The road certainly will stand the load of the heaviest traffic, and the bridges, furnished by the Hamilton Bridge Company, of Hamilton, Ont., have a factor of safety large enough to enable the road to handle railway traffic in the fullest sense of the term. There are three regular bridges, and the Bowman's Ravine trestle, which is 500 feet long and 135 feet high. The bridges, with the exception of Bowman's Ravine trestle, are all above Victoria Park, and across rushing water needing heavy piers One of the bridges has two spans of 150 feet each.

The cars have very heavy 33-inch wheels. They weigh 500 pounds, with 3½-inch tread and 1¼-inch flange. Another feature I observed was the use at one or two points on the road, of cattle guards, which might wisely be adopted in some American city streets, to keep loungers off the tracks.

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The power house is a structure well in keeping with the other edifices in Victoria Park, and is of the most solid construction. Here the power of Niagara is used electrically for the first time on the Canadian side, and upon such an extensive scale as to exemplify the results possible when the Niagara region has become, as it undoubtedly will ere long, a great manufacturing centre. The water is led from the rapids just above the Falls, by an unobtrusive flume 200 feet long to the gates, where it is taken in to run two 1,000 h. p. turbines under the head of 62 feet, and then passes out by a tunnel about 600 feet long, to the Horseshoe Falls, under whose gigantic sheet of foam it is discharged, joining the 1,350,000,000 cubic feet of water that pass every minute over that wondrous curve now fast becoming a "V" with acute angle. I cannot say that I note any diminution in the flow over the Horseshoe, due to the power plant, but if it really amounts to anything it may retard the destruction of the beautiful contour of the fall by relieving it of part of the enormous burden now imposed on it. The fate in store for Niagara unassisted by man is to become a long series of rapids, but the relief now promised her should actually preserve and perpetuate her beauty rather than destroy it.

The power house building is 100 feet long by 62 feet wide, and contains ample accommodation for three large turbines. The two already installed drive by means of the main shafting and friction pulleys, three Canadian General Electric "M. P. 200" generators, which represent a total capacity of about 800 h. p. These generators are compounded for 20 per cent. loss, and are connected through three Thomson-Houston generator panels to the feeder board. The connections between the machines are such that they can be run in multiple, or separately at different voltages, so that if found necessary one dynamo can be operated at a higher voltage and connected to the longer feeders. Each feeder is provided with a separate safety catch and amperemeter. The dynamos stand on pier foundations of solid rock, and are absolutely free from vibration. The circuits are led from the machines under the floor to the wall where they are carried up to and out of a window and thence to the pole line.

The turbines are about 45 in. in diameter and are of the Leffel type and are called the "New American." The specification required them to be each capable of developing 1,000 h. p. under 55 feet head of water, and capable of working with any head up to 63 feet. Provision is made at the gates against needle ice, and the construction of the wheel cases, penstocks, draft tubes, gates, gears, standards and pillow blocks is of the most solid and endurable nature. The wheels are geared to give a speed of 250 revolutions per minute on the line shaft.

There is a supplementary steam power house at the Queenston end of the line, containing two Canadian General Electric "M. P. 100" generators belted direct to two Wheelock condensing engines running at 90 revolutions, built by Goldie & McCulloch, of Galt, Ont. This steam plant is only intended for use in the busy summer months when large excursions of 1,000 to 1,500 people are constantly being landed at Queenston from the Toronto steamers, and require to be taken in swarming carloads up the mile and a half of five to six per cent. grade. In ordinary running, this station is shut down, and the trolley and feeder are connected at station 480, so that the whole of the road can be run by the Falls plant. Before this plan was adopted careful studies were made, and it was found that beyond a doubt, in view of the heavy duty exacted by such work, it would be cheaper to install this plant than to transmit sufficient power from the remote main power house to handle the thronged cars on these grades.

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The company has a capital stock of $300,000, and the road may be bonded up to $45,000 per mile. It has cost up to date about $600,000. Besides the annual payment to the Government of $10,000, the company had to give a bonus of equal amount before beginning operations. The manager is not satisfied with the traffic from the Canadian cities, although it swamps his carrying capacity even now; and it is expected that in a short time he will be hauling as many people from Buffalo, through Chippewa to Queenston as he now brings through Queenston from Toronto up to Chippewa. It is a natural, easy, and beautiful line of travel, and the most will be made of its opportunities at both ends.

## COMMERCIAL ELECTRICITY.

ELECTRICITY, once a plaything, then a scientific study, is now a commercial product. Twenty years ago electrical energy was generated in the laboratory for experimental purposes, by a few physicians as a medicine of somewhat questionable repute, and in weak currents by those who applied it to use in the arts. From the cylinder of glass or mastic, excited by friction to set cork mannikins or pitch balls a-dancing, to the dynamo that runs from one to a dozen powerful engines is a long step, but one that has been taken within the memory of men who still call themselves young.

Electricity as a commercial product, says the New York Sun, is to those who deal in it as commonplace an affair as eggs or butter. The conditions and cost of its production are positively known, and the product may be measured almost as the clerk with his yardstick measures dry goods. You may buy your electricity by specific quantities, and, if you have the conveniences, may carry it home with you as you would carry any other purchase. It can be sent to you by express, or delivered by messenger, or it may be served out over a wire in measured quantity as gas and water are served through pipes. All this seems mysterious to those not technically educated because the electricity shops do not count their product by dozens or measure it by yards and gallons, but use outlandish denominations and a puzzling scientific nomenclature.

Nevertheless, the shopkeepers are at home with the mysterious limber thing in which they deal, and they never stop to think about its mystery, although just beyond the small field which their knowledge covers there lies an unknown area of conjecture.

Electricity as a commercial product and a handy tool, applicable to anything that mechanical power can accomplish, is a thing approximately of only the last ten years. Before that time its cost made it mostly a matter of splendid practical possibilities. Now, with conditions given, a skilled electrician can estimate to a hair the cost of producing the amount of electricity necessary to yield a specified power. It is chiefly a question of the cost of coal.

The existence of two simple laws makes electricity a practical power for doing the world's work. One is that when an