

G 3.

IMPROVEMENT OF BRETON BAY, LEONARDTOWN, MARYLAND.

The improvement of Leonardtown Harbor, at the head of Breton Bay, was authorized by the river and harbor act of June 18, 1878, which contained an appropriation of \$5,000 for the commencement of the work. A survey of the harbor was made in December, 1874, under the direction of Major Wm. P. Craighill, Corps of Engineers, whose report will be found in the report of the Chief of Engineers for 1875, Part II, page 108. The plan of operations approved by the Chief of Engineers was the excavation of a channel 150 feet wide and 9 feet deep between the 9-foot curve in the bay and the Leonardtown wharf, where a least depth of 5 feet existed at the time of the survey.

Under date of June 29, 1878, proposals for dredging were invited. The following is an abstract of those received and opened July 22, 1878:

Abstract of proposals for dredging in Leonardtown Harbor, Maryland, opened at 12 m., Monday, July 22, 1878.

Number.	Name.	Address.	Price per cubic yard.	Time of commencement.	Time of completion.	Number and kind of machines.	Daily work, cubic yards.
1	Geo. C. Fobes & Co.	Baltimore, Md	\$0 18	Oct. 1, 1878	July 1, 1879	1 clam-shell dredge.	1,000
2	Franklin B. Colton..	Philadelphia, Pa . .	18	Sept. 15, 1878	Nov. 30, 1878	1 dipper or grapple.	500
3	Daniel Constantine.	Baltimore, Md	23½	Jan. 15, 1879	Feb. 28, 1879	1 Osgood dredge.	600
4	G. H. Ferris	do	12½	Oct. 1, 1878	June 30, 1878	1 dipper	500
5	Brainard and Rice . .	Washington, D. C. . .	13	Sept. 1, 1878	Oct. 31, 1878	New Jersey dredges, clam scoops, and buckets.	1,500
6	George F. Brott	do	22	Sept. 15, 1878	Jan. 30, 1879	Morris and Cumings' dredge.	500 to 1,000
7	Joseph Williams	do	20	Sept. 15, 1878	Nov. 1, 1878	1 dipper	500 to 1,000

The contract was awarded to Mr. G. H. Ferris, of Baltimore, Md., at 12½ cents per cubic yard.

The work was commenced February 25, 1879, with a large grapple-dredge, and continued until March 21, 1879. A channel 60 feet wide and 9 feet deep at low-water was dredged through the shoalest water from the turn in the bay to Leonardtown wharf. The material was a very soft blue mud, easily excavated. A basin was dredged at the wharf for turning steamers. The dredged material was removed in scows and deposited in Echo Bend, at an average distance of 1½ miles from the place of excavation.

The river and harbor act, approved March 3, 1879, appropriated \$4,000 for the continuation of this work, which, when available, will be applied to widening the channel and basin.

Leonardtown is the county seat of Saint Mary's County, and has a weekly line of steamers to Washington, D. C., and also to Baltimore.

The following statistics of trade have been furnished by Mr. George Blackistone, of Leonardtown:

Estimated value of annual shipments	\$225,000 00
Estimated value of annual receipts	175,000 00
Total	400,000 00

The work is in the collection-district of Alexandria, which is the nearest port of entry.

The collections during the fiscal year were \$2,631.69.

Money statement.

July 1, 1878, amount available	\$5,000 00
Amount appropriated by act approved March 3, 1879	4,000 00
July 1, 1879, amount expended during the fiscal year	4,756 67
July 1, 1879, amount available	4,243 33
Amount (estimated) required for completion of existing project	21,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881	15,000 00

G 4.

IMPROVEMENT OF ACCOTINK CREEK, VIRGINIA.

A survey of this creek was made in June, 1870, the report of which, together with the plans of improvement and estimates, are contained in the Report of the Chief of Engineers for 1872, page 707.

An appropriation of \$5,000 was made June 10, 1872. The dredging of a channel from the town of Accotink to a point in Accotink Bay 1½ miles below was commenced under contract October 2, 1872, and completed April 3, 1873. A part of this channel had a width of 25 feet and a depth of 4 feet, and the remainder a width of 40 feet and a depth of from 2½ to 3 feet. It has since filled in with material brought into the creek by freshets and heavy rains, so that the steamer formerly navigating the creek is unable to reach her wharf. The trade on this account is small.

The precise condition of the channel cannot be stated, as no funds have been available for its examination for five years.

In order to complete the work according to the original estimate \$14,000 will be required, while for a 6-foot channel 50 feet wide in the creek and 100 feet wide in the bay the sum of \$22,000 should be appropriated.

Accotink is in the collection-district of Alexandria, which is the nearest port of entry.

The collections during the fiscal year ending June 30, 1879, were \$2,631.69.

G 5.

IMPROVEMENT OF OCCOQUAN RIVER, VIRGINIA.

HISTORY OF OPERATIONS.

An examination or survey of Occoquan River, Virginia, was directed in river and harbor act of June 10, 1872, and was made under the direc-

tion of Col. William P. Craighill, Corps of Engineers, whose reports will be found in the Report of the Chief of Engineers for 1873, pages 819 and 825. These reports give full details as to the obstructions to navigation, which were three in number, viz: A sand bar $\frac{1}{2}$ a mile below the town of Occoquan, the "Upper Mud" $\frac{3}{4}$ of a mile below the Alexandria and Fredericksburg Railroad Bridge, and the "Lower Mud" at the mouth of the river between Taylor's Point and Sandy Point. The estimated cost of a channel 100-foot wide and 5 feet deep at low-water was \$18,000.

An appropriation of \$5,000 was made March 3, 1873, which was expended in dredging a channel 50 feet wide and 5 feet deep at low-water through the "lower mud." The work was transferred to my charge in July, 1874, and a contract entered into for dredging a channel through the "upper mud" under the appropriation of \$5,000 made June 23, 1874. This channel was completed May 12, 1875.

Under the appropriation of \$5,000, made March 3, 1875, a channel was dredged, by contract, through the sand-bar between the railroad bridge and Occoquan, the width being 80 feet and the depth $5\frac{1}{2}$ to 6 feet at low-water. An examination of the channel at the mouth of the river was made in April, 1876, and it was found to have filled in to a least depth of 4 feet. It was accordingly redredged as far as the funds would permit, this work being continued until May 17, 1876. For the details of the work thus briefly summarized I would respectfully refer to the various annual reports of the years named.

The next appropriation was \$10,000, made June 18, 1878, for completing the improvement. It was proposed to expend this in redredging and widening the several channels, and in constructing dikes, if necessary, at the sand-bar. The dredging was advertised under date of June 29, 1878, and the following proposals received and opened July 22, 1878:

Abstract of proposals for dredging in Occoquan River, Virginia, opened at 12 m., Monday, July 22, 1878.

Number.	Name.	Address.	Price per cubic yard.	Time of commencement.	Time of completion.	Number and kind of machines.	Daily work, cubic yards.
1	A. A. Dodge	Baltimore, Md	\$0 17	Aug. 25, 1878	Jan. 1, 1879		
2	G. H. Ferris	do	15 $\frac{1}{2}$	Jan. 1, 1879	June 30, 1879		
3	Wm. H. Brainard and Geo. D. Rice.	Washington, D. C.	15	Oct. 15, 1878	Dec. 20, 1878	1 dipper	500
4	Daniel Constantine.	Baltimore, Md	23	Sept. 20, 1878	Nov. 1, 1878	New Jersey shoredredges, clam scoops, and buckets.	600
5	Thos. P. Morgan, jr.	Cumberland, Md.	20	Aug. 1, 1878	June 1, 1879	1 Osgood	600
6	American Dredging Co.	Philadelphia, Pa	26	Sept. 15, 1878	Mar. 15, 1879	1 grapple or 1 dipper.	500
7	C. D. Spaid	Washington, D. C.	11	Sept. 1, 1878	Dec. 31, 1878	1 dredge, 4 scows.	500 to 1,000
8	Joseph Williams	do	21 $\frac{1}{2}$	Aug. 1, 1878	Nov. 15, 1878	1 dipper	500 to 1,000
9	G. F. Brott	do	22	Sept. 1, 1878	Jan. 1, 1879	1 clam-shell	1,500

The work was awarded to the lowest bidder, Chauncey D. Spaid, of Washington, D. C., good and sufficient bondsmen having been furnished by him, one of whom filed a power of attorney authorizing him to draw the funds accruing for work done.

Work was commenced October 10, 1878, on the lower channel between Taylor's Point and Sandy Point. The ice brought the season's work to a close December 20, 1878. Operations were resumed April 18, 1879,

and on June 13, 1879, the lower channel was completed to a width of 100 feet and a depth of 5 to 6 feet at low-water.

Great delay and embarrassment to the work resulted from the course of Mr. Spaid, the contractor, who revoked his power of attorney no less than three times, withdrawing the revocation on two occasions. Evidence having been presented that the contract had been transferred by him contrary to the provisions of the same and the Revised Statutes of the United States, the contract was, by the authority of the Chief of Engineers and with the approval of the honorable Secretary of War, annulled June 16, 1879, and the bondsmen directed to complete the same.

Dredging is now in progress near Occoquan, where a sand-bar has recently formed.

The following appropriations have been made:

March 3, 1873	\$5,000 00
June 23, 1874	5,000 00
March 3, 1875	5,000 00
June 18, 1878	10,000 00

Occoquan is in the collection-district of Alexandria, which is the nearest port of entry.

The collections during the year ending June 30, 1879, were \$2,631.69.

The following statistics of the river have been furnished by Mr. J. T. Janney, of Occoquan:

RECEIPTS.	
878 bushels corn, valued at	\$489 67
1,926 bushels wheat, valued at	2,175 19
Estimated amount of merchandise received by 8 stores, valued at	25,000 00
	<hr/>
	27,664 86

SHIPMENTS.	
625,000 hogshead hoops, valued at	\$13,000 00
8,000 cords wood, valued at	20,000 00
Wharf and bridge piles and lumber, valued at	3,000 00
100,000 barrel hoops, valued at	800 00
12,000 cedar posts, valued at	1,700 00
15,000 pounds sumac, valued at	125 00
2,044 barrels flour, valued at	10,599 22
3,516 pounds mill offal, valued at	569 26
2,000 dozen eggs, valued at	250 00
	<hr/>
	50,043 48

Money statement.

July 1, 1878, amount available	\$10,000 00
July 1, 1879, amount expended during fiscal year	\$4,291 92
July 1, 1879, amount expended during fiscal year	38 51
July 1, 1879, outstanding liabilities	<hr/>
	4,330 43
July 1, 1879, amount available	<hr/>
	5,669 57

G 6.

IMPROVEMENT OF AQUIA CREEK, VIRGINIA.

HISTORY OF OPERATIONS.

A survey of this creek was made under the direction of Maj. Wm. P. Craighill, Corps of Engineers, by Capt. C. B. Phillips, Corps of Engineers, in June and July, 1871, extending from Wharton's Landing, the head of navigation, to the mouth. A report upon this survey will be found in the report of the Chief of Engineers for 1872, page 708. From Wharton's Landing to the Narrows, a distance of $2\frac{1}{2}$ miles, the course of the creek winds through wide marshes, its depth varying from 2 to 17

feet. Below the "Narrows" the creek suddenly expands to a width of $\frac{3}{4}$ of a mile, the depth being reduced to 2 feet, gradually increasing to 6 feet near the mouth, $4\frac{1}{2}$ miles from the "Narrows." The Richmond, Fredericksburg and Potomac Railroad crosses the creek $3\frac{1}{2}$ miles above the mouth. The improvement proposed was the excavation of a channel 40 feet wide and 6 feet deep at low-water through the shoaler parts of the creek between the "Narrows" and the mouth. The estimated cost of the work was \$18,000.

An appropriation of \$1,500 was made June 10, 1872, and proposals invited for the dredging. The bids, being too high, were rejected. A second appropriation of \$2,000 was made March 3, 1873. The work was then offered for contract, but the bids were again rejected for the same reason. The work was transferred to me in July, 1874, and again advertised for proposals. Favorable bids having been received, a contract was entered into and a channel 4 feet deep at low-water dredged between the "Narrows" and a point 4,750 feet below, just above the railroad bridge and through the shoalest water. The channel was 25 feet wide, about $\frac{1}{3}$ of it having been widened to 40 feet. The material was generally soft mud, and was deposited on the sides of the cut, 5 feet from the edge.

An appropriation of \$2,000 having been made March 3, 1875, the widening of the channel to 40 feet was continued, and a part was further widened to 80 feet. This was done by contract and was completed September 22, 1875. In the report of 1876, the original estimate for the work was increased to \$20,000, in view of the delay in its completion.

WORK OF THE PAST FISCAL YEAR.

The river and harbor act approved June 18, 1878, appropriated \$5,000 for completing the improvement, and the operations of the last fiscal year were conducted with this in view.

Specifications were prepared for dredging a channel 5 feet deep and 50 feet wide through portions of the creek above and below the railroad bridge, the existing channel to be deepened where this was found necessary.

The following is an abstract of the proposals opened July 22, 1878.

Abstract of proposals for dredging in Aquia Creek, Virginia, opened at 12 m., on Monday, July 22, 1878.

Number.	Name.	Address.	Price per cubic yard.	Time of commencement.	Time of completion.	Number and kind of machines.	Daily work, cubic yards.
1	Daniel Constantine	Baltimore, Md	\$0 23 $\frac{1}{4}$	Nov. 6, 1878	Jan. 11, 1879	1 Osgood	600
2	G. H. Ferris	do	11 $\frac{1}{4}$	Oct. 1, 1878	June 30, 1879	1 dipper	500
3	Thos. P. Morgan, jr.	Cumberland, Md	20	Aug. 1, 1878	June 1, 1879		
4	American Dredging Company.	Philadelphia, Pa	17	Sept. 15, 1878	Mar. 15, 1879	1 grapple or dipper.	600
5	George F. Brott	Washington, D. C.	15	Sept. 15, 1878	Jan. 1, 1879	1 clam-shell	1,500
6	William H. Brainard and Geo. D. Rice.	do	12 $\frac{1}{2}$	Aug. 30, 1878	Sept. 25, 1878	New Jersey shoredredges, clam scoops, and buckets.	
7	Joseph Williams	do	21	Sept. 1, 1878	Dec. 1, 1878	1 dipper	500 to 1,000
8	Geo. C. Fobes & Co.	Baltimore, Md	12	Oct. 1, 1878	July 1, 1879	1 clam-shell	1,000

The contract was awarded to Mr. G. H. Ferris, of Baltimore, Md.

The dredging was commenced September 5, 1878. A channel 50 feet wide and 5 feet deep was dredged from the end of the old channel above the bridge to Walker's Landing, 1,800 feet below the bridge. Below this point no trouble is experienced by vessels navigating the creek. The mud was deposited 15 feet from the sides of the channel, by means of a shoot built on a scow and kept alongside the dredge. The old channel was examined and found to have generally preserved a depth of 5 feet, the limit of depth on the former contracts, except near and above the upper island. It was deepened wherever shoaling had taken place, and several logs and limbs of trees which had lodged in the channel were removed. On the 21st of October a 5 to 5 $\frac{1}{2}$ foot channel had been completed between the Narrows and Walker's Landing. The work next requiring attention was near Wharton's Landing, which vessels were unable to reach except at high-water. An examination of the locality was made, and it was found that the available funds were sufficient to excavate a 50-foot channel. The dredge was accordingly taken up the creek, removing on the way a small sand-bar at Austin's Run, near Coal Landing. On October 24, the channel between Wharton's and Dent's Landings was commenced a short distance above the latter and continued with some delays until December 25, 1878, when it was completed; the width being 50 feet and the depth 5 feet at low-water. The material found was sand and mud and was deposited on the sides of the cut, the creek being too narrow for the use of a shoot, according to the specifications.

This completes all the work requested by the citizens and those interested in the navigation of the creek, and secures a sufficient depth for the present or immediately prospective demands of trade. The work accomplished has undoubtedly been of great benefit to the residents along the creek in affording them increased facilities for the shipment of various products.

I have been unable to obtain any definite statistics of the trade of the creek.

The shipments of wood during the last year are estimated at from 4,000 to 5,000 cords. Railroad-ties, hoop-poles, lumber, and farm products are also shipped. There were six saw-mills and ten grist-mills on and near the creek in 1872.

Aquia Creek is in the collection-district of Alexandria, which is the nearest port of entry.

The collections for the last year were \$2,631.69.

The following appropriations have been made:

June 10, 1872.....	\$1,500 00
March 3, 1873.....	2,000 00
March 3, 1875.....	2,000 00
June 18, 1878.....	5,000 00

Money statement,

July 1, 1878, amount available.....	\$5,000 00
July 1, 1879, amount expended during fiscal year.....	5,000 00

G 7.

IMPROVEMENT OF NOMINI CREEK, VIRGINIA.

The operations in connection with this improvement have been as follows:

A survey of the creek was made in November, 1872, under the direc-

tion of Maj. William P. Craighill, Corps of Engineers, whose report, with estimate of the cost of the work, will be found in the report of the Chief of Engineers for 1873, page 822. Nomini Creek is an important tributary of the Potomac, which it enters about 82 miles below Washington. It drains a large area of productive country, but at the time of the survey its navigation was obstructed by a bar of sand and oyster shells at its mouth, over which but 3 feet could be carried at low-water. The dangers and difficulty of passing the bar were still further increased by cross-tides and a rapid current, caused by the large tidal space in the creek to be filled and emptied at each tide.

After passing the bar a wide and navigable stream is found, in which 8½ feet can be carried to Nomini Ferry, 3 miles above the mouth, and 5 feet can be carried for 2½ miles above the ferry.

The improvement proposed was the excavation of a channel 100 feet wide and 9 feet deep at low-water through the bar, and the estimated cost was \$20,000.

The first appropriation was made March 3, 1873, amounting to \$10,000. A contract was entered into and a channel dredged 50 feet wide, with a ruling depth of 7 feet at low-water. An additional appropriation of \$6,000 was made in the river and harbor act of June 23, 1874. In July, 1874, the work was transferred to me by Colonel Craighill. Proposals for further dredging were invited, and a contract made for the same. Work was commenced in October, 1874, but was interrupted by the cold and stormy winter which followed. Operations were suspended May 6, 1875, the funds being exhausted. The next appropriation was that of March 3, 1875, amounting to \$5,000. Bids were received for the dredging June 30, 1875, and a contract made for the work.

Operations were commenced October 6, 1875. The failure of the boiler of the dredge made it necessary to suspend work. As it has been found by experience that a dredge could not work at this locality in winter, the completion of the contract was postponed until next season. A survey of the channel was made in September, 1876. The average width was then about 90 feet except at White Point, where it has been increased to 200 feet to counteract the effect of the cross-currents.

The channel is reported to have generally preserved its depth, but should be widened still more to meet the increased requirements of navigation. The material has washed from the slopes during the passage of steamers. By giving the channel a greater width this difficulty may be obviated.

The channel is also exposed to the adverse action of storms and high winds, and, in order to insure its permanency, I would now recommend that the original plan be modified, so as to provide for a width of 150 feet. The increase in trade and the wide public benefit derived from the work already done has been so marked as to justify the enlargement of the channel. I therefore submit the following estimate for the additional work proposed:

ESTIMATE.	
50,000 cubic yards dredging, at 30 cents	\$15,000
Contingencies, 15 per cent	2,250
	17,250
Deduct amount appropriated March 3, 1879	2,500
Balance to be appropriated	14,750

An appropriation of \$2,500 was made March 3, 1879, for this work. Under so small an appropriation the price of dredging must be high, as

a considerable part of the total amount is required to pay the expenses of towing.

This sum will, when available, be applied to widening the cut where the need is most pressing. I would, however, urge that the entire sum asked for completing this work be appropriated at one time.

The several appropriations made have been as follows:

March 3, 1873	\$10,000
June 23, 1874	6,000
March 3, 1875	5,000
March 3, 1879	2,500

For the completion of the work an appropriation of \$15,000 is asked. The channel is now in constant use. Two lines of Washington steamers making three trips each week pass through it up the creek, and another line makes semi-weekly trips to Baltimore. The trade of a wide district now centers at Nomini Ferry, and this landing now makes the largest shipments of any on the Potomac below Alexandria.

The following statistics of trade show the approximate yearly business:

SHIPMENTS FROM NOMINI CREEK DURING THE PAST YEAR.

Cords of wood	1,650
Railroad ties	500
Posts	1,000
Feet lumber	40,000
Bushels grain, &c	81,300
Barrels fruit, vegetables, oysters, &c	24,600
Boxes produce, poultry, &c	12,600
Tons ivy root	80
Cattle	600
Sundries valued at	\$4,452

The work is in the collection district of Alexandria, which is the nearest port of entry.

The collections during the fiscal year were \$2,631.69.

Money statement.

Amount appropriated by act approved March 3, 1879	\$2,500 00
July 1, 1879, amount available	2,500 00
Amount (estimated) required for completion of existing project	15,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881	15,000 00

G 8.

IMPROVEMENT OF RAPPAHANNOCK RIVER, VIRGINIA.

HISTORY OF OPERATIONS.

The importance of the preservation and improvement of the navigation of the Rappahannock River was recognized by Congress in providing for its survey in the river and harbor act of August 30, 1852. A reconnaissance of the river was made by the late General Mansfield in that year, and a survey was made by the United States Coast Survey in 1853-'54.

In the act of July 11, 1870, a survey was again ordered, which was made under the direction of Maj. Wm. P. Craighill, Corps of Engineers,

whose report thereon will be found in the Report of the Chief of Engineers for 1874, part 2, page 31.

The Rappahannock River, from Fredericksburg, the head of navigation, to Chesapeake Bay, is 104 miles long. Fredericksburg, the most important commercial point on the river, has a valuable water-power and an extensive trade with domestic ports. The water-power is obtained by a well-constructed dam, which supplies the water for 9 mills.

The river between Fredericksburg and Port Royal (28 miles below) has a tortuous course, with high banks, some marshy flats, and a width increasing gradually from 350 to 1,500 feet. Below Port Royal the river takes the character of an estuary, and is but little affected by freshets or fluvial currents.

The obstructions are bars or shoals formed by the enlargement of the waterway beyond the normal width, and the action of freshets and also several wrecks.

The following table shows the localities which the Coast Survey maps indicated as requiring attention, and which were nearly all examined under the direction of Colonel Craighill.

The depth will be found to be generally greater than those given in the charts of the Coast Survey. The difference may be due to two causes, the short time allowed during the survey for the determination of the low-water plane, or the distance of the localities of the soundings from the gauge stations.

Number.	Locality.	Low-water depth, Coast Survey.	Depth found in 1870.
<i>Between Fredericksburg and Port Royal.</i>			
1	Fredericksburg Bar	Feet. 5 $\frac{1}{2}$	Feet. 5
2	Spottswood Bar	6	7
3	Castle's Ferry Bar	5	7
4	Spring Hill	8	10
5	Moss Neck	7
6	Farleyvale	8	8 $\frac{1}{2}$
7	Hough Creek	10	11
8	Mount Creek	11	12
9	Mill Bank	10
<i>Between Port Royal and Tappahannock.</i>			
10	Nanzatico Reach	10
11	Naylor's Hole	8

The bars at which improvements were considered necessary to secure 10 feet at low-water, with a channel 100 feet wide, are described in the report of 1870 as follows:

Fredericksburg Bar.—The shoal extends along the whole front of the town and down the river as far as Deep Run. Length, 1,800 yards; depth, 4 to 7 feet.

Spottswood Bar (4 $\frac{1}{2}$ miles below Fredericksburg.)—The river here expands in width, leaving a current without sufficient force to maintain a regular channel. Length, 1,800 yards; least depth about 6 feet at low-water.

Castle's Ferry Bar.—At Castle's Ferry, 8 miles below Fredericksburg, is found the next bar, which arises from the same cause as the one above. Length, 700 yards; depth, 8 feet at low-water.

Farleyvale Reach (12 miles below Fredericksburg).—A bar of slight extent, having a length of 350 yards and a depth of 8 feet.

In addition to these bars there were found between Fredericksburg and Port Royal 6 wrecks at Fredericksburg, and 3 at Spottswood Bar, which obstructed the channel.

Below Port Royal two bars were found.

Nanzatico Reach (3 miles below Port Royal).—Length, 800 yards; depth, 7 feet.

Naylor's Hole (one mile above Tappahannock), is the next and last shoal. The bar is due to the loose bottom, expanded water-way, and confluence of opposing tides. Its length is 800 yards. Depth, 7 feet.

The plan of improvement proposed was the removal of these bars and shoals by dredging (the channel to be 10 feet deep and 100 feet wide), and the regulation of the dimensions of the water-way by means of training-dikes. The estimated cost of the work was \$83,760.

IMPROVEMENT.

The several appropriations for the improvement and the work done under them have been briefly as follows:

March 3, 1871, \$15,000. Under this appropriation channels 70 feet wide and 8 feet deep at low-water were dredged, by contract, through Spottswood and Fredericksburg Bars and completed September, 1872. Wrecks were removed by contract as follows: One at Fredericksburg, one at Spottswood Bar, one at Piscatawa Creek, one at Urbana, one at Laurie's Point, and two at Mill Creek.

June 10, 1872, \$15,000. The channels at Fredericksburg and Spottswood Bars were widened to 120 feet by contract and the dredging completed in April, 1873. A dike 1,600 feet long was built along the left bank of the river, opposite Fredericksburg, to confine the dredged material which was placed behind it, and to contract the water-way of the stream over the bar. A dike was also constructed along the left bank below the steamboat wharf to rectify the wharf line, and filled with dredged material.

March 3, 1873, \$15,000. A freshet of unusual duration and height occurred in May, 1873, which caused some filling in the Fredericksburg Channel. It was therefore redredged by contract, the material being deposited behind the dikes and in the river below the bar. This work was concluded in November, 1873.

The dike on the left bank was extended and connected with the shore. Several logs and snags were removed below Spottswood Bar.

The work was transferred to my charge by Colonel Craighill in July, 1874.

June 23, 1874, \$7,000. The available balance July, 1874, including this appropriation, was nearly \$13,000. A dike was built by contract on the left bank of the river between the railroad bridge and the ferry, and completed March 8, 1875. The channel was dredged along the wharf front, where it was found to have filled in. The sand was placed behind this dike (No. 2) and the channel completed, 50 feet wide and 9 feet deep at low-water, July 28, 1875.

March 3, 1875, \$5,000. Applied to redredging the channel between Deep Run and the lower wharves as far as the funds permitted, the width being 50 feet and the depth 9 feet. The material was deposited behind the lower dike (No. 1), and the work concluded May 8, 1876.

August 14, 1876, \$10,000. This appropriation was made available January 22, 1877. The dike built in 1872 on the right bank below the steamboat wharf had been injured by ice, and was in danger of giving way, and precipitating the sand behind it into the channel. A new