

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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A CASE FOR APPEAL.

On Monday last, an autocar again figured in a Hampshire Police Court, Mr. John Adolphus Koosen, of Southsea, having been summoned for using a locomotive without causing a person on foot to precede it by at least twenty yards. Mr. Koosen was fined 1s. and costs, the bench of magistrates being unanimous in the opinion that the carriage was a locomotive. We are not quite certain, but we believe, the carriage used was one employing a small gas engine supplied with ordinary coal gas from cylinders containing it in a compressed form. If this be correct, how policeman Kerby could see steam coming from the vehicle, we are at a loss to conceive. The peculiar and important part about this case, however, exists in the fact that Mr. Koosen had fortified himself by taking out a carriage licence under the Customs Act of 1888. This point was urged on his behalf by his solicitor, but the chairman elected to assume that it might be made a locomotive at any moment, as a gig or other vehicle could be attached to it at will, surely a most arbitrary argument in a case like this. We should have thought in all common sense that it would have been time enough to have considered it a locomotive, when Mr. Koosen attached a gig or other vehicle at the back of it, a performance which we imagine he was not at all likely to undertake, but it seems a difficult matter to argue with these Hampshire magistrates. It will be remembered that Mr. Knight's case was dealt with in a Hampshire police court—indeed, we fancy before the same magistrates, but of that we are not quite certain. At any rate, it would appear to us that the unreasoning opposition of the agricultural interest, oblivious of the ultimate benefit which will accrue to them by the introduction of the autocar, finds full vent in rural Hampshire. We are not aware whether a case was asked to be stated for appeal, but it appears to us that here, at any rate, would be a suitable case for an appeal, and we would commend it to the attention of the newly-formed association, this being the first case which has occurred in which the defendant has been the possessor of a licence from Her Majesty's Customs Department giving him permission to use a carriage, for availing himself of which permission he is now fined by another department of her Majesty's service.

Notes.

In wishing our readers the compliments of the season—for Christmastide will be over before our next issue appears—we would ask those who have any communication to make for the columns of this paper next week to note, that, on account of the general holiday, although no difference will be made in the publishing day of *The Autocar*, the editor's labours will be devoted to it on Monday instead of Wednesday, so that anything intended for publication in No. 9 must reach us on that day.

* * *

Readers of *The Autocar* will have seen by reference to the advertising columns that the demand for the earlier numbers of this journal has been so great that, whilst very few copies indeed of Nos. 2 and 3 remain in the publishers' hands, No. 1 quickly ran entirely out of print. Our publishers inform us, however, that they have been able to secure a small parcel of this number from one of their outlying agents, and these they will be prepared to dispose of to readers desiring to complete their sets at 2s. 6d. each.

* * *

As an instance of the vitality of the autocar trade in France, we may note that in a letter received this week from Les Fils de Peugeot Frères, of Valentigney, who are one of the principal manufacturers in France, the firm inform us that they are so crowded with orders at the present time that they are unable to keep pace with them. Another French manufacturing house which is engaged in this branch of business informs us also that they are so busy that, whilst they are not disposed to refuse orders, they cannot undertake to deliver upon any specified date within the next three months.

* * *

Our contemporary, *The Financial Post*, strikes out in a new line when it suggests the use of the word "Volvites" to indicate the new horseless carriages. Among the many suggestions this is the strangest, and we scarcely think can possibly "catch on." Since the publication of this journal the title "autocar" is seen every day more frequently in print, and we fancy this will be the generally adopted term for the vehicles in this country. America appears so far to have unanimously adopted "motor cycle" for all classes of vehicle, which we are inclined to think is at times just a little incongruous.

At last we are happy. We have seen Mr. Pennington, and we have seen his motor, and we shall be happier still when we have seen it at work. Mr. Pennington, who arrived in this country late on Friday evening of last week, is a tall finely built man, with a deeply thoughtful expression of countenance, and a way of expressing himself which of itself goes very far towards carrying conviction with it. It is very evident that he has given deep and close attention to every detail of his little machine. The one we saw was a two-cylinder bicycle motor, and, so far as we could judge from an inspection, it bore out everything which has been said concerning it. For simplicity of construction there is nothing we have yet seen which can in any way approach it, and it only remains to be proved that the little midget will develop, as Mr. Pennington says it will, something over two brake h.p., with a very much higher indicated record still.

* * *

Whilst the parent country England, through the dunderheadedness of county magistrates and faddist legislators, sticks in the mud, our colonies are hampered with none of these things, and go ahead in an enterprising and highly commendable manner. This fact is emphasised in connection with autocars, for Mr. Simms, the manager of the Daimler Co., informs us that the Director of Public Works at Colombo, Ceylon, has just been authorised by the Government of that colony to purchase a number of Daimler motor carriages for the purpose of carrying the mails from the General Post Office to the railway stations at Colombo, the daily distance to be covered by the new motor mail carriages being about twenty miles. It is understood that this new postal arrangement will entail a saving to the service of about sixty per cent. as compared with conveyance by horse power. If the home Government are willing to learn by the experience of the colonies, we may yet hope to see at no distant date royal mail autocars running throughout this country, to the expedition of the postal service and the great benefit of the pockets of the ratepayers.

A HISTORICAL EVENT.

The Story of the Bordeaux-Paris Trials.

(Continued from page 75.)

All the other carriages that finished the journey stood the test remarkably well, and, so far as could be seen, they suffered no deterioration whatever. The next three arrivals were Peugeot carriages, the first of which completed the journey in 54h. 35m., the second in 59h. 48m., and the third two minutes afterwards. Though Mr. Levassor vanquished all his competitors in such brilliant style, he is not awarded the first prize, as this is given to the first vehicle carrying four persons or more, and is consequently secured by MM. Peugeot for the carriage which arrived third.

The prizes are awarded as follow :

1st, Les Fils de Peugeot Frères, of Valentigney (Doubs).

2nd, MM. Panhard et Levassor, 19, Avenue d'Ivry, Paris.

3rd and 4th, Les Fils de Peugeot Frères.

5th, MM. Panhard et Levassor.

6th and 7th, M. Roger, 52, Rue des Dames, Paris.

The only steam carriage to complete the entire journey was that of M. Bollée, which took ninety hours to cover the distance.

To sum up in a few words : Of the twenty-eight vehicles that left Versailles only twelve were able to reach Bordeaux, and eight arrived in Paris within one hundred hours, at the end of which time the race was closed.

The most striking feature of the trials is the absolute superiority of petroleum, and especially of the Daimler motor, which is employed by both MM. Panhard et Levassor and the Fils de Peugeot Frères. . . . The consumption of petroleum essence is less than a pound per horse-power per hour, and the cost of working a carriage for two persons is about a half-penny a mile. A reservoir in front of the vehicle contains enough oil to drive the carriage fifty miles, but extra supplies can be carried for two hundred miles or more. The water for cooling the cylinders is stored in a reservoir underneath the vehicle. The method of communicating power to the wheels is very simple. The fly wheel of the motor projects below the body of the carriage, and a rod from the centre of the wheel is geared on to an axle, which is of course at right angles. The axle communicates with the driving wheels by ordinary chain gear.

The only difference between the Panhard et Lavassor and Peugeot carriages lies in the disposition of the motor, which is placed in front of the driver in one case, and at the rear of the carriage in the other. The Peugeot carriage is also fitted up in a more luxurious style, with steel-spoked pneumatic-tyred wheels, and is, in every respect, an admirable product of the carriage-building industry. The framework of the carriage is composed of weldless steel tubing, which has the double advantage of imparting the greatest possible lightness and strength to the vehicle, and of being used as a reservoir for water for cooling the cylinders. The Daimler motor is constructed by MM. Panhard et Levassor, and is sufficiently powerful to allow of a carriage, with a full charge, travelling at a speed of four or five kilos, up steep gradients, and of fifteen or eighteen kilos. along level roads. It is even possible to attain higher speeds, and this has necessitated the employment of three brakes, one on the driving axle and two on the wheels, so that the carriage can be stopped almost instantly. All the levers are within easy reach of the driver, who has the carriage under perfect control. The superiority of these vehicles is manifested not only in their better performance, but also in their condition after the race, as the state of the steam omnibus, when it had finished the journey with its driving gear clogged up with oil and mud, was not likely to predispose people in its favour. This vehicle, however, has been

constructed a great number of years, and to this extent its performance is noteworthy.

It is to be regretted that the Serpollet and De Dion vehicles, which are constructed upon really practical lines, should have been thrown out of the contest by unforeseen accidents.

In the carriages of M. E. Roger special attention has been given to securing the greatest simplicity of the working parts, as in the opinion of the inventor this is the one indispensable feature of a really practicable vehicle. The motor employed is a four-cycle Benz petroleum engine with a single cylinder. The motor is placed horizontally, about midway underneath the carriage, and is bolted on to an iron cross-bar. It works directly on an axle carrying a pulley, and the power is communicated by leather belting. This horizontal movement, it is claimed, entirely prevents the shaking and trepidations noticeable in vertical motors, while the engine ceases running when the carriage is at rest. There is consequently no unnecessary waste of oil, seeing that the consumption of petroleum spirit is exactly in proportion to the distance covered by the vehicle. The leather belting likewise obviates all danger of breakage by merely slipping round the pulleys when any sudden and severe strain is put upon them. Another advantage lies in the facility with which the belting can be taken off the driving pulley and put on to a dynamo or light machinery of any kind. In this way the utility of the motor is not confined merely to the propulsion of the vehicle. The explosion is effected by means of electricity stored in accumulators under the seat of the driver, and these accumulators can be used for at least two hundred hours without recharging. The carburetor is placed at the back of the carriage, and the water is contained in a flat copper receptacle covering the inside of the vehicle. M. Roger is now about to employ a condenser, so that the water may be economised as much as possible. It will be seen that the working parts are exceedingly simple, and the maker claims that there are only half the number used in other self-propelled vehicles. They are, moreover, easily accessible by lifting the lid at the rear of the carriage, when every part is exposed to view. The method of direction is also very ingenious. The front axle is fixed, and the wheels only turn, so that it is practically impossible for the carriage to be upset by any sudden movement. These claims to safe driving seem to be justified by the fact that both of his carriages that were entered for the race succeeded in completing the whole distance.

From the office of *The Kent and Sussex Courier*, Tunbridge Wells, has now been issued a pamphlet, which is a report of the article upon the horseless carriage, by Sir David Salomons, which appeared in the pages of that journal and *The Autocar*. In the pamphlet now issued, however, Sir David has added a considerable amount of additional information.

FRENCH JOTTINGS.

BY OUR OWN CORRESPONDENT.

If anything, the Salon du Cycle more than justifies all that has been said lately as to the way in which the autocar industry is growing. The number of makers is no longer to be counted by twos and threes but by the dozen, and everyone who possess facilities for turning out self-driven carriages are manufacturing them. Owners of patents are looking for capitalists, and capitalists are seeking workable patents, so that by the time they have come to an agreement there will be a great many more makers than there are now. On account of the interest taken in the new movement every inventor who has been working on some new system for propelling vehicles has gone to the expense of constructing a carriage, with the result that several inventors are able to show at the Salon a new type of autocar concerning which they have been promising great things for months past. Their claims, indeed, seem rather too general to allow of their being accepted unless they are borne out by actual tests. It was hoped that an opportunity would be afforded of trying the vehicles on a track which it was said would be placed at the disposal of exhibitors, but as this track was merely a small space railed off, with scarcely sufficient room to turn in, while the ground was cut up by bicycle riders, the autocar makers did not care to avail themselves of the privilege. It is a pity that the autocars were unable to show off their merits in this way, as absolutely no idea can be had of their capabilities on the stands, and prospective buyers are, of course, inclined to discount the eulogies of the makers themselves. It would be interesting, for example, to see by practical demonstration how far the vibration of the Daimler motor has been lessened. Panhard et Levassor claim to have done this by a more perfect equilibrium of the motor, and Peugeot assert that they have attained the same end by reducing the speed. That vibration can be lessened in this way there can be little doubt, but it is problematic whether the vertical motor can ever be made to run quite silently and without a noticeable trepidation to the vehicle. It would also be instructive to see at work the vehicle of M. Lepape, which, in theory, claims to overcome all noticeable vibration. In this vehicle the power is transmitted by friction in such a way that it would be strange if the running of the vehicle caused the slightest inconvenience to the riders. Had all the carriages been submitted to daily trials we should have learned more about them than by any number of road races.

Perhaps the chief thing noticeable about the show of autocars is the prominence given to tricycles and quadricycles, these latter being light vehicles on four bicycle wheels, and capable of carrying two or three persons. The quadricycle is undoubtedly the most popular type of autocar at the present moment. It occupies little space, is economical, does not weigh more than about 450lbs., it is easily managed, and is moreover of an elegant design. The great thing to be done to increase the efficiency of these

vehicles is to obviate the necessity of carrying supplies of water for cooling the cylinders, as their capacity in this respect is so small as to require a renewal of water very frequently. Several of the tricycles and quadricycles are, indeed, constructed with a special arrangement for cooling the cylinders by the air. This is done in the remarkable tricycle of M. Klaus, of Lyons, who claims to be the inventor of the system of corrugating the surfaces of the cylinders. As, however, this principle was used on the Dion tricycle a year or two ago, and the Klaus machine has only just been constructed, it is not easy to see how he substantiates his claim. It is yet a big step in autocar design to be able to suppress the water jacket, and M. Klaus even further simplifies his tricycle by doing away with the carburator, the petroleum spirit and air being mixed in the cylinder itself. In another tricycle made by M. Loyal the pistons work directly on the driving axle, and a great economy is effected by driving out the burnt gases at the pressure of the atmosphere. All these are undoubtedly big improvements in the construction of autocars, and there is no reason why, before long, they should not be applied to a single vehicle, when we should have something like a perfect carriage. While some inventors have aimed at the greatest simplicity in the design of motor cycles, others have gone to the other extreme, with the result that there are one or two ingenious mechanical creations, but rather too complicated to be placed in the hands of the ordinary user. It is to be regretted that makers of tricycles and quadricycles should attach too great a pecuniary value to their machines, and should ask prices that are absolutely prohibitive. When prices are reasonable there are to be found plenty of purchasers, as is proved by the extraordinary success of the Gladiator quadricycle, for which enough orders have been booked to keep the makers employed for several months. Judging from the business now in hand, 1896 may be looked upon as an "autocar year."

The motor question is a long way from being settled; in fact, it may be said to have only just been opened. The few years that have elapsed since engineers first began to design light motors capable of being employed in autocars have scarcely been sufficient to bring them to perfection, and as experience can alone guide them in this direction, probably a few more years will roll before finality will have been reached in a motor which will meet all the requirements of an autocar. Many of the systems at present employed give very satisfactory results up to a certain point, but makers are still looking for something better to overcome the slight inconveniences of mechanical power for road traction. A chat with most of the makers at the Salon du Cycle revealed that they are experimenting with new motors which, they anticipate, will give remarkable results. The object aimed at is, of course, to reduce the weight and the consumption of petroleum spirit for a given power. One maker informs me that he has just received a proposition to take up a motor which, weight for weight, is nearly three times as

powerful as the motor at present employed by him. The Gladiator Co. has also acquired a new motor for which they claim special advantages, but unfortunately no opportunity has yet been given of putting it to a public test. The rotatory motor has also made its appearance, and in principle nothing can be better for an autocar. It consists merely of a cylinder, in which a cam turns round with the axle. The gas mixture is introduced into the cylinder, and the explosion drives the eccentric round. If it is found that the claims are borne out, the motor will prove to be a formidable rival of those now in use. It is to be hoped, for the sake of the future of the autocar, that the inventor is not over-sanguine.

THE AUTOCARS AT THE SALON DU CYCLE.

To the cycling enterprise in France must always remain the credit of assembling the first exhibition of autocars worth mentioning in the beginning of the Renaissance of these vehicles of the future. The show at the Palais de l'Industrie in the Champs Elysées is a most important one, and up to the time of writing has attracted many well-known people from all parts of Europe who are interested in the industry, and amongst them we noticed Sir David Salomons making a careful examination of the exhibits last Saturday. Upon entering the hall the first stand of vehicles to attract notice is that of MM. Panhard & Levassor, 19, Avenue d'Ivry, Paris, who show four hooded phaetons, a cab, a waggonette carrying a substantial awning, an ambulance waggon, a four-wheeled *char-à-banc*, a fine pinnace, another neat waggonette, and a pretty private 'bus. All these vehicles are fitted with Daimler motors of suitable powers, but the carriage maker's body and wooden wheels with iron tyres are used in all cases but three. The Société Gladiator Française show an Olympia type of tricycle, a particularly neat tubular-framed charrette to seat three, made with bicycle wheels, ball bearings, and 3 in. Gallus pneumatic tyres, and a quadricycle tandem tricycle with a duplex motor. The system of these motors was described at length in a recent issue dealing with the motor cycles of the Stanley Show. MM. Duncan and Suberbie show a thoroughly well-designed and tasteful little charrette to accommodate two, the frame of which is made of cycle tube, the fittings being neatly upholstered in blue carriage cloth, and all mounted on four cycle wheels with ball bearings, etc., and shod with Clincher tyres. The two cylinder motor fitted to this pretty little carriage has also been dealt with at length in the columns of this journal, and is of two horse power. This firm also have six of their motor cycles, which have also been described.

De Dion & Bouton, 12, Rue Ernest Puteaux, Seine, have four replicas of the tricycle fitted with their motor, as shown at the Stanley Show, as well as a waggonette driven by a steam motor under the body of the carriage, and boiler, condenser, furnace, etc., in a box over the front wheels. The four wheels were made on the suspension principle, the drivers having tangent spokes, and all shod

with solid rubber tyres. Le Fils de Peugeot Frères, 72, Passage du Gaire, Paris, who, as is well known, won the Paris-Bordeaux race, show nine cars of various descriptions. Types of the carriages which ran first and third in this celebrated trial are shown, also a neat private 'bus, two nice little charrettes, and a waggonette with a permanent awning and leather curtains. The vehicles are all fitted with Daimler motors in the rear of the carriages. A traction carriage with a hooded 'bus attached is staged by Lepape, 23, Rue Montaigne, Paris. The engine is vertical, and the motion is transmitted from the engine shaft to the transverse driving shaft through the agency of two friction discs about 2.6 in diameter, the periphery of that on the latter engaging with the cement-face of the disc on the engine shaft. The driven disc is movable on the transverse driving shaft, and thus variations of speed are obtained, but we think the slip and friction likely to be enormous. The chain and toothed wheels also appear crudely made. E. Roger, 52, Rue des Dames, Paris, has two hooded phaetons on cycle wheels fitted with the well-known Benz motor. Landry and Beyrouz, 19, Rue Albany, Paris, show a somewhat heavy-looking hooded phaeton with a Daimler motor in rear. Em. Delahaye, Tours, has a waggonette for six driven by a motor on the Roger principle. It has rubber-tyred carriage wheels. A. Loyal, of 204, Rue St. Maur, shows a neat and small carriage with a vapour motor fitted beneath the carriage working on the driving axle, forming part of the through axle upon which the driving wheels are mounted, and connected with them by two friction clutches. The engine is formed of two oscillating cylinders, the charge of explosive gas being fired by electric spark. The drivers are about 24 in. in diameter, and the cylinders, although about 20 in. long, have only a 12 in. stroke. This particular motor is not completed, and the cylinder covers in position rather bother the motor-expert at first. These covers, however, are fixed only for the purpose of forming a steady to the somewhat lengthy piston rod. The latter is made hollow, and by a particularly neat and ingenious valve arrangement in the piston, which is actuated by a small rod passing through the piston and worked off a cam on the crank, the motor exhausts through the piston rod. Only the cylinders are exposed; the oil reservoir, cells, and coil are all neatly concealed under the seat. The steering is on the "Olympia" tricycle plan. This neat little carriage attracts a vast amount of attention. The motor is four h.p., and M. Suberbie tells us has given excellent results. The Compagnie de Voitures sans Chevaux, 38, Rue Legendre, Paris, show a somewhat cumbrous looking phaeton, with a petroleum motor arranged on the Tenting system. P. Gautier, 56, Boulevard Arago, shows a four-seated car, actuated by a Daimler motor of four h.p., the special features of this vehicle being the excellent arrangement of the engine and gearing, which are all cleverly encased and protected. Michelin, the great French pneumatic tyre maker, demonstrates plainly before all the world the absolute necessity of fitting these

autocars with cycle-built pneumatic tyred-wheels. On a large platform he has mounted a species of two-car merry-go-round, the one carried on an iron-tyred carriage wheel, and the other on a Michelin pneumatic-tyred cycle-built wheel. The cars are revolved at the end of two long jointed arms by an oil engine, and in the path of the wheels sundry considerable obstacles are fixed. The horrible jolting experienced by the unfortunate traveller over the iron-tyred wheel, and the non-effect of the obstacles upon the passenger in the pneumatic-tyred car, are sufficient to carry the desired conviction to the most obtuse mind. A sociable tricycle is shown by F. N. Sautenard & Cie., of Paris, driven by a two-cylinder steam engine; an ingenious form of tubular boiler is used, heated by petroleum, but the steam exhausts directly into the air, and a cylindrical water reservoir is carried in rear, which must need frequent replenishment. A number of "La Francaise" lamps are shown by V. L. Longuemare, 12, Rue du Boisson, St. Louis, wherein a strong heating blast flame is given by the pressure upon the oil of the heated vapour within a chamber formed for the purpose above the pass valve. This is an adaptation of the lamps used to heat the platinum points in the Daimler motor, and our attention was drawn to them on Saturday by Sir David Salomons, who thought very highly of the method of construction, and the results obtained. The Leo Automobile car, shown in the shape of a particularly neat four-wheeled dogcart with wood wheels and Michelin pneumatic tyres, is driven by a "Moteur Pygmée," entirely concealed, with all its gear, within the body of the vehicle. The motor is on the Daimler principle, and the only gearing visible outside the cart is a pinion driving a spur wheel on the axle of the rear pair of wheels. The motor fitted is of six-horse power, and the whole vehicle presents a particularly neat appearance. The road locomotive made by the Société Anonyme Franco-Belge, with a tram-car like public vehicle coupled thereto, is shown. The boiler is on the Hancock tube system, and stands up within the vehicle, which is car-shaped and roofed. The engine is duplicated, one cylinder, etc., being enclosed in a casing on each side of and below the frame, and connected with driving wheels by suitable toothed gear. In addition to the cars shown upon his stand, E. Rogers demonstrated the comfort, speed, and directableness of his vehicles from time to time by running two others, one a pretty light low charrette with cycle wheels, and the other a kind of landau with seating accommodation for six, up and down the extensive mat area set apart for the purpose on the east side of the building. A heavy post-chaise with wooden iron-tyred wheels driven by a twin cylinder engine on the Serpollet system is exhibited by Ste. Decourville, Petit-Bourg (St. O.) The furnace is placed at the back of the rear axle, and has no platform from which it can be fed, the attendant having to descend unless a charging tube is fitted. The steering is controlled by gearing, and a segmental rack attached to the locking of the forecarriage. The twin cylinder

engine is fixed under the body of the vehicle, and seems considerably exposed to dust and weather.

Considered as a whole, the autocar show at the Palais de l'Industrie is undoubtedly a most interesting exhibition, but nothing of particularly

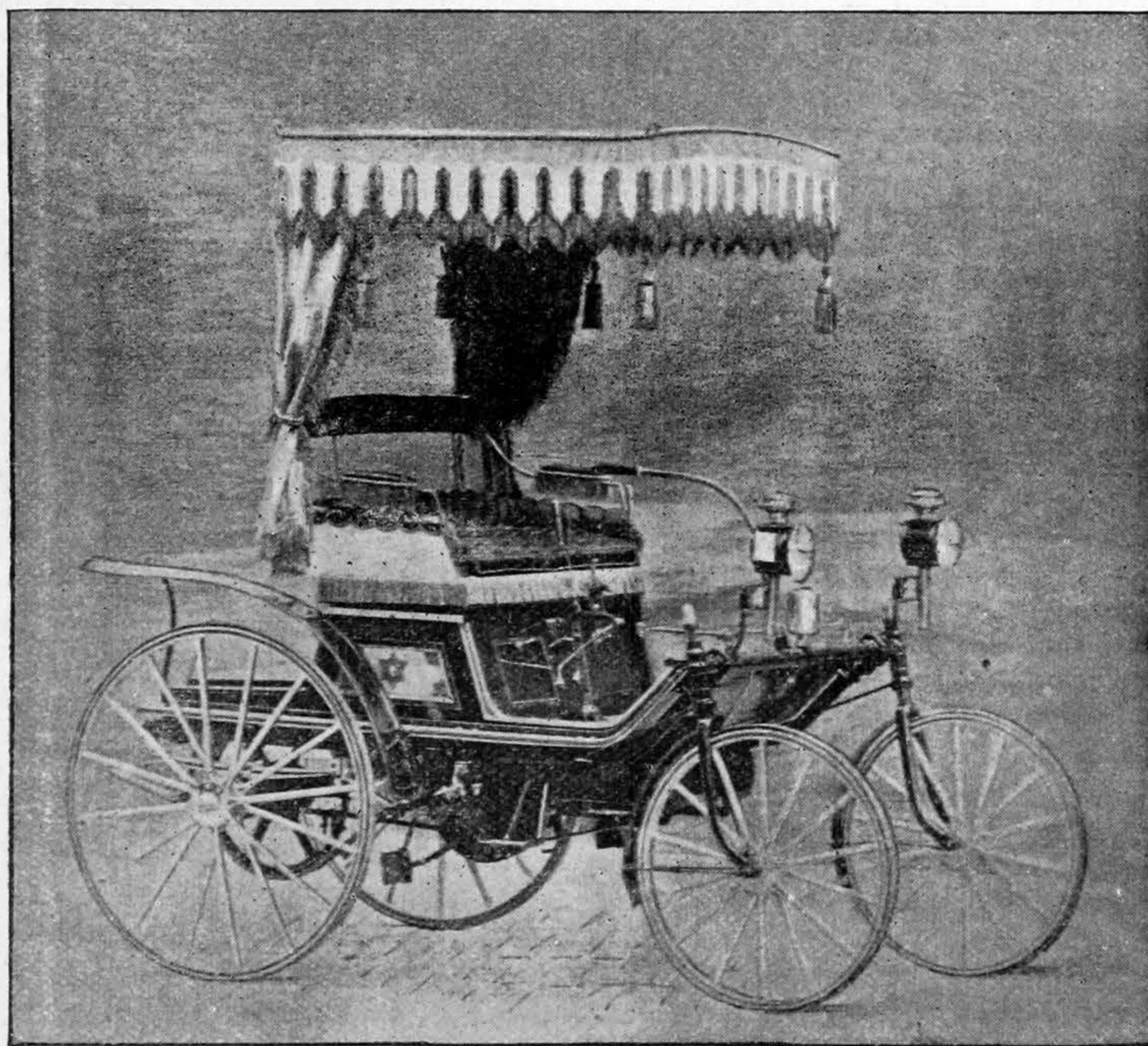
great interest is found in the shape of motors. At least, this is the case so far as we have been able to discover, for French exhibitors have a somewhat regrettable habit of leaving their exhibits to explain themselves.

EARLY DAIMLERS.

Mr. Frederick R. Simms, of the Daimler Motor Syndicate, Ltd., writes us:

"In your fifth number of *The Autocar* I find two very interesting articles about the motor car of the Sultan of Morocco and Mr. Butler's petroleum cycle. As it may also be interesting to your readers, I should like to inform you that the carriage supplied to the Sultan of Morocco in August, 1892, was a Daimler motor carriage, a photograph of which I have pleasure in enclosing

carriages is due to Mr. Gottlieb Daimler, who should justly be called the inventor of the oil motor cycles and carriages. It is, again, the Daimler motor which Messrs. Panhard & Levassor, of Paris, commenced manufacturing in France about seven years ago, and by the success which was met, Messrs. Panhard & Levassor also induced other engineers to take up the manufacture of the self-propelled vehicle. Thus it was possible that the *Petit Journal* competition (Paris to Rouen) in 1894, and the historical race of this year (Paris to Bordeaux), could be run. We could therefore



THE DAIMLER CARRIAGE OF THE SULTAN OF MOROCCO.

for illustration (and which we reproduce in block form herewith.—ED.) The Butler petroleum cycle was brought out in the year 1887 to 1888, whereas Mr. Gottlieb Daimler, the eminent engineer, constructed a motor bicycle in the year 1886, the first trial of which took place on the 10th November of that year, and an illustrated article appeared in the *Gartenlaube* in the year 1889, No. 9.

"The first experimental trial trips of the Daimler motor carriages took place on the 4th March, 1887, which were followed by most successful trials to drive bicycles and the like by petroleum motors. The credit of having created, or, at any rate, having given a new impu'se to, mechanical

hardly be surprised that the Daimler motor carriage—commanding such a great experience, stretching over ten years—should carry away all the first prizes."

The *Paris Figaro*, in an interesting article on motor vehicles in England, in which the red flag required in this country is naturally much ridiculed, says that the countrymen of Watt and Stephenson have taken a long time before they showed any interest in motor vehicles, and that the offer of a prize of £1,000 on the part of *The Engineer* is the first step in the right direction.

THE DAIMLER MOTOR CARRIAGE AT THE CRYSTAL PALACE.

On Wednesday last a party of pressmen to the number of about a score, representing most of the principal journals, assembled at the Crystal Palace on the invitation of Mr. F. R. Simms, of the Daimler Motor Co., for the purpose of inspecting the trials of the new improved autocar driven by the Daimler motor.

The party were at first entertained to lunch in the Garden Restaurant, at the conclusion of which Mr. Simms informed those present of the purpose for which they had been invited, and hoped that the journals which they severally represented would be unanimous in supporting the Act which would be brought forward at the next meeting of Parliament to remove the absurd restriction which at present prevented enterprise in autocar manufacture.

Mr. Simms further informed those present that the carriage which they would see in the grounds would be placed upon exhibition there at two p.m. on Saturday next (to-day). He also referred to the recent formation of an association for the protection of their interests, and said that another body termed the Autocar Touring Club, for similar objects in view, would shortly be inaugurated, and further informed them that an exhibition of motors and autocars was being arranged to take place at the Crystal Palace some time in the early spring, when he had no doubt they would see some machines "made in England" on view.

After those present had drunk to the success of the Daimler motor carriage, the party adjourned to the grounds, where a handsome Victoria was placed at their disposal. Its mechanism was first explained. The Daimler engine by which it was driven was of three and a half brake h.p., and the carriage had been improved in several ways, notably by the substitution for the driving chain of leather belts, and by the mounting of the motor upon springs, which materially reduced the vibration felt when the carriage was at rest and the motor running. This, although still present, was extremely slight, and when the carriage was running was not felt at all.

Another improvement, too, had been made in the construction of the engine, which removed the smell from it to the merest possible trace.

By means of an ingenious cooling arrangement, it was now necessary to carry only four gallons of water, which would last for a run of sixty miles, whilst the stock of petroleum suffices for a journey of two hundred.

The members of the party then in turn entered the carriage, and were taken on tours throughout the grounds.

The carriage, despite the very soft state of the gravel paths, due to the recent rains, easily and steadily surmounted rises of about one in eleven.

On down grades and the level a speed equalling close on fifteen miles an hour was attained, and it was also demonstrated that the machine could be stopped when going at full speed in about twice its own length, and could be manœuvred and

turned with quite as great facility as a horse-driven vehicle. The experiment was voted perfectly satisfactory, and we have no doubt those who will take themselves to the Palace this afternoon will be equally pleased with the running of the carriage.

WHAT EDISON THINKS OF IT.

"Talking of horseless vehicles, by the way," said Mr. Edison, "suggests to my mind that the horse is doomed, yet this animal shows a greater economy of force than man, for seventy per cent. of the energy of the horse is available for work. But the horseless vehicle is the coming wonder.

"The bicycle, which ten years ago was a curiosity, is now a necessity. It is found everywhere.

"Ten years from now you will be able to buy a horseless vehicle for what you would have to pay to-day for a waggon and a pair of horses. The money spent in the keep of the horses will be saved, and the danger to life will be much reduced."

"Will these vehicles be run by electricity?"

"I don't think so," said Mr. Edison. "As it looks at present it would seem more likely that they will be run by a gasoline or naphtha motor of some kind. It is quite possible, however, that an electrical storage battery will be discovered which will prove more economical, but at present the gasoline or naphtha motor looks more promising.

"It is only a question of a short time when the carriages and trucks of every large city will be run with motors. The expense of keeping and feeding horses in a great city like New York is very great, and all this will be done away with, just as the cable and trolley cars have dispensed with horses.

"You must remember that every invention of this kind which is made adds to the general wealth by introducing a system of greater economy of force. A great invention which facilitates commerce enriches a country just as much as the discovery of vast hoards of gold.

"Even the deposits of gold have not been one-half exhausted. You take the present craze for mining speculation that is going on in England. That is undoubtedly based upon genuine merit in the South African mines."—*New York World*.

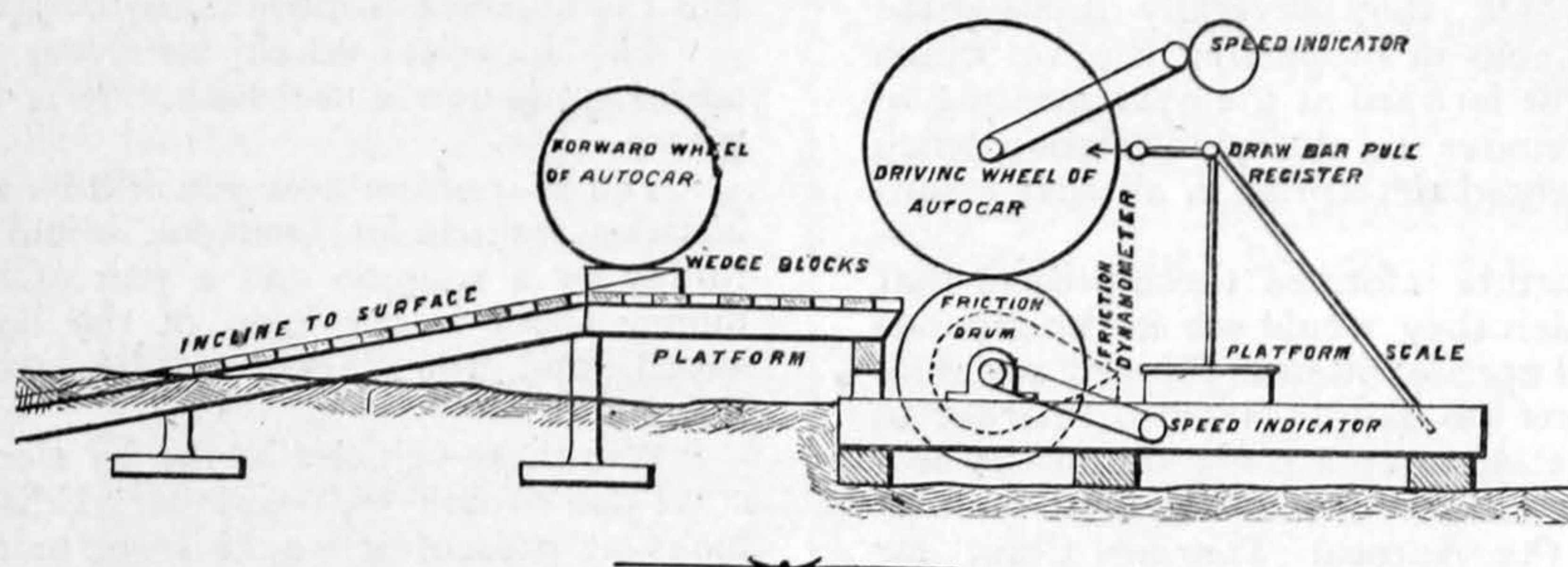
Sir Augustus Harris's "Cinderella" carriage in his new pantomime at Drury Lane will be quite "up to date." The carriage, which will be horseless, is designed by Messrs. Jackson, and built by Messrs. Windover, both London firms. It will be illuminated by over five hundred electric lamps.

Whatever opposition may be offered, says *The Field*, to making motor carriages free of the streets and roads matters very little; it will have to give way sooner or later—probably sooner; for in this case history will repeat itself. The introduction of stage coaches was opposed, and so, of course, were the railways; but the hostility came to nothing, nor will it in the present case.

TESTING MACHINE FOR AUTOCARS.

It will be remembered that one of the rules governing the recent autocar competition at Chicago provided that the judges should be allowed to test the vehicles for efficiency, economy, etc. To aid them and the assisting experts in their tests, an apparatus was designed by two Chicago engineers on the lines of the locomotive testing plant at the Purdue University. The apparatus was illustrated and briefly described in a recent issue of *The Engineer*. It will be seen the driving wheels of the car run

on a friction drum which is revolved by them when under steam, or, we should say, under vapour, and the friction drum is connected to a dynamometer. Two speed indicators, one run off the driving wheels of the car and the other off the friction drum, make it easy to deduce the mean speed of the vehicle. Besides these a draw bar pull register is fitted to register the tractive pull of the motor. At present we have no details of the results obtained from tests carried out by the apparatus, which certainly is well designed to ascertain and register the actual power and efficiency of an autocar.



Correspondence.

TO MOTOR OR NOT TO MOTOR, THAT IS THE QUESTION.

[9.]—As the new industry, the motor carriages, are likely to be extensively used before long, I think it is nothing but right that the "iron horse," like cycling, should also have its *verb*. I beg to suggest motor-touring, say motouring or motoring, the verb would thus be *to motour* (motor).

Of course it might strike us as rather funny now, if we read in the paper "Lord Salisbury motored" this afternoon from Downing Street, and arrived at Paddington Station at exactly six o'clock," but I feel sure we shall get used to this and a good deal more in the twentieth century.

FREDERICK R. SIMMS.

THE FREE USE OF AUTOCARS IN INDIA.

[10.]—There has been recently so much written about mechanical road carriages and the legality of running same on public roads, etc., showing the great interest the public is taking in this burning *fin de siècle* question, that I trust you will allow a little space for a letter from a friend of mine at Bombay, where the ancient Highways Locomotive Act is still also in full swing.

"Since my writing you the last letter, I have enquired of the Police Commissioner whether he would allow the use of one of these carriages in Bombay, to which the Commissioner replied in the manner following: 'So long as there is no danger of explosion, so long as there is no unusual noise to frighten horses, and so long as the carriage is not driven at a higher rate of speed than other carriages in Bombay, I see no reason why the use of same should be prohibited.'"

I venture to suggest that, although the temperature at Bombay sometimes reaches even one hundred to one hundred and fifteen degrees, the Bombay police commissioners seem to have a very reasonable aspect of the whole question, which certainly does them great credit.

FREDERICK R. SIMMS.

A CASE FOR CONSIDERATION.

[11.]—Mr. J. A. Koosen, who is the owner of an autocar, was summoned to-day before the magistrates of the Fareham Division for using a certain locomotive, "and whilst such locomotive was in motion unlawfully did not cause a person on foot to precede by at least twenty yards such locomotive."

Mr. Koosen had taken out a carriage licence under the Customs Act of 1888, and we urged this point upon the magistrates, and also submitted that the carriage in question was not a locomotive, and did not come within the purview of the Locomotives Acts.

Mr. Koosen called Mr. J. R. Penning, of South-sea, electrical engineer, to describe on his behalf to the magistrates the construction, motive power, and general details of the carriage; the magistrates, however, unanimously decided that the carriage was a locomotive within the Locomotives Acts, and they would not draw any distinction between the present case and that of *Parkyn v. Priest* which was decided in 1881.

Mr. Koosen wished us to inform you of what had taken place, as he believes it to be the first case in which the holder of a carriage licence, under the 1888 Act, has been summoned for using such carriage as a locomotive.

HYDE & HOBBS.

Portsmouth, Dec. 16th.

THE NATIONAL TRACTION ENGINE OWNERS' & USERS' ASSOCIATION.

The annual general meeting of the above association was held on 11th December. Mr. E. B. Chittenden in the chair. The minutes of the previous meeting and the report of the Council were read and approved. Griffith Boscawen, Esq., M.P., was again elected president, and Mr. E. B. Chittenden chairman of the Council. Mr. Elliott, Mr. Aveline, and several other speakers impressed upon the meeting the necessity of road improvement, and besought the Council to urge upon the Government the imperative need for amending the Road Locomotives Act, and making licences and regulations universal throughout the country. Light railways were not considered necessary in view of the manner in which traffic of all kinds could be served by traction engines and the lighter autocars which were now being introduced. Resolutions urging upon the Government the necessity for immediate action in the above regard, and the necessity of a conference with this association before putting such a bill into motion as that of the Horseless Carriage Bill of last year, were unanimously carried. After the discharge of a large amount of routine business, and the endorsement of a suggestion that the N.T.E.O.U.A. should act in concert with the Self-propelled Traffic Association, the meeting was brought to a close by the passing of a vote of thanks to the chairman who had so ably presided. The attendance numbered about one hundred and fifty.

THE AUTOCAR IN THE POLICE COURT.

At the Fareham Police Court, on Monday, John Adolphus Koosen, of Southsea, was summoned for using a locomotive on the Gosport Road without causing a person on foot to precede it by at least twenty yards. P.C. Kerby stated that he saw the autocar passing along the highway at a pace of from six to seven miles an hour; steam was coming from the vehicle, in which the defendant and a lady were seated. Mr. Hobbs, solicitor, who appeared for the defendant, argued that the autocar was a carriage and not a locomotive, the licence obtained from the Excise stating that it could be propelled or drawn by horses or mechanical power. The chairman, Mr. W. H. Deane: But it might be made a locomotive at any moment, as a gig or any other vehicle might be attached at will. Mr. Hobbs admitted that might be so, but at present they had not done that. If a conviction ensued it would greatly interfere with a growing industry, and would entail the obtaining of a special Act of Parliament, as autocars were now greatly used in Paris, America, and various English towns. Mr. J. R. Penning, electrician, of Southsea, stated that the autocar had four rubber-tyred wheels, was like an ordinary elegant victoria, with a perfect steering gear, able to stop within about seven feet, ejected but a small amount of hot water and vapour, and could do no possible harm to the roads. P.C. Kerby, re-called, repeated his state-

ment that steam was coming from the autocar when he saw it at Stubbington. Mr. George Hackett, of Ryde, having seen the machine, stated that no steam was emitted. The Chairman said they were unanimously of opinion that the carriage was a locomotive, but, as this was the first case of the kind, they imposed only a nominal penalty of 1s. and 15s. 7d. costs.

SELF-PROPELLED CARRIAGES.

The discussion on the paper on the above subject, read before the Society of Arts a few weeks back, was resumed on 11th inst., Wolfe Barry, Esq., occupying the chair. The hall was well filled, and the discussion which followed Mr. Barry's introductory remarks proved of considerable interest. Mr. Barry congratulated the meeting upon the presence among them of a representative of the Kane-Pennington Motor Co., who had brought a motor for their examination. He thought Mr. Cunynghame's paper had ably dealt with the history, progress, and development of autocars. Those who recalled the early days of the cycle must perceive that the same moment now practically existed with regard to the self-propelled vehicle. Nothing but the present state of the law restricted the immediate advancement of matters. He hoped soon to see this huge field of enterprise thrown open to inventors, and carriages innumerable travelling the roads of England without let or hindrance. Mr. Barry then called upon Mr. Bateman, who referred briefly to the history of the subject, and recounted the steps taken fourteen years ago to perfect the steam tricycle. He held that the objectionable Act so frequently referred to was never intended to apply to autocars, as the latter had not been invented, or rather did not exist, at that time. He considered that great results were achieved with Sir Henry Parkyn's system, and Mr. Bateman then detailed the action of the engine when steam was got up upon the occasion of the reading of the paper, and the story of the now-famous action at law which practically ended the career of this ingenious motor tricycle upon the road. He referred to the great effect the large and influential meeting at Cannon Street Hotel, when the Self-propelled Traffic Association was formed, must have upon the movement, and insisted that the highly desirable development of this traffic would render unnecessary the further agitation for light railways. He thought that steam, petroleum, electricity, and even clockwork might all have something to say in this connection, but, at present, the fashion ran upon *essence de pétrole*. Electricity had hitherto taken a back seat, but the story of a new invention, which was to change all that was already in the air. From the starting point of the Parkyn steam motor, engineers could turn out a perfectly satisfactory steam motor, which he thought would keep prices down, and fairly compete with all other methods of traction and carriage. He particularly objected to the official inspection which had been suggested. The individual must take the risk,

and pay damages in case of accident. There could be no doubt that when the opportunity came, England would be able to do all that was necessary with regard to horseless transit. Whatever disadvantages, if any, there might be, the reduced cost of road maintenance and the extra comfort would much more than compensate. When horses had largely been banished from London, her streets would become a city fit for human habitation.

Mr. Carse, the manager of the Kane-Pennington Motor Co., then gave a brief, but untechnical, description of the K.P. motor by means of the example brought into the hall. He assured his hearers that control did not belong alone to steam, for the K.P. motor could run at 1,000, or three or four revolutions per minute as desired. The motor then before them was of two h.p., and weighed but 20lbs. Mr. Overman, the great cycle maker of the States, had been sceptical as to the results claimed, but had been absolutely convinced by the demonstration offered him. The oil was admitted into the cylinder vapourised by one electric spark, and exploded by a second. So certain was the action that the engine would run 2,000 revolutions without missing, and the speed could be absolutely controlled. He had ridden many hundreds of miles on vehicles propelled by these motors, and for a vehicle to carry two persons the motor shown would be employed. The vehicle would weigh 120lbs., and the motor 20lbs. Mr. Phillipson, the president of the Institute of Carriage Builders, spoke at some length upon the generalities of the question, and referred to the intimate collaboration of the carriage builder and engineer to produce the best results.

Mr. Alexander Siemens then offered a few brief remarks upon the subject. He had no doubt of the power of production of these carriages in Great Britain so soon as the restrictions were removed, and thought that side by side with the rest an electrical improvement would be found. In his opinion the heavier vehicles should be first considered, and presented an extremely useful line for initial movement on the part of inventors.

Mr. Edwards thought the reason of the present Act had somehow been lost sight of. It was imposed for the reason that at that time certain road engines had been running at excessive speeds, and this brought the ordinary traction engine also under a ban. Sir Thos. Aveling, and a number of influential farmers, caused the passage of the present Act. In any future legislation he thought the speed permitted should not exceed ten miles per hour.

Mr. Yeaman (who represented Mr. Ward) then spoke at some length in defence of electrical propulsion and traction, and referred to the satisfactory performances of the electrical 'bus which ran over five hundred miles in the streets of London, taking all the steep gradients surmounted by ordinary traffic. The 'bus which ran from Hammersmith to Liverpool Street had also behaved satisfactorily in every way. Since 1888 another electric 'bus had been constructed, and this might shortly be seen in public. Mr. Yeaman

gave the meeting some interesting information with regard to the weight of accumulators, etc., etc., and ably defended the possibilities of electric traction, etc.

A few pertinent questions were asked by Mr. Clarkson with regard to the K.P. motor, particularly with reference to the working pressure, but this Mr. Carse was not in a position to afford. In the construction of all these motors and carriages it should be borne in mind that their safe conduct would necessarily be placed in unskilled hands, and in the drafting of the proposed bill he thought that the use of the light oils should be prohibited.

Colonel Cunynghame, who recognised the author of the paper as a brother officer of the Royal Engineers, referred to the lessened congestion of traffic the use of such vehicles would bring about in the streets of great cities. He scouted the notion that there would be any lessening of the horse industry, and instanced as an example the fact of the Metropolitan Railway. The population increased faster than the means of moving them about, and horseless carriages was but a further step to meet a demand for further and convenient means of transport.

The secretary of the society having mentioned the results of the Chicago competition, Mr. Beaumont dwelt at some length upon the chances of the bill to be brought before the House of Commons at the next sitting, and warned its supporters to leave no stone unturned to ensure its passing. He pointed out that the opposing interests had as yet had no chance of showing their strength. Certainly it was well known that Mr. Chaplin was so much in favour of the measure that he had held a deputation to be unnecessary, but, notwithstanding, no one interested must relax his effort to further the end in view. The author of the paper then replied briefly to the speakers who had taken part in the debate. He considered that the autocar of the future would be fitted with large pneumatic tyres, and that success with these carriages would accrue to those who made an intelligent use of such tyres combined with lightness of frames. He personally did not object to great speeds on equal grounds with Mr. Bateman. Mr. Wolfe Barry then summed up the question in fitting terms, and a thoroughly interesting *séance* was brought to a close with the customary vote of thanks.

THE CANTOR LECTURES.

Mechanical Road Carriages.

The third, and final, lecture on the above subject was given by Mr. Worby Beaumont, at the Society of Arts, on Monday evening, 16th December, before a large audience, many of whom no doubt had been attracted thither by the announcement that mechanical road carriages of recent make would form the principal subject of the lecturer's address.

Mr. Beaumont said that the recent races instituted by *Le Petit Journal*, in France, had proved a great stimulus to the industry, and had

produced many makers of these carriages, and at least two firms had come here, which showed that we were neglecting this industry.

After referring to the offer of 1,000 guineas in prizes by the editor of *The Engineer*, for competition amongst makers of autocars, reference was made to the recently formed association, under the leadership of Sir David Salomons, for the protection of the new industry. British people must insist on the use of these vehicles being free, and unencumbered by onerous conditions, when we might hope to take the place at present held by our neighbours across the sea. Fifty years ago we proved that steam road carriages might be a commercial success, and now we had steam, electricity, and oil, and with the advantage of being first in design, and first in enterprise, as soon as the restrictive laws are removed, we should take our proper place in the manufacture of autocars.

The lecturer then proceeded to describe some of the more recent carriages, views of the majority of them being shown upon the screen. One of the most interesting was E. Butler's oil motor vehicle of 1883, which was the first petroleum cycle which ever ran on ordinary roads. This was improved and exhibited at the Inventions Exhibition in 1885. The principal features were a wheel shield, acting also as a water cooler, separate short driver wheel axles, on Akerman's design of 1819-20, and a roller brake or skid.

Serpollet's steam carriage, 1892-5, was then described, as also was the now well-known capillary water tube boiler, the tubes being in their improved form, thickened and curved, or arched. This boiler was an instantaneous steam generator, the water being led into the tubes as the steam was required, the cistern being placed under the seat of the carriage, with the boiler at the back, and the cylinders underneath, over-running gear for the wheels being provided. By admitting water only when the engine was at work one of the great difficulties of steam carriages was overcome.

J. H. Knight's oil motor tricycle was next shown. Mr. Knight was the first to use the heavier oils of commerce, which would pass the standard as to density and flashing point. The vehicle was built to carry two persons. Two speeds could be obtained by means of double bands and jockey pulleys, a single cylinder engine being used.

The Hon. Evelyn Ashley's carriage was then shown, this being provided with a Daimler motor, and an ingenious method of gradually changing the speed of the vehicle by means of an arrangement of cog wheels on a movable sleeve, operated by the driver. It was found that the front wheel tyre (pneumatic) wore away more rapidly than the back wheel tyres, allowing for the difference in size, this possibly being due to its being the steering wheel.

Sir David Salomons' differed greatly from the older variety; in this case the carriage was the first consideration, and the motor of secondary importance, and not much in evidence, being arranged underneath and at the back.

De Dion, Bouton & Co.'s steam carriages were explained, these being chiefly of the steam traction

or bogie order. Count de Dion had done a very great deal in all that had produced the success which France was to-day able to proclaim.

Le Blant's Serpollet vehicle contained plenty of room for passengers, the engine being beneath and the boiler at the back. This was also used as a steam horse for drawing omnibuses, etc.

De la Haye's oil motor vehicle was next on the list. This was a benzoline motor carriage, carrying two cylinders, and provided with compensating gear and two-speed mechanism.

Between 1886 and 1894 many attempts were made to produce a practical omnibus and parcel post vehicle. R. Ward's electric cab was introduced in 1886, and in 1888 the Ward Electric Car Co., Ltd., of James Street, Haymarket, London, S.W., made an omnibus, and, later on, a parcel van. All these electrical carriages were driven by motors actuated from secondary batteries.

E. J. Clubbe & Co. also made an electric parcel van supplied with fifty-six E.P.S. cells, the motor being one of Crompton's. The electric vehicle which ran in the Paris-Bordeaux race was of seven horse-power normal, carrying thirty-eight cells in twelve boxes, weighing altogether sixteen or seventeen hundredweight. It ran a considerable distance, but it was found that it could only run forty-five miles before it was necessary to change its accumulators.

Mr. Beaumont then showed and explained the latest form of Daimler motors as they will be made here by the Daimler syndicate, vapourising the air and oil, driving it into the cylinder, compressing it into the ignition tube, which is heated by a small lamp. The lecturer incidentally remarked that the Director of Public Works at Colombo had recently ordered some Daimler motor carriages for use in the island of Ceylon.

One of the most attractive looking carriages shown was the hotel carriage or omnibus of the Benz Motor Company, very little machinery being noticeable about the carriage.

M. Rogers's carriage was also shown, this being supplied with Benz motors.

One of the most recent firms to take up the subject of autocars was Messrs. Roots & Venaker, of Westminster Bridge Road. The vehicle was to be provided with a Roots oil engine; a vehicle on three wheels to carry two persons, weighing eight hundredweight, whilst one for four persons weighed about ten hundredweight, the frames were tubular, and acted as water circulating tubes, the last view shown was J. Scotte's steam motor carriage.

In reviewing the present condition of matters, the lecturer said there were several points to consider and bear in mind. First, who will want, and what are the purposes for which motor carriages will be required? Secondly, who will be able to use them? What sort of attendant will be required to keep the machines in order and work them? Must we have a trained mechanic, or an intelligent engine driver, or an intelligent gardener, or odd man, or can they be made that they will be very little trouble to the owner himself to look after? A vehicle requiring the services of a driver and stoker will be inferior to many now in use on

the Continent. If business is to be done with the average man, he must be able to use the machine himself. As regards high speeds, the early makers lost a great deal by trying to obtain too high a speed for their conveyances; it is a question whether high speeds are at all necessary, moderate speeds will be sufficient, and it will be useless to make vehicles capable of travelling at much higher speeds than those allowable.

As regards variable speeds, Mr. Beaumont considered that a motor capable of generating a moderately high speed, say twelve miles an hour, and a low speed for climbing hills, would meet most requirements; to obtain a number of different speeds means great reserve of power and extra weight.

Was the future motor to be steam, electricity, petroleum, or what form would it take? There was much room for improvement in the steam engine, although the oil motor had run away with most of the prizes of late. It would be necessary to use boilers of the instantaneous type such as the Serpollet, and it must be unnecessary for the driver to be troubled with water gauges, or difficulties about stopping of the carriage. If the boilers were self-filling and self-regulating, the steam engine had several advantages over other motors as regards stopping and starting, and differences of speed. It was not improbable that steam engines, in the form of rotary engines or turbines, would come to the front, as they would be without the vibration found in many other motors; the principal difficulty would be the form of gearing to reduce the high speed of the turbine to that of the road wheels.

As regards the frame, wooden wheels and india-rubber tyres would probably be used. The cycle makers had shown us how to make light frames, and to use ball bearings to the best advantage, and also how an industry can be established in a very few years, capable of giving employment to hundreds of thousands of men, and they should encourage us to insist on the removal of those blocks which cause us to take a second place to France and Germany, where we should have been first.

A cordial vote of thanks having been passed to Mr. Beaumont for his very interesting lecture, and suitably responded to, the meeting was brought to a close.

New Patents.

This list of applications for autocar patents is specially compiled for *The Autocar* by Mr. G. Douglas Leechman, consulting engineer and patent expert, 18, Hertford Street, Coventry, from whom any further information respecting patents, designs, and trade marks may be obtained.

APPLICATIONS, NOV. 25TH TO DEC. 7TH.

22,519.—F. C. Esmond, "Improvements in or connected with electric railways or electric transport."

22,588.—H. P. Holt, "Improvements in steam motor carriages."

22,650.—J. J. H. Sturmev and H. J. Lawson, "Improvements in or relating to road vehicles."

22,729.—T. H. Rushton and G. A. Trusher, "New or improved apparatus for stopping and restarting tramcars and other vehicles."

22,809.—J. Hewins and C. Hardy, "Improvements in apparatus for stopping and restarting tramcars and other vehicles."

22,877.—J. Scotte, "Improved motor vehicle or steam carriage for use on roads."

23,116.—W. Baines, "Improvements in or relating to motor vehicles."

23,243.—A. T. Stones, "A new or improved apparatus to be used in starting tramcars."

23,246.—H. V. Weyde, "Improvements in or connected with the propulsion of road vehicles."

Answers to Correspondents.

F. R. SIMMS.—To hand with thanks. We insert.

HYDE & HOBBS.—You have our best thanks for the intimation. We utilise with pleasure.

E. C. AMOS.—We are glad *The Autocar* so interests you, and have handed your subscription to our publishers. You will see by another paragraph that we have been able to secure a few copies of No. 1.

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SUBSCRIPTIONS.—"THE AUTOCAR" is published every Friday morning in Coventry and London, and may be obtained of all News-vendors and Bookstalls, or delivered first post on Friday, at the following rates:—

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HORSELESS CARRIAGES. NOTICE !!!

In consequence of our exhibiting a drawing of our carriage motor at the Stanley Show we were excluded from exhibiting at the Crystal Palace bicycle show. It is on view at the Britannia Tool and Engine Factory, Colchester. Reserve your orders. Agents are being appointed.

WILL BE READY SHORTLY.

HORSELESS CARRIAGES;

Petroleum, Steam, and Electric. Their history and present types.

By S. COTTERELL.

TO PROMOTERS OF AUTOCAR COMPANIES & OTHERS.—

A gentleman with convenient City offices, clerks, etc., would be glad to act as temporary secretary to a company or syndicate, or would represent an autocar manufacturer.—L.A. & Co., 165, Fenchurch Street, E.C.