

Work on this section was continued through the entire year. It is not expected that the present scale of improvements will secure sufficient depth at extreme low-water to admit of navigation by steamers, but the object is to secure a sufficient depth at moderate stages and thus prolong the navigable season. The amount of commerce on this section of the river is also reported on the increase.

The snagboat employed on this section has removed 349 snags, &c., and cut down 546 overhanging trees during the year.

Money statement.

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.	60,000 00	

III.—KENTUCKY LINE TO SMITH'S SHOALS.

1. *Wild Goose Shoals.*

586 cubic yards of rock excavated from channel.
7,196 cubic yards of gravel excavated from channel.
595 cubic yards of rock quarried for dams.
1,693 cubic yards of rock placed in dams.

2. *Wolf Creek Shoals.*

272 cubic yards of rock excavated from channel.
2,732 cubic yards of gravel excavated from channel.
250 cubic yards of rock quarried for dams.
423 cubic yards of rock placed in dams.

This section extends to the head of steamboat navigation, and the object in view is the same as in case of the previous section, viz, to extend the period of navigation without attempting to secure a navigable channel at extreme low-water.

Money statement.

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.	50,000 00	

IV.—SMITH'S SHOALS.

These shoals, four in number, with an aggregate fall of 54 feet, form an immovable barrier to upstream navigation. Nothing short of an elaborate system of locks and dams which would be entirely disproportionate to the present needs of commerce, or a radical contraction of water-way, supplemented by a system of towage, can make these shoals navigable for upstream traffic.

The following are the quantities of work completed during the year at the different shoals in this section.

1. *Mill Shoal.*

1,483 cubic yards of rock excavated from channel.
791 cubic yards of loose rock and gravel excavated from channel.
1,601 cubic yards of rock quarried for dams.
3,195 cubic yards of rock put into dams.

2. *Long Shoal.*

2,536 cubic yards of rock excavated from channel.
2,983 cubic yards of loose rock and gravel excavated from channel.
3,245 cubic yards of rock quarried for dams.
5,623 cubic yards of rock put into dams.

3. *White Cliff Ripple.*

60 cubic yards of rock excavated from channel.
495 cubic yards of loose rock and gravel removed.

4. *Shadowen Shoals.*

1,035 cubic yards of rock excavated from channel.
743 cubic yards of loose rock and gravel excavated.
2,430 cubic yards of rock quarried for dams.
1,564 cubic yards of rock put into dams.

From the foregoing it will be seen that the general character of the improvement at all points on this section, as in fact upon the entire river, is perfectly uniform, and consists simply in excavating rock and gravel from the channel, building stone wing-dams to contract the water-way, and in removing snags, &c.

The unusual thickness and quantities of ice formed in the Upper Cumberland during the past winter, and in 1876 and 1877, caused considerable damage to some of the dams, but such occurrences are not likely to be repeated often, and the difficulty can in a great measure be avoided by putting in heavier and better shaped stones for the top courses of the dams. For this reason, and because it may be found desirable to put more rock into dams, and do more channel excavation than was contemplated in the original estimate, it is probable that at least \$30,000 more than the original estimate will be required, and an appropriation of that amount is therefore recommended.

Money statement.

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 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.	30,000 00	

V.—SMITH'S SHOALS, TO THE FALLS OF THE CUMBERLAND.

This portion of the river is very rapid and full of immense bowlders, which render navigation at low-water an impossibility, and extremely dangerous at any time. The improvement undertaken has consisted in blasting out these bowlders and removing snags, so that rafts of logs

and coal-boats coming out of Rock Castle and Laurel rivers can pass down with comparative safety on what are called boating tides.

In former years large quantities of coal have been boated down to Nashville, and notwithstanding a serious disaster to a coal fleet at Smith's Shoals some months ago, which seriously crippled this industry, I am informed that the successful passage of the shoals by boats and rafts since that time is restoring confidence in the navigation of the shoals, and that the coal-mining industry will probably revive and receive a new impetus from the improvement of the river navigation.

Money statement.

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

Capt. L. C. Overman, United States Engineers, has had immediate supervision of the Cumberland River improvement. The average number of employes has been 394.

This work is in the collection-district of New Orleans. The amount of revenue collected at the nearest port of entry is unknown to me.

The estimates of cost of improving Cumberland River above Nashville amount to \$283,764.

The whole amount appropriated for and expended on the different sections has been as follows:

	Appropriated.	Expended.
Nashville to the Kentucky line.....	\$53,000 00	\$31,335 93
Kentucky line to Smith's Shoals.....	24,000 00	17,996 51
Smith's Shoals.....	70,000 00	47,556 97
Smith's Shoals to Falls of Cumberland.....	4,000 00	3,626 89
Total.....	151,000 00	100,516 30

T 3.

IMPROVEMENT OF HIAWASSEE RIVER.

Work on this improvement was in progress at the beginning of the fiscal year and was continued until the end of December, when the appropriation was exhausted and the boats and other property were collected near Charleston, Tenn., and placed under charge of watchmen.

The following are the principal items of work done during the year at Matthews' Shoals, McElrath's Shoals, Sivil's Shoals, Magill's Island, Blackbird Shoals, and Graves' Ferry and Shoals:

	Cubic yards.
Rock excavated from channel.....	591
Gravel excavated from channel.....	57
Riprap and retaining-walls.....	174
Rock quarried.....	2,292
Rock put in dams.....	2,104

Several substantial barges were built for boating stone, and considerable other preparatory work done, so that the force is now better equipped for work than at any previous time.

The obstructions are of the same general character as those on the Upper Tennessee and require similar treatment. With the exception of Matthews' Shoals, where the current is too strong, and one or two other minor obstructions requiring correction, the river is now in good navi-

gable condition from its mouth to Charleston. An additional dam will remove the difficulty at Matthews' Shoals, and the work will then be extended above Charleston. For reasons stated in the last report the cost of the improvement up to Savannah Ford will exceed the original estimate by at least \$10,000. If the original amount estimated had been appropriated at once so that the work could have been carried on continuously when the stage of water was such as to permit the work to be done to advantage, the amount might have been sufficient, but the expense and disadvantage of stopping and starting a work, taking care of property when not in use, and other contingencies, add greatly to the cost of a work when the appropriations are small and irregular.

The amount of commerce on the Hiawassee is much greater than the representation of that stream on the map would indicate, and the improvements as well as the regimen of the river are of a permanent and satisfactory character.

Assistant Engineer John S. Crary has continued in charge of this improvement, and has had under his direction an average of 86 men.

Estimates for improving Hiawassee River.....	\$30,000 00
Amount appropriated.....	23,000 00
Amount expended.....	19,964 08

Money statement.

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
July 1, 1879, amount available.....	3,035 92
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

T 4.

IMPROVEMENT OF COOSA RIVER, GEORGIA AND ALABAMA.

Work was continued on the improvement of this river at several points between Rome and Greensport, with a view to securing additional depth at low-water for the benefit of commerce already existing and employing several large steamers.

Below Greensport the object is to overcome the serious obstructions at Ten Island Shoals, where the fall, 24 feet, is so great as to require locks and dams to allow boats to reach the coal-field 18 miles below.

The following extracts from the report of Lieut. W. L. Marshall, United States Engineers, who has had immediate charge of the work, will give an idea of the nature and present condition of the improvement above Greensport:

1. *Horseleg Shoals.*—Three reefs, 1 at head, 1 midway, and 1 at foot of shoal, with a fall of 3.7 feet in less than 3,000 feet. Depth of water before improvement, 14 inches at extreme low-water; after improvement, 28 inches. Reefs excavated and about 3,000 linear feet of dams constructed in 1877-78, to deepen water over reefs and check velocity of current over them. Dams at foot of shoal are founded on gravel, which has washed away and will have to be replaced by stone to render the improvement permanent. Boats now go over the shoals with all the freight they can bring up to them. Before improvement they had to stop below the shoals at low-water and transfer cargo by wagon to or from Rome, 1½ miles above. Dams, mostly light cribs, filled with stone reaching to low-water mark. The great fall over these shoals prevented higher dams. They are sufficiently strong to be permanent.

2. *Shorter's Island*.—Gravel bar with loose bowlders; a few only of the most dangerous bowlders removed; work one-fourth done.

3. *Mayo's Bar*.—Loose rock and gravel. Loose rock removed and short dam built; which has caused the gravel to wash out. Water 3 feet deep at extreme low-water; 18 inches before improvement completed.

4. *Palestine Bar*.—Gravel-bar. Gravel excavated, short dam built, and channel deepened about 8 inches. Improvement not permanent. One-half completed. One more dam should be built below present one, to cause gravel to move into deep pool below shoal.

5. *Quinn's Island*.—Bar of logs and gravel. Improvement completed.

6. *Beech Creek*.—Gravel-bar, logs, and overhanging trees. Bar scraped; snags, &c., removed. Improvement temporary. Half done.

7. *Foster's Island*.—Gravel bar scraped and deepened 10 inches. Will need occasional dredging to maintain channel.

8. *Copperas Bluff*.—The most difficult shoal, with the exception of Lower Center Shoal, which is similar, to improve on the river. River makes very short bend, with channel near convex bank. Reefs of spar extending out from the concave bank for a distance of half a mile at frequent intervals. Fall about 2 feet. Channel 60 feet wide and 30 inches deep at extreme low water. Excavated through reefs, but boats cannot, on account of sudden bend, keep channel. At least one guide or training dam of smooth cribs should be built, and the channel widened 5 feet at the point of greatest curvature, to make improvement complete. Improvement three-fourths done.

9. *Mill Shoals*.—Two gravel-bars, with rock reefs above the upper one. Fall about 22 inches in 1 mile. Rock excavated, a training dam built at upper bar, and 3 spur dams or groins on lower bar. Gravel washed out and channel deepened from 8 inches to 1 foot. A little dredging is needed. Dams of brush and stone, and cribs of round logs filled with gravel or stone. Improvement complete, except about 400 yards of dredging.

10. *Chicken Shoal*.—About $\frac{1}{2}$ mile in length; a series of rock reefs infringing upon channel. Channel 60 feet wide and 30 inches deep at low water excavated. Improvement completed, with exception of a few bowlders at foot of shoal, discovered by greater draught of steamers since improvement was made. Gain of from 10 inches to 1 foot, except at foot where bowlders have been found.

11, 12. *Wester's Bar and Fish-Trap Shoal*.—Both gravel bars, scraped and deepened 8 inches, and short dam built of stone, to keep gravel washed off crest of bar. Improvement complete, except one spur dam below each shoal 100 feet long. Occasional dredging may be necessary.

13. *Turkeytown Island's Shoal*.—About 474 linear feet of dam constructed, and about 200 yards of rock excavated from channel. About 10 inches gained in low-water depth on the rock bar. A gravel bar is gradually forming below the shoal, which in time will require a short spur dam from left bank to keep the channel open. This bar is not the result of the improvement above, but was noticeable before the work was done, but was not, and is not yet, an obstruction. Work four-fifths done.

14. *Greensport Reefs*.—Three-fourths miles above Greensport, 5 formidable reefs stretched across the river from shore to shore, with exception of irregular, crooked, and dangerous channel through them. A new straight channel was excavated and marked by tri-angular cribs. Depth gained about 8 inches, with wider and safer channel.

The results of the improvements effected on the Upper Coosa have been a gain of 8 inches in available depth of water, at the lowest stage, between Rome and Greensport, 181 miles below. The improvements, which have been for the greatest part the excavation of rock from the channel, are mostly permanent. I would request an appropriation of \$23,000; the balance of the required estimate, for the shoals already worked upon, to complete their improvement, and the excavation of gravel from a few other points on the river between Rome and Greensport. Also, \$150,000 for the river between Greensport and the Selma, Rome and Dalton Railroad bridge.

The freights on the Coosa River doubled in 1878-'79 what they have been previously since the war. The pine-lands, hitherto considered worthless for cotton planting, have proved valuable agricultural lands, and are being rapidly taken up for homesteads. As the improvement progresses, many lands at present remote from means of transportation, and which still belong to the government, will be settled and improved.

The commerce of the river amounts to about \$7,000,000 annually in lumber and cotton and return merchandise, employing 5 steamers. The improvements in progress are principally, however, directed to opening the Coosa River coal and iron field, which borders the river 18 miles below Greensport. This field will be attained on completion of the work at Greensport, Ala.

The *Ten-Island Shoals*, including Whistenant's Mill Shoals, are fully described in the report of last year, which is accompanied by a map of

the shoals and a project for their improvement. The principal items of work done on these shoals during the past year were as follows:

1,333 cubic yards of rock excavated from channel.
3,100 cubic yards of rock placed in dams.
10,318 cubic yards of rock quarried for dams.
1,254 linear feet of crib and rock dams built.
1,286 logs and snags removed.

The average number of men employed on this improvement has been 136 during the year.

In prosecuting the work of improving Coosa River at Ten-Island Shoals, it will be necessary for the United States to procure titles to certain lands for sites of locks and right of way to the same, and I would respectfully recommend that a clause authorizing the purchase be inserted in the next appropriation bill, as follows:

Provided, That whenever, in the prosecution and maintenance of the work of improving Coosa River between Greensport and the Selma, Rome and Dalton Railroad bridge, in the State of Alabama, it may be necessary, in the judgment of the Secretary of War, to take possession of any lands for canals or cut-offs, and a reasonable price for the same can be agreed upon between the owner of said lands and the officer in charge of said work on the part of the United States, the Secretary of War may authorize the purchase of said lands: *Provided*, That in case the owners of said lands shall refuse to sell the same at a reasonable price, then the price to be paid shall be determined, and the title and jurisdiction procured, in the manner prescribed by the laws of the State of Alabama: *And provided*, That in either case the entire cost of such lands to the United States shall not exceed \$5,000.

The original estimates of the cost of improving the Coosa River are	\$552,347 00
Amount appropriated	150,000 00
Amount expended	55,172 43

Money statement.

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	150,000 00	

T 5.

IMPROVEMENT OF OOSTENAULA AND COOSAWATTEE RIVERS, GEORGIA.

An appropriation of \$4,000 having been made for resuming work on these rivers (act of June 18, 1878), the necessary boats, derricks, &c., for a working party were fitted out near Resaca, on the Oostenaula, in April and May last, and before the end of the year the work had been fairly commenced.

The improvements required are of the same character as on the Upper Tennessee, Hiawassee, and other streams in this region. No work has been done on these streams since 1876, and many of the dams, which were hastily and not very substantially built (owing to the small amount of funds and the large number of points requiring improvement), will need strengthening and extending.

The following is a statement of the principal items of work done dur-

ing the working season above specified. This work was distributed among 11 different obstructions.

137 snags removed from channel.
67 cords drift-wood removed from channel.
50 cubic yards rock removed from channel.
28 cubic yards sand and gravel removed from channel.
49 overhanging trees cut.
277 cubic yards rock quarried and placed in dams.
9 cords brush and logs placed in dams.

The working force consists of 36 men, and is proceeding up the Oostenauala from Resaca, thence up the Coosawattee, and on the 1st of July had reached Fields's Mill, 18 miles above Resaca.

The original estimates made for these rivers are	\$28,208 50
Whole amount appropriated	22,000 00
Total amount expended	20,325 05

Money statement.

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	6,208 50	

T 6.

IMPROVEMENT OF ETQWAH RIVER, GEORGIA.

The instrumental survey of this river referred to in my last report was commenced on the 12th of May, and the field-work completed about the end of the fiscal year. The reports, maps, and estimates are now being prepared by Mr. Ernst Ruhl, who made the survey, and will be forwarded as soon as completed.

Pending the result of this survey, no intelligent project for the improvement could be made, and no work has therefore been done during the year other than that relating to the survey.

Total amount appropriated (act August 14, 1876)	\$10,000 00
Total amount expended	59 73

Money statement.

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

T 7.

IMPROVEMENT OF OCMULGEE RIVER, GEORGIA.

The principal work done on this river during the year has been as heretofore chiefly confined to the removal of snags and overhanging trees. The river-bed is generally of a shifting nature, the shoals being formed in most cases by accumulations of drift held in position by sunken logs. On the removal of the logs the current washes out a channel of itself. Several abrupt bends have been straightened by removing the stumps and logs, and allowing the river to cut through at high-water. The following extracts from a report of Assistant Engineer B.

W. Frobel, who has immediate charge of this improvement, will explain the matter more fully:

On the 23d of August, 1877, work was begun on the Ocmulgee River, near its junction with the Oconee. For $\frac{1}{2}$ mile or more above the mouth of the Oconee, there was a flat sand bar upon which there was not more than 15 inches of water at its lowest stage. By removing the logs imbedded in it, the sand soon washed away, leaving a good channel with 8 feet water. This channel has continued to improve. The next most serious obstacle was found at Tillman's Bar, of which I have already furnished you a map and detailed description. From Tillman's to Reuben's Cut, the only obstacle at ordinary low-water was logs, which in great numbers filled the bights where the deepest water is found, preventing boats from keeping the channel and forcing them into shoal water; the worst of these have been removed. At Reuben's Cut the river makes a long bend, computed at from 2 to 3 miles. At the upper end of this bend there was a "break-over" not more than 100 yards long. The old river was filled with logs and snags, about which several sand bars were forming. It was therefore determined to clean out the "break-over." This has been done and a good channel formed, which continues to widen and deepen. There is now no difficulty in passing at any time or at any stage of water. The river has been partially cleaned out from the Macon and Brunswick Railroad bridge 4 miles below Macon to its mouth, a distance computed at 250 miles. A more thorough cleaning out has been had from its mouth to "Dick Swift Cut-off," a distance of 75 miles. On this portion of the river but little additional work is needed just now to give good navigation on ordinary water. This work will consist in the removal of some "patches of logs" below the bridge at Lumber City, and improving Hubbard's Bar by taking out a few rocks from the channel, and also by straightening some awkward bends above this, known as "Hungry Points." I inclose you a sketch. You will see that the points Upper and Lower Winslow are low wooded projections, around which the river sweeps in a very narrow and crooked channel. There are small break-overs at both these points; by widening and deepening these the channel may be directed along the high rock bluff which forms the right bank of the river, and the trouble cured.

I am informed by Mr. Fraser, who is in local charge of this work, that Dodge & Co. alone have 360 timber rafts detained by being unable to get past these points. Mr. Fraser says: "He (Mr. Dodge) has been compelled to quit hauling until he can get what he has rafted off. If the work I have spoken of was completed he could get out of the Ocmulgee at any stage of water." Again he says, writing from Jacksonville, July 15, "The river now is dead low, and we have to work our way as we go. Wherever we clean out, we have the greatest abundance of water." He has been directed to employ his force upon the points named.

The work done so far may be termed permanent, except perhaps the falling in of trees, which cannot be prevented now. By straightening and cleaning out the channel the impingement of the current upon the soft alluvium which forms the banks will be lessened and the evil complained of lessened with it. In other places different means must be used, which I will suggest hereafter. I inclose you a rough sketch of Reuben's Cut as it is now, and one showing the geological formation at Tillman's Bar; this will answer for most if not all the rock-bars below Hawkinsville. These bars are of loose rocks which have fallen into the river-bed by the gradual washing away of the soft material which underlies them. In most cases they can be removed by grapnels without blasting. The rock is siliceous sandstone, very brittle and easily broken up. The river will have an abundance of water when the logs are removed for boats larger than those navigating it now. So soon as these are enabled to run upon regular schedule time and are not compelled to "lay by" at night, the value of the navigation will be greatly increased.

In anticipation of the opening of the river from Hawkinsville to Macon, a new steamer has been built at Hawkinsville and is nearly completed. This boat is designed to ply between these places. Another boat has been contracted for, and will be ready shortly. Since the work of opening the river began, the area of land planted along its banks has greatly increased, while some idea may be had of the extent and value of the lumber trade, when one firm has 360 rafts detained in the river by these obstructions.

There were during the year 1,370 snags and logs removed and 44 overhanging trees cut away. The working party consists of an overseer, Mr. Fraser, and 12 hired men, with a steamboat and steam-derrick boat rigged for pulling out snags.

It is stated that considerable commerce would spring up on this river if the Altamaha, which is formed by the union of the Ocmulgee and Oconee, was made navigable. The Altamaha is not, however, in my

district, and I am not informed as to the prospect of there being any work done on that river.

This work is in the collection-district of Brunswick, Ga.

The original estimate of the cost of the work of improving this river is	\$56,240 00
Amount appropriated	37,000 00
Amount expended	23,989 61

Money statement.

July 1, 1878, amount available	\$16,987 31
Amount appropriated by act approved March 3, 1879	7,000 00
	\$23,987 31
July 1, 1879, amount expended during fiscal year	10,976 92
July 1, 1879, outstanding liabilities	1,150 85
	12,127 77
July 1, 1879, amount available	11,859 54
Amount (estimated) required for completion of existing project	19,240 00
Amount that can be profitably expended in fiscal year ending June 30, 1881	19,240 00

T 8.

IMPROVEMENT OF OCONEE RIVER, GEORGIA.

The general character of this river is similar to that of the Ocmulgee, and the obstructions and improvements required are also similar.

An appropriation having been made for the improvement of this river, the steamer Colville was hired and a working party fitted out for removing snags, &c., between the Central Railroad bridge and Dublin; 209 snags and logs were removed from this part of the river. A steam-derrick boat, with self-propelling power, was built and fitted out at Milledgeville, and, with considerable difficulty, worked her way down to the Central Railroad bridge through rafts of logs and other obstructions, and is now at work on the river below the bridge. Mr. M. T. Singleton is in charge of the working party, which consists of 10 men. Assistant Engineer Frobel states that—

Before this work was begun, an empty boat could not ascend this portion of the river when the water was less than 2 feet above "dead low." The steamer Colville has recently gone up with a full load of cotton with the water only 6 inches above "extreme low," and this since only the worst places were cleaned out. I hope with the aid of the new steam-derrick boat just completed for this river to finish this portion of the work during the next fiscal year, and then the boats should be sent to work on the lower river, the opening of which is of vast importance to all that section. I have had an instrumental survey made from the bridge to Dublin, but owing to the fact that Mr. Singleton has been constantly engaged upon the work of cleaning out, and has had no time to complete his maps and notes, the report has not yet been forwarded to you. In relation to all this work, I would respectfully renew the recommendation contained in my letter of the 14th of May (recommending an appropriation for the Altamaha).

It is a matter of congratulation that during two of the sickliest seasons known in this country for many years past, we have not had a single death or a serious case of sickness upon all this work, although during the whole time the parties have worked in the midst of dense swamps, and in a region so malarious that to go into the swamp even for a very short time is deemed exceedingly dangerous. The strictest sanitary regulations have at all times been enforced, and their escape from fever so far may be in a measure due to this.

This work is in the collection-district of Brunswick, Ga.

The amount of revenue collected at the nearest port of entry is unknown to me.

The original estimate made for this work was	\$15,000 00
Amount appropriated	11,500 00
Amount expended	4,182 15

Money statement.

July 1, 1878, amount available	\$10,000 00
Amount appropriated by act approved March 3, 1879	1,500 00
	\$11,500 00
July 1, 1879, amount expended during fiscal year	4,182 15
July 1, 1879, outstanding liabilities	1,752 50
	5,934 65
July 1, 1879, amount available	5,565 35
Amount (estimated) required for completion of existing project	3,500 00
Amount that can be profitably expended in fiscal year ending June 30, 1881	3,500 00

T 9.

EXAMINATIONS OF CANEY FORK AND OBEY'S RIVERS, TENNESSEE.

UNITED STATES ENGINEER OFFICE,
Chattanooga, Tenn., February 20, 1879.

GENERAL: I have the honor to forward herewith reports of examinations made in compliance with your instructions of August 7, 1878, by Mr. C. A. Turrill, assistant engineer.

The estimates of cost of the proposed improvements, viz, \$30,228 for Caney Fork, and \$11,869 for Obey's River, appear small, but from the nature of the work and the circumstances under which the examinations were made it was not expected that anything more than approximate estimates could be made, and as Mr. Turrill has had considerable experience in work of improving such streams, his judgment will probably be found sufficiently correct.

In forwarding these reports Capt. L. C. Overman states that—

The section of country through which these two streams flow is largely dependent upon their navigability both for shipment of products and reception of supplies, and doubtless will be for many years to come, as the character of the country is such as to render the construction of railroads very expensive, and the wagon-roads are likewise rough and hilly.

Mr. C. A. Turrill, in his report, estimates \$11,869 as the approximate cost to improve Obey's River, Tennessee, and this sum judiciously expended would be sufficient for all the present requirements of the stream and the surrounding section of country. If, however, for any reason this amount cannot be secured for Obey's River, the sum of \$3,000 expended in clearing out snags, logs, and overhanging trees would do much to render the present navigation of the stream much more reliable and safe.

Mr. Turrill, in his report, estimates \$30,228 as the approximate cost to improve Caney Fork; and the whole, or as much as possible, of this sum should be appropriated for this stream.

Very respectfully, your obedient servant,

W. R. KING,
Captain of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

CANEY FORK RIVER, TENNESSEE.

REPORT OF MR. C. A. TURRILL, ASSISTANT ENGINEER.

NASHVILLE, TENN., February 8, 1879.

SIR: Acting under your instructions, after completing an examination of Obey's River, I proceeded to the head of navigation of Caney Fork River, at Sligo, Tenn., and made an examination from the head of navigation to its mouth or junction with the Cumberland, 120 miles from Nashville and 72 miles from the initial point of survey.

Special examination was made of the more prominent shoals and islands, and such notes, sketches, and soundings at other points were taken as would enable me to form an approximate estimate of the cost of improvement, having for its object the exten-