

propriety of having vessels of eight feet draught of water across, if practicable, would be readily admitted; but it may well be questioned, whether to save the expense of loading and unloading at each end of a canal three hundred miles long, the expense of carrying two yards deeper than would otherwise be necessary, ought to be encountered.

It has generally been assumed, and perhaps too lightly admitted, that canals should be made on a perfect level. This axiom would not be questioned, if the transportation each way were of equal burden, if the distance or the frequency of good feeding streams were such as easily and constantly to supply, without danger of excess, the incessant waste of water by absorption, leakage, and evaporation, and if the waters to be connected were on the same level; but in a case like the present, rational doubts may be entertained. The difference of level being upwards of five hundred feet, all the descent which can prudently be obtained by an inclined plane, is so much saved in the expense of lockage; and in all human probability, the transportation for centuries to come, will be of so much greater burden from the interior country than back from the sea, that a current from the lake is more to be desired than avoided, more especially as it will, in some degree, counteract the effect of frost.

That inexhaustible stream of limpid water which flows out of Lake Erie, with little variation of height to endanger the canal, is a strong temptation to use it exclusively, until auxiliary supplies can be drawn from other reservoirs equally pure. Nor is it improper in this case to remark, that it is impossible there should ever be a considerable variation in the surface of Niagara River, at the mouth of Tonawanda. No supposable fall of rain or melting of snow, even if both were to take place at the same time, in the country which surrounds the great lakes, could raise, in any considerable degree, their extended surface. Indeed, we know from experience, that a greater difference of elevation at the mouth of Lake Erie, is occasioned by a change of wind, than by any variation of seasons. Admitting, however, a considerable rise of water no matter from what cause, at the source of Niagara river, it cannot suddenly, from the narrowness and shallowness of the channel, produce a correspondent rise at the foot of the Black Rock rapid; and the elevation there must, in the nature of things, exceed that which is occasioned by it fifteen miles lower down; especially as the river, including the two channels round Grand Island, has, for the greater part of the way, nearly three times the breadth which it has above. If, however, it were only a deep bay, the water pressed forward by the wind, would be piled up to a considerable height; but, instead of that, the river here, with a breadth fully double to what it has at Black Rock, precipitates itself over the first ledge, in its headlong course to the cataract, so that an increase of height is instantly counteracted by the increased rapidity with which it rolls over the rock.

In all events, it would be advisable to use this water, exclusively for a great part of the way, even if the country afforded other resources; and to this effect there must be some descent in the canal.

What the precise amount of that descent should be in every mile, the commissioners presume not to say. They do not pretend to sufficient knowledge on the subject, and with all proper deference, they refer it to a practical engineer.

Nevertheless, like other men possessed of common discernment, they perceive not only that the quantity of water which runs in a given time, must be proportionate to the rapidity with which, and the aperture through which it passes, but also that the rapidity itself will depend, not merely on the declivity but also on the mass, because, in a deep and wide channel, the friction must be less than in one that is narrow and shoal. It will depend also on another circumstance, whose effect, that single cause remaining the same, will vary according to such of the preceding circumstances as may be connected with it.

Admitting, for instance, a stream to be deep and wide in descending an inclined plane, its velocity will be accelerated. But if the inclination be not great, and the channel shoal and narrow, the friction may so counteract the descent as to retard the velocity. From these considerations it is evident, that the sum of descent must depend primarily on the quantity of water required. This in navigation ascending and descending by locks, must be greater than when carried along a plain. It must also be greater in a loose than in a stiff soil. Moreover, the quantum of descent required, must, after the needful supply of water is ascertained, depend on the length, the width, the depth, and finally on the course of the canal, whether direct or serpentine. And here the same common sense presents another important consideration. The amount of rapidity which may with safety be hazarded, will depend on the texture of the substance through which the current passes. No navigable velocity can injure a rock of granite, but a gentle current will sweep off the substance of bog meadow. In like manner, banks which resist, when the course is direct, may be eaten away, and the current itself be retarded, if propelled along a tortuous course. The commissioners cannot, therefore, too often repeat, that their report must be accepted as suggestions proceeding from a superficial view, and not as conclusions founded on sufficient and scientific investigation.

After this preliminary caution, they assume hypothetically, that a canal were run in such manner as that the average descent were six inches in every mile.

Casting an eye on the Map it will be seen that the first difficulty in the course will be to cross the Genesee, at an elevation of twenty-six feet above its surface. But unless the Canal be lowered down to that river, the expense of an aqueduct cannot be avoided, because from the upper falls, which are too high, there is little descent to the lower falls; and if, from any cause, it be advisable to cross it by an aqueduct, the addition of a few feet in the height will not much increase the expense. Indeed, considering the swell of the river in freshets, an elevation short of twenty feet would scarcely leave sufficient space under the arch. The next difficulty will be, in crossing the mouth of Seneca Lake by an aqueduct eighty-three feet high; but this also, if a convenient place can be found, will not be important, because a moderate aperture will suffice to void the equable stream from that Lake.

The third difficulty is at the mouth of Cayuga, where the elevation is one hundred and thirty feet. Even this might be encountered without any unusual hardship, if the hills approached each other, but the valley to be crossed is not much, if any

thing, short of a mile; and to erect a mound of that length and of the sufficient height and breadth, is an herculean labour. Whether it will be performed, must depend on the sum that undertakes this task, respecting which a few words may find their proper place hereafter. Supposing, however, that difficulty to be surmounted, it is believed that none will remain, which cannot be in a considerable degree avoided, by bending occasionally to the southward, and returning round the northern points of the hills, till the canal is brought opposite to Rome. Its elevation there above the Mohawk, will be forty-seven feet, or less, by one foot for every two miles that it may be lengthened. In a word, if, on due examination, a thing of this sort should be found practicable, instead of depriving the country of water, every drop of which is needed by its inhabitants, they will gain a great addition from the canal; and as to the navigation singly considered, there can be no doubt but it must in that way be superior to a waving course, ascending and descending by locks; for not to mention the expense of constructing & keeping them in repair, the time spent, & tolls paid in passing them, must considerably enhance the freight of goods. But if there be no lockage, and the toll be no more than is needful to keep the canal in repair, it will amount to so little, as not to merit notice in a calculation of freight. Rejecting it therefore, and allowing two horses and three men to take a boat of fifty tons burthen twenty miles a day, which is certainly within bounds, and putting the whole expense at five dollars on the landing downward, leaving the return load as profit, or, which is equivalent to reducing the distance one half, we have fifty tons transported ten miles for five dollars, being one cent per ton, per mile; to speak then in round numbers, it will cost three dollars to bring a ton from Lake Erie to Hudson's river, being little more than one half of what is now paid for freight on Lake Ontario, between Oswego and Lewistown. Without entering into calculations, which every person can easily make for himself, to enumerate the bulky articles which will derive value from such facility of transportation, it may be proper in this place to recur again to the commercial competition with our British neighbours.

A tolerable good navigation up and down the St. Lawrence already exists, but the cheapest rate at which transportation has been performed within the last ten years between Kingston and Montreal, according to the best information the Commissioners have been able to obtain, is one dollar per hundred ascending and half as much descending the river. But admitting the freight could be so reduced as to be on a level with that between Albany and New-York, admitting also that the transportation across Lake Ontario could be performed as cheaply as through the proposed canal, and even admitting that the risk on that Lake, and of course the premium of insurance, were nothing, still it would follow, that transportation from the head of Lake Ontario to Montreal, would cost as much as from the mouth of Tanawanto to New-York, leaving a preference to the latter of the cost of land carriage from Chippeway to Queenstown. Moreover nature has given, other things being equal, a decided preference to the port of New-York. There are, generally speaking, six weeks of navigation from Albany in the spring, before vessels can safely leave Montreal to descend the river St. Lawrence, and as many more in the autumn after the mouth of that river is closed.

The navigation from New-York is seldom obstructed, so that produce deposited there, can be sent to market during five months, in which at Montreal it lies a dead weight on the hands of the owner. This circumstance is of especial importance in regard to wheat and flour, which can be sent from New-York, so as to be sold in the south of Europe, before those articles can be brought from the Baltic, or gathered in the country. Whereas if shipped from Montreal in the month of May, they cannot reach Spain or Portugal until after supplies are received from Dantzic, and but a short time before the harvest, which is early in July.

Thus it is evident, that the canal will, if properly effected, turn to the United States the commerce of the upper Lakes. Moreover a side cut of five or six miles, would, by means of locks, connect it with Lake Ontario in the Harbour of the Genesee; and in like manner, a connection would be established with the Seneca and Cayuga Lakes, from the heads of which, the short portage by good roads to New-town and to Oswego, opens a communication through the Susquehanna to the Chesapeake. Nor is it improbable, that by running upon the west side of the Cayuga, means may be found to establish a water communication with the Susquehanna, from the great bend of which, a good and short road may be made to the Delaware.

Thus a variety of markets may be opened, to stimulate and reward the industry of those who are now, or may be hereafter, settled along the Great Lakes, whose shores, exclusive of Lake Superior, are upwards of two thousand miles, surrounded at convenient distance by more than fifty million acres of land.

To the question, what will the proposed Canal cost, it is not possible to answer with any thing like precision. Indeed preliminary points are to be adjusted, and of these the first is, whether it is to be made for sloops or barges. The expense of the former will, it is believed, be at least double that of the latter. Another question, whether it is to be carried along an inclined plane, or by a line ascending and descending, must be decided by a comparison of the expense, and of the utility each way. In general, however, it may be satisfactory to the Honourable the Senate and Assembly, to receive the information, which the Commissioners feel no hesitation in giving, that as far as they have been able to extend their inquiry, there is no part of the civilized world, in which an object of such great magnitude can be compassed at so small an expense. Generally speaking, the course is through a tract of country, the excavation whereof will be easy, and there is at convenient distances from the spots where it may be wanted, a sufficiency of freestone as well as of limestone, with a superabundance of fuel. The subsistence of men also, and of cattle, will be abundant and cheap. The wages of the former are, as is well known high, but measures may certainly be devised, to obtain the labour for so great a public work, more cheaply, than is practicable in private operations, on a small scale. But the Commissioners beg leave to observe, that no supposable expense can bear an undue proportion to the value of the work. Thus were it, by giving loose to fancy, extended to fifty millions of dollars, even that enormous sum, does not exceed half the value, of what, in all human probability, and at no distant period, will annually be carried along the Canal.

The more proper question perhaps is, in what time can it be effected? For if an annual sum be appropriated, and secured on a solid fund, it will be effected in time, and the greater the sum the shorter will be the period. The Commissioners have no doubt, but that good bargains for the public, may be made with those through whose land the Canal shall pass, and they have great pleasure in stating, that generous offers have already been made by many proprietors, the acceptance of which must necessarily be deferred to the moment, when the business assuming a more substantial form, shall be committed to superintendants duly authorized to treat. Enough has been said to show that no accurate estimate of the expense can as yet be made. To give some general notion, however, it may be assumed, that in common cases labourers ought to dig and remove to a reasonable distance, eight cubic yards per day. The excavation may therefore be set at the eighth of a dollar per cubic yard, an average breadth of fifteen yards, & depth of one yard, which by means of the mound on each side, will be sufficient for four and a half to five feet of water, giving for each yard in length, fifteen cubic yards, may therefore be taken at two dollars, and the mile at three thousand five hundred and twenty dollars, but allowing for the obstructions of trees and roots, not less than four thousand dollars. This gives for three hundred miles, one million two hundred thousand dollars. The excavation needed, to bring a column of water fifteen yards wide, and two yards deep, with sufficient descent from the Tanawanto, through the middle steep, will at the same rate, cost two hundred and fifty thousand dollars. Thus, to speak in round numbers, the Canal alone might cost a million and a half, even through a favourable soil, lying conveniently, without the opposition of rocks or other impediments. Many of these, however, must be expected, and will perhaps double that sum. Another great expense is that of locks and aqueducts. It is said that the former will cost at the rate of one thousand dollars per foot of ascent for a vessel of fifty tons; this is believed to be a low estimate. At any rate, in a Canal like the present, there must be a double set, one for the ascending and one for the descending navigation. Even then it is to be feared that there will be much embarrassment and delay. Thus the lockage being taken at two thousand dollars per foot, for three hundred and forty feet of descent and ascent between Lake Erie and Rome, will cost six hundred and eighty thousand dollars, should that waving course be deemed advisable. From Rome to Hudson's River, a descent of three hundred and eighty feet, will call for an addition of seven hundred and sixty thousand dollars. If then the locks be put at a million and a half, it is the lowest rate which can prudently be supposed. It would, indeed, be safer to set them at two millions. There will still remain for aqueducts, embankments and mounds, a considerable expenditure, which cannot at present be ascertained. To estimate the expense of aqueducts, it may be advisable to put the cubic yard of masonry at two dollars, and consider the aqueduct as a solid mass. It is true, that not more, perhaps, than one third of the materials required for a solid mass, will be used, but the workmanship on those materials will be much more costly; many of the stones must be hewn, and many clamped together with iron; moreover, the expense when such buildings are raised to a great height, is proportionately greater than when nearer the earth. An aqueduct over the Genesee may, perhaps, be one hundred and fifty yards long; but to avoid mistakes, it will be more advisable to suppose two hundred. The height above mentioned is twenty-six feet; but as well to obviate mistakes, as for convenience of calculation, it may be taken at ten yards, and in order to preserve the full breadth of the Canal, the aqueduct may be considered as twenty yards wide. Thus we have a result of forty thousand cubic yards of masonry, which, at two dollars, will require an expenditure of eighty thousand dollars. A remark which will not escape the most cursory observer, is, that a single set of locks, to ascend and descend five and twenty feet, will cost fifty thousand dollars, at the lowest estimation; and on the system of level canals, the descent in this case is sixty five feet. Excepting the Genesee, no considerable aqueduct will be needful, because the streams from the lakes being equable, small arches may be turned over them, and the canal be carried along a mound of earth. The expense of such mound must depend on the convenience of obtaining materials. Where hills of sufficient elevation in the neighbourhood, give the advantage of running along wooden rail ways, or where the transportation may be by boats along the canal itself, a mound will cost but little, compared to that which is raised solely by the labour of men and cattle. All estimates, therefore which are not founded on exact local knowledge, must be vague and uncertain. Assuming, however, as a basis, the price of one dollar for eight cubic yards; to estimate the expense of a mound over the Cayuga Lake, one hundred and thirty feet high, and sixty feet wide on the top, with an inclination of five and forty degrees in the descent of the side, we have at the base, one hundred and ninety feet, giving a mean width of one hundred and twenty five, which, multiplied by the height, one hundred and thirty, is sixteen thousand two hundred and fifty feet, or in round numbers, one thousand eight hundred square yards. These, at the eighth of a dollar each, will cost for every cubic yard of the mound in length, two hundred and twenty five dollars. Allowing, therefore, two thousand yards instead of a mile, so as to compensate for the expense of an arch two hundred feet long, with a span of fifty feet over the stream, and for other contingencies, the whole cost might be four hundred and fifty thousand dollars, perhaps half a million.

Under the impression resulting from these observations, it is believed, that one million of dollars would provide for every thing of this sort, so as to bring the canal to a reservoir near Hudson's river, without locks, for four million of dollars. A descent there, of from three to four hundred feet by locks, would cost, perhaps, another million; or if it should be deemed more advisable to transport by rail-ways, the water used for machinery, would probably yield a rent sufficient to keep the canal in repair. The Commissioners hope they shall be excused, if in this place, they advert to a question more important, perhaps, than any other. By whom shall the needful expense be supported? They take the

liberty of entering their feeble protest against a grant to private persons or companies. To give a national interest is at stake. It must not be the subject of a job, or a fund for speculation. Among other objections, there is one important, that it would defeat the contemplated extension of transportation. It should always, on occasions of this sort, be recollected, that the reasons adduced for grants to individuals in Europe, apply more here. Few of our fellow-citizens have more money than they want; & of the many who want, few find facility in obtaining it. But the public can, daily, at a fair interest, command any reasonable sum. Moreover, such large expenditures can be more economically made under public authority, than by the care and vigilance of any company.

It remains, therefore, to determine, whether the canal should be at the cost of this state, or of the Union. If the state were not bound by the Federal band, with her sister states, she might look for compensation from those who own the soil, and the great lakes, for the permission to cut through at their expense. Or her statesmen might deem it still more advisable, to make the canal at her expense, and take for the use of it a transit duty, raising or lowering the impost as circumstances might direct, for her own advantage. This might be the better course, if the state stood alone. Unfortunately for the peace and happiness of all, this is not the case. We are connected by a bond, which if the prayers of good men are favourably heard, will be indissoluble. It becomes proper, therefore, to resort for the solution of the present question, to principles of distributive justice. That which profits itself is the true adage, that those who participate in the benefit should contribute to the expense.

The Commissioners presume not to go one step further. The offers of individuals already alluded to, show their conviction of that equity by which the state is called on for her share. The whole, as well as justice of the national Legislature, will, no doubt, lead to the exercise on their part, of prudent munificence; but the proportion, the conditions, the compact, in short, must be the result of treaty. Whether the honourable Senate and Assembly will take steps towards a negotiation, what these steps may be, it is in their wisdom to determine.

All which is humbly submitted,
GOVERNEUR MORRIS,
STEPHEN VAN RENSSLAER,
WILLIAM NORTH,
DE WITT CLINTON,
THOMAS EDDY,
PETER B. PORTER,
SIMEON DEWITT.
New-York, February, 1811.



FOREIGN.

From London Papers to the 11th March, received at Boston, by the Alert, in the short passage of 20 days from Liverpool.

March 1. Yesterday his Royal Highness the Regent held a court at Carlton House, when Mr. FOX, the American Minister, took leave, previous to his departure from this country.—Gazette

Mr. PERCEVAL, in the House of Commons, March 1, informed that Mr. PINKNEY, the American Minister, had taken his leave of the Regent, previous to his return to the United States—that the negotiations on the points in discussion (the right of search, imprisonment of seamen, and the Orders in Council) had been broken off—that Mr. P. would leave to Charge des affaires to carry on the usual correspondence between the two nations—and that Mr. FOXER would carry out to America immediately propositions, which he thought the American government would not refuse to adopt.

Mr. PINKNEY's return is not in consequence of any unfriendly result of the negotiation between the two countries. He leaves a Charge des affaires to carry on diplomatic correspondence; and Mr. FOXER proceeds immediately to America, as our minister. We repeat, that whenever the French decrees are repealed in good faith, we will repeal our orders, and not before. Mr. PINKNEY now knows those decrees are not bona fide repealed; and Mr. SMITH, the American Secretary, in a letter to Gen. Turreau, has explicitly declared that the decrees were not repealed—"the seas only, and not the means, has undergone an alteration."

H. of C. Mar 4.—Mr. Whitbread rose to ask an explanation of the reply made by the Chancellor of the Exchequer to a question of his, respecting the negotiation with America. He understood the right hon. gentleman that the discussions between the two countries had not broken off; but he had understood out doors from good authority, that no discussions were now depending and that the charge des affaires was not instructed to continue the discussions.—With respect to the correspondence, the Ministers might as well publish it, if they did not, the American government would, long before the arrival of Mr. FOXER in America.

Mr. Perceval said he must have been misunderstood by the gentleman, if he thought he had said that the charge des affaires would continue the late discussions. This was certainly not the province of a charge des affaires, and therefore those discussions were terminated in this country previous to Mr. PINKNEY's taking his audience of leave. The discussions were not, however, closed; and the minister who was going to America would take over propositions which he conceived to be entitled to a favourable reception in America. He doubted the out-door information the gentleman had received.

Mr. Whitbread said his information was derived circuitously from the American Minister himself.

March 11. The state of the health of his Majesty is most satisfactory.

French Decrees.—The Paris Monitor, of March 16, repeats, that the French Decrees are repealed with respect to America, because America is taking measures to cause her flag to be respected; and because she refuses to submit to the British orders in council; but she is not repealed with respect to those neutrals who will oppose those orders. It adds—"Every flag which a feeble and pusillanimous nation suffers to be insulted and denationalized, can no longer on that account, be recognized as neutral—it becomes English. The Berlin and Milan Decrees will forever remain the fundamental law of France, because they arise from the nature of things; and when England resumes her paper blockade the Decrees of Berlin and Milan will be established in their full force."

French Capture.—In the brig Harriet, capt. Ward, from Lisbon, came passengers, capt. Malcolm and crew of the brig Sumner, of Warrenton, from Liverpool for Lisbon, laden with wheat; and capt. Powers and crew, of the Brig Endeavor, from Lisbon for Marblehead, with salt, and 100 merino sheep. [The above mentioned vessels were captured and sunk by the French frigate Renouart, North 26,