

*Money statement.*

July 1, 1878, amount available.....	\$6,000 00
Amount appropriated by act approved March 3, 1879.....	10,000 00
	\$16,000 00
July 1, 1879, amount expended during fiscal year.....	5,916 91
	10,083 09
Amount (estimated) required for completion of existing project.....	20,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.	10,000 00

## APPENDIX D.

ANNUAL REPORT OF COLONEL JOHN NEWTON, CORPS OF  
ENGINEERS, FOR THE FISCAL YEAR ENDING JUNE 30,  
1879.

UNITED STATES ENGINEER OFFICE,  
New York, July 15, 1879.

SIR: I have the honor to transmit herewith the annual reports upon the river and harbor works in my charge for the fiscal year ending June 30, 1879.

Very respectfully, your obedient servant,

JOHN NEWTON,  
Col. of Engineers, Bvt. Maj. Gen., U. S. A.  
The CHIEF OF ENGINEERS U. S. A.

## D 1.

## IMPROVEMENT OF HUDSON RIVER, NEW YORK.

Lieut. J. H. Willard, Corps of Engineers, is in superintendence of the works, which he has efficiently and economically managed.

Partial surveys were frequently made for the location of dikes, of lines to be dredged, and of the same after completion for comparison.

## REPAIRS.

The west dike at New Baltimore was secured by additional piles, and the settlement of the stone filling readjusted.

The dikes at Van Wie's, at Douw's, Pada Hook, and Coeymans have been leveled up with stone for most of their lengths.

A small cut was made in Papscannee Dike to accommodate boats.

The first, second, and part of the third dam appertaining to the three sections of dikes on the east side of the Overslaugh have been removed. These dams were temporary and useful only until funds were available to connect the sections together.

A wreck on the cross-over from Douw's Point was also removed. Amount expended for repairs, \$2,495.90.

Lieutenant Willard estimates for the repairs necessary for the present fiscal year the sum of \$2,500.

## NEW WORK.

Contracts dated October 23, 1878, made for pile dikes and for driving lines of piles, the last where it was thought that the more expensive dike might be dispensed with, but it was foreseen that circumstances might arise rendering it expedient to convert a portion of the piling into a dike, which could easily be effected by depositing stone on one or both sides of the line.



A heavy rise of the river in the fall suddenly brought the contractors to a stand, and the high waters of spring have put back the reopening of work. None of the dikes were finished, but the piling at Shad Island has been completed.

The term of these contracts has been extended by authority from Washington. The dikes at Douw's Point, at Shad Island, and at New Baltimore will be finished during the present season, as also the piling at the Overslaugh, at Staats, Cedar Hill, Castleton, Mulls, Coeymans, and New Baltimore.

The additional work recommended is the removal of Austin's Rock, renewing of Base Island Diike, an old and temporary structure, putting an additional course on the west dike at New Baltimore, and constructing a crib upon a dangerous rock at the same place. The State Engineer and Surveyor, Hon. Horatio Seymour, jr., has, with funds appropriated by the State of New York, efficiently co-operated with the United States Engineers in advancing the improvement of the river by dredging new channels made necessary by the progress of the dikes, and removing shoals.

The freshets of the fall have left deposits at various places in the unfinished portion of the river, on the Overslaugh, and below Barren Island.

The first-named place has been almost yearly, for a long time past, filled in with these deposits, as the current of the river, debouching from the contracted section at Albany, loses its power of transportation in the wide reach of the Overslaugh. With the exception of the last-named place, the navigation is in good order this season. Eight feet at mean low-water may now be carried from Burden's to Albany, which has not hitherto been the case.

Subjoined I respectfully refer to Lieut. J. H. Willard's report.

ESTIMATE FOR FISCAL YEAR ENDING JUNE 30, 1881.

Office, surveys, repairs, and contingencies .....	\$10,000 00
Completing removal of Austin's Rock .....	10,000 00
Completing renewal of Base Island Diike .....	3,000 00
Completing Schermerhorn and Shad Island dikes .....	7,000 00
Renewing and securing old Overslaugh dikes .....	10,000 00
Reserve for dredging, examinations, and contingencies .....	25,016 47
<b>Total .....</b>	<b>65,016 47</b>
Amount of estimate of 1868 .....	\$984,304 47

Amounts appropriated.

By act of Congress approved June 23, 1866 .....	\$50,000 00
By act of Congress approved March 2, 1867 .....	305,188 00
By act of Congress approved July 25, 1868 .....	85,000 00
By act of Congress approved April 10, 1869 .....	89,100 00
By act of Congress approved July 11, 1870 .....	40,000 00
By act of Congress approved March 3, 1871 .....	40,000 00
By act of Congress approved June 10, 1872 .....	40,000 00
By act of Congress approved March 3, 1873 .....	40,000 00
By act of Congress approved June 23, 1874 .....	40,000 00
By act of Congress approved March 3, 1875 .....	40,000 00
By act of Congress approved August 14, 1876 .....	50,000 00
By act of Congress approved June 18, 1878 .....	70,000 00
By act of Congress approved March 3, 1879 .....	30,000 00
<b>.....</b>	<b>919,288 00</b>
Amount expended .....	832,698 89

New Baltimore, west channel, 69,797 yards .....	\$6,892 45
Coeymans Middle Ground, 14,653 yards .....	1,227 19
Mulls, 54,475 yards .....	4,930 78
Van Wie's and Overslaugh, 69,726 yards .....	9,023 45
Fishhouse Shoal, 3,003 yards .....	426 00
Engineering expenses, inspectors, &c .....	4,689 83
<b>Gross cost 211,654 cubic yards .....</b>	<b>27,189 80</b>
Balance on hand June 30, 1879 .....	33,452 92

Estimate for work that can be done with advantage this season.

	Cubic yards.
New Baltimore .....	70,000
Coeymans Middle Ground .....	25,000
Mulls .....	30,000
Overslaugh .....	45,000
Upper river .....	30,000
<b>Total .....</b>	<b>200,000</b>

This work is located in the fourteenth collection-district, Albany being the port of entry.

The value of the imports for the fiscal year ending June 30, 1879 was \$595,043, and the duties on the same were \$95,420.71 coin and \$10,317.49 currency; total \$105,738.20.

There are enrolled and licensed at this port 784 vessels, aggregating 92,866.82 tons. The Troy collection-district has been closed and the business transferred to the office at Albany.

The amount of commerce benefited by this improvement has been estimated at \$500,000,000.

Money statement.

July 1, 1878, amount available .....	\$70,000 00
Amount appropriated by act approved March 3, 1879 .....	30,000 00
	<b>\$100,000 00</b>
July 1, 1879, amount expended during fiscal year .....	13,410 89
July 1, 1879, outstanding liabilities .....	34,000 00
	<b>47,410 89</b>
July 1, 1879, amount available .....	52,589 11
Amount (estimated) required for completion of existing project .....	65,016 47
Amount that can be profitably expended in fiscal year ending June 30, 1881 .....	65,016 47

Abstract of bids for constructing pile dikes in the Hudson River, opened October 15, 1878.

Name of bidder.	Douw's Point, 1,000 feet.	Shad Island.			New Baltimore, 500 or 2,500 feet.	Total cost.
		First section, 800 feet.	Second section, 200 feet.	Third section, 200 feet.		
Walter Doty .....	\$5 09	\$5 74	\$5 74	\$5 74	\$14 12	\$47,278 00
John H. Marshall .....	3 06	2 66	3 78	5 02	6 48	23,148 00
Charles Guidet and Isaac White .....	7 11	6 90	8 25	11 86	15 42	55,202 00
Henry Dubois & Sons .....	4 15	4 15	4 64	7 84	9 78	34,416 00
Joseph Walsh .....	4 25	4 95	4 95	4 95	9 75	34,565 00
George E. Richardson .....	5 00	6 35	6 95	11 25		Incomplete.
William D. Fuller .....	2 98	2 68	3 58	4 93	7 75	26,201 00
Frank Pidgeon, jr. ....	4 95	4 59	5 15	8 78	11 85	41,033 00
Henry V. Sloat & Bro .....	3 64	4 14	4 14	4 14	8 39½	29,595 50



Abstract of contract for pile dikes in Hudson River, New York.

Contractor's name.	Residence.	Date of contract.	Subject of contract.	Remarks.
John H. Marshall .....	New Baltimore, N. Y.	Oct. 23, 1878	1,000 feet, Douw's Point. 1,200 feet, Shad Island. 2,500 feet, New Baltimore (more or less).	To be completed by July 1, 1879. Extension granted to October 1, 1879.

Abstract of bids for furnishing and driving about 10,000 piles in the Hudson River, New York, October 15, 1878.

Name of bidder.	Price per foot for piles.	Price per foot for driving.	Price per foot, accepted and driven.
Walter Doty .....			\$0 11
John H. Marshall .....			5 $\frac{1}{2}$
Edgar M. Pavn .....		\$0 02 $\frac{1}{2}$	7
Charles Guidet and Isaac E. White .....	\$0 08	10	18
H. F. Chapman & Co .....			11
Joseph Walsh .....			6
George E. Richardson .....	\$4.50 per pile		30
William D. Fuller .....			5 $\frac{1}{2}$
Frank Pidgeon, jr. ....			11 $\frac{1}{2}$
Henry V. Sloat & Bro .....			8 $\frac{1}{2}$
Henry Dubois & Sons .....			10
Henry Dubois & Sons .....	for spruce		7

Abstract of contract for furnishing and driving 10,000 piles, more or less, in the Hudson River, New York.

Contractor's name.	Residence.	Date of contract.	Subject of contract.	Remarks.
William D. Fuller .....	Albany, N. Y.	Oct. 23, 1878	10,000 piles; furnishing and driving and sawing off about 150,000 linear feet of piles.	To be completed by July 1, 1879. Extension granted to October 1, 1879.

REPORT OF LIEUT. J. H. WILLARD, CORPS OF ENGINEERS.

UNITED STATES ENGINEER OFFICE,  
Albany, N. Y., July 8, 1879.

SIR: I have the honor to present my report on improving Hudson River, New York, for the fiscal year ending June 30, 1879.

SURVEYS.

After navigation opened in 1878 and freshets had subsided, examinations were quickly made at doubtful points in order to apply the State appropriation to dredging where most needed. Examinations were also made where new works had been put down the previous year. These surveys extended from Troy to Bath, from Cuyler's Bar to Van Wie's, and embrace Mulls, Coeymans, and New Baltimore.

The work was pushed rapidly forward, and lines were laid out to the best advantage and submitted to the State Engineer.

Toward the end of the season, and some time after the dredging was finished, I had the same sections resurveyed and maps traced for comparison. The results were quite gratifying and showed that the work had been done faithfully, but it was also seen that if money had been abundant more certain channels would have been obtained at New Baltimore, Coeymans, Mull's, and at the Upper Overslaugh.

I was not surprised, therefore, to find from the surveys just finished that a shoaling had taken place near Bogart's Island, at the south end of Mull's, and the head of the west channel at New Baltimore, but I had hoped that the long-continued high-water this spring might overcome obstructions caused by the severe freshets of last autumn.

The survey of the section above Albany shows a channel of 100 feet least width, and 8 feet least depth at ordinary low-water; but some work remains to be done to make the course more easy and to remove lumps over the Round Shoals.

In building the third section and the cross-dam on the Overslaugh, I encountered rock, which, from its position, I supposed belonged to the same ledge as Austin's, Van Wie's Point, &c.

As a decided change was to be expected in this channel, I thought that more information should be had in regard to the bottom, and so I collected all the old maps and notes from former surveys, and also made a pretty thorough examination by boring and sounding. All the information thus obtained has been embodied in a map, scale 1/1000, and additional borings will be made in a few days. So far as has been determined, the entire bottom seems to be of rock lying at varying depths of 3 to 13 feet or more below ordinary low-water. Austin's Rock is much larger than has been supposed, and is fast becoming a dangerous obstruction to navigation.

So long as the channel was narrow and confined to the west line near the dike, these rocks remained covered with sand, and offered a gently sloping bank which protected vessels, but now that the channel has been considerably widened and the water has grown deeper near to and northward of the rocks, vessels of all kinds, but especially tugs, are in danger of being driven against it, except under the most favorable circumstances. New points have been found south of Austin's with 6 or 7 feet depth at ordinary low-water, and so lying that they must be taken off before Austin's can be removed. All that part of the ledge lying westward of a line through the highest point and parallel to the channel should be removed to a depth of at least 13 feet at low-water, and if the cost should not prove too great the work should be extended eastward for at least 60 feet more.

I think that \$30,000 could be profitably spent on this work, and would remove a large portion of the most dangerous part, and the remainder could be removed next season if it should be thought advisable.

In this connection I must say that I have found cause to reconsider the opinion that the rocks at New Baltimore should be removed.

I think a cheaper and better plan would be to build a strong crib as a foundation for a permanent light to be used when the east channel shall be closed.

In looking through a letter and report-book of Captain Brewerton, I found mention of borings to be undertaken between Troy and Van Wie's Point, and a report that the borings were taken through the ice from Troy to Albany. Hughes's map of 1843 shows a few borings near and in front of Albany.

The notes may be in the records of the department, and would be of value if they could be found, not only in saving of time, but in enabling a more decided opinion to be formed in regard to the question of increasing the usefulness of the upper section of the river. An effort should be made to get these notes if they are still extant.

The west dike at New Baltimore had settled somewhat and inclined toward the channel, and I thought it best to secure the front by piling.

The stone filling was renewed for the greater part of its length. I think that this dike ought now to be raised to the level of ordinary high-water.

The cost would be about \$1,200. The dike at Van Wie's received some attention, and the dikes at Duow's, Van Wie's, Parda Hook, and Coeymans have been levelled up for most of their lengths. I made a small cut in Papscaanee dike to accommodate shippers along shore, and also permitted some ice dealers to make a small temporary opening in the dike above Bath.

The first and second and part of the third cross dams on the east side of the Overslaugh were removed, the stone put into the nearest dikes as far as it could be got at, and the piles redriven along the line of dikes to assist in closing the intervals. I found it impossible to remove the piling on the west side as I had been directed, and so gave up the work until a more powerful machine could be had. So also I delayed the curtailing of the Barren Island dike.

The high-crib dike opposite to the Round Shoals was much damaged by ice last winter and by thieves. I propose now to restore it to former level, fill up with stone, and use the material dredged by the State at the place as a backing. The dike has remained secure at the upper end, where a like plan was adopted two years ago. The cost, exclusive of the gravel which comes under the State contract, will be about \$300.

The old crib dike at Base Island is fast giving way, but I think it inadvisable to attempt to restore it now. The Bath dike now being closed the mound of stone along the line of the old crib may be thought sufficient.

The Bath dike, chiefly in that section which was made partly of crib-work, yielded to the action of ice, and is much out of shape. I should recommend securing the tim-



ber and weighting the whole with stone filling, so also with one or two small parts of Cedar Hill dike.

In October a wreck lodged on the cross-over below Douw's Point, making a dangerous obstruction to navigation and liable to form a bar. In the emergency I had it removed without waiting for authority, hiring wrecking tools and men at the most favorable terms possible.

There should be some way of preventing owners from abandoning their worthless property in the river, without being obliged to wait for the law's delay or being put to the expense of removal ourselves. The cost of repairs was as follows:

2,918 cubic yards rubble.....	\$1,459 00
Removing cross-dams, repairing timber works, &c.....	787 78
Hire of dredge, wrecking tools, &c.....	249 12
Total .....	2,495 90
The estimate for the present year .....	2,500 00

## NEW WORK.

Contracts were made October 23 for pile-dikes at Douw's Point, Shad Island, and New Baltimore.

Work was begun as soon as possible at Douw's Point, and 1,000 feet of piling finished. Heavy rains set in, and continuing for some time caused a freshet, and compelled suspension of work. It was secured as well as could be by partly filling with rubble and left for the winter. Work was delayed this season by long-continued high-water and has only just been resumed.

The dike at Douw's mill will be finished in a short time, and that at Shad Island pushed rapidly forward, but the work at New Baltimore will have to be delayed until a decision is had in regard to the west channel. As this work will lie in quite deep water, a frame will be required to hold the dike at bottom. \* \* \*

Present value of the contract.....	\$23,148
Extra work and contingencies, say.....	1,852
Liability, say.....	25,000

A contract was made at the same time for furnishing and driving about 10,000 piles on the Overslaugh, at Staat's, Cedar Hill, Mulls, &c. This contractor did not have so much trouble as the one on the dikes, and succeeded in finishing a part of the work on the Overslaugh and at Shad Island. Work was also begun much sooner this season by selecting the lines farthest down the river, and so avoiding the effects of high water. The work at Shad Island and part of that at Mulls has been finished, and the rest will probably be done by September.

I am of the opinion that considerable stone will be needed on these lines, particularly in the deep water, to keep the piles down and in alignment; some few have been carried off where the bottom was soft, or where the line crossed dump-heaps. Stone can be bought now in quantities of 1,000 yards for 50 cents per yard and perhaps for less, except where delivery involves lighterage. I should say that an average of 25 or 30 cents per running foot would cover the cost. In this way a low mound may be formed, which will serve to direct the flow by gentle means until the lines of ebb and flood are brought to coincide.

The terms of this contract are so favorable, and the probabilities of a rise in cost so strong, that I think it desirable to extend the amount so far as the contractor is willing, particularly on the lines in shoal water.

The number of piles driven and accepted under the contract was 3,059, being 42,966 linear feet of timber, and costing \$2,416.83. The payment on this contract, after reserving 25 per cent., was \$1,812.62. The payments to be made according to the basis of calculation will amount to \$6,624.87.

Allowing about 25 per cent. on the first estimate, which might be done with advantage to the government, the amount to be paid would be \$8,734.25. Liabilities under this contract, including 25 per cent. reserved payment and contingencies, say \$9,000.

## STATE WORK.

In May, 1878, owing to delay and uncertainty about the river and harbor bill, the State legislature granted an appropriation of \$30,000 to assist this work, and placed the expenditure under the control of the State Engineer and Surveyor, the Hon. Horatio Seymour, jr. The policy inaugurated in 1876, when the control of a like appropriation was taken from a body of irresponsible commissioners and placed in the hands of the State officer, was continued, and friendly relations were maintained between the United States and State Engineers.

I made the necessary examinations, as already mentioned, the State paying a portion of the cost, and submitted maps and laid out lines for dredging as approved by the State Engineer.

In May, 1879, at the earnest demand of parties engaged in river navigation, and especially those from Troy, another appropriation of like amount was granted, and examinations made as before at those places where experience has shown that obstructions were most to be expected. Work has already been let for dredging about 30,000 yards at Bogart's Island and about 15,000 yards from the west side of the channel over the Round Shoals.

As the work progresses, it becomes more and more difficult to decide what to do with the deposits. Near Troy and Albany I can find no places except behind the crib dikes or to the east of Austin's Rock and below that point. I must use either the rocky channel at Mulls, or relift behind the dikes. \* \* \*

On the whole the dredging at the south end of Middle Ground at Coeymans, combined with the extension of the dike, has produced very good results. We have now nearly 8 feet at low-water over the point, and by another season, with perhaps a little aid, I think the 10-foot channel will follow the dike for its entire length.

The completion of the west channel at New Baltimore is now of the most pressing importance. The north end seems to have filled up, owing to scour along the dike, while the east channel is better than I have ever known it. This state of affairs is not wholly unexpected, and is capable of simple explanation. \* \* \*

The amount of work done under Mr. Seymour's administration is given as follows:

Balance of State appropriation.....		\$642 72
Appropriation of 1878.....		30,000 00
Appropriation of 1879.....		30,000 00
	Cubic yards.	
New Baltimore West Channel.....	69,797	\$6,892 45
Coeymans Middle Ground.....	14,653	1,227 19
Mulls.....	54,475	4,930 78
Van Wie's and Overslaugh.....	69,726	9,023 45
Fish-house Shoal.....	3,003	426 00
Engineering expenses, inspectors, &c.....		4,689 83
Gross cost.....	211,654	27,189 80
Balance on hand June 30, 1879.....		\$33,452 92

## ESTIMATE FOR WORK THAT CAN BE DONE WITH ADVANTAGE THIS SEASON.

	Cubic yards.	
New Baltimore.....	70,000	
Coeymans Middle Ground.....	25,000	
Mulls.....	30,000	
Overslaugh.....	45,000	
Upper River.....	30,000	
Total.....	200,000	

I have obtained the following valuable information from the advanced sheets of the report of the auditor of the canal department:

## ERIE CANAL.

## Season of navigation of 1878.

Number of boats enrolled.....	300
Tonnage of same.....	48,365
Number of tons brought to tide-water via Erie Canal from West and Canada.....	2,461,065
Same for State of New York.....	370,725

Of this there were:	
Barrels of flour.....	13,157
Bushels of wheat.....	27,016,233
Bushels of corn.....	25,489,750
Number of tons ascending and descending.....	5,171,020
Value of merchandise transported.....	\$164,653,365

Almost the whole amount of merchandise brought to Albany by canal is transported to New York City in the same boats by towing companies, the time of transit being from fifteen to twenty-six hours.

Respectfully submitted.

J. H. WILLARD,  
Lieutenant of Engineers.

Col. JOHN NEWTON,  
Corps of Engineers U. S. A.



## D 2.

## IMPROVEMENT OF HARBOR AT RONDOUT, NEW YORK.

In September, 1878, a contract was made with Joseph L. Powley for the construction of 1,200 feet of pile-dike as an extension westwardly of a portion of the south dike already built. During the progress of building this dike it was found desirable to add some 600 feet to the length of it, and by this addition carrying it well up to the shore. This addition was approved of by the Chief of Engineers, and the contractor completed the work by the 31st December, 1878.

During the fall of 1878 the channel between the north and south dikes was dredged by hired labor, the dredges being paid at the rate of \$4.37 per hour of actual working time. The amount of material removed during the 149½ days worked by the dredges was 59,800 cubic yards. In the fall of 1878 a violent storm, accompanied by heavy rains, caused the guard-lock of the canal above the harbor to give way; the waters, suddenly released, swept large vessels from their moorings and dashed them with great violence against the dikes. The south dike had a break of 180 feet made in it, and small breaks were made in the north and branch dikes.

Prior to this event little sediment had deposited to form shoals beyond the mouth of the jetties, but, after it, a large deposit was formed, which will, it is believed, totally disappear after partial dredging. A partial examination has already shown a considerable deepening from natural causes.

From the upper end of the south dike to the canal-boat basin, a distance of 400 feet, there was driven a single row of piling, the piles being driven as close as practicable, and strengthened with two rows of stringers.

Fender-piles were driven along the face of the south dike, from the light-house to the canal basin, for protection against vessels and tows when entering the harbor.

There is depth over the bar up to the wharves of Rondout of 12½ feet at mean low-water, and a well-defined channel, which bids fair to be permanent.

Collection-district, New York.

Nearest port of entry, New York.

Amount of revenue collected, \$98,046,244.55.

Amount of commerce and navigation benefited by the completion of this work,

ORIGINAL ESTIMATE.	
North dike.....	\$41,600 00
Branch dike.....	34,400 00
South dike.....	59,600 00
Dredging channel.....	14,400 00
Contingencies and engineering.....	22,500 00
	172,500 00
AMOUNTS APPROPRIATED.	
By act of Congress approved June 10, 1872.....	10,000 00
By act of Congress approved March 3, 1873.....	20,000 00
Amount allotted June 8, 1875:	
From repairs of harbors on Atlantic coast.....	762 18
From contingencies of rivers and harbors, &c.....	237 82
By act of Congress approved August 14, 1876.....	30,000 00
By act of Congress approved June 18, 1878.....	30,000 00
	91,000 00
Amount expended.....	80,591 60

## Money statement.

July 1, 1878, amount available..... 34,503 53  
 July 1, 1879, amount expended during fiscal year..... 24,095 13

July 1, 1879, amount available..... 10,408 40

## Abstract of bids for constructing pile-dikes at Rondout Harbor New York.

Bidders.	Price per linear foot.
Franklin B. Colton.....	\$10 00
Frank Pidgeon, jr.....	8 80
Thomas Keeler.....	7 20
Francis Pidgeon.....	6 30
John Beattie.....	5 83½
William D. Fuller.....	5 48
P. Sanford Ross.....	5 38
Henry Dubois & Sons.....	5 00
Thomas Sturgeon, sr.....	5 00
H. V. Sloat & Brother.....	4 94
David V. Howell.....	4 67
Joseph L. Powley.....	4 19

## Abstract of contract for constructing pile-dike at Rondout Harbor, New York.

Contractor.	Residence.	Date of contract.	Subject of contract.	Remarks.
Joseph L. Powley..	Kingston, Ulster County, New York.	Sept. 10, 1878	Extension of pile-dike eastwardly 1,200 feet.	To be completed by December 31, 1878.

## D 3.

## IMPROVEMENT OF EAST RIVER AND HELL GATE, NEW YORK.

Capt. James Mercur, Corps of Engineers, continued in superintendence of the removal of rock from Haller's Point Reef, and of the excavations at Flood Rock, Hell Gate, and was also assigned by me to the superintendence of the work of the steam-drilling scow in East River and Hell Gate, in which last operations he has the assistance of Mr. Roy Stone, assistant engineer.

The reports of Captain Mercur and of Mr. Stone make it unnecessary for me to enter into detail, and I respectfully refer to these as giving full information upon the subjects treated.

Diamond Reef, containing an area of about 1½ acres, is covered for the greater portion of its surface by a formation of clay, gravel, sand, bowlders, and a concreted mass, through which the bed rock occasionally projected. Work has not hitherto been regularly conducted upon this reef; at times, only when operations ceased for a time upon Coenties reef and others, the drilling-scow has been put to work upon the outlying portions of bed rock. It was finally determined to resume operations and pursue them steadily until the whole should be reduced to the proper level. After Frying Pan, in Hell Gate, shall have been removed, the next position will be upon Pot Rock, which will conclude the channel reefs enumerated in the original report.

I transmit herewith map of Flood Rock, showing the excavations to the end of the fiscal year, as also the plan of the axes of future galleries.



It is designed first to excavate, under the lower portion of the Middle Reef, including Negro Head, as by this operation alone a great step towards radical improvement will have been accomplished.

The amount of rock excavation has been small for the past year, owing to the necessity of purchasing and establishing an entirely new plant, but the larger facilities now furnished will insure a quick progress. With every advance of the galleries, also, an increased area of operations is developed. The amount asked for the fiscal year ending June 30, 1881, is \$450,000.

This work is in the collection district of New York.

The nearest port of entry is New York City.

The amount of revenue collected last fiscal year was \$98,046,244.55.

The amount of commerce and navigation benefited by the completion of this work would be about \$4,000,000 daily.

Amount asked to be appropriated for the fiscal year ending June 30, 1881, for continuing work on Flood Rock and channel reefs in Hell Gate, \$450,000.

ORIGINAL ESTIMATE.

Running reefs at Hell Gate and Diamond and Coenties Reefs. .... \$5,139,120

AMOUNTS APPROPRIATED.

By act of Congress approved July 25, 1868 .....	85,000 00
By act of Congress approved April 10, 1869 .....	178,200 00
By act of Congress approved July 11, 1870 .....	250,000 00
By act of Congress approved March 3, 1871 .....	250,000 00
By act of Congress approved June 10, 1872 .....	225,000 00
By act of Congress approved March 3, 1873 .....	225,000 00
By act of Congress approved June 23, 1874 .....	225,000 00
By act of Congress approved March 3, 1875 .....	250,000 00
By act of Congress approved August 14, 1876 .....	250,000 00
By act of Congress approved June 18, 1878 .....	350,000 00
By act of Congress approved March 3, 1879 .....	250,000 00

Deduct amount reverted to the United States Treasury .....	\$3,158 55	2,538,200 00
Deduct amount reverted to the Harlem River .....	11,000 00	
	14,158 55	

Amount expended .....	2,524,041 45
	2,084,711 32

AMOUNT EXPENDED DURING YEAR ENDING JUNE 30, 1879.

Removing reef at Hallet's Point .....	\$52,758 50
Excavations at Flood Rock .....	87,635 91
Steam drilling scow .....	47,502 94
Hydraulic scow .....	1,508 21
Contingencies .....	8,569 82
	197,975 38

Money statement.

July 1 1878, amount available .....	\$382,960 21
Amount appropriated by act approved March 3, 1879 .....	250,000 00
July 1, 1879, amount expended during fiscal year .....	197,975 38
July 1, 1879, outstanding liabilities .....	103,995 06
	301,970 44
July 1, 1879, amount available .....	330,989 77
Amount (estimated) required for completion of existing project .....	2,615,078 55
Amount that can be profitably expended in fiscal year ending June 30, 1881 .....	450,000 00

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