

CANADA'S FIRST MOTORCYCLE.

The credit of owning the first motor vehicle in the Dominion of Canada belongs to F. B. Featherstonhaugh, patent solicitor, Toronto. This vehicle, which is modelled on the lines of the hansom cab, can be closed in front when required by means of a flexible, transparent, celluloid blind. The vehicle has been constructed from Mr. Featherstonhaugh's design and under his own supervision. It is mounted on three pneumatic-tired bicycle wheels of especially strong construction, and is braked by a foot-brake operating on a drum on the driving axle.

The electrical equipment is the invention and production of W. J. Still, of Toronto, and is covered by patents issued and applied for. It consists of a battery of 12 cells, a motor of about 4 maximum h.p., and a series multiple controller. The cells are of the lead-lead type, and contain about 140 ampere hours at a 5-hour discharge rate: their average voltage being about 1.9 for the entire discharge. This equals a capacity of 266 watt hours each, or a total of 3,192 watt hours, or 4.27 h.p. hours. They weigh each $23\frac{1}{2}$ lbs., or a total of 279 lbs., equivalent to a weight of about 66 lbs. per h.p. hour.

This light weight of the batteries is due to the peculiar design of the plates, they being constructed of a spiral ribbon of a special highly compressed lead sustained by non-metallic supports so as to admit of the free expansion and contraction of the active material without any strain or disintegration. Whilst exceedingly permeable, and permitting an uninterrupted circulation of the acid, no buckling and short circuiting of the plates can occur. This gives them an exceptionally high discharge rate, without an abnormal drop in potential, and enables them to maintain an immense output without injury.

The motor, which is of the disk armature type, is six polar, the fields being series wound, the commutator is of the flat type, and the current is supplied by 6 copper brushes running on end. The efficiency of the motor is extremely high, its electrical efficiency on ordinary loads being about 93 per cent., and it is fused for about 250 amperes of current. It will develop up to 4 h.p. without heating, and is absolutely sparkless under ordinary working conditions. The weight of the motor is about 100 lbs., and it is journalled on the main driving axle and geared to it by a gear of 12 to 1; a differential gear is employed to permit different rates of speed in the two driving wheels when turning corners, and the motor is spring cushioned to prevent sudden strains to the gears when starting. The controller is of the series multiple type, and has three positions, 6, 12 and 24 volts, and contains a separate reversing cylinder operated by a small lever. The head lights are illuminated by small incandescent lamps, fed from the battery and controlled by separate switches. The vehicle is steered by the same handle as controls the speed and is so nicely adjusted that it may be readily turned by a very slight pressure.

The total weight of the vehicle is about 700 pounds, of which not more than 279 pounds is weight of battery, the type of rig being a comparatively heavy one.

The batteries used in conjunction with the electric vehicle described in the foregoing article were designed especially for the high discharge rate work required for electric rail traction, such as interurban and locomotive railway work, where it would be simply impossible to carry battery power, even with such light cells as Mr.

Still's, to supply power for any great length of time.

In the *Motocycle* of July, 1896, Leland Summers gives the weight of present electrical equipments at:

1,420 lbs. per h.p., with a capacity of	8 h.p. hours
1,010 " " " " " " " " " " " "	5 h.p. "
710 " " " " " " " " " " " "	3 h.p. "

And a possible maximum of

400 lbs. per h.p., with a capacity of	1 h.p. hour
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This shows a weight of 177 lbs. per h.p. for an eight-hour discharge rate, 202 lbs. per h.p. for a five-hour discharge rate, and 296 lbs. per h.p. for a three-hour discharge rate, with a possible maximum of 400 lbs. per h.p. at a one-hour discharge rate. Mr. Still informs us that he is able to make cells of his design that will not weigh more than 90 lbs. per h.p. on one-hour discharge rate, thus making a battery that will develop 1 h.p. for one hour at a weight of 90 lbs.

THE NIAGARA FALLS ELECTRIC POWER QUESTION.

The article in our January number dealing with the case of the Canadian Niagara Falls Power Co. has been taken up by many contemporaries in a spirited manner, and an agitation has been started which has already resulted in strong protests from various public bodies against the alienation of the water privileges on the Canadian side of the Niagara Falls. It is satisfactory to note that, generally speaking, this agitation is of a non-political character, and we hope it will continue so. The letters of Wm. T. Jennings, C.E., to the Toronto daily papers, have given strength to these protests, and we trust the Ontario Government now realizes the full sense of its responsibility in this matter. At the time the agreement was made with the Canadian Niagara Power Co., through the commissioners of the Queen Victoria Niagara Falls Park, it was thought to be a very favorable one. The Park commissioners needed money to carry out the improvements required for the park, and the annual rental of \$25,000 per year gave them what they considered a very nice income for their purposes. This amount still looms very large in the eyes of the present commissioners, and even in the eyes of some members of the Ontario Government. The commercial and industrial bearings of this transaction are not so vital a consideration to the commissioners, and this is where the mistake has come in. So long as the æsthetic tastes of the Park commissioners were gratified, the commercial features of the bargain were of secondary interest, and the enormous commercial value of this franchise is evidently not yet realized by them. But men like Col. Shaw, late American Consul at Manchester, Eng., and the other New York gentlemen who compose the so called "Canadian" company, knew what they were about. They were quite willing to gratify the Park commissioners with a handsome present income, provided they could hold a good long mortgage on the future; and they succeeded beyond their expectations. They knew the growing value of electrical power, and they knew what the near future had in store for a falls which could furnish 7,000,000 h.p., if all of it were developed. And so it came about that they stipulated for a monopoly of the power on the Canadian side for one long century. Like Esau, in dealing with Jacob, the commissioners were hungry, and sold the Province's birth-right for the mess of pottage. It will be remembered by readers of our last article that the members of the Canadian company are, financially speaking, all citizens of the United States, and are the same gen-