

IMPROVEMENT OF THE HARBORS OF WASHINGTON AND GEORGETOWN, DISTRICT OF COLUMBIA; OF THE CHANNEL AT MOUNT VERNON, VIRGINIA, AND BRETON BAY, MARYLAND; OF TRIBUTARIES OF THE LOWER POTOMAC; OF RAPPAHANNOCK RIVER, URBANA CREEK, HAMPTON, CHICKAHOMINY, AND STAUNTON RIVERS, VIRGINIA; AND ROANOKE, PERQUIMANS, YADKIN, AND FRENCH BROAD RIVERS, NORTH CAROLINA.

Engineer in charge, Mr. S. T. Abert, United States Civil Engineer.

1. *Improvement of Harbors of Washington and Georgetown, District of Columbia.*—Of the appropriation of \$50,000 of June 18, 1878, for this improvement, \$20,000 was to be applied to the Washington channel and \$30,000 to the Georgetown channel.

Proposals for the dredging required at these localities were invited by public advertisement, and the work awarded to the lowest bidders, who commenced work August, 1878, on the Georgetown channel.

The tug and appliances employed by them were not adapted to the work, so that the dredging proceeded in a slow and unsatisfactory manner, and finally ceased altogether. The contractors, after due and repeated notification, failed to prosecute the work in accordance with the requirements of their contract, and it was therefore annulled November 16, 1878.

Up to that date but a small amount of work had been done on the Georgetown channel. Bids for the completion of the dredging were invited, and operations commenced in April on the Georgetown channel with two dipper dredges, and on the Washington channel with one grapple dredge. The latter channel is nearly completed to a width of 200 feet, and a depth of 12 feet at low-water. The Georgetown channel has been dredged to a width of about 60 feet through the bar, and is progressing favorably. The depth is 16 feet at low-water.

The appropriation of March 3, 1879, will be expended in widening and deepening the channels now in progress.

The engineer in charge renews his recommendations in relation to the permanent improvement of the harbor, in accordance with the modified plan he submitted in his last annual report.

The estimated cost of this work, which provides for reclaiming the flats with the sand excavated from the river-bed, he puts down at \$2,592,000, with annual appropriations of \$200,000 for its gradual execution.

The estimated cost of removing the rocks at the outlet-lock of the Chesapeake and Ohio Canal is \$44,000.

He also submits an estimate for the continuation of the removal of rock in Georgetown Harbor, commenced in 1876, amounting to \$24,000.

July 1, 1878, amount available.....	\$50,078 22	
Amount appropriated by act approved March 3, 1879.....	50,000 00	\$100,078 22
July 1, 1879, amount expended during fiscal year.....	23,363 71	
July 1, 1879, outstanding liabilities.....	2,019 11	25,382 82
July 1, 1879, amount available.....		74,695 40
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised at this office.....		120,000 00

(See Appendix G 1.)

2. *Improvement of channel at Mount Vernon, Virginia.*—An appropriation was made in the act of March 3, 1879, for the improvement of this channel, which crosses the flats between the main channel of the Potomac River, and the wharf at Mount Vernon. The depth of water now existing over the flats is but 4 feet at ordinary low-water. During high northwest winds the depth is so much reduced that the steamer which carries passengers and mails between Washington and Mount Vernon is unable to reach the wharf.

The plan of improvement proposed is to dredge a channel 150 feet wide, and 6 to 7 feet deep, at low-water, across the flats, and the estimated cost is \$14,000. The appropriation now available will be applied to dredging a channel of such width as the funds will permit. To complete the work \$10,000 will be required, and the engineer in charge recommends that this amount be appropriated for the next fiscal year.

Amount appropriated by act approved March 3, 1879.....	\$4,000 00
July 1, 1879, amount available.....	4,000 00

Amount (estimated) required for completion of existing project.....	10,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	10,000 00

(See Appendix G 2.)

3. *Improvement of Breton Bay, Leonardtown, Maryland.*—The appropriation made for this work, June 18, 1878, has been applied to dredging a part of the proposed channel from Breton Bay to the Leonardtown wharf, where the least depth has heretofore been 5 feet. The funds were sufficient to excavate a channel 60 feet wide and 9 feet deep, and it is proposed, with the appropriation of March 3, 1879, to widen this channel and also the basin for turning steamers at the wharf. For the completion of the work \$21,000 will be needed, and the engineer in charge recommends an appropriation of \$15,000 for the next fiscal year.

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 fiscal year.....	\$9,000 00
	4,756 67

July 1, 1879, amount available.....	4,243 33
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Amount (estimated) required for completion of existing project.....	21,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office.....	10,000 00

(See Appendix G 3.)

4. *Improvement of Accotink Creek, Virginia.*—This work was commenced in 1872 with an appropriation of \$5,000, and a channel was dredged from the town of Accotink to a point in Accotink Bay $1\frac{1}{2}$ miles below. The continuation and completion of the work was not provided for by subsequent appropriations, and the channel has since filled in to such an extent that it can hardly be used. In order to complete the work according to the original estimate \$14,000 will be required.

(See Appendix G 4.)

5. *Improvement of Occoquan River, Virginia.*—Under the appropriation of June 18, 1878, for the completion of this improvement, bids were invited for dredging at the mouth of the river and at other points where deposits from freshets had taken place, and the contract awarded to the lowest bidder. Under this contract the channel through the bar at the mouth of the river between Taylor's Point and Sandy Point was dredged and widened to 100 feet.

Evidence of a transfer of the contract contrary to its provisions and those of section 3737 of the Revised Statutes having been filed with

the engineer in charge, the contract was, with the sanction of the Secretary of War, annulled, and the bondsmen directed to proceed with its completion.

Work is now in progress near the town of Occoquan, where a bar has formed by the deposits of sand during freshets.

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

July 1, 1879, amount available..... 5,669 57

(See Appendix G 5.)

6. *Improvement of Aquia Creek, Virginia.*—A channel 50 feet wide and 5 feet deep at low-water has been dredged from the end of the old channel above the bridge of the Richmond, Fredericksburg and Potomac Railroad to Walker's Landing, 1,800 feet below the bridge, where a sufficient depth of water for the present navigation is found. The channel dredged in 1874 and 1875 between the bridge and the "Narrows" above had generally preserved its depth, except near the upper island. It was deepened wherever shoaling had occurred, and several logs and obstructions were removed. A channel was next dredged through a small bar above Coal Landing, above the "Narrows." Between Wharton's Landing and Dent's Landing the creek had become very shoal and could not be passed except at high-water. A channel 50 feet wide and 5 feet deep at low-water was commenced at this locality in October and finished in December, 1878. This completes all the work requested by the citizens interested in the improvement, and gives a sufficient depth for the present demand of trade. The improvement has been of material benefit to the residents of the section of the country through which the stream passes.

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

(See Appendix G 6.)

7. *Improvement of Nomini Creek, Virginia.*—The improvement of the bar at the mouth of this creek was commenced in 1873, and has been continued as far as the several appropriations would allow, resulting in a channel about 9 feet deep and 90 feet wide where but 3 feet could be carried before the work was begun. The opening of this channel has afforded an outlet to a large and productive section of country, and three lines of steamers now pass through it to landings on the creek. The increase in trade and the resulting public benefit have been such that the enlargement of the present channel to meet the increased demands of navigation is recommended by the officer in charge. The present width is not sufficient for steamers, and renders the channel subject to deterioration from the action of cross-currents and high winds. It is proposed to make the width 150 feet with a depth of 9 feet, the estimated cost being about \$17,500.

An appropriation of \$2,500 was made March 3, 1879, which will be applied to this widening.

For the completion of the work an appropriation of \$15,000 is required.

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, as revised in this office	7,500 00

(See Appendix G 7.)

8. *Improvement of Rappahannock River, Virginia.*—With the appropriation of June 18, 1878, a contract was entered into for building two dikes near Fredericksburg for the storage of sand dredged from the river.

One of these dikes on the right bank of the river has been completed. The other along the opposite bank was still in progress at the end of the fiscal year. A contract was also entered into for dredging the channel along the wharf front of Fredericksburg to remove the recent deposits of sand. This work was completed in April.

A survey of Spottswood Bar has been made and the ruling depth at low-water found to be 7 feet.

The work to be done under the appropriation of March 3, 1879, will be the construction of wing-dams at Spottswood Bar and dikes at Fredericksburg, and the removal of snags, logs, and other obstructions at Spottswood Bar. A revised estimate for the completion of the improvement is submitted by the officer in charge. It is proposed to secure a channel 100 feet wide and 10 feet deep at low-water between Fredericksburg and Port Royal by dredging and wing-dams; and between Port Royal and Tappahannock, to provide for the navigation of the river by vessels drawing 15 feet. This depth at low-water will be obtained by dredging, the width of channel being 200 feet.

Training dikes will be employed to effect the proper action of the tidal currents in maintaining required dimensions of channels in such portions of the proposed cut as may not be kept opened by the natural force of current.

The estimated cost of the entire work is \$290,000, and an appropriation of \$50,000 is recommended for the next fiscal year.

July 1, 1878, amount available.....	\$13,500 00
Amount appropriated by act approved March 3, 1879.....	10,000 00
	<u>\$23,500 00</u>
July 1, 1879, amount expended during fiscal year.....	10,398 03
July 1, 1879, outstanding liabilities.....	355 34
	<u>10,753 37</u>

July 1, 1879, amount available..... 12,746 63

Amount (estimated) required for completion of existing project.....	290,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	50,000 00

(See Appendix G 8.)

9. *Improvement of Urbana Creek, Virginia.*—The obstruction to navigation at Urbana Creek consists of a bar of sand at the mouth, over which but 6½ feet could be carried when the survey was made in December, 1874.

The appropriation of March 3, 1879, will be expended in dredging a channel through this bar 10 feet deep at low-water and of such width as the funds will allow.

The estimated cost of the dredging is \$20,000, and \$15,000 will therefore be required to complete it. For the next fiscal year an appropriation of \$7,500 is asked.

Amount appropriated by act approved March 3, 1879.....	\$5,000 00
July 1, 1879, amount available.....	5,000 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, as revised in this office	7,500 00

(See Appendix G 9.)

10. *Improvement of Hampton River, Virginia.*—Work was commenced during the fiscal year under the appropriation of June 18, 1878. A bar exists at the mouth of the river, through which it is proposed to dredge a channel 9 feet deep and of such width as the funds permit.

Dredging is now in progress, and the appropriation of March 3, 1879, will be applied to the continuation of the work already undertaken. The amount appropriated will be sufficient to do the dredging proposed, and, unless the construction of a jetty to protect the channel from the action of storms should hereafter be found necessary, no additional appropriation will be required.

July 1, 1878, amount available	\$10,000 00	
Amount appropriated by act approved March 3, 1879	2,000 00	\$12,000 00
July 1, 1879, amount expended during fiscal year	2,073 92	
July 1, 1879, outstanding liabilities	164 61	2,238 53
July 1, 1879, amount available		9,761 47

(See Appendix G 10.)

11. *Improvement of Chickahominy River, Virginia.*—Surveys of the several obstructions to navigation were made preliminary to the commencement of the improvement under the appropriation of June 18, 1878. These obstructions were three in number, viz: Binn's Bar, 23 miles from the mouth of the river, and Old Fort and Windsor Shades Bars, about 2 miles above Binn's Bar. The ruling depth over these bars was from 4 to 5 feet at low-water. The plan of improvement provided for dredging channels through them 8 feet deep at low-water. The work was executed by contract. Channels were dredged through Binn's Bar to a width of 100 feet, and through Old Fort and Windsor Shades Bar to a width of 60 feet.

In order to meet the requirements of navigation these channels should be widened and several dikes built to close other channels through the marshes and swamps which border this river. The estimated cost of this work is \$10,000.

An appropriation of \$1,000 was made March 3, 1879, leaving \$9,000 which will be required for the completion of the present project.

July 1, 1878, amount available	\$5,000 00	
Amount appropriated by act approved March 3, 1879	1,000 00	\$6,000 00
July 1, 1879, amount expended during fiscal year	4,982 38	
July 1, 1879, amount available	1,017 62	

Amount (estimated) required for completion of existing project	9,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office	5,000 00

(See Appendix G 11.)

12. *Improvement of Staunton River, Virginia.*—An examination of this river was made in accordance with the requirements of the river and harbor act of June 18, 1878, the report of which will be found in Appendix.

In the act of March 3, 1879, an appropriation of \$5,000 was made for the improvement, which will comprise rock and gravel excavation and the construction of wing-dams at the several shoals that now obstruct the navigation between Roanoke Station and Brookneal, Virginia. For the completion of the work \$30,000 will be required, and an appropriation of \$15,000 is recommended by the engineer in charge for the next fiscal year.

Amount appropriated by act approved March 3, 1879	\$5,000 00
July 1, 1879, amount available	5,000 00

Amount (estimated) required for completion of existing project	30,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881 ..	15,000 00

(See Appendix G 13.)

13. *Improvement of Roanoke River, North Carolina.*—The last appropriation for this improvement was made June 23, 1874. Work has remained suspended, no funds having been available. An account of the operations of previous years will be found in Appendix.

To complete the work according to the estimate dated December, 1871, \$222,000 will be required. But for the present it is proposed to confine operations to the removal of snags and repair of dikes.

An appropriation of \$5,000 is recommended by the engineer in charge for this object for the next fiscal year.

Amount (estimated) required for completion of existing project	\$222,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881 ..	5,000 00

(See Appendix G 14.)

14. *Improvement of Perquimans River, North Carolina.*—At the date of the last report the removal of stumps at Hertford had been completed. No further appropriations for this work are required.

July 1, 1878, amount available	\$587 24
July 1, 1879, amount expended during fiscal year	360 00

July 1, 1879, amount available	227 24
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(See Appendix G 15.)

15. *Improvement of Yadkin River, North Carolina.*—The report upon the survey of this river between the bridge on the North Carolina Railroad and Wilkesborough, provided for by the river and harbor act of June 18, 1878, was transmitted to Congress and printed in Senate Ex. Doc. No. 35, Forty-sixth Congress, first session, and will be found in Appendix G 16.

It is proposed to improve the river for steamboat navigation from the North Carolina Railroad bridge, near Salisbury, to the foot of Bean Shoal, the principal obstruction.

The required depth and slope of the water surface will be secured by building wing-dams and by rock and gravel excavation at the shoals.

The cost of this improvement will be \$82,000. An appropriation of \$20,000 was made March 3, 1879, for the commencement of the work; \$62,000 will be needed for its completion, and \$40,000 is asked for the next fiscal year by the officer in charge.

Amount appropriated by act approved March 3, 1879	\$20,000 00
July 1, 1879, amount available	20,000 00

Amount (estimated) required for completion of existing project	62,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office	30,000 00

(See Appendix G 16.)

16. *Improvement of French Broad River, North Carolina.*—The operations during the past fiscal year have been as follows:

At Davidson's River a channel has been dredged through the entire length of the shoal, and 16 wing-dams built, to secure a slope which could be ascended by steamers or bateaux.

At Patton's Shoal a channel has been dredged and the construction of the necessary wing dams completed.

At Allison's Shoal the excavation of a channel through the deposits of gravel, of which it is formed, was the only work which was found necessary, and has been finished.

Cherokee Shoal is formed of rock and gravel, and in order to secure the required depth of channel and slope of the water surface a considerable amount of rock excavation as well as dredging has been needed. This work, together with the construction of wing-dams, is in progress.

The appropriation of March 3, 1879, will be applied to the continuation of the work as heretofore. For its completion according to the original estimate \$25,000 will be required.

July 1, 1878, amount available	\$17,837 92	
Amount appropriated by act approved March 3, 1879.....	5,000 00	\$22,837 92
July 1, 1879, amount expended during fiscal year.....		10,251 84
July 1, 1879, amount available.....		12,586 08
Amount (estimated) required for completion of existing project		25,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office		10,000 00

(See Appendix G 17.)

EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

To comply with provisions of the river and harbor act of June 18, 1878, Mr. Abert was charged with, and has completed, the following examinations and surveys:

1. *Staunton River from Roanoke Depot, in Charlotte County, Virginia, to Brookneal, in the county of Campbell, Virginia.* The results of this examination were submitted to Congress and printed in House Ex. Doc. No. 43, Forty-fifth Congress, third session. (See also Appendix G 13.)
2. *Dan River, Virginia, from Clarksville, via Danville, Virginia, to Danbury, North Carolina.* (See Appendix G 19.)
3. *Yadkin River, North Carolina, between the bridge on the North Carolina Railroad and Wilkesborough.* (See Appendix G 16.)

And to comply with provisions of the river and harbor act of March 3, 1879, has been charged with, and is now engaged upon, the following, the result of which will be duly submitted when received.

1. *Dan River, Virginia, from Clarksville, Virginia, to Danbury, North Carolina.* (Continued.)

IMPROVEMENT OF THE HARBORS OF NORFOLK, VIRGINIA, AND EDENTON, NORTH CAROLINA; OF ELIZABETH, NANSEMOND, AND BLACK-WATER RIVERS, VIRGINIA, AND OF CURRITUCK SOUND, NORTH RIVER BAR, AND CERTAIN RIVERS IN NORTH CAROLINA.

Officer in charge, Capt. C. B. Phillips, Corps of Engineers.

1. *Improvement of Norfolk Harbor, Virginia.*—The act of June 18, 1878, appropriated \$50,000 for continuing this improvement. Work during the fiscal year ending June 30, 1879, has been conducted in furtherance of the existing project for the improvement of the harbor and its approaches, and has consisted simply in dredging.

In the harbor proper about 60,000 cubic yards of material have been removed from the bar at the mouth of the Eastern Branch of Elizabeth River, increasing the width of channel at this point to 690 feet, with a depth of 22 feet, thus greatly benefiting this valuable portion of the harbor. At the mouth of the Southern Branch (the approach to the Gosport navy-yard) 115,000 cubic yards have been dredged, adding 240 feet to the available width of the channel, with a depth of 25 feet.

At the approach to the harbor about 128,000 cubic yards have been dredged at the bar off the mouth of the Western Branch.

Three cuts aggregating 115 feet in width, with a depth of 25 feet at ordinary low-water, have been made the entire length of the bar, a distance of 1,900 feet. Total amount of material removed from the three localities, 302,490 cubic yards.

All the above was done by contract, at the low price of 7.7 cents per cubic yard. The material has all been dumped on the flats below, and to the west of Craney Island.

The contract called for the excavation of 350,000 cubic yards, more or less, during the fiscal year.

On account of the unusual severity of the past winter, the time for the completion of the contract has been extended until July 31, 1879.

The act of March 3, 1879, appropriated \$75,000 for continuing this important work.

It is proposed to continue dredging at the bar off the mouth of the Western Branch until a width of 400 feet shall have been attained, and to dredge in the inner harbor from the flats on the Portsmouth side, in order to increase the area of available anchorage ground, and to restore, in a measure, the cross-sectioned area which has been lost in the harbor during the last twenty years.

It is estimated that the material which should be removed from these two localities will amount to about 670,000 cubic yards, which will be all that can probably be undertaken with the new appropriation. The existing project contemplates the ultimate excavation of a channel 500 feet in width and 25 feet in depth at ordinary low-water from the harbor proper to the deep water of Hampton Roads.

July 1, 1878, amount available.....	\$53,305 78	
Amount appropriated by act approved March 3, 1879.....	75,000 00	\$128,305 78
July 1, 1879, amount expended during fiscal year	28,272 63	
July 1, 1879, outstanding liabilities	2,329 14	30,601 77
July 1, amount available		97,704 01
Amount (estimated) required for completion of existing project.....		218,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.		100,000 00

(See Appendix H 1.)

2. *Improvement of South Branch of Elizabeth River, Virginia.*—The appropriation of June 18, 1878, has been expended in dredging the channel between the lock of the canal and Park's Gap below, including the deepening and widening of the approaches to the latter. Dredging was completed in January. The result has been to secure a channel 7½ feet in depth and from 60 to 80 feet in width between the two points referred to above.

No further expenditure on this work seems to be called for at present.

July 1, 1878, amount available.....	\$5,267 95
July 1, 1879, amount expended during fiscal year	5,267 95

(See Appendix H 2.)

3. *Improvement of Nansemond River, Virginia.*—Nothing has been done upon this improvement during the past fiscal year. It was intended to apply the appropriation of June 18, 1878, to the repair of the dikes at the mouth of the Western Branch. An examination of these dikes during the month of November last found them in such comparatively good condition that it was deemed best to defer repairs until after another warm season, the water being infested with the teredo.

The dikes will be thoroughly repaired during the present fall, after which it is expected that nothing more will be required at this work for several years.

The dredged portions of the channel have continued to maintain their respective depths remarkably well.

No appropriation will be required for the fiscal year ending June 30, 1881.

July 1, 1878, amount available.....	\$2,100 73
July 1, 1879, amount available.....	2,100 73

(See Appendix H 3.)

4. *Improvement of Blackwater River, Virginia.*—Mr. S. T. Abert, U. S. Civil Engineer, was in charge of this work until May 7, 1879.

The act of June 18, 1878, appropriated \$5,000 for this improvement. Operations during the fiscal year have been confined to clearing the bed and banks of the river of snags, stumps, overhanging and fallen trees. The work was commenced in August, 1878, and completed in December last. During this period the entire river was cleared from Franklin, the head of navigation, to its mouth. The number of snags, logs, and fallen trees removed was 1,223; the number of overhanging trees removed was 144.

The work remaining to be done consists principally in the trimming off of points at several abrupt bends in the river.

By act of March 3, 1879, an additional appropriation was made for this work. This, together with the balance of the old appropriation, will be applied to dredging at one or more of the abrupt bends referred to.

July 1, 1878, amount available.....	\$5,000 00
Amount appropriated by act approved March 3, 1879.....	2,500 00
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	\$7,500 00
July 1, 1879, amount expended during fiscal year.....	3,363 43
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July 1, 1879, amount available.....	4,136 57
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Amount (estimated) required for completion of existing project.....	7,350 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.	7,350 00

(See Appendixes G 12 and H 4.)

5. *Improvement of North Landing River, Virginia and North Carolina.*—To comply with provisions of the river and harbor act of June 18, 1878, a survey was made, and a report, accompanied by a plan and estimate of cost of improvement, was transmitted to Congress and printed in House Ex. Doc. No. 68, Forty-fifth Congress, third session.

The improvement proposed consists mainly in dredging so as to secure a channel 80 feet in width at bottom and 9 feet in depth at an ordinary stage of water. Some logs and stumps are also to be removed from the upper part of the river, and several points are to be cut off where bends are too abrupt for safe and easy navigation.

The estimated cost of the whole improvement proposed amounts to \$88,000.

The act of March 3, 1879, appropriated \$25,000 for this work. It is proposed to apply this amount to carrying out the work above indicated so far as funds will permit.

Amount appropriated by act approved March 3, 1879.....	\$25,000 00
July 1, 1879, amount available.....	25,000 00
Amount (estimated) required for completion of existing project.....	63,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office.....	33,000 00

(See Appendix H 5.)

6. *Improvement of Currituck Sound and North River Bar, North Carolina.*—The object of this improvement is to secure a channel 80 feet in width at bottom and 9 feet in depth at an ordinary *winter* stage of water, through the entire length of the upper sound, a distance of 10½ miles

from Farraby's Island to the northern end of the Carolina Cut of the Albemarle and Chesapeake Canal.

An appropriation of \$20,000 was made for this work by act of June 18, 1878.

From a careful survey of the upper sound, made during the months of September and October, 1878, it was estimated that the cost of excavating the proposed channel would amount to about \$90,000; and as the appropriation was less than one-fourth that amount, it was determined to apply it to those portions of the channel most in need of attention, securing the proper depth of water, but cutting to but little more than half the width contemplated ultimately.

The portions of the channel selected for dredging were: 1st, from Farraby's Island south a distance of about 4 miles; and, 2d, between buoys Nos. 6 and 10, a distance of about three-fifths of a mile.

A contract was entered into for the excavation at the rate of 9¾ cents per cubic yard, and was completed on the last day of the fiscal year. Over 138,000 cubic yards of material were removed.

The portions of the channel mentioned above have been dredged to a width of fully 50 feet and to a depth of 9 feet at an ordinary *winter* stage of water. Some dredging was done at a shell reef below Farraby's Island, and also at the turn at the new beacon opposite Mackey's Island.

It is proposed to apply the appropriation of March 3, 1879, to carrying out, as far as it will permit, the project for an 80-foot channel the entire length of the upper sound. It is not deemed advisable to attempt an improvement of North River Bar until the above shall have been accomplished.

To complete the estimate will require a further appropriation of \$45,000.

July 1, 1878, amount available.....	\$20,000 00
Amount appropriated by act approved March 3, 1879.....	25,000 00
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	\$45,000 00
July 1, 1879, amount expended during fiscal year.....	16,947 44
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July 1, 1879, amount available.....	28,052 56
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Amount (estimated) required for completion of existing project.....	45,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office.....	25,000 00

(See Appendix H 6.)

7. *Improvement of Edenton Harbor, North Carolina.*—During the past fiscal year the appropriation of June 18, 1878, has been expended in excavating a channel from the town of Edenton across the bar to the deep water of the bay. The channel is 850 yards in length, and has been excavated to a width of 100 feet and a depth of 9 feet at an ordinary stage of water. These dimensions seem to be all that are required at this locality.

A turning-basin was also commenced inside the bar, though but little was done to it on account of the near exhaustion of funds. It is proposed to apply the appropriation of March 3, 1879, to the completion of this basin. It will be dredged to 9 feet in depth; one side will conform as nearly as possible to the present Port Warden's line, and it will be made as wide as funds will permit.

On the completion of this turning-basin, all that appears necessary at this locality will have been accomplished; in fact, considerably more