

besides extensive preparations for the masonry. For the receipts &c., on this canal this year, see appendix letter E.

LAKE ST. PETER.

Lake St. Peter. The progress made during the last season towards the effecting of a direct channel through this lake, with an increased depth of water has been highly satisfactory, and far greater than was expected. The operations of next year, I feel confident will set at rest the vexed question as to the possibility of effecting this improvement. Being fully aware of the doubts which were entertained respecting it, and looking upon it to be one of those works, the success of which can be satisfactorily determined only by experiment, I took the precaution long before the work was commenced of sending a full statement of my views upon the subject, formed after having given it the deepest consideration, in my power to Capt. Bayfield, whose science and intimate knowledge of the lake, with its shoals, channels, currents, &c., justly entitle his opinion to be received with the greatest confidence and respect. I am happy to have it in my power to state, that that officer, duly impressed, with the great magnitude, importance and difficulty of the work, and without advancing any opinion for or against the practicability of the undertaking further than "that there is quite sufficient ground of hope to justify the interesting experiment," fully agrees with me as to the course that should be taken. He was pleased to say, "I agree so nearly with the views which you have communicated to me in your letter, that there remains little more to do than to express my concurrence therein." I was also desirous of obtaining the opinions of Capt. Douglas, of the Unicorn, which are thus recorded by himself. "I was with the Gulnare and under the command of Capt. Bayfield, R. N., when the survey of the lake was in progress and subsequently in command of a steamer (the Canada) for nine years, and was always of opinion that the present contemplated cut (the direct one) was the only one that would give a satisfactory result, and I have now no hesitation in recording my unchanged sentiments on that subject." The interest taken by Capt. Bayfield in the undertaking, led him to communicate with Capt. Beaufort, the Government hydrographer, on the subject, by which the benefit of that gentleman's opinion has also been obtained. Capt. Beaufort states that while reading Capt. Bayfield's letter, "a civil Engineer of considerable eminence, J. M. Rendel Esq.," entered, and that they discussed the affair "with all the earnestness due to an operation, so generous and praiseworthy in the conception, and so big with future advantages in its issue,"—the result of their deliberation he states to be, that the straight channel should be adopted, the shoal at the head of it dredged, and the channel generally deepened by the use of Rakes, and that by means of "Groins", formed of Piles, interlaced with large Brush, with the excavated stuff deposited around them, the waters of the several "alien channels", should be turned into the direct course, as much as possible. Among other practical and pertinent observations, Capt. Beaufort states that the "Rake has been tried with very happy effects," as well in the forming as in the successful preservation of channels.

In proportion as I had to contend with pre-conceived Ideas and Mis-statements, was I gratified at finding my opinion supported by such high authority as the foregoing, and as it is necessary that the plan of operations adopted should be fully stated, I take the liberty of here giving two or three extracts from a communication I lately had the honor to make to Capt. Bayfield on the subject, which explain at large the principles on which the selection of the channel and the course of proceedings were governed.

Progress very satisfactory.

Doubts entertained respecting the success of this work.

Precaution taken to have the opinion of Captain Bayfield, prior to the work being commenced.

That officer approves of the course adopted.

Captain Douglas also concurs in the course adopted.

The course adopted meets with the approval of Captain Beaufort, R. N. also of J. M. Rendel, Esq. C. E.

"For my part I was perfectly satisfied after much thought, that whatever is to be accomplished, must be in the straight channel and that the obtaining of a moderately increased depth of water, and of a direct course instead of the present very crooked one, were advantages certain to be derived from, and sufficient to justify the experiment. I have not been so presumptuous as to predict to what an extent, an increase of depth can be obtained, and I have taken good care that the outfit (which constitutes three-fourths of the expenditure up to the present time) is such as to be applicable to the improvement of the several portions of the upper Navigation, and of the Harbours on the Lakes which so much require it. From the very nature and magnitude of the Work, practical Men would be cautious and slow in coming to a decision, but in such cases, where, as I conceive, experiment in conjunction with theory and science must be resorted to, before any final and satisfactory conclusion can be arrived at, were they deterred from having recourse to it by unfavorable predictions, always plentiful on such occasions and as often emanating from very ill-informed sources, many of our noblest existing Works would never have had being." Again—"I have ever been an Advocate for following and acting in concert with "Dame Nature," especially in water operations, it was not therefore without a great deal of consideration that I took the direct south channel. I need scarcely repeat to you the reasons for so doing the power of diverting such a Mass of Water down it, its being capable of being made perfectly straight, the risk of collision being thereby much lessened, the only obstructions in it being at the head where we can bring the force of the St. Lawrence directly to bear on them—the great facility of our working in it, compared with the present circuitous channel used by the Trade, in which our Vessels, leading chains, mooring cables, buoys, anchors, attendant lighters, and tenders would be constantly in the way of and getting foul of the Vessels passing at all hours."

"The result of our operations this year are so satisfactory, and so far beyond what I had calculated on, that I do not hesitate to express to you my conviction that success is certain and will be speedy. I send herewith a section shewing the state of the work at the commencement and termination of the past season. It is formed from soundings taken most carefully by Captain Vaughan, our Superintendent of the work, in conjunction with Captain Raeside, the Harbour Master and Chief Officer of the Trinity Board of this city. Of the experience and capability of both these gentlemen, you are, I believe, fully aware. The soundings were taken on the 19th of the present month, on a calm day, and with a pole marked into feet and inches.

"Our machinery, at the commencement of the season was deficient in several respects, so much so, that from the many unavoidable interruptions, I consider we in reality worked not much more than half the season; yet the results, I am sure you will consider far greater than you could have calculated upon. By taking the most moderate measurement of the quantity of stuff which has disappeared, and comparing it with that which the united loads of the number of barges discharged daily during the season, (and of which a regular log was kept,) would give, it is certain that the quantity carried off by the current is equal at least to that absolutely lifted. The current has obviously and seriously been increased; on commencing, a man could scull across the channel easily with one hand, it now requires stiff pulling to get across it without drifting much. The original buoys we put down to mark our local, and which

Principal expenditure heretofore in outfit applicable generally to others much required on the upper navigation.

Advantages from adopting the direct channel.

Result of this year's operations very satisfactory.

Much loss of time from necessary repairs and defect in machinery.

The quantity of stuff carried off by the current aided by the rake equal at least to that raised.

Current thro' the new cut much increased.