

With reference to the abstract of obstructions to be overcome, the 1st or nine mile rapids present the most formidable, the natural rise to Widow Harris' at the then lowest pitch of water being 116 feet 5 inches 9-10ths.

These being a continued succession of rapids, cascades, chutes and shallows, until reaching the small pond of still water near the Highlands above O'Connor's Tavern, I propose surmounting by the construction of dams and locks, with the requisite excavation for the foundations and entrances, as shewn on the sections, placing the first or entrance lock in the now dry channel at the head of

#### Lock No. 1.

\*By nine Dams shore as a line of ingress, as shewn on the detailed plan. The navigation keeping the channel of the river,\* until reaching below Robinson's Mills, at which point marked on the plan, a collateral cut will be required for a short distance into the still water at O'Connor's, which being raised eight feet, will sufficiently drown the Highland Rapids to throw the requisite depth into another collateral cut, as shewn on the detailed plan, along a meadow, chiefly through rock excavation, upon which I propose to have Lock No. XIII. of 9 feet lift, which will carry the communication into the navigable sheet above Widow Harris's house, at which point the Wing Dam, as shewn, will be required to raise the water sufficiently to ensure the necessary draft of water over the shallows above Lewis Bush's, and before coming to the foot of the little or Chisholm's Rapids, at which place the second Section commences, and which, although of no continuance, and the rise apparently trifling, being only 8 7 8, yet presents considerable difficulty, and which may be overcome with most advantage by one lock of 10 feet lift, the difference from the natural rise (8 7 8) occasioned by raising the long reach above, and by 1100 yards of excavation through lime stone rock, of a nature easy of excavation, and of suitable material for the lock, &c., as the rate per estimate will shew. This section will cost £13814 7 6, and bring the navigation into what I shall (for distinction) call the *Percy Reach*, extending 12½ miles to Percy Landing, the waters of which, however, will require to be raised as shewn in Sections, 1 foot 4 inches 2 by the construction of a Dam at the head of Chisholm's Rapids, on the Table Rock, in order to afford a sufficiency of water the rocky shallows opposite to the Government place from the head of Long Island upwards; and will cost, as per estimate, £400 0 0 Halifax Currency, and ensure a perfect navigation to the foot of Section 3d or Percy Landing, which place is by nature calculated for the reception of any number of vessels, from its extended Bay (Trent Lake) and the secreted coves issuing from it.

From this point to Crow Bay (termination of section 3d) a distance of 12½ miles, the river does not, upon the whole, afford such opportunities of improvement by damming, particularly the first 1½ mile. From Percy Landing at point A (being the deepest and most convenient spot for leaving the river) the navigation must follow a collateral cut along the West shore in suitable excavation, until reaching Myers' Mill pond, as shewn on the plan, rising 23ft. 8, 8, by 2 Locks of 12 & 13, 7 and from which, until reaching Wilkins' Mills, a distance of 2 3-8 miles, the river, from the fortunate circumstance of being divided by a long Island, extending from Percy Landing, offers every facility that could be wished, as the whole of the water can be turned down the back or main channel during the excavations from the bed of the river, which must be lowered at the different points, as shewn on the Section, to save raising the dams to an inconvenient height, and consequent embankments, the banks for the greater part (to the head of Long Island) being rather low—then from Myers' mill the navigation will be carried to the foot of the Big Falls or Wilkins' Mills by 2 locks, 2 dams, and the different excavations from the bed the river.

From the waters immediately below the Falls, which are of sufficient depth, and only require to be deadened by the Dam, head of Long Island, the line of navigation must leave the river until reaching the Table Rock rapids above the Falls, or to Wilkins' boom, a distance of 1430 yards, for which purpose, as favourable an opportunity presents as could well be conceived, along a natural hollow or ravine, coursing by the rear of Mr. Wilkins' house and leading nearly to the point where it is intended to rejoin the river, at this place three combined and two detached Locks will be required to carry the navigation over the Big Falls, their contributory rapids and table rock chute, into the river above the boom, making a rise of 39 ft. 11 in. chiefly through favourable excavations.

From the waters immediately below the Falls, which are of sufficient depth, and only require to be deadened by the Dam, head of Long Island, the line of navigation must leave the river until reaching the Table Rock rapids above the Falls, or to Wilkins' boom, a distance of 1430 yards, for which purpose, as favourable an opportunity presents as could well be conceived, along a natural hollow or ravine, coursing by the rear of Mr. Wilkins' house and leading nearly to the point where it is intended to rejoin the river, at this place three combined and two detached Locks will be required to carry the navigation over the Big Falls, their contributory rapids and table rock chute, into the river above the boom, making a rise of 39 ft. 11 in. chiefly through favourable excavations.

From hence to Crow Bay the river presents every opportunity for improvement with the exception of the Crow Bay or middle rapids, at which point a collateral cut from No XXVII, at the foot of these rapids to No. XXIX. foot of Crow Bay, will be required with 3 locks, through rock excavation of well bedded limestone; from the Boom to this point (XXVII.) requiring (comprehending the still water at Major Campbell's) 2 locks and 3 dams, the whole rise being 58 ft. 5 in. 3 from Wilkins' Boom to Crow Bay, with the increased head on the Bay necessary to cover a table rock to the requisite depth.—This section from Percy Landing will cost £113,714 13 4, which brings the line to the Forks at the foot of Heeley's rapids, where commences section No. 4, which rising 72 ft. 9 in. 5 in a distance of 1½ miles, I propose surmounting by 8 locks 3 dams and 220 yards of excavation, as shewn on the section for this place, in the following manner, viz.—At or near the Forks, by the construction of 3 dams 14, 13 & 13 feet in height by 180 feet in width with 3 locks of 9 ft. 6 in., 8 ft., 8 ft. lift, which will back the water into what may be termed Entrance Bay, at the foot of Heeley's Falls, from which point in a direct line to the summit water of the *Long Reach*, a ravine leads, in every respect calculated to assist in overcoming the difficulties on this important station, and which may be accomplished by the construction of one detached, three combined, and one regulating Lock, making a total rise with the increase of head on summit level of 76 ft. 11 in. 5 pts. requisite as afterwards will be shewn, and will cost in all £32,892 2 5 bringing the navigation into the 14 Mile Reach, on which however there exists three different impediments to more than 18 inches draft of water, and which are tinged on the general plan amounting in all to 4 ft. 2 in. perpendicular rise, which, together with the complement of water required over the Upper Shallow (say 3 feet) make a total of 7 ft. 2 in. The surmounting these, I had in contemplation to accomplish by part excavation, and to have towed up Craft by a Machine suitable for the purpose, but after taking into account the comparative trifling damages which would arise, from raising the level of the Long Reach, and the facility of doing so at Heeley's Falls, the adoption of the latter measure, would seem the more advisable, and which is intended to be effected by a dam across the table rock at the summit of Heeley's Falls of 13 feet in height and