Cost of 8,250 cubic yards in place.

Description.	Average cost per cubic yard of work.	Total cost.
Materials	$0 87	$7,147 81
Labor	18	1,478 19
Tools and hire of plant	04	310 79
Superintendence and office expenses	06.5	538 84
Total	1 15.5	9,475 63

Cost of removing snags and wreck, $248.54.

Prescott Bar.

Description of work.	No. linear feet.	Rock.	Brush.
		Cub. yds.	*Cub. yds.*
Dams	1,695	4,242	3,149
Shore protection	480	885	842
Total	2,175	5,127	3,991

Total cost of 9,118 cubic yards in place.

Description.	Average cost per cubic yard of work.	Total cost.
Materials	$0 86	$7,869 68
Labor	16	$1,478 50
Tools and hire of plant	04	412 99
Superintendence and office expenses	06.5	598 60
Total	1 12.5	10,359 77

IV. CRAT'S ISLAND BAR.

A dam closing the channel between the right bank and Crat's Island was constructed and 2 spur-dams from the right bank above the island, thus throwing the low-water flow of the river through the left channel.

The dams were only built to the low-water level, and will not interfere much with the high-water flow.

The accompanying map shows the results of the work.

The detailed cost of this work was as follows:

Description of work.	No. linear feet.	Rock.	Brush.
		Cubic yds.	*Cubic yds.*
Dams	2,450	14,139	7,168
Shore protections	400	550	923
Total	2,850	14,689	8,091

Total cost of 22,780 yards.

Description.	Average cost per cubic yard of work.	Total cost.
Material	$0 93	$21,218 57
Labor	11	2,555 00
Tools and hire of plant	04	1,029 75
Superintendence and office expenses	06.5	1,495 00
Total	1 14.5	26,298 32

V. BEEF SLOUGH BARS.

The channel to the right of Grand Encampment Island was closed with a low dam and 3 spur-dams built out from the right bank above.

The small channel between Island 31 and the left bank was closed and the head of the cut into Beef Slough revetted on both banks.

Some more work is still necessary here, which will be put in as soon as the stage of water will permit.

The chute between Island 34 and the left bank should be closed and a mattress laid across the cut to prevent its deepening.

The detailed cost of this work was as follows:

Beef Slough Bar.

Description of work.	No. linear feet.	Rock.	Brush.
		Cubic yds.	*Cubic yds.*
Dams	3,200	8,704	5,270
Shore protections	700	1,155	1,215
Total	3,900	9,859	6,485

Description.	Average cost per cubic yard of work.	Total cost.
Material	$0 93	$15,209 69
Labor	14	2,235 47
Tools and hire of plant	09	1,483 29
Superintendence and office expenses	07	1,141 36
Total	1 23	20,069 81

VI. ROLLINGSTONE BARS.

The work here consisted in closing Horseshoe Bend just above the head of Rollingstone Slough; in building 2 short spur-dams, one just above the head of Horseshoe Bend from the right bank and the other from near the foot of Island 57; and a dam to close the opening between Islands 57 and 58.

Much more work is necessary to complete the improvements in this vicinity, but the shortness of the season and the difficulty in getting materials rapidly prevented the plans being fully carried out.

A contract has been made with Jacob Richtman, of Fountain City, for constructing the remaining work as far as the last year's appropriation will admit of.

The following is a detailed statement of the cost of this work:

Rollingstone Bars.

Description of work.	No. linear feet.	Rock.	Brush.
		Cubic yds.	*Cubic yds.*
Dams	2,280	6,235.57	3,878.59
Shore protections	800	1,519.60	544.01
Total	3,080	7,755.17	4,422.60

Total cost of 12,178 cubic yards.

Description.	Average cost per cubic yard of work.	Total cost.
Material	$0 82.7	$10,077 32
Labor	24.0	2,934 28
Tools and hire of plant	09.5	1,208 78
Superintendence and office expenses	07.1	867 47
Total	1 23.3	15,087 85

BETSY SLOUGH BAR.

The work here consisted in contracting the left channel at the foot of Island 63 by 2 spur-dams from the left bank.

The long spit of sand extending down from the foot of Island 63 was protected with a revetment of brush and stone, and Pap Chute or right half of channel to right of Island 63 was closed.

Formerly the channel was through Pap Chute, but Betsy Slough or left-hand channel has been enlarging and now Pap Chute is full of sand bars.

The only further work in this locality is some shore protection in Betsy Slough to prevent further widening, and a shore protection just below the foot of Island 67 on the right bank.

A contract has been made for this work with Jacob Richtman, of Fountain City.

The following is the detailed cost of this work:

Betsy Slough Bar.

Description of work.	No. linear feet.	Rock.	Brush.
		Cubic yds.	*Cubic yds.*
Dams	1,755	5,806.80	3,003.73
Shore protection	3,152	6,785.45	2,205.04
Total	4,907	12,592.25	5,208.77

Cost of work.

Description.	Average cost per cubic yard of work.	Total cost.
Materials for dam and shore protection, 7,167 cubic yards	$0 74.3	$5,328 54
Labor		2,487 94
Plant, tools, &c		533 60
Blasting bowlders		286 70
Dredging bowlders, 1,806 cubic yards	0 87½	1,580 25
Dredging sand-bar, 13,134 cubic yards	0 25	3,283 50
Superintendence		814 05
Total		14,314 58

SUMMARY.

Pig's Eye and Kaposia Bar	$18,573 32
Newport Bar	5,952 61
Hastings Bar	9,475 63
Prescott Bar	10,359 77
Crat's Island Bar	26,298 32
Beef Slough	20,069 81
Rollingstone Slough	15,087 85
Betsy Slough	21,184 51
Queen's Bluff Bar	11,212 24
Bellevue Bar	16,161 97
Horse Island (removing rock)	372 29
Dallas and Pontoosuc	14,314 58
General surveys and estimates	33,832 02
Survey for Board of Engineer officers (low-water)	5,055 31
Total expended	207,950 23

Description of work.	Number of cubic yards.	Cost per cubic yard.	Total.
Dams and shore protections	131,448	$1 24.4	$163,540 16
Dredging sand	13,134	25	3,283 50
Dredging bowlders	1,806	1 03.3	1,866 95
Blasting rock	95	3 91.8	372 29
Surveys			38,887 33
			207,950 23

SURVEYS.

A continuous survey of the river from Saint Paul, Minn., to the head of Des Moines Rapids has been made, and except for a short distance between Saint Paul and Prescott and between Trempeleau, Wis., and Lynxville, Wis., the maps are finished and a study made for the improvement of the river.

This survey was made by four parties:

No. 1, under command of Assistant Engineer Frederick Terry, worked between Prescott and Lynxville.

No. 2, under Assistant Engineer F. W. Lehuartz, from Lynxville to within 15 miles of Savanna, which 15 miles was surveyed by the officers and crew of the snag-boat.

No. 3, from Savanna, Ill., to Burlington, Iowa, under Assistant Engineer James P. Allen.

From Burlington to head of Des Moines Rapids the river has been specially surveyed with reference to a study of the movement of sand-

bars, complete gaugings, and sediment observations. This party is under charge of Assistant Engineer G. A. Marr.

The surveys consisted in running a carefully-chained transit line on or near one bank of the river.

A tested level line was also run to determine the water-surface elevations, and bench-marks were established about every 1,000 feet of river.

The immediate banks of the river were surveyed, and the sounding stakes located by stadia measurements, which, as often as was practicable, were tied on to the transit line.

Zig-zag sounding-lines were run across the river where no present obstructions to navigation existed; but on bars or other obstructions close lines of soundings, with several points on each line located by intersections, were made.

To determine the stage of water, gauges were set up at various points and connected with the lines of levels. These gauges were read daily, besides which the water-surfaces were determined many times each day by each party.

The equipment of the parties consisted of an ample supply of instruments, a quarter-boat supplied with cooking and mess furniture, three small boats, and a steam-launch. The steam-launches were very useful in soundings and transporting the men to and from their work. The engines for the boats were built at the United States arsenal on Rock Island, and were constructed at a much less rate than could have been done by private parties.

The results of the surveys are being plotted on a scale of $\frac{1}{9600}$, except where obstructions exist, when detailed sheets on a scale of $\frac{1}{4800}$ were made.

For the special observations of the discharge of the river, movements of sand bars, amount of materials in suspension in the river, special instruments are being made.

Six Ellis meters were purchased. A chronograph, designed and constructed by Messrs. T. S. and J. D. Negus, of New York, registers simultaneously the revolutions of 6 meters. The register is made on a continuous strip of paper 14 inches wide, and knowing the coefficients of the meters, it is a very simple matter to determine the velocity of the water at each meter.

Fortunately, a slough was found near Burlington in which there was at low-water no perceptible current, and many determinations have been made to determine the coefficients of the meters.

The high-water discharges of the river can only be approximately arrived at, as the banks are overflowed, and even at moderate stages of water much water passes through lateral channels in the bottom lands.

PROPOSED WORK FOR SEASON OF 1879.

Projects have been approved for works to improve the river at Smith's Bar, about 2½ miles below mouth of Saint Croix River, at Mount Vernon Bars (about 2½ miles below Minneiska, Minn.), and at the bars just above Winona; $20,000 of the amount appropriated is to be spent in testing the "Adams Flume."

What remains of the old appropriation will be used in completing the surveys and maps, in making such shore protections at the places improved last year as may be necessary, and in removing bowlders from the channel at Horse Island, Keithsburg, and New Boston.

The surveys and the extreme low-water of last season developed a great need for very extensive work of improvement.

As far as a preliminary study of the maps already finished can be made, the cost of improvement will be not less than $1,500,000.

A complete estimate can only be made after a more careful study of the maps, some of which are not yet completed.

The work of improvement will of necessity be progressive.

Not less than $500,000 should be appropriated per year until the whole work is finished.

The improvement of this great artery of commerce is a necessity to prevent too great charges for transportation from the valley to the eastern coast. Once improved so that there are no difficulties to its navigation, there is no doubt that it will control the cost of the carrying of the grain of the Mississippi Valley to the seaboard.

ABSTRACT OF APPROPRIATIONS FOR IMPROVING THE MISSISSIPPI RIVER FROM SAINT PAUL TO DES MOINES RAPIDS.

By act approved June 18, 1878	$250,000
By act approved March 3, 1879	100,000
	350,000

Money statement.

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

Abstract of proposals received and opened this 4th day of June, 1879, by Maj. F. U. Farquhar, Corps of Engineers, U. S. A., for furnishing brush and stone and constructing dams and shore protections of the same in the vicinity of Fountain City, Wis.

Number.	Names.	Residence.	For 7,158 cubic yards stone.		For 4,485 cubic yards brush.		Aggregate.
			Rate per cubic yard.	Amount.	Rate per cubic yard.	Amount.	
1	A. Reiling	Bellevue, Iowa	$1 50	$10,737 00	$0 70	$3,139 50	$13,876 50
2	Donald A. McDonald	La Crosse, Wis	1 35	9,663 30	1 00	4,485 00	14,148 30
3	Payton S. Davidson	do	1 10	7,873 80	70	3,139 50	11,013 30
4	Jacob Richtman	Fountain City, Wis	1 10	7,873 80	60	2,691 00	10,564 80
5	Winston Bros	Minneapolis, Minn	1 22	8,732 76	63	2,825 55	11,558 31
6	Caius M. Cole	Marietta, Ohio	1 20	8,589 60	65	2,915 25	11,504 85
7	S. D. Van Gorder	Winona, Minn	1 30	9,305 40	80	3,588 00	12,893 40
8	Andrew J. Whitney	Keokuk, Iowa	1 45	10,379 10	85	3,812 25	14,191 35

Abstract of proposals received and opened this 4th day of June, 1879, by Maj. F. U. Farquhar, Corps of Engineers, U. S. A., for constructing shore protections of brush and stone in the vicinity of Hastings, Minn.

Number.	Names.	Residence.	For 2,100 cubic yards.		For 1,350 cubic yards.		Aggregate.	Remarks.
			Per cubic yard.	Amount.	Per cubic yard.	Amount.		
1	McIntyre & Hanscom	Saint Paul, Minn..	$1 19	$2,499 00	$0 74	$999 00	$3,498 00	
2	Donald A. McDonald	La Crosse, Wis ...	1 35	2,835 00	1 00	1,350 00	4,185 00	
3	Payton S. Davidson	....do	1 10	2,310 00	70	945 00	3,255 00	Informal.
4	Winston Bros	Minneapolis, Minn	86	1,806 00	77	1,039 50	2,845 50	
5	G. H. Warren	...do	1 04	2,184 00	87	1,174 50	3,358 50	
6	Lutz & Gage.....	Lake City, Minn ..	99	2,079 00	90	1,215 00	3,294 00	
7	Caius M. Cole.....	Marietta, Ohio	1 12	2,352 00	65	877 50	3,229 50	
8	S. J. Truax	Hastings, Minn ...	1 17	2,457 00	1 18	1,593 00	4,050 00	

Q 3.

IMPROVEMENT OF THE MISSISSIPPI RIVER FROM DES MOINES RAPIDS TO MOUTH OF THE ILLINOIS RIVER.

No surveys having been made on this part of the river other than at the sites of the bridges at Quincy and Louisiana, and at a few bars, and these surveys having been much too limited for any purposes of projecting improvements of the river, it was deemed necessary before commencing operations to make a continuous survey of the river from the foot of Des Moines Rapids to the mouth of the Illinois River.

Two parties were put into the field early in August, one under charge of Assistant Henry Custer, commencing work at Keokuk and finishing just above Hannibal, Mo., and the other under Assistant F. A. Churchill, after first making some local surveys at bad obstructions, commencing work 1 mile below Clarksville and finishing at Grafton, Ill.

It being evident in October that Mr. Custer could not finish the gap between his work and Mr. Churchill's, a third party under Assistant J. H. Morrison was put in the field, and by the middle of November the survey of the river between Keokuk and the mouth of the Illinois River was finished.

The field-work of the survey consisted in, 1, a carefully chained transit line; 2, a checked line of levels on which were established many bench marks and heights of water surfaces; 3, the shore lines of the river and principal sloughs and sounding stakes were run in by stadia measurements, checked on the transit line as often as practicable; and 4, soundings were made back and forth on the river sufficient to define all shoal bars.

Only the topography of the immediate banks of the river was sketched, as both time and money for the purpose were limited.

As soon as the maps could be made, plans for the improvement of the river at Gilbert's Island and Slim Island were submitted to and were approved by the Board of Engineers for improving the Mississippi River.

I. GILBERT'S ISLAND.

The works proposed at this place were to close Gilbert's Chute (the right-hand channel) to protect the left bank near Cincinnati Landing, and

to build several spur-dams above and below Gilbert's Island to rectify the channel of the river.

Proposals were advertised for, and on January 4, 1879, were opened. The contract was awarded to William A. McConnell. At first the contractor was hindered by the ice, but after the ice went out he showed so little energy that he could not complete his contract in the time specified (June 30), and it was taken away from him and given to his sureties. The works completed by him during the fiscal year were the dam closing Gilbert's Chute, some 800 feet of shore-protection near Cincinnati Landing.

A commencement was made on one spur-dam, from the right bank just above the head of Gilbert's Island.

II. SLIM ISLAND.

The works here proposed are for the improvement of the river from just below Clarksville, Mo., to Hamburg, Ill., a distance of 14 miles. They consist in dams for closing several side channels of the river to confine all the water in one channel and of spur-dams to contract the channel and direct the currents of the river.

The estimated cost of these works was $153,000. The funds available will only allow of about $50,000 of the work being done during the season of 1879.

A preliminary study of the river shows that much work will have to be done, 1, to improve the river where now obstructions to navigation exist, and 2, to rectify the channel and protect the river banks where now navigation is unobstructed, but where after the next high-water bad bars may exist.

Of course, the first work should be the improvement of the river where it is most obstructed.

For the greater part of the distance between Keokuk and the mouth of the Illinois River both banks of the river are composed of soft materials and will have to be protected wherever attacked by the river.

This work can be done from year to year as its necessity becomes apparent.

A preliminary estimate of the cost of improvement is as follows:

1. Works for improving river where obstructions to navigation exist... $921,294 00
2. Works for maintaining and rectifying channel of river where there is at present a sufficient depth at lowest stages of water, but where the channel is tortuous and banks soft 1,125,102 00

Five hundred thousand dollars could be well spent every year until the work is finished, and such a sum would be more economical than smaller ones, as when only small sums are available, the necessities of navigation being great, no completed system of works at any locality can be constructed; and besides, contractors will not and cannot furnish efficient plant to cheaply construct a small work.

GILBERT ISLAND (OR CHUTE) IMPROVEMENT.

Contract work.

Description.	Linear feet.	Stone.	Brush.
		Cub. yds.	*Cub. yds.*
Dams	1,862	4,547	4,203
Shore protections	1,350	1,568	657
Totals	3,212	6,115	4,860

Cost of 10,975 *cubic yards put in work.*

Description.	Cost per cubic yard.	Total.
Material	$0.865	$9,492 48
Superintendence and office expenses	0.203	2,231 72
Totals	1.068	11,724 20

NOTE.—The contractor failed.

SLIM ISLAND IMPROVEMENT.

Contract work.

Description.	Linear feet.	Stone.	Brush.
		Cub. yds.	*Cub. yds.*
Dams	1,760	4,145.90	3,361.66
Shore protections	1,295	3,597.84	1,687.48
Totals	3,055	7,744	5,049

Cost of 12,793 *cubic yards put in work.*

Description.	Cost per cubic yard.	Total.
Material	$0.823	$10,533 44
Superintendence and office expenses	0.218	2,786 16
Totals	1.041	13,319 60

IMPROVEMENT MISSISSIPPI RIVER, DES MOINES RAPIDS TO MOUTH OF OHIO RIVER.

Summary.

Improvements at Slim Island	$13,319 60
Improvements at Gilbert Chute	11,724 20
General surveys	27,150 06
Survey of Board of Engineer officers; low-water	2,569 48
Total expended	54,763 34

Description of work.	No. cubic yards.	Cost per cubic yard.	Total cost.
Dams and shore protections	23,768	$1.054	$25,043 80
Surveys			29,719 54
			54,763 34

Money statement.

Improvement of Mississippi River from Des Moines Rapids to mouth of Ohio River.

July 1, 1878, amount available		$100,000 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		45,236 66

Improvement of Mississippi River from Des Moines Rapids to mouth of Illinois River.

Amount appropriated by act approved March 3, 1879	40,000 00
July 1, 1879, amount available	40,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881	500,000 00

Abstract of proposals received and opened January 4, 1879, by Maj. F. U. Farquhar, Corps of Engineers, U. S. A., for building dams and riprapping shores in the Mississippi River near Gilbert's Island, Missouri.

Names.	Residence.	Stone. 12,000 cubic yards. Per cubic yard.	Stone. 12,000 cubic yards. Amount.	Brush. 12,000 cubic yards. Per cubic yard.	Brush. 12,000 cubic yards. Amount.	Aggregate.	Remarks.
H. S. Brown	Hamilton, Ill	$1 30	$15,600	$0 90	$10,800	$26,400	Contract awarded.
Samuel S. Sample	Keokuk, Iowa	1 37	16,440	97	11,640	28,080	
William A. McConnell	Quincy, Ill	1 24	14,880	61	7,320	22,200	
Whitney & Son	Sandusky, Iowa	1 45	17,400	1 05	12,600	30,000	
McDonald & Bro	La Crosse, Wis	1 70	20,400	1 15	13,800	34,200	
McNamara & Anderson	Keokuk, Iowa Rock Island	1 75	21,000	75	9,000	30,000	Informal; no witnesses to signatures.
Reynolds & Saulpaugh	Rock Island	1 85	22,200	1 35	16,200	38,400	
Winston Bros	Minneapolis, Minn	1 12	13,440	1 12	13,440	26,880	
Claus Veiths	Saint Louis, Mo	1 25	15,000	80	9,600	24,600	
P. S. Davidson	La Crosse, Wis	1 02	12,240	1 02	12,240	24,480	
Archibald McArthur	Chicago, Ill	1 45	17,400	1 00	12,000	29,400	Informal; only one copy of bid.
A. Reiling	Bellevue, Iowa	1 58	18,960	1 60	19,200	38,160	
Wells, Timberman & Co	Keokuk, Iowa	1 45	17,400	1 25	15,000	32,400	
Arthur Danahy	Aurora, Ill	2 35	34,200	2 40	28,800	63,000	Informal; no witnesses to signatures.

Abstract of proposals received and opened March 8, 1879, by Maj. F. U. Farquhar, Corps of Engineers, U. S. A., for building dams and riprapping shores in the Mississippi River near Slim Island, Missouri.

Names.	Residence.	Brush. 22,300 cubic yards. Per cubic yard.	Brush. 22,300 cubic yards. Amount.	Stone. 28,400 cubic yards. Per cubic yard.	Stone. 28,400 cubic yards. Amount.	Aggregate.	Remarks.
Grafton Quarry Company	Grafton, Ill	$1 00	$22,300 00	$1 35	$38,340	$60,640 00	Contract awarded.
Fruin & Co	Saint Louis, Mo	66	14,718 00	1 03	29,252	43,970 00	
Whitney & Son	Keokuk, Iowa	50	11,150 00	1 17	33,228	44,378 00	
Reynolds & Saulpaugh	Rock Island	58	12,934 00	1 15	32,660	45,594 00	
Winston Bros	Minneapolis, Minn	78	17,394 00	1 22	34,648	52,042 00	
Claus Veiths	Saint Louis, Mo	86	19,178 00	1 29	36,636	55,814 00	
Archibald McArthur	Chicago, Ill	70	15,610 00	1 00	28,400	44,010 00	
P. S. Davidson	La Crosse, Wis	65	14,495 00	1 25	35,500	49,995 00	
Patrick F. Lonergan	Louisiana, Mo	84	18,732 00	1 45	41,180	59,912 00	
William S. Grant Linn	Rochester, N. Y	3 00	66,900 00	2 87	81,508	148,408 00	
Wells, Timberman & Co	Keokuk, Iowa	1 00	22,300 00	1 25	35,500	57,800 00	
Samuel S. Sample	do	87	19,401 00	1 25	34,932	54,333 00	
McDonald Bros	La Crosse, Wis	57	12,711 00	1 25	35,500	48,211 00	
James Brewer	Port Byron, Ill	1 50	33,450 00	2 00	56,800	90,250 00	
W. B. Lankworthy	Quincy, Ill	69⅔	15,498 50	1 20	34,080	49,578 50	
Peter Scully	Saint Louis, Mo	63	14,049 00	1 20	34,080	48,129 00	
H. S. Brown	Hamilton, Ill	80	17,840 00	1 10	31,240	49,080 00	
James McNamara	Keokuk, Iowa	90	20,070 00	1 25	35,500	55,570 00	Not in duplicate.

Q 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 was executed for the closing of two chutes through which the main river threatened to force itself and leave the city of La Crosse without a navigable channel. The dams constructed will not only avert the threatened danger, but will also bear an important part in the future improvement of the navigation of the river in this vicinity.

The contractors, Messrs. McDonald Brothers, began work August 28, and finished November 7, 1878. The brush and stone dams they built were well executed, though the lower dam at Island 106 showed a settlement of between 1 and 1½ feet the next spring.

The portion of the dam which settled was not over 200 feet long, an was built originally on a very soft quicksand bottom.

Surveys were made at the close of the work, and seven months afterward show very little change in the river for purposes of navigation.

The crossing at the lower bar has shifted greatly, and is straighter and deeper than before beginning.

The portion of the dam that settled was filled up under a contract with Mr. P. S. Davidson, of La Crosse, Wis.

Summary.

Items of work.	Number of linear feet.	Cubic yards of rock.	Cubic yards of brush.
Dams	1,625	4,946	2,951
Shore protections	550	2,077	588
Total	2,175	7,023	3,529

Table showing list of 10,552 *cubic yards material put in work.*

Items of expense.	Average cost per cubic yard.	Total cost.
6,411 cubic yards of rock at 97 cents per cubic yard; 612 cubic yards of rock at 92½ cents per cubic yard; 3,529 cubic yards of brush at $1.15 per cubic yard	$1 02.76	$10,843 16
Superintendence and all office expenses	0 08.28	874 51
Total	1 11.04	11,717 67

Superintendence and office expenses 8.6 per cent.

La Crosse.

Description of work.	Number of linear feet.	Cubic yards of rock.	Cubic yards of brush.
Dams	1,625	4,946	2,951
Shore protection	550	2,077	578
Total	2,175	7,023	3,529