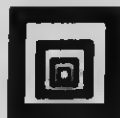


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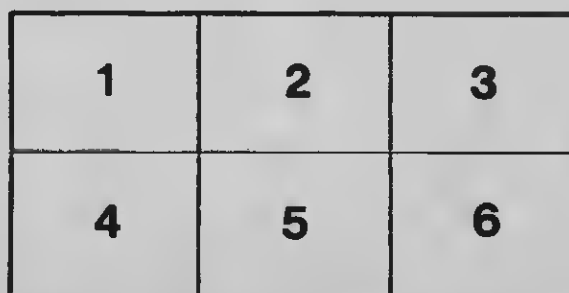
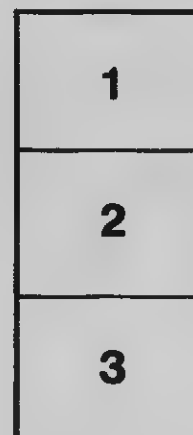
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G NIAGARA POWER

AND ITS RELATIONS TO  
THE FUTURE OF ONTARIO

BY

MAJOR GENERAL

FRANCIS VINTON GREENE

*Can. P.  
Case  
no. 809*

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AN ADDRESS DELIVERED IN TORONTO,  
BEFORE THE EMPIRE CLUB OF CANADA  
JANUARY 10, 1907.

*Mr. Chairman and Gentlemen:*

Allow me to express my high appreciation of the honor of being invited to address this Club. If I were a Canadian and lived in Toronto I should certainly be one of its members and do all in my power to promote the objects for which it exists.

Before coming to the subject upon which you have asked me to speak I should like to take a portion of my time in saying a few words concerning the objects of this Club, and concerning the probable future of Canada and its relations to Great Britain and to the United States.

Through the courtesy of your Secretary I have seen the addresses delivered in this Club during the two preceding years, and I have read all or nearly all of them with much interest and instruction. I was particularly impressed by Mr. Wilfred Campbell's speech on Imperialism in Canada, in November, 1904; and by the debate between Mr. Foss and Dr. Montague on the relations of the United States with Canada and Great Britain at the meeting in January, 1905. Mr. Campbell enunciates certain fundamental doctrines, the nature of which is only just beginning to be appreciated. He speaks of "that new imperialism which is taking possession of the modern world. It is, after all, the constructive form which the democracy is taking after its destructive period has passed; and which men like Mr. Goldwin Smith have been looking for but have not recognized. Just as Christianity was evolved out of Judaism, so the present Imperialistic movement is coming up as the constructive period of the democracy." And again, "all progressive communities, all organizations, and progressive men of today are consciously or unconsciously Imperialists. \* \* \* It is decidedly time to point out in no uncertain manner that Imperialism is not a mere desire of a portion of ours or any people; but that it is a great force in the modern world, swaying us all; that it is here to stay until it has performed its work of reconstructing the modern democracy." And finally he says, "Today the men who are little Englanders, little Irelanders and little Canadians

are behind the time in their political ideas. Many of them are so far bemuddled in Eighteenth Century issues, Eighteenth Century bitterness and Eighteenth Century ideals long accomplished, that they have forgotten that this is the Twentieth Century. They have forgotten that much has taken place in the interval; that the world of today has outgrown mere expansion and individualistic antagonism; that life has become more self-controlled, that man's view, as a whole, is larger, saner and more centralized. They do not see that the foes to be fought today are not old world tyrannies, but the evils of ignorance and materialism and their attending tyrannies everywhere, especially on this continent."

These are striking propositions, especially novel to a generation which has inherited from its forefathers so firm a belief in the universality and finality of the political ideas which were put into operation at the close of the Eighteenth Century; and yet, it may possibly be that they are fundamental truths which, while not yet self-evident, may come to be so considered a few years hence.

The application of these general principles to the special problems in Canada takes the form, as stated by every speaker who has touched upon the subject before this Club, of a closer alliance between Great Britain and all her English speaking colonies throughout the world, and I believe that such an alliance or consolidation will be distinctly for the welfare of mankind, and the advancement of civilization. The policy of free trade in business and disintegration in political ties advocated for two generations by Bright and Cobden and Gladstone has had its day. The United States have been developed on principles diametrically opposed to those which they advocated; and the phenomenal success of the great republic to the south of you has challenged the attention of the world, and led to a revision of the public sentiment which supported these statesmen during two generations in the nineteenth century. Whether Mr. Chamberlain has

evolved the plan which will be adopted for the consolidation of the British Empire I do not pretend to say; but I do believe that some form of consolidation will be worked out and adopted, that the Cobden school of thought is now or soon will be extinct, and that never again will a British Minister say, as Disraeli said "Those wretched colonies will be independent, too, a few years and are a mill-stone around our necks." So far from this being the case, the fact is that the colonies are the main source of the future strength of Great Britain; and her prosperity, and almost her very existence, depend upon their development and their consolidation. It is the glory of England that she has founded these English speaking colonies all over the world; and if she does not keep them and give them their full share in the common government of the Empire, the Empire will inevitably fall to pieces and she will become a small trading nation like Holland.

The debate between Mr. Foss and Dr. Montague was most interesting. Mr. Foss stated the position of the New England manufacturer, with his home market over-sold and looking for a foreign market under reciprocity. Dr. Montague replied that however beneficial that might be to the New England manufacturer, he could not see in what way it would benefit Canada, which has just established her own manufactures and intends, if she can, to keep the home market for herself; thus adopting the policy which the United States has followed with such singular success for more than one hundred years. In the debate the probable future of Canada and its relations to Great Britain and the United States were much discussed, and this is certainly one of the most interesting questions of the present time. It has been said, I believe by Sir Wilfred Laurier, that the Nineteenth Century belonged to the United States and the Twentieth Century to Canada. There is every reason to believe that this is quite true, in the sense that the development of the United States was the most important historical fact of the Nineteenth Century and the development of Canada will be the most important historical fact of the



Twentieth Century. You start the Twentieth Century with practically the same population that we had at the beginning of the Nineteenth Century, and you have the untold advantage of steam and electricity to aid you in your development. Your country is as large as ours, and after deducting the frozen wastes of the north and taking account only of that portion of Canada which is south of the 60th parallel—the latitude of St. Petersburg—you have an area greater than that of France, Germany, Spain, Austria-Hungary, Italy and Japan. Your soil is as fertile as theirs and these countries support a population of nearly 250,000,000. Three-fourths of that population live between the same parallels of latitude—42 and 60—as the portion of Canada which I have referred to, and while latitude is not the only element which determines climate, yet in the matter of climate the advantage is distinctly with Canada; for however it may have been in ancient times when the known world was limited to the shores of the Mediterranean, it certainly is true that during the last 300 or 400 years the world has been dominated by the northern races. Your climate not only grows the best wheat in the world but it makes grit in men.

Not only have you a vast extent of territory waiting to be occupied by the surplus population of the world, which surplus is likely constantly to increase as sanitation improves and wars decrease, but the resources of this vast land in mines, in forest and in fertile lands are fully equal, so far as I can see, to those of the United States with only two exceptions—you grow no cotton and your supplies of coal, while vast in extent, lie so far to the westward or eastward as to be almost inaccessible for Ontario. As against this Ontario has water powers, not alone at Niagara but on other streams widely scattered, which, when properly developed with the aid of electrical science, will probably make up for your deficiency in coal. Your finances are in splendid condition, your revenue for federal purposes being about \$11.00 per capita against \$9.00 per capita with us, and while your debt is much

larger per capita than ours, yet it is much less than that of Great Britain and only one third of that of France.

Your railways are at the rate of  $3\frac{1}{2}$  miles per thousand inhabitants whereas ours are at the rate of only  $2\frac{1}{2}$  miles per thousand inhabitants. You have expended \$85,000,000 for your canal system, or at the rate of \$15.00 per capita. A similar expenditure by the United States would mean nearly \$1,250,000,000, and great as is the work we are now undertaking at Panama it is, by comparison with our resources, a small effort compared with that which you have successfully put forth in the canals connecting the lakes with the sea.

Your system of public education is, I believe, excellent, and you have hitherto had the enormous advantage of being practically exempt from expenditures for military purposes. For the army, navy, fortifications and pensions the United States spends about \$360,000,000 per annum, or about \$4.50 per capita, and for similar purposes Great Britain spends nearly \$320,000,000 or about \$7.60 per capita. Canada, on the other hand, spends only about \$4,000,000 per annum for such purposes or about 70 cents per capita. That you can continue to enjoy this exemption as you grow in wealth and population seems improbable, but that it is an enormous advantage to you so long as it can be continued is beyond question.

It behooves my countrymen, as it seems to me, to study these problems with some care and decide what is to be their attitude toward their neighbor on the north, destined so soon to be the equal in wealth and population of a great nation.

It was the mistake of England, or at least of its governing class and its representative statesmen, during the 80 years or more intervening between the War of 1812 and the War with Spain, to adopt toward the United States an air of condescension and arrogance, not unmingled at times with hatred and contempt. I say it was a mistake because it did not retard the growth of the United States one iota. It engendered a feeling of hostility which is only now subsiding, and in the end it left England more

keen than any other nation for the support and friendship of the United States. Similarly I think the attitude of the United States towards Canada has in the past not been wise. There has been much loose talk of annexation without any serious thought whether annexation would be desirable for either or both countries. There was a time twenty years ago when reciprocity was popular in Canada, and when, by the exercise of proper tact, we might have secured the Canadian market almost as completely as our own market. We were not wise enough to avail ourselves of it, but took the attitude that if we failed to grant reciprocity to Canada we would force her to ask for admission into our Union. So far from doing that we forced her to work out her own salvation: and it has been worked out in a manner worthy of the very best traditions of the Anglo-Saxon race. As matters stand now, Canada has no favors to ask of anyone, either on this side of the Atlantic or on the other. As to Great Britain, it has been said that British sovereignty in Canada exists only so long as it is not exercised, and while perhaps, in view of the loyal feeling now existing throughout Canada toward your mother country, you might hesitate to acknowledge the truth of such a statement, yet, I think that in any matter which brings the question to a practical test you will find this statement not far wrong.

As to Canadian sentiment towards the United States, so far as one may judge from the speeches delivered in this Club, from the attitude of the Press and from what is heard in conversation in Canada, the annexation sentiment, which did exist to some extent at one time, has now practically died out, and any such proposition, if submitted to your electors, would be defeated by a vote of at least ten to one.

Just what your future is to be, whether it is to be in a consolidation of the British Empire, or in absolute independence as a great nation, or in some alliance with your powerful and still growing neighbor to the south, I do not undertake to say; but of this I am absolutely certain, and that is, that your future will be determined by your-

selves; that you have reached the position where you are absolute masters of your own destiny. As you work it out and as you grow greater year by year I think we, in the United States, will have the same feeling of respect and admiration for you that one strong, self-reliant, self-respecting man has for another; that your growth, although politically and commercially independent of us, cannot be but advantageous to us; and that in spite of the tariffs which now, and probably for a long time will, divide us, your growth must lead to a larger trade with us, and that with the constantly increasing facilities for communication and intercourse, there will be a constantly increasing intimacy and friendship which cannot fail to be of the highest mutual advantage.

I hope I may be pardoned for using up so much of my time in speaking of things with which you are so familiar, but I confess that I was ignorant of most or many of them until three years ago when I came to live near the Canadian frontier and to be identified with a Canadian corporation. The subject of the relations between Canada and the United States has since then become one of fascinating interest, and I only wish that something might arise to cause all my countrymen to be as much interested in the subject as its importance deserves.

And now as to Niagara Power, concerning which you have asked me to speak. I shall not weary you with descriptions of turbines, generators, transformers, power houses and transmission lines, for all of you, I think, have a very full knowledge of what has been done in the development of hydro-electric power at Niagara. Mr. Nicholls, the active head of one of the Canadian companies, gave a very full description of all of the Canadian developments, in this Club, just two years ago. Since then the development has gone on, and now the street cars at Syracuse on the east and Toronto on the west are operated by Niagara power, and between these two points distant 250 miles from each other as the wires run, a variety of industries in the way of light, heat and power

are dependent upon the adaptation and utilization of this mighty force.

But instead of going into any of the details on the mechanical or electrical or business side I would rather speak to you of Niagara power in its international aspect, and in its relation to the future of Ontario.

On my own side of the river public opinion in regard to Niagara seems to have crystalized into the cry "Save the Falls." On your side of the river the only sentiment which I hear is "Transmit and distribute the white coal at the lowest possible price." In the United States there is a feeling, largely due to misunderstanding, that the Falls are in danger of being destroyed, and this is supported by a sentiment practically unanimous that this must not be permitted. In Ontario no one believes that the Falls are in danger of being destroyed, and owing to the absence of coal in Ontario there is an almost unanimous sentiment that the future development of the industries of the Province is, in no small degree, dependent upon the development of Niagara power and its distribution over a wide area, either by means of government ownership or otherwise, at the lowest possible cost.

In the United States public sentiment has found expression in the Burton Bill adopted in Congress on the 29th of June, 1906, asserting the paramount rights of the United States against the rights of the state of New York and the riparian owners in the waters of the Niagara River; expressing the determination to control the navigation of the River, protect the integrity of the frontier and preserve the beauty of Niagara Falls; and thereupon forbidding the diversion of water on the American side from the Niagara River or any of its tributaries, in the State of New York, for power purposes, without the written permit of the Secretary of War, and forbidding the introduction of electricity from the Canadian side of the Niagara River into the United States without a similar permit. Incidentally this law destroys the rights of riparian owners as they and their predecessors have believed them to exist for the last 200 years, and destroys them as completely as if a wall had been built at the

river's edge of their property. On the Canadian side public opinion has found expression in the Beck law assented to on April 23, 1906, giving to the Ontario government the right to expropriate by judicial proceedings any or all power houses, transmission lines and even, if desired, to expropriate the electric current itself, and appointing a commission to regulate and control the distribution of Niagara power throughout the Province of Ontario.

In the United States the main object has seemed to be to preserve the Falls, and in Ontario to distribute the power from the Falls; and yet, after all, I do not believe that the two countries are seriously apart. I believe there is just as much sentiment in Ontario in favor of preserving the Falls, in case they are in any danger, as there is in the United States; but from better knowledge of the facts they are not excited about it because they do not believe that the Falls are in any danger of injury from any works now in progress or contemplated. In the United States I believe there is a sentiment as strong as that in Canada in favor of distributing the power as cheaply and as widely as possible. The International Waterways Commission, by unanimous report of both sections, has said that to destroy the Falls would be a crime, and on this dictum I think they do not fear and need not fear contradiction from any source. The International Waterways Commission after a most thorough and exhaustive study made certain recommendations as to the diversion of water and stated the amount of water which could not be exceeded without the possibility of injury to the appearance of the Falls, and while the United States Congress in its legislation has limited the amount of water which can be diverted on the American side, and of electricity which can be transmitted from the Canadian side, to quantities much smaller than the quantities recommended by the Waterways Commission, yet the law by its terms remains in force for only three years; and if it is true, as those who are best posted concerning the facts believe, that the successive development of the works now projected will show no change in the appearance of the Falls, then it may reasonably be expected

that the United States Congress will adopt the views of the Commission, which was created for the express purpose, among other things, of studying this question. And so I think it may be confidently predicted that, as misconception of the facts gives place to accurate knowledge of them, the future of Niagara will be worked out on these lines.

1. The Falls (to paraphrase Daniel Webster) must and shall be preserved.

2. The greatest amount of power consistent with the preservation of the Falls must and shall be developed and distributed as widely as possible at the lowest possible cost.

Of the importance of this power to Ontario there can be hardly any question. It is important to New York state, but New York is comparatively close to the coal fields and has no duty to pay on coal. Of the importance of power itself there is even less question. It is the fundamental prime mover of modern civilization. The only source of it is the sun's energy, which has been manifested in the past in the formation of coal and oil and gas; is now manifested in the tides and the winds; and in the future will be chiefly utilized in the energy of falling water, thanks to the recently discovered uses of electricity. The use of the energy of falling water is as old as history itself but until near the beginning of the present century its application was limited to a few hundred yards from the spot where the water fell. Now by converting the hydraulic energy into electricity, and by putting into that electricity an enormous pressure or voltage, the power can be transmitted at least 200 miles to advantage; and if the electrical art progresses as much in the next ten years as it has in the last ten years it will be feasible to transmit it 500 miles.

The use of falling water as a source of power is the most economical of all sources of power. By the sun's heat the water is evaporated from the sea, the lakes and the rivers, it is condensed in clouds, precipitated in rain or snow, falls upon the ground and again finds its way to the lakes and seas. It is perpetual motion and the prime

cause, the sun's energy, is so enormously abundant, that the loss of energy in creating this cycle of rising and falling water is inappreciable. The winds and the tides are also perpetual and involve no appreciable loss of energy, but no method has as yet been found of using them to advantage in the transmission of power. Possibly the invention of a suitable storage battery will bring the varying forces of the winds into use as a source of power to be transmitted by electricity; and possibly the same may be done in regard to the tides; but as yet this has not been accomplished. Coal, oil, gas, peat, and wood as producers of steam, are all fundamentally wasteful. As the power is created these substances pass away in gases and vapors which in turn are absorbed by the soil and vegetation and may again produce coal, oil, peat, and wood, but only after the lapse of millions of years; so that as the matter stands today water power is the only source of energy which does not involve destruction and waste. It has been well termed "white coal." Its use gives no form of noxious vapors, no noise, no smoke, no cinders. It is pre-eminently the power of a century *de luxe*. And as a demonstration of the control of gigantic forces by the brain of puny man it has no rival. Electricians can give you no adequate idea of what electricity is, but they can tell you with great accuracy what it does and can do, and how it can be regulated and controlled. It is a spectacle second only to the Falls themselves as a mighty manifestation of the works of God upon earth, to walk through one of the great power houses at Niagara, and in profound silence, with only a half dozen operators in sight, watch the wires and transformers and recording instruments through which is invisibly and noiselessly passing a titanic force on which depend the light, the transportation and many of the industries of hundreds of thousands of people, scores of miles away.

There are certain things in the industrial and chemical world which can only be done by cheap electricity. One of them is the manufacture of aluminum, a metal which was unknown outside of the chemist's laboratory twenty years ago, and which now is manufactured for a thousand



uses of man to the extent of nearly 20,000,000 pounds a year—although it is the lightest metal in existence. This metal was first produced for commercial purposes at Niagara and it has been well said by Mr. Stetson that if Niagara power had done nothing else than manufacture this metal, at a price that brings it into so many varied uses, the development of Niagara power would still have been a land mark in the advance of civilization.

To come down somewhat to details in regard to the advantages of this power for Ontario, I need only say that Ontario owns the northern shore of Lake Erie and the western bank of the Niagara River, and that Niagara power can be generated and distributed throughout all that portion of Ontario which lies between Toronto and Windsor at a cost less than power can be produced by steam. To what extent you will use it is for your manufacturers themselves to say. Of course power is not the only element in the cost of manufacture. Labor, raw material and transportation are each more important, I believe, than power as elements of cost, but the power is nevertheless a very important element. In ordinary manufactures I believe a saving of say one-half in the cost of power means a saving of from 5% to 15% in the cost of the finished product; in the electro-chemical industries such as aluminum, calcium carbide, carborundum, soda-ash, nitrogenous products, and the reduction of certain metals, a reduction of one-half in the price of power means a reduction of possibly 40% in the cost of the finished product. Certain industries of this last named class require the very cheapest power and can not stand the cost of transmitting it. For such industries special facilities and advantages are present in that portion of Ontario between the Welland Canal and the Niagara River, having the benefit of the lake navigation and five lines of trunk railroads and power at a price almost unrivaled for cheapness. In other industries such as agricultural implements, boots and shoes, hardware, textile fabrics, steel and iron works, the price of power is a less important factor and the business can stand the cost of transmission to the point where such industries are

already developed, as they are at so many points in Ontario, rather than to stand the cost of pulling up stakes and moving down to the vicinity of the Niagara River.

It is not alone in manufactures that cheap power will prove advantageous but also in lighting, possibly in heating, and certainly in many domestic uses, not alone in the great cities but in the villages and on the farms. I believe the day is not far distant when practically every house in Ontario within two hundred miles of the Niagara River will be lighted by electricity supplied by the power of the great Cataract. It will be running the sewing machines, the churns, the ice cream freezers, the ventilating fans, the house pump, the knife cleaner and sharpener, the dish-washing machine, the clothes-wringer and other parts of the laundry, and a host of other domestic utensils not yet invented but much thought about at the present time by a multitude of inventors.

But I fear if I continue, the Honorable Adam Beck will claim I am poaching on his preserves; for he has traveled the length and breadth of the land in the last few months showing to all the dwellers in Ontario what can be done with Niagara power, and in this aspect of the case possibly the subject is one which already wearies you. And yet it seems hard to believe that any man who has to work, either with his brains or his hands, for his daily living, can be weary of a subject on which his prosperity and his household bills so largely depend.

And so, gentlemen, if an alien may be allowed to express an opinion on your internal affairs, I wish you all success in the spread of Imperialism as you have defined it, in the consolidation of the British Empire with Canada as one of its most important factors, in the development of Niagara power to the greatest possible extent always consistent with the preservation of the Falls, and in the distribution of this power at the lowest possible cost throughout the length and breadth of Ontario.

