THE AUTOCAR

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

EDITED BY HENRY STURMEY.

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THE AUTOCAR.

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Notes.

It is announced from America that Mr. Arthur Kitson, treasurer of the American Daimler Motor Co., of Steinway, Long Island, and some others, have secured a controlling interest in the American company, having purchased 210,000 dollars worth out of the total stock of $400,000, and that they will organise a new company to manufacture autocars propelled by motors made under the Daimler patents.

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To visit the Automobile Club show at Richmond Mr. John Stirling, managing director of the Stirling Motor Carriages, Ltd., Hamilton, N.B., drove his motor dogcart from Edinburgh to London in two days. On the first day he covered 170 miles, and reached London at midnight of the second day. The machine was driven about in the show grounds afterwards.

* * *

The Northern Motor Co., of Copenhagen, has made a good beginning. A few days since Mr. Holger Hassel, its manager, went to the German Daimler factory at Cannstadt, where he was met by H.R.H. the Crown Prince of Sweden and Norway, who is extremely interested in autocars. After the Prince had been round the works and tried some of the machines he placed an order with Mr. Hassel's firm for a motor Victoria.

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It will be remembered that not so very long since we announced that Dr. Colohan, of Dublin, had made a friendly wager that he would drive his Benz car from Dublin to Kilbeggan and back, over give and take Irish roads, inside twelve hours. Considering the roughness of many of the roads traversed, and the hard grades to be surmounted, not a few motorcarists thought he had accepted a rather arduous challenge. However, a few days since he set out and satisfactorily accomplished what is, we believe, the first long motor drive in Ireland which has attracted public attention, and he covered the 123 miles in just inside eleven hours.

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An instance of the way in which motor "accidents" are worked up occurred last week. The sub-heading of the paragraph referred to a "narrow escape of the Duke of Orleans and his private secretary," and one might be led to believe that it was caused by a motor "instead of which," as the immortal saying goes, a cab ran into the motor, and so caused the so-called motor car accident. The Duke had driven up in a private electric brougham to Waterloo Station, and in descending from the main line platform to the Waterloo Road, a hansom cab came in collision with it, driving it against a brick wall, and partially wrecking it. This is a fair sample of the usual way in which so-called motor car accidents are worked up.

* * *

The Worthing Town Council have licensed a motor waggonette to ply for hire within their jurisdiction. The license is a conditional one for three months. The machine is not to be driven within the borough at a greater speed than nine miles an hour, and it must not turn corners at above four miles an hour. If it is considered to have behaved itself properly at the end of three months the license will be renewed should the owner so desire. At the same sitting of the council, it is interesting to note, a number of drivers of horse-drawn vehicles who had been addicted to drunkenness, and who had been found drunk when in charge of the carriages they drive, were relicensed with a caution that they must remain temperate in future.

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Some time since *The Electrical Review* of New York offered prizes for the best names to designate the electrically-propelled self-contained vehicle for roads and streets. About four hundred suggestions were received from England, South America, and the States generally, and eventually the word "Electromobile" gained the first award. Some of the names sent in were very quaint, as may be judged by a perusal of the following list: Accelawatt, Equine-nit, Bacrotom, Automo, Aut, Faraday, Autopropelectric, Electragon, Trolley-Ho, Moto, Locomobile, Telecar, Electropel, Autogo, Autovolt, Elecar, Pacolet, Franklin, Automote, Cheveless, Moby, Plantemobile, Electrola, Antihorse, Voltcar, Quatrecycle, Odomotor, Autema.

* * *

Engineering is still pessimistic. In referring to the long-distance trials of the Automobile Club it says: "The display was sufficient to make it plain that the average automotor car is not the kind of vehicle most persons would select for a short trip in the country. The rattle, jar, dust, and stench are as opposed as anything can well be to the peace and quiet of the country." After this extraordinary outburst we can only wonder what the *Engineering* man was doing at Southall, and whether he has ever had a ride on a decent motor car. However, he makes one exception, and that is in favour of the Lanchester car, which is undoubtedly wonderfully free from vibration, though so far as the other numerous objections mentioned by *Engineering* are concerned, it is no better, or worse, than its fellows.

To-day (Saturday) the Crystal Palace Company are holding an open motor cycle race-meeting on the cycle track. Mr. F. W. Baily informs us that the chief item will be an hour's contest for a £105 cup put up by the Crystal Palace Company. This will be a kind of challenge trophy, and the winner from time to time will be expected to meet challengers, but no particulars are yet given of the conditions under which the cup will be held. There is also a five miles scratch race for a silver cup presented by Mr. Wellington, and a two miles handicap. In each of these races, provided that not less than six entries are received, three prizes will be given. There is also a possibility that the match between Messrs. Weigel and Wridgway will come off if the former should receive his tricycle in time. For this the Palace Company are offering a gold medal.

* * *

A peculiar, and indeed amusing, little accident occurred in Lincoln on Thursday night of last week. Mr. and Mrs. R. M. Wright were riding a "Humber" motor quadricycle along Newland, closely keeping their proper side, when a gentleman on a bicycle, who had been watching the motor coming along, by some means rode into the quad. Mr. Wright stopped it dead, and so came off, grazing one hand slightly, but Mrs. Wright retained her seat. The cyclist was unhurt, but his machine was crushed at the back rim and gear case. There appears to be no suitable explanation as to why the bicycle ran into the motor, for the rider is very experienced. After it was all over, and the inevitable crowd cleared away, the party had a good laugh over the incident, a state of things one could desire was more usual in these cases.

* * *

Although Messrs. Shrapnell Smith and Henry Sturmey appeared to prove that Van Toll was travelling at a reasonable pace with his car fully under control when he was stopped by the police, as recorded in our issue of a fortnight since, he was fined 10s. and costs at the West London Police Court for the offence, the Stipendiary at the same time remarking that the speed of the traffic in London had perceptibly increased within the memory of man, firstly, through the improvement in the quality of the horses used; secondly, in the introduction and use of the bicycle; and, latterly, by the introduction of the motor car, which appeared to him to endeavour to exceed the speed of the fastest bicycle. He apparently did not look very seriously upon the case, but, we suppose, had to support the policeman, so imposed a small fine and costs—12s. in all—as a solatium to that dignitary's feelings.

* * *

A Scotte road train service has, we learn, just been started between Ventimiglia, on the French-Italian frontier, near Nice and Vievola, for the conveyance of passengers. The last-named town is at present the terminus of the railway system connecting the district with the province of Piedmont. The train comprises a twenty-seven horse-power Scotte combined steam tractor and 'bus conveying sixteen passengers, and a trailer having accommodation for twenty-four persons. Ere the service was permitted to be started a trial trip had to be run in presence of both Government and local authorities, through which we understand the train successfully passed. The outward journey from Ventimiglia is all uphill, the forty-three kilometres between that town and San Dalmazzo di Tenda being covered in six hours. The Italian authorities have fixed the maximum speed to be permitted at fourteen kilometres per hour, and on the return journey this was easily maintained.

* * *

With reference to the opinion expressed in our report of the Automobile Club Show that the Jackson "Doctors'" car was underpowered, Mr. Tuke writes us that the Yorkshire Motor Car Co. guarantee that it will climb a genuine gradient of one in eight or nine with two persons on board, and that as a matter of fact it has been up a heavy gradient two hundred yards in length, averaging one in seven, and with three persons on board, at about three miles an hour. He further informs us that they are prepared to fit the car if desired with a three horse-power motor, which they will guarantee to take three or four persons up a gradient of one in six or seven, and at twenty to twenty-two miles an hour on the level, this, of course, at an extra charge. We are looking forward with much interest to an opportunity of trying this little car, which attracted universal attention at the show, and is an undoubted triumph in the way of showing what can be effected with a one and a half horse-power De Dion motor, and we are pleased to learn that the firm have already done exceedingly well with it in the way of orders.

* * *

Autocar builders who are anxious to silence the running of their motors to the utmost, and are considering the employment of raw-hide pinions, should write Messrs. Schreiber and Co., of Victoria Avenue, Bishopsgate Street Without, who are importing specially-made raw-hide pinions from Chicago. In high-speed machinery small diameter pinions of this description have not hitherto given the best results, but Messrs. Schreiber claim that all previous shortcomings are now overcome by the method in which their special brand of raw-hide pinions are made. The pinion employed must always be wider than the spur wheel with which it meshes, as the laminæ of raw-hide are made up solid between two thin discs of brass, and the teeth cut through all. At present, Messrs. Schreiber prefer to consider each enquiry on its merits, and are willing to cut their pinions to the gauges of their customers. As we know the Lifu people use raw-hide pinions in connection with their highly successful engines, and this is doubtless largely responsible for the quietude of these admirable motors, a larger use of such gear wheels by motor makers would appear to be desirable.

* * *

The Paddington Vestry is evidently, so far as the majority of its members are concerned, the reverse of a goahead public body. At a recent meeting it was proposed that a deputation should be sent from them consisting of the chairman and vice-chairman of the Works Committee, together with their surveyor, to the Liverpool heavy van trials, so that these three gentlemen might follow the trials and form their conclusions as to the suitability of the different vans competing for use on the vestry roads as dust vans, etc. However, a penny-wise-and-pound-foolish policy prevailed, and the proposition to send the deputation was negatived. It is rather amusing to read the comments of the local papers on the subject. They seem

to labour under the delusion that the excursion would have been a kind of picnic, and an altogether delightful outing, as unnecessary as pleasurable, for they say, "Motors, with all their qualifications and capabilities, can be examined nearer home." We should like to know how or where such an opportunity will be afforded, at any rate this year, for comparing the respective merits of motor vans likely to be suitable for vestry work. £20 was asked for as the expenses of the deputation during the trials, and we have no doubt that the vestry will spend considerably more than this sum in ordinary railway fares, etc., to the makers of different machines which they may contemplate purchasing. However, this is the way of such bodies.

* * *

The motor car show at the Agricultural Hall will open on Monday next, July 3rd, and remain open for two weeks. At present no list of exhibitors has been issued, but we are given to understand that a representative selection of machines will be staged, and that over seventy entries have been received for the road trials, of which we gave full particulars in our issue of April 15th last, though the competition for goods vehicles to carry a minimum load of three tons, and at least two people, has been abandoned, and one or two other competitions may also be dropped, but for pleasure carriages designed to carry not more than two persons, and the next class for those designed to carry four or more persons, very big entries have been received. In addition to the gold medals offered for the contests for electrical vehicles four cash prizes of £25 each will be given. These road trials will take place during the second week of the exhibition. In the centre of the hall, we are told that all the sports usually taking place at the military tournament will be put on, but motor tricycles and motor vehicles generally will be used in place of horses. This sounds rather an impossible procedure, but we shall not have long to wait before we know whether it is successfully carried out or not.

* * *

Upon very good authority we learn that there is every probability of the Local Government Board seeing its way at no distant date to increase the permissible speed limit of vehicles weighing under two tons from eight miles an hour to twelve, and we believe the trials which were made on Friday with a loaded Daimler Post Office van on the hills around Richmond had some bearing upon this question. There can be no doubt that such a provision would mean a great deal to this branch of the automobile industry, more especially in the direction of omnibuses and large passenger vehicles, and would not in any way endanger the safety of the public. At the same time, if such an alteration is made, it will be only fair and reasonable that the speed limit for the lighter forms of vehicle should also be raised. We do not suppose that it is within the powers of the Local Government Board to permit a speed limit greater than that laid down in the Act, viz., fourteen miles an hour, but we think the Local Government Board regulations may well be made to coincide with the Act in this particular. We have no doubt it will be many years before the legal limit can be raised beyond this, as a new Act of Parliament would be required, and probably before that is secured the end will have been gained by the tacit consent of the authorities to ignore the speed question *per se* so long as reasonable care in the matter of speed in relation to local circumstances and surroundings is exercised.

* * *

Some further particulars are to hand with regard to the Altrincham accident last week. In the first place it appears that Barnes, who was a driver and not a traveller in the employ of Bond's Soap Co., is steadily making progress towards recovery, and does not appear to have succumbed to his injuries, as stated in our last. According to the evidence of the ladies who were on board they were not being driven at the excessive rate of speed which appeared to be the case from the first accounts, but were travelling on the top-speed of the van, viz., twelve miles an hour, when at the bottom of a slope one of the steering pins broke, which sent the car into the side walk, and caused it not to turn over in the ordinary acceptation of the term, but to literally "stand on its head," very nearly turning a somersault forwards, in which position the petrol being fed into the burners by gravity as well as pressure quickly flooded them, and set fire to the car. It is perfectly clear that there is no such thing as an explosion, and in this case it is probable that had the car turned on its side and not stood on its head no fire would have occurred. The accident emphasises the absolute necessity of the steering and all the connections to it on an autocar being strong and reliable. The owners say the upset was caused by a sudden failure of the steering gear caused by the breaking of the cast iron lug holding the steering-pillar in position. If this be so we can only say that the sooner a metal of higher grade than cast iron is used at this point the better. However this may be, and however much care may be taken with the material and workmanship in this vital part of a car, it behoves all who have charge of motor carriages to keep a careful eye on the steering. It is very rarely indeed that anything goes wrong with this part of a decently-made carriage. In fact, this accident is the only one that we recollect from the cause; but it is so obvious that any sudden deflection of or failure in the steering must cause a mishap that it is unnecessary to further urge careful attention to this part of the machine.

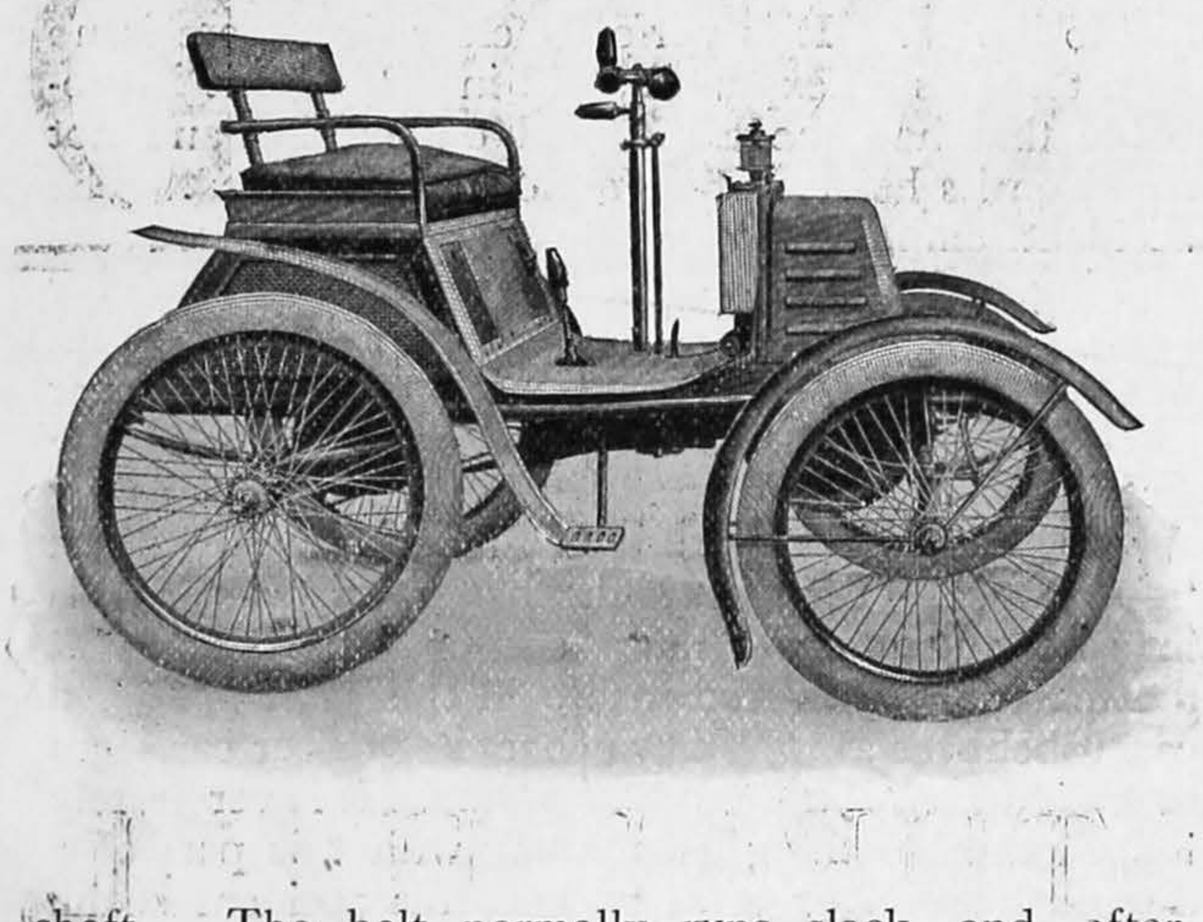
A motor cycle arrived at Boston, Lincolnshire, the other day. It had not been there long before it had a narrow escape of an accident, as a man in charge of a waggon was so astonished when he saw it coming that he suddenly stood still with his horses and waggon in the middle of the road just as he was drawing away to make room for the machine. His unexpected stoppage was not provided for by the motorist, and the machine just grazed his wheel. Luckily, no damage was done.

* * *

Motorists who drive at night should give a trial to Salsbury's improved Anti-candle, which is practically a paraffin lamp of great light-giving power made in the shape of a candle, to take the place thereof in ordinary carriage candle lamps. The Anti-candle will burn petrol, and give fifty per cent. more light than when paraffin is used, at an absurdly small cost. Salsbury's, of Long Acre, are also selling the ingenious and excellent Diety lamp, which also is specially suitable for autocars, as it is absolutely windproof.

THE VIVINUS TWO-SEATED CAR.

With a view of meeting the demand for a light two-seated autocar at a low price, La Société des Ateliers Vivinus, of 244, Rue du Progrès, Brussels, has just put on the market a little vehicle illustrated herewith. The motor is a vertical one, of the petroleum spirit type. It is placed in the front portion of the vehicle, and is stated to develop from three and three-tenths to three and a half horse-power. No water jacket is provided, the cooling of the cylinder being effected by a rotary fan, which is claimed to be "absolutely new"! Electrical ignition is employed, while the carburetter is a special one of the firm's own design. Two speeds are provided, by means of which, in conjunction with the variations possible with the electric ignition, the Vivinus Co. claim that the car can travel at any desired speed from five to forty kilometres per hour. As regards the power transmission mechanism, two pulleys of different diameter are mounted on the motorshaft, only one belt being employed to connect these pulleys with the corresponding pair on the intermediary



shaft. The belt normally runs slack, and, after being "shipped" on to the desired pair of pulleys, it is tightened, and so made to grip, by means of a jockey pulley controlled by a foot pedal. By releasing the latter, the motor can be instantly thrown out of gear with the rear road wheels, as occasion may arise. Another feature of the Vivinus car is that no driving chains are employed, the connection between the intermediary shaft and the rear axle being by means of spur wheels. The petrol tank is stated to have a capacity sufficient for a run of 150 kilometres. The frame is suspended on springs, while the wheels are of the cycle type, 30in. in diameter, and provided with pneumatic tyres. The working parts of the car are claimed to be all of ready access, while the motor is provided with parts made on the interchangeable system. Although the car, which weighs but 3 cwt. 28 lbs. complete, has only been on the market a few weeks, we learn that the company have already over one hundred on order, this no doubt being due to its relative low price—3,000 francs, or about £120. At the price no pretensions to special finish can be expected. As to the merits of the car, we can say nothing, as we believe no machine of the make has been sent to England yet. We should require a good long trial before we were convinced of its durability.

Correspondence.

THE AUTOMOBILE CLUB TESTS AT RICHMOND.

[802.]—As there appears to be a good deal of cross talk respecting the above tests, and a lot of solid truth kept back from the public, as British agents of the Riker Electric Motor Car Co., we feel, in justice to Mr. Riker, the inventor of the Riker system, that we should give some particulars respecting the above tests. In the first place, we would say that we did not personally compete in the trials, although it was our intention to do so, by sending in one of our newest electric sporting dogcarts, as exhibited by the American company at the Motor Car Exhibition recently held in New York, but, unfortunately, this shipment, although it has arrived in England, could not be got out of the London Docks in time for the tests owing to a mistake being made in the bill of lading and shipping documents relating to this particular shipment, nor can we even now get the vehicle released until the arrival of the proper instructions from the New York shippers. Hence it was a very great disappointment to us that we were unable to compete or run this special type of Riker vehicle on the Richmond track. We also wish to specially point out that the hooded Stanhope, exhibited by the Mackenzie Carriage Works, although a Riker phaeton, which is being constructed in two types, Type A being for short runs of twenty-five to thirty miles, and Type B for longer runs of forty to sixty miles, according to requirements and system of storage battery used, the vehicle driven by Mr. Alexander Mackenzie was one of our ordinary Type A, which has been specially designed by the inventor for light power work, and expressly built to comply with the Act of Parliament for running up to twelve miles an hour as legally allowed by law. It may also be mentioned that this type of vehicle is only fitted with a one and a half kilowatt motor, wound for eighty volts, so as to be worked by forty small cells of, say, one hundred ampère hours' capacity, whereas the Leitner trap was fitted with two Riker high-speed motors of two horse-power each, coupled in series, giving, with the average overload these motors will stand, nearly six horse-power, as against Mackenzie's two horse-power, and yet the Riker phaeton did its work admirably, although the hill-climbing test was a severe one for a small motor of only one and a half kilowatt power. . . .

The Mackenzie Carriage Works are constructing by arrangement a large number of this class of electric vehicles for our firm, and we shall shortly have a group of some twenty completed vehicles on view, and with a proper set of batteries, many of which are now obtainable from several makers, they will easily run from thirty to thirty-three miles per day continuously with one charge of battery power, costing less than 2s. for the current consumed. Therefore, when the merits of this special type of "self-propelled electric phaeton" become better known, we have every reason to believe that it will become very popular as a "runabout" vehicle for both pleasure and business purposes, especially as it spins along so smoothly through the streets, and being speeded to

run at either three, six, nine, and twelve miles an hour, and driven from the rear wheels and steered from the front wheels, it is a method of driving which gives absolute control to the driver over his vehicle under all the varied conditions met with in congested City thoroughfares. Every expert who has ridden on this type of vehicle expresses his delight at the pleasure and comfort obtained when riding on same.

Now as to the long-distance contests. It was specially stated by the judges that after the hill-climbing tests were completed the batteries were to be discharged down to 1.8 volt, and then recharged for the thirty miles run, which was adhered to by Mr. Mackenzie. Unfortunately, our Mr. Arthur Shippey has been laid up for some time past with a severe attack of influenza, and his medical man would not allow him to leave his room to supervise the tests. Hence Mr. Mackenzie, although a first-class motor-carist, knows practically nothing of electrical matters, and having no one to assist him in the absence of Mr. Shippey did the best he could with the mixed set of faulty batteries employed to run our vehicle in the tests, which consisted only of 36.90 ampère hour capacity batteries, and four small Headland cells with a capacity of only fifty-five ampères, the charging current of which, according to Headland's list, is stated to be fifteen ampères, hence only the output of the small type of cell was obtained, and on a rapid discharge upon steep grades causing heavy resistance to be created by being overworked. This, as electricians well know, is in our favour. Mr. Mackenzie states that he only recharged the batteries for the thirty miles (Saturday's) run at the rate of eighteen ampères for two hours, and this after the cells had been fully discharged down to 1.8, whereas, we are informed, the "Leitner" batteries were not recharged from the Richmond mains, as arranged, but were recharged from a private plant in the district, and thus probably charged from this plant at forty to fifty ampères, as their battery has a capacity of one hundred and twenty ampère hours per cell, as noted in *The Autocar* on page 518, and without discharging them down to 1.8, as officially noted they should have been, which, we are told, they absolutely refused to do, and if this fact is true we think this refusal alone should have absolutely disqualified them for taking further part in the official tests. We have no actual evidence at present on this point, so we must content ourselves until the issue of the judges' final report, and those of the official observers who saw the batteries charged, as, of course, all the true facts have been noted by the official observers, and will be publicly known by the British public in due course.

Mr. Mackenzie informs us that he mentioned to Sir David Salomons that he was afraid he only had a charge for a twenty miles run, but felt inclined to chance it. Of course, he could have used his discretion, and not have competed with a faulty set of batteries with such a small charge, but we are glad he did compete, considering he obtained nine miles more run than he expected. These undisputed facts speak for themselves. The most extraordinary part of the whole test is that the Electric Undertakings Co. actually competed against us with two of our own racing type of motors purchased by them in New York, and imported into England without our knowledge or consent. . . . So far as we are concerned, we feel it our duty to record these facts, and leave the Automobile Club judges to deal with the matter as they may think best, as, like members of the Jockey Club, they should be a power of strength in matters of this kind connected with the new era of travel, and, as the committee consist of a most influential body of gentlemen whose names are a warranty to the public who have the development and success of the new industry at heart, we have no doubt but that justice will be done us. Personally, we believe in calling a spade a spade, and consider honour should be given to whom honour is due, which in this case certainly belongs to Mr. Riker. We may say that our Mr. Arthur Shippey is making every inquiry possible as to the ins and outs of this mysterious business, and when the inquiries are complete we intend to lay the whole facts before the Automobile Club Committee. In the meantime we feel perfectly justified in claiming the gold medal for the Riker system, as the splendid results obtained in both cases were obtained from the Riker motors. Now, had the tests been fixed by the club as a test for the best battery, instead of the best electric carriage, matters would have borne a different complexion.

SHIPPEY BROS., LTD.,
FREDK. J. SHIPPEY.

June 22nd, King Street, Cheapside, E.C.

FRONT OR BACK STEERING?

[803.]—Can any of your readers state why it is that the majority of the light autocars are fitted with the front wheels steering and not the back? Any experiences showing the advantages and disadvantages of the two methods will be interesting, as several new makers are advocating steering by the back wheels.

W. A. G.

A SUGGESTION FOR DEFENCE.

[804.]—In reference to police persecution, could not something be done in the way of assurance? *i.e.*, cyclists and motorists pay an annual premium to a common fund, out of which fund deduct amount of fines and costs.

I am putting the matter to you in a very crude way; it would be for others to work it out to a practicable issue if the idea is of any value.

FRED KNOTE.

BELTS AND JOCKEY PULLEYS.

[805.]—Will Mr. Thomas Groves tell me how many miles his belts will run before they require renewal?

Those on the small Benz cars will run more than 1,500 miles before being cast aside. In my opinion there is more loss of power with a loose belt running over pulleys than in the fast and loose pulley of the Benz. Of course, a great deal depends on the size of the pulleys and the distance between the centres of the shafts.

JOHN HENRY KNIGHT.

Barfield, Farnham, June 24th.

BRITISH MOTOR MATTERS.

[806.]—The letter of M. Weigel's in last week's issue, although he argues the whole matter of infringement out to his own satisfaction, does not strike me as being a good example of commercial honesty.

There appears to be a general desire on the part of a certain class of people to always benefit at the expense of someone else, and in the question of patents this is emphasised to a very great extent. The patents controlling the De Dion motor, for example, are the result of many years' hard work and experiments and practical use, and the expenditure of a large amount of time and money, and surely those who have done all this are entitled to some return. Nevertheless, M. Weigel would have us steal ideas of such eminent men in the motor car world as Comte De Dion, Monsieur Bouton, Herr Daimler, and a large number of others who are only now reaping the benefit of many years' hard work in experiments, without the payment to them of a single penny. Moreover, the British Motor Co., Ltd., having had the pluck to buy the patents of these early pioneers of the industry at a stage when motors and everything pertaining to them were simply laughed at in England, surely deserve the support of every fair-minded man in the action they have recently taken up for the protection of their rights.

Possibly M. Weigel is not such an innocent individual as he would have us believe, and possibly the chief point in his letter lies in the mention of the particular motor in the earlier part of it, which motor is, I am inclined to believe, an infringement of the British Motor Co.'s patents. I enclose my card, and beg to remain,

AN INDIGNANT SHAREHOLER.

20th June.

A SUGGESTED HILL-CLIMBING CONTEST.

[807.]—Referring to the coming hill-climbing match between the Pennington car and the Mors car, it seems to me that whichever car wins it will not give any particular satisfaction to the ordinary motor car user in this country, as I think what we would all like to see is a competition open to every type of motor vehicle, and it seems to me it would be very interesting if such a thing could be arranged over here.

We are, through the laws of the country, prohibited from racing on the road, but why should we not hold an open hill-climbing test on some very steep gradient, preferably in Kent, such as Westerham Hill, so that it would not be very much trouble for French competitors to cross over, it only being a comparatively short drive from the coast to the scene of the competition.

I believe that such a competition, if arranged at a date suitable to some of the foreign chauffeurs, would prove highly interesting and most instructive to us all over here, as it is obvious that a vehicle that will climb hills fast will go fast on the level if a high gear is fitted.

The class of competition I should suggest would be to go up and down Westerham Hill, say, five times, and the time each car took for the ascent to be allowed it for descent.

If, however, it took longer to descend than it did to ascend, this amount of time should be counted against it in its total hill-climbing time.

The ascents and descents should, of course, be made one after the other until the five ascents have been completed, without any interval or stop between each.

I feel sure that a test of this sort, which could be witnessed by a large number of people, held on a Saturday afternoon, would create wonderful amusement.

Trusting you will think the matter of sufficient interest for insertion in your next issue,

June 22nd. S. F. EDGE.

THE MATCH BETWEEN MESSRS. WEIGEL AND WRIDGWAY.

[808.]—In reply to the letter of Mr. Baily, I greatly regret to state that I am in a very unenviable position.

I have every desire to ride on Saturday, but I am in the awkard position of not having received my new Gaillardet tricycle.

If it arrives in time I shall be at the Crystal Palace and will certainly ride. If it does not what I propose is as follows:

That Messrs. Jarrott and Wridgway ride for the gold medal offered by the Crystal Palace Co., and for the silver cup so kindly offered by Mr. Wellington, and that the winner ride me for both at a future date to be appointed by Mr. Baily, and which will be acceptable to both my opponent and self.

That I on my side deposit a guarantee of £3 with Mr. Baily to ride on the day fixed, and should I fail to put in an appearance the £3 to go for the cost of another prize to be run by others.

I greatly regret this incident, but it is—or at least seems so at present—unavoidable, and I feel it most keenly.

Ride my matches I certainly will, and am prepared to give any guarantee that I will do so, and I sincerely trust that none of your readers will imagine that I am in any way attempting to back out of my own "challenges"—in fact, I trust they will extend me their sympathy in my present unfortunate position.

I have forwarded Mr Baily a copy of this letter that he may understand the position and come to a decision as to my proposals as above.

In the meantime I beg finally to state that if my machine arrives I shall ride, and have put off a journey to Paris expressly on the off chance of being able to do so. D. M. WEIGEL.

June 27th.

FAIR PLAY.

[809.]—What a pity the editor of *Hearth and Home* did not make sure of his facts before he spoke of English automobilism—between the Baron de Crawhez's Atlas Mountain trip and *the* trip from London to Brighton there is an interval, apart from the fact that most of the motors in that celebrated run were of foreign make. Has *Hearth and Home* been asleep since Emancipation Day that it knows nothing of many subsequent, successful, and much more arduous journeyings (automobile) than that first trip to Brighton? Speaking of *English* automobilism, last week I had a delightful run on a car, built entirely in England, and of English material, and it ran so well, was so well finished and comfortable, that I gave the inventor and builder, Mr. C. T. Crowden, of Leamington, an order for one at once, which is to be finished by the end of July (I think that is up against

foreign manufacturers), when I intend to go for a holiday upon it with my family. Should it be of interest to you, I shall be pleased to send an account of my experiences with it afterwards. [We shall be glad to have it.—ED.]

Peckham, S.E., June 27th. C. W. KING.

THE ROOTS CAR AT THE SHOW.

[810.]—Although the public will perceive, we hope, the evident animus in your remarks on the running of our car at the Automobile Club Show, and although a large section of the public were at the show, and saw how perfectly our car ran for some five or six hours daily on the track or in the grounds (except the last day of the show), still many persons would see your statement who did not see our car run. . . It is evident you cannot be fair, but it is not so much the *suggestio falsi* as the *suppressio veri* we complain of, as it was evident to everyone at the show that our car made less exhaust than some of the spirit cars running at the show.

You will perhaps also allow us to state that the reason we did not enter for the fifty miles run or the hill-climbing contest was because our car was in pieces at the B.S.A. Co.'s works as a sample from which to manufacture. ROOTS AND VENABLES.

June 27th.

[We insert this letter as a specimen of the communications the editor of a paper which publishes unbiassed opinions is likely to occasionally receive from persons whose productions may be adversely criticised.—ED.]

THE BAYLEY STEAM VEHICLE.

[811.]—In reply to Mr. G. A. Burls's letter, published in your issue of the 24th ult., Messrs. Bayley's trolley is constructed on the Straker system, under the British Motor patents, and the figures published with regard to consumption of coke and water are precisely in accordance with results effected at the trials. These, however, were, in the opinion of the judges, too good to be true, and it will therefore interest your correspondent to know that in the second trial ordered by them, and which took place in the presence of Professor Boys and an observer on Monday last, even better results were obtained. The distance traversed was identical with the first trial, the net load carried, 3 tons 10 cwt., being in excess of that carried on the first trial. The coke and water used 123 lbs. and 98 gallons respectively, so that the fuel cost represents 1.75 lbs. coke per ton mile, which, sir, is a record for self-propelling vehicles produced in any country. The nearest approach to this high standard of economy with which I am conversant is that of Messrs. Thornycroft's lorry, which competed under the same conditions, but with less load, at the trial, and where the fuel used represented 2.9 lbs. of Welsh coal per ton mile.

With regard to the evaporation figures mentioned in Mr. Burls's letter, comparisons with De Dion results are of no value, as the vehicle, other than being fitted with a modified De Dion boiler, bears no resemblance to De Dion's constructional practices.

I enclose you a copy of results showing the second trial of the Bayley trolley, which took place on Monday, and which will doubtlessly interest your readers.

SIDNEY STRAKER, A.M.I.C.E.

Heavy Waggon Trials held at Uxbridge, Twenty Miles. Automobile Club, June 13th, 1899.

No.	T'l weight.	Weight carried.	Time for 20 miles.	Water used.	Water per mile.	Fuel.	Fuel used.	Fuel per mile.	Average speed per hour.	Fuel used per ton mile.
	ton. cwt. qr.	ton. cwt. qr. lb.	h. m. s.							
41. - Steam Carriage and Waggon Co.	6 19 0	3 8 0 18	3 42 20	136 gals.	6·8 gals.	Coal.	197 lbs.	9·85 lbs.	5·4	2·9
42.—Motor Carriage Supply Co.	8 13 0		5 19 0	1 gal.		Petrol.	4 gals.	0·2 gals.	3·76	
43.—Motor Carriage Supply Co.	4 6 0	2 4 1 0	3 27 0	11½ ozs.		Petrol.	2 gals. 6 pints	0·1375 gals.	5·84	
44.—Daimler Motor Co. P O. van.	4 1 3	1 18 1 0	3 59 0	2 gals. 7 pts.		Petrol.	3 gals.	0·15 gals.	5·02	
45.—Bayley's Ltd., first trial.	6 12 2		4 9 0	99 gals.	4·95 gals.	Coke.	122 lbs.	6·1 lbs.	4·81	1·7
Bayley's Ltd., second trial.	6 17 0	3 10 0 4	4 0 0	98 gals.	4·9 gals.	Coke.	123 lbs.	6·15 lbs.	5·0	1·75

A company has just been formed in Cologne, with a capital of £30,000, to be known as the Allgemeine Betriebs-Gesellschaft für Motorfahrzeuge. The object of the company, in which the Cologne Electrical Co. (late Messrs. L. Welter and Co.) is interested, is to deal in motor cars of all kinds, and to establish automobile services for the transport of both passengers and goods.

* * *

From the publishing house of Ulrico Hoepli, of Milan, comes a fat little volume in cloth covers entitled "l'Automobilista," by G. Pedretti, which purports to be a guide to the mechanical construction of automobile vehicles, and is published at the price of 5.50 lira. It describes and illustrates the various methods of construction at present in use, and gives a large mass of useful information to those whose knowledge of the Italian language places it within their reach.

Following the example set by the Winton Motor Carriage Co., the Haynes-Apperson Co., of Kokomo, Ind., are now anxious to submit their motor vehicles to a long distance run, and for this purpose propose to drive one of their cars from Kokomo, Ind., to New York, a distance of about 1,000 miles, against time.

* * *

Our contemporary *The Queen* has quite come round to the motor idea, and says: "The universal adoption of the motor car in England can only be a matter of time." It further adds: "Fifty miles on a motor does not exhaust you so much as fifteen behind horses. You can go down the steepest hill with safety, and ride uphill, which is the time when you want to ride most, without feeling that you ought to get out and walk to save the horses," and it concludes its remarks by saying, "There is little doubt that the next rage among our aristocracy will be the possession of motor cars."

Flashes.

Steps are being taken at Boston, Mass., towards the formation of a New England Automobile Club.

* * *

Mr. F. Armstrong, of the George Hotel, Penrith, has commenced to run motor car trips from Penrith to Pooley Bridge.

* * *

We are informed that M. F. Rowse, of Northgate House, 48, Walcott Street, Cheltenham, is able to supply autocarists with petrol.

* * *

It is reported that the Mid-European Motor Car Club is organising an automobile race from Berlin to Vienna, to be run off next autumn.

* * *

Messrs. Patin and Reguillart is the style of a new firm which has just been formed at Puteaux (3, Rue du Château) to manufacture electrical motor vehicles.

* * *

The Grand Duchess Valdimar has qualified to drive a motor carriage in Paris and the provinces, having passed the examination required by French law.

* * *

120,000 men are stated by a contemporary to be employed in the manufacture of autocars in France. We should be inclined to take an "o" off this figure.

* * *

It is stated that the New York Central Hudson River Railway Co. has decided to start a system of electric cabs and carriages at the Grand Central Railway Station in New York.

* * *

For the year ending March 31st, 1899, the Daimler Motoren Gesellschaft, of Cannstadt, made a net profit of 70,468 marks. We heartily congratulate Mr. F. R. Simms and his co-directors.

* * *

The Pilgrim Motor Vehicle Co. is the title of a new company which has just been formed at Biddeford, Me., U.S.A., with a capital of £100,000, for the purpose of manufacturing motor vehicles.

* * *

The Whitehall Review says of the Automobile Club Show: "The exhibition is sure to do more for the motor industry in one week than a couple of years' constant pegging away on ordinary lines would accomplish."

* * *

The leading German motor manufacturers, it is announced, more particularly those using electricity as a motive power, have entered into a combination with the object of raising prices by at least five per cent. The step is attributed to the increased cost of raw material.

* * *

Some time ago the preliminary steps were taken at Stuttgart in regard to the formation of a Wurtenburg Motor Car Club. The club has now been duly brought into existence, starting off with a membership of 45. Herr Pfautach, of Stuttgart, has been elected first president.

A service of motor cars is about to be started to run regularly along the coast from Lowestoft to Kessingland, Wrentham, and Southwold, through the estate of the Earl of Stradbroke, one of the prettiest drives in the Eastern Counties; and also to Oulton, Fritton, Yarmouth, etc.

* * *

Complaints are being made, a daily tells us, of the "litter" which motor cyclists make on the Surrey road when paperchasing. We confess we had no idea that these fixtures were so annoying or so frequent; in fact, we rather fancy our daily contemporary has been hoaxed by some person over the matter.

* * *

A race between a team of horses and an autocar is being arranged in Paris. But of what use will it be? And what will it prove? Merely that the autocar is vastly superior to the horse in matters of speed and endurance, and as this fact is already well known, one wonders why such a "race" was ever seriously thought of.

* * *

At the Brentford furious driving case last week a witness stated that Dr. Lehwess was going at the rate of twenty miles an hour, and that "if he had not stopped a number of people would have got hold of the car and forced him to." Puzzle: How were they going to get hold of a car and stop it when it was travelling at twenty miles an hour?

* * *

USEFUL KNOWLEDGE.

Contact screws—Teeth extraction.
Junction fittings—Lace and orange blossoms.
Vapour regulating device—The closure.
Efficiency test—A month's wash.
Electrical connections—Telegraph clerks.
Contact blades—Cavalry sabres.
Faulty ignition—Firing for insurance money.
Exhaust products—Spoilt corks and empty bottles.

* * *

The motor car service at Bedford, or rather between Bedford and Kempston, is becoming exceedingly popular. It is reported that one day recently 387 passengers were conveyed between Bedford and its suburb. The distance is about two and threequarter miles, and the fare twopence. Probably the time is not far distant when communication will be opened up in a similar manner between Luton and one or two of the adjoining villages, and such communication, whenever established, must prove of undoubted advantage to town and village. The cars in Luton have proved a great success.

THE AUTOCARIST'S DIARY.

June 13th to July 3rd.—Paris autocar show at the Tuileries (Automobile Club de France).

July 2nd.—Frankfort-on-Main-Cologne race, West German Automobile Club.

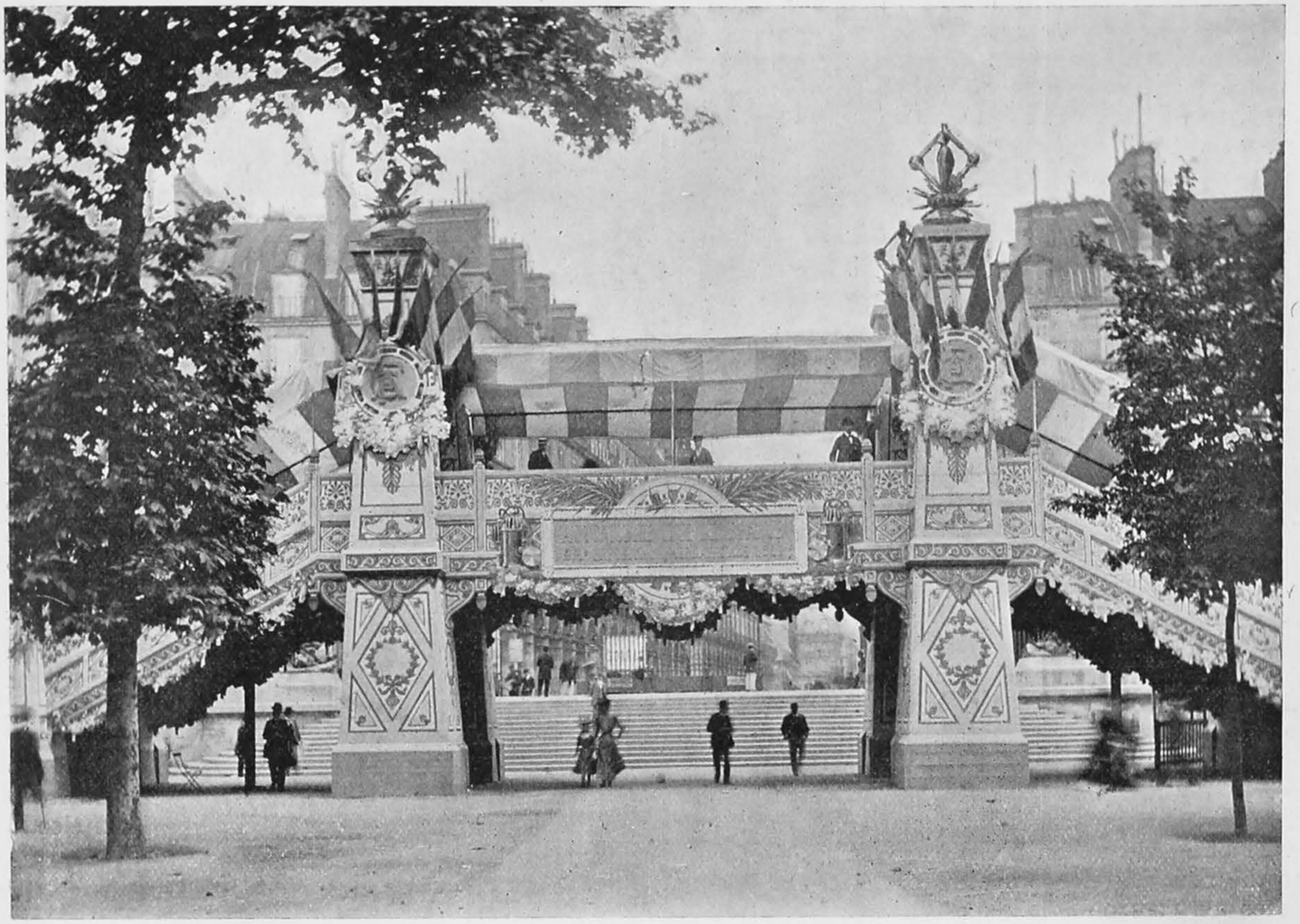
July 3rd to 15th.—Autocar exhibition at Agricultural Hall, N. (Messrs. Cordingley and Co.)

July 3rd.—Spa-Brussels-Antwerp race.

July 16th to 24th.—The great Tour de France (2,350 kiloms).

July 29th to August 2nd.—Heavy vehicle trials, Liverpool.

THE PARIS AUTOCAR SHOW.



THE OVERHEAD GANGWAY CONNECTING THE TWO GREAT HALLS.

The success of the second annual show of autocars in the Tuileries Gardens was a foregone conclusion, but no one could have hoped to see such a huge crowd as assembled on the opening day, when it is estimated that close on 50,000 visitors passed through the turnstiles. It is true that by far the great majority of them went there by invitation, but the fact that so many people should have made it a duty to visit the show is sufficient proof that it has taken its place among the Parisian events. The Exposition d'Automobiles promises to become as big a social function as the Salon or the Concours Hippique. The show covers nearly double the space it did last year, for, besides the great hall with its dependencies and annexes, another big hall has been erected on the other side of the gardens, the two being connected by an overhead gangway covered in by an awning. Notwithstanding the vast space, it was with the greatest difficulty that one could move about on the opening day, and M. Gustave Rives, the organiser, had every reason to be satisfied with the popularity of the show. As for the stands, there were close on 400, so that Baron de Zuylen was not far wrong when he stated recently that there were 600 firms engaged in the automobile industry, though it must be confessed that the connection of a good many exhibitors with autocar construction is very remote.

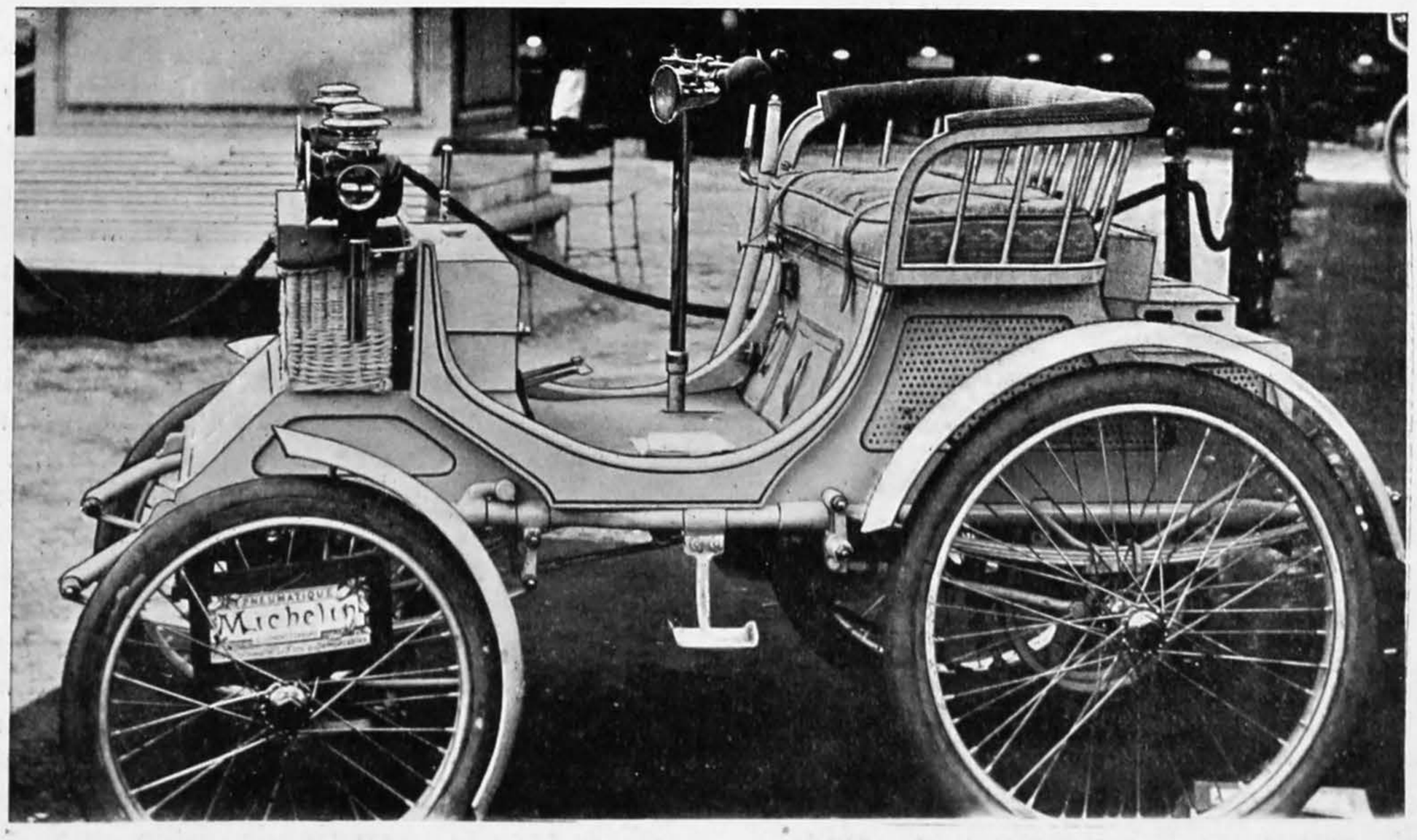
Taking the stands in the order in which they came under notice, the first was that of the Société des Automobiles Peugeot, of Audincourt, Doubs, and Lille, Nord. The chief novelty on this stand was a light carriage weighing only 380 kilos., with the water and petrol tanks full. The tank fitted behind the dashboard, in front of which is a basket, contains enough petrol for a run of 200 kilometres, and the water supply is sufficient for half that distance. The three and a half horse-power motor is said to be very economical in the consumption of water, and with the radiator under the forepart of the car only a very small quantity need be carried. This light vehicle is practically a reduction of the ordinary type of Peugeot car, and resembles it externally in almost every detail, the only difference being in certain small matters to secure the lightest possible draught. It runs on ball bearings, and, with two passengers up, and a small seat for a child, it will travel at the rate of thirty kilometres an hour. One notable modification in this car, however, is that the tubular underframe is not used for the circulation of the water, as is the case with the big vehicles, though this may be done if desired by the purchaser who prefers to carry a larger supply. For all ordinary purposes it is found that such an arrangement is not necessary on the light car. The gearing is of the usual spur wheel pattern, and, being lighter, is, of course, more com-

pact, and is enclosed in a gear case which thoroughly protects it from dust and mud. It is arranged for three speeds and reversing. The brakes appear very effective. The drum for the band brake on the rear axle, which is operated by a lever at the side, has an ingenious arrangement for preventing any backward movement of the car once the brake is applied, this consisting in a ratchet on the drum, into which drops a click or pawl. The usual Peugeot steering gear is adopted, that is to say, a bicycle-shaped handle, and the movement is transmitted by a chain from the bottom of the spindle to a larger pinion, which operates a rod connecting with the shaft on the swivels of the front wheels. These wheels are made with tangent spokes, and fitted with pneumatic tyres. It may be remarked that the motor can be adapted for electrical or incandescent firing, according to the desire of the buyer, but the car exhibited had electrical ignition, and this is the system favoured by the makers. All the levers are very handily placed, the brake lever at the side, the change speed lever in front, and the regulator underneath, and there is nothing to interfere with the movements of the driver. The car exhibited was painted white, and looked very neat and taking. Its price is 4,800 francs. Among the other cars exhibited by the Société Peugeot were an omnibus for six persons, and propelled by an eight horse-power motor; a large brake for ten persons with a ten horse-power motor, and the racing car of M. Lemaître, fitted with a twenty horse-power motor, which won the race at Nice, when it travelled at the rate of seventy kilometres an hour. It will be remembered that M. Lemaître started favourite in the Paris-Bordeaux race, when he gave up on account of a serious accident to the man who accompanied him. There were altogether ten cars on the Peugeot stand, but in no case was there any change in the standard mechanism, the only difference being in the greater power of the motors for a given weight due to a better compression of the gas mixture, and a more efficient exhaust.

The stand of Charron, Girardot, et Voigt, 2, Rue Brunel, was not completed at the time of our visit, but several different types of cars were already on view, including Panhard and Mors vehicles, and the famous winning car in the Paris-Bordeaux race, which was recently illustrated in *The Autocar*. A voiturette for two persons was also exhibited, showing an ingenious combination of the tricycle frame and trailer, the frame in front, carrying a De Dion motor with a Guyenet et Balvay change speed gear, being an elongation of the underframe of the vehicle. This necessitates a long steering lever, upon which are placed the various levers for the motor and the change speed gear. We will make a further reference to this stand when completed in the event of a later inspection revealing some novelties.

The Compagnie Française de Voitures Electromobiles, 20, Rue Taitbout, exploit the Bersey patents in France, and exhibited several vehicles on this system. Some of the cars destined for private use had the batteries in the body of the vehicle, and a very neat-looking phaeton was fitted with the Doré gear, consisting of a vertical shaft, and an enclosed differential operating directly on the front axle, which is both driving and steering. This car weighs 1,800 kilos., and, with 400 kilos of Cruto accumulators, is said to be capable of running sixty kilometres with one charge. The usual type of private carriage weighs from 2,000 to 2,200 kilos., including about 800 kilos. of Fulmen accumulators. The company are still experimenting with all the different types of accumulators, and have not apparently settled upon any definite system. The cars are well constructed, and have a neat appearance, but, like most electrical carriage firms, the company is very loth to give any details which may enable one to arrive at the total working cost.

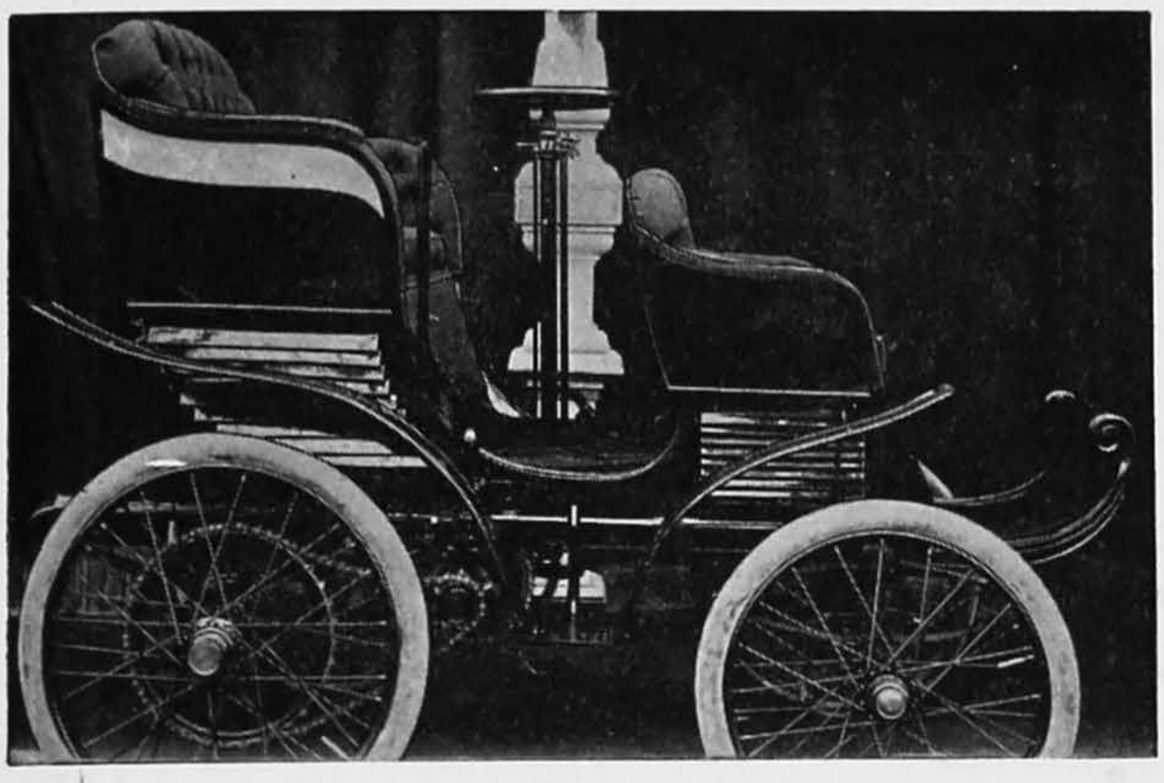
The stand of Clément et Cie., Levallois-Perret, was occupied by a number of De Dion tricycles and quadricycles, in which more attention was given to the æsthetic appearance of the machine than is usual in motor cycles, and the upturned handle-bars gave a



NEW LIGHT PEUGEOT.

novel appearance to many of the machines. As might have been expected from the reputation of this firm as cycle builders, the tricycles were constructed upon the most approved lines, and appeared to be thoroughly safe and reliable.

The Compagnie Française des Cycles et Automobiles, 7, Rue Darboy, exhibited four carriages of different types propelled by a single cylinder horizontal motor. The firm do not appear to have fixed on any definite system of power transmission, for they will adapt the belt or chain gear according to specifications of buyers. The engine on the car for three



THREE-SEATED CAR OF THE COMPAGNIE FRANÇAISE DES CYCLES ET AUTOMOBILES.

persons develops three and a half horse-power, and the car weighs 350 kilos, including forty litres of water and ten litres of petrol. The lighter vehicles run on three wheels, the rear one for driving with the aid of a chain or belt on a drum fixed to the hub, and in the heavier cars the power is transmitted in the usual way by spur wheels. The makers have aimed at producing a simple and practicable vehicle, and so far as the general arrangement of the mechanism is concerned they seem to have met with some success.

The Société des Voitures Electriques et Accumulateurs Bouquet Garcin and Schivre Patents, 12, Avenue de Madrid, Neuilly, had four of their new types of vehicles, which presented many interesting features, notably in the abandonment of some of the principles which have heretofore guided makers of electric cars, and in the adoption of others that are claimed to add largely to the efficiency of the mechanism. This is seen especially in the arrangement of the motor and driving gear, the latter consisting of the usual trains of spur wheels, and so adapted to the carriage that it can be taken to pieces in a few minutes if it be found necessary to clean the mechanism or change any of the parts, which are all made to template. A single motor is employed because the makers rightly argue that one large motor has a higher efficiency than two smaller ones each of half its size. It has two windings in the proportion of three and five, and consequently two collectors. With these two windings it is possible to get four combinations representing four different speeds without changing the couplings of the battery or varying the excitation. For the most part of the time therefore the motor is excited normally, so that it works under the best possible conditions, while there is an almost entire absence of sparking. The great elasticity of this motor, by allowing of so many speeds being obtained with the combination of the windings, has, of course, simplified the batteries and permitted of their being grouped in series without its being necessary to connect them up for the different speeds. As the batteries are always connected in series no inconvenience is likely to arise in the event of one or two cells getting out of order, as the only effect will be to reduce the speed, and the rest of the battery will continue to work normally. On the cars exhibited the batteries weighed about 250 kilos for the propulsion of a ton, and with this it is claimed possible to cover a distance of eighty kilometres. The cells are of the B.G.S. type, which the makers claim to be the lightest constructed for a given capacity. At a rate of discharge of 1·5 ampère per kilogramme of plates during nineteen hours the capacity is said to be 28·7 ampère hours. The average weight of a B.G.S. battery is 350 kilos, and its capacity is 120 ampère hours at the normal rate of discharge of fifteen to twenty ampères. All the operations for driving the vehicle are performed by a wheel which gives six speeds forward and two reversing, as well as an electric brake. In running downhill the motor may be used as a generating dynamo for recuperating the battery, but is is perhaps questionable whether this arrangement is of any special advantage in towns.

A new firm to embark upon the industry is the Gardner's Automobile Works, 9 and 11, Rue Stendhal, Mr. Gardner being a wealthy American who is interesting himself very largely in the construction of autocars. Three cars were exhibited here. One of the vehicles was fitted with a single cylinder horizontal motor with belt transmission, the arrangement being much the same as is usual in this type of carriage, except in certain small details, and notably in the system of tightening the driving chains by means of a sliding screw. The most noteworthy exhibit on this stand was a racing car, which is reported during its trial runs to have travelled at the rate of forty miles an hour on the third speed gear. The car is a long rakish-looking vehicle, tapering down in front, and giving plenty of room for the driver and attendant. There are two two-cylinder horizontal motors developing twelve horse-power under the forepart of the car, and the power is transmitted to the countershaft at the rear by a leather belt, which always runs at a uniform speed, and the differential is arranged for four speeds and reversing. As the car is intended to run at the rate of an express train, special attention has been given to the brakes, of which there are two, one on each side of the car, so that in the event of the driver forgetting to put down the brake in case of emergency it may be applied by the attendant. Moreover, the brake automatically throws the engine out of gear, and the car can thus be stopped almost instantly. The car is built up of steel sections, and is very solidly constructed, and may be expected to distinguish itself in the forthcoming long-distance races.

The vehicles exhibited on the stand of De Dion-Bouton et Cie., 12, Rue Ernest, Puteaux (Seine), were of the types recently illustrated and described in *The Autocar*, and comprised a steam omnibus constructed for the Entreprise de Transports par Automobiles "La Provençale," an omnibus of larger capa-

THE LARGE HALL.

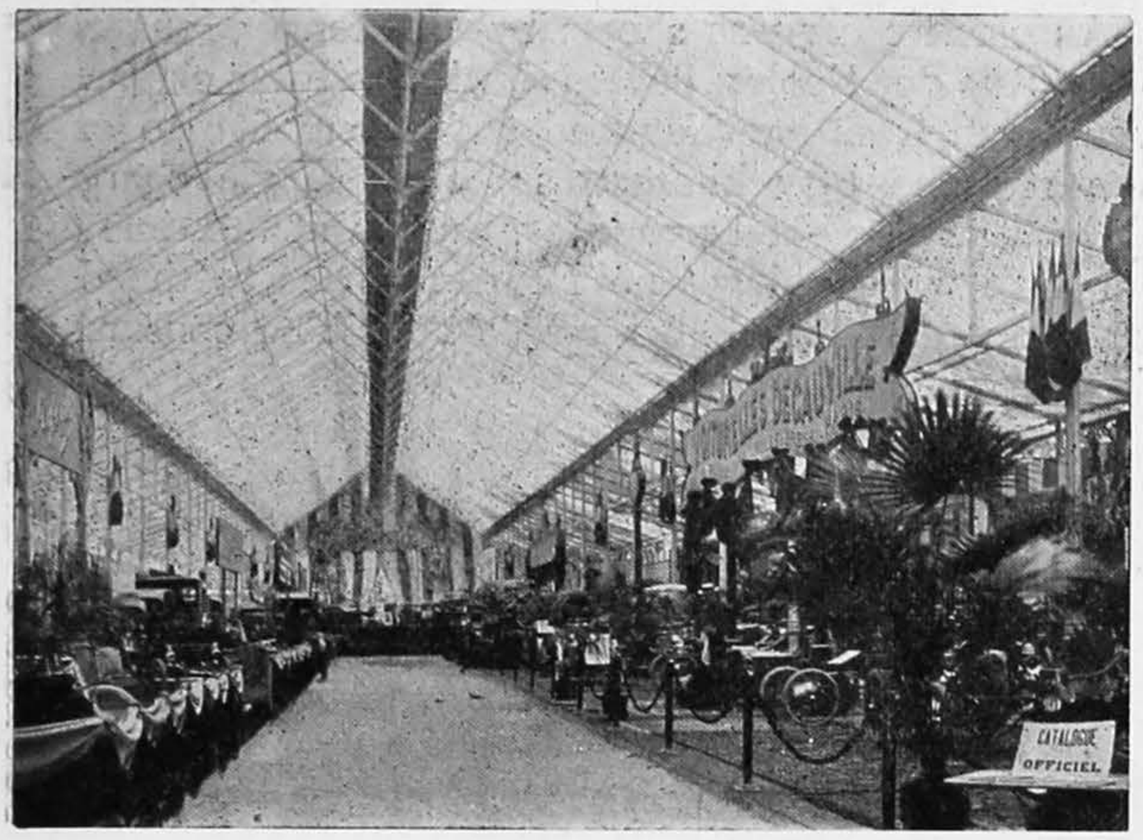
city, a three and a half ton lorry propelled by a thirty horse-power engine and carrying four tons, and the light voiturette with a single sylinder vertical motor, to say nothing of the large collection of tricycles and quadricycles which helped to fill up this big stand. As the voiturette was publicly exhibited for the first time, it naturally came in for a great deal of attention, but the other vehicles were practically the same types that we have seen at previous shows.

The voiturette was also the most popular attraction on the stand of the Société des Anciens Etablissements Panhard et Levassor, 19, Avenue d'Ivry. The car was recently illustrated and described in these columns. The steering arrangement is entirely different from the ordinary run of light vehicles. As is well known, the underframe of the car terminates in four tubes, which converge in a point where they carry a swivel on the centre of the front axle. The steering spindle has at its bottom end a pinion which turns on a toothed rod communicating with the axle. This arrangement appears to give very good results despite the criticisms of those who hold that the fixed axle with swivel joints for the steering wheels is alone suited for autocars. The firm exhibited several other standard types of vehicles, including a lorry, a delivery van, a cab, and a racing car. There was nothing novel in their construction, however, though in another part of the show a car was exhibited with the new magnetic gear, in which the motor is thrown in gear by two plates that are brought together by magnetic attraction, the power being furnished by a small dynamo. We will deal with this gear later on.

Some of the smartest looking cars in the show were those exhibited by the Société l'Electromotion, of Levallois-Perret, who had close upon a dozen different types of Columbia vehicles suited to the various requirements of users. The batteries were composed of Phœnix accumulators upon the Philippart patent. It is claimed that with a battery weighing four hundred kilos a three-seated car of a ton will travel one hundred kilometres at the rate of twenty kilometres an hour. A van built for the proprietors of the important Parisian daily, *Le Matin*, was characterised with much more elegance than one is accustomed to see in a vehicle of this class. It weighs 1,800 kilos, including 600 kilos of accumulators, and it will carry a load of 500 kilos. Since their introduction into Paris the Columbia cars have met with increasing favour from the automobile public.

The Société Anonyme d'Electricité et d'Automobiles Mors, 48, Rue du Théâtre, appears to be aiming at adapting a different motor and driving gear to each distinct type of car, for out of the five carriages exhibited there were no fewer than three separate systems of mechanism. Besides the standard form of dogcart with the four-cylinder motor, the company showed its light car, in which the two-cylinder horizontal engine is placed transversely in the same axis in the forepart of the vehicle. Those engines develop six and three and a half horse-power respectively, but for the heavier types of cars they have lately introduced they use a two-cylinder vertical motor of eight horse-power, which is enclosed in a box in front. The motor weighs 1,100 kilos with fly wheel, while the weight of the four-cylinder engine is 800 kilos. At first we supposed that the firm was trying to get the most suitable motors for the efforts to be pro-

duced in propelling the light, medium, and heavy cars, but we were told that the makers did not find much difference between the vertical and four-cylinder engines, and that the fitting of one or the other was left to the choice of the buyer. The purchaser can also select his own gear, for some of the cars had spur wheel gearing and others belt transmission, and, though the latter runs more smoothly, the experience of the firm is that it ought not to be employed with motors of more than six horse-power, because this would necessitate a proportionate increase in the weight of the fly wheel. In the light two-seated car, however, spur wheel gearing was used. The steering gear is also different in the light and heavy cars. In the former the rod from the steering spindle operates on a rod parallel with the axle, with which it is connected by swivel pieces. On the heavy cars the rod connects with one end of a segment piece which is pivoted on the axle, and the other end carries the parallel rod which transmits the movement to the segment piece at the opposite end of the axle. The dogcart, with its four-cylinder motor, continues to be the most



VIEW OF SIDE HALL.

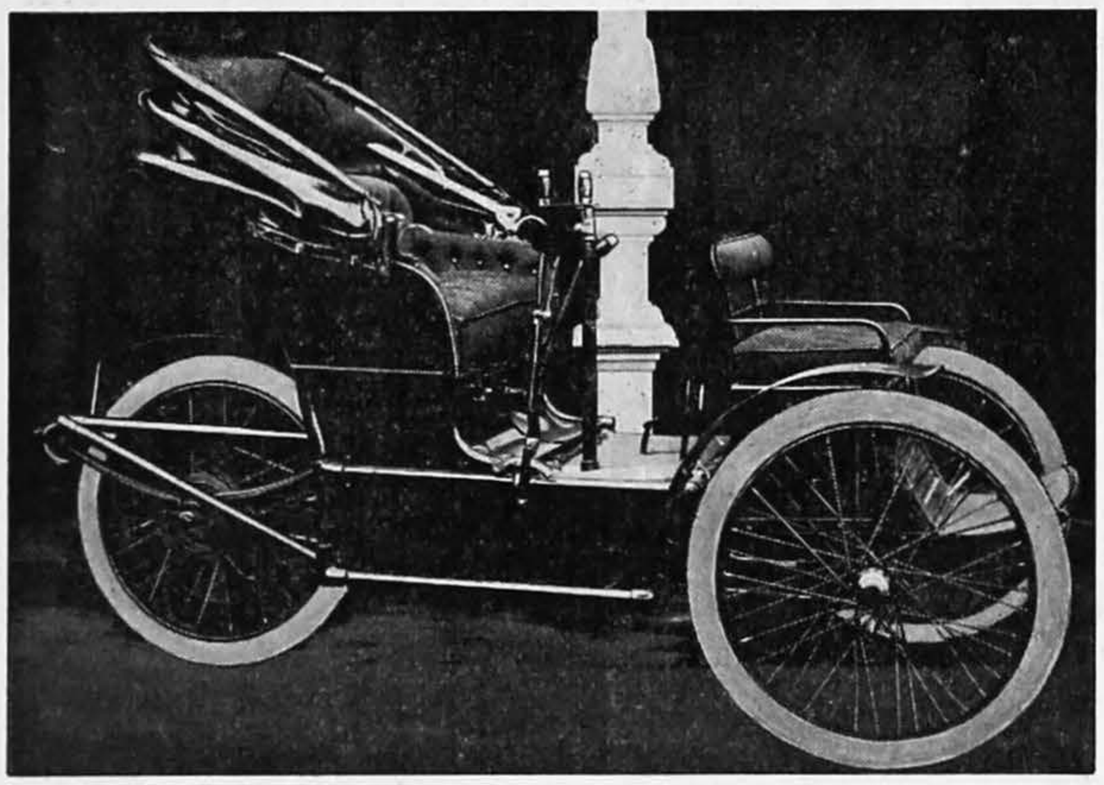
favourite type of vehicle, but for buyers requiring heavy cars the makers exhibited a double victoria and a combination vehicle in the form of cab, with two seats in front for the driver and a passenger, and another behind for the groom. Both these vehicles were propelled by vertical motors.

The system of traction employed by the Société des Voitures Electriques Kriéger, 80, Rue Taitbout, was fully described in our account of the recent motor cab trials, and among the vehicles exhibited on this stand was the cab which took part in that competition, as well as a closed cab, a four-wheeler built for the Compagnie Générale des Voitures, and an omnibus constructed for the Bon Marché. The last-named vehicle has already been in daily service for six months, and has been doing its sixty kilometres a day, which is about the maximum required for a goods delivery van in Paris. This van weighs 1,420 kilos, including a battery of Fulmen accumulators weighing 420 kilos. The two motors geared directly on the front wheels develop normally from seven to eight horse-power, and with this force it is able to take any of the gradients in Paris without the slightest difficulty.

The Cleveland Machine Screw Co., 61, Boulevard Haussmann, exhibited several light electric cars that were well worth careful inspection on account of their many ingenious devices for simplifying the driving gear and rendering it practically automatic. The car is designed to secure as large a space as possible for the batteries. In fact, it may be described as a battery box on an underframe, with seats on top, and every superfluity in the carriage builders' art has been dispensed with, though this detracts in no way from the elegance of the vehicles. The car weighs 900 kilos, including 375 kilos of accumulators. These are of the Sperry type, and the battery is composed as usual of forty-four cells, with which it is claimed possible to run a distance of one hundred kilometres at a rate of sixteen kilometres an hour. The bi-polar series wound motor is geared on to the rear axle by spur wheels, and a reducing gear can be operated from the seat so as to practically double the power available for mounting steep gradients. Running at 1,800 revolutions under a tension of eighty-six volts the motor develops normally two horse-power, though it is capable of giving five horse-power without inconvenience. The whole of the driving gear is reduced to a steering handle, a foot lever for the brake, and a button pressed by the foot for putting the motor in circuit. The steering lever also serves for operating the combinator. By depressing the lever the car is started, and by raising it the motor is reversed, while at the horizontal the circuit is cut. At this last position the brakes are brought into play automatically, and by removing a key which connects up the circuit it is impossible for the car to be started when not in use. A novel arrangement of the swivels for the steering wheels is worth notice. These are not placed vertically, as is usually the case, but inclined so that when the front wheels meet with any obstacle the shock will be taken up through the axis of the swivels or pivots, and thus, it is claimed, prevent any vibration to the body of the car.

M. L. Serpollet, 27, Rue des Cloys, again had something new in the way of steam carriages. When M. Serpollet produces a mechanism which seems to represent the latest advance as regards simplicity, ingenuity, and efficiency, he sets to work and devises propelling machinery still more simple, ingenious, and efficient, but after inspecting the carriages shown it is difficult to see how even he can go one better. The great weakness of the Serpollet cars has hitherto been the engines, and in his latest vehicles he has adopted a four-cylinder simple acting engine, the cylinders being placed in pairs at an angle of forty-five degrees. The ordinary sliding valve, the stuffing boxes, and all parts that are liable to get out of order have been done away with. Steam is cut off at any part of its course by means of a sliding rod operated by a knob underneath the steering wheel. The ordinary Serpollet generator is placed at the rear, and is fired with twelve burners consuming lamp oil. The quantity of steam raised is regulated by the admission of the oil and water in the proportion of ten parts of water to one of petroleum, and this is done by a pump operated by a cam of varying diameter, so that the pump forces more or less fuel and water, according to the diameter of the cam brought to work upon it. In starting the car two movements of a hand lever force the oil into the burners and the water into the tubes,

and the engine runs by putting down a foot lever. Once this is done no attention is required to the car, which is said to run as silently as an electric vehicle. A very large condenser is fitted underneath the vehicle, and it is claimed that with the supply of oil and water carried the car will run from one hundred and fifty to two hundred kilometres. A lighter type of car, weighing 850 kilos, was exhibited, fitted with a six horse-power engine, and it was stated that during a trial it mounted the Saint-Germain gradient at the rate of twenty-five kilometres an hour. The special attraction of the stand, however, was a voiturette weighing 250 kilos, and having seating capacity for two persons. The three horse-power engine has four cylinders arranged horizontally in pairs, and its total weight, including the case and everything, is only twenty-seven kilos. Except for the motor the arrangement of the mechanism is much the same as in the other vehicles. The water and petroleum tanks will carry supplies for sixty kilometres. A large number of orders were booked for the voiturette during the show, and a great many were also taken for the medium-sized carriage. In the past would-be buyers have been ready enough to place orders for the Serpollet cars, but they have not been able to get



THREE-WHEELED CAR OF THE COMPAGNIE FRANÇAISE.
(See page 573.)

delivery. It is probable, however, that before long a considerable number of cars will be turned out, as Mr. Gardner has undertaken to finance the concern and manufacture the vehicles at his large works in the Rue Stendhal.

A motor tricycle for two persons *vis-à-vis* of a novel type was exhibited by Chevalier, Thévard, et Cie., Avenue de la Gare, Blois. The vehicle is built up on an underframe of tubes, and has a very long wheel-base. The vertical three horse-power motor is fixed on the rear axle, the cylinder being cooled by flanges, while the combustion chamber is cast with a water-jacket. The power is transmitted by a long shaft and bevel gear to the front wheel, and the two rear wheels are used for steering. This gear is arranged for two speeds. There is a band brake on each hub of the front wheel. If the motor develops the full power stated the arrangement of the mechanism may be found satisfactory, but it certainly seems a mistake to have three wheels on such a long machine, as four wheels would considerably increase the stability without augmenting the draught. As it is, the car is only a tricycle, in the sense that it has three wheels, and it lacks some of the essential qualities of the voiturette.

Two light cars for seating two persons were exhibited by Ernst et Cie., 13, Rue Laffitte, one of them with an Aster vertical motor of two and a quarter horse-power at the rear, and geared on to the axle by spur wheels. It carries the petrol tank in front, as well as a basket, and is covered by a hood. It is well suspended on large springs, and is an elegant and comfortable-looking vehicle. The Aster motor is a good one, and may be considered reliable. The other car was fitted with a small two cylinder vertical motor in front, and the power was transmitted by friction plates to the countershaft, and thence to the driving wheels by chains. The system of two friction plates at right angles, so that various speeds could be obtained by moving the edge of one between the centre and the periphery of the other, was abandoned years ago on the heavier types of cars, but it is quite possible that it may be satisfactorily employed on carriages of the voiturette class. The difficulty lies not so much in any loss of power as in the wear of the plates after they have been used a short time, when they refuse to grip.

An electric car was shown by M. Henry Monnard, 6 bis, Rue des Ecoles, Suresnes, which, it was claimed, would run from one hundred and twenty-five to one hundred and fifty kilometres with a single charge. The battery weighed 750 kilos, though at the time of our visit we could get no information as to the description of accumulators employed. The consumption was said to be 14.2 ampère hours at a speed of twenty-four kilometres. The rear axle is made in two short sections, which are bolted to the sides of a central frame carrying the motor. The two ends of the armature gear on to spur wheels, which, in their turn, operate on a shaft that is geared on to spur wheels on the axles.

(To be continued.)

"Those who are best capable of forming an opinion," says a writer in the *Universal Provider*, "seem to be convinced that the day for the automobile is close at hand, and the recent Automobile Club and other shows appear to have done much to popularise the movement. Meanwhile we may rest assured that the motor car will never in our time supersede horse traffic, although it is very probable that before long it will materially supplement it, and save that useful animal much of the harder work—especially in hilly country."

* * *

A North London scribe thus delivers himself in the columns of a local paper. Evidently he is not well posted in motor matters: "The motor car may be the vehicle of the future, but it is certainly not the carriage of the present. It is abominably noisy, its vibration is excruciating, and if anything can be more atrociously hideous than the London motor cab it is not fit even for this wicked world. Why is it that British manufacturers so often neglect to make things pretty or graceful as well as useful and strong? What is rational education doing for the people if, whenever they reduce a new idea to practice, they revel in lines that are coarse and heavy, and ostentatiously destitute of the faintest approach to beauty?"

AUTOMOBILE CLUB SHOW NOTES.

In our last issue we gave the address of Mr. W. H. Newman, who showed an ingenious infinite-variation gear, as of Totteridge Park, Bedford, whereas the town of that gentleman's location is Hertford. Speaking of this gear reminds us that it attracted much interested attention from the practical visitors present. Mr. Newman had only just completed it—the first model—in time for the show, so was not able to show other than its movement. It is probable, however, that it will be put under trial on a car in a somewhat modified form within the next few months, and then its practicability or otherwise in actual car work will be ascertainable.

The daring tricks of the two diminutive French drivers of the noisy little Decauville cars caused much interest and amusement. They had the most perfect command of their cars, and would dash straight at the crowd full speed, and then when within a dozen yards whisk round at times on two wheels and be off again in the opposite direction, the low position of the seat close to the ground facilitating such performances. Then they would drop a handkerchief, and driving full speed by it stoop down from the step and pick it up. But on two occasions when performing this feat the driver fell out, and the car went tearing along on its own, picking up a post or two and charging a dummy "bobby" or two, which had the effect of checking its speed and enabling the driver to overtake it and climb aboard again. It was rather an exciting time for the spectators, who did not know where the car would be charging next before its mad career was stopped.

Speaking of cars running free reminds us that Mr. Campbell Muir somewhat astonished the people by playing ringmaster to his Daimler once or twice. Putting the car on the bottom speed and slowing down his engine, he turned his steering lever sharply and then left the car, which then went quietly circling around in most uncanny fashion, Mr. Muir occasionally varying the performance by putting her on her reversing gear, and so causing her to gyrate backwards. It is an effective little trick, and rather startling at first sight.

Towards the close of the week Mr. Simms made matters lively once or twice in front of the grand stand by running round the enclosure on his motor-Maxim quadricycle, making several brief halts to fire sundry shots and volleys *en route*.

The first occurrence of the nature of an accident happened on Wednesday. Whilst running about the grounds a motor-tricyclist made full speed for what he imagined was an opening in the barrier fence separating the gymkhana ground from the track. Unfortunately for him and very curiously he did not observe that this presumed opening was closed breast high with a piece of 4in. x 2½in. quartering. This stiff bit of timber he took with his chest, breaking the beam clean through by reason of a lucky knot, and being forced out of the saddle backwards, fortunately without serious damage. The tricycle reared up and turned turtle, and was withdrawn for docking purposes.

On Thursday Mr. Lanchester, dashing nonchalantly out of the gates of the show ground, and turning sharply into the narrow lane outside, encountered the Lifu just coming in. Needless to say, nothing happened to the Lifu, but the front wheels of the lighter car were wrecked. Mr. Lanchester, however, had it running again with a pair of new wheels on Friday.

Another mix-up took place on Saturday evening on the driving ground at the back of the grandstand, when Mr. Zacharias, of the Automobile Association, and Mr. Seyd, of the International Motor Co., brought their respective cars into collision, the former cutting the latter down amidships, carrying away the mud-guards and step of the International, and bending his own front axle. Both cars appeared to be on their wrong sides.

The last tricycle race on Saturday evening, too, finished up with a smash. Mr. Roger Fuller had won the handicap, with Mr. S. F. Edge a few yards behind, and both men let their motors run, and took a final circuit on the track. Unfortunately, on the bottom corner, which was rather awkwardly sloped, Mr. Fuller sat up too soon, and capsized, being thrown clear of his machine. Mr. Edge promptly ran over his neck, and was tipped out himself, his machine dashing into the palings. Fortunately, neither of the riders was damaged, though Mr. Edge's machine was pretty considerably used up, and the crowd had an exciting *finale* to the proceedings.

The horse v. motor contests each day were much enjoyed by the public, especially by those who appreciate a good horse, for Gold Ring is a fine animal, and has a splendid action. At first the horse "broke" whenever the motor got near it, but he soon got used to it, and then ran away from the roadster tricycle, which was pitted against him, so Mr. Jarrott, of the British Motor Co., was appealed to, and brought his racer into requisition, Mr. S. F. Edge also taking a race or two, and it was then at once seen that it was a case of only one in it. However, good races were made, and, as the week wore on, the horse received varying handicap allowances until on the last race on Saturday evening Gold Ring got 100 yards start from Edge, who let his motor out, and went right away from him at the finish, winning by about a quarter of a lap.

Only one Pennington car was on view on the opening day, but before the week was out three of them had put in an appearance, and much interest was taken in their performances in the grounds and on the track, where, although neat and handy, they did not appear to be possessed of any great speed.

Upon one of the machines on the Motor Manufacturing Co.'s stand was fitted a bell of a novel character, designed, we believe, by Mr. C. R. Hutchings, of Bournemouth. This bell took the typical bell-shape, standing some five or six inches high, and being rung by means of a finger trigger actuating a clapper. The volume of sound produced was large and sonorous, and from an æsthetic point of view undoubtedly preferable to the horn, and clearly distinguishable from the cycle bell. At one time we admit we were prejudiced against the horn, and we cannot say that we are highly enamoured of it now, but use brings all things to us, and the sound is not by any means so objectionable, either to the users of cars or the public, as it once was, all having got somewhat accustomed to it, and the horn certainly has this advantage—that it has now come to be asso-

ciated with the motor car, and the sound of it at once indicates to the road user the class of vehicle which is approaching.

On Saturday one of the new Endurance two-seated cars put in an appearance, and attracted much attention as it was manœuvred about the grounds by two ladies. It is a neat little vehicle, and appeared to be very easily handled.

Although the show was a decided success from a practical point of view, except on the opening and closing days, the attendance of the public was disappointing, and we fear it must result in financial loss to the club. The attendance was, however, of good class, and plainly composed more of persons really interested in the movement than of mere sightseers, and enquiries amongst the exhibitors at the close showed that those who had really practical vehicles to deal with had done very good business, and had no reason to be dissatisfied with the results.

AWARDS.

The judges have announced the following awards of medals and diplomas:

DIVISION I.—Cars which took part in the Trials.

Gold Medals.—Daimler Motor Co., Ltd., for Critchley light car, Siamese phaeton, and Rougemont waggonette; Steam Waggon and Carriage Co. for steam lorry; Motor Carriage Supply Co. for ten horse-power lorry and six horse-power lorry.

Special.—Delahaye Motor Car Co. for four-seat phaeton; F. W. Lanchester for three-seat car.

Silver Medals.—Motor Carriage Supply Co. for convertible waggonette; Hewetsons Ltd. for Benz dogcart and for Benz Ideal; Automobile Association for Mors four-seat car and for Barrière tricycle; Daimler Motor Co. for Post Office van.

DIVISION II.—Cars and Component Parts at the Exhibition Only.

Gold Medal.—Liquid Fuel Engineering Co. for steam waggonette and omnibus.

Silver Cup.—Hon. C. S. Rolls for best privately-owned vehicle.

Silver Medals.—Liquid Fuel Engineering Co. for excellence of component parts of steam vehicles (1, burner; 2, wheels and steering axles); Clarkson, Capel, and Co. for their steam vehicles, for burner, and for condenser; Mackenzie Carriage Co. for design and appearance of electrical carriages with Riker frames; Electric Motive Power Co. for electric motor carriages and for controller and steering gear; Motor Carriage Supply Co. for electric ignition, for ignition advance, and for component arrangements in Cannstadt car; Stirlings and Co. for general appearance of Stirling-Daimler motor vehicles; A. F. Mulliner for excellence of carriage work for motor vehicles; Hewetsons Ltd. for their exhibit of Benz carriages; Automobile Association for appearance and for motor and gear construction of Gobron Brillie Car; Decauville Aine for two-seated voiturette; Motor Manufacturing Co. for exhibit of motor cycles on the De Dion system; Mossberg Roller Bearings for roller bearings; Carless, Capel, and Co.

Bronze Medals.—Marshall and Co. for improvements in Benz motor carriages; Des Vignes, Cloud, and Co. for excellence of design and workmanship in small steam boilers; Daimler Motor Co. for Price's tyre brake; Rubery and Co. for motor car frames; Roots and Venables for component parts; Automobile Association for combined petrol and lubricating tank and pump, and for Kuhlstein Vollmer tractor; Ariel Cycle Co. for motor tricycles.

Diplomas.—Lyon and Whitmore for ignition tube; Southern Motor Car Co. for improvements in Benz motor carriages, and for carburetter arrangement in Papillon tricycle; John Morgan and Sons for uniform; Messrs. Hart and Co. and W. and T. Avery, Ltd., for weighbridges erected and placed at the disposal of the club.

The awards made by the judges convey an enviable distinction on the recipients. At too many exhibitions the awards are granted by men who, even if they be disinterested, are not really qualified to deal with the exhibits, and their verdicts, however much they may deceive the lay public, only amuse or disgust those "in the know." This is not so with the Automobile Club's awards, as a better qualified or more honourable body of gentlemen than those appointed for the Richmond Show could not be found, as will be admitted at once by anyone who runs through the following list of distinguished names, for each one of them is well known in engineering and scientific circles:

Mr. W. Worby Beaumont, M.Inst.C.E., M.I.Mech.E.; Professor C. Vernon Boys, F.R.S.; Mr. Dugald Clerk, Assoc.M.Inst.C.E.; Mr. Bryan Donkin, M.Inst.C.E., M.I.Mech.E.; Professor Hele-Shaw, LL.D., F.R.S., M.Inst.C.E., M.I.Mech.E.; Major Holden, R.A., F.R.S.; Sir W. H. Preece, K.C.B., F.R.S., Pres. Inst. C.E.; Mr. Boverton Redwood, F.R.S.E., Assoc. M.Inst.C.E.; Sir David Salomons, Bart., M.A., Assoc. M.Inst.C.E., M.I.E.E; Mr. James Swinburne, M.Inst.C.E., M.I.Mech.E.

The Driving, Steering, and Speed Contests.

The driving and steering racing contests at the Automobile Club show, which closed its doors last Saturday at the Old Deer Park, Richmond, were continued during the latter part of the week, and, though somewhat wanting in particularity from a programme point of view, sufficed to make for the gaiety of the daily attendances. In our issue of last week we carried the competitions up to Tuesday night, and now give below in brief the results of the competitions on Wednesday and to the end of the week.

TWO MILES TRICYCLE HANDICAP RACE.—C. Jarrott (scratch), 1; Easom (two laps), 2; Graham-White (one lap), 3. Hon. C. S. Rolls retired, machine failing. Time, 5m. 19s.

PROFESSIONAL DRIVING EVENT.—Dumond (Decauville) beat Théry (Decauville) by two lengths.

OBSTACLE RACE.—Théry beat Dumond by three lengths.

DRIVING COMPETITION (gentlemen).—H. Mulliner (Benz) beat S. M. Beevor (Benz) easily. A. Buttemer (Benz) beat H. Mulliner (Benz) by two lengths. Buttemer (Benz) beat I. D. Roots (heavy oil car) by three lengths. Buttemer (Benz) beat Capellen (International) easily. Buttemer (Benz) beat Hewetson (Benz) easily. Buttemer (Benz) beat A Mulliner (Daimler) easily. C. S. Rolls (Panhard) beat Buttemer (Benz).

HORSE *v.* MOTOR TRICYCLE (one mile).—Jarrott beat Gold Ring by one length. Time, 2m. 41⅕s.

MOTOR CYCLE HANDICAP (two miles).—C. Jarrott (motor tricycle, scratch), 1; Easom (two and threequarter laps), 2; Buck (one lap), 3. Also ran, Graham-White (one and a half laps) and Andrews (one and a half laps). Time, 4m. 49s.

DRIVING BACKWARDS COMPETITION—*Final.*—Campbell-Muir beat Rolls.

DRIVING COMPETITION (tricycles).—Jarrott beat A. M. White.

OBSTACLE RACE.—Rolls beat Buttemer.

Owing to the wet nothing of any moment was done on Thursday, but on Friday the following events took place:

S. F. EDGE (motor tricycle) *v.* GOLD RING.—Gold Ring won by a neck. Time, 2m. 32⅕s.

TWO MILES DECAUVILLE RACE.—Dumond (red car) beat Théry (blue car) by a quarter of a mile.

HALF-MILE RACE (Hallum on ordinary tricycle *v.* Graham-White on motor tricycle).—Hallum received 220 yards, and won by twenty-eight yards.

MOTOR TRICYCLE RACE (two miles).—S. F. Edge (scratch), 1; C. Jarrott (scratch), 2; Graham-White (one and three-quarter laps), 3. Won by half a wheel. Time, 4m. 42½s.

DRIVING POSTS.—Campbell-Muir beat H. Mulliner. Rolls beat Campbell-Muir. Rolls beat Roots.

OBSTACLES.—H. Mulliner beat Hewetson. Roots beat H. Mulliner. Rolls beat Roots. Both the above contests were won by Rolls.

TRICYCLES (posts).—In the final Jarrott met Rolls, and won.

TRICYCLE *v.* HORSE.—S. F. Edge beat Gold Ring in a one mile race by 150 yards. Time, 2m. 26⅕s.

MOTOR TRICYCLE RACE (two miles).—S. F. Edge (scratch), 1; C. Jarrott (scratch), 2; Graham-White (two laps), 3. Won by threequarters of a length. Time, 4m. 49s.

On Saturday afternoon the programme was an extensive and varied one, and only brief details are given below:

TRICYCLE *v.* HORSE (one mile).—Edge, giving Gold Ring 100 yards, won by one and a half lengths. Time, 2m. 55s.

TWO MILES MOTOR TRICYCLE HANDICAP.—Buck (one and threequarter laps), 1; Andrews (two and threequarter laps), 2; Fuller (one and a half laps), 3; Edge (scratch), 4; Jarrott (scratch), 0. Time, 4m. 26⅕s.

The Decauville boys then gave a neat exhibition of picking up handkerchiefs from the low cars going fast, one car running away without the rider, to the great amusement of the crowd.

POST RACE.—Buttemer beat Campbell-Muir. Buttemer beat H. Mulliner. Rolls beat Buttemer.

OBSTACLE RACE.—Buttemer beat Campbell-Muir. Buttemer beat H. Mulliner. Buttemer beat A. Mulliner. Rolls beat Buttemer.

DRIVING BACKWARDS.—Campbell-Muir beat W. Andrews. Rolls beat Campbell-Muir.

TWO MILES SCRATCH RACE (motor tricycle).—S. F. Edge, 1; C. J. Jarrott, 2. Won by five lengths. Time, 4m. 50s.

Jarrott beat Gold Ring in a one mile race by forty yards. Time, 2m. 31⅕s.

MOTOR TRICYCLE HANDICAP (two miles).—Fuller (one and a half laps), 1; S. F. Edge (scratch), 2; C. Jarrott (scratch), 3; Buck (half a lap), 0. Good race, won by ten yards. Fuller and Edge collided at end, neither hurt. Time, 4m. 44s.

Some time ago we included in our list of dealers in petrol the name of Coulthard and Co., of Preston. We have now ascertained that the firm named do not stock that commodity.

* * *

Some time ago we recorded an effort made at Lincoln to start a motor service for the isolated, but populous, district north of Lincoln. From one cause and another nothing has been done as yet, but the writer of the articles which appeared in the *Lincoln Gazette* would be pleased to hear from anyone who would care to take the matter up. The service includes a remunerative mail service, which could be secured. We would forward any letters.

AMERICAN MOTOCYCLE NOTES.

NEW YORK, May 30th.

The automobile pot boils, and the mechanical vehicle plot thickens apace in the United States in this month of May, 1899.

The great show of electric waggons at the Garden* has been a pronounced success commercially, all of the exhibitors having sold all of the carriages they had to sell, and booked many orders for future delivery. Riker is full for months to come; the Columbia informed me that it would take eighteen months to clear their books if they did not take another order in that time; the Waverley sold everything, and sent a lot of orders to the factory besides; the American had the same story to tell, and the Fischer Equipment, which is noted for a "poor-mouth" policy of statement, admitted that it had done well, and had nothing to complain about.

On the 24th there was a parade of electric waggons in New York, with no less than fifty vehicles in line, containing all the magnates of electric automobilism, with some of their wives and sweethearts, making altogether the most imposing exhibition of self-propelled waggons ever seen on this continent.

But the electrics were not alone in their glory. Winton, of Cleveland, started at six a.m., Monday, May 22nd, 1899, for New York, in one of his own gasoline engine-driven waggons, and reached the Astor House in four days and ten hours, Friday afternoon, May 26th, the cyclometer registering 707·4 miles. The occupants of this two-passenger Winton waggon were Mr. Alexander Winton, president of the Winton Company, and Mr. Charles B. Shanks, of the Cleveland *Plain Dealer* newspaper. The actual running time was given as forty-seven hours thirty-three minutes, giving an average speed of about fourteen and a half miles per hour. This long run was made without renewal of cooling water, and with only one mishap. At 4.45 p.m., Tuesday, the 23rd, near Fairport, N.Y., eighty miles east of Buffalo, one of the front steering axles gave way close to the shoulder, and the front wheel mounted on that axle, went off on its own account, and both of the occupants of the carriage were thrown over the dashboard, fortunately with no serious injury to either. By telegraph and express a new axle was forwarded from the Cleveland factory in time to permit the waggon to resume its journey at ten a.m. the next day. I interviewed Mr. Winton in New York hoping to obtain an interesting story of this first long journey made by mechanical propulsion on common roads in this country, but unfortunately he is one of those persons from whom it is hard to obtain much information. Mr. Winton thought the waggon was running about twenty-five miles per hour at the time the axle broke. The axle was of solid steel, one and a quarter inches diameter at the point of fracture, and the accident was due wholly to the impinging of the wheel against a large stone in the roadway. The weight of the waggon was given by Mr. Winton as 1,700 lbs. The wheels are 32in. front and 36in. rear diameters; the tyres are Hartford pneumatics, 3in. in diameter, supposed to have had about 100 lbs. pressure.

It does not seem possible that this Winton waggon

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* The illustrated report of this show has been unavoidably withheld owing to the number of similar fixtures nearer home. It will appear in the earliest issue possible.—ED.

weighed so much as 1,700 lbs., but that was the weight given by Winton himself, who said, on my expressing surprise at the weight, that he was not convinced that the waggon was so heavy as it should be even at that weight. I have since thought that perhaps the weight was given as 700 lbs., instead of 1,700, but as I repeated the weight, and Mr. Winton repeated it again after me, I do not see how there could have been a misunderstanding. The fuel used was from twenty to twenty-five gallons of deodorised stove gasoline, the Cleveland price of which is six cents per gallon, making the total fuel cost from $1·20 to $1·50, for the whole 707 miles. It is much to be regretted that a more detailed story of this interesting run could not have been obtained.

The daily press gave space to Winton's journey with the usual lack of accuracy, the *Sun*, often fairly well informed, going to the extent of an editorial, in which the Winton gasoline-driven waggon was specified as an "electricity-driven carriage."

In other items the dailies are more fortunate. The formation of a New York automobile club is correctly announced, as is the receipt of a million dollar contract by the Studebaker Waggon Company, South Bend, Indiana, for the construction of electric vehicle waggon bodies. The Studebaker is the largest American waggon-building concern, and employs, I believe, between 3,000 and 4,000 workmen at present, but will erect new factory buildings at a cost of $400,000, especially adapted to the construction of automobile woodwork.

Besides this large contract the other big thing of the past week is the announcement of the formation of a "Freight Handling Trust," capitalised at only the bagetelle of $200,000,000, by the ever magnificent (on paper) "Autotruck" promoters.

It may be as well to note that the "Autotruck" "Air-power" managers utterly refuse all information as to their real progress in air-driven waggon-building to every individual having any pretence of technical knowledge, and that so far as can be learned the only vehicle the Autotruck Company has on the road anywhere is the shopyard truck at Worcester, Mass., which was lately shown, from a photograph, in this journal. Another point of some interest to possible investors in the "Air-power" and "Autotruck" schemes is to be found in the English patent issued to Lemuel Wellman Wright, April 15th, 1828. This patent specifies exactly, precisely, and in full and complete detail, the use of compressed air to drive waggons on common roads in the same manner as the "Autotruck" people use compressed air, including the addition of heat by injecting steam into the compressed air. While I was well aware that the "Autotruck" scheme was on old ground, I confess that I was not prepared to find it so precisely and entirely anticipated in all important details, as it certainly is, by this Wright patent of seventy years since.

It may well be noted here that the general public has no knowledge of the real history of automobilism, and does not know that from 1822 to 1832 all the present schemes for driving road waggons mechanically were proposed, and many of them experimented with; such, however, is the fact. Steam waggons were made which were really good and economical, although the low pressures used made the waggons heavy—80 lbs. was about the high pressure limit, and these old steam carriages weighed from 5,200 to 8,000 lbs. for stage coaches. The explosion engines of that day did not attempt to use the direct pressure of the burning charge, but only sought to make the vacuum obtained by the charge explosion available for motive power. Electricity was also considered, but as the storage battery was not known, there was no possibility of successful electrical waggon propulsion at that time. Now, here in America, the trolley car is everywhere in highly successful use, and it is this great success of the trolley car which sells the storage battery waggon, although the trolley car makes no use of the storage battery, and hence really affords no argument in favour of storage battery driven carriages to be used on common roads. But for all this it is very clear that electric-driven waggons are to have an enormous immediate sale in this country. The fitness of the electric waggon for common road use will be hotly contested here by the steam waggons and the internal combustion motor-driven vehicles. I hear whispers of a heavily capitalised close corporation which will acquire our best steam waggons, which are beyond question the very best driven of all the automobiles yet produced, and place them before the American public in the most favourable manner possible. I saw one of the Stanleys last week at the Garden; he informed we that he has now orders for over two hundred of the Stanley steam waggons on his books, and that the first hundred, built in one lot, will begin to come out of the factory immediately. These waggons weigh 375 lbs. for two passengers, and have ball bearings, dustproof throughout, and a dustproof chain and compensating gear case, and are altogether desirable carriages, without noise and without odour.

I rode last week on a new steam waggon, 750 lbs. weight, 250 lbs. to 300 lbs. steam pressure, having a good fourteen brake horse-power motor—that is to say, plenty of power to lift itself vertically at a good rate of speed. The patents on this most interesting waggon, which has engines of such high refinement as to deliver a horse-power with less than 18 lbs. of water per hour, are not yet issued. I was, however, allowed to take full photographs, which will be forwarded to *The Autocar* at the earliest possible moment.

Winton reported several sales of his waggons in New York in consequence of his seven hundred miles run, and there is no question in regard to the immediate use of a large number of automobiles, electric, gas engine, and steam driven, in the United States in the near future.

As to the "Air-power" vehicles, that is as may be; it seems a strange thing to go over the old records of automobilism of seventy years ago, and read precisely the same things that are being said in the papers today about road waggons driven by mechanical power. Undoubtedly steam would have gone into large use on common roads between 1830 and 1840 had not the horseowners been able, through unfavourable legislation, to keep the new systems of traction from having a chance to demonstrate their powers.

NEW YORK, June 14th.

The rumour in regard to the Stanley steam waggon takes the definite form of a current statement that a syndicate has taken over the Stanley Automobile

business at a cash price of $250,000, and will immediately erect a factory in the vicinity of New York large enough to employ about a thousand workmen in the production of two and four-passenger Stanley steam waggons.

It is also said that the *Cosmopolitan Magazine* will offer $2,000 for the best automobile shown in a run from the City Hall, New York, to Ardsley Casino, about twenty-five miles, judgment to be awarded on a scale of points of speed, cost, appearance, freedom from bad odours, manageability, light weight, and so on, the contest to take place in July.

Although I have no absolutely certain information as yet, I regard both the foregoing items of gossip as substantially true.

I am also informed that none of the first hundred Stanley waggons have yet been delivered, the usual experience of "first lots" being experienced under the able management of the Stanley Brothers as well as elsewhere, and several minor points in the new waggons still requiring attention.

There is a race in prospect between Charron of Paris and Winton of Cleveland, Ohio, the run to be from Chicago to New York. This distance is very nearly a thousand miles by rail, and probably quite that by common roads. Much of the way the roads are poor. Between Cleveland and New York, about 750 miles, Winton lately averaged something over twelve miles an hour for his running time in one of his gasoline engine-driven waggons, and Charron can probably show not less than twenty miles average hour travel between Chicago and New York. Winton has placed a $4,000 forfeit with the *New York Journal*, while Charron has placed a similar amount with the *Herald*. Charron wants everything in the hands of the *Herald*, because the *Herald* prints a Paris edition, and there is an abundance of talk between Winton and Charron in those two papers.

Stanley's steam waggon and the Crouch steam waggon could make Charron's waggon extend itself, in my opinion, and a sweepstakes open to all competitors who would come up with the entrance fee would make a more interesting contest than is likely to be had with Charron and Winton only as contestants. The Charron-Winton run is slated for August.

The Crouch waggon has the best small steam engines in it ever seen by me. Crouch assured me he could develop a horse-power with 18 lbs. of water per hour, and I think this remarkable performance quite possible, as Crouch uses steam at from 250 lbs. to 300 lbs. pressure, superheated to 700 degrees, and has steamjacketed cylinders with a clearance of only 1-200th part of the piston displacement.

The present Crouch waggon, the first and only one so far built, has a pair of cylinders 3in. bore by 6in. stroke, and can develop about fourteen horse-power, and as this waggon weighs only about 750 lbs. empty, it should be able to give Charron a run for his money.

Since writing the foregoing I have seen a circular of the new Stanley Waggon Company, which makes it certain that the facts are about as stated previously. This circular has not yet been made public, but I can probably forward a copy by next steamer, together with full particulars of this important automobile transaction.

The decidedly aerial "Autotruck" is not making any stir just now, and seems quite likely to wait until an actual working waggon is on view before it gathers in much more of the confiding public's money. It really seems as if capitalists preferred to invest in mechanical schemes precisely in proportion to the improbability of a fortunate outcome. All the compressed air motor ventures so far have had an uniform ending, and the Hoardley-Knight-Croker Autotruck proposition does not involve a single vital feature which is not over half a century old, and there seems to be very little probability that the increased mechanical facilities of to-day will render things magnificently successful which were shown in the first half of this century to be faulty in general conception.

There is a very great activity in the electric vehicle producing establishments, the Electric Exhibition at the Garden having been the means of placing a large number of orders. The electric waggon people all report more work than they know what to do with.

HUGH DOLNAR.

The Anglo-American Oil Co. have issued a useful pocket-book containing a list of London and provincial agents selling Pratt's motor car spirit, together with forwarding information, railway receiving days, etc.

* * *

Autocarists driving in the neighbourhood of St. Albans can obtain petrol from Mr. John Roe, of the Saracen's Head Cycle Depôt, Redbourn, which is about five miles north of St. Albans, on the main London-Coventry road.

* * *

Not only did the motor tricycles of the Motor Manufacturing Co., Ltd., gain the award of a silver cup at the Automobile Club races at Richmond on Saturday last, but the firm was also awarded a special silver medal for the excellence of its motors and motor tricycles by the committee of judges acting on behalf of the Automobile Club.

* * *

Edison is announced to have taken the floor in the matter of motor invention, and to have commenced with an electric tricycle which is going to run 150 miles without recharging. What will inventors do now, poor things? There is just a chance, however, that it may not turn out a case of the cat among the pigeons, as Edison does not compass all the wonders of which the daily press accuse him.

* * *

It would appear from our American correspondent's notes that the international match between Charron and Winton has not fallen through after all, and that Mr. Winton is quite prepared to agree to the terms suggested by M. Charron. Should the match come off in August or September, as suggested, we hope to be there to see, but if we were inclined to bet there is no doubt upon whom our money would be placed.

* * *

Mr. John Williams, one of the leaders of the Welsh miners, and an experienced cyclist, recently essayed the riding of a motor cycle on the Mumbles—Swansea road. There being no traffic on the road at the time a big speed was obtained. Talking afterwards, Mr. Williams said that one of the peculiarities of the machine was the alarming manner it gained speed, but after a little careful handling he succeeded in bringing it to a standstill.

DAIMLER MOTOR CO., LTD.

An extraordinary meeting of the shareholders of the Daimler Motor Co., Ltd., was held on Wednesday, at the Holborn Restaurant, in compliance with the pledge given at the last general meeting of the company that the shareholders should be fully informed at an early date as to its position.

Mr. E. H. Bayley presided, and the other members of the board present were Sir Edward G. Jenkinson, Mr. J. H. Mace, and Mr. H. E. Sherwin Holt; also the secretary, Mr. John Ware, and about thirty-five shareholders.

The Chairman explained that this was an informal meeting called solely for the purpose of giving the shareholders information. When he was elected chairman in January last he stated that he would make a thorough and exhaustive investigation into the affairs of the company, and report at an early a date as possible, reserving to himself the right to retire from the position if he considered the prospect of the company unsatisfactory. Sir Edward Jenkinson gave a similar promise. Since their election the board had carried out many reforms, and so far from considering the position of the company unpromising he was convinced, that with the change of policy that had taken place and good business management, the company had not only a satisfactory, but a brilliant future. (Hear, hear.) The first duties to which they directed their attention was to cut down the expenditure to the lowest possible point compatible with efficiency. They dispensed with practically the whole of the London clerical and official staff, an expense of £525 per annum, and had the whole of the work done at Coventry. This not only saved money, but also delay in answering letters from customers. The book-keeping had been placed on a thoroughly sound footing, and to carry out this rather revolutionary change the whole of the work of the office had to be reorganised. The reorganisation of the factory at Coventry had been carried out; it was found there were more overseers than necessary in proportion to the number of men. By the rearrangements made a saving of £1,144 per annum would be effected. The manufacture of stock not readily saleable had been stopped. The works were filled with profitable work, as fast as men could be secured. Unfortunately, at the end of last year sixty-four per cent. of the men were discharged, and it was difficult to get them back, because they thought they would be discharged again in the winter. The board had retained the services of Mr. Sidney Straker as consulting engineer, and he had completed the designs for two leading types of motors, which would form the backbone of the company's business, and when the parts for these were standardised a large demand would be met. The Chairman referred to the success of the Daimler exhibits at the Automobile Show, and said that for the light machine, to which their excellent works manager, Mr. Critchley, had devoted so much attention, the company had already received twenty orders. As this machine was now standardised a large number could be produced to advantage. Passing on to financial affairs, the Chairman announced that several matters had been dealt with to the advantage of the company. He strongly denied their affairs were in a chaotic condition; their balance at the bank had increased from £2,100 in January to £7,800 at the present time. (Hear, hear.) The present board were working most harmoniously, and new life and energy were being shown by the staff and workpeople.

Replying to questions, the Chairman said they made carriages of all descriptions. Experience had shown that for the carriage of very heavy loads, such as four or five tons, steam was better than oil. For light goods petrol was best, and the board had been paying special attention during the last three months to getting a motor for the carriage of goods to the extent of one or two tons.

Mr. Heap remarked he had noticed in the newspapers that a firm at Bolton had a motor car run by electricity.

The Chairman: You may rest assured this new design of ours will beat anything run by electricity. In reply to Mr. Harvey George he said their motor would be applicable to *char-à-bancs* that would carry twenty-six persons. For any vehicles for the carriage of passengers their motors would be suitable.

Sir Edward Jenkinson, at the request of the chairman, gave some explanation of the revision of the system of book-keeping, by which the actual cost of the work and the amount of profit would be accurately ascertained. He also spoke of the satisfactory financial condition of the company.

Mr. Henry Sturmey acknowledged the value of the services of Sir Edward Jenkinson since he had been able to grasp the facts of the position. He was prepared to admit that things were better than they were two months ago. What he had to complain of was that when the new board came in they absolutely ignored the knowledge those already in possessed, with the result that for at least four months out of the six the affairs of the company were in a chaotic state. In the first six months of last year ninety-six to one hundred cars were manufactured; in the corresponding six months this year only thirty-seven. What was the good of having a bank balance if they did nothing with it? If, instead of admiring their bank balance, the board had used it to increase the productive capacity of the works, which could have been done, it would have been doing something good. They had lost by reason of the policy pursued a profit of something like £5,000, and they would have had fifty or sixty more cars running about, bringing in more custom. As he did not agree with the policy of the directors, and his advice and experience seemed of no use on the board, he asked the meeting to accept his resignation as a director. He protested against the way the directors had muddled away the first four months, and added that it was only after taking Mr. Critchley into their consideration, and making him practically general manager, as well as works manager, that any good work had been done.

The Chairman said he thought Mr. Sturmey's remarks were not entitled to much consideration. They were put on the board, he understood, to ignore the policy of the former board. They had done so, and should continue to do so.

Sir Edward Jenkinson pointed out that after workmen had been scattered all over the country it was very difficult to get them back again. They were filling the shops by degrees with good hands again; the work was there waiting for them to do.

In reply to Mr. Rawlinson, the Chairman stated that about two-thirds of what the factory would turn out was now being obtained; it went down to one-third.

Mr. Rawson moved a vote of confidence in the present board of directors, which

Mr. Harvey George seconded, and it was carried.

The Chairman having acknowledged the vote, during which he expressed confidence the company had a good thing, the meeting terminated.

The motor vehicle race from Amsterdam to Aix-la-Chapelle, planned by the Westdeutsche Automobile Club, has had to be given up owing to the Dutch authorities, seemingly not much in favour of the race, placing so many obstacles in the way of the promoters. The day of the race has therefore been altered to July 2nd, and the route is from Frankfort-on-Main to Cologne, about 224 kilometres. The start from Frankfort takes place at seven a.m.

THE LONDON STEAM OMNIBUS CO.

A Reconstruction Scheme.

In a circular, which has been sent out by Mr. W. J. Hunter, to the shareholders of the London Steam Omnibus Co., a scheme for the reconstruction of that concern is put forward, which should place it upon a satisfactory basis, and give it at least a chance to exploit the motor omnibus idea with some reasonable possibilities of making it pay. Broadly speaking, the principal point secured has been the reduction on the price to be paid the British Motor Co. for their license from £210,000 to £50,000, which latter sum is to be paid in cash. Then the terms of the license have been enlarged, so that in place of only having an exclusive license for London for omnibuses made under the De Dion patents the firm will have this exclusive right extended to *char-à-bancs* and cars generally, and this license will be extended to the whole series of patents owned by the British Motor Co. The scheme also incorporates an arrangement with the existing firms owning licenses by which the interests of the Steam Omnibus Co. are protected, and competition with similar motors prevented, and last, but by no means least, the scheme provides for the removal of the whole of the present board—Messrs. E. H. Bailey, J. H. Mace, T. Robinson, G. Iden, and R. G. Hall—and the substitution therefor of an entirely new board, which is to consist of Col. C. M. Davidson, Col. C. E. Macdonald, and another member of the Board of the London Tramways Co., which has recently been purchased by the London County Council. The title is to be altered to the Motor Omnibus and Traction Company, Limited, and the reconstructed company will start business with something like £80,000 cash capital available, and a balance of 280,000 unissued shares, which could be issued at a future date should the requirements of the company demand it. This scheme looks feasible and sound, and certainly under it and the new management this hitherto unfortunate concern should at least have a chance of showing of what the idea for which it was formed is capable.

THE FIRST CASE IN LEICESTER.

At the Leicester County Police Court, last week, William Nash, motor car driver, Leicester, was summoned for driving a car at a greater speed than twelve miles an hour, contrary to the County Council byelaws.

P.C. Harding stated that he saw defendant, who was the driver of one of the motor cars running between Anstey and Leicester, driving a car down Taylor's Hill, on the Ashby Road, at a pace which witness considered was considerably over eighteen miles an hour. On the return journey he spoke to Nash, who remarked that there appeared to be a good deal of jealousy about the driving of motor cars in that district. Witness had previously had complaints about the pace at which these cars travelled. In defence, Nash said it was impossible for him to drive the car at a greater pace than thirteen miles an hour, and this was the rate at which he was travelling on the day in question. He produced a copy of the Act, in which he said it was stated he could drive at fourteen miles an hour. He had been a motor car driver for four years, and was the first driver in Leicester. The Chairman said the Act apparently allowed Nash to drive at fourteen miles an hour, but that Act also gave local authorities power to issue regulations with reference to the pace at which cars could be driven. This was the first case they had had at that Court, and defendant would be fined 15s. inclusive, or seven days.

ALLEGED FURIOUS MOTORING.

Some Extraordinary Statements.

At the Brentford Petty Sessions last week Dr. Edward Lehwess, of Twickenham, was summoned for having furiously driven a motor car through Ealing to the common danger of the public.

Police-constable 443 X said that on the 28th ult. he was on mounted duty at the Uxbridge Road, Ealing, when he saw defendant coming along at a most furious rate with a motor car. Witness rode into the middle of the road and beckoned to him to stop, but he took no notice and drove straight into witness, thereupon he wheeled his horse round and galloped in front of him. Defendant was just under him, and he had to gallop as fast as he could to keep in front of him. Defendant tried to pass him on his right side and then on his left. Seeing it was no good, he pulled up, and said he had not been driving at a greater speed than six miles an hour. Witness estimated that he was going from sixteen to seventeen miles per hour. People were running after them, and when he stopped a crowd of three hundred gathered round.

Police-constable 134 X said he shouted to the defendant several times to stop, but he took no notice. No less than fifty people complained to witness of the rate defendant was going.

Inspector Argue and a civilian witness corroborated. The latter stated that the defendant was going at the rate of twenty miles an hour, and that if he had not stopped a number of people would have got hold of the car and forced him to.

The defendant said he did not exceed ten miles per hour.

The Chairman said the Bench were unanimously of opinion that defendant had driven at a dangerous rate. He would be fined forty shillings and costs. The maximum penalty was £10, which he would have to pay if he was summoned again for a similar offence.

AN AUTOCARIST OBTAINS DAMAGES.

At the Windsor County Court on June 27th, before His Honour Sir A. G. Marten, Q.C., Mr. Harry Heatly, of 110, Cannon Street, W.C., civil engineer, sued Mr. T. R. Seaton, of the George Hotel, Aylesbury, farmer and hotel proprietor. The action was for damages sustained by the plaintiff in consequence, it was alleged, of the negligent driving of defendant or his servant.

Mr. G. M. Cohen, instructed by Mr. Staplee Firth, appeared for Mr. Heatly, and Mr. Moyses appeared for Mr. Seaton.

On the 5th April last Mr. Heatly was driving his motor car from Oxford to London accompanied by his wife. On the main road between Taplow and Slough Mr. Heatly in his car was met by defendant's carter, Davis, who was driving a heavy waggon laden with empties, and had two horses harnessed tandem fashion. When the vehicles were about fifty yards from one another Mr. Heatly noticed the leading horse of defendant now crossing the road towards the car. Mr. Heatly stopped his car, shouted to the driver to stop his horses, and at the same time stopped the engine

in his car, which was thus motionless and noiseless. The horse advanced diagonally and did not appear to be under the control of defendant's carter. Mr. Heatly and his wife got out of the car, and the horse, passing on the near side of the car, entangled its traces in the wheels, and, despite Mr. Heatly's exertions to free the machine, it was dragged some little distance along the road and eventually forced under the wheels of the dray and completely smashed, the defendant's carter saying he could not stop his horses. These facts were established by the evidence of Mr. and Mrs. Heatly and a man named Thomas Gregory, who was passing at the time.

The defendant contended that the horses were frightened by the motor car, and that Mr. Heatly was an unskilful driver, and ran his motor car into defendant's waggon after the horses had swerved.

His Honour, in summing up, instructed the jury that if they thought the collision was an occurrence which could not be prevented by the use of ordinary means of control with regard to horses, then it would be an accident for which no damages could be recovered, but that if they found that defendant had been negligent in allowing a heavy cart of this kind to be sent out tandem fashion with only one driver, or that defendant's servant was negligently driving, or had not proper and ordinary control of his horses, there should be a verdict for the plaintiff.

The jury retired, and on their return gave a verdict for plaintiff for £43 damages, and his Honour gave judgment for that amount with costs.

A German paper reported, last week, that the 180 workmen of Cudell and Co., motor vehicle works, Aix-la-Chapelle, are on strike.

* * *

A company has just been formed at Niagara Falls, N.Y., U.S.A., with a capital of £2,000, to be known as the Niagara Automobile Co.

* * *

La Societa per la Costinzione di Automobile is the name of a company which has just been formed at Padua, Italy, with a capital of £16,000.

* * *

Messrs. Ernst and Co. is the name of a new firm which has just been formed in Paris (13, Rue Lafitte) to deal in motor cars. The capital is £3,720.

* * *

A meeting of chauffeurs has just been held in New York, when it was decided to form the Automobile Club of America, a committee being appointed to draw up the necessary rules.

* * *

La Société Lyonnaise des Vélocipèdes et Automobiles Rochet et Schneider, of Lyons, has changed its title to La Société Lyonnaise de Construction d'Automobiles Rochet et Schneider. At the same time the capital has been increased from £20,000 to £40,000.

* * *

While in Bourne, last week, one of our correspondents was proceeding to rest his bicycle on the kerbstone, when a man in charge of a young horse in a baker's cart begged him to "shift" the bicycle, as he could not say when the horse would go when he left hold of its head. Now, supposing a motor car was as bad as that. Would there not have been an outcry? A "hay-motor," however dangerous, must, of course, have excuses made for it.

In view of the development of the horseless vehicle movement, the Norwegian customs authorities have suppressed the former heading, "Electric motor cars for use on railways," and has created a new one under which all motor cars are included. The import duty upon all automobile vehicles has been fixed at 15 öre per kilog (about 8s. 6d. per cwt.)

* * *

In connection with the annual meeting of the German Touring Club, which is to be held at Mainz from the 14th to the 20th July next, a motor cycle and motor car race between Mainz, Finthen, Coblenz and back is being organised. The distance is about 240 kilometres. The race will be divided into two categories—motor vehicles weighing less than 350 kilog, and motor vehicles weighing 350 kilog and over.

New Patents.

This department is conducted by Mr. G. Douglas Leechman, consulting engineer and registered patent agent, 18, Hertford Street, Coventry; 75, Chancery Lane, London, W.C.; 32, York Street, Dublin; and 9, Exchange Chambers, New Street, Birmingham; from whom any further information respecting patents, designs, and trade marks may be obtained. Any person interested in opposing the grant of patents on any of the undermentioned applications may give notice of opposition in the prescribed form not later than the day appended to each abridgment.

MAY 29TH TO JUNE 2ND.

11,133.—A. J. Lyon and G. F. Whitmore, "Improvements in devices for the automatically extinguishing in motor vehicles when overturned of ignition tubes or of burners heating the same."

11,155.—H. P. Miller, "Improvements in or connected with weather screens for hanson cabs, motor hansoms, and like vehicles."

11,225.—B. Rade, "Improvements in motor cycles or like vehicles."

11,249.—R. M. Hunter, "Improvements in electric devices for propelling and controlling vehicles."

11,238.—H. S. Maxim, "Improvements in and connected with motor-driven vehicles, velocipedes, and other light vehicles."

11,415.—A. J. Boult (Hugot), "Improvements in or relating to driving mechanism of motor road vehicles."

ABRIDGMENTS.

No. 4,053, A.D. 1898, FEBRUARY 18TH.—GEAR FOR MOTOR CARS, H. AUSTIN. Two spur wheels A A' are capable of turning independently of one another, and have a common axis. These wheels are mounted on the ends of axles B B' carried in bearings, and the wheels are rigid with their respective axles. A drum C enclosing the wheels A A', and capable of turning independently thereof, is provided with sprocket teeth *c* for a chain. Within this drum are mounted spur pinions *a a'* adapted to turn upon transverse pins *b b'* which pass through the sides of the drum C. The wheels A A' and pinions *a a'* are formed with parallel teeth. The teeth of the pinion *a* gear directly with the teeth of the wheel A, and the teeth of the pinion *a'* gear directly with the teeth of the wheel A'. The portions of the teeth of the pinions which extend beyond the inner sides of the wheels A and A' gear directly with one another. If the drum C be held from turning, and the pinions *a a'* be then caused to rotate, the spur wheels A A' with which the pinions gear will be caused to revolve in opposite directions. Two wheels of a motor car

or cycle being driven by the wheels A A', if the drum is revolved and the resistances against the turning of the spur wheels are equal, as for instance when the vehicle is running straight, the two pinions will not revolve around their axes, but will simply carry round the equal spur wheels A A';

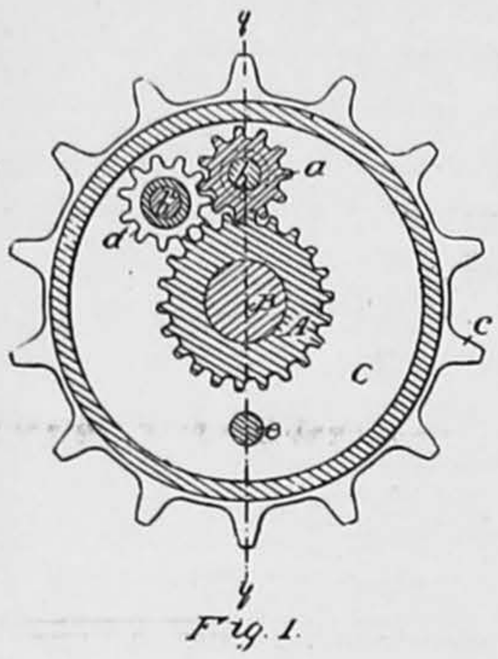


Fig. 1.

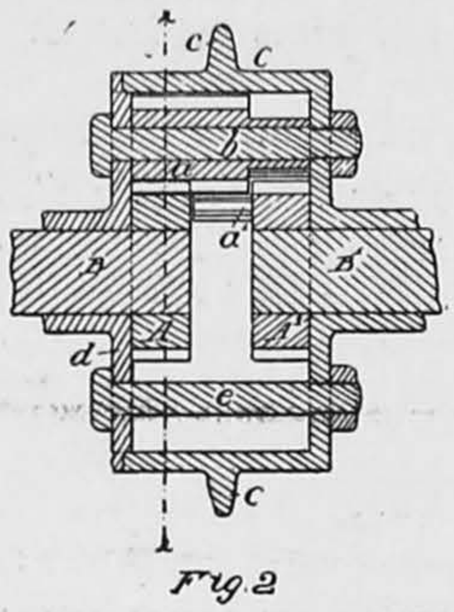


Fig. 2.

whereas, if a greater resistance is opposed to the turning of one of the wheels than to the other, as when the vehicle is turning a corner, the pinions will revolve, and the one wheel will be driven faster than the other. Specification No. 20,401 of 1895 is referred to.

No. 9,516, A.D. 1898, APRIL 25TH.—BELT-DRIVING GEAR, A. BOLLEE (Père). This driving gear has a cone made, say, for three different speeds, and consisting of four steps or diameters $G^1\ G^2\ G^3\ G^4$ secured to the driving shaft A, and another cone mounted on the driven shaft B and consisting of alternating fast ($F^1\ F^2\ F^3$) and loose ($M^1\ M^2\ M^3\ M^4$) stepped pulleys (fig. 1). Two coupling forks are employed, one turned upwards and the other downwards, each constituted by two branches forming a V having arms not in the same vertical plane, the branches *b* and *c* nearest to the wider end of the cones being nearer the cones than the other branches *a* and *d*. These two V-shaped forks can move together, both in vertical and in horizontal planes, along lines substantially parallel to X Y and U V. The fork *a b* moves along an oblique line *x y* (figs. 1 and 2), and the fork *c d* moves in a similar oblique line *u v* (fig. 1). When the belt is on $G^2\ F^2$ by pushing the forks towards the left the belt is brought at one end on to the loose pulley M^2 and against the next step, and at the other end it overlaps $G^2\ G^3$. As the branch *b* of the fork is nearer the cone G^2 than the branch *d* to the cone M^2 the branch *b* will at once cause the belt to fall on G^3, while the belt which will thus become inclined at the other end will not immediately be forced to move on to the larger diameter of M^2 as the branch *d* is sufficiently far away. By continuing to push the forks towards the left, the branch *d* will finally force the belt on to the larger part of M^2. By continuing the movement the belt afterwards passes, without any resistance, off the loose pulley M^2 to the fixed pulley F^3, which is of the same diameter, and the speed of the driven-shaft will consequently be changed. If the belt is pushed still further towards the left, it comes first on the loose pulley M^3, whereby the rotation of the cone is stopped, and then continuing it falls on the step G^4 of one cone and the loose pulley M^4 of the other. Then not only the shaft B is completely stopped, but also the belt is released, and its tension is considerably reduced. By moving the belt towards the right it is caused to pass simultaneously on to G^3 and M^3, and to become stretched, and is then ready to be moved on to the fixed pulley F^3 for driving purposes. In this way an absolute slackening of the belt is obtained when it has no work to perform, and its immediate stretching as soon as it is required to work. Still better results are assured by applying to the driving pulley the arrangement of loose pulleys of the driven pulley. At the end of the driving cone (fig. 4) is provided a stepped pulley G^4 loose externally on a bearing O, in which rotates the driving shaft A. The loose pulley G^4 can be applied laterally against the fixed part G^3, which then causes it to participate in the rotation by frictional adhesion, which can be increased either by a strong weight or by a conical surface of rubber or by a magnetic coupling or the like. The small step M^4 of the driven shaft loose pulleys $M^3\ M^4$ is mounted in the same manner, it being loose externally on the bearing of the shaft B, while the other step M^3 is loose either on the same bearing or on the shaft B itself. Assuming that the belt is on $G^4\ M^4$, it being thus on two loose pulleys, the spindles of which do not rotate as they are constituted by the bearings of the shaft, will not move; and the shaft A will continue to rotate indefinitely without the belt receiving any

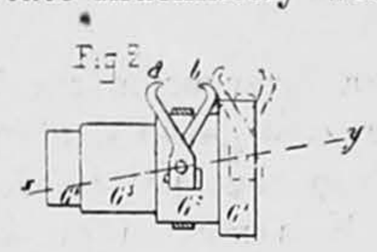


Fig 2.

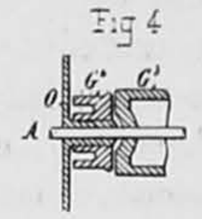


Fig 4.

Fig 1.

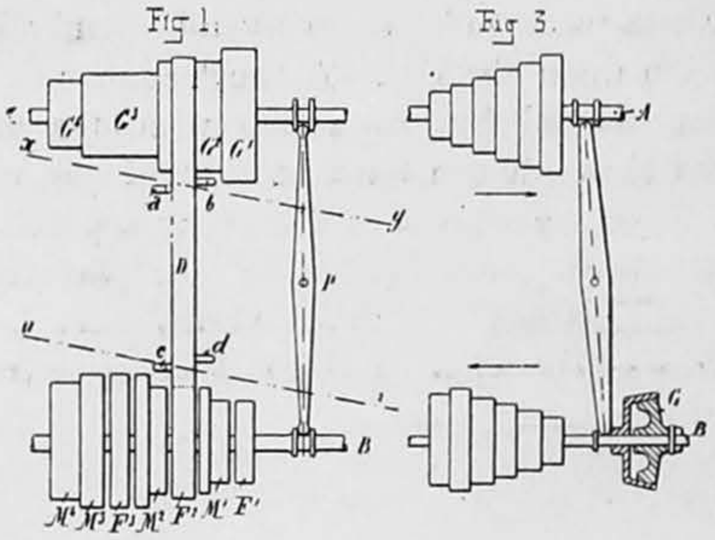


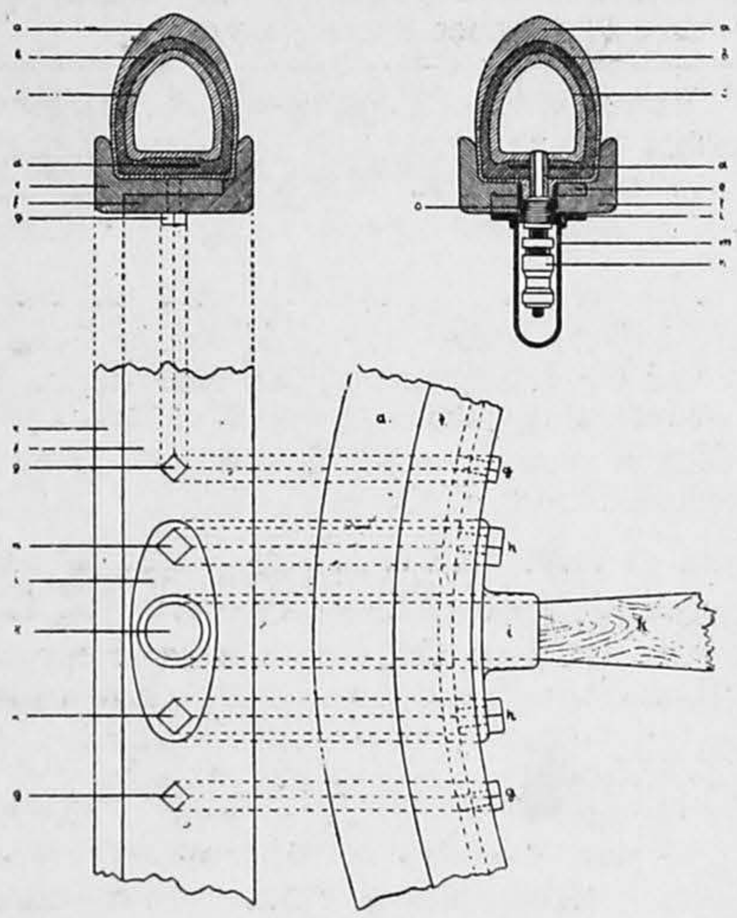
Fig 3.

power or the pulleys requiring the slightest lubrication, as all these parts are stationary. By pushing the belt towards the right it forces the loose pulley G^4 against G^3 simply by frictional engagement, or it will effect this movement more certainly if it is provided with a flange, which facilitates the engagement of G^4 and G^3. The contact between G^3 and G^4 being produced, the pulley G^4 rotates as if it were in one piece with G^3, and the belt passes freely from G^4 on to G^3 and from M^4 on to M^3 and becomes stretched. By moving the branches *a* and *d* away from the cones to a greater or less extent the interval between the moment when the branches *b* and *c* of the forks cause the belt to be moved and the moment when the other branches *a* and *d* come into operation can be regulated with great exactitude. This regulating can be effected by inclining the branches of the forks. The disengaging forks must be arranged so that the axis of the belt passes exactly through the bisecting line of the forks when said belt is operative and in place. The wider the steps are relatively to the width of the belt the more can the branches of the disengaging forks be opposite each other in a vertical plane, that is to say, the more they can approach the form of a flat V. On the contrary, if the distance between the two shafts is very small, the belt very wide, and the loose pulleys comparatively thin discs, a supplementary means may be found useful for assisting the forks to cause the belt to fall at one end before raising it at the other end. It is sufficient in this case to connect the two shafts by an oscillating lever P, so as to enable each cone to be moved longitudinally in the direction indicated by the arrows (fig. 3) before moving the forks. The cones are thus moved to a desired extent, so that only half the width of the belt engage with the cones. By then moving the forks the belt falls at once in the desired manner as it was supported only on half its width. The general arrangement may be modified in many ways. As each fast pulley may become a loose one if disengaged from its shaft, driven cones consisting of alternate fast and loose pulleys may be replaced by cones made in one piece (fig. 3) which may

become a single loose pulley by disengaging a conical coupling G. This disengaging may, for instance, be effected by the longitudinal movement of the cones produced by the lever P. The driving cone, provided that it is also fitted with a coupling, may also be in one piece with the loose pulley G^4 (fig. 4), the belt being stationary when it has no work to perform. The two cones may in this case be mounted loosely at their ends on bearings supporting the shafts A and B, similarly to the pulley G^4 on the bearing O. The loose pulleys G^4 and M^4 may be mounted on fixed shafts secured in line with the rotating shafts A and B. If the distance between these shafts is variable, or if there is a jockey pulley on the belt, only one cone need be a stepped one.

No. 20,647, A.D. 1898, SEPTEMBER 30TH.—PNEUMATIC-TYRED WHEELS, J. T. WINCKELSETT. The pneumatic tyre is made in the form of an endless tube, the interior rubber tube *c* being surrounded by a layer or layers *b* of fabric, while the outer rubber layer *a*, thickened at the pointed tread, encloses these two component parts. A flat metal band *d* is imbedded in the base portion of the layer or layers *b* for the purpose of securing and firmly holding the tyre in position upon the rim. A short rubber tube *o*, which may be strengthened by protective windings of fabric, is made to pass through the base portion of the rubber layer

Fig. I *Fig.* II



a and through an aperture in the metal band *d* into the interior of the tyre, and serves to receive the air valve *n*, which may be secured to said tube. The wheel rim consists of two separate parts *e* and *f* made to fit closely into each other, and to be firmly held together by screws *g*. If the screws *g* are loosened the left portion of the rim *e* can be removed, while the right portion *f*, maintained in position by spoke-caps *i*, secured thereto by screws *h*, in which the spokes are fixed, remains firmly connected with the hub of the wheel.

Answers to Correspondents.

FRED. KNOTE.—We insert your letter.

DR. DAWSON TURNER.—Thanks; have noted.

H. HASSEL.—Please accept our congratulations.

J. HEWITT.—We are much obliged for your enclosure.

F. R. SIMMS.—Please accept our congratulations.

G. R. ALLEN.—We are very much obliged, and glad to have your opinion that the autocar driver was not to blame.

ENGINEER.—We note with interest, and are sorry we were unable to meet you. Will be glad to have further particulars.

E. SHRAPNELL SMITH.—Very many thanks. We quite agree with you. With regard to P.S. you have our deepest sympathy.

JOHN ROE.—Many thanks. Have noted. We are always glad to have the information you give us, as we want as many names as possible.

NORMAN E. BURKE.—We believe the concern you name has been wound up, but are not quite certain on the point, and we think the British Motor Co., 14, Holborn Viaduct, E.C., may be able to give you some information upon the subject.

W. T. W.—Spring steel tyres have been tried in almost every conceivable form, especially upon cycles, and if they did not stand upon cycles they are not likely to stand upon cars, where the weight and strains are so much greater and more complex. We can see no hopeful prospect before such an idea.

R. CROSS.—We are very glad to have your opinion on the matter, and confess that personally we endorse it, but, of course, the sternly practical side of the question must be considered, and that is the reason for it. We think you will find it arranged so that there is no difficulty over the matter you mention.

H. P. FERNALD.—On May 6th we published a list of 160 odd names. A list is also published by both the firms best known in connection with the distribution of petrol, whose advertisements appear in our columns. Thanks for note about Rowse. We shall publish amended lists from time to time. With regard to the bulge you mention in your carburetter we think you will find the matter fully explained in our issues of May 6th, 13th, and 20th. If these do not cover your trouble please write again giving full particulars, and we will insert your note.

Miscellaneous Announcements.

All advertisements inserted in this column must be strictly prepaid.

Under this head we are prepared to insert advertisements of autocars and other goods for sale, situations vacant and wanted, patent rights, partnerships, businesses for disposal or wanted, and other miscellaneous announcements of a like character. The charge for each insertion is 2s. 6d. for thirty words or less, and 6d. for every six words or less in addition, and a discount is offered of one free insertion in a series of thirteen, i.e., *a 2s. 6d. advertisement will be inserted thirteen times for £1 10s., etc. All advertisements or series of advertisements inserted in this column must be strictly* PREPAID, *and must reach* COVENTRY *not later than* MIDDAY *on* WEDNESDAY *to ensure insertion.*

Numbered Addresses.—*For the convenience of advertisers, letters may be addressed to numbers at* THE AUTOCAR *Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed "No. 000, c/o* THE AUTOCAR, *19, Hertford Street, Coventry," or if "London" is added to the address, then to the number given, c/o* THE AUTOCAR, *3, St. Bride Street, Ludgate Circus, E.C.*

Deposit Department.—*Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with* THE AUTOCAR *both parties are advised of this receipt, and upon intimation of the arrival and acceptance of the goods, the money is forwarded less a charge of 1s. for registration, and a deposit fee of 1¼ per cent. on the value of the transaction. All deposit matters are dealt with at Coventry.*

SITUATIONS WANTED AND VACANT.

ALL-ROUND cycle fitter seeks employment in motor works, slight knowledge of oil engines; good references and testimonials.—No. 1,383, c/o *The Autocar* Office, Coventry.

SITUATION required by gentleman, aged 29, thorough expert in motors, excellent references, knowledge of French, at present managing small business.—No. 1,384, c/o *The Autocar* Office, Coventry.

WANTED, from August 13th till end of month, a young autocar mechanic, to accompany advertiser on tour through France. Must understand Mors cars, speak French fluently, and be willing to make himself generally useful.—Terms on application, by letter only, to MARK MAYHEW, Scio, Roehampton.

CARS, &c., FOR SALE AND WANTED.

WANTED, to hire a De Dion motor tricycle, with a view to purchase; must be of the most modern construction.—Full particulars to T. M. GARDINER, Cycle Works, Hoddesdon.

WANTED, twelve De Dion motor tricycles, 1¼ or 1¾; must be in perfect running order and good condition.—Full details and photos to FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

WANTED to purchase immediately, six Daimler cars to carry four to eight passengers; must be cheap.—Send full particulars and photos to FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

PANHARD Motor for sale, ready to build car to, 3 h.p., nearly new; price £40.—A. OLLEY, Enfield Town.

MOTOR Bicycle, magneto ignition, two cylinders, wants adjusting, has run well; sacrifice £15.—JOHNSTON, 97, Greenwood Road, Hackney, London.

GENUINE De Dion throughout Tricycle, only over a few weeks, complete with accessories; £65, a splendid machine.—A. B., 168, Dalston Lane, London, N.E.

BENZ Victoria for sale, 5 h.p., complete with hood, in splendid condition, suit medical man, cost £280; price £140.—ALBERT OLLEY, Baker Street, Enfield Town.

BEESTON Motor Tricycle, 1¾ h.p., 3in. tyres to side wheels, tube ignition, everything in perfect condition; price £47 10s., or would hire it.—ALBERT FARNELL, Bradford.

FOR Sale, excellent 5½ h.p. Benz (four-seated) dogcart, in splendid condition, large petrol tank, painted primrose and dark green; price, £160 cash.—Apply No. 1,385, *The Autocar* Office, Coventry.

1¾ h.p. De Dion Tricycle and double trailer, tank, side mudguards, etc., good as new; bargain, £70; can be seen and tried in London.—No. 1,386, c/o *The Autocar*, 3, St. Bride Street, E.C.

LATEST 1899 pattern De Dion Tricycle for sale, very fast and powerful machine, only three months old, extra petrol tank and electric ignition.—Apply COMET CYCLE CO., High Street, Wandsworth.

DAIMLER Knightley Victoria, nearly new, and in perfect condition, wheel steering, and Longuemare burners ready to be fitted; owner purchasing a racing car.—TURNER, 37, George Square, Edinburgh.

FOR Sale.—Almost new Humber Bollée, to seat three, in perfect condition, to be sold cheap; free trials to buyers; full particulars and photos sent.—Apply to FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

FOR Sale, 5 h.p. Benz Sociable, in perfect running order, quite equal to new, latest improvements; no reasonable offer refused.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

WRIDGWAY'S famous racing Aster motor tricycle, fastest motor tricycle, speed 37 miles per hour, quite new, winner of several gold medals, racing Saturday, July 1st, at Crystal Palace.—Price and particulars, FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

PANHARD and Levassor waggonette, to carry eight, with spare 'bus top, fitted with water cooling for long journeys, almost new; price £275.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

DE Dion Motor, 1¼ h.p; price £12.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

CHENARD Motor Tricycle, to carry two, 1¾ h.p. De Dion Motor; price £60.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill.

TWO Werner motor bicycles, £20 each; one De Dion motor tricycle, £30.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill.

DAIMLER Lorry, to carry 30 cwt., suitable for mineral water work or brewers, floor space 9ft. × 4ft., perfect order, not worked much; to be sold cheap.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

FIVE h.p. Benz char-à-banc, to seat six or eight persons, in perfect running order, almost equal to new, with force water circulation, and special condensers; £135, complete.—FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

LIGHT Daimler waggonette, equal to new, to carry six, very fast car, weight only 18 cwt.; price £265.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

NEW French made De Dion tandem bicycle for sale, 1¾ h.p., perfect condition, very fast, could easily be converted into tandem tricycle.—LESLIE BUCKNALL, ESQ., Wickhurst Manor, near Sevenoaks.

MOTOR (2 h.p. alternating), by Langden Davies, to suit 100 volt circuit, with starting switch and resistance; has never been used; £20.—ILIFFE, SONS & STURMEY LTD., *The Cyclist* Printing Works, Coventry.

1899 International Benz Dogcart, Brampton chain, Connolly tyres, automatic chain lubricators, regulating lever, plated top rail, fast and powerful car; £150, free trial.—JOHNSON & SON, St. James Street, Lynn.

THREE Benz 16 h.p. Waggonettes, for thirteen persons, excluding driver; on level, sixteen miles. Will take full load uphill; first-class condition; immediate disposal.—HY. LEDSAM, Chartered Accountant, 22, Waterloo Street, Birmingham.

QUADRICYCLE, fitted with 1½ b.h.p. Simms' patent motor and electric ignition gear, unequalled for smooth running, silent, and reliable; price £120, to carry two persons.—THE MOTOR CARRIAGE SUPPLY CO., LTD., Donington House, Norfolk Street, W.C.

BENZ Ideal, £95; 1¾ h.p. tricycle, new De Dion motor, with licence, electric ignition, £68; Beeston tricycle, 1¼ h.p., electric ignition, £35; second-hand autocar bodies, from £10; Endurance 3 h.p. vertical motor, complete, electric ignition, carburettor, etc., water jacketed, £20; chain wheels, pinions, differential gear; complete cars, from £100, to seat two and four persons, English make. Orders quickly executed. Every description of repairs done on the premises, and petrol kept in stock. Parts machined, and owners' castings and designs worked up to drawings. Free trial to purchasers.—COBORN CYCLE AND MOTOR CO., 363, Mile End Road, London, E.

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TRANSFERS for Autocars.—Write for sketch (free) and prices, enclosing wording, to ILIFFE, SONS & STURMEY LTD., Coventry.

JULIUS HARVEY & Co. supply steam, oil, and electric motor vehicles of every description; illustrated catalogues on application.—11, Queen Victoria Street, London, E.C.

PLATINUM used ignition tubes wanted, and platinum scrap of all kinds purchased, best prices, by DERBY AND CO., 44, Clerkenwell Road, London, E.C. Established 1797.

PATTERN and Model Makers.—We have had a large experience in motor work; light patterns a speciality; brass and aluminium founders.—GOODWIN & SON, 16, Charles Street, Hatton Garden, E.C.

THE King quadricycle (convertible), seats two, £105; the King tricycle, £80; King's P.T.S. autocycle (seats two), £84; leather suits, combination waterproofs, densimeters; agents wanted.—THE KING MOTOR CAR CO., 70A, Rye Lane, Peckham.

EXCEPTIONAL Offer.—New Benz Cars, all our latest improvements, electric light, regulating lever handy, etc. Eclipse cars sold by others for power. £25 worth extra work put in. Sold at usual prices.—HUNTER, Eastdown Works, Lewisham.

EXPERIMENTAL Work, repairs, oil-retaining gear cases for motor tricycles a speciality.—JAMES & BROWNE, 155, Buckingham Palace Road, London, S.W. (near Victoria Station). Telephone 363, Westminster. Telegrams, "Jeminess," London.

IMPORTANT.—Intending purchasers of motor cars should specify ROUGH & Co.'s complete variable speed friction and transmission gear, and avoid belt, chain, and toothed gear troubles.—Address, Hereford. Note.—Wanted, partner to develop above; inspection invited.

AILSA CRAIG MACHINE COMPANY, LTD., Putney.—Nickel-platers, enamellers, motor engineers; repairs, accumulators charged, fittings supplied. Complete cars quoted for, first-class workmanship, moderate prices. Enquiries solicited. Telephone 192, Battersea.

NEW and second-hand Autocars for sale.—Accommodation for motor cars; repairs promptly carried out by skilled workmen; petrol, grease, etc., in stock.—ROWLAND BARNETT & Co., LTD., electrical and mechanical engineers, 74, Northumberland Street, Newcastle-on-Tyne.

THE North of England Motor Co., 41, Aire Street, Leeds, agents for Benz cars, Daimler cars, and Butler motor tricycles; also motors and parts. Petrol kept; repairs done. In stock, latest 8 h.p. Benz drag, seat ten; Daimler waggonette, seat six; Butler tricycle, 2 h.p. All letters prompt attention.—S. LEUCHTERS & Co.

PASSENGER Waggonettes and Chars-à-bancs.—We are building these in all sizes to carry from nine to thirteen. Prompt delivery. We delivered the first Bedford car to carry thirteen in three weeks from receiving the order. Passenger services arranged.—For photos and particulars write to SALMONS & SONS, Motor Car Works, Newport Pagnell.

"ON an Autocar Through the Length and Breadth of the Land," by Henry Sturmey, being notes on a tour of over 1,600 miles from Land's End to John-o'-Groat's, London, and Coventry, illustrated with thirty-six views taken *en route* by the author. Bound in green cloth. Price 4s. 6d. nett; postage 3d.—ILIFFE, SONS & STURMEY LTD., 3, St. Bride Street, Ludgate Circus, E.C.

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PETROL.—CARLESS, CAPEL & LEONARD, of Hope Chemical Works, and Pharos Works, Hackney Wick, London, N.E., specially distil Petrol, the spirit best adapted for motors, motor carriages, launches, etc., etc. Maximum of efficiency and perfect combustion, therefore great economy and no deposit in cylinders. No smell, no dirt, no trouble. Carless, Capel & Leonard have supplied the above for the Daimler motors for over five years, and hold the highest testimonials. They also supply lubricating oils and greases. Samples and prices on application. Telegrams: Carless, Hackney Wick. Petrol.

MISCELLANEOUS.

BOLLÉE, with or without canopy, exceptionally fast and powerful, bargain; also a De Dion Motor Tricycle, quite new, and cheap. Trials solicited.—MOTOR AGENCY, Ryley Street, Coventry.

LATEST 1¾ h.p. tricycle for sale or hire; motors of all kinds supplied, stored, repaired, etc.; petrol and other necessaries kept.—Apply SIMPSON, STRICKLAND & Co., LTD., engineers, Teddington-on-Thames, S.W.

IVEL Hotel, Biggleswade, on the Great North Road.—A large supply of Carless' petrol and lubricating oil always in stock. Ivel cycle and motor car works at back of hotel; accumulators charged.—Proprietor, DAN ALBONE.

A GENTLEMAN, having large *clientèle* amongst tradesmen and stores in London, is desirous of introducing motor vans for trade purposes on commission for first-class firm.—W. D., c/o *The Autocar* Office, 3, St. Bride Street, E.C.

TO Manufacturers and Syndicates.—Persons desirous of securing land for manufacturing purposes in the Midlands can be suited with from one to twenty-five acres. The land is freehold, well situated for development, in close proximity to the motor-making quarter of the city, within a few yards of the L. & N.W. Ry., and possesses nearly a quarter of a mile of canal frontage. For all particulars apply to MCCARTHY & Co., Well Street, Coventry.

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