

9. *Improvement of harbor at Fort Madison, Iowa.*—The dam at the head of Niota Chute was completed and a new project was adopted for the further prosecution of the work by building a spur-dam from the head of Niota Island toward the Iowa shore. It is designed to build this during the present year.

July 1, 1878, amount available	\$8,036 99	
Amount appropriated by act approved March 3, 1879.....	3,600 00	\$11,636 99
July 1, 1879, amount expended during fiscal year.....		4,758 45
July 1, 1879, amount available		6,878 54

(See Appendix Q 9.)

10. *Removing bar in Mississippi River opposite Dubuque, Iowa.*—This work consists in dredging a bar which obstructs the steamboat landing, and was carried on during the fiscal year as far as available funds will permit.

A Board of engineer officers, convened to consider the various plans proposed for the permanent improvement of the river at this place, recommend the construction of two spur-dikes from the Illinois shore at Dunlieth for the purpose of contracting the water-way and creating a scour over the area already dredged, provided the bar shows signs of filling up. The cost of the two dikes is estimated at \$12,668.

Surveys will be made during the coming season to determine this question.

July 1, 1878, amount available	\$10,033 17	
Amount appropriated by act approved March 3, 1879.....	4,000 00	\$14,033 17
July 1, 1879, amount expended during fiscal year.....		10,037 41
July 1, 1879, amount available		3,995 76
Amount (estimated) required for completion of existing project.....		8,672 24
Amount that can be profitably expended in fiscal year ending June 30, 1881.....		8,700 00

(See Appendix Q 10.)

11. *Protecting piers of the Rock Island Bridge by means of sheer-booms.*—The two sheer-booms built during the fiscal year of 1877-'78 have been carefully watched and their useful effect estimated.

During the next fiscal year the booms will be kept in repair as far as available funds will permit and their effect will continue to be noted.

July 1, 1878, amount available.....	\$3,232 05	
July 1, 1879, amount expended during fiscal year	2,558 31	
July 1, 1879, amount available.....		723 74
Amount that can be profitably expended in operating booms in fiscal year ending June 30, 1881.....		1,000 00

(See Appendix Q 11.)

12. *Improvement of Galena River and Harbor, Illinois.*—The greater part of the appropriation of \$30,000 of June 18, 1878, has been expended in dredging; but the extreme low water and generally unfavorable conditions under which the work was carried on has made it impossible to expend the entire appropriation. One hundred thousand nine hundred and seventy-five cubic yards of material were removed.

During the present year the dredging will be continued.

The officer in charge suggests the appropriation of \$30,000 to continue the dredging during the fiscal year ending June 30, 1881.

July 1, 1878, amount available.....	\$30,000 00	
Amount appropriated by act approved March 3, 1879.....	12,000 00	42,000 00
July 1, 1879, amount expended during fiscal year	16,887 26	
July 1, 1879, outstanding liabilities	7,131 67	24,018 93
July 1, 1879, amount available.....		17,981 17
Amount (estimated) required for the completion of existing project.....		358,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.....		30,000 00

(See Appendix Q 12.)

EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

To comply with the provisions of the river and harbor act of June 18, 1878, Major Farquhar was charged with and has completed the following:

1. *Mississippi River at and above the city of Alexandria, Missouri.* (See Appendix Q 13.)

2. *The harbor at Quincy, Illinois.* (See Appendix Q 5.)

The results of these surveys were duly transmitted to Congress and printed as Senate Ex. Doc. No. 53, Forty-fifth Congress, third session.

And to comply with provisions of the river and harbor act of March 3, 1879, Capt. Alexander Mackenzie, Corps of Engineers, is charged with a survey of *Cuivre River, Missouri*, the results of which will be duly submitted when received.

IMPROVEMENT OF THE DES MOINES RAPIDS OF THE MISSISSIPPI RIVER AND OPERATING THE CANAL.

Officer in charge, Capt. Amos Stickney, Corps of Engineers.

The work has consisted in completing the construction and the placing of lock machinery for operating the guard-lock by hydraulic pressure; grading and enclosing lock grounds; building riprap face-wall on canal embankment; dredging rock from river channel; dredging deposits from canal and in front of city of Montrose; equipping steam drilling scow for continuing rock excavation in river channel; constructing telephone line, and operating canal for navigation.

July 1, 1878, amount available.....	\$99,960 50	
Amount appropriated by act approved March 3, 1879.....	65,000 00	\$164,960 50
July 1, 1879, amount expended during fiscal year.....	75,168 08	
July 1, 1879, outstanding liabilities.....	3,917 36	79,085 44
July 1, 1879, amount available.....		85,875 06
Amount (estimated) required for completion of existing project and operating canal for fiscal year ending June 30, 1881.....		129,065 00
Amount that can be profitably expended in fiscal year ending June 30, 1881:		
For operating canal.....	40,000 00	
For improving Des Moines Rapids.....	90,000 00	130,000 00

(See Appendix R.)

PRESERVATION OF THE FALLS OF SAINT ANTHONY AND IMPROVEMENT OF THE MISSISSIPPI ABOVE THE FALLS—IMPROVEMENT OF THE CHIPPEWA AND SAINT CROIX RIVERS, WISCONSIN, AND OF MINNESOTA RIVER AND RED RIVER OF THE NORTH, MINNESOTA AND DAKOTA—EXAMINATIONS FOR RESERVOIRS AT THE SOURCES OF THE MISSISSIPPI.

Officer in charge, Capt. C. J. Allen, Corps of Engineers.

1. *Preservation of Falls of Saint Anthony, Mississippi River.*—The work, during the year, has principally consisted in building a masonry wall at the westerly end of the apron 80 feet in length and 23 in height. The crib-work and old coffer-dams near the foot of Nicollet Island were removed from the channel and the timber and iron taken out and sold at public auction.

The balance of the fund applicable to the improvement is too small to meet anything more than the most ordinary repairs needed. The officer in charge reports that if the government retain charge of the works at this point \$50,000 ought to be available in order to meet accidents liable to occur.

The act of March 3, 1879, appropriated for the construction of a sluiceway through the public works at the falls for the passage of logs. This sluice will be built of timber during the season. By the terms of the act, no expenditure shall be incurred by the United States upon the sluice other than that required in its actual construction.

July 1, 1878, amount available	\$11,413 39	
Amount appropriated by act approved March 3, 1879.....	10,000 00	
		\$21,413 39
July 1, 1879, amount expended during fiscal year.....	7,896 41	
July 1, 1879, outstanding liabilities.....	125 11	
		8,021 52

July 1, 1879, amount available.....	13,391 87	
Amount that can be profitably expended in fiscal year ending June 30, 1881, to meet repairs necessary, present and prospective.....	50,000 00	

(See Appendix S 1.)

2. *Improvement of Mississippi River above the Falls of Saint Anthony.*—During the season of 1878, bowlders and gravel were removed from the channel from a point a short distance above Coon Rapids to Minneapolis, and several cribs removed. With the balance of funds remaining it is proposed to repair dams and jetties when necessary.

July 1, 1878, amount available.....	\$6,827 43	
July 1, 1879, amount expended during fiscal year.....	\$3,558 99	
July 1, 1879, outstanding liabilities.....	621 68	
		4,180 67

July 1, 1879, amount available.....	2,646 76	
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Amount (estimated) required for completion of existing project.....	124,667 50	
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	40,000 00	

(See Appendix S 2.)

3. *Construction of lock and dam on Mississippi River at Meeker's Island, Minnesota.*—No work has been done here, no funds being available for use, as the parties holding the land-grant have not made the release to the United States required by the act of March 3, 1873. The State of Minnesota should annul the grant to the parties holding the land-grant and release the same to the United States.

July 1, 1878, amount available.....	\$25,000 00	
July 1, 1879, amount available.....	25,000 00	
Amount (estimated) required for completion of existing project.....	922,121 46	

(See Appendix S 3.)

4. *Improvement of Chippewa River, Wisconsin.*—The west jetty at the mouth of the river has been repaired and widened and the east jetty completed.

It is proposed, with the appropriation of March 3, 1879, to continue the work of removing sand-bars by means of dams and jetties, and to protect caving banks where necessary.

The original estimate for existing project was \$139,892.50, in which is included the sum of \$64,002.50 for protecting the high sand-banks against erosion.

July 1, 1878, amount available.....	\$10,040 64	
Amount appropriated by act approved March 3, 1879.....	8,000 00	
		\$18,040 64
July 1, 1879, amount expended during fiscal year.....	9,916 76	
July 1, 1879, outstanding liabilities.....	62 07	
		9,978 83

July 1, 1879, amount available.....	8,061 81	
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Amount (estimated) required for completion of existing project.....	111,892 50	
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office, for constructing wing-dams, jetties, &c.....	25,000 00	

(See Appendix S 4.)

5. *Improvement of Saint Croix River, Wisconsin.*—Work during the fiscal year has consisted in removal of snags, logs, overhanging trees, cribs, and bowlders from the channel; also in the revetment of caving bends and closing of chutes. With the balance of funds on hand and the appropriation of March 3, 1879, it is proposed to continue the improvement as above and to make a low-water survey of the stream below Taylor's Falls.

July 1, 1878, amount available.....	\$10,000 00	
Amount appropriated by act approved March 3, 1879.....	8,000 00	
		\$18,000 00
July 1, 1879, amount expended during fiscal year.....	8,272 00	
July 1, 1879, outstanding liabilities.....	614 90	
		8,886 90

July 1, 1879, amount available.....	9,113 10	
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Amount (estimated) required for completion of existing project.....	17,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	17,000 00	

(See Appendix S 5.)

6. *Improvement of Minnesota River.*—Snags, overhanging trees, logs, and bowlders were removed from a point 3½ miles above Henderson to Little Rapids, 35 miles of river having been passed over. There is little commerce on the river. The existing project contemplates the construction of locks and dams and removal of obstructions from the mouth to South Bend, at an estimated cost of \$733,868.63. No work is contemplated during the coming season, the balance of funds on hand for this work being too small with which to accomplish anything.

July 1, 1878, amount available.....	\$10,013 41	
July 1, 1879, amount expended during fiscal year.....	\$9,648 41	
July 1, 1879, outstanding liabilities.....	150 00	
		9,798 41

July 1, 1879, amount available.....	215 00	
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Amount (estimated) required for completion of existing project.....	733,868 63	
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(See Appendix S 6.)

7. *Improvement of Red River of the North, Minnesota and Dakota.*—A dredging machine was built during the winter and spring and set in

operation to remove the clay-bars and other obstructions between Moorhead and Pembina. By the close of the fiscal year 9 miles of river had been cleared of obstructions to navigation. Examinations were also made at the site for a lock and dam at Goose Rapids.

With the balance on hand and the appropriation of March 3, 1879, it is proposed to continue the work of dredging and removal of obstructions, closing of island chutes, &c.

July 1, 1878, amount available.....	\$31,564 71	
Amount appropriated by act approved March 3, 1879.....	25,000 00	\$56,564 71
July 1, 1879, amount expended during fiscal year.....	12,923 81	
July 1, 1879, outstanding liabilities.....	2,336 51	
		15,260 32
July 1, 1879, amount available.....	41,304 39	
Amount (estimated) required for completion of existing project.....	270,310 18	
Amount that can be profitably expended in fiscal year ending June 30, 1881, in dredging between Moorhead and the boundary line.....	25,000 00	
Removing obstructions to flatboat navigation between Breckenridge and Moorhead.....	15,000 00	40,000 00

(See Appendix S 7.)

8. *Examination of the sources of the Mississippi, Saint Croix, Chippewa, and Wisconsin rivers, to determine the practicability and cost of creating and maintaining reservoirs upon the head waters of said rivers, with a view to improving navigation of the same.*—Three fully equipped parties were placed in the field the latter part of August, 1878, to examine and survey the sources of these streams; subsequently two parties were added to gauge the discharge of the Saint Croix and Chippewa Rivers and to operate at the sources of the Flambeau. Meteorological and water-gauge stations were established at important points. Parties took the field again in July, 1879, to continue the examination of the sources of the Saint Croix, Chippewa, and Wisconsin Rivers. A preliminary report was transmitted to Congress and printed in House Ex. Doc. No. 54, Forty-fifth Congress, third session.

The appropriation of March 3, 1879, can be profitably expended during the coming fiscal year.

July 1, 1878, amount available, allotted from appropriation for examinations, surveys, and contingencies, river and harbors.....	\$20,000 00	
Amount appropriated by act approved March 3, 1879.....	25,000 00	\$45,000 00
July 1, 1879, amount expended during fiscal year.....	20,000 00	
July 1, 1879, outstanding liabilities.....	5,646 59	25,646 59
July 1, 1879, amount available.....	19,353 41	

(See Appendix S 8.)

EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

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

1. *The Mississippi from Saint Paul to the Falls of Saint Anthony.*
2. *Superior Bay to determine the best and most economical plan for harbor improvement for the head of Lake Superior.*

IMPROVEMENT OF THE TENNESSEE AND CUMBERLAND RIVERS; OF HIAWASSEE RIVER, TENNESSEE; OF COOSA RIVER, GEORGIA AND ALABAMA; AND OF OCMULGEE, OOSTENAULA, COOSAWATTEE, ETO-WAH, AND OCONEE RIVERS, GEORGIA.

Officer in charge, Maj. William R. King, Corps of Engineers, with Capt. L. Cooper Overman and Lieut. W. L. Marshall, Corps of Engineers, under his immediate orders.

1. *Improvement of Tennessee River.*—*a. Above Chattanooga.*—The work of reorganizing and equipping working parties for resuming active operations, which was begun about the close of the last fiscal year, was continued, and owing to the work having been suspended some 18 months, considerable time and a considerable portion of the small appropriation were consumed in these preparations.

Work was resumed at *Chota Shoals*, which had been left in an unfinished state from the exhaustion of the previous appropriation, and a large quantity of stone was quarried and placed in the dam at the head of the shoals, and used in riprapping the banks to prevent washing.

At *Coulter's Shoals* a serious break in the dam and a gap in the island were effectually closed.

An examination was made of nearly all the other dams on the river, and they were found to have withstood the action of the floods, some of them for 6 or 7 years, and with a few exceptions were almost uninjured.

This improvement has never been completed in accordance with the original project, and as the work has thus far accomplished its object, it is advisable that appropriation be made for continuing it as far as Knoxville. The officer in charge reports a considerable amount of commerce on the river, and that there is a prospect of an increase on that part where improvement is most needed.

July 1, 1878, amount available.....	\$15,071 17	
Amount appropriated by act approved March 3, 1879.....	11,500 00	\$26,571 17
July 1, 1879, amount expended during fiscal year.....	15,062 94	
July 1, 1879, amount available.....	11,508 23	

Amount (estimated) required for completion of existing project.....	33,500 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	33,500 00

b. Below Chattanooga.—This work has been continued during the year at *Elk River Shoals*, *Big Muscle Shoals* (canal), and at *Little Muscle Shoals*, both by hired labor and under contract, for building locks 6, 7, 8, 9, and 10.

At *Elk River Shoals* rock has been quarried and placed in the dam which is to form the channel around Milton's Bluff, completing 2,347 linear feet of this dam, and 2,385 feet more were raised above the water. Rock was also excavated from the channel at the head of these shoals. A large amount of work was also done in building cabins, boats, derricks, &c. It is hoped that the channel-work will be so far completed this season as to render this work comparatively independent of the stage of water.

At *Big Muscle Shoals* the work of rebuilding and enlarging the canal has been continued.

The canal trunk may be considered as completed for 11½ miles out of the entire length of 14½ miles. This includes all the excavation and embankment necessary to reduce the number of locks from 17, the number in the old canal, to 9, the number now required, and to carry the canal trunk over Shoal Creek in an aqueduct, instead of crossing by means of a dam.

The contractor for building locks has made slow progress, and has performed only about one-fourth of the work called for by his contract.

On the completion of the contract work of George Williams, it was deemed advantageous to the government to purchase all his railroad track, engines, derricks, buildings, tools, and unused materials, and also to purchase a quantity of derricks, tools, &c., from Mr. S. N. Kimball, and about 10 miles of telegraph along the canal from the Atlantic and Pacific Telegraph Company; this property, amounting to an aggregate of about \$39,000, is now available for use in completing and operating the canal.

Effort is being made to push the lock work and other masonry to completion, as the balance of the work can easily be completed sooner than it will be possible to complete the masonry. For this purpose three quarries for dimension-stones have been opened, and stones quarried and cut, and incidentally a quantity of stones have been prepared for rubble masonry. A quantity of sand and cement have been procured ready to begin the laying of masonry.

Under the provisions of the act of Congress approved January 13, 1879, entitled "An act for the relief of the representatives of George Williams, deceased," a Board of Engineer Officers was convened by the Secretary of War for the consideration of said claims. Their report was referred to the Chief of Engineers and the Judge-Advocate-General of the Army for their opinions thereon. The report of the board, which, with the opinions of the officers above named, will be found in Appendix T 1, herewith, was approved by the Secretary of War, and the amount of the award, \$101,536.72, was paid by the Treasury to C. L. Williams, administrator, from the appropriation for improving Tennessee River.

The funds available for carrying on this work will be exhausted long before the usual time for passing river and harbor appropriation bills, and in order to avoid delaying this important work it is hoped a suitable amount will be appropriated, as soon as possible after the meeting of Congress, for continuing the work.

At *Little Muscle Shoals* rock has been excavated from the channel and placed in dams. The completion of the channel work, which it is hoped will be accomplished this season, will afford navigation to the lower end of the canal and establish water communication at all times with that work, which has heretofore been carried on at a disadvantage on account of its isolated condition.

At *Colbert Shoals* but little work has been done during the year; some rock was put in the dams to repair small breaks, and rock and bowlders were taken from the worst part of the shoals.

At *Duck River Shoals* a quarry was opened and rock quarried for proposed dams.

At *Bee Tree Shoals* 190 cubic yards of bowlders were removed.

July 1, 1878, amount available	\$518,027 50	
Amount appropriated by act approved March 3, 1879	210,000 00	
July 1, 1879, amount expended during fiscal year	429,715 46	\$728,027 50
July 1, 1879, outstanding liabilities	30,264 04	
July 1, 1879, amount available		459,979 50
Amount (estimated) required for completion of existing project	2,587,500 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office	500,000 00	

2. *Improvement of Cumberland River.—a. Below Nashville.*—Work on this section was carried on at Harpeth Shoals, Palmyra Island, Dover

Shoals, Gatlin Shoals, Ingram Shoals, &c., by the removal of rock, gravel, logs, and snags from the channel; overhanging trees were cut down, rock quarried, and 13,625 cubic yards of dam built. Harpeth Shoals, formerly a very formidable obstruction, is now classed among the minor obstructions.

July 1, 1878, amount available	\$45,008 63	
Amount appropriated by act approved March 3, 1879	40,000 00	\$85,008 63
July 1, 1879, amount expended during fiscal year	42,753 47	
July 1, 1879, outstanding liabilities	1,921 00	44,674 47
July 1, 1879, amount available		40,334 16
Amount (estimated) required for completion of existing project	63,821 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office	40,000 00	

Cumberland River above Nashville.—b.—From Nashville to the Kentucky line.—The work done has consisted of channel excavation, construction of dams, and clearing this section of the river of snags, logs, and overhanging trees. The working parties were employed on improving the shoals at Bartlett's Bar, Sand Island, Holliman's Island, Cub Creek, Simpson's Island, &c., and upon the snagboat; rock, gravel, logs, and snags were removed from the channel; overhanging trees cut down; rock quarried and placed in dams.

July 1, 1878, amount available	\$20,007 81	
Amount appropriated by act approved March 3, 1879	18,000 00	\$38,007 81
July 1, 1879, amount expended during fiscal year	16,343 74	
July 1, 1879, outstanding liabilities	2,663 75	19,007 49

July 1, 1879, amount available		19,000 32
Amount (estimated) required for completion of existing project	69,155 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office	40,000 00	

c. From the Kentucky line to Smith's Shoals.—This section extends to the head of steamboat navigation. The principal obstructions are Wolf Creek Shoals and Wild Goose Shoals. At these points rock and gravel have been excavated from the channel; rock has been quarried, and 2,116 cubic yards of dams constructed during the year.

July 1, 1878, amount available	\$8,010 90	
Amount appropriated by act approved March 3, 1879	6,000 00	\$14,010 90
July 1, 1879, amount expended during fiscal year	8,007 41	
July 1, 1879, amount available		6,003 49

Amount (estimated) required for completion of existing project	67,609 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office	25,000 00	

d. Smith's Shoals.—The aggregate fall of the 4 shoals forming this obstruction is 54 feet. These shoals form an immovable barrier to upstream navigation, without an elaborate system of locks and dams, or towage. On this section during the year, rock, gravel, and loose stone have been taken from the channel, and rock quarried and placed in dams.

In view of the necessity of a larger quantity of channel excavation, and of placing heavier stones in the top courses of the dams, an additional appropriation of \$30,000 is recommended for this section by the officer in charge.

July 1, 1878, amount available.....	\$29,947 37	
Amount appropriated by act approved March 3, 1879.....	15,000 00	
		\$44,947 37
July 1, 1879, amount expended during the fiscal year.....	22,504 34	
July 1, 1879, outstanding liabilities.....	348 52	
		22,852 86
July 1, 1879, amount available.....		22,094 51
Amount (estimated) required for completion of existing project.....	30,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office.....	20,000 00	

e. From Smith's Shoals to the Falls of the Cumberland.—The river in this section is very rapid. Immense bowlders render navigation an impossibility. The work done has consisted of blasting bowlders and removing snags, so that rafts and coal-boats can float from the mouths of Rock Castle and Laurel River on boating tides.

July 1, 1878, amount available.....	\$2,021 32
July 1, 1879, amount expended during fiscal year.....	1,648 21
July 1, 1879, amount available.....	373 11

(See Appendix T 2.)

3. *Improvement of Hiwassee River, Tennessee.*—This work was in progress at the beginning of the fiscal year, and was continued until the end of December, when it was suspended for want of funds.

Work was done at six principal shoals.

Several substantial barges were built for this work, and considerable other preparatory work done; so that the working parties are now well fitted out.

The obstructions are of the same general character as those on the upper Tennessee, and require similar treatment.

With some additional work at Mathew's Shoals to check the rapid current, and some little work at minor obstructions, the river will be in good navigable condition from its mouth to Charleston.

A force will then be put at work above Charleston, to extend the improvement towards Savannah Ford.

The cost of this improvement will exceed the original estimate by at least \$10,000, \$3,000 of which were appropriated last year; and the balance can be probably expended during the next fiscal year.

The amount of commerce on the Hiwassee is very considerable, and the improvements, when made, will be of a permanent character.

July 1, 1878, amount available.....	\$10,040 05
Amount appropriated by act approved March 3, 1879.....	3,000 00
July 1, 1879, amount expended during fiscal year.....	\$13,040 05
July 1, 1879, amount available.....	10,004 13
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 T 3.)

4. *Improvement of Coosa River, Georgia and Alabama.*—The principal points at which improvements have been made, *above Greensport*, are at Horseleg Shoals, Coperas Bluff, Mill Shoals, Turkeytown Island Shoals, and Greensport Reefs; rock, gravel, logs, and snags were removed from the channel. The improvements at *Mayo's Bar, Quinn Island Mill Shoals, Chicken Shoals, Wester's Bar, and Fish-trap Shoals* are completed, except some occasional dredging that may become necessary.

At *Greensport Reefs*, a wide and safe channel has been excavated, and

marked by cribs through 5 formidable reefs which stretch from shore to shore.

On the Upper Coosa, a gain of 8 inches of water at lowest stage has been obtained for 181 miles from Rome to Greensport.

Below Greensport.—At *Ten Island Shoals*, including Whistenant's Mill Shoals, rock has been excavated from channel and placed in dams, as well as quarried for dams, and crib and rock dams have been built; and logs and snags have also been removed from the stream.

The officer in charge recommends that a portion of the next appropriation be made available for the purchase of land for lock-sites and right of way, necessary in the prosecution of the work of improvement below Greensport.

July 1, 1878, amount available.....	\$88,849 33
Amount appropriated by act approved March 3, 1879.....	45,000 00
	\$133,849 33
July 1, 1879, amount expended during fiscal year.....	39,021 76
July 1, 1879, outstanding liabilities.....	2,915 95
	41,937 71

July 1, 1879, amount available..... 91,911 62

Amount (estimated) required for completion of existing project.....	402,347 00
Amount that can be profitably expended in fiscal year ending June 30, 1881, as revised in this office.....	100,000 00

(See Appendix T 4.)

5. *Improvement of Oostenaule and Coosawatee rivers, Georgia.*—Until the close of this fiscal year no work has been done on these streams since 1876. Several of the dams need repairing; others, strengthening and extending. The building and fitting up of boats for this work and channel excavation was begun in April, and from that time to the end of the fiscal year work was done at 11 different points.

A working force, starting from Resaca, has reached Field's Mill, 18 miles above that town.

July 1, 1878, amount available.....	\$4,000 00
Amount appropriated by act approved March 3, 1879.....	3,000 00
	\$7,000 00
July 1, 1879, amount expended during fiscal year.....	1,325 05
July 1, 1879, outstanding liabilities.....	776 00
	2,101 05

July 1, 1879, amount available..... 4,898 95

Amount (estimated) required for completion of existing project.....	6,208 50
Amount that can be profitably expended in fiscal year ending June 30, 1881.....	6,300 00

(See Appendix T 5.)

6. *Improvement of Etowah River, Georgia.*—An instrumental survey of this river has been made, the field-work of which was completed about the end of the fiscal year. The reports, maps, and estimates are now being prepared. No project could be made for the improvement of this river with the small amount of funds available, and no money has therefore been expended on it, excepting that relating to the survey.

July 1, 1878, amount available.....	\$9,940 27
July 1, 1879, amount available.....	9,940 27
Amount (estimated) required for completion of existing project.....	Incomplete.

(See Appendix T 6.)

7. *Improvement of Oemulgee River, Georgia.*—This improvement has been continued during the year, the principal work being the removal of snags and sunken logs, which, by retaining the silt or deflecting the current, cause most of the obstructions to navigation in this river.