

will have been done than was originally contemplated in the year 1872; and no further appropriation for the work is asked for at present.

July 1, 1878, amount available.....	\$4,000 00
Amount appropriated by act approved March 3, 1879.....	1,000 00
	<hr/>
	\$5,000 00
July 1, 1879, amount expended during fiscal year.....	3,991 44
	<hr/>
July 1, 1879, amount available.....	1,008 56

(See Appendix H 7.)

8. *Improvement of Scuppernon River, North Carolina.*—An appropriation was made for the improvement of this river by act of June 18, 1878. As there had been no examination or survey of the river with a view to its improvement, an examination became necessary to determine the most judicious method of expending the appropriation, and to estimate the total cost of improvement proper to be made. It was estimated that the amount available would be sufficient to excavate a channel of proper dimensions across the bar at the mouth of the river, and that a further amount of \$6,000 would be required to clear the upper river of the obstructions to navigation.

Proposals for dredging at the bar were invited, and the only one received was rejected on the ground that it was unreasonably high.

By act of March 3, 1879, an additional appropriation was made for the work, which added to the amount already available, made a sum sufficiently large to warrant the belief that reasonable bids might be expected should the work be readvertised. The appropriation of June 18, 1878, therefore remained unexpended up to the close of the fiscal year.

July 1, 1878, amount available.....	\$2,000 00
Amount appropriated by act approved March 3, 1879.....	2,000 00
	<hr/>
	\$4,000 00
July 1, 1879, amount expended during fiscal year.....	231 57
	<hr/>
July 1, 1879, amount available.....	3,768 43

Amount (estimated) required for completion of existing project.....	4,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881..	4,000 00

(See Appendix H 8.)

9. *Improvement of Tar River, North Carolina.*—A survey of this river from Washington to Tarboro' was required by the river and harbor act of June 18, 1878. The survey was made during the month of December last, and a report, accompanied by a plan and estimate of cost of improvement proposed, was transmitted to Congress and printed in House Ex. Doc. No. 68, Forty-fifth Congress, third session.

The estimated cost of the whole improvement proposed amounted to \$10,000.

It is proposed to apply the appropriation of March 3, 1879, to clearing the river of all obstructions, both natural and artificial, that now impede navigation, without dredging or the construction of jetties or other works—commencing at the town of Washington and proceeding up the river as far as available funds will permit.

Amount appropriated by act approved March 3, 1879.....	\$3,000 00
July 1, 1879, amount available.....	3,000 00
	<hr/>
	7,000 00

Amount (estimated) required for completion of existing project.....	7,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881..	7,000 00

(See Appendix H 9.)

10. *Improvement of Pamlico River, North Carolina.*—Mr. S. T. Abert, United States civil engineer, was in charge of this work until May 7, 1879.

As stated in the last annual report, work was suspended at this locality in June, 1878, owing to the near exhaustion of available funds.

The work remaining to be done consists principally in widening the channel across the stumpy shoal about 1 mile below the town of Washington, N. C. An appropriation was made for continuing this improvement by act of March 3, 1879. This it is proposed to expend in widening the channel referred to, although it is estimated that the entire width that will thus be attained will not exceed 130 feet. It should be ultimately increased to a width of 200 feet. The dredged channel across the bar immediately below the town, which is now but 175 feet in width, should also be made 200 feet wide. Dredging at each of these points has been to 9 feet at an ordinary stage of water.

July 1, 1878, amount available.....	\$2,070 57
Amount appropriated by act approved March 3, 1879.....	3,000 00
	<hr/>
	\$5,070 57
July 1, 1879, amount expended during fiscal year.....	1,209 80
	<hr/>
July 1, 1879, amount available.....	3,860 77

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 Appendixes G 18 and H 10.)

11. *Improvement of Neuse River, North Carolina.*—A survey of the river was made under the direction of Major Craighill, Corps of Engineers, in 1871. His estimate of the cost of the proposed improvement amounted to \$153,000, of which amount \$51,000 was the estimate for the removal of obstructions, both natural and artificial. Further improvements in the way of cutting off certain abrupt bends in the river were also contemplated.

It was determined to apply the entire appropriation of June 18, 1878, to the removal of obstructions, commencing at the mouth of the river and working up as far toward Goldsboro' as funds would permit.

Active operations have continued to the close of the fiscal year. At the Fort Point Blockade, about 3 miles below New Berne, a sunken brig, a schooner, and other artificial obstructions were removed, adding 550 feet to the available width of channel. At Johnson's Point, below, 160 "Yankee catchers" were removed, adding over 500 feet to the available width.

A long point to the east of New Berne was cut across by dredging a channel 150 yards in length, 100 feet wide, and 8 feet in depth.

Five vessels of various sizes were removed from the blockade of the Linkfield Channel above New Berne.

The artificial obstructions having been thus partially removed, the force proceeded up the river, clearing the channel and banks of snags, logs, and overhanging and fallen trees. This work had progressed at the close of the fiscal year to a point about 15 miles above the town of Kinston, or to within 31 miles of the railroad bridge near Goldsboro'. The worst portion of the river has been passed, and the work is now comparatively light. Aside from the above work, five perpendicular jetties have been constructed at a long bar below Kinston. The jetties are of sheet piling, and average about 100 feet in length. The channel has improved much since their construction.

Piles have been driven at the approaches to both the railroad and the county bridges below Kinston.

A steam hoister for the work has been commenced and is now nearly completed.

By act of March 3, 1879, an appropriation was made for continuing

this work. It is proposed to continue the clearing of the river as high as Goldsboro', to complete the removal of the artificial obstructions near New Berne, to construct about 2,600 linear feet of sheet-pile jetties, to trim off points at three abrupt bends in the river, and to make some attempts to check the washing of the concave banks above Kinston.

July 1, 1878, amount available.....	\$40,000 00	
Amount appropriated by act approved March 3, 1879.....	45,000 00	\$85,000 00
July 1, 1879, amount expended during fiscal year.....	26,626 19	
July 1, 1879, outstanding liabilities.....	2,694 92	
		29,321 11
July 1, 1879, amount available.....	55,678 89	
Amount (estimated) required for completion of existing project.....	68,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office.....	40,000 00	

(See Appendix H 11.)

12. *Improvement of Trent River, North Carolina.*—The river and harbor act of June 18, 1878, made provision for the survey of this river. The survey was made during the month of December last, and a report upon same, accompanied by a plan and estimate of the cost of the proposed improvement, was transmitted to Congress, and printed in House Ex. Doc. No. 68, Forty-fifth Congress, third session. The estimated cost of the whole improvement proposed amounted to \$22,000.

It is proposed to apply the appropriation of March 3, 1879, to clearing the river of its present obstructions, such as snags and fallen and overhanging trees, commencing at the town of Pollocksville and proceeding up the river as far as Trenton, the head of navigation. Other work proposed, such as dredging and the construction of deflecting dikes, will necessarily be postponed until a further appropriation is made.

Amount appropriated by act approved March 3, 1879.....	\$7,000 00
July 1, 1879, amount available.....	7,000 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 H 12.)

13. *Survey for an interior water communication between Norfolk, Virginia, and the Atlantic Ocean, south of Hatteras.*—The river and harbor act of June 18, 1878, made an appropriation for the purpose of having "a complete survey and examination of all the water lines and routes leading or that may lead from the harbor of Norfolk to the Atlantic Ocean, south of Hatteras, including any communication that may be practicable with the Cape Fear River."

This survey has been in progress since the early part of September, 1878. The field-work north of Albemarle Sound was completed in February, and included surveys of the Albemarle and Chesapeake and the Dismal Swamp Canals, the Pasquotank, North Landing, and North Rivers, Currituck Sound, and Lake Drummond. The field-work south of Pamlico Sound was completed in April last, and included, besides a number of trial lines, a careful survey of a line from the Trent to the White Oak River, a portion of the White Oak, a line from the latter to the New River, and thence to the northeast branch of the Cape Fear River, and a line from Newport River to the White Oak, near Swansboro'. Since April, work has been confined to the office, preparing maps and estimates.

Maps of all the work are in an advanced state, and a full and final report upon the survey will be transmitted to Congress at its next session.

July 1, 1878, amount available.....	\$20,000 00
July 1, 1879, amount expended during fiscal year.....	18,966 73
July 1, 1879, amount available.....	1,033 27

(See Appendix H 13.)

EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

The act of June 18, 1878, provided for examinations or surveys, or both, and estimates of cost of improvement proper to be made at the following localities:

1. *North Landing River, Virginia.* (See Appendix H 5.)
2. *Onancock Harbor, Virginia.* (See Appendix H 14.)
3. *The Nottoway River, Virginia.* (See Appendix H 15.)
4. *Pee Dee River, from Cheraw, South Carolina, to the mouth of the Ucharie River, North Carolina.* (See Appendix H 16.)
5. *The Trent River, North Carolina.* (See Appendix H 12.)
6. *Neuse River, from Smithfield to Goldsboro', North Carolina.* (See Appendix H 11.)
7. *Chowan River, North Carolina.* (See Appendix H 17.)
8. *The Tar River, North Carolina, from Washington to Tarboro'.* (See Appendix H 9.)

The reports upon each of these examinations and surveys were transmitted to Congress and printed in House Ex. Doc. No. 68, Forty-fifth Congress, third session.

The act of March 3, 1879, provided for examinations or surveys at each of the following localities, the results of which will be duly submitted when received:

1. *York River, Virginia.*
2. *Pamunkey River, Virginia.*
3. *Archer's Hope River, Virginia.*
4. *Lynn Haven Bay, Virginia.*
5. *Link Horn Bay, Virginia.*
6. *Broad Bay, Virginia.*
7. *Lockwood's Folly River, North Carolina.*
8. *Waccamaw River, North Carolina.*
9. *Catawba River, North Carolina.*
10. *The Pee Dee River, South Carolina.*
11. *Catawba River, South Carolina.*
12. *Wateree River, South Carolina.*
13. *Santee River, South Carolina.*

IMPROVEMENT OF THE RIVERS AND HARBORS ON THE COAST OF SOUTH CAROLINA, GEORGIA, AND THE ATLANTIC COAST OF FLORIDA.

Officer in charge, Lieut. Col. Q. A. Gillmore, Corps of Engineers, having under his immediate orders Capt. James C. Post, Corps of Engineers.

I. *Improvement of the Harbor of Charleston, South Carolina.*—The work done during the fiscal year was the beginning of a new project. There had previously been expended, between the years 1871 and 1878, the sum of \$93,000 in removing 14 wrecks of iron-clad and wooden vessels, and in taking down a portion of the outer end of the Bowman jetty in Beach Channel.

During the last fiscal year additional borings and current observations were made upon the bar, and a new survey was made of that portion of the bar where the north jetty was to be located. The new plan of improvement comprises the construction of two low jetties of riprap-stone, resting on mattresses of logs and brush, one starting from the north shore and the other from the south shore of the throat of the harbor, and converging towards each other in such manner that their sea ends on the outer slope of the bar will be from $\frac{1}{2}$ to $\frac{5}{8}$ of a mile apart, or such distance as may be hereafter fixed. The work of construction accomplished during the year consisted in laying the north jetty for a length of 4,096 linear feet, measured from the high-water mark on Sullivan's Island, with a bottom width varying from 43 to 66 feet, and a height varying from 4 to 5 feet—generally from 4 to $4\frac{1}{2}$ feet. No settlement has taken place upon any part of the work, and the sand, especially in the deeper portions of the bar alongside the jetty, is gradually filling in along the slopes of the work.

During the current fiscal year the north jetty will be increased in both length and height, and work upon the south jetty will be started. The method of construction, with mattresses of logs and brush loaded with stone, will be continued, and where the water is rather deep will be applied not only to the foundations but to the body of the work.

July 1, 1878, amount available.....	\$200,976 35	
Amount appropriated by act approved March 3, 1879.....	200,000 00	
		\$400,976 35
July 1, 1879, amount expended during fiscal year.....	56,395 75	
July 1, 1879, outstanding liabilities.....	12,131 13	
		68,526 88
July 1, 1879, amount available.....		332,449 47
Amount (estimated) required for completion of existing project.....	1,400,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	500,000 00	

(See Appendix I 1.)

2. *Improvement of Savannah River and Harbor, Georgia.*—The project of improvement now being carried on was submitted August 28, 1873. Previous to that time and subsequent to January 1, 1865, a large number of wrecks, cribs, and other obstructions had been removed under a contract awarded by the Treasury Department, and some dredging had been done by the city of Savannah at the oyster bed north of Fort Pulaski and elsewhere.

Since July 1, 1872, the work has been in charge of the War Department. During the fiscal years 1873 and 1874 16 heavy cribs and the wrecks of 7 vessels were removed from the channels below the city, and 166,500 cubic yards of material were dredged from the shoals and bars. Most of the money expended in executing the project of August 28, 1873, has been for dredging, in order to secure a prompt improvement of the navigation, the amount of material removed aggregating nearly 700,000 cubic yards, in addition to that above specified.

The work done during the past fiscal year comprised the following items:

1st. The partial construction of a submerged dam at the cross-tides, designed to increase the volume of downward flow along the front of Savannah City. The dam is to consist of a superstructure of riprap stone resting on a compact mattress of brush, with its crest at the level of 4 feet below mean low-tide. At the close of the fiscal year 553 linear feet of the dam had been built to its full width and to an average height of $4\frac{1}{2}$ to 5 feet above the bottom, leaving 227 linear feet between the

low-water marks on opposite sides of the stream upon which no work had been laid, and nothing was done between the lines of low-water and the rice-field dikes with which the dam is to be connected. The contract is about half finished.

2d. Deepening the water-way between the cross-tides and the city, for the double purpose of aiding the entrance of the tidal wave and facilitating the discharge of the increased outward flow. The line selected for deepening was close to the Georgia shore. The quantity of material removed up to June 30 amounted to 27,131 cubic yards, and the work on that line was not completed. Below the city dredging has been postponed to await official action on the amended project.

3d. Completing the work of gauging the stream at several points commenced toward the close of the previous fiscal year. One set of gauging was conducted by Capt. James C. Post, and another, ordered specially for the Board of Engineers having the new project under consideration, by Captain Post and Civil Assistant S. L. Fremont. Both reports are now before the Board of Engineers above mentioned, and will doubtless be submitted with their report.

During the current fiscal year it is proposed to expend the funds available in closing the channels between the islands from Elba to Cockspur, in throwing a sill dam across the south channel at the head of Elba Island, and in dredging at shoal places, in case the new project is adopted; otherwise in the execution of such plan of improvement as shall be approved.

July 1, 1878, amount available.....	\$70,683 49	
Amount appropriated by act approved March 3, 1879.....	100,000 00	
		\$170,683 49
July 1, 1879, amount expended during fiscal year.....	13,926 69	
July 1, 1879, outstanding liabilities.....	3,624 44	
		17,551 13

July 1, 1879, amount available.....	153,132 36	
Amount (estimated) required for completion of existing project.....	129,320 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	129,320 00	

(See Appendix I 2.)

3. *Improvement of Saint Augustine Creek, Thunderbolt River, Georgia.*—This river, used by small freight and passenger steamers, plying the inside passage between Savannah and Brunswick, Fernandina and the Saint John's River, is obstructed by a wreck of a large timber dry-dock. Since the examination was made, which led to a recommendation for its removal, the channel past it has been considerably enlarged by scour. It may be deemed sufficient, upon further examination, to erect a framework beacon over the wreck and not incur any further expense.

If so, this course will be adopted.

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

(See Appendix I 3.)

4. *Improvement of the Harbor of Darien, Georgia.*—The sum of \$8,000 provided for this improvement was all expended in dredging, and was the first government appropriation for this locality. Channels 50 feet wide and 10 feet deep at mean low-water, and aggregating 500 yards in length, were dredged through two shoals in Darien River north of General's Island; a channel 75 feet wide, 14 feet deep, and 500 yards long was dredged in the North River below the Union Island sawmills, and at the confluence of the Darien and North Rivers known as the "Break" the channel was deepened from 8 to 12 feet and widened to 75 feet at

mean low-water. The aggregate quantity of materials removed amounted to 51,041 cubic yards. The increased depths secured vary from 2 to 4 feet. They may or may not, in the opinion of the engineer officer in charge, be permanent.

July 1, 1878, amount available.....	\$8,000 00
July 1, 1879, amount expended during fiscal year.....	8,000 00

(See Appendix I 4.)

5. *Improvement of Brunswick Harbor, Georgia.*—Before submitting a project for expending the \$20,000 appropriated for the improvement of this harbor the engineer in charge wishes to have an examination made of the locality, and perhaps to have the streams gauged. He has been authorized to expend \$1,000 for this preliminary work.

Amount appropriated by act approved March 3, 1879.....	\$20,000 00
July 1, 1879, amount available.....	20,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, in the execution of such project for permanent improvement as may be adopted	25,000 00

(See Appendix I 5.)

6. *Improvement of the inside passage between the Saint John's River and Fernandina, Florida.*—No work was done on this passage during the fiscal year just closed for want of funds, and the shoal places dredged during the fiscal year ending June 30, 1876, at an expense of about \$7,300, have filled up considerably.

During the present fiscal year it is proposed to expend the sum of \$7,000, appropriated by act of March 3, 1879, in dredging in Gunnison's Cut, perhaps also in Kingsley's Cut to some extent, and at other shoal points, so as to secure a more nearly uniform depth over all the shoals. It is the opinion of the engineer officer in charge that this passage ought to be enlarged for the use of light-draught steamers.

Amount appropriated by act approved March 3, 1879.....	\$7,000 00
July 1, 1879, amount available.....	7,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	25,000 00

(See Appendix I 6.)

7. *Improvement of the bar at the mouth of Saint John's River, Florida.*—The sum of \$50,000, appropriated for this bar during the years 1870 to 1873, inclusive, was expended in dredging upon the bar and in making surveys. The increased depths secured were never expected to be permanent.

During the past fiscal year borings and current observations were made upon the bar, and the stream was gauged at Mayport, some distance above the bar, in order to obtain data for a plan of permanent improvement. In furtherance of this object the engineer officer in charge submits a project for the improvement of the channel of entrance by means of jetties.

The United States dredging-steamer Henry Burden was employed in dredging on the bar, at such times between August 1, 1878, and March 15, 1879, as the weather permitted, a large proportion of the time being lost owing to heavy or foggy weather. She always worked in the best channel, and therefore changed from one channel to another as occasion required.

No appropriation having been made for this work for the fiscal year ending June 30, 1880, no operations can be carried on during the present fiscal year.

The new project of improvement by jetties will, it is claimed, secure a

low-water depth on the bar of 15 feet, at an estimated cost of \$1,306,409, or a low-water depth of about 10½ feet for \$800,000.

With a low-water channel 10½ feet deep, vessels drawing about 13 to 13½ feet could cross the bar on an ordinary flood, and could carry no more than this over the shoals between the bar and Jacksonville. Spring tides would give about 1 foot more on the bar.

The engineer in charge states that \$400,000 could be profitably expended upon this new project within twelve months after the money became available.

(See Appendix I 7.)

8. *A project for the improvement of the channel of entrance into Cumberland Sound, Georgia and Florida.*—The engineer officer in charge of river and harbor improvements on the Georgia and Florida coast submits a project for deepening the entrance into Cumberland Sound (Fernandina Harbor), with the explanatory statement that—

The plan of improvement, in all its essential features, is similar to the one prepared for deepening the channel over the bar at the mouth of the Saint John's River, Florida, and the two projects are forwarded together in the belief that should it be determined by Congress to improve one of these entrances, but not both of them, the information would be useful in making the selection, by furnishing data for a fair and discriminating comparison between the two.

According to the plan and estimates the cost of works to secure a low-water depth of 20 to 21 feet in the bar channel would be \$2,071,000, while for \$1,000,000 a channel 16 to 17 feet deep at low-water could be established.

In the execution of either project \$400,000 could be profitably expended in one year.

No appropriation of money has ever been made by Congress for improving the entrance into Cumberland Sound.

(See Appendix I 8.)

EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

To comply with provision of the river and harbor act of June 18, 1878, Lieutenant-Colonel Gillmore was charged with and has completed the following examinations and surveys:

1. *Savannah River above Augusta, Georgia.*—The results of this examination were transmitted to Congress and printed in House Ex. Doc. No. 90, Forty-fifth Congress, third session. (See also Appendix I 2.)

2. *Mouth of Saint John's River, Florida.* (See Appendix I 7.)

3. *Survey of Saint John's River, Florida, between Lake George and Lake Monroe, and estimates of cost of deepening Volusia Bar and straightening the river by cut-offs.* (See Appendix I 9.)

4. *The peninsula of Florida with a view to the construction of a ship-canal from the Saint Mary's River to the Gulf of Mexico.*—A surveying party took the field in the early part of last November.

The prime object of this preliminary survey especially pointed out was to settle conclusively, if possible, or at least with a tolerable degree of certainty, the question of the capacity and adaptability of Okefinokee Swamp for the purpose of feeding a long reach of the summit level of a ship-canal, neglecting if necessary such minor parts of the field-work as did not bear directly on the question of the water supply.

During the five months of operations in the field, transit and level lines were run from Fernandina and Jacksonville to Lake City, which served as a base line for all the subsequent lines run.

Okefinokee Swamp has been examined and lines of level run entirely around it, with numerous offset lines into and across it.

The elevation above tide-water of a great number of points between the base line and Okefinokee Swamp has been ascertained. Instrumental lines have also been run from the Suwannee River to the Gulf of Mexico. It is reported that several good lines for the location of a ship-canal to the Gulf can be found in this section of the country.

Numerous ponds and lakes that may be made available as feeders have been examined and their elevations determined.

The unfinished field-work will occupy about six weeks for its completion.

Additional lines of levels will be run through Okefinokee Swamp, in the vicinity of Saint Mary's River, and from the swamp in a south-westerly direction. A few borings will also be made.

The work of mapping the results of the survey has made fair progress, and it is expected that the final report can be submitted as early as the middle of December.

To comply with the provisions of the river and harbor act of March 3, 1879, Lieutenant-Colonel Gillmore has been charged with and is now engaged upon the following, the results of which will be duly submitted when received:

1. *The Broad River, South Carolina.*
2. *Port Royal River, near Beaufort, South Carolina.*
3. *Entrance to Cumberland Sound, Florida and Georgia.*

GULF OF MEXICO.

IMPROVEMENT OF THE HARBOR OF MOBILE, ALABAMA, AND OF PENSACOLA AND CEDAR KEYS, FLORIDA; OF CHATTAHOOCHEE AND FLINT RIVERS, ALABAMA AND GEORGIA; OF APPALACHICOLA RIVER, FLORIDA, AND OF CHOCTAWHATCHIE, ALABAMA, WARRIOR, TOMBIGBEE, AND PASCAGOULA RIVERS, ALABAMA AND MISSISSIPPI.

Officer in charge, Capt. A. N. Damrell, Corps of Engineers.

1. *Improvement of harbor of Mobile, Alabama.*—The survey of Mobile Bay provided for by act of June 18, 1878, was commenced in July, and continued during the fiscal year.

At the end of the fiscal year the field-work was not fully completed, but sufficient had been accomplished to show that the channel dredged from 1871 to 1877 had retained its depth, and to indicate that a further improvement is possible under the same system, at an estimated cost of \$820,000 for a channel 17 feet deep, and \$1,900,000 for a channel 21 feet deep (both to be 200 feet wide) at mean low-water.

The engineer officer in charge recommends the latter depth, and has submitted two projects for the consideration of the Board of Engineers for River and Harbor Improvements.

As soon as the field-work is completed a final report will be made.

July 1, 1878, amount available.....	\$11,869 26	
Amount appropriated by act approved March 3, 1879.....	100,000 00	
		\$111,869 26
July 1, 1879, amount expended during fiscal year.....		9,098 64
		<hr/>
July 1, 1879, amount available.....	102,770 62	
		<hr/>
Amount (estimated) required for completion of existing project.....	717,229 38	
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office.....	200,000 00	

(See Appendix J 1.)

2. *Improvement of harbor of Pensacola, Florida.*—A contract was made for the complete removal of four of the wrecks lying near the entrance to this harbor, and operations commenced in November, which, on ac-

count of unfavorable weather, progressed very slowly. At the close of the fiscal year the work was in the following condition: The wrecks of the pilot-boat Nettle and bark Ada have been reported by the contractor as completely removed, while a large portion of the wreck of the ship Miles, and part of that of the Conroy, still remain to be removed. It is expected that the whole of this work will be completed during the summer.

By act of March 3, 1879, a further sum of \$10,000 was appropriated for the improvement of this harbor.

For several years a shoal has been forming across the main channel inside of the outer bar, seriously impeding navigation. To ascertain the extent and probable cause of this shoaling, a careful examination and partial survey was made.

The most important changes which are found to have taken place are the abrasion of the western shore-line north and south of Fort McRee, and the formation of an inner bar in the main ship-channel. For the immediate relief of the large commerce of this harbor the officer in charge recommends the re-establishment of the old shore-line of McRee by the construction of 4,000 feet of a brush and stone dike or jetties, and the deepening of the channel through the new or inner bar to 25 feet with a width of 300 feet, by dredging. The cost of this work is estimated at \$177,250.

July 1, 1878, amount available.....	\$20,000 00	
Amount appropriated by act approved March 3, 1879.....	10,000 00	
		\$30,000 00
July 1, 1879, amount expended during fiscal year.....	4,620 52	
July 1, 1879, outstanding liabilities.....	8,600 00	
		<hr/>
		13,220 52
		<hr/>
July 1, 1879, amount available.....		16,779 48
		<hr/>
Amount originally (estimated) required for completion of existing project.....	20,000 00	
Amount (estimated) required for completion of existing project.....	1,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	1,000 00	

(See Appendix J 2.)

3. *Improvement of harbor at Cedar Keys, Florida.*—The cut through the Middle Ground was widened by dredging to 200 feet, depth of 11½ feet.

Twenty-four thousand seven hundred and forty-eight cubic yards of sand, shell, and limestone were removed in accomplishing the result.

It is proposed, during the next fiscal year, to continue the improvement by dredging at several shoal points in the channel between Sea Horse and Grassy Keys, to remove the wreck of the steamer Gettysburg and to use any future appropriation that may be made in completing the above work and widening the cut through the outer bar.

July 1, 1878, amount available.....	\$20,000 00	
Amount appropriated by act approved March 3, 1879.....	15,000 00	
		\$35,000 00
July 1, 1879, amount expended during fiscal year.....	12,667 39	
July 1, 1879, outstanding liabilities.....	1,224 90	
		<hr/>
		13,892 29
		<hr/>
July 1, 1879, amount available.....		21,107 71
		<hr/>
Amount (estimated) required for completion of existing project.....	66,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	35,000 00	

(See Appendix J 3.)

4. *Improvement of Chattahoochee River, Alabama and Georgia.*—Seven hundred and ninety-eight snags were removed and a large number of overhanging trees were cut down at various points.

The jetty previously constructed at Shell Creek Bar, which had been