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For THE CANADIAN ENGINEER.

HORSELESS VEHICLES.

BY J. H. KILLEY, HAMILTON.

Horseless carriages have been in use in France and Germany more or less for the last three years. At the present time it is stated that more than 1,500 motor vehicles for various purposes, run by kerosene and gasoline vapor and atmospheric air, are now at work, as also numbers of bicycles and tricycles. The cost of running these machines over all grades on the common roads is less than one-half of animal traction, and in most cases not more than one-third. A tricycle lately, in Paris, France, has run over 10,000 miles of roads, and is now in good condition to run the same distance. Its weight, including its oil charge, is only one hundred pounds. Slightly over one gallon of kerosene, it is claimed, will run it with one passenger one hundred miles. A bicycle with the same size motor weighs eighty pounds, and it is claimed that it will travel forty miles per hour on a level road.

One company in Paris, the Abeville Hackney Cab Company, have two hundred motor cabs, either built or in process of construction, for the hackney cab trade of Paris. Last year a competitive test took place between Paris, Lyons and Rouen, in which twenty vehicles took part, the kerosene machinery doing the best work. Another test took place this year, \$10,000 being given in prizes to the machines which the judges claimed to be best.

The use of animal power on the ordinary roads will sooner or later, to a great extent, be superseded by mechanical power. This has been effectively demon-

strated by the late competitive test between Paris, Bordeaux and back to Paris, a distance of seven hundred and fifty miles; the \$10,000 being distributed in prizes to the vehicles which were considered best in the opinion of the committee of experts and others who were appointed to determine this matter. In the competition there were seventeen petroleum motors, seven steam motors, and two storage battery electric. One and all of the prizes were captured by the oil driven vehicles, the first having arrived back at the starting point in Paris in 48 hours and 56 minutes after leaving Paris, at the rate of fifteen and one-third miles per hour for time and distance. Some of the gradients on the route are stated to be from six to seven in one hundred, or a rise of 360 feet in one mile. The other oil cars were in from five to seven hours after the first. A steam vehicle, from which much was expected, and a favorite with those inclined to bet on the result, took over one hundred hours to cover the distance, and some of the others did not arrive at Bordeaux at all. The storage battery carriages stopped before getting half way to Bordeaux, a number of bicycles of the ordinary kind accompanied the motors, but were soon out-distanced. The roads travelled over were not of a favorable character, in fact, they were purposely chosen so, to determine the true status of the different vehicles. The petroleum ones are stated to have been covered with mud from the wet and rough roads, but in other respects were in perfect running order. The vehicle taking the first prize of 8,000 francs was the second to arrive at Paris. It is a four-seated one, with room for baggage and stores. The first to arrive got the second prize, as it only had two passengers. They each carried oil on the run for two hundred miles, the cost of the oil for the four-seated rig averaging one cent per mile there; the oil being much dearer than in Canada, the whole cost of running being about one-third that of animal power doing this distance. It must be borne in mind that horses could not do the work in the time stated. The whole route of the race was crowded over by interested spectators. In the event of an accident no outside help was allowed, the occupants of carriages having to carry on their own repairs if any. Not to do so, put them out of the race. The French and German engineers should have the credit of bringing motor vehicles to a successful issue. These, like the gas engines, were originated in France. I recollect the Lenoir gas engine in use, in France, forty years ago, made somewhat on the same lines as those of the present day. The success of the French competition has aroused both English and United States engineers to the fact that a very large business will be done in these machines in the near future, not only as carriage and wagon motors, but for general power purposes. The English High Road Act prevented mechanical power being used on the high roads, as it could only be done under very stringent regulations, and that during the night only. This kept back the business for the whole time that the French and Germans have had them in use, and left England behind in this branch of manufacture. Now, however, the law will be altered, the