

The Hydraulic Canal.

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AS the waters of the Niagara River pass down through the Rapids and over the Falls they make a descent of about two hundred and fourteen feet in a distance of less than a mile. A force is thus generated equal to several millions of horse-power.

One of the things that most naturally occurs to the thinking man is the possibilities of the employment of this energy in useful work.

The simplest means of utilizing this force in a small way was by cutting canals along the river by the rapids above the Falls and discharging again into the river at a point a little distance below the intake.

So it has happened that from the earliest times mills were built at various points along the rapids above the Falls. The first use of the power appears to have been for a saw-mill which was erected about 1725, to supply lumber for the use of Fort Niagara, and from time to time until the lands along the rapids were taken by the State of New York for a Reservation, mills of various sorts were built and supplied with power from this source.

Only a small amount of power could be obtained in this way, and the building of mills in close proximity to the Falls was objectionable.

In 1847 Augustus Porter outlined the plan on which the present Hydraulic canal is built.

The circular issued by him at that time was accompanied by a map showing the canal very much as it stands to-day.

In 1842 negotiations were commenced with Caleb J. Woodhull and Walter Bryant, and an agreement was finally reached with these gentlemen by which they were to construct a canal and were to receive a right of way one hundred feet wide for this canal and a certain amount of land at its terminus. Ground was broken by them in 1853, and the work was carried on for about sixteen months. It was then suspended for lack of funds, and nothing more was done until 1858 when Stephen N. Allen took up the work and carried it forward for a time. After that, Horace H. Day took up the matter, and in 1861 completed a canal about thirty-five feet in width and about eight feet deep.

The location of the entrance to this canal was most wisely chosen. Just before the river commences its rapid descent to the brink of the Falls, the last of the small islands have been passed and it stretches out calm and deep, and more than a mile in width.

From this point the canal extends in the most

direct line to the edge of the high bluff below the Falls and by traversing a distance of forty-four hundred feet reaches a point where its water stands two hundred and fourteen feet above the water in the river below.

Great as were the evident advantages of this canal as a source of power it happened, from various causes, that no mills were built to use the water from it until 1870, when Mr. C. B. Gaskill built a small grist mill on the site of his present large and modern flouring mill.

In 1875 the canal and all its appurtenances were purchased by Mr. Jacob F. Schoellkopf of Buffalo, who organized the Niagara Falls Hydraulic Power and Manufacturing Company, of which he is still the president.

Since that time the building of mills upon its banks has gone steadily forward until there are at present fourteen large water wheels supplied with water from the canal, and the mills which they operate turn out about four thousand barrels of flour, and forty tons of paper every day, besides much other minor products and directly or indirectly afford employment for a large percentage of the population of the city of Niagara Falls.

By the terms of the grant to the builders of this canal the land was conveyed to them only to the edge of the high bank, and the sloping bank below still remained in the hands of the original owners.

This permitted the use of only about one-half the available head, but this mattered little at that time, as no water-wheel maker would have dared to put his wheel under a head of more than one hundred feet. Many were the failures of wheels in trying to use the hitherto unprecedented head of one hundred feet. All these difficulties have been overcome however.

The title to the bank below has been acquired by the company owning the canal, and during the past year a large wood pulp mill has been built by the water's edge below the high bank, taking its supply from the water which has heretofore been wasted from the mill above. The wheel which operates this mill is sixty inches in diameter, works under a head of one hundred and twenty-five feet, and is probably developing more power than any other single wheel in the world.

The growth of the manufacturing industries at this point has been such as to very nearly exhaust the power of the canal as originally built by Mr. Day. With a view to providing themselves with a supply of power for future demands, the company, about a year ago, commenced an enlargement of the canal to a little more than double its original capacity.

The enlargement now in progress is expected to be completed by the coming autumn, and will provide about thirty thousand horse-power.

The right of way occupied by the Hydraulic Canal

is one hundred feet in width, and it is the intention of the owners to enlarge the canal until it occupies the entire right of way, and to deepen it sufficiently to supply on the aggregate about one hundred thousand horse-power.

Power will, in the future, doubtless be developed by using the water under the full head of two hundred and fourteen feet.

The bank of the river for about a mile below the present mills is owned by the company, and affords excellent sites for mills requiring large amounts of power.

In addition to supplying power to these mills the lower bank offers a most excellent chance for the development of power to be transmitted to a distance by electricity or other means.

For this latter purpose no more favorable place could well be imagined.

A large volume of water is available where it can be used under a head of more than two hundred feet, and the wheels can be so placed that the generators can be belted directly to them without the intervention of long and cumbersome shafts or drives.

In power already developed and in possibilities of further development the plant of the Niagara Falls Hydraulic Power and Manufacturing Company deserves to rank among the first of the great water powers of the world.