary. Competitions of the kind lasting a week provided a record, but the test differed considerably from prolonged running month after month. To carry this out Mr. Smith detailed the formation of the Road Carrying Co., Ltd., of Liverpool, and told how £20,000 was put up with the expectancy of loss, and how early in 1902 ten steam lorries were ordered for the work. This number was subsequently increased to fourteen. All the machines were specified to accord with the requirements of the 1896 Act, and the Joint Fire Insurance Committee. Less

\* A limited number of the 1898 and 1901 reports may be obtained from the Hon. Secretary L.S.P.T.A. The 1899 report is out of print.

water, oil, and fuel, the tare of each was under three tons, the machines being weighed in running order, and inclusive of all fittings. Notwithstanding the risks of reduced loads and repairs, the tare was adhered to prevent compulsory stoppage by interested pressure on the authorities. These fourteen motor waggons came into service between August and December, 1902. Shortening days and persistent wet weather increased the difficulties of initiating what was a novel scheme of goods conveyance. Several routes, varying from seven to forty miles in length, were selected, and generally adhered to.

Mr. Smith gave a list of the goods handled, numbering fifty-nine, beginning with raw cotton and ending with pickles, and which ran into many thousands of tons per annum. The rates obtained varied from 2.5d. to 6.0d. per ton mile. Single and double shifts were tried, but the latter were shortly abandoned. After some twelve months working the necessary data were acquired, and the legal tare waggons were laid off or disposed of. The operations of the Road Carving Co., however, will be resumed. Remarking that interest of course crystallised round the commercial results obtainable, Mr. Smith appended to his paper a table giving estimates for the average annual working cost of motor waggons, according to roads and loads, and this table we give hereunder:

Locality.	Owner's work.		On hire.	
	Motor only.	Plus trailer.	Motor only.	Plus trailer.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
London County ...	8 0 0	10 10 6	13 15 0	17 8 8
Country ...	7 5 0	9 16 0	12 5 10	16 2 3

The above estimates were a statement of general results obtainable under the three tons fare limit. But they, of course, required further and particular elucidation. Intending motor wagon users must weigh calmly the traffic they could provide or secure, and bear in mind the increased wear and tear consequent upon hire or general carrying. Variety of work and change of route multiplied difficulties almost beyond belief, as drivers never knew all the conditions, and were themselves under less control. Management was not debited. There existed extreme difficulty in reconciling the working conditions in different parts of the country, and for various trades. A detailed examination of each point was impossible, but a few called for reference. These were:

**WORKING DAYS.**—It must be admitted that careful driving only would obtain 280 working days per annum. There were machines running 300 days per annum successfully, but if old and lightly-built waggons were included the average would approach 250 days. The results obtained depended very largely upon the driver, his road and speed judgment, and an early attention to small adjustments.

**DRIVERS.**—It was vitally important to select the right type of men. Motor wagon driving called for resource in difficulties, nerve for traffic, and a steady and sober temperament. A splendid fitter might be a total failure as a driver, and references as to stationary jobs went for nothing until after road trial. Experience proved that a man could be taken from the country, given a month's training, and developed into a good all-round driver, though somewhat less independent of outside help at times. Much difficulty had been experienced in the past in the procurement of efficient and careful drivers, but with the necessary opportunities at the maker's works there was practically an unending supply of good drivers upon which to draw.

**ROADS AND TARE.**—A regular forty-five miles per day could be performed only on good surfaces and foundation. Under inferior circumstances the forty-five miles per day fell rapidly to twenty-five miles in wet weather. Warning must be given as to this class of traffic on "unpitched" or "unbottomed" roads. With new weight and other heavy traffic regulations expected from Mr. Long shortly the present difficulties should be largely ameliorated. They had been unexpectedly accentuated by combined result of tare limit of three tons, and minimum legal width of tyre 4in. of 1896 Act. Makers had been unable to fit wide tyres and large diameter wheels except by illegal tare. The present tare limit had meant the reduction of mechanical strength, and the prevention of the use of wide tyres.

**MILEAGE AND COSTS.**—The determining factor was the available traffic. The table stood good to-day, save that under the new Act heavier loads could be carried. Working costs would not increase, and the prices of vehicles were

likely to fall with increased output. This fall might reach fifteen per cent. in three years. Past experience had shown the need for discrimination with regard to areas, distances, roads, traffic, and local customs if there was to be a reasonable prospect of success. They had been taught to draw the line between paying and non-paying conditions. Mr. Smith said he would give a definite statement on this line of demarcation for the guidance of those contemplating motor wagon use in their own business openings.

His figures referred to a steam lorry, with platform load of four tons, and hauling a two tons load on trailer at average speed not more than five miles per hour. Daily mileage and loaded trips must be fixed according to trade or requirements, and machines used must have a minimum tare of four tons. His gauge was the amount earned, and the enquirer must judge of the possibility of that realisation. The costs of working had been proved within reasonable limits, but the earnings varied enormously with work undertaken. There were broadly two classes of users of motor waggons:

- The owner for use in his own trade.
- The owner for hire.

Heavy motor waggons would prove remunerative where the undernoted weekly freight expenditure by horse or rail could be replaced on a maximum mileage of 220 miles load capacity as mentioned above:

Class of Work.	Weight Capacity.	
	Self-contained motor wagon, 4 tons.	Motor wagon and trailer, 7 tons.
Per week (20 hours under steam, 5 1/2 days, 50 weeks per annum.)	£	£
<b>Prime cost</b> ...	600	67 1/2
Interest at five per cent. per annum ...	30 0	33 7/5
Depreciation at fifteen per cent. per annum ...	90 0	101 2/5
Fuel—Coke at 15s. per ton ...	63 0	94 5
Wages—Driver at 35s. per week ...	91 0	91 0
Assistant at 17s. 6d. per week ...	75 0	45 5
Repairs and adjustments ...	20 0	25 0
Water, lubricants, and sundries ...	12 0	15 0
Insurances ...	—	—
<b>Total per annum</b> ...	£381 0	£496 0
<b>Vehicle-miles per annum (280 days).</b>	Miles.	Miles.
(A) On bumpy and badly paved roads; thirty miles per day ...	8,400	8,400
(B) On average granite setts, etc.; thirty five miles per day ...	9,800	9,800
(C) On good macadam; forty five miles per day ...	12,600	12,600
<b>Net ton-miles per annum.</b>		
A ... with full load ...	33,600	58,600
... " " " ...	25,200	44,100
... " " " ...	16,800	29,400
... with full load ...	39,200	68,600
B ... " " " ...	29,400	51,450
... " " " ...	19,600	34,300
... with full load ...	50,400	88,200
... " " " ...	37,800	66,150
... " " " ...	25,200	44,100
<b>Cost per net ton-mile.</b>	d.	d.
A ... with full load ...	2 7	2 0
... " " " ...	3 6	2 7
... " " " ...	5 5	4 0
... with full load ...	2 3	1 7
B ... " " " ...	3 1	2 3
... " " " ...	4 7	3 5
... with full load ...	1 8	1 3
C ... " " " ...	2 4	1 8
... " " " ...	3 6	2 7

These costs were inclusive of interest on capital outlay, depreciation, wages, and running expenses, but on owner's work nothing was included for management or supervision. The large increase for hire was due to risk of intermittent occupation, rent, management, interest on extra capital outlay, claims for damage to goods, and fifteen per cent. added for contingencies and profit. Many firms had insufficient regular traffic even to occupy one motor economically. It was urgent to employ a motor wagon constantly. The advantage of hiring was the absence of risk and expense of breakdowns. If six or seven tons were required to be carried on the motor lorry, and another two or three in the trailer, steam vehicles could now be obtained to do this at some ten per cent. increase of aggre-



gate working cost. Wherever there were delays in loading and unloading the larger weight carried at one time frequently timed the scale in comparison with horses, rail, or canal. Instances would be found where a four tons load would only pay expenses, whilst the extra load would be nearly all profit. With good roads it was preferable to carry the whole load on the motor waggon. There were many highly interesting developments under consideration, the schemes of Lord Iveagh and Mr. Pirrie for Ireland being probably the largest. Also there was vast scope for the highest engineering intellects in the improvements necessary. One system, the "ped-rail" of Mr. B. J. Diplock, should be watched; it might have a wide reaching effect on internal transportation. The motor waggon industry of this country had much to gain by close observation of traction engine experience, especially in

regard to points of design and working. There was room for blending the best points of each, to avoid excessive weight, provide the needed strength, and produce an instrument at once internally effective and externally indestructible. This done, there was ahead an enormous potential demand both for home and export. The successful use of kerosene under road conditions where the engine load differed from moment to moment opened a wide extension of the principle of internal combustion as a source of power for heavy motor traffic. In view of the whole matter of transport purposes, Mr. Smith thought the club might advisedly form a special committee on "Mechanical Road Transport." The position of the movement to-day was that given an increased tare heavy motor traffic was an assured mechanical and commercial success in very many directions.

(To be continued.)

## CLUB DOINGS.

### The Southern Motor Club.

Informal runs for November have been arranged as follows: Sunday, 15th, to Brighton; Sunday, 22nd, to Southsea; Sunday, 29th, to Westcott. It has also been arranged to hold club evenings at the new headquarters on Thursdays during the winter months.

### Cheltenham and Gloucestershire A.C.

At a special meeting held to discuss the Motor Car Act, a resolution was passed to the effect: "That while approving of the general principle of a reasonable speed limit in the interests of all users of the roads, the club regretted that the Legislature should have thought fit to impose so many restrictions upon motor vehicles, more especially as regards numbering." The club is also in entire accord with the Reading Automobile Club's scheme for an automobile federation, and suggests Birmingham as a convenient centre.

### Scottish A.C. (Western Section).

The following arrangements for club evenings and discussions for the winter session have been made: Monday, 23rd November, discussion, "The Ideal Touring Car," introduced by Mr. John M. Ross; Monday, 7th December, annual dinner, chairman, the Right Honourable Lord Inverclyde; Monday, 18th January, 1904, paper, "Reminiscences of the Road," by Mr. Charles Jarrott; Monday, 1st February, paper, "The Evolution of Roadmaking in Scotland," by Mr. Robert Drummond, C.E., F.S.A.; Monday, 15th February, discussion on "The Cost, Upkeep, and Care of an Autocar," introduced by Messrs. John Adam and J. Hunter Steen; Monday, 7th March, paper, "The Medical Aspect of Motoring," by Professor Hugh Galt. The meetings are held at the Windsor Hotel, St. Vincent Street, Glasgow, at eight p.m.

### Yorkshire A.C.

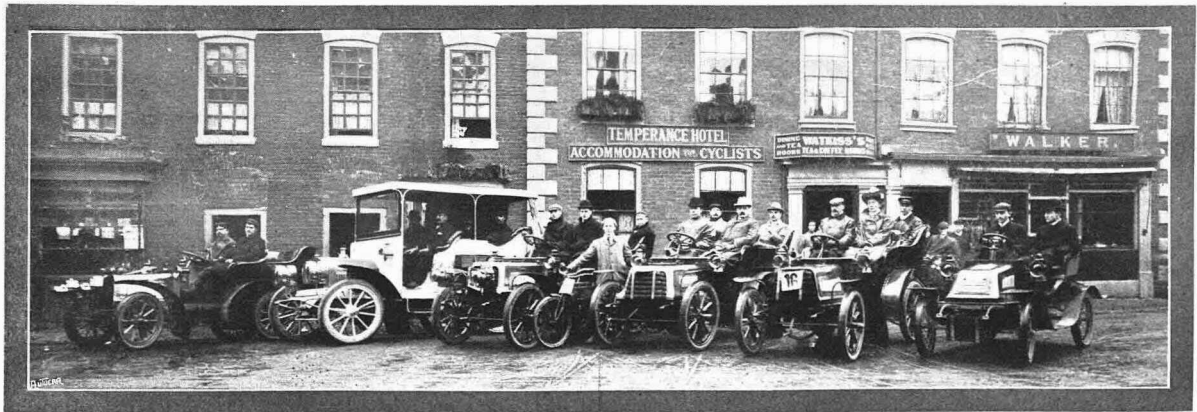
Amongst the guests who have been invited to attend the annual dinner of the Yorkshire A.C. at the Great Northern Hotel, Leeds, on Friday, December 4th, is M. Jenatzy, the winner of the last Gordon-Bennett race.

### Cambridge University A.C. Hill Climb.

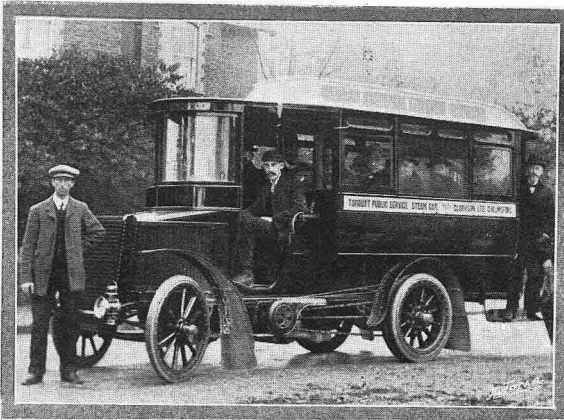
A hill-climbing competition, promoted by the Cambridge University A.C., was held a few days ago at Otley Hill, near Hitchin—an incline which has a gradient of one in eight and one in nine. Eight cars competed. The result was a tie between a 20 h.p. M.M.C., which climbed the hill in 1m. 24s., and a 12 h.p. Lucas (fitted with a two-cycle engine), which accomplished the feat in 1m. 26s. on the handicap. The other cars competing were 20 h.p. Napier (this car was driven by Mr. Lionel Rothschild, and was missing badly), Panhard, Georges-Richard Brasier, Baby Peugeot, Swift, and 9 h.p. Argyll.

### The Proposed Federation of Provincial Clubs.

This project—the details of which, as formulated by the Reading A.C., have been already published—does not appear to meet with the approval of the Nottingham and District A.C. This, we imagine, is because an imperfect view is taken of the scope, or rather the limitations, of the proposed organisation. The Nottingham secretary (Mr. A. R. Atkey) in reply to the Reading circular, intimates that his club is "not prepared to give the slightest support or approval" to the suggested federation. The Nottingham clubmen appear to be labouring under the impression that the whole question is summed up in getting a low rate of subscription, but this, as we understand it, is not the case. The Nottingham Club also "strongly object" to the use of the term "provincial automobilism."



Wolverhampton A.C. A meet at a favourite rendezvous. On the occasion of the recent hill climb at Bridgnorth there was quite a little fleet of Star cars present, so that they were grouped together and photographed. Starting from the left the machines are a two-cylinder 7 h.p., a four-cylinder 18 h.p., then two four-cylinder 12 h.p.'s. The next is a two-cylinder 7 h.p., and the last on the right a two-cylinder 6 h.p. two-seated car. It will be noticed in the large white car with the canopy, in which Mr. Lisle is sitting, that in the outline of the bonnet and dashboard there are some departures from Star practice. This machine has been specially built to the order of Mr. C. E. Shaw, M.P. Mechanical inlet valves are used, and a remarkably quiet and flexible engine is obtained.



**MOTOR 'BUSES AT TORQUAY.** Last week there arrived in Torquay a Chelmsford steam omnibus supplied by the inventors and manufacturers, Messrs. Clarkson, Ltd., of Chelmsford. The vehicle has seating capacity for fifteen passengers, and calculating this number at an average weight the gross weight which the engine has to propel is about three tons. This 'bus is lighted by electricity and ample ventilation is provided; spring cushions further contribute to the comfort of the passengers. As a preliminary run the 'bus carried the Licensing Committee over one of the routes, a distance of three miles, to the entire satisfaction of those gentlemen, who immediately granted the necessary license. It is interesting to note that this car is fitted with Butter tyres, the twin pattern being provided to the rear wheels.

Here, again, there is no necessity to differentiate between various kinds of automobilism. The scope of the proposed federation, as we understand it, will be largely confined to work which as a national body the parent club cannot undertake. Thus we say without intending any depreciation of the national work of the A.C.G.B.I.

All will agree in the sentiment expressed by Mr. Atkey that "the idea of splitting automobilism into factions would be exceedingly foolish at a time when united effort is so badly needed. The proposed federation would, we believe, tend not towards disintegration, but towards unity, as it would work with the parent club.

"What we in Nottingham" (continues the letter) "have realised is the enormous amount of good work which has been done to automobilism generally—including Reading provincial automobilism—by the A.C.G.B. and I. We recognised this long before we were affiliated, and when that body drafted their affiliation scheme, we gladly welcomed the opportunity it afforded of enabling us in some measure to signify in a practical form our sympathy and appreciation for services rendered in the common good. We did not try to squeeze our capitation fees out of the existing subscription of one guinea, but went straight to our members and said, 'We want you to increase your subscription by 10s. 6d. in order to strengthen the hands of the parent organisation.' To a man they did so, with all the willingness in the world, and so we have not felt the pinch of poverty like Reading, nor been troubled like our Lincoln brethren with this 'burning question' of affiliation fees.

"We are extremely sorry that in a movement so new as ours, composed, as one would imagine, of intelligent and catholic-minded men, there has not been a more loyal and lofty spirit of enthusiasm displayed than is evinced by your circular, and the sordid bickerings of the Lincoln Club.

"We in Nottingham are as keen as decency will permit in getting full value for money, and in making arrangements which will be most beneficial to ourselves. But we are all fully convinced that the time has not yet arrived when personal or local interests should be weighed in the balance. If automobilism is to be progressive, if we are to develop this great pastime and industry, it can only be by united effort and unselfish work.

"We have in the parent club an organisation capable of enormous good, composed in the main of men of great influence and personal integrity, who have made enormous sacrifices which will directly or indirectly benefit every-

one of us from Land's End to John-o'-Groat's. To us therefore, our duty is clear, and with no uncertain voice we deprecate any secessional conferences or cheap federations, and affirm our undivided loyalty to the A.C.G.B.I.

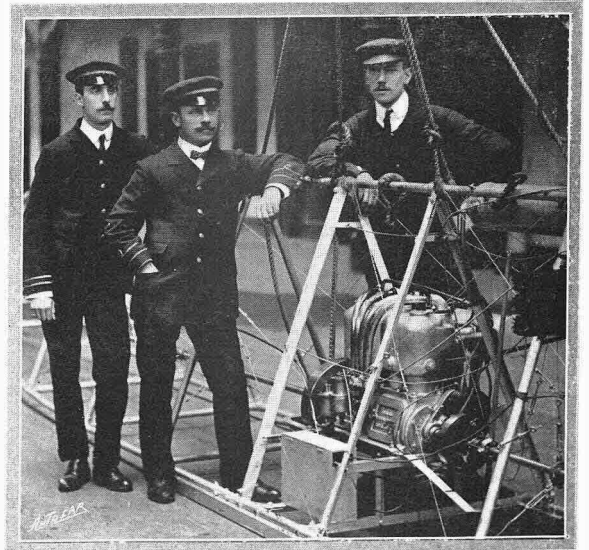
"Our affiliation entitles us to a voice on its executive committee, and on the executive committee of the Motor Union, and if every other provincial club would affiliate and send its representatives, we could materially influence the general policy of the club. Thus would Reading 'provincial automobilism' gain its own ends, and at the same time be a material factor for the general good."

Many consider there is room for an organisation such as that proposed by the Reading Club, and that the points raised and the praise bestowed upon the parent club in the communication from Nottingham—matters upon which all automobilists will agree—do not in the least show that a federation of provincial automobilists is unnecessary.

#### Midland A.C. Hill Climb Results.

The results of the hill-climbing handicap which was conducted by the Midland A.C. on September 12th have just been received, two months after the contest. The hill up which the competition took place was the Surrising ascent of Edge Hill, the gradient of which varies from one in nine to one in 6.43. Twelve cars entered, and of these eight competed. In *The Autocar* of September 19th the performances of the several cars were reported. Since that time the results have been worked out by the rules of the handicap, which, however, are not made public, and we here reproduce them:

- First and gold medal.—10 h.p. Wolseley (No. 8), driven by Mr. H. Luff Smith. Time, 1m. 27 $\frac{3}{4}$ s. .33 points.  
 Second and silver medal.—12 h.p. Ariel (No. 12), Mr. Harvey Du Cros. Time, 1m. 22 $\frac{3}{4}$ s. .35 points.  
 Third.—16 h.p. De Dietrich (No. 3), Mr. H. A. Holder. Time, 1m. 11s. .36 points.  
 Fourth.—10 h.p. Lanchester (No. 4), Mr. C. W. Dixon. Time, 1m. 58 $\frac{3}{4}$ s. .37 points.  
 Fifth.—10 h.p. Lanchester (No. 6), Mr. M. A. Lawrence. Time, 2m. 2s. .39 points.  
 Sixth.—10 h.p. Lanchester (No. 7), Mr. E. J. Hartenfeld. Time, 2m. 1 $\frac{3}{4}$ s. .40 points.  
 Seventh.—20 h.p. Wolseley (No. 10), Mr. A. E. Crowdy. Time, 1m. 16s. .44 points.  
 Eighth.—24 h.p. Panhard (No. 1), Mr. J. A. Holder. Time, 1m. 9 $\frac{3}{4}$ s. .54 points.



**THE BEEDLE AIRSHIP.** The four-cylinder 12-15 h.p. Blake engine in position. This motor is precisely the same as those supplied for use in autocars, excepting that aluminium has been used in its construction wherever possible. Electric ignition is employed, and two gallons of petrol and two gallons of cooling water are carried for its use. See also page 596.

## THE AMERICAN RELIABILITY TRIALS.

The American reliability trials came to a conclusion on October 15th, when out of the thirty-four cars which left Weehawken, New York, on October 7th, twenty reached Pittsburg, P.A. A description of the first six days' run was given in *The Autocar* of October 31st, pages 557-560, in which the distressing weather conditions were fully brought out. These conditions obtained through the remainder of the journey with but little variation. The state of the roads over the last two stages were such as made the performance of the finishing cars all the more meritorious. The prevailing conditions were heavy clay, extremely slippery in places, with an aggravated switchback contour for a grand finale. In comparison with the A.C.G.B. and I. thousand miles trials there was a very considerably larger number of repairs and replacements; but, in consideration of the conditions, we do not think that these were abnormally large, yet, on the other hand, it was plain that in many respects certain parts were not nearly so strong as they should have been. American manufacturers will no doubt take advantage of the lessons learned, and improve these matters.

One of the most exciting incidents of the later stages occurred to one of the Knox cars. The car in question was plugging away through rain and mud when the front wheels dropped into a rain-filled gully, washing the water over the floor of the car, whereon was a 10 lb. tin of carbide. Matters soon began to get warm in more ways than one, for in reaching over to the fizzing tin of carbide, the operator had the steering tiller knocked out of his hand, and the car plunged on to the side of the road, dropping into a deep water-filled gully, which completely submerged the car. Despite all this, the car was dragged out, put to rights, and continued the run. Taking it all round, the Knox cars had an exceedingly hard time of it. Two suffered cylinder troubles through bad lubricating oil, while yet another, running out of petrol, filled up his tank with kerosene, and finished on that up to Erie.

The following is a synopsis of the performances of the cars:

- No. 2.—Columbia ran right through to Pittsburg, making good times on all stages.
- No. 3.—Columbia did not go beyond Pine Hill first stage.
- No. 4.—White steam car did not complete the third stage.
- No. 5.—White steam car ran through to Pittsburg, making excellent times on all stages.
- No. 6.—Another White steam car also ran right through the trials. This car and No. 5 left Weehawken together, and arrived at

Pittsburg simultaneously, though after the third stage the times were not coincident.

- No. 9.—Toledo completed the trials, and ran straight through from the third to the fourth stage.
- No. 10.—Toledo ran through to Pittsburg; stopped at end of each stage.
- No. 13.—Phelps did not complete the second stage.



One of the two White steam cars which ran through the American reliability trials from New York to Pittsburg.

- No. 14.—Arrow ran right through the trials in good time.
- No. 15.—Pierce ran through to Pittsburg. Small difference in time between it and the Arrow.
- No. 16.—Packard (Old Pacific) completed the trials in excellent time.
- No. 17.—Rambler arrived at Pittsburg, running straight through from the second to the seventh stage.
- No. 18.—Rambler ran through to Pittsburg in excellent time, resting at each stage.
- No. 19.—Fredonia ran through from the second to the last stage, arriving late at Pittsburg.
- No. 20.—Fredonia arrived at the end of the trial course on Friday morning.
- No. 23.—Knox reached Pittsburg late on Thursday evening, running straight through from the second to the fifth stage.
- No. 24.—Knox retired on the sixth stage.
- No. 25.—Knox retired on the second stage.
- No. 26.—Franklin completed the trial in good time, running straight through from the second to the fourth stage.
- No. 27.—Franklin arrived at Pittsburg three minutes later than No. 26.
- No. 28.—Franklin retired on the second stage.

- No. 29.—Haynes-Apperson retired on the second stage.
- No. 30.—Haynes-Apperson arrived in Pittsburg in good time.
- No. 31.—Haynes-Apperson retired on the second stage.
- No. 32.—Northern retired on the second stage.
- No. 33.—Northern retired on the third stage.
- No. 34.—Northern retired on the second stage.
- No. 35.—Stearns completed course in good time, resting each stage.
- No. 36.—Locomobile arrived at Pittsburg early, running straight through from third to fifth stage.
- No. 37.—Holley broke down on first stage.
- No. 39.—Oldsmobile arrived at end of trial in good time, running through from third to fourth stage.
- No. 40.—Oldsmobile retired on the third stage.
- No. 41.—Oldsmobile arrived in Pittsburg 3h. 40m. after the first cars.
- No. 42.—St. Louis reached the end of the trial in good time, running straight through from the second to the seventh stage.

### NON-STOP RUNS.

For the benefit of those who wish to undertake non-stop runs at other periods than those afforded by the club reliability trials or quarterly 100 miles runs, Mr. Basil H. Joy, the technical secretary of the Automobile Club, informs us that the club has decided that an official record shall be kept at its premises, 119, Piccadilly, London, W., of all absolute non-stop runs recognised by the club. The club is prepared to furnish an official to ride on any car with which it is proposed to make such a run, the expenses of the official to be borne by the manufacturer, together with the fee of two guineas per day for his services. It will be necessary for the manufacturers to give proper notice of their proposal to hold a run, and to arrange with the club for the attendance of the official in the event of the manufacturer desiring that the run shall be officially recognised by the club.

### POLICE TRAPS.

A correspondent writes: The notable Ripley sergeant had shifted his ground on Sunday last and irreproachably turned out in grey unmentionables, black overcoat, and an alpine hat, had posted himself at the foot of Bodystone Hill, on the London side of Ripley, with his uniformed scouts thrown out to left and right. Between Esher and Ripley every car we met gave us warning, but it was evident that the sergeant had selected his ground with the idea of catching cars as they came off the hill, which is long, straight, and of easy grade, very provocative of pressure upon the accelerator or a little opening of the throttle. Apparently, therefore, the sergeant's appetite has been whetted by that it feeds upon, as he has moved his trap from the village street out into the open country. We came across another police trap laid somewhat unskillfully on the decline from the top of the Hind Head towards Liphook, but warning and to spare was given by some sporting automobilists who

rolled the top of the hill for some time with a police trap card displayed over the tonneau door. The car doing such good service was driven by a lady.

Another correspondent informs us of the existence of a trap on the incline down from the Royal Herts Hotel, Farnham, on entering the town from the Guildford end. It will also be advisable to exercise caution on the main roads of Northumberland, where, judging from the report of the County Council proceedings, an outbreak of police "vigilance" may shortly be expected.

### MANY USEFUL THINGS.

The United Motor Industries of 45, Great Marlborough Street, have just now some interesting novelties to show automobilists and makers. One of these is a fitting in the form of a dark lantern shutter arranged in the cone of a Castle acetyloid lamp, by which the bright light from the burner can be entirely veiled at will by the driver from his seat, whenever the brilliance of the light has scared man or beast on the road. The light can be instantly uncovered again at will. A wire and ring leading to the steering wheel afford the means of striking the shutter when desired. The car sets of Auto-clés or box spanners for a garage are also worthy of attention. They are equipped with no less than thirty-one keys, lengthening rod, junction piece, and two screw bits, the keys being of sizes to fit any nut on any well-known French or English make of cars. The U.M.I. are also making a speciality of French motor body furniture a thing which many English body builders will be glad to know. They have also a particularly neat watch-holder fashioned with suitable clips to attach to the arms of the steering wheel. A double purpose funnel (water and petrol) is a good space saving accessory. The funnel proper serves for water, but when it is desired to fill up the petrol tank the petrol straining portion shuts back into the ordinary well of the funnel. The W. oilcan, with detachable funnel, is also an article which will be welcomed. In lamps, the U.M.I. have several new patterns, the Castle Miniature petroleum lamp of English manufacture being a thoroughly well finished article, while the new Alpha, with cleverly designed double lens, should have a big vogue. The Castle fitted tool roll should be on every car. With it a man may realise that there is all he is likely to require in the shape of tools to cope with any ordinary roadside breakdown.

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