

The principle of Dams or Groins adopted, similar to that recommended by Capt. Beaufort and Mr. Rendel.

"floated well up, are now kept under water from the strength of the current. Not only had the dams and groins, suggested in Captain Beaufort's letter, and referred to in that I had the pleasure of receiving previously from you, been decided upon, but the mode of their construction. I had directed that the piles should be cut away at low water or a foot under it, so that the river on the "break up" would float the ice over them, and I had instructed Captain Vaughan to have "wattled in" among these piles, trees with their branches. The stuff excavated has also been deposited according to Captain Beaufort's ideas, namely, in stopping up the mouths of the alien channels; the result of which, the greatly increased current in the direct channel fully shews, and to the effects of a rake which I have had briskly at work, I attribute very much the disappearance of so great a mass of stuff beyond that actually taken up. So far as I can form an opinion, the nature of the stuff is of a fortunate consistency, sufficiently tenacious not to threaten silting up, and yet capable of being raked up and carried off by the current.

Anticipated benefits from the ice being grounded over and on each side of the channel, thereby producing "undercutting."

"You are aware that the ice on the great surface of the lake becomes grounded on the shoals. I expect much to be effected by this operation also, as the passage of a large portion of the waters of this vast river, instead of being diverted as heretofore into several small and crooked channels, will take place down the new straight one, and I calculate therefore, that considerable undercutting will take place. This I have observed invariably occurs in the second class rivers of this Province, wherever the bottom is not rock. The main groin, to throw the united volume directly down the new channel, we cannot complete until the channel is available to the trade.

When channel is obtained, a pier to be at each end with lights.

"When the channel is created, my idea is to construct at each end an isolated substantial Pier, with a Light-house on each; these, together with the straightness of its course will enable it to be used at all times, and I have no doubt the constant passage of the steam vessels will much aid the stream in the keeping clear and deepening of the channel.

Outfit.

"Our outfit consists of two Steam Dredges, with two engines, and one chain of buckets to each, working in the centre of the boats, also two steam-tug vessels; one of these is employed constantly at the towing of the scows, in which the other also assists, but when not so employed she works the rake. I am inclined to believe that we may be compelled to get a third, for if the Dredges work as well next season, as they did towards the conclusion of the past one, the services of the two tug-boats would be required at the scows. We have but one rake, but I will have another made this winter, there being many days during the season, when from the roughness of the Lake, the Dredges cannot work, but the Rakes could be used to great advantage; the discharging scows, fuel and attendant Lighters, compose the remainder of our squadron.

Why it is confidently calculated on that the channel will keep clear when once opened.

"That this channel when once opened throughout and with the greatly increased volume of water passing through it, will keep open, I have no doubt. The trees and other debris now annually brought down by the Yamaska and Saint Francis Rivers, are not carried out far comparatively into the Lake, but are deposited parallel with the south shore, and that the effects of these rivers will not be to obstruct or silt up the channel, I am of opinion is evident from the fact that they have not for the last thirty years, to which period my information extends, affected it in any sensible manner, although it has for that time laboured under the disadvantage of being stopped at

"the upstream end, and had therefore no "scour" through it."

I trust I will be excused for the length of these extracts from my communication to Captain Bayfield, but public attention being much drawn to this work, I felt it to be incumbent on me fully to explain all the details connected with it; this I could not do more simply than in the foregoing.

The whole amount of the appropriation for this work is £65,000, the sum expended £32,776 9 3, of which £27,291 has been the cost of the outfit of every description, applicable to any other work, leaving but £5,534 actually chargeable to this work. This balance will be sufficient to provide fuel, meet repairs, and maintain the full establishment at work for two years more, long before the expiration of which, satisfactory evidence will be afforded of what can be done.

I beg leave to draw attention to the chart of the Lake and section of the channel, which will be found in the appendix, (letters F. and G.)

RIVER RICHELIEU.

The works of the Lock and Dam near Saint Ours, River Richelieu for the improvement of this river, thence to the entrance to the Chambly Canal are all let, and are by the terms of the contract to be completed by the close of next season. From the respectability and experience of the Contractors, full confidence may be entertained that no exertion will be spared on their part to insure the accomplishment of this desirable object. The work done may be stated at

- 4,552 cubic yards of earthwork,
- 6,904 do feet of oak delivered,
- 1,778 do do pine timber delivered,
- 114,639 superficial feet of pine plank in work,
- 27,530 do do pine do.
- 476 cubic yards of stone prepared.
- 15,483 do feet of hemlock delivered.

RIVER OTTAWA.

The works connected with this River, for which an appropriation was made, were of two classes; one, the River Ottawa. various Bridges over the several Branches of the Works of two Ottawa near Bytown; with the causeways &c., connected therewith; the other, the construction of slides First, the on the Ottawa and on the Madawaska, one of its principal tributaries. several Bridges near Bytown. Second, the construction of Slides.

The former are all fully completed, and in use.

They consist of

- One Bridge 150 ft. in length, in spans of 24 ft. each. Bridges completed.
- Do. 159 do. one span of 111 feet.
- Do. 76 do. in one span.
- One wire suspension Bridge, 242 feet between the points of suspension, length of chains 487 feet each.
- One Arch of Masonry 44 feet span.
- do. do. 37 do.
- do. do. 55 do.

The entire of the foregoing with the causeways, toll-houses &c., are now open to the public. In the Appendix (Letter B.) will be found a schedule of Tolls to be levied at this Bridge, which I had the honor to submit for the consideration of the Executive Government some time back; and in bringing the subject before it, I recommended that the system of collection at this