

1878, a survey and examination was made at this point, and plans and estimates submitted for the works of improvement thought to be necessary. These were published in House Ex. Doc. No. 46, Forty-fifth Congress, third session.

Congress, by act of March 3, 1879, appropriated \$15,000 for carrying on these works, which are now being prosecuted in accordance with the general plan submitted, and the results thus far obtained are satisfactory. It is proposed to expend the present appropriation in the further prosecution of this plan.

Amount appropriated by act approved March 3, 1879.....	\$15,000 00
July 1, 1879, amount expended during fiscal year.....	205 72
July 1, 1879, outstanding liabilities.....	5,152 04
	<u>5,357 76</u>

July 1, 1879, amount available..... 9,642 24

Amount (estimated) required for completion of existing project..... 118,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881. 118,000 00

(See Appendix O 4.)

4. *Improvement of Missouri River at Kansas City, Missouri.*—In the bend above the bridge which crosses the Missouri River at Kansas City, very serious erosion of the left bank of the river has been going on for some time past. If this is not checked the river is liable, by cutting its way through the eastern approach, to entirely destroy this bridge, which is now one of the main railway crossings of the Missouri River. It will also leave Kansas City without any available river front, and otherwise materially interfere with the navigation of the river.

To comply with the provisions of the river and harbor act of June 18, 1878, a survey and examination was made at this point, and plans and estimates submitted for the works of improvement thought to be necessary. These were published in Senate Ex. Doc. No. 37, Forty-fifth Congress, third session.

Congress, by act of March 3, 1879, appropriated \$30,000 for carrying on these works, which are now being prosecuted in accordance with the general plan submitted, and the results thus far obtained are satisfactory.

It is proposed to expend the present appropriation in the further prosecution of this plan.

Amount appropriated by act approved March 3, 1879.....	\$30,000 00
July 1, 1879, amount expended during fiscal year.....	\$97 38
July 1, 1879, outstanding liabilities.....	7,235 09
	<u>7,332 47</u>

July 1, 1879, amount available..... 22,667 53

Amount (estimated) required for completion of existing project..... 62,810 00
Amount that can be profitably expended in fiscal year ending June 30, 1881. 62,800 00

(See Appendix O 5.)

5. *Improvement of Missouri River at Fort Leavenworth, Kansas.*—Before commencing operations in the vicinity of Fort Leavenworth with the funds appropriated by act of Congress of June 18, 1878, a survey of the river of several miles in extent was necessary.

The plan of improvement approved contemplated the revetment of the left bank in the bend above Fort Leavenworth, where severe erosion was going on, and the rectification of the channel where necessary to improve navigation. The work has been prosecuted in accordance with the general plan approved, and the results thus far obtained are satisfactory. It is proposed to expend the present appropriation in the further prosecution of this plan.

July 1, 1878, amount available.....	\$25,000 00	
Amount appropriated by act approved March 3, 1879.....	10,000 00	35,000 00
July 1, 1879, amount expended during fiscal year.....	18,728 19	
July 1, 1879, outstanding liabilities.....	6,934 33	25,662 52

July 1, 1879, amount available..... 9,337 48

Amount (estimated) required for completion of existing project..... 35,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881. 35,000 00

(See Appendix O 6.)

6. *Improvement of Missouri River at Atchison, Kansas.*—In order to decide more definitely upon the most judicious and economical method of expending the funds appropriated last year for the work of improving the Missouri River at Atchison, Kans., a resurvey was made, and from the data obtained plans and estimates were submitted for continuing the work. These contemplate the protection of the left bank of the river above the bridge from erosion, and the straightening of the channel so as to make the passage of the bridge less difficult. So far as these plans have been carried out the results are satisfactory.

It is proposed to expend the balance of the appropriation now available in the further prosecution of these plans.

July 1, 1878, amount available.....	\$20,000 00	
Amount appropriated by act approved March 3, 1879.....	20,000 00	\$40,000 00
July 1, 1879, amount expended during fiscal year.....	19,736 96	
July 1, 1879, outstanding liabilities.....	2,672 30	22,409 26

July 1, 1879, amount available..... 17,590 74

Amount (estimated) required for completion of existing project..... 80,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881. 80,000 00

(See Appendix O 7.)

7. *Improvement of Missouri River opposite Saint Joseph, Missouri.*—Operations in the vicinity of Saint Joseph, Mo., were mainly confined to stopping the erosion of the Kansas shore above the Saint Joseph Bridge, where the western approach to the bridge was seriously threatened. Until some new element of disturbance to the regimen of the river is introduced, this may be considered as having been successfully accomplished.

Opposite Amazonia and about 20 miles above the bridge a cut-off is seriously threatened and may take place any day. This will shorten the course of the river about $4\frac{1}{2}$ miles. The effect of this cut-off upon the general features of the river will doubtless be very great.

For works of improvement that will be necessary at and above Saint Joseph an estimate is submitted.

The appropriation now available for this work will be devoted to protecting the left bank of the river above the bridge and along the front of the city of Saint Joseph. In this locality rapid erosion is now going on.

July 1, 1878, amount available.....	\$50,000 00	
Amount appropriated by act approved March 3, 1879.....	9,000 00	\$59,000 00
July 1, 1879, amount expended during fiscal year.....	47,507 87	
July 1, 1879, outstanding liabilities.....	1,423 47	48,931 34

July 1, 1879, amount available..... 10,068 66

Amount (estimated) required for completion of existing project..... 84,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881. 84,000 00

(See Appendix O 8.)

8. *Improvement of Missouri River at Nebraska City, Nebraska, and Eastport, Iowa.*—Before commencing operations last season in the vicinity of Nebraska City, a resurvey of this portion of the river was thought to be necessary, in order to determine the effect of the early summer flood, and to decide definitely upon a plan for completing the work commenced during last fiscal year. The resurvey was made and plans and estimates for the improvements necessary were submitted. These contemplate stopping the erosion of the banks at various places between Wyoming and Eastport, and rectifying the channel throughout this extent of the river. Owing to the unfavorable features of the river in this locality, it is necessary to carry on operations throughout a wide extent in order to produce the effect desired. The work has been carried on during the year in accordance with this general plan with encouraging results, and it is proposed to expend the appropriation now available in further prosecuting it.

July 1, 1878, amount available	\$40,000 00	
Amount appropriated by act approved March 3, 1879	30,000 00	
		\$70,000 00
July 1, 1879, amount expended during fiscal year	28,076 67	
July 1, 1879, outstanding liabilities	13,868 18	
		41,944 85
July 1, 1879, amount available	28,055 15	

Amount (estimated) required for completion of existing project..... 55,000 00
 Amount that can be profitably expended in fiscal year ending June 30, 1881. 55,000 00
 (See Appendix O 9).

9. *Improvement of Missouri River at Omaha, Nebraska, and Council Bluffs, Iowa.*—In consequence of a great change that was taking place in the Missouri River in the vicinity of Omaha, resulting from the cut-off of July 8, 1878, it was deemed advisable to have a resurvey made and a new study instituted to determine the most desirable plan for proceeding with the work of protecting property and improving the navigation of the river in this vicinity. The general plan submitted and approved contemplates the protection of the Nebraska and Iowa shores at points where erosion is taking place above the bridge, and the rectification of the shore lines and channel, so as to make the passage of the bridge by steamboats less difficult and dangerous.

The work during the year has been carried out in accordance with the general plan approved. It has resulted in stopping the erosion of the banks at the most important points and is otherwise satisfactory.

It is proposed to expend the appropriation now available in the further prosecution of the general plan.

July 1, 1878, amount available	\$80,000 00	
Amount appropriated by act approved March 3, 1879	50,000 00	
		\$130,000 00
July 1, 1879, amount expended during fiscal year	78,611 09	
July 1, 1879, outstanding liabilities	11,653 09	
		90,264 18
July 1, 1879, amount available	39,735 82	

Amount (estimated) required for completion of existing project 80,000 00
 Amount that can be profitably expended in fiscal year ending June 30, 1881. 80,000 00
 (See Appendix O 10).

10. *Improvement of Missouri River at Sioux City, Iowa.*—A resurvey of the Missouri River in the vicinity of Sioux City was made in July and August, 1878, and new plans and estimates submitted for the improvements thought to be necessary. The plan adopted contemplates pro-

tecting the left bank of the river in front of Sioux City by means of a brush revetment, and the rectification and protection of the Nebraska shore above and opposite the town, also the construction of the works necessary to prevent the steamboat-landing from being destroyed in consequence of the formation of a sand-bar in its immediate front.

The work during the year has been prosecuted in accordance with this general plan, and the results have been satisfactory. It is proposed to expend the appropriation now available in the further prosecution of this general plan.

July 1, 1878, amount available	\$12,500 00	
Amount appropriated by act approved March 3, 1879	10,000 00	
		\$22,500 00
July 1, 1879, amount expended during fiscal year	12,269 71	
July 1, 1879, outstanding liabilities	3,317 30	
		15,587 01
July 1, 1879, amount available	6,912 99	

Amount (estimated) required for completion of existing project 23,800 00
 Amount that can be profitably expended in fiscal year ending June 30, 1881. 23,800 00

(See Appendix O 11.)

11. *Improvement of Missouri River at Vermillion, Dakota.*—The Missouri River in front of the town of Vermillion has recently been eroding its banks and threatening with destruction considerable valuable property. About 3 miles above the town a cut-off is liable to take place at any time, which will cause a very great change in the regimen of the river. At the expense of parties interested, Major Suter was directed to cause such data to be collected as would be necessary to form a plan and estimate for the improvement of the river at this point. The funds placed at his disposal being very limited, only a hasty reconnaissance could be made.

Upon the data thus collected a plan was devised, which was submitted, with an estimate of the cost of the improvement necessary. Congress, by act of March 3, 1879, appropriated \$5,000 for carrying on these works. This amount, so far as it is at present expended, has been devoted to protecting the river bank from erosion at points where the most important interests are threatened. The remainder will be applied in the same manner.

Amount appropriated by act approved March 3, 1879	\$5,000 00	
July 1, 1879, amount expended during fiscal year	\$1 50	
July 1, 1879, outstanding liabilities	3,742 15	
		3,743 65
July 1, 1879, amount available	1,256 35	

Amount (estimated) required for completion of existing project 70,000 00
 Amount that can be profitably expended in fiscal year ending June 30, 1881. 70,000 00

(See Appendix O 12.)

12. *Improvement of Arkansas River between Fort Smith and Wachita, Kansas.*—It is proposed to expend this appropriation, when available, in removing snags, rocks, &c., from such portions of the river as can be reached by the snag-boats.

To further carry on this work, the officer in charge recommends an appropriation of \$80,000 for the work immediately necessary, and of \$16,300 for a survey to develop a plan of permanent improvement.

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, as revised in this office	40,000 00	

(See Appendix O 13.)

13. *Improvement of Arkansas River at Fort Smith, Arkansas.*—With the funds (\$10,000) allotted from the appropriation for improving the Mississippi and Arkansas rivers to this work, the dike that was in process of construction was finished. The results expected have been fully realized. There is now a good landing in front of the town of Fort Smith, and a good ferry passage to the opposite side, and the navigation of the river at this point is all that could be expected.

July 1, 1878, amount available.....	\$10,000 00
July 1, 1879, amount expended during fiscal year.....	\$9,977 65
July 1, 1879, outstanding liabilities.....	22 35
	10,000 00

(See Appendix O 14.)

14. *Improvement of White River at Buffalo Shoals, Arkansas.*—There being no further appropriations for this work, at the beginning of the present fiscal year there was only available for operations the unexpended balance of \$1,676.50 remaining from the appropriation of \$10,000 made by act of August 14, 1876.

This amount has been expended in removing some of the worst obstructions from the channel.

July 1, 1878, amount available.....	\$1,676 50
July 1, 1879, amount expended during fiscal year.....	1,676 50

(See Appendix O 15.)

15. *Survey of Missouri River from its mouth to Sioux City, Iowa.*—The field-work of this survey was commenced last season, about the 1st of September, near the town of Weston, Mo., 8 miles above Leavenworth, Kans. On December 4, field operations were suspended on account of the inclemency of the weather, the survey at that time having reached Boonville, Mo., 217 miles from Weston, and about 200 miles from the mouth of the river.

During the suspension of field operations a force was at work to complete the maps as rapidly as possible.

To comply with the provisions of the river and harbor act of June 18, 1878, special surveys and reports were made upon the condition of the river in the vicinity of the following-named places, with a view to obtaining data upon which to base estimates for much-needed improvements, viz, Kansas City, Glasgow, Cedar City, and Saint Charles, Mo.

Early in April operations were resumed in the field, and May 21 the mouth of the river was reached. The party, June 5, resumed operations at the mouth of the Big Sioux River. It is expected that by the close of the present season the survey will have reached Weston, Mo., thus completing the entire field-work of the survey of the Missouri River from its mouth to Sioux City, Iowa.

The act of Congress of March 3, 1879, extends this survey to Fort Benton, Montana. The officer in charge estimates that to complete this extension will require about three years' work, and cost \$100,000.

July 1, 1878, amount available.....	\$50,000 00
Amount appropriated by act approved March 3, 1879.....	30,000 00
	\$80,000 00
July 1, 1879, amount expended during fiscal year.....	44,374 19
July 1, 1879, outstanding liabilities.....	15,354 19
	59,728 38

July 1, 1879, amount available.....	20,271 62
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Amount (estimated) required for completion of existing project.....	100,000 00
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(See Appendix O 16.)

16. *Improvement of Missouri River at Saint Charles, Missouri.*—To comply with the provisions of the river and harbor act of June 18, 1878, a survey and examination was made at Saint Charles, Mo. Upon the data obtained from these, plans and estimates were made for improving the river in the vicinity of this place.

These were submitted to Congress and published in House Ex. Doc. No. 60, Forty-fifth Congress, third session.

(See Appendix O 17.)

EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

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

1. *Missouri River at Cedar City, Missouri*, printed as House Ex. Doc. No. 44, Forty-fifth Congress, third session. (See also Appendix O 3.)
2. *Missouri River at Saint Charles, Missouri*, printed as House Ex. Doc. No. 60, Forty-fifth Congress, third session. (See also Appendix O 17.)
3. *Missouri and Kansas Rivers at and near their junction*, printed as Senate Ex. Doc. No. 37, Forty-fifth Congress, third session. (See also Appendix O 5.)
4. *Arkansas River, from Fort Smith to mouth of Little Arkansas*. (See Appendix O 18.)
5. *Kansas River, from its mouth to Junction City*. (See Appendix O 19.)

The last two were printed as House Ex. Doc. No. 94, Forty-fifth Congress, third session.

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

1. *Arkansas River at Pine Bluff*.
2. *The Gasconade River from its mouth to Vienna, in Maries County, Missouri*.

IMPROVEMENT OF MISSOURI RIVER ABOVE THE MOUTH OF THE YELLOWSTONE—IMPROVEMENT OF YELLOWSTONE RIVER.

Officer in charge, Lieut. Edward Maguire, Corps of Engineers.

1. *Improvement of Missouri River above the mouth of the Yellowstone.*—At Cow Island, the upper dam was lengthened and the middle and lower dams built. The work at this locality is now complete, a navigable channel of over 3 feet having been secured. The scouring action of the water will probably increase the depth.

At Grand Island the left chute was closed by a fascine dam of brush, stone, and gravel. The effect of this dam has been an increased depth of water on the upper shoal.

At Dauphin's Rapids the 100-foot channel was extended 1,600 feet, making a total length attained in the two seasons of 3,400 feet, with a depth varying from 3 to 5 feet, except in places where only 30 inches could be obtained. The dam closing the right chute was finished.

The work during the present season will be continued by three parties, one at Dauphin's Rapids, one at Kip's Rapids, and one at Grand Island. The latter party, after completing the work at that point, will proceed to Shonkin Bar and commence the work required there.

July 1, 1878, amount available.....	\$33,597 63	
Amount appropriated by act approved March 3, 1879.....	45,000 00	\$78,597 63
July 1, 1879, amount expended during fiscal year.....	25,786 67	
July 1, 1879, outstanding liabilities.....	531 34	26,318 01
July 1, 1879, amount available.....	52,279 62	
Amount that can be profitably expended in fiscal year ending June 30, 1881.	50,000 00	

(See Appendix P 1.)

2. *Improvement of Yellowstone River.*—By the river and harbor act of March 3, 1879, the sum of \$25,000 was appropriated for this improvement, and work has been commenced on Buffalo Rapids, the most important obstruction in the river.

Amount appropriated by act approved March 3, 1879.....	\$25,000 00
July 1, 1879, amount available.....	25,000 00

EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

To comply with provisions of the river and harbor act of June 18, 1878, Lieutenant Maguire was charged with the *survey of Yellowstone River*.

The survey was commenced September 6, 1878. One party started at Fort Keogh, the other at the mouth of Powder River. The channel length of river surveyed was 145½ miles; developed shore line, 527 miles. The number of soundings taken was 59,731. The river was gauged at three different points.

One party is now in the field, having commenced work at Terry's Landing, near the mouth of the Big Horn River. It will continue the survey in the direction of Fort Keogh. Should the 111 miles between Terry's Landing and Keogh be finished this year, there will still remain about 220 miles to be surveyed.

(See Appendix P 2.)

And to comply with provisions of the river and harbor act of March 3, 1879, Lieutenant Maguire has been charged with the *continuation of the survey of Yellowstone River*, and with an examination of *Cheyenne River, Dakota*, the results of which will be duly submitted when received.

IMPROVEMENT OF THE NAVIGATION OF THE MISSISSIPPI RIVER BETWEEN SAINT PAUL AND THE MOUTH OF THE ILLINOIS, INCLUDING IMPROVEMENTS AT SPECIAL LOCALITIES BETWEEN THOSE POINTS—IMPROVEMENT OF GALENA RIVER AND HARBOR, ILLINOIS.

Officer in charge, Maj. F. U. Farquhar, Corps of Engineers, with Capt. B. D. Greene, Corps of Engineers, under his immediate orders.

1. *Operations of snag-boat in improvement of Upper Mississippi River.*—During the year the United States snag-boat *Montana* was employed as in former years in removing snags and other obstructions, and in making surveys for future improvement.

At the close of the working season of 1878, the machinery of the *Montana* was transferred to a new hull built at Jeffersonville, Ind., and the new boat named the *General Barnard*. The cost of this steamer and outfit was \$20,963. The hull of the steamer *Montana* was sold.

It is proposed with the funds available to operate the *General Barnard* during the working season of 1879 in the same manner as the *Montana* has been used heretofore.

The officer in charge submits an estimate of \$25,000 for running the boat and making repairs during the fiscal year ending June 30, 1881.

July 1, 1878, amount available.....	\$42,738 97	
Amount appropriated by act approved March 3, 1879.....	20,000 00	\$62,738 97
July 1, 1879, amount expended during fiscal year.....	45,031 19	
July 1, 1879, amount available.....	17,707 78	
Amount that can be profitably expended in fiscal year ending June 30, 1881.	25,000 00	

(See Appendix Q 1.)

2. *Improvement of Mississippi River from Saint Paul to the Des Moines Rapids.*—Improvements have been made at the following places, viz: Pig's Eye, Newport, Hastings, Prescott, Crat's Island, Beef Slough, Rollingstone, Betsy Slough, Queen's Bluff, Bellevue, Dallas, and Pontoosac.

The dams and shore protections were constructed of brush and stone, and the results have been satisfactory.

With the appropriation of March 3, 1879, it is proposed to keep completed works in repair, and build such shore protections as may become necessary.

Plans have been prepared for the construction of works at Smith's Bar, 2½ miles below the mouth of the Saint Croix, at Mount Vernon Bar, and at the bars above Winona, to be paid for from the appropriation made by act of March 3, 1879, and \$20,000 of the same appropriation has been set aside to be expended in testing the Adams flume as provided for in that act.

During the past year a continuous survey has been made over the whole length of the river from Saint Paul to the Des Moines Rapids, a distance of 515 miles, consisting of a chained transit and level line with thorough gauge observations and soundings. Maps on a scale of 1 inch to 800 feet have been platted, showing the results of this survey; and at special localities maps have been constructed on a scale of 1 inch to 400 feet. A systematic plan of improvements has been projected by the officer in charge, which is shown on the maps, and the estimates for this portion of the river are nearly completed.

This thorough survey shows that the estimates based on former partial surveys will not be sufficient to effect a full improvement of this portion of the river.

A special survey, ordered by the Board of Engineers on the Improvement of the Mississippi River, has been in progress between Burlington and the head of the Des Moines Rapids, with accurate gaugings of the river combined with observations of the movements of the sand bars, oscillations of water level, &c.

The officer in charge submits an estimate of \$500,000 for the further improvement of the river from Saint Paul to the Des Moines Rapids during the fiscal year ending June 30, 1881.

July 1, 1878, amount available.....	\$250,000 00	
Amount appropriated by act approved March 3, 1879.....	100,000 00	\$350,000 00
July 1, 1879, amount expended during fiscal year.....	203,768 06	
July 1, 1879, outstanding liabilities.....	4,182 17	207,950 23
July 1, 1879, amount available.....	142,049 77	
Amount that can be profitably expended in fiscal year ending June 30, 1881.	\$500,000 00	

(See Appendix Q 2.)

3. *Improvement of Mississippi River from Des Moines Rapids to mouth of Illinois River.*—Works are in progress on this portion of the river at Slim Island and Gilbert's Island, and a project has been adopted for improving Canton Chute near Canton, Mo.

A connected survey, the same in its details as that above Des Moines Rapids, has been made over the whole distance from Keokuk to Grafton at the mouth of the Illinois River, a distance of 148 miles. The maps and preliminary estimates for this portion of the river are completed.

A preliminary estimate of the cost of improving this portion of the river has been prepared by the officer in charge, resulting as follows:

1st. For works of improvement where obstructions to navigation exist....	\$921,294
2d. Works for maintaining and rectifying the channel of the river where... there is at present a sufficient depth at the lowest stages of water,...	
but where the channel is tortuous and the banks soft.....	1,125 102
In all.....	2,046 396

It is proposed to continue the work at Slim Island and Gilbert's Island with the funds available during the coming season.

The officer in charge estimates that \$500,000 can be profitably expended for prosecuting the works on this portion of the river during the fiscal year ending June 30, 1881.

*July 1, 1878, amount available.....	\$100,000 00
Amount appropriated by act approved March 3, 1879.....	40,000 00
	\$140,000 00
July 1, 1879, amount expended during fiscal year.....	47,169 02
July 1, 1879, outstanding liabilities.....	7,594 32
	54,763 34
July 1, 1879, amount available.....	85,236 66
Amount that can be profitably expended in fiscal year ending June 30, 1881.	500,000 00

(See Appendix Q 3.)

4. *Improvement of Mississippi River from the bridge of the Chicago, Milwaukee and Saint Paul Railroad, above La Crosse, Wisconsin, to the mouth of Root River, below that city.*—This work consisted in closing the two sloughs on each side of Bates Island and protecting the head of Grand or Barron Island.

The work was completed during the fiscal year, and has accomplished its purpose in protecting the city from a threatened diversion of the main channel of the river from the water front of the city of La Crosse.

Plans for improving the bad bars at La Crosse will be embraced in the general plans for improvement of Mississippi River from Saint Paul to Des Moines Rapids.

July 1, 1878, amount available.....	\$12,500 00
July 1, 1879, amount expended during fiscal year.....	11,717 67
July 1, 1879, amount available.....	782 33

(See Appendix Q 4.)

5. *Improvement of Mississippi River at Quincy, Illinois.*—It is proposed to begin work at this place during the present season by building spurs and a closing dam on the Illinois shore as far as the available funds will permit.

The officer in charge submits an estimate of \$50,000 for the further prosecution of this work during the fiscal year ending June 30, 1881.

*This sum was appropriated under the head of "Widening and deepening channel of Mississippi River from Des Moines Rapids to the mouth of the Ohio."

Amount appropriated by act approved March 3, 1879.....	\$20,000 00
July 1, 1879, amount available.....	20,000 00
Amount (estimated) required for completion of existing project.....	204,109 87
Amount that can be profitably expended in fiscal year ending June 30, 1881.	50,000 00

(See Appendix Q 5.)

6. *Improvement of Rock Island Rapids, Mississippi River.*—The work of removing patches of rock which still obstruct the channel was carried on during the past year, both by blasting and by chiseling; 1,853½ cubic yards of rock were broken and 3,363 were dredged.

This work will be continued during the fiscal year.

The amount required for the completion of the existing project is estimated by the officer in charge at \$12,000

July 1, 1878, amount available.....	\$32,851 37
Amount appropriated by act approved March 3, 1879.....	6,000 00
	\$38,851 37
July 1, 1879, amount expended during fiscal year.....	29,674 44
July 1, 1879, amount available.....	9,176 93

Amount (estimated) required for completion of existing project.....	12,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.	12,000 00

(See Appendix Q 6.)

7. *Improvement of the harbor at Muscatine, Iowa.*—The work at this place has consisted wholly in dredging in front of the city. Seventeen thousand five hundred and ninety cubic yards have been removed during the fiscal year, and the dredging will be continued as far as the available funds will allow.

The officer in charge suggests that the balance of the original estimate for this work, viz, \$11,750, can be profitably expended during the next fiscal year for its completion.

Amount appropriated by act approved March 3, 1879.....	\$7,500 00
July 1, 1879, amount expended during fiscal year.....	\$1,474 60
July 1, 1879, outstanding liabilities.....	2,356 40
	3,831 00
July 1, 1879, amount available.....	3,669 00

Amount (estimated) required for completion of existing project.....	11,750 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.	11,750 00

(See Appendix Q 7.)

8. *Improvement of Rush Chute and harbor of Burlington, Iowa.*—In the original project for this work it was estimated to cost \$35,221.70, but a revised project and estimate was submitted by the officer in charge January 25, 1879, increasing the cost about \$20,000.

The dam across Rush Chute has been completed and some dredging done to facilitate landing of steamers at Burlington.

It is proposed to continue the dredging and the construction of dams during the present season as far as the funds available will permit.

The officer in charge suggests for the fiscal year ending June 30, 1881, the appropriation of the balance required to finish the work under the revised project, viz, \$44,656.87.

July 1, 1878, amount available.....	\$10,034 01
Amount appropriated by act approved March 3, 1879.....	5,000 00
	\$15,034 01
July 1, 1879, amount expended during fiscal year.....	7,347 35
July 1, 1879, outstanding liabilities.....	15 74
	7,363 09

July 1, 1879, amount available.....	7,670 92
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Amount (estimated) required for completion of existing project.....	44,656 87
Amount that can be profitably expended in fiscal year ending June 30, 1881.	44,656 87

(See Appendix Q 8.)