

or five pounds above the atmospheric pressure; as the piston passes down, it uncovers a port above it and lets a portion of this mixed vapor above it into the upper part of the cylinder; this drives out the waste products of combustion left from the down or power stroke, but not the mixture introduced. The compression immediately closes the exhaust valve, while the compression of the vapor in the cylinder is still increased until the moment the crank turns the upper centre, when an electric spark from a simple primary battery explodes the vapor, and thus gives out its power. The motion of the eccentric working the pump brings about the electric contact, giving the spark at the proper moment of time. The oil tank is in the bow of the boat, not visible, the quantity required to run the boat per hour being about one pint, the speed being between 7 and 8 miles per hour. The motor handles with the greatest facility; can stop, start, go slow, go full speed. Momentarily, the boat can also be backed up with the greatest facility without stopping the motor. All the attention that is necessary in a clear course, is to steer the boat. The motor runs from 600 to 800 revolutions per minute, as near as could be ascertained. It also runs practically noiselessly and smoothly. There was no annoyance by odor from the oil. The exhaust passes out under the stern noiselessly also. The writer has seen, he believes, nearly every method of vessel propulsion, recollects the "Archimedes," the first commercial screw propeller, as also other forms of propulsion, but nothing previously seen interested him more than the performance of the machinery of this boat. It is the nearest to automatic action that has ever come before his notice. This boat is the property of Robert and John Moodie, Hamilton, and may be seen at Bastien's wharf. Boats on the same principle are built up to 60 feet long, with 10 or 12 feet beam, having cabins, etc., and furnished in the most luxurious manner. For long trips they carry oil for runs of 1,000 miles, and are safe in ordinary lake weather. It may not be long before much larger boats and motors are built, inasmuch as gas engines commenced with very small powers, and were considered only suitable for such for a number of years after their introduction. Now, however, they are made up to 500 h. p. and over. A gas engine, started lately on the River Wear, in the east of England, pumped out a large dry dock containing 10,500 gross tons of water in two hours, developing 250 h. p., at a cost of about one-third of the cost of steam power to do this work.

HORSELESS VEHICLE TEST.

There will be a competitive test of horseless vehicles between Milwaukee and Chicago, on 2nd of Nov. next, for the sum of \$5,000. Up to last week, sixty vehicles were entered for competition. When the offer was made some three months ago, it was feared that there would not be time to prepare the vehicles for the competition. So far, no European names have been registered as being in the competition, all being from the United States. There may, however, be German or French machines entered by United States firms. It is stated that the great majority of these inventors have already completed their vehicles, and are now making practical tests with the view of perfecting their machines.

Three months ago, the horseless carriage was practically unknown in the United States. France and Germany were in the field, and their constructors, encouraged by the success which attended the makers

of gas-driven carriages, went to work with a will and were in a fair way to monopolize the business. They had passed many patents through the American patent offices. Had American manufacturers longer remained idle they would soon have found that foreign mechanics had monopolized the whole business. In the last ninety days 150 patent applications have been made at Washington for inventions pertaining to motor vehicles. This activity will be felt in other directions besides that of motor vehicles, as a great deal of the attention of ingenious mechanics will be directed to the question of securing power for other purposes from light and inexpensive machines. The invention of flying machines has been kept back by the weight of the power machinery; this bids fair soon to be changed, as the new oil motors are the most powerful for their weight and fuel consumption yet brought into notice. The progress made in this particular in gas, oil, and gasoline engines almost amounts to a revolution. The Paris and Bourdeaux vehicles in the competition tests, as shown in illustrations, looked heavy and unwieldy, as does all vehicle work in Europe in contrast with the American. It is stated that the vehicles in use in Paris and Germany do not compare in lightness and strength with most of those prepared for the Chicago competition. The motors that gained the prizes in Paris are not entered for competition, nor machines built on their system.

There will, however, be a vehicle equipped with an aluminum bronze oil engine of 6 horse-power, weighing complete on the carriage 140 lbs. There are small motors weighing from 40 to 65 lbs., which it is claimed have indicated from 4 to 5 horse-power. If these statements are found to be correct or the best, there is no knowing what the effect will ultimately be, not only in vehicles, yachts, etc., but in all businesses where a cheap and powerful motor will be found of service.

The result of this competition may lead to an entire change in the near future in locomotion on streets and common roads, as also on tramways; in fact, what the future may be cannot be guessed at. It is quite certain that this competition will lead to great improvements on the Old Country machines. It would, therefore, be advisable for Canadians who think of going into the business of building or importing these machines, to make it their business to go to Chicago and see the test and machines for themselves, or not having mechanical knowledge, to take a person that has along with them. One large engineering firm in Ontario has two experts already employed in looking into the machines by way of building them for all purposes, including horseless carriages.

PROPOSED COUNTY OF HURON BELT LINE.

A committee of public-spirited citizens of Goderich contemplate the formation of a company to build a belt line of electric railway through the county of Huron, with the town of Goderich as the chief centre of traffic.

The route suggested by the committee is as follows: Taking Goderich as a starting point, a radial line running through Nile, Dungannon, Lucknow, Wingham, Brussels, Seaforth, Egmondsville, Brucefield, Varna, and thence returning *via* Bayfield to Goderich, a total distance of from eighty-five to ninety miles. To make the matter clearer we give herewith a map of the county showing the route of the proposed line. The total population of the villages tributary to such a line would be about 20,000, and the population of the county