

WILL NIAGARA DISAPPEAR AT THE BEHEST OF INDUSTRY?



Glorious spectacle may be effaced through withdrawal of waters to create electric power.

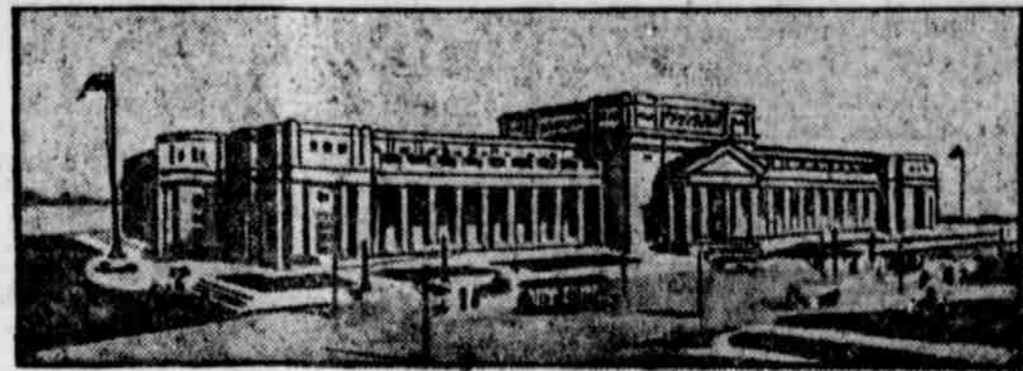
Unless steps are taken by the federal and Canadian governments to curb the campaign being made in the name of industry upon the great lakes to divert their waters, the falls of Niagara, the grandest cascade on the continent, will be ruined as a natural spectacle. This statement is not made by alarmists, but by engineers whose duties have led them to make the calculations leading to this alarming prophecy.

Neither is this sad day placed in that future whose perspective is so dim that one believes it will be the heritage of the countless millions yet unborn. It is declared that if the work of diverting the waters continues and should all the projects that have been formed for the purpose take substance, those now living may see the time

have a capacity of 16,300 cubic feet of water a second. Across the river, in Queen Victoria Park, the hydraulic plants now under construction will divert as much as 32,100 cubic feet of water a second from the Niagara river above the falls, when they are in full operation. In the same park the power house of an electric railway and the pumping plant for town water are estimated to draw about 400 cubic feet a second from the river. The total capacity of the power plants either in operation or in construction on both sides of the river is thus about 48,800 cubic feet a second. A little calculation will prove that this is about 29 per cent of the minimum discharge of the river.

Other Drains on the Lakes.
As has been said, there are other drains upon the resources of the upper

67,400 cubic feet of water a second, or 41 per cent of the minimum discharge rate of the Niagara river. It should be borne in mind, however, that when the record of the discharge rate of the river was taken in 1899, about 10,000 cubic feet of water a second was being diverted. Even considering that, the prospect of the near future is that of about 60,000 cubic feet of water a second being diverted, or about 36 per cent of the minimum discharge. It has been declared that only about 10 per cent of the volume of water passing over the falls is carried by the New York bank, which is known to be shallow. Consequently, when there is



POWER HOUSE OF THE TORONTO AND NIAGARA COMPANY.

a further diversion of 10,000 cubic feet a second, it does not require a feat of imagination to see that this reduction in volume will have an appreciable effect upon the American falls.

Tapping Lake Michigan.
But 67,400 cubic feet of water a second is not all that it is projected to divert from the same supply. The State of New York alone has granted within recent years franchises to at least six companies to use the supply for power, and the Ontario government has authorized the diversion of as much as 33,000 cubic feet of water a second. Hydraulic engineers have reported to the Ontario authorities that an additional 30,000 cubic feet a second may easily be diverted at and near Queen Victoria Park. There are other possibilities of developing the same kind of economical power by further diversion of the waters of the great lakes. The Illinois river at Joliet, only twenty-five miles from Lake Michigan, has a surface elevation of 531 feet, and while flowing 325 miles across the State of Illinois drops 405 feet at its mouth in the Mississippi river. By diverting the water of Lake Michigan and discharging it into the upper bed of the Illinois or Desplaines river it would thus be possible to develop great local power, and also to increase any water power that may be developed along this river in its course across the State. A power station near Joliet, on the line of the Chicago drainage canal, is under construction and is to have 24,000 horse-power. If the franchises are obtained more may be built and each power plant will divert more water, and all the water thus diverted flows toward the Mississippi.

Cliffs Instead of Cataracts.
Similar opportunities are offered on the Kankakee river, Indiana, and there are even possibilities in Ohio of diverting the water of Lake Erie and permitting it to find its way into the Ohio river. The questions of getting franchises and of being able to divert the

water by an economical method are the only obstacles to a water power development in Ohio. When the States and the Canadian provinces geographically situated to make use of the tremendous and cheap power of the waters of the great lakes make full use of the supply at their doors, Niagara Falls, as one of the wonders of the world, will have disappeared as completely as has the Colossus of Rhodes; for, instead of a sublime cataract, there will remain a little waterfall; high, of course, but unimpressive, and entirely dry when a contrary wind further lowers the level of Lake Erie.

Constructing Canadian Plants.
The construction of the plants of the which will develop 110,000 horse-power, Canadian Niagara Power Company, and the Ontario Power Company, which will produce 180,000 horse-power, stands among the remarkable engineering feats of the last decade. This work was begun two years ago, and is now approaching completion. The plan provided for an inland forebay, placed

a boulder and sank, to be seen no more, but later to be dashed over the falls.

The wheel pit was cut out of the solid rock, and is 400 feet long, twenty-seven feet wide and 150 feet deep. Much of this work was done by channeling machines. In this pit eleven turbines will later be installed, each having a capacity of 12,500 horse-power. From this wheel pit to the Horseshoe Falls, a distance of 2,000 feet, a tunnel has been bored to carry off the water. This tunnel has its exit under the Horseshoe, and is twenty-six feet three inches high and twenty-three feet five inches wide. When completed a gallery will hang from its roof for the whole length, and, in addition to being necessary for the proper inspection of the tunnel, will afford a thrilling experience for visitors to Niagara.

Benefit to Buffalo and Toronto.
From these new power plants Toronto will be lighted, electric railways operated between Toronto and Niagara, and manufacturing establishments supplied, just as the plants on the New York side transmit and sell their power in Buffalo. The manufacturing establishments, the electric railways and the municipalities in the neighborhood of the great lakes will profit by this power, heretofore going to waste, but the grandeur of Niagara Falls will disappear, if the demand for economical power continues.—Philadelphia Ledger.

RUSSIAN HOME LIFE.

Eating, Sleeping and Smoking Chief Occupation of a Head of a House.

The daily life of a Russian couple of the wealthier classes is singularly regular and monotonous, varying only with the changing seasons. In summer the lord of the house gets up about 7 o'clock and puts on, with the assistance of his valet de chambre, a simple costume, consisting chiefly of a faded, plentifully stained dressing gown. Having nothing particular to do, he sits down at the open window and looks into the yard.

Toward 9 o'clock tea is announced and he goes into the dining room—a long, narrow apartment, with bare wooden floor and no furniture but a table and chairs. Here he finds his wife with the tea urn before her. In a few minutes the younger children enter the room, kiss their papa's hand and take their places around the table. As this morning meal consists merely of bread and tea it does not last long, and all disperse to their several occupations.

The head of the house begins the labors of the day by resuming his seat at the open window and having his Turkish pipe filled and lighted by a boy whose special function is to keep his master's pipe in order. The housewife spends her morning in a more active way. As soon as the breakfast table has been cleared she goes to the larder, takes stock of the provisions, arranges the meals and gives to the cook the necessary materials with detailed instructions as to how they are to be prepared. The rest of the morning she devotes to her other household duties.

Toward 1 o'clock dinner is announced and Ivanovitch prepares his appetite by swallowing a gulp of wineglass of home-made bitters. Dinner is the great event of the day. Food is abundant and of good quality, but mushrooms, onions and fat play rather too important a part in the repast, and the whole is prepared with little attention to the recognized principles of hygiene. No sooner has the last dish been removed than a deathlike stillness falls upon the house. It is the time of the after-dinner siesta.

The young folk go into the garden and all the members of the household give way to drowsiness naturally engendered by a heavy meal on a hot summer day. Ivanovitch retires to his own room, from which the flies have been carefully expelled by his pipe bearer. His wife dozes in a big armchair in the sitting room, with a pocket handkerchief spread over her face. The servants snore in the corridor, the garret or the hay shed, and even the old watchdog in the corner of the yard stretches himself out at full length on the shady side of his kennel.

In about two hours the house gradually reawakens, doors begin to creak, the names of the various servants are bawled out in all tones, from bass to falsetto, and footsteps are heard in the yard. Soon a man servant issues from the kitchen, bearing an enormous tea urn, which puffs like a little steam engine. The family assembles for tea.

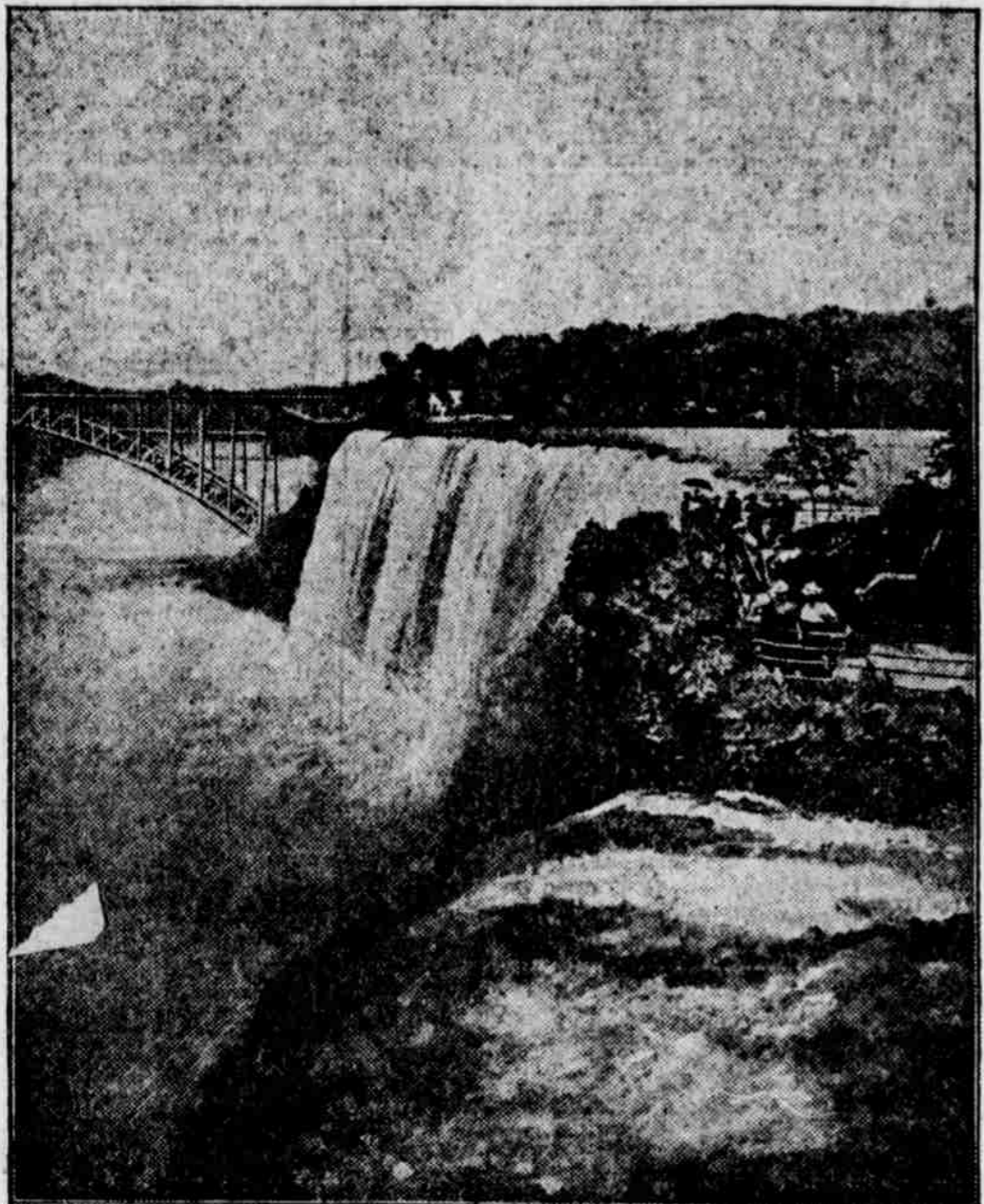
Could Not Wait on So Many.

The young man, says the New York Times, was of that peculiarly embarrassing age when the male voice changes.

He had gone into a store, and in a tone that was one moment a promising bass and the next a thin treble, was ordering some collars.

"One at a time!" the bewildered proprietor suddenly interjected. "One at a time, please!"

You can always flatter a girl by saying she "sings with expression," as she never considers that there may be more than one kind.



THE WHIRLPOOL RAPIDS.

when the American falls will be dry and the Canadian falls but a travesty of their former greatness.

Dangers Threatening the Falls.
There is considerable difference in level among the great lakes; the water descends from one to another, and the waters of Lakes Superior, Michigan, Huron and Erie are drawn off by the Niagara river, making a descent in its twenty-seven miles of 327 feet, of which 161 feet is a perpendicular drop, forming the world-famed falls, into Lake Ontario. It will be apparent that as practically all the overflow of the lakes is drawn off by the Niagara river, and consequently is precipitated over the great cliffs forming the falls, any diversion of the waters in any of the lakes above the falls must reduce the volume of water passing over the falls. Therefore, while the power plants erected and being built on both sides of the Niagara river have, up to the present time (proved the greatest menace, they are not by any means the only dangers threatening the great cataract.

The normal discharge of the Niagara river, according to measurements made by the United States engineers in the years 1899 and 1900, and taken with Lake Erie at its mean level, is 222,000 cubic feet a second, but this sinks at times to 165,340 cubic feet a second. While this volume of water is enormous, it is by no means beyond the power of industry to absorb it all in turning turbines.

Power Plants on the Niagara.
At present there are two power plants on the New York side of the river, and on the Ontario side three enormous plants are nearing completion, while a smaller plant is being operated. The discharge tunnels of the plants now in operation are said to

Niagara river. A few miles west of Buffalo the Welland canal leaves the Canadian shore of Lake Erie and runs about thirty miles to Lake Ontario, with a drop of about 327 feet. All the water traffic between these two lakes passes through this canal, and consequently the consumption of water for navigation purposes above is considerable. In addition, however, a large amount is used for the development of power, one of the generating stations recently completed passing about 1,400 cubic feet of water a second when operating under full load. If the new barge canal follows the line of the present Erie canal from Buffalo to Savannah, a distance of 138½ miles, this length of canal will be supplied with water from Lake Erie, as the corresponding length of the old canal is now, and it is estimated that the amount of water required for this purpose will reach 1,237 cubic feet a second. The Chicago drainage canal is said to require as much as 6,000 cubic feet of water a second. Work has been started on a canal that is to run from La Salle to the Devil's Hole in the gorge below the Whirlpool Rapids, and this canal will develop 150,000 horse-power, to achieve which about 7,400 cubic feet of water a second must pass through the turbines. In addition to these diversions of water which otherwise would pass over the falls, there is the possibility that one of the power companies on the New York side of the Niagara river will construct another tunnel, and another 8,600 cubic feet of water a second may be diverted.

Diversion of the Waters.
In immediate prospects, as will be seen from the above, the total diversion of water from the great lakes and the Niagara river will reach no less than



WHEEL PIT OF CANADIAN POWER COMPANY.—From The World To-day.