system desirable, there will be openings for the self-contained and self-propelled vehicle. The small propulsive effort which is required where a metal wheel runs upon a metal rail is admitted by all engineers, and it is this feature which will, under favourable circumstances, enable the petrol tram car to hold its own with the petrol omnibus. In fact, we conceive circumstances under which electrically propelled tram cars may be held inferior to those which are fitted with an internal combustion engine, and we anticipate that this branch of passenger transport will receive increasing attention from municipalities and companies in different parts of the United Kingdom. The tram car which is independent of a central generating station provides a guarantee against general suspension of traffic through a mechanical or line failure, but it is still subject to the common disability of running on a fixed track. The petrol tram car must, therefore, be inferior to the motor omnibus in traffic capacity.—*Commercial Motor.*

The Motosacoche.

With the object of proving the practicability, reliability and efficiency of the Motosacoche motor attachment on an ordinary roadster cycle, Mr. Edwards, whose weight is 12½st., undertook a ride from Wellington to Napier, *via* the Rimutukas, and back over the ranges from Pahiatua to Palmerston, thence *via* Paekakariki. The cycle to which it was attached was a Royal Saxon roadster, built of tubing as used on ordinary road-racing cycles, but with the addition of a girder to front forks. The tyres were 26 x 1¾ Britannia ordinary cycle tyres. The rough and steep grade of the Rimutukas was negotiated by the Motosacoche in a most satisfactory manner, despite the fact that the bicycle carried a spare accumulator, a supply of benzine sufficient for 150 miles, a kit of tools, rain cape, leggings, etc., the complete turnout weighing 72lbs. The descent of the Rimutukas was undertaken in the dark and the cycle received a more than ordinarily severe testing and came out splendidly, thus proving the inventor's claim that the attachment considerably strengthens the ordinary cycle frame.

The run through the Wairarapa proved that the Motosacoche can attain on good roads, a speed of 35 miles an hour, and the consumption of benzine was but half a gallon for 70 miles. When negotiating the Mungaroa grade, Mr. Edwards was stopped by a mob of cattle, and, thanks to lightness and the handle-bar control of the Motosacoche, he was again enabled to mount without trouble and continue the ascent.

The efficiency of the Motosacoche special accumulator may be judged by the fact that after the ride of 799 miles, the accumulator, which is of 4 volt and 20 ampere-hour capacity, had dropped only 1 point below 4. On examination of the ordinary tyres, at the completion of the ride, it was hard to realise that they had covered the above distance at the speed, and clearly proves that the cost of up keep of a bicycle with the Motosacoche attachment is infinitesimal.

News has reached the colony that Admiral Percy Scott has been granted the sum of £8,000 by the British Admiralty for his inventions relating to gunnery.

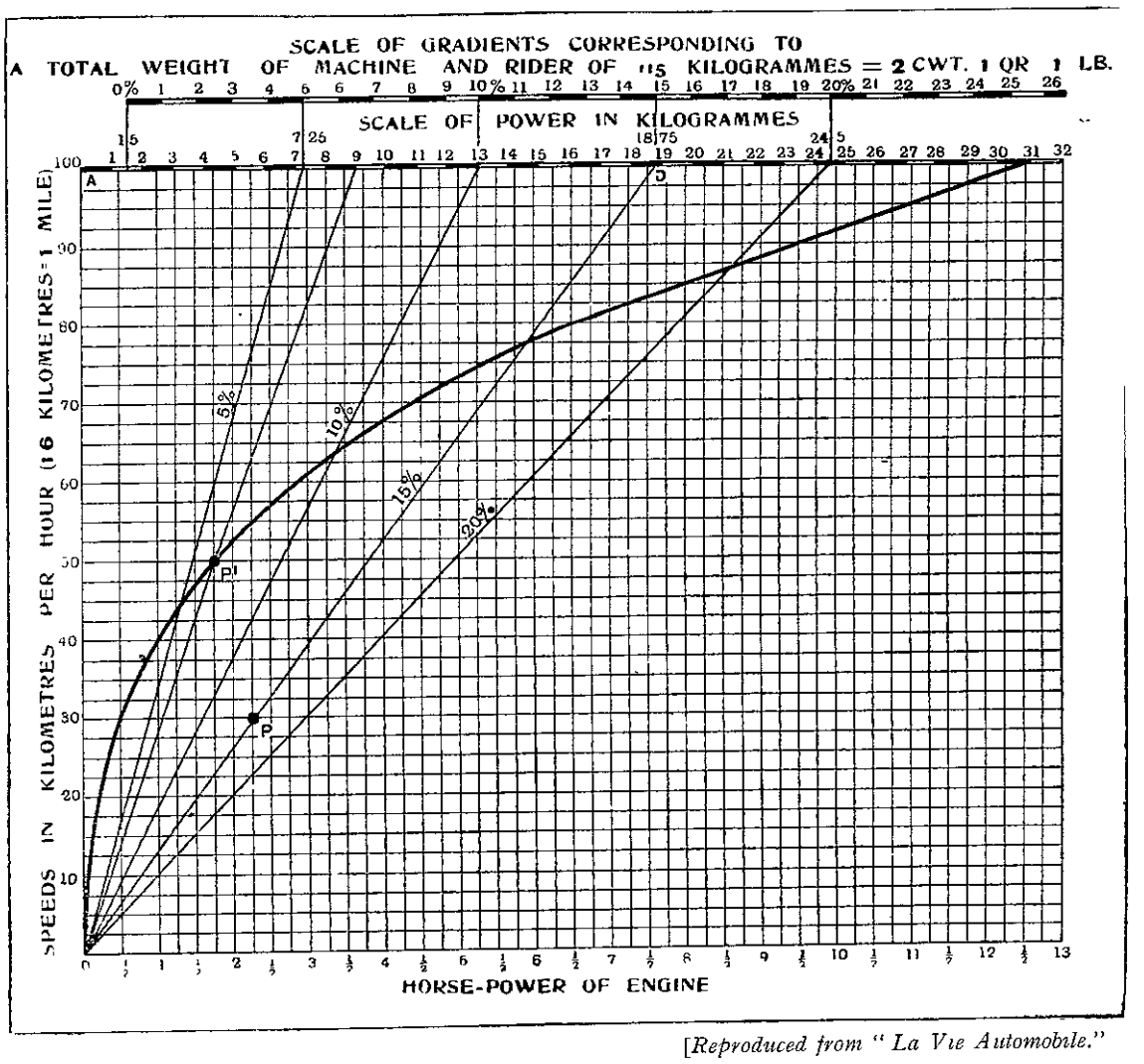
Mr. Alfred Beit has presented the city of Hamburg with £100,000 to establish a university.

CAR CONSTRUCTION.

BY AN ENGLISH EXPERT.

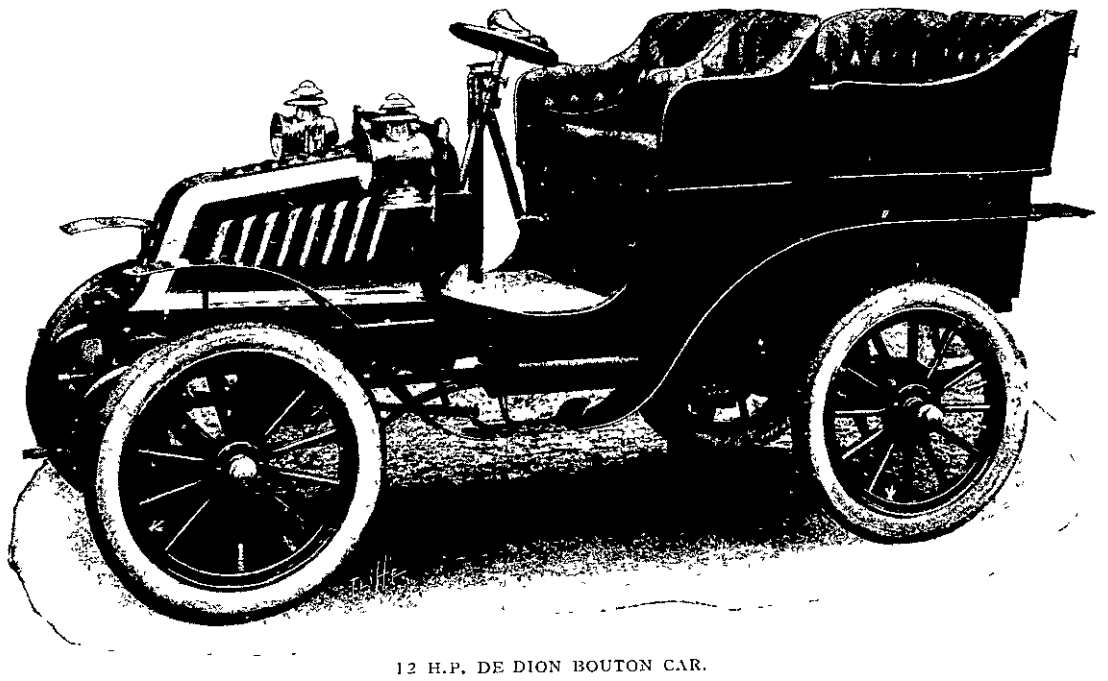
THE question of the relative merits of English and foreign cars occupies a prominent place when motor matters are discussed. It is not a matter upon which dogmatic assertions can be made; it covers so wide a field that some consideration of the subject may not be out of place at present. Dealing with the numbers of cars sold in this country, it is, of course, an accepted fact that there are many more foreign cars sold than English, which is simply due to the demand being so great that the home manufacturer is quite unable to cope with it. This is easily proved by the fact tha every English constructor producing good cars is even more full of orders than is the case with his rivals on the Continent. There can be no doubt of the fact that English cars are now being produced which meet the requirements of the public a position of affairs which could not be accurately advanced some time since. A very large section of the public is convinced that the British ca is in every way equal to the foreign, and are only prevented from purchasing by the difficulty o obtaining delivery.

When we investigate the reasons sometimes adduced to assert the superiority of foreign cars we are told that they are constructed from better steel; that they are lighter, stronger, cheaper, more quiet, better sprung, and more easily controlled. In fact, on every point upon which the purchaser requires any assurance the British car is said to be lacking. Let me examine these points in detail. (1) Better steel—Considering the position of the British steel manufacturer in the markets of the world, the assertion that proper steel cannot be produced by us and is therefore not being used by British motor-car makers scarcely stands for a moment. It was, of course, impossible to expect steel makers to devote any large amount of attention to motor steels when the industry was so small that the result of research could not bring any return; but a very different state of affairs exists to-day, for we find that Vickers, with special brands of case hardening nickel steel, nickel chrome steel, air hardening steels, spring steel, and Willans and Robinson with vanadium steel, have made a speciality of this branch of the business purely for motor-car purposes. The fact that their efforts have met with a measure of success, in that they are doing a large business in these steels, is a certain proof that the motor-car business is flourishing and that they have been successful in producing as good as, if not better, steels than such as are produced on the Continent. (2) Lightness—If there is one point on which more misapprehension exists than any other it is the question of weight. In fact so serious is the misconception regarding this that many responsible manufacturers have quite abandoned the practice of giving any exact figures in connection with this point It is, however, a fact that the success of the best foreign cars has been due not to lightness but to their solidity of construction and consequent ability to wear well It can be asserted quite positively that weights of equal-powered cars produced by the best firms here and abroad are practically the same. The arguments which apply to the question of lightness also apply when one considers strength. In this respect it stands out as a wonder-



[*Reproduced from "La Vie Automobile."*

THE ABOVE PLOTTED DIAGRAM IS OF INTEREST, SHOWING, AS IT DOES, BY THEORETICAL CALCULATION, THE POWER REQUIRED ON A MOTOR BICYCLE TO ENABLE THE MOTOR CYCLIST TO ASCEND A GIVEN GRADIENT, AND ATTAIN A CERTAIN DESIRED SPEED ON THE LEVEL. FOR INSTANCE, IF A RIDER WEIGHING 9ST. HAS A MOTOR CYCLE WEIGHING ABOUT 130 LBS., HE MUST HAVE AN ENGINE OF 3¾ H.P. TO ENABLE HIM TO ATTAIN A SPEED OF 31 MILES AN HOUR MAXIMUM AND ASCEND A GRADIENT OF 6½ TO 1 WITHOUT PEDAL ASSISTANCE. THE GRADIENTS ARE GIVEN IN PERCENTAGES—*i.e.*, 20% = 1 IN 5 · 10% = 1 IN 10, ETC.



12 H.P. DE DION BOUTON CAR.