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The Volunteer Review,

AND

MILITARY AND NAVAL GAZETTE

"Unbribed, unbought, our swords we draw,
 To guard the Monarch, fence the Law."

OTTAWA, TUESDAY, MAY 16, 1876.

TO CORRESPONDENTS.—Letters addressed to either the Editor or Publisher, as well as Communications intended for publication, must, invariably, be pre-paid. Correspondents will also bear in mind that one end of the envelope should be left open, and at the corner the words "Printer's Copy" written and a two or five cent stamp (according to the weight of the communication) placed thereon will pay the postage. No communication, however, will be inserted unless the writer's name is given, not necessarily for publication, but that we may know from whom it is sent.

We have for the past nine years endeavored to furnish the Volunteer Force of Canada with a paper worthy of their support, but, we regret to say, have not met with that tangible encouragement which we confidently expected when we undertook the publication of a paper wholly devoted to their interests. We now appeal to their chivalry and ask each of our subscribers to procure another, or to a person sending us the names of four or five new subscribers and the money—will be entitled to receive one copy for the year free. A little exertion on the part of our friends would materially assist us, besides extending the usefulness of the paper among the ranks—keeping them thoroughly posted in all the changes and improvements in the art of war so essential for a military man to know. Our ambition is to improve the *Volunteer Review* in every respect, so as to make it second to none. Will our friends help us to do it? Premiums will be given to those getting up the largest lists. The *Review* being the only military paper published in Canada, it ought to be liberally supported by the officers, non-commissioned officers, and men of each Battalion.

The engineering problem involved in the improvement, or rather construction of the harbour of Montreal, is one of the most difficult yet presented to scientific, professional and practical skill—situated between the foot of Lachine Rapids and the head of the St. Mary's current—the area to be dealt with exhibits physical difficulties of the most formidable character to any attempt to control so large a body of water of great depth with a swift and ever varying velocity, and attended by phenomena aggravated by the narrowing of the channel below the city.

The fearful ice shove is exhibited in all its power and grandeur to the great discomfort and not little danger of the inhabitants of the low-lying sections of the Commercial Metropolis of Canada, and it is this particular feature that makes the engineering problem so difficult of solution. Many schemes have been devised at various times—having for their object the improvement, or rather creation of a safe still water harbour—and at the same time to mitigate the annually recurring evils of the ice shove, but all have hitherto failed from various defects in design or for want of a proper appreciation of the true conditions of the phenomena to be dealt with and the absence of the necessary practical skill and experience.

The *Montreal Witness* of 30th March contains the outlines of a plan, which is not only perfectly feasible, but the only one that can be adapted to the conditions of the River and the true solution of all the engineering problems connected with the creation of a harbour in front of the city of Montreal. The author of this design is J. G. SIFFELL, Esq., C.E., Superintendent Engineer of the Lachine, St. Lawrence, and Ottawa River Canals—one of the first Hydraulic Engineers on this Continent and nearly a quarter of a century's experience of the locality with which he proposes to deal.

The *Witness* shows an outline engraving of the general design, which our space will not allow us to reproduce, but it is only necessary to say that the project in brief is to enclose by a wharf or wall a space parallel to the shore from the foot of the present Lachine Canal to Hochelaga, above St. Mary's current, to excavate a Canal from thence to a point two miles below where deep water will be reached. The *Witness* thus describes this portion of the works under the head of

THE SIFFELL SCHEME OF IMPROVEMENT.

The Government was so thoroughly impressed with the importance of these improvements that they gave their engineer in charge of the Lachine Canal instructions to make a plan of the required accommodation in connection with the deep water basin at the Montreal terminus of the canal, or what may be properly termed the "Point St. Charles Inland Docks." A plan of harbor improvement and dock construction was submitted to the Minister of Public Works, by that gentleman some time during the winter of 1873. This plan, shown by the accompanying engraving, was favorably commented on by the press and well received by the public; so much so that the Harbor Commissioners and Corn Exchange were induced to have it lithographed and distributed among commercial men, especially those interested in the carrying trade of this country. This scheme is to extend the canal to Hochelaga, where it forms an easy connection with the deep water channel in the river, about two miles below the St. Mary's current, where there is ample room for extending the harbor accommodation should it hereafter be required; and where steamers or other vessels can take the channel without the risk of grounding or being carried on to the rocks by the currents. The deep water basins, or Point St. Charles inland docks (more than a mile in

extent), will be surrounded with a wharf and warehouses, into which vessels can either discharge, or from which they can receive cargo. On the rear side of all these warehouses provision is made for railway connection, so that all transshipments can be made free of cartage; these docks being in the immediate vicinity of the Point St. Charles railway station really forms a portion of it, which can be approached by vessels 250 feet in length, 45 feet in width, drawing 18 feet of water. These docks are also accessible on all sides for carts, when it is found necessary to employ them. By this plan the central or present harbor will be formed into a still water basin and have its capacity doubled, with 33 feet depth of water where there is 20 feet at its present lowest stage, and where steamers of the largest tonnage can ride in safety or be easily and quickly moved to any position of the harbor, without fear of grounding. The river entrance to this portion of the harbor, or more properly docks, is to be made by two locks, situated between Victoria Pier and the shore, to be 500 feet long, 80 and 60 feet wide respectively, and provided with three pairs of gates, arranged for passing large or small vessels, and accessible without encountering the strong current outside the pier. Vessels, when within the docks, are to be brought directly alongside the wharves, on which ample space for sheds, the disposition of cargo and railway traffic is afforded; the cartage traffic will not be interfered with, and provision is also made for extending this railway connection to the old barrack property, near where the track would come from the contemplated site for the Montreal, Ottawa & Western Railway station.

An outside or river frontage is also provided from Victoria Pier to the rear of the Montreal Warehousing Company's stores and elevators, where another entrance is to be made to the Point St. Charles basins. This frontage would give wharfage accommodation the entire distance at the present harbor level.

From the Victoria Pier a canal 100 feet wide thirteen feet deep with docks on both sides is seen to be continued down to the Hochelaga wharf, with a parallel range of river wharves the entire distance, on which provision is made for warehouse and railway connections with the city side.

From the Hochelaga wharf the canal is seen to pass inland to the low lands west of the Main street, where extensive inland docks are provided for. They would be of about 9,000 feet in length, and from two to five hundred feet in width, with twenty-five feet depth of water. These docks are to be surrounded with wharves, warehouses and elevators so arranged as to afford expeditious and cheap handling of freight, with railway and short connections on the rear side, all of which are situated in the immediate vicinity of the North Shore and Montreal, Ottawa and Western Railways, and where a general eastern freight station on an extensive scale can be built to connect with, and form a portion of, the docks; thus to a great extent done without expensive cartage, which is an important item in a general scheme of cheap transportation. This can only be secured by building the depots close to the docks, thus saving cartage, and railway and street connections for freight en route.

Another important feature in this scheme is that a graving dock and ship yard can be well located on the river side of the Hochelaga dock, where the largest ships entering the harbor could be docked and repaired, or new vessels built.