Canal

Providence January 2. 1826

Dear Sir

Your Estimate pages 26 and 27 of Dec. was duly received Some little delay has occurred to procure the original field book containing the information you requested from the levelling on the Blackstone Canal —

The whole fall from the Village of Worcester to the tide water in this town is 451.71 Feet. and from Burbanks Mill pond to tide water 434 44/100 Feet. —

It is gratifying for me to learn that my levelling on the Connecticut River agrees so nearly with Col. Baldwins — And although I could wish there was less difference yet possibly some part of it may be occasioned by the different elevation of the water in the river at the time when the levelling was performed Respectfully Your Obt Servt

Holmes Hutchinson

Holmes Hutchinson to Jon. Seaver Jan. 2. 1826. Canal Worcester survey

Jon. Seaver Esq.
Worcester Mass.

Gen. Canal

Boston

10

1826 Canal

Canal

Harrisburg Canal Office

Harrisburg Jany 21st 1826

Laomi Baldwin Esquire

Dear Sir,

your letter of the 9th instant to myself and of the 11th to Mr Wm L. Barron were both missed in my absence at Philadr which circumstance, has occasioned some delay in replying. At a meeting of our board of Managers this day, convened for the purpose, they have unanimously agreed, and accept the offer contained in your letter to William L. Barron - to wit, "That you will devote six weeks, or two months of your time to the Service of our Company, to Commence with the 1st of next month, February, during which time you could make all the Surveys examinations &c. pre paratory to the Commencement of our work: and further, that if existing engagements should not permit your, we might expect your continuance with us, for a longer period, or until our canal should be finished."

Our board of Managers are much gratified with the prospect of obtaining your Skill & aid in the location of our Canal, on various accounts, which will be Communicated, when we may have the opportunity personally

Laomi Baldwin Esquire
Boston
Mass
Paid 18¾
PAID

HARRISBURG PENN
23 JAN

1826

Canals
J. Forster
Print Sec

John Forster, Jan. 21. 1826
Ans. Jan. 29. 1826

I am directed to request, that you will not delay your preparations to start for this place, on the 1st of May as proposed; and if any thing shall have occured, to prevent your coming on at that time, you will immediately advise us, upon the receipt of this. —

We will look for you to be with us about the 5 or 6th of next month. —

I am Dr Sir

Very respectfully

your Obt. Servt.

John Forsters Pres. &c.

Canal

Canal Amherst County Virg[a] 10th July 1824

My dear Sir.

I received your esteemed favor of the 16th ult., by the mail of last night: and, this being a rainy day, I embrace the leisure it affords, to thank you for it.

Your opinion, on the subject of the depth which sh[d] be given to our canals, has ever been mine: and the sole difficulty I have felt upon the subject, has been the necessity either of increasing the width, to attain depth; or to encounter great expence in protecting the steep sides of a deep & narrow canal. Upon James River, we have given a slope of 2 horizontal, for 1 perpendicular inches. I never thought it shd be less than 2 for 1— And so far as my observation has extended, the bank of a canal, after being for a time in use, takes a slope nearer 3 for 1. Where stone is abundant, I would pave the inner bank, or even build a perpendicular wall. From experience I know it may be very cheaply done. (1) And even where stone is not so cheaply obtained, the expence of repairs incurred, by the washing of the banks of a canal, would justify a very considerable expenditure in the first instance. The pavement of the banks of the intended canal at Louisville, has been contracted for at less than 12½ cents per square yard; & the work is equal to the best street pavements. — Altho by increasing the depth of canal, the passage of the boat will be greatly facilitated; yet, as there will necessarily be a considerable surge on both sides of the stern of the boat, the propriety of protecting the towing path bank, with a pavement, will not be obviated even in a wide & deep canal. In the section of the James River canal, operating at this place, the superabundance of stone, would enable the com-

into the lock, in a line nearly corresponding with the length of the lock, it causes so strong a current towards the lower gates, as to force the boat against them with great violence. — Some of the stone used here, I fear, is of too soft a texture. —

The section of canal here, has surface width 30 feet; bottom 18 feet; 4½ feet depth. The inside slope of the banks in both sections, is 2 inches horizontal, for 1 2 inches perpendicular.

Your opinion that "little absolutely useful has been done in Virginia" is comparatively true. Very little has been done in comparison with what sh[d] have been done, if all the resources of the State might have accomplished. This is owing to several causes. Among others, None of our leading public men appear to take any deep interest in Works of internal improvement: but give all their attention to subjects more purely political. The hackneyed subject of "State Rights," occupies all their thoughts: and they will neither impose on Country themselves, nor suffer Congress to do it. The transfer of our friend Mercer, from the State, to the Federal legislature, is greatly to be deplored. I have used every effort to recall him; but am opposed by obstacles which he, for the present, deems invincible. Another obstacle to our improvement, will be found in sectional jealousies, caused by supposed rival interests. The Roanoke, Appomattox, James River, Rappahannock & Potomac districts, are each anxious that the public funds shall first be applied for their benefit. None are willing to postpone their claims, in favor of others: the consequence is, that instead of commencing with energy, & prosecuting to its speedy completion, some one of the most important public works, & then turning to another, the public funds are pitted away upon a great variety of works, & are inadequate to the production of any great & palpable good. From the revenue of the Fund of Internal Improvement, there has been subscribed & paid to various Turnpike Navigation companies

(1) Much the greatest portion of the Canal making through the Blue Ridge, I have no doubt of the practicability of making the Canal of such a width at bottom, & with such a slope of the banks, as to render it unnecessary to have any stone walling. I would rather have some loose stone thrown down along the margin of the water, where there is already a slope of 45 degrees, than to be at the expence of building a wall. Where the Canal is cut in Slate rock, I think it would be advisable to substitute an entire wall, instead of the slope. The Engineer of the James River Canal, Mr Davis, has made a small experiment of this kind, which has succeeded well.

tractor to pass the banks, (or rather the bank,) for $1400 a $500 per Mile. The Engineer, myself are not upon good terms: such is the suspicious character of the man, that such a recommendation coming from me, would be attributed to some selfish motives. Indeed pain occurrences which have taken place, I may since informed Colo Anderson, the Commissioner, of my determination to operate the orders of his Engineer, without expressing either disapprobation, or approbation of his plans: As I was determined to give no advice, which should subject me to imputation, or suspicions, of selfish interested motives. The aforesaid Character appears to believe all the world, (of course except himself) to be destitute of honesty. And real base his other qualifications for the station he fills, you may judge, when I tell you that, except the old canal at Richmond, (along which he has sometimes navigated a boat,) he has never seen any work of the kind. Nor had his practical ignorance upon the subject of Canals, been corrected by the perusal of a single author upon their Theory: A levelling instrument he had never seen. The first Section of this Canal in the Mountain, was laid out by the Young gentleman, in whose favor I wished to interest you: All the knowledge possessed by the new principal Engineer, was acquired by him while attending upon Purcell. The latter soon discovered that he was expected to instruct the man who was to supercede him, as chief Engineer; & very naturally, became less communicative. A quarrel was the consequence; & Purcell has been transferred to the section on the South side of the river, leaving the completion of the location on this side, to Colo Peyton. But to return from this digression, and respond to your enquiries.

Locks. Upon the Canal between Richmond & Maidens Adventure, (as Contractor) Hill, There are 8 lift, & 3 Guard locks. Of the former, 4 built 2 of 9.25 feet lift each: & 3 of 7.75 ft. lift each — There are 2 of 6 ft. & One of 4 feet lift. The last one I think was unnecessary, & that the four feet ought to have been added to the 23.25 ft composing the lift of the 3 locks before mentioned. Such a course would have enabled the Company at a future day, to extend a lateral Canal up the valley of Tuckahoe Creek, one mile & a half further than can now be done. That valley abounds in Coal, which is only beginning to be worked.

Each of these lift & guard locks, is 16 feet wide & 80 feet long, measured from the heart wall, to the point of the lower gates, when closed. The four first are of hammered granite; & the others of freestone. All of them handsome specimens of masonry. The canal in that Section (28 miles long) is forty feet at surface water; 28 feet at bottom, 4 3½ feet deep.

In the Section now under Contract at this place, (7 miles long,) there will be 12 lift locks, & two guard locks: all of red sandstone — not unlike the red sandstone used in the City Hall of N. York. The lift of these locks varies from 9.25 ft. to 8.25 feet. the greater lift being in the higher part of the Section. The width of all these locks, is 16½ feet — length from heart wall to lower gates when closed 75 feet — in other words from head port, to heel port 79½ feet. The four first locks, counted on the lower Section, are filled thro' cast iron Cylindrical Culverts, entering at the angles of the heart, & chamber walls of the locks. All the others, on the lower, as well as upon this, Section, are filled through Stone Square Culverts, entering through the side walls, four feet from the heart wall. According to the plan furnished by Mr. Crozet for the locks here, the water was to enter the Culvert, by apertures in the return walls, at the head of the locks; & to be discharged into the lock at the angles of the side & heart walls, as I recollect was done in the four locks first mentioned. One of the locks I have built here, conforms to this plan so far as regards the admission of the water from the Canal into the Culvert. The objections I had to this plan were 1st. as to the plan of admission; that if any accident befel the Culvert, or its Cast iron gates, there would be a necessity of forming a dam across the Canal at the head of the lock, to get at the Culvert for repairs: whereas, when (as is usual) the entrance into the Culvert is made behind the Lock gates, the water can be stopped, by planks dropped in the Grooves cut, for that purpose, in the entrance walls.

2d. as to the outlet of the Culvert: when the water is admitted

opinion you entertain of their efficiency, & consequent advantages.

I am writing amidst the noise, & confusion, caused by my 8 young children, whom the weather confines to the house. This must be my apology for the obliterations with which this very hasty letter abounds.

With sincere esteem & friend
John G. Gamble

Free
Col. S. Baldwin
Engineer
Harrisburg
Pennsylvania
Canals
1826
Col. S. Wool
U.S. Army

P.S. The day you were not at the King of Canada, you visited the state of Maryland: & at any time within a fortnight, upwards of sixty miles, you might

10 Feb. 1826

the sum of $410000: besides $187500 lent to some of same companies. Exclusive of the above there has been expended upon the James River Canal - & road between Dunlaps Creek, & the Great Falls of Kanawha & upon the Kanawha River, the sum of $1030000: this sum has been borrowed upon the credit of the State. The rights of the James River Company, now belong to the State; & altho' the works in prosecution, are conducted in the name of the Corporation, it is a State work. To complete what is now under Contract upon the James River Canal, & upon the Kanawha River, will probably require $170000 more. I have been so long remote from the sources of precise information upon these subjects, that I cannot say how much of this large sum will have been expended upon the James River Canal: but I conjecture not less than $930000. The work which will have been done, will consist of 28 miles of Canal in the lower Section, 27 Miles upon the Mountain section. The rebuilding 2 old dams & erection of 3 new dams - at Fines Fish dam: at Ellicotts Advantage Falls & at Watkins Falls, near the Mouth of the North branch. Each of these dams has a lock for the passage of boats - 8 lift, & 3 guard locks, upon the lower Section; & of 12 lift & 2 guard locks, in the Mountain Section. A Stone Aqueduct X Dever, Stony, & Tuckahoe Creeks - & large Cast iron Culvert of four 80 to 100 feet Span, at Conoco & Evitham Creeks. Two Cut Stone Aqueducts of nine Ordinary Arches (80 feet Span) upon the Mountain Section. The James River Canal so far as it will have been completed, will cost about $22000 per Mile. Under the direction of Engineers of Science, & ability, the same work might have been done for much less. Our contemptible notions of economy, in the Salaries of Officers, to whom is entrusted the conduct of Works involving great expenditure of money, as might naturally have been expected, has caused us to pay dearly for our folly. When we will be cured of it, I know not.

How does it happen that a Marine Rail way, "to haul up ships" is resorted to in Boston? Does not the tide rise high enough for the erection of Dry Docks? I had supposed that the safety, & facility, with which ships can be repaired in these Docks, would give them a preference over any inclined plane. ✱

But speaking of rail roads, reminds me of importuning you for information relative to the subject which now seems to fill so large a space in the public mind. I mean transportation of produce upon our rail roads, by the agency of loco-motive Steam engines. I have always doubted whether, with safety, a carriage could be propelled upon a crooked rail road, with a velocity of even five miles per hour. Now, I perceive, a velocity of 8.10 & 12 Miles, is spoken of. Your recent tour through England must have afforded opportunities of knowing all that had been accomplished in this way. If it be the greater interest in this enquiry, from its connection with a scheme I have much at heart - viz the conception of James & Ohio Rivers in the best practical manner.

Gloomy as it, at present, the prospect of success in such a project, my motto ever has been, "Don't give up the Ship": and it is my purpose to endeavor to rouse the attention of Virginia to the paramount importance of effecting this conception alluded to, by a Tunnel thro' the Alleghany; & a continued Canal from Richmond to Point Pleasant. If this new application of Steam can produce effects spoken of, it might be advisable to substitute rail roads from Richmond to the Great Falls of Kanawha, in place of a canal. The objections to a change in the mode of transportation, as well as to a change of Carriers upon the same route, are so many & strong that nothing but the most satisfactory proof of the cheapness, speed & safety of this new mode of conveyance, ought to recommend it. Considering the amount of lockage, & the intrinsic difficulty of a considerable portion of the ground, the communication by a continued canal would cost a vast sum of money: but, in my opinion, not more than the object would justify, & the commerce repay. If the Ohio river, & the two Ohio Canals now making, were lakes, connected with each other, I should find no difficulty in persuading the State of Virginia to undertake a canal which, would bring the produce of their shores, to our Metropolis. And yet, a minutes reflection will satisfy a sensible man, that for safety, certainty, & convenience [illegible] such a canal as I am describing, is much superior to a combination of Lake & Canal navigation; and that as the Country bordering upon the Ohio & Ohio Canals, exceed, in fertility of soil, the Country bordering upon the Lakes, the Commerce which would float upon our Canal, would exceed that which the Erie Canal will accommodate. From the mouth of Kanawha, to the Scioto Canal, at Portsmouth, pursuing the Meanders of the Ohio, is only 84 Miles; & about the same distance from the Scioto to the Miami Canal, at Cincinnatti. The length of Canal from Richmond to Point Pleasant would be, about, 480 Miles. A toll of One & half cents per Ton per Mile, upon only 200,000 Tons of produce transported upon it, would pay 6 per Cent upon an expenditure of twenty four Millions of dollars, if it did cost so much.

I will esteem as a particular favor, the communication of such facts, as you may have collected, relating to the rail road system - and the

✱ Will you be so good as to describe from the manner the Locks are hung: & the machinery by which such large gates are moved & closed.

Dear Brother Boston Feb 25 Saturday 1826

Canal

of the Canal Reports

The Government allowed 12 copies each to Commissioners & Engineers

Your 12 copies I have got & have sent 6 of them to you - by Sch.r Eleza & Jane. Capt Cobb master to Philadelphia to Care of Messrs A. G. Barclay - Consignee of the Vessel Isosphere - she will sail today or tomorrow. - I have sent copies of the Reports also to all the Gentlemen on your list excepting Mr Vaughan - Peirce & Quimby On sending one over to Dr Wyman - he returned the following note. - "Charlestown Feb 23 1825

" Dr Sir - Permit me thro you to tender my thanks to your Brother Loammi for his
" very acceptable present of a copy of his report on the Canal &c. - Please make my
" acknowledgements to him when you may write to him or see him. -
" I believe your Brother has made the surveys quite acceptable to the Commissioners
" and honorable to himself. He is certainly acquiring a high reputation as
" an Engineer & I have no doubt his opponents (I will not call them rivals)
" must soon be quiet. - I suppose the southern hostility is mainly to be attributed
" to an individual, who is fast ceasing from troubling." yours &c

The Courier has found fault with Genl. D. french words - but says that the Engineer is contented with calling things by their more common terms, such as those who are mainly to read the report can understand - "Bend" & "Survey" &c in your report are more satisfactory, & would suppress them french words. —

Loammi Baldwin Esq.
Engineer
Hamilton
Pennsylvania

Mail

1826

Feb. 25. 1826
Read. March 2. 1826

J. F. Baldwin.

George has not come back yet. — I heard of you to day by the letter to Capt Tracey — which by the bye is incomplete — you must have left out one sheet of the letter I think as we cannot understand it as it is — he has only 2 sheets. — We are tolerably well though I am not very strong yet. — The Papers say Sampson Wood of Groton D. Sheriff hung himself with a draught Chain a few days since. — I have rec'd a long double letter for you from John G Gamble dated Canal Amherst County Virg 10 Feb'y 1826 about Canal &c — which I have not read & hardly think it worth while to send it to you until I hear from you..

I paid True & Green. 17.50 for your 25 Report & rec'd 22.

I hope you will write me soon after you get to Harrisburg & as soon as you find out how long you may there be engaged

I am your affectionate Brother

L. P. Baldwin

John Clifton March 11. 1826

L. Baldwin Esqr
Civil Engineer
Harrisburg. Pa

Mail

FEB 1826

Phila Mar. 11. 1826

Dear Sir,

Your package, which was forwarded by Mr. Randall, came safe to hand, I feel much indebted to you for your letter in Reply to Mifflin; I have read it with much pleasure, and agree with you in every point of view; I think it must have made Mr. President feel rather bad, I guess he will be somewhat shy in troubling you any more on the subject.

The package from Boston is deposited in the stage office & will go by the same mail which brings you this, I directed it to be entered on the way-bill & hope it will reach you in safety —

The canal reports you request, I shall endeavour to procure and, if successful, forward them by the earliest opportunity.

It would please me exceedingly to be with you at Harrisburg & hope e'er long to have that pleasure, in the mean time give my best respects to Foster, Elder, Fisher and any other ~~friend~~ acquaintance who may think me worth enquiring after, and be assured

I remain your most sincere friend

John Clifton

L. Baldwin Esqr

P.S. I shall attend to the subscription to Stricklands work —

5

Steam boat barge &c.
between Trenton & Phila.
April 21. 1826.

Dear Sir,

I am on my way to Washington,
and should this find you at Harrisburg
it will give me great pleasure to hear
from you at Baltimore, care of John
Trimble". We are extending the purchase
at Norwich to more than 1500 acres,
so as to embrace three distinct privi-
leges, which will give us an immense
power. Your Brother G. will make
the surveys as soon as I return, which
will be in two weeks. At Washington
I shall not be unmindful of your x

Joseph B. Rumsey. April 21 1826
Rec'd & ans'd April 24.

Col Samuel Sloan
Engineer
Harrisburg
Penn

PAID
APR 22
PHILA

On the steamboat
of B Rumsey
RR.
canal

1826

will write you from there or Baltimore.

I think we shall be prepared to commence operations on the Quinebaug by the middle of May. Give me all the information in relation to the survey of a Grand Canal through the centre of the state, from the Eastern to the western capital, &c.

George is getting along, I believe, extremely well with the Marine Railway at Boston, and with much more solidity than the New Yorkers have given to theirs. I left your Br. James on the survey at Norwich for the Quinebaug canal.

I am very truly
Your obt. servt.
J. B. Quinby.

When do you return?

J. Williams. Esq. 24 1826
Dec 29 & and. 1 mary. 1826

Lancaster Pa
Edwin Esq
Harrisburg
Pa
Pennsylvania.

1826

Apr. 24. 1826

Dear L,

It is a long time & we without news from you, except what I get from you brother George — Henry Little embarked at N Orleans for Boston on his return home, 26th ult, & on the 31st he expired. From the moment of his landing 'till he died his disease was aggravated in every respect — he had bilious - severe conflicting &c: he suffered much in mind & body: in mind, because he knew what his fate must be — because he was disappointed in N Orleans, &c. —

I am sorry & pay that my sister L. after being confined 12 weeks & her chamber, is losing little by little every day, & we have but faint hope she will ever be well; indeed from her constant fever and wasting, we have too much reason, & fear that her disorder is consumption —

As we always enjoyed fine health, this is an event for which we were not prepared. Death is sweeping our family fast away. I hope those few fr[illegible] that remain, will be spared me, while I continue on the stage. —

This is a sad time for many L! Her father as you may suppose, is any thing but tranquil. Our Gen: L. is gone & his new home. —

The Salem subscription for their water works has gone on favourably — I believe 2500 shares & $100 each are already subscribed, so that the work will be begun. Let me hear from you, I am

Yrs affec
Williams

You & Gen Deaborn desire & the remembrance of you, & requests, when you have leisure some stormy day, you would write him.

Wilmington Del. Aug 22 1858

Dear Sir

Please send me by Express
Adams & Co's Express
Two Dollars
Yours Truly
Wm. Williams

Humphreysville, Ct. April 24. 1826.

Mr Baldwin,

Sir

I have to request of you to visit this place, as early as may be conveniently practicable, for the purpose of taking a survey of the water power, here. We have been, for a long while, desirous of having a survey taken, and should have applied to you the last Summer, had we not understood that you was engaged throughout the season.

I should be glad to have you write me, six to ten days previous to the time you intend to be here, notifying me at what time I may expect you, in order that I may be sure of being at home.

If you could come in the month of May, we should be glad, and the earlier you could make it convenient to come, within said month, the better it would accommodate us.

Please have the goodness to write me, on receipt of this. Respectfully, John H. DeForest

Agent

Jamie Baldwin Esqr.
Engineer
Hartford
Favored by Mr Harrison of Conn.

1826

Aug. 28 1826

I have merely said, in letter to Mr De Forest that you were absent & might be back in a month & might spend the summer at Bloomsburg -

Mrs Williams sent this home unsealed -

J. F. B.