	Appropriation.	Expended.	Balance.
Schools, Town District:			
Appropriation	$2,324.97	$2,324.97	.....
Voted by district	700.00	700.00	.....
Dog license	90.80	90.80	.....
Literary fund	115.73	115.73	.....
Text-books	160.00	160.00	.....
	$3,391.50	$3,391.50	.....
District No. 20:			
Appropriation	$2,178.61	.....	.....
Voted by district	1,140.00	$2,675.00	.....
Unexpended balance, 1898	824.89	824.89	.....
Voted to pay bond, 1899	500.00	500.00	.....
" " " 1898	500.00	500.00	.....
" " interest	20.00	20.00	.....
Dog license	85.10	.....	.....
Literary fund	108.45	.....	.....
Text-books	150.00	.....	.....
Accrued interest, 1898	70.00	10.00	.....
	$5,577.05	$4,529.89	$1,047.16
West End School:			
Appropriation	$6,000.00	$6,000.00	.....
Liquor Agency:			
Receipts	$8,701.39	.....	.....
Rent	.....	$276.00	.....
Salary, agent	.....	600.00	.....
Liquors	.....	7,088.59	.....
Lights	.....	7.80	.....
Miscellaneous	.....	482.35	.....
	$8,701.39	$8,454.74	$246.65
County tax	.....	$42,062.48	.....
State tax	.....	29,499.25	.....
Cemetery Trusts	.....	6,865.00	.....
Cemetery fund, West Concord	.....	7.50	.....
" " East Concord	.....	15.00	.....
		$6,887.50	
Total expended as shown by city treasurer	.....	$447,358.78	.....

	Appropriation.	Expended.	Balance.
Orders outstanding, not presented:			
White park, account J. H. Ramsey & Co			$6.00
Roads and bridges, John Tenney, $0.45; E. Rhodes, $1; M. Ferrin, $2			3.45
County poor, J. H. Gallinger, $8; John C. Farrand, $1.75			9.75
			$19.20
Concord Water Works:			
Balance, 1898	$12,098.06		
Collections	53,953.13		
Salary, superintendent		$1,800.00	
" clerk		605.00	
" foreman		405.00	
Pay-rolls		6,541.10	
Interest		26,315.00	
Freight		1,658.10	
Meters		1,511.80	
Miscellaneous		1,335.72	
Lights		19.05	
Printing		111.10	
Supplies		10,158.48	
Telephone		126.00	
Bonds		10,000.00	
	$66,051.19	$60,586.35	$5,464.84

Respectfully submitted,

JAMES H. MORRIS,
City Auditor.

DEPARTMENT REPORTS.

CITY OF CONCORD, N. H.

WATER DEPARTMENT.

1899.

BOARD OF WATER COMMISSIONERS.

NATHANIEL E. MARTIN, Mayor, *ex officio.*

EDSON J. HILL	to March 31, 1903.
TIMOTHY P. SULLIVAN . .	to March 31, 1903.
WILLIAM P. FISKE . . .	to March 31, 1902.
WILLIAM E. HOOD	to March 31, 1902.
SOLON A. CARTER	to March 31, 1901.
FRANK D. ABBOT	to March 31, 1901.
JOHN WHITAKER	to March 31, 1900.
HENRY E. CONANT . . .	to March 31, 1900.

FRANK D. ABBOT, *Clerk.*

OFFICERS.

WILLIAM P. FISKE, *President.*
V. C. HASTINGS, *Superintendent.*
ALICE G. COCHRAN, *Clerk at Water Office.*
HENRY A. ROWELL, *Engineer at Pumping Station.*

CONCORD WATER BOARD.

Date of election and length of service of members.

Abraham G. Jones, *ex officio*	1872—three months.
John M. Hill *	1872–1878.
Benjamin A. Kimball	1872–1878.
Josiah Minot *	1872. Resigned Jan. 10, 1874.
David A. Warde *	1872–1874.
Edward L. Knowlton *	1872. Resigned Sept. 25, 1875.
Benjamin S. Warren *	1872–1873.
John Kimball, *ex officio*	1872–1876.
John Abbott *	1873–1876.
John S. Russ *	1874–1877.
Abel B. Holt *	1874–1877.
Samuel S. Kimball *	1875. Resigned July 1, 1891.
Geo. A. Pillsbury, *ex officio**	1876–1878.
Luther P. Durgin *	1876–1885.
John Kimball	1877. Resigned July 1, 1891.
William M. Chase	1877. Resigned July 1, 1891.
Horace A. Brown, *ex officio*	1878–1880.
James L. Mason *	1878–1893.
James R. Hill *	1878. Died 1884.
Geo. A. Cummings, *ex officio*	1880–1883.
Edgar H. Woodman, *ex officio**	1883–1887.
Joseph H. Abbot *	1884–1893.
George A. Young	1885–1894.
John E. Robertson, *ex officio*	1887–1889.
Stillman Humphrey, *ex officio* *	1889–1891.
Henry W. Clapp, *ex officio* *	1891–1893.
Willis D. Thompson	1891–1895.
William P. Fiske	1891. Now in office.

* Deceased.

James H. Chase*	1891.	Died 1893.
John Whitaker	1892.	Now in office.
Henry E. Conant	1892.	Resigned Jan. 8, 1895.
Parsons B. Cogswell, *ex officio**	1893–1895.	
Solon A. Carter	1893.	Now in office.
Frank D. Abbot	1893.	Now in office.
William M. Mason	1893–1899.	
William E. Hood	1894.	Now in office.
Ebenezer B. Hutchinson	1895.	Resigned Jan. 10, 1899.
Edson J. Hill	1895.	Now in office.
Henry E. Conant	1899.	Now in office.
Timothy P. Sullivan	1899.	Now in office.

PRESIDENTS OF THE BOARD.

Josiah Minot*	1872.	Resigned Jan. 10, 1874.
Benjamin A. Kimball	1874–1875.	
Edward L. Knowlton*	1875.	Resigned Sept. 25, 1875.
John Kimball	1875–1876.	
Benjamin A. Kimball	1876–1878.	
John Kimball	1878.	Resigned July 1, 1891.
William P. Fiske	1891.	Now in office.

*Deceased.

SUMMARY STATISTICS.

CONCORD, NEW HAMPSHIRE, WATER WORKS.

Population of the city by census of 1890 . . 17,004

Population of that portion of the city included within the water precinct, estimated 15,000

Date of construction, 1872; additions since.

Works are owned by the city.

Source of supply, Penacook lake, a natural body of water containing 265 acres, situated about three miles and a half from the state house, and about 125 feet higher than Main street in front of the state house.

Mode of supply, gravity and pumping to reservoir.

FINANCIAL.

MAINTENANCE.

Receipts.		Expenditures.	
From consumers, mostly for domestic uses.	$53,815.39	For management and repairs . . .	$3,578.37
From rents . . .	83.32	For new distribution pipes . . .	13,664.73
From pipe sold, etc. .	196.76	For new service pipes .	1,110.92
		For maintenance of pumping station .	2,347.33
		For inspection . .	566.00
		For meter account .	2,198.00
		For work at Penacook lake	33.25
		For relaying pipe near Mrs. Eddy's, on account of change of grade . . .	578.14
		For incidentals . .	194.61
		For abatements . .	142.34
			$24,413.69
		Amount required to pay interest on bonded indebtedness	26,225.00
		Balance . . .	3,456.78
	$54,095.47		$54,095.47

CONSTRUCTION.

Cost of land damages, flowage, and water rights:

Paid B. F. & D. Holden, for water rights	$60,000.00
Concord Manufacturing Co., for water rights	83,000.00
W. P. Cooledge, for mill privilege and land	5,500.00

Paid Humphrey & Farnum, for kit-shop privilege	$5,000.00
Flowage rights around Penacook lake	4,375.61
W. P. Cooledge, Hutchins house and lot	2,250.00
Mary C. Rowell, for land .	1,500.00
Moses H. Bradley, " . .	5,000.00
Joseph B. Walker " . .	2,214.00
John G. Hook, " . .	370.00
A. S. Ranney, " . .	1,350.00
Alfred Roberts, " . .	1,275.00
Charles E. Ballard, " . .	2,500.00
Mary G. Carter, " . .	1,250.00
Elizabeth Widmer, " . .	1,564.50
A. L. Proctor, " . .	450.00
Robert Crowley, " . .	3,000.00
Miles Hodgdon, " . .	2,200.00
Coffin & Little, " . .	800.00
O. F. Richardson, " . .	100.00
C. H. Amsden, water and flowage rights	5,000.00
Cost of property and rights of Torrent Aqueduct Association . .	20,000.00
dam, gate-house, and appurtenances	30,756.17
conduit and gate-houses . .	29,484.05
mains (low service main and pump main from the dam to Penacook street, force main from the pump to the reservoir, fire main through North and South Main and Turnpike streets, and supply main from near the dam to Stark street)	160,960.92
distribution pipe . . .	283,431.38
service pipe	42,489.95

Cost of reservoir	$42,460.09	
pumping station, shop, stable and storehouse	22,000.00	
pumping machinery	10,215.00	
engineering and superintendence	14,913.12	
incidentals	6,531.19	
Cost of works, January 1, 1900		$851,940.98

Bonds of the city have been issued to pay a part of said cost, of which $10,000 have been paid each year for the past four years from the earnings of the works, and of which the following are still outstanding:

When due.	Rate.	Amount.
Nov. 1, 1900,	3½,	$15,000.00
Jan. 1, 1901,	4,	10,000.00
Jan. 1, 1902,	4,	10,000.00
Jan. 1, 1903,	4,	10,000.00
Jan. 1, 1904,	4,	10,000.00
Jan. 1, 1905,	4,	10,000.00
Jan. 1, 1906,	4,	10,000.00
Jan. 1, 1907,	4,	10,000.00
Jan. 1, 1908,	4,	10,000.00
Jan. 1, 1909,	4,	10,000.00
Jan. 1, 1910,	4,	5,000.00
Jan. 1, 1911,	4,	5,000.00
Oct. 1, 1912,	4,	45,000.00
Jan. 1, 1913,	4,	10,000.00
Jan. 1, 1914,	4,	10,000.00
Jan. 1, 1915,	4,	10,000.00
Jan. 1, 1916,	4,	10,000.00
Jan. 1, 1917,	4,	10,000.00
Jan. 1, 1918,	4,	10,000.00
Jan. 1, 1919,	4,	10,000.00
Mar. 1, 1922,	3½,	20,000.00
Jan. 1, 1923,	4,	400,000.00
		$650,000.00

REPORT OF WATER COMMISSIONERS.

To the City Council:

The Board has the honor herewith to submit the report for the year 1899:

The detailed report of our superintendent herewith presented leaves little to be said by the commission.

The work has been along usual lines of maintenance, also following out plans heretofore presented, consisting mainly in laying a section of 3,259 feet of 20-inch cast iron pipe towards Penacook lake, also a section of 10-inch cast iron pipe between Centre and Freight streets, thus obviating the danger from leakage on the old pipe through a section of Main street, where much damage might occur.

The strain on the old pipe is constantly manifesting itself by the serious breaks we have had. The board is considering a plan for re-laying certain sections of the city with cast iron pipe. The time is not far distant when the main line now running through State street must be replaced by a larger pipe in order to distribute water more freely to the southern part of the city.

One matter of concern in new construction is the advance in the cost of material, being from 35% to 40% over prices paid in 1899, but it would be unwise to be unprepared for certain emergencies which may arise at any time, and this work is imperative.

The commission have submitted a report during the year on the question of buying water from the Penacook and Boscawen water precinct.

The number of meters has been increased by 139, making some 915 now in use. This fact may explain in some measure the gratifying condition of our water supply, while other localities have been alarmed by a shortage. The water stands about 11 feet higher than at the lowest point in 1895, thus securing for the present, at least, a supply sufficient for the demand.

The amount heretofore received for hydrant rentals was cut off from the list of appropriations this year, and the bonds maturing November 1, 1899, $10,000, were met only in part from the earnings of the works. A larger amount mature in the coming year, which must be provided for: $15,000 of 3½% bonds mature November 1, 1900, and $10,000 4% bonds January 1, 1901. These bonds should be paid as they become due, thus reducing the interest payments and allowing so much more to apply to the reduction of the debt.

The pumping station has maintained its efficiency, more water being pumped than in the previous year. The good care of the grounds around the station has been continued, making it very attractive, and a delight to all.

The work of the department was unnecessarily delayed, pending the adjustment of the alien labor question.

We desire to bear testimony to the careful and efficient manner in the care and work of the department by the superintendent and his assistants.

Respectfully submitted,

EDSON J. HILL,
TIMOTHY P. SULLIVAN,
WILLIAM P. FISKE,
WILLIAM E. HOOD,
SOLON A. CARTER,
FRANK D. ABBOT,
JOHN WHITAKER,
HENRY E. CONANT,
NATHANIEL E. MARTIN, *ex officio*,

Water Commissioners.

REPORT OF THE SUPERINTENDENT.

To the Board of Water Commissioners:

I herewith present to you the twenty-eighth annual report of the operations of this department, showing the receipts, expenditures and abatements, together with a statement of extensions and improvements made during the year ending December 31, 1899.

RECEIPTS.

For water, from consumers by fixed rates	$26,215.81	
For water, from consumers by meter rates	27,448.18	
From delinquents	61.10	
For water used for building purposes	90.30	
rents	83.32	
pipe and stock sold, hay, etc.	196.76	
		$54,095.47
Deduct abatements		142.34
Net receipts for 1899		$53,953.13

EXPENDITURES.

General Expenses.

Paid V. C. Hastings, salary as superintendent	$1,800.00	
pay-rolls, salaries and labor	6,053.46	
Nath'l White, Jr., rent of office and heating	350.00	
S. G. Sanborn, rent of shop at Penacook and smith-work.	25.10	
Rumford Printing Co., printing	107.85	
F. L. Sanders, books, etc.	10.30	

Paid	Silsby & Son, stationery, etc.	$24.41
	Ira C. Evans, printing	20.09
	Concord Light & Power Co., gas	10.20
	New England Telephone & Telegraph Co., telephones	126.00
	Humphrey-Dodge Co., hardware	49.52
	Thompson & Hoague, "	60.04
	J. H. Dodge, grain	41.74
	Clark & White, grain	40.65
	C. H. Martin & Co., lead, oil, etc.	10.35
	Batchelder & Co., oil, etc.	21.58
	Woodworth & Co., cement	24.75
	Stoughton Rubber Co., washers	2.00
	John C. Thorne, rubber boots	16.25
	Abbot-Downing Co., repairs	23.00
	J. D. Johnson & Son, "	16.10
	W. S. Davis & Son, repairs	3.00
	James R. Hill & Co., supplies	10.50
	M. J. Drummond & Co., cast-iron pipe	5,609.80
	Davis & Farnum Manufacturing Co., cast-iron pipe	111.64
	R. D. Wood & Co., cast-iron pipe and hydrants	865.34
	Ford & Kimball, castings	47.86
	Builders Iron Foundry, castings	10.69
	Concord Foundry & Machine Co., castings	6.33
	D. A. Streeter, castings	4.00
	Ludlow Valve Manufacturing Co., gates	646.18
	Richards & Co., pig lead	401.72
	John Walker, pig lead	289.34
	Concord Light & Power Co., pig lead	61.00
	Chadwick Lead Works, lead pipe, etc.	36.70

Paid	Walworth Manufacturing Co., pipe, tools, and fittings	$360.29
	J. H. Cunningham Co., tools and fittings	88.11
	Goodhue & Milton, fittings	7.89
	Peck Brothers, corporations	6.84
	Payne Tapping Machine Co., tools	71.30
	Anderson Pipe Cutter Co., tools	6.60
	C. L. Randall, tools	5.00
	Perrin, Seamans & Co., tools and packing	61.79
	Sewall & Day Cordage Co., manilla rope	11.80
	Hayes Manufacturing Co., service boxes	42.19
	Smith & Anthony, repair bands	5.50
	The Fairbanks Co., scale and tools	105.20
	National Meter Co., meters	641.90
	Thomson Meter Co., "	790.40
	Henry R. Worthington, "	66.50
	Union Meter Co., "	24.00
	E. B. Hanchay, smith work	127.74
	Ross W. Cate, "	8.25
	J. M. Crossman, "	2.45
	George L. Theobald, team-work	137.30
	O. F. Richardson & Son, "	38.63
	Charles H. Farnum, "	18.00
	Cavis G. Brown, "	11.75
	Henry Morrill, "	8.48
	John H. Coburn, "	6.00
	E. B. Hutchinson Building Co., lumber and labor	43.47
	C. M. & A. W. Rolfe, lumber and labor	2.34
	Rowell & Plummer, mason-work	68.20
	James H. Rowell & Co., repairing concrete	69.75

Paid Ola Anderson, use of derrick	$7.00	
Smith Premier Typewriter Co., repairs	10.00	
Engineering News	5.00	
Highway department, paving Main street	58.70	
Morrill & Danforth, insurance	25.00	
Eastman & Merrill, insurance	7.50	
E. R. Angell, water analyses	18.30	
Boston & Maine Railroad, freight on pipe, etc.	1,658.10	
town of Webster, taxes	50.00	
V. C. Hastings, cash paid out	84.29	
incidentals	224.97	
		$21,924.02

Pumping Station Expenses.

Paid pay-rolls, engineer and fireman	$1,503.64	
Concord Coal Co., coal	376.54	
H. O. Marsh, "	261.65	
C. H. Stevens & Co., coal	5.94	
H. H. Crowell, slab wood	101.25	
O. F. Richardson & Son, drawing wood	14.50	
Vacuum Oil Co., oil	22.95	
Knowlton Packing Co., packing	12.00	
Humphrey-Dodge Co., supplies	12.65	
Batchelder & Co., "	2.34	
Stoughton Rubber Co., hose	6.00	
Star Brass Manufacturing Co., repairing counter	11.85	
Rowell & Plummer, mason-work	2.20	
Woodworth & Co., soda ash	4.97	
Concord Light & Power Co., gas	8.85	
		$2,347.33
Total expenditures for 1899		$24,271.35

The expenses are divided as follows:

General Expenses.

For management and repairs	$3,578.37	
new service pipes	1,110.92	
new distribution pipes	13,664.73	
inspection	566.00	
meter account	2,198.00	
work at Penacook lake	33.25	
relaying pipe near Mrs. Mary Eddy's, on account of change of grade	578.14	
incidentals	194.61	
		$21,924.02

Pumping Station Expenses.

For salaries, engineer and fireman	$1,503.64	
fuel	759.88	
oil, packing and other supplies	69.76	
repairs	14.05	
		$2,347.33

EXTENSIONS AND IMPROVEMENTS.

Main and distribution pipes have been laid and hydrants set during the year, as follows:

On main line,

north from near tenement block of New Hampshire state prison to Moses H. Farnum's, 3,259 feet 20-inch cast-iron pipe and four hydrants, in place of 14-inch cement-lined pipe, discontinued.

In North Main street,

south from Centre street to opposite state house, 554 feet 10-inch cast-iron pipe, in place of 8-inch cement-lined pipe, discontinued.

In North Main street,

south from Capitol street to Pleasant street, 1,017 feet 10-inch cast-iron pipe, in place of 8-inch cement-lined pipe, discontinued.

In South Main street,

south from Pleasant street, to south line of Freight street, 284 feet 10-inch cast-iron pipe, in place of 6-inch cement-lined pipe, discontinued.

In School street,

west from Merrimack street to Tahanto street, 350 feet 10-inch cast-iron pipe, in place of 8-inch cement-lined pipe, discontinued.

In Rumford street,

south from Franklin street to Washington street, 1,450 feet 8-inch cast-iron pipe, in place of 8-inch cement-lined pipe, discontinued.

In Pleasant street,

at crown of hill by Mrs. M. B. G. Eddy's, 513 feet 8-inch cast-iron pipe, in place of 8-inch cement-lined pipe, discontinued.

In Beacon street,

west from Jackson street to Rumford street, 750 feet 6-inch cast-iron pipe, in place of 4-inch cement-lined pipe, discontinued.

In Merrimack street,

south from Centre street to School street, 450 feet 6-inch cast-iron pipe, in place of 4-inch cement-lined pipe, discontinued.

In Rockingham street,

west from Donovan street, 147 feet 6-inch cast-iron pipe.

In Jefferson street,

north from Concord street, 173 feet 4-inch cast-iron pipe, in place of $\frac{3}{4}$-inch pipe.

On connections in re-laying pipe,

50 feet 10-inch, 19 feet 8-inch, 240 feet 6-inch cast-iron pipe, in place of cement-lined pipe, discontinued.

On hydrant branches,

471 feet 6-inch cast-iron pipe; 392 feet 6-inch cement-lined pipe discontinued.

On blow-offs,

6 feet 4-inch pipe.

Also 1,031 feet 1-inch and $\frac{3}{4}$-inch pipe; 173 feet $\frac{3}{4}$-inch pipe discontinued.

Summary of the Foregoing.

NEW PIPES, HYDRANTS AND STOP-GATES.

Pipes.	*Hydrants.*	*Stop-Gates.*	
1-in., 1,031 feet.	W. Concord road, 4	4-in.,	3
4-in., 179 "		6-in.,	23
6-in., 2,058 "		8-in.,	2
8-in., 1,982 "		10-in.,	7
10-in., 2,255 "		20-in.,	1
20-in., 3,259 "			
10,764 feet,	—		—
equal to 2.03 miles.	4		36

PIPES AND STOP-GATES DISCONTINUED.

1-in., 173 feet.		4-in.,	2
4-in., 1,339 "		6-in.,	6
6-in., 823 "		8-in.,	1
8-in., 4,025 "			
14-in., 3,259 "			
9,619 feet,			—
equal to 1.82 miles.			9

Total length of main and distribution pipes now in use, 313,881 feet, equal to 59.44 miles.

Total number of hydrants now in use, 264.

Total number of gates now in use, 747.

SERVICE PIPES.

There have been laid during the year and connected with the main pipes, 56 service-pipes consisting of

54	$\frac{3}{4}$-inch,	1,243 feet.
1	10-inch,	37 "
1	6-inch,	27 "
56		1,307 feet.

There have been discontinued during the year, 8; whole number in use at the present time, 3,288; total length of service-pipes, 77,118 feet, or 14.60 miles.

We have set 139 meters during the year; 2 have been removed; making the total number now in use, 915.

The following table shows the height of water in Penacook Lake on the first day of each month:

January	184.70	July	183.80
February	184.70	August	183.10
March	184.80	September	182.20
April	185.00	October	181.90
May	184.90	November	181.40
June	184.40	December	181.00

The lowest point reached was December 1, being 181; the highest was March 14, 185.15; mean height, 183.49, which was .82 foot lower than the mean height for the year 1898.

The water has been running over the overflow one hundred and twenty-three days during the year: in January, 31; in February, 16; in March, 31; in April, 30; in May, 15. At no time has the water been lower than forty-three inches below the overflow.

The most important work of the year has been the continuation of the 20-inch cast-iron main in place of the 14-inch cement-lined and the relaying of the pipe in Main street.

The new 20-inch main has been extended 3,259 feet to a little north of Moses H. Farnum's residence. It will now require

about 5,300 feet to complete the main from the pumping station to the gate house in West Concord, or about two years' work at the same rate as the last three years.

In Main street, a 10-inch cast-iron pipe was laid from Centre street to Freight street in place of 8 and 6-inch cement-lined. The work was done thoroughly; all the service-pipes were put in good condition, in most instances new pipes were laid and in others the pipes were repaired; service boxes at the curb were placed on nearly every supply; all the hydrants which had been in use since the construction of the works, eight in number, were replaced by new ones of the most improved design.

Two other hydrants have been replaced by new ones in addition to those on Main street and two new ones on West Concord road, a total of twelve hydrants, all of which are included in the distribution pipe account for this year.

The expenses of the year were also increased by relaying the 8-inch pipe on Pleasant street, near Mrs. Eddy's, which was occasioned by cutting down the street grade in macadamizing the street.

It has been well known from the first analyses, that Penacook Lake water will act on lead pipe to such an extent as to render it unfit for drinking purposes; and as water that will act on lead will generally have a like effect on zinc, I have believed that galvanized-iron pipe should not be used to carry Penacook Lake water for domestic use. I, therefore, corresponded with Prof. E. R. Angell, of Derry, and according to his directions placed a piece of galvanized-iron pipe in a sample of water, allowing it to remain there about twelve hours. The analysis is appended to this report showing the unusual and harmful quantity of zinc in the water.

In closing this report, I wish to express my sincere appreciation of the faithfulness of the employees of the department.

Respectfully submitted,

V. C. HASTINGS,

Superintendent.

SANITARY ANALYSIS OF WATER.

SAMPLE FROM OVER INTAKE, PENACOOK LAKE.

Water is a mineral substance, composed of two elements. Hydrogen forms one-ninth of its weight, and oxygen, eight-ninths. This is water chemically pure, or pure water. As found in nature, it always contains other substances. Water sanitarily pure need not be chemically pure. Water sanitarily impure, designated as polluted, or contaminated, contains substances or organisms injurious to health; animal matter, vegetable material, disease germs, poisonous metals, as lead, zinc, copper, manganese, etc.

The figures in the analysis represent parts per 100,000. To convert into parts per million, multiply by 10; into parts per United States gallon, by 0.583722; into parts per English gallon, by 0.7.

ODOR.—Some pond-like.

COLOR.—Nearly colorless.

TRANSPARENCY.—Clear.

Pure water is odorless, colorless, clear, and tasteless. Water sanitarily pure may have one or all of these properties. Polluted water may be free from some or all of them.

BEHAVIOR DURING EVAPORATION.—Nearly quiet.

APPEARANCE OF RESIDUE.—Nearly uniform; few circles.

Water containing vegetable juices is a thin syrup. Such water foams during evaporation. Circles and irregular figures are marked on the dish where the last bubbles break in drying away. Animal matter seldom causes water to behave in this manner.

TOTAL SOLIDS.—4.0.

The amount of solids in water, sanitarily pure, varies greatly. Good well water in this state seldom contains more than 15 parts. Good pond water contains less than half of this quantity.

IGNITION OF RESIDUE.—It blackens some.

The residue blackens in proportion to the amount of organic carbon present, provided there is no excess of nitrates. Nitrates are present excessively more often in animal polluted waters; hence the residue of such waters blackens less than that of vegetable contaminated waters, both because animal matter contains less carbon as a rule, and because the nitrates supply oxygen to consume it quickly. Vegetable carbon often blackens intensely and the blackening persists.

LOSS ON IGNITION OF RESIDUE.—2.0.

This consists of the combustible and volatile portion of the organic matter, and volatile mineral substances—carbonic acid, nitric acid, water of crystallization, zinc, and other volatile metals. The proportion of mineral solids is larger in well water than in pond water, because well water settling through the earth has come in contact with more soluble minerals. On the other hand, pond water contains more organic solids, because the soluble organic matter received from the surface of the ground has not been removed by the filtering action of earthy strata. It is seldom that the character and quantity of natural, mineral solids condemn a water. Vegetable matter is less harmful than animal matter. Both are more harmful in well water than in pond water, because light and sunshine tend to destroy deadly germs.

HARDNESS.—1.0.

ALKALINITY.—1.0.

The figures are given in terms of carbonate of lime, *i. e.*, so many parts of carbonate of lime would give the same figures. Hardness and alkalinity give considerable information about the mineral constitution of water and often concerning its sanitary condition. Hardness is due chiefly to the salts of lime and magnesia, most often, their carbonates and sulphates. Alkalinity is caused only by their carbonates, or by the carbonates of potash, soda, ammonia, or some other alkali. Water hard from the salts of lime and magnesia, other than their carbonates, shows no alkalinity, unless the substances last named above are present. The carbonates of lime, or magnesia, give nearly the same degree of hardness and alkalinity, lime especially. Sewage increases the alkalinity which then becomes an indication of pollution.

FREE AMMONIA.—0.0017.

ALBUMINOID AMMONIA.—0.0148.

Ammonia results from the decomposition of organic matter; the free is that which the natural process of decay has produced, and points to what extent decay has been going on in the water; the albuminoid results from the artificial decomposition of organic matter during analysis and points to the quantity of organic matter actually present. In good well water the albuminoid ammonia should not exceed 0.009 part, and in good pond water 0.015 part. In neither should the free ammonia exceed 0.005 part.

CHLORINE.—0.3.

Chlorine is a constituent of common salt. Sewage is rich in salt, hence the value of chlorine as an indication of pollution. Good water should not contain more than 0.5 part of it, unless the locality is near the sea coast, or is naturally rich in salt.

NITRIC ACID.—Trace.

This is a constituent of saltpetre which is produced by the fermentation of manures and sewage. Good well water should not contain more than 0.5 part of it, and pond water not more than 0.02. Excess of chlorine or nitric acid in water always indicates either actual contamination, or dangerous proximity to sources of filth. In this case, the water contains filtered sewage. Nitric acid of tenresults from the oxidation of ammonia, or vegetable matter. If the quantity of chlorine is normal while the nitric acid is excessive, the water is probably contaminated with vegetable matter, unless other results deny it.

NITROUS ACID.—None.

This is a lower oxide of nitrogen than nitric acid. It is a transition product between ammonia, or organic matter, and nitric acid. Its presence shows that the source of pollution is so near that time enough has not elapsed for the complete oxidation of its nitrogen in its progress toward the water supply. Good water should contain none of it, or but a mere trace.

OXYGEN CONSUMED IN OXIDATION.—0.198.

Good well water should require less than 0.1 part of oxygen, and good pond water less than 0.2 for the oxidation of its dissolved organic matter. In no case should it exceed 0.4. Some bad waters may require less than 0.5 part. Vegetable material, comparatively richer in carbon than animal substances, requires more oxygen for oxidation; while animal substances, being richer in nitrogen, yield more ammonia and other nitrogen compounds.

POISONOUS METALS.—None.

Water should not contain more than 0.03 part of lead, or copper, or more than 0.05 part zinc.

IRON.—Trace.

Good water ought not to contain more than 0.1 part iron.

SEDIMENT.—Little.

Good water should deposit no sediment, or scarcely any.

MICROSCOPIC EXAMINATION AND BIOLOGICAL CHARACTER OF SEDIMENT.—Diatoms, vegetable matter infusoria.

NUMBER OF BACTERIA PER CUBIC CENTIMETRE GROWING AT BLOOD TEMPERATURE IN ALKALINE AGAR MEDIUM.—14.

NUMBER OF BACTERIA PER CUBIC CENTIMETRE GROWING AT BLOOD TEMPERATURE IN AGAR MEDIUM CONTAINING PARIETTI'S SOLUTION.—None.

Disease germs grow at the temperature of the body. Many harmless bacteria also flourish at this temperature. If a sample of water contains none which grow at this temperature, disease germs are evidently absent. The disease germ more usually found in waters of this latitude is the typhoid bacillus. The bacillus coli communis, whose original habitat is in the intestines, though not strictly a disease germ, is preëminently the sewage bacterium, and consequently all waters in which it is found should be condemned. The presence of any other sewage bacterium should also condemn a water for drinking purposes. The typhoid bacillus, the coli communis, and a few others will grow in agar medium, containing Parietti's solution, but to distinguish and identify them, special cultures and examinations must be made. Bacteria multiply very rapidly after water is taken from its source and raised to summer temperature. Since the kind of bacteria is more important than their number, the delay necessarily caused by transportation of the sample, if not too long, is favorable instead of objectionable, because a very few disease germs in a large quantity of water might escape discovery, but detection of them would be much more certain after their multiplication.

DISEASE GERMS.—None.

This is good water.

EDMUND R. ANGELL.

June 17, 1899.

SAMPLE TAKEN FROM TAP IN WATER OFFICE, IN WHICH A PIECE OF GALVANIZED IRON PIPE WAS ALLOWED TO STAND ABOUT TWELVE HOURS.

Water is a mineral substance, composed of two elements. Hydrogen forms one-ninth of its weight, and oxygen, eight-ninths. This is water chemically pure, or pure water. As found in nature, it always contains other substances. Water sanitarily pure need not be chemically pure. Water sanitarily impure, designated as polluted, or contaminated, contains substances or organisms injurious to health; animal matter, vegetable material, disease germs, poisonous metals, as lead, zinc, copper, manganese, etc.

The figures in the analysis represent parts per 100,000. To convert into parts per million, multiply by 10; into parts per United States gallon, by 0.583722; into parts per English gallon, by 0.7.

ODOR.—Odorless.

COLOR.—Slight tint.

TRANSPARENCY.—Clear.

Pure water is ordorless, colorless, clear, and tasteless. Water sanitarily pure may have one or all of these properties. Polluted water may be free from some or all of them.

BEHAVIOR DURING EVAPORATION.—Nearly quiet.

APPEARANCE OF RESIDUE.—Little yellowish; nearly uniform.

Water containing vegetable juices is a thin syrup. Such water foams during evaporation. Circles and irregular figures are marked on the dish where the last bubbles break in drying away. Animal matter seldom causes water to behave in this manner.

TOTAL SOLIDS.—5.6.

The amount of solids in water, sanitarily pure, varies greatly. Good well water in this state seldom contains more than 15 parts. Good pond water contains less than half of this quantity.

IGNITION OF RESIDUE.—It darkens little.

The residue blackens in proportion to the amount of organic carbon present, provided there is no excess of nitrates. Nitrates are present excessively more often in animal polluted waters; hence the residue of such waters blackens less than that of vegetable contaminated waters, both because animal matter contains less carbon as a rule, and because the nitrates supply oxygen to consume it quickly. Vegetable carbon often blackens intensely and the blackening persists.

LOSS ON IGNITION OF RESIDUE.—2.0.

This consists of the combustible and volatile portion of the organic matter, and volatile mineral substances,—carbonic acid, nitric acid, water of crystallization, zinc, and other volatile metals. The proportion of mineral solids is larger in well water than in pond water, because well water settling through the earth has come in contact with more soluble minerals. On the other hand, pond water contains more organic solids, because the soluble organic matter received from the surface of the ground has not been removed by the filtering action of earthy strata. It is seldom that the character and quantity of natural, mineral solids condemn a water. Vegetable matter is less harmful than animal matter. Both are more harmful in well water than in pond water, because light and sunshine tend to destroy deadly germs.

HARDNESS.—2.0.

ALKALINITY.—*2.9.

The figures are given in terms of carbonate of lime, *i. e.*, so many parts of carbonate of lime would give the same figures. Hardness and alkalinity give considerable information about the mineral constitution of water and often concerning its sanitary condition. Hardness is due chiefly to the salts of lime and magnesia, most often, their carbonates and sulphates. Alkalinity is caused only by their carbonates, or by the carbonates of potash, soda, ammonia, or some other alkali. Water hard from the salts of lime and magnesia, other than their carbonates, shows no alkalinity, unless the substances last named above are present. The carbonates of lime, or magnesia give nearly the same degree of hardness and alkalinity, lime especially. Sewage increases the alkalinity which then becomes an indication of pollution.

FREE AMMONIA.—0.0020.

ALBUMINOID AMMONIA.—0.0104.

Ammonia results from the decomposition of organic matter; the free is that which the natural process of decay has produced, and points to what extent decay has been going on in the water; the albuminoid results from the artificial decomposition of organic matter during analysis and points to the quantity of organic matter actually present. In good well water the albuminoid ammonia should not exceed 0.009 part, and in good pond water 0.015 part. In neither should the free ammonia exceed 0.005 part.

CHLORINE.—0.1.

Chlorine is a constituent of common salt. Sewage is rich in salt, hence the value of chlorine as an indication of pollution. Good water should not contain more than 0.5 part of it, unless the locality is near the sea coast, or is naturally rich in salt.

NITRIC ACID.—Mere trace.

*This represents the amount of acid consumed rather than the amount of alkali-earth in solution. The presence of zinc causes this variation and also that in the hardness.

This is a constituent of saltpetre which is produced by the fermentation of manures and sewage. Good well water should not contain more than 0.5 part of it, and pond water not more than 0.02. Excess of chlorine, or nitric acid in water always indicates either actual contamination, or dangerous proximity to sources of filth. In this case, the water contains filtered sewage. Nitric acid often results from the oxidation of ammonia, or vegetable matter. If the quantity of chlorine is normal while the nitric acid is excessive, the water is probably contaminated with vegetable matter, unless other results deny it.

NITROUS ACID.—None.

This is a lower oxide of nitrogen than nitric acid. It is a transition product between ammonia, or organic matter, and nitric acid. Its presence shows that the source of pollution is so near that time enough has not elapsed for the complete oxidation of its nitrogen in its progress toward the water supply. Good water should contain none of it, or but a mere trace.

OXYGEN CONSUMED IN OXIDATION.—0.184.

Good well water should require less than 0.1 part of oxygen, and good pond water less than 0.2 for the oxidation of its dissolved organic matter. In no case should it exceed 0.4. Some bad waters may require less than 0.05 part. Vegetable material, comparatively richer in carbon than animal substances, requires more oxygen for oxidation; while animal substances, being richer in nitrogen, yield more ammonia and other nitrogen compounds.

POISONOUS METALS.—None, except zinc 0.28.

Water should not contain more than 0.03 part of lead, or copper, or more than 0.05 part zinc.

IRON.—Trace.

Good water ought not to contain more than 0.1 part iron.

SEDIMENT.—Very little.

Good water should deposit no sediment, or scarcely any.

MICROSCOPIC EXAMINATION AND BIOLOGICAL CHARACTER OF SEDIMENT.—Nothing important.

NUMBER OF BACTERIA PER CUBIC CENTIMETRE GROWING AT BLOOD TEMPERATURE IN ALKALINE AGAR MEDIUM.—3.

NUMBER OF BACTERIA PER CUBIC CENTIMETRE GROWING AT BLOOD TEMPERATURE IN AGAR MEDIUM CONTAINING PARIETTI'S SOLUTION.—None.

Disease germs grow at the temperature of the body. Many harmless bacteria also flourish at this temperature. If a sample of water contains none which grow at this temperature, disease germs are evidently absent. The disease germ more usually found in waters of this latitude is the typhoid bacillus. The bacillus coli communis, whose original habitat is in the intestines, though not strictly a disease germ, is preëminently the sewage bacterium, and consequently all waters in which it is found should be condemned. The presence of any other sewage bacterium should also condemn a water for drinking purposes. The typhoid bacillus, the coli communis, and a few others will grow in agar medium, containing Parietti's solution, but to distinguish and identify them, special cultures and examinations must be made. Bacteria multiply very rapidly after water is taken from its source and raised to summer temperature. Since the kind of bacteria is more important than their number, the delay necessarily caused by transportation of the sample, if not too long, is favorable instead of objectionable, because a very few disease germs in a large quantity of water might escape discovery, but detection of them would be much more certain after their multiplication.

DISEASE GERMS.—None.

This is good water, without the zinc.

EDMUND R. ANGELL.

September 27, 1899.

REPORT OF ENGINEER OF PUMPING STATION.

PUMPING STATION, CONCORD WATER-WORKS.

V. C. HASTINGS, *Superintendent:*

SIR, — I would report that the pumping machinery at the pumping station is in very good working condition.

Following will be found a statement of the coal and supplies used at the pumping station during the year, with a table showing the work for each month.

Statement.

76 tons, 790 lbs. Pocahontas coal.
55 tons, 1345 lbs. Cumberland coal.
47 cords of wood.
60 gallons of oil.
31 lbs. of waste.

ENGINE RECORD.

Date.	Pumping time. *h. m.*	Gallons water pumped.	Daily average pumped.	Total coal burned.	Daily average coal burned.	*Gallons pumped per pound of coal.
January.....	133:00	11,371,435	366,820	23,510	759	483
February.....	133:45	11,313,704	404,060	24,025	858	470
March.....	133:00	11,327,236	365,394	24,497	790	460
April.....	127:15	10,778,612	359,287	23,002	766	468
May.....	133:45	11,279,534	363,855	23,428	755	481
June.....	188:30	15,845,598	528,186	31,956	1,065	495
July.....	165:00	13,734,334	443,043	28,069	905	489
August.....	129:00	11,875,452	383,079	23,900	770	496
September...	149:30	12,453,350	415,111	25,232	841	493
October.....	131:30	10,831,516	349,403	22,077	744	490
November....	137:15	11,347,058	378,235	23,184	722	489
December	129:30	11,038,236	356,072	22,695	732	486
Total	1,691:00	143,196,066	392,317	295,575	809	484
Daily average	4:37	392,317	.....	809	.....	.....

*Amount of coal consumed includes that used for heating the building and banking fires.

Amount of coal consumed per thousand gallons pumped, 2.06 pounds.

HENRY A. ROWELL,
Engineer.

APPENDIX.

A.

Receipts for Each Year Since the Completion of the Works.

For the year ending January 31, 1874	$ 4,431.10
For fifteen months ending April 1, 1875	17,535.00
For the year ending April 1, 1876	16,921.24
" " " 1877	19,001.07
" " " 1878	20,763.03
" " " 1879	21,869.86
" " " 1880	22,451.53
" " " 1881	26,744.58
For nine months ending December 31, 1881	25,534.01
For the year ending December 31, 1882	27,243.06
" " " 1883	28,255.48
" " " 1884	28,915.65
" " " 1885	30,222.54
" " " 1886	30,862.64
" " " 1887	34,047.52
" " " 1888	38,441.32
" " " 1889	40,237.53
" " " 1890	42,133.41
" " " 1891	46,075.16
" " " 1892	48,351.52
" " " 1893	52,299.66
" " " 1894	53,230.10
" " " 1895	55,343.19
" " " 1896	56,557.81
" " " 1897	55,156.42
" " " 1898	59,147.54
" " " 1899	53,953.13
Total receipts for 27 years	$925,725.10

B.

Mean Height of the Water Each Year.

1873	175.86	1887	179.04
1874	179.50	1888	181.96
1875	180.00	1889	180.91
1876	180.28	1890	181.90
1877	176.46	1891	180.00
1878	179.50	1892	174.32
1879	179.74	1893	173.38
1880	175.30	1894	172.81
1881	174.70	1895	171.15
1882	179.15	1896	178.96
1883	176.40	1897	183.33
1884	178.18	1898	184.31
1885	176.80	1899	183.49
1886	178.10		

C.

SCHEDULE OF IRON AND CEMENT-LINED PIPE AND GATES.

STREETS.	Brick Conduit.	Length and Size of Cement-Lined Pipe in Feet.							Length and Size of Iron Pipe in Feet.										Number and Size of Gates.									
	30-in.	18-in.	14-in.	12-in.	10-in.	8-in.	6-in.	4-in.	24-in.	20-in.	18-in.	16-in.	14-in.	12-in.	10-in.	8-in.	6-in.	4-in.	24-in.	20-in.	18-in.	16-in.	14-in.	12-in.	10-in.	8-in.	6-in.	4-in.
Conduit	2220																		2									
Reserve main									282										3									
Low service main		11391								331	1905	75								2	10	1	6				1	
Pump main			5297							7939	58	75	147							5	2	1	9		1		1	
Force main									240	2962		42	20						1	3			1					
Abbott																		372										2
Academy								370										100										
Albin																		662										1
Alleyways																	450	505										1
Allison								910									1563										3	1
Auburn													2182										1					
Avon																	724										2	
Badger																		694										1
Beacon																	1613										3	1
Blake																		300										1
Blanchard																	475										1	
Blossom Hill								617									1781										1	
Bow																	590										1	
Bowery avenue																		245										1
Bradley								1038							63			243							1			1
Bridge																	1123										1	
Broadway							369										2983										3	
Cambridge																		160										1
Capitol															508		763								1		3	
Centre							648	1231							3529	835									9	3	4	
Chandler																										1		
Chapel								586										56										2
Charles																		516										1
Chestnut							373										265										1	

Church								1502									75	280										1	5
Clinton							289	1615									45											2	1
Columbus avenue													2100										1							
Concord								1545										286											5	
Court								673																					1	
Curtice avenue																	422											2		
Dakin																		855											2	
Depot																	387	242										1	1	
Depot, W. Concord																	350											1		
Donovan																	456											1		
Downing								2445																					3	
Dunklee																	28													
Durgin																	265											1		
Eastman																		400											1	
Electric																	550											1		
Elm																		368											1	
Essex								550									242											1	2	
Fayette								1180																					2	
Ferry																		1066											2	
Fiske										1045										1										
Ford place																		320											1	
Forest																	535											2		
Foster																	180											1		
Franklin							1691	577						2166			765						4		1	8			
Freight															438		285							1		2			
Fremont																		590											2	
Fruit, North																	1065											1	1	
Fruit, South								2884										16											2	
Fuller																		88												
Gas								663																					1	
Giles								854								300	6												2	
Glen																	840											2		
Granite avenue																		210												
Green								1706							340									1					4	
Hall								910										798												
Hammond																		496												
Hanover																		600											2	
Harrison																		230												
Harrod																		333											1	
Harvard																		760											1	
High							1218						380				982						1	2	1		3			
Highland																	60	832										1	1	
Hill's avenue								234								69		75								1			1	
Holly																	710											1		

SCHEDULE OF IRON AND CEMENT-LINED PIPE AND GATES.— *Continued.*

STREETS.	Brick Conduit.	Length and Size of Cement-Lined Pipe in Feet.							Length and Size of Iron Pipe in Feet.										Number and Size of Gates.									
	30-in.	18-in.	14-in.	12-in.	10-in.	8-in.	6-in.	4-in.	24-in.	20-in.	18-in.	16-in.	14-in.	12-in.	10-in.	8-in.	6-in.	4-in.	24-in.	20-in.	18-in.	16-in.	14-in.	12-in.	10-in.	8-in.	6-in.	4-in.
Holt																	646										1	
Hopkinton road																		475										1
Jackson								1215										340										3
Jefferson																		173										
Kimball																		204										
Langdon															360			357							1			1
Laurel								1538																				2
Liberty														1311										1				
Lincoln																		367										2
Lyndon								1168									65	300									2	2
Main, North							3639			4209					1681		38				3				3		6	
Main, South							2424			300		2422			284		14						2		1		5	
Main, W. Concord				1764																				2				
Maple								382										430										2
Marshall																		330										1
McKinley																	738										2	
Merrimack							867										819										4	
Mill road, S. P. Sch.																	874	1890										2
Mills																		1320										4
Minot								494									355										1	
Monroe								1291																				1
Montgomery								702																				1
Morton																	516										1	
Myrtle																		225										1
Oak																		305										1
Odd Fellows ave																		201										
Old Hopkinton r'd																		814										1
Old Saw Mill road, St. Paul's School																		3446										2
Orchard																	620										1	
Park								566									30										1	1
Peabody																	340										1	

Pearl								602																						2
Penacook							788					300		1041	557	1825			1			1		3		2		1
Perkins								650																						2
Perley								1580									635													4
Perry avenue																	460													2
Pierce																	300													1
Pillsbury																2493													4	
Pine															681	985										2	4			
Pitman																	480													1
Pleasant						8575	2322							1700	513	260								3	5	9				
Prince																	515													2
Prospect																800														
Railroad								592																						1
Ridge road																524											1			
Rockingham																1320											2			
Rollins court																	195													1
Rumford				5952	1203	511		1203					9		1791	14						6	3	4	2	2				
School						1617	627	497						693	708	575							4	3	4	1					
Short																	223													1
South							5283									2631										7				
Spring, North							2640								26											4				
Spring, South								2374									405													2
State, North			3704	1622						509									1			3	1							
State, South					3034	854																		2	1					
Summer																	389													1
Summit																	172													1
Tahanto																1015										4				
Thompson								1357																						3
Thorndike							1871									25										3				
Tremont							196	1330								33										2	2			
Turnpike							1907					174	1026	1193		1703	3650					1				3	2			
Union								1007																						1
Valley							879																			1				
View																229														
Walker								676									692													3
Wall								753																						1
Warren							2525	271							1492	81	327							3	7					
Warrenstone																525										1				
Washington							1905	622								855										6	2			
Water								371																			1			
Waverly																	272													1
West							2478									315										4				
Winter																	225													1
Woodman																366														

SCHEDULE OF IRON AND CEMENT-LINED PIPE AND GATES. — *Concluded.*

STREETS.	Brick Conduit.	Length and Size of Cement-Lined Pipe in Feet.							Length and Size of Iron Pipe in Feet.										Number and Size of Gates.									
	30-in.	18-in.	14-in.	12-in.	10-in.	8-in.	6-in.	4-in.	24-in.	20-in.	18-in.	16-in.	14-in.	12-in.	10-in.	8-in.	6-in.	4-in.	24-in.	20-in.	18-in.	16-in.	14-in.	12-in.	10-in	8-in.	6-in.	4-in.
Wyman																	220										1	
Hydrant branches.							1404	293							177		1909	109							6		134	16
Blow-offs								106							132		8	92					1	1	1		11	54
PENACOOK.																												
Penacook main			13110	1221						381				120						1			6	3				
Canal, East						628									225	8										2		
Canal, West						422																				1		
Center						479	245								247		369								1	1	2	
Charles							1777																				3	
Church							482																				1	
Crescent															635										2			
Cross						734																				2		
High							2100																				3	
Main				2573													150							3			1	
Main, West																	1284										1	
Maple																		214										1
Merrimack				57		1251	2023									37										3	2	
Penacook																	850										2	
Rolfe																	1846										1	
Spring						652																				1		
Stark					529																				1			
Summer						1203		276																		3		1
Union																		261										1
Washington						1193										150	1080									1	2	
Winter																	400										1	
Hydrant branches.							709										141										34	1
Blow-offs								55										8						1			2	8
Total	2220	11391	22111	13189	4766	18767	44262	42830	522	17676	1963	2788	6155	4799	12053	7167	50464	33499	6	17	12	4	31	24	46	39	353	211

D.

FIRE-HYDRANTS.

STREETS.	LOCATIONS.	Number.	Total.
No. Main.	South-west corner North Main and Penacook	1	
"	East side North Main, near J. B. Walker's	1	
"	Junction North Main and Fiske	1	
"	East side North Main, near Larkin's store	1	
"	North-west corner North Main and Franklin	1	
"	East side North Main, opposite Pearl	1	
"	North-west corner North Main and Washington	1	
"	West side No. Main, opposite Historical Society rooms.	1	
"	East side North Main, opposite Chapel	1	
"	North-west corner North Main and Court	1	
"	North-west corner North Main and Pitman	1	
"	North-west corner North Main and Montgomery	1	
"	East side North Main, opposite Montgomery	1	
"	North-west corner North Main and Centre	1	
"	South-east corner North Main and Bridge	1	
"	South-west corner North Main and Park	1	
"	East side North Main, opposite Park	1	
"	North-west corner North Main and Capitol	1	
"	North-west corner North Main and School	1	
"	West side North Main, at Centennial Block	1	
"	East side North Main, opposite Centennial Block	1	
"	East side North Main, in rear Eagle Hotel	1	
"	East side North Main, in rear Woodward Block	1	
"	North-west corner North Main and Warren	1	
"	West side North Main, at Central Block	1	
"	North-east corner North Main and Depot	1	
"	North-west corner North Main and Pleasant	1	27
So. Main.	South-east corner South Main and Pleasant	1	
"	North-east corner South Main and Freight	1	
"	East side South Main, opposite Fayette	1	
"	East side South Main, opposite Thompson	1	
"	South-east corner South Main and Chandler	1	
"	North-west corner So. Main and Wentworth's avenue.	1	
"	North-west corner South Main and Thorndike	1	
"	East side South Main, opposite St. John's church	1	
"	North-west corner South Main and Perley	1	
"	West side South Main, near Abbot-Downing Co.'s	1	
"	East side South Main, opposite Abbot-Downing Co.'s.	1	
"	North-west corner South Main and West	1	
"	East side South Main, near West	1	
"	West side South Main, opposite Gas	1	
"	West side South Main, opposite Holt Bros. M'f'g Co.	1	
"	South-west corner South Main and South State	1	
"	North-west corner South Main and Pillsbury	1	
"	East side South Main, opposite Pillsbury	1	
"	West side South Main, at J. H. Lamprey's	1	
"	West side South Main, at W. J. Sawyer's	1	20
Water.	West side Water, near Capt. James Thompson's	1	1
Hall.	West side Hall, below Rolfe and Rumford Asylum	1	1
Hammond.	North side Hammond, near Bridge	1	1
Fiske.	West side Fiske, near North State	1	1
Summer.	North-east corner Summer and Pitman	1	1
Durgin.	West side Durgin, near Toof's laundry	1	1
No. State.	East side No. State, near cemetery gate	1	
"	North-east corner No. State and Foster	1	
"	West side No. State, at water-works storehouse	1	
"	South-west corner North State and Penacook	1	
"	North-west corner North State and Walker	1	
"	North-west corner North State and Church	1	
"	North-west corner North State and Tremont	1	
"	North-east corner North State and Washington	1	
"	West side North State, opposite Court	1	
"	North-west corner North State and Maple	1	

FIRE-HYDRANTS.—*Continued.*

STREETS.	LOCATIONS.	Number.	Total.
No. State.	North-east corner North State and Centre	1	
"	East side North State, opposite government building	1	
"	South-west corner North State and School	1	
"	North-west corner North State and Warren	1	
"	North-west corner North State and Pleasant	1	15
So. State.	East side South State, opposite Wall	1	
"	North-west corner South State and Thompson	1	
"	South-west corner South State and Monroe	1	
"	East side South State, opposite Laurel	1	
"	South-east corner South State and Downing	1	
"	North-east corner South State and West	1	
"	Junction of South State and South Main	1	7
Mills.	South-east corner Mills and Downing	1	
"	West side Mills, near Levi Call's	1	2
Dakin.	West side Dakin, near C. E. Harriman's	1	1
Dunklee.	North-west corner Dunklee and Pillsbury	1	1
Broadway.	North-west corner Broadway and Allison	1	
"	West side Broadway, near precinct line	1	2
Green.	North-west corner Green and Prince	1	
"	East side Green, opposite Prince	1	2
South.	West side South, opposite Wall	1	
"	North-west corner South and Thompson	1	
"	West side South, opposite Monroe	1	
"	West side South, opposite Laurel	1	
"	West side South, opposite Downing	1	
"	West side South, opposite Allison	1	
"	West side South, near Abbott farm	1	
"	West side South, opposite Smith farm	1	
"	North-west corner South and Rockingham	1	9
Bradley.	South-west corner Bradley and Penacook	1	
"	West side Bradley, opposite Walker	1	
"	East side Bradley, opposite Highland	1	3
Union.	North-west corner Union and Maple	1	1
Lyndon.	South-west corner Lyndon and Tremont	1	1
No. Spring.	South-west corner North Spring and Centre	1	1
So. Spring.	South-west corner South Spring and Oak	1	
"	West side South Spring, opposite Concord	1	
"	West side So. Spring, opposite Perley proposed exten.	1	3
Rumford.	West side Rumford, opposite Perkins	1	
"	North-east corner Rumford and Franklin	1	
"	West side Rumford, opposite Beacon	1	
"	North-east corner Rumford and Abbott	1	
"	North-east corner Rumford and Cambridge	1	
"	North-east corner Rumford and School	1	6
Tahanto.	North-west corner Tahanto and School	1	1
Pine.	South-west corner Pine and Centre	1	1
High.	North-west corner High and Auburn	1	
"	East side High, opposite Forest	1	
"	South-west corner High and Franklin	1	3
Giles.	South-east corner Giles and School	1	1
Fruit.	North-east corner Fruit and Clinton	1	
"	East side Fruit, opposite Wm. W. Critchett's	1	
"	North-west corner Fruit and Woodman	1	3
Minot.	West side Minot, near Odd Fellows' Home	1	1
Penacook.	South side Penacook, east of P. B. Co., bark house	1	
"	South side Penacook, near P. B. Co.'s	1	
"	South side Penacook, near P. B. Co.'s office	1	
"	South-east corner Penacook and North Main	1	
"	South-west corner Penacook and Rumford	1	
"	South-east corner Penacook and Columbus avenue	1	6
Highland.	North-east corner Highland and Rumford	1	1
Church.	North side Church, opposite Lyndon	1	
"	North-east corner Church and Rumford	1	2

FIRE-HYDRANTS. — *Continued.*

STREETS.	LOCATIONS.	Number.	Total.
Franklin.	North-west corner Franklin and Jackson	1	
"	South-west corner Franklin and Rumford	1	
"	South side Franklin, opposite W. J. Ahern's	1	
"	North-east corner Franklin and Auburn	1	4
Beacon.	North-west corner Beacon and Jackson	1	1
Blanchard.	North-west corner Blanchard and Essex	1	1
Ferry.	North side ferry, east of C. & M. Railroad	1	1
Washington.	South-west corner Washington and Union	1	
"	North-west corner Washington and Rumford	1	
"	North side Washington, opposite Perry avenue	1	3
Valley.	North side Valley, opposite Forest	1	1
Auburn.	North-west corner Auburn and Forest	1	1
Centre.	North-east corner Centre and North State	1	
"	South-west corner Centre and Green	1	
"	North-west corner Centre and Union	1	
"	North-west corner Centre and North Spring	1	
"	North-west corner Centre and Rumford	1	
"	South side Centre, opposite Essex	1	
"	South-west corner Centre and Summit avenue	1	
"	North-east corner Centre and Ridge Road	1	8
Bridge.	South side Bridge, near easterly barn	1	1
Capitol.	North-east corner Capitol and North State	1	1
School.	North-west corner School and Green	1	
"	North-west corner School and North Spring	1	
"	North-west corner School and Merrimack	1	
"	North side School, near city storehouse	1	
"	North side School, opposite E. B. Woodworth's	1	5
Depot.	North-west corner Depot and Railroad square	1	
"	South side Depot, at end of train shed	1	2
Warren.	North-west corner Warren and Green	1	
"	North-west corner Warren and North Spring	1	
"	North-west corner Warren and Rumford	1	
"	South-west corner Warren and Merrimack	1	
"	North-west corner Warren and Tahanto	1	
"	North-east corner Warren and Liberty	1	
"	Junction Warren and Pleasant, near Fruit	1	7
Pleasant.	North-west corner Pleasant and Railroad square	1	
"	North-west corner Pleasant and Green	1	
"	South-west corner Pleasant and Spring	1	
"	South side Pleasant, opposite Rumford	1	
"	South side Pleasant, opposite Merrimack	1	
"	South side Pleasant, opposite Pine	1	
"	South side Pleasant, opposite Liberty	1	
"	North side Pleasant, opposite Mrs. Aiken's	1	
"	South side Pleasant, near Mrs. Eddy's	1	
"	North side Pleasant, near Mrs. Lane's	1	
"	North side Pleasant, near J. McC. Hammond's	1	
"	South side Pleasant, opposite Pond road	1	
"	South side Pleasant, near J. Milnor Coit's	1	
"	North side Pleasant, opposite Infirmary	1	
"	South side Pleasant, near the mill	1	15
Mill Road.	East side Mill road, near Upper School cottage	1	
St. P. School.	North side Mill road, at Orphans' Home	1	2
Old Hopkint'n road.	Junction Old and New Hopkinton roads	1	1
Marshall.	North side Marshall, opposite Fuller	1	1
Freight.	North side Freight, at southwest corner passenger station	1	1
Hill's avenue.	North-east corner Hill's avenue and South Main	1	
"	South-west corner Hill's avenue and Railroad square.	1	2
Fayette.	North-west corner Fayette and Elm	1	1
Chandler.	South side Chandler, opposite railroad	1	1
Concord.	South side Concord, opposite Jefferson	1	1

FIRE-HYDRANTS. — *Continued.*

STREETS.	LOCATIONS.	Number.	Total.
Thorndike.	North-east corner Thorndike and Grove	1	1
Laurel.	North-east corner Laurel and Pierce	1	1
Perley.	North-west corner Perley and Grove	1	
"	South side Perley, near old brook	1	2
West.	North side West, near Badger	1	
"	North side West, opposite Dakin	1	
"	North side West, at intersection Broadway	1	3
Clinton.	North side Clinton, opposite Avon	1	1
Avon.	North-west corner Avon and South	1	1
Harrison.	North-west corner Harrison and Morton	1	1
Allison.	North-west corner Allison and Mills	1	1
Rockingham.	North-east corner Rockingham and Broadway	1	1
Prospect.	North-west corner Prospect and Granite avenue	1	1
Curtice ave.	North side Curtice avenue, near John C. Kenney's	1	1
North State.	East side North State, near W. H. Perry's	1	
West Concord road.	West side North State, near Calvary Cemetery	1	
"	East side North State, near A. L. Coburn's	1	
"	West side North State, at south line of prison wall	1	
"	West side North State, at north line of prison wall	1	
"	East side North State, near Asa L. Gay's	1	
"	West side North State, near Amos Haynes Co.'s	1	
"	West side North State, near C. H. Farnum's	1	
"	West side North State, near M. H. Farnum's	1	
"	East side North State, near stone cut	1	10
	WEST CONCORD.		
North State.	East side North State, near old city farm	1	
"	East side North State, near engine house	1	
"	East side North State, opposite D. Holden's	1	
"	West side North State, near north mill	1	
"	East side North State, opposite George W. Brown's	1	
"	East side North State, near Mr. Harrington's	1	
"	East side North State, opposite A. Hollis's	1	
"	East side North State, near Sewall's Falls road	1	8
Electric.	North-east corner of Electric and North State	1	
"	North side Electric, near power station	1	2
Lake.	East side Lake, near S. W. Kellom's	1	
"	East side Lake, near Mrs. G. E. Holden's	1	2
Knight.	South side Knight, opposite railroad station	1	1
Hutchins.	North side Hutchins, near B. T. Putney's	1	
"	North side Hutchins, near C. & C. Railroad	1	2
Penacook rd.	West side Penacook road, near Warner road	1	
"	West side Penacook road, near Mr. Currier's	1	2
	PENACOOK.		
Main.	West side Main, at Woodlawn cemetery	1	
"	West side Main, opposite Stark	1	
"	West side Main, near Mr. Prescott's	1	
"	South-west corner Main and Union	1	
"	Washington square, opposite Washington	1	
"	North-west corner Main and Charles	1	
"	North side Main, opposite East Canal	1	
"	North side Main, near iron bridge	1	8
West Main.	West side West Main, opposite cemetery	1	1
High.	East side High, opposite Summit	1	
"	North-west corner High and Maple	1	
"	North-west corner High and Spring	1	3
Washington.	South-east corner Washington and Union	1	
"	South side Washington, opposite John Whitaker's	1	
"	South side Washington, opposite Charles	1	

FIRE-HYDRANTS. — *Continued.*

STREETS.	LOCATIONS.	Number.	Total.
Washington.	South side Washington, near Contoocook bridge	1	4
Charles.	South-west corner Charles and Warren	1	
"	North side Charles, near George W. Corey's	1	2
West Canal.	South-east corner West Canal and Warren	1	1
East Canal.	North side East Canal, near Contoocook Mfg. Co.	1	
"	North side East Canal, near Crescent	1	2
Crescent.	North side Crescent, east of Canal	1	1
Merrimack.	South side Merrimack, opposite Merrimack avenue	1	
"	North side Merrimack, opposite D. W. Fox's	1	
"	North side Merrimack, opposite Cross	1	
"	South side Merrimack, opposite Rolfe's shop	1	
"	North side Merrimack, near road to Island	1	
"	North-west corner Merrimack and Penacook	1	6
Summer.	North side Summer, opposite High	1	
"	North-east corner Summer and Centre	1	2
Spring.	North-east corner Spring and Church	1	1
Centre.	North-west corner Centre and Spring	1	1
Cross.	South-west corner Cross and Summer	1	1
Rolfe.	North side Rolfe, near James Corbett's	1	
"	North-west corner Rolfe and Penacook	1	2
Penacook.	West side Penacook, opposite A. W. Rolfe's	1	1
	Whole number public hydrants		264
	PRIVATE HYDRANTS.		
	Boston & Maine Railroad, upper yard	6	
	Boston & Maine Railroad, new shops	14	
	New state prison	3	
	Abbot-Downing Co.'s yard	6	
	Page Belting Co.'s yard	5	
	W. P. Ford & Co.'s yard	1	
	N. H. Asylum for Insane yard	1	
	Concord Gas Light Co.'s yard	1	
	St. Paul's School	1	
	Water-works pumping station grounds	1	39
	Whole number private hydrants		39

HIGHWAY DEPARTMENT.

REPORT OF COMMISSIONER OF HIGHWAYS.

To the City Council:

The greater part of the money expended this year has been used for general maintenance, that is, repair of roads, streets, courts, culverts and bridges. The out-lying districts, as will be shown in this report, have received more attention than in previous years. We have tried to harden as many sandy hills and grade as much as possible. In many places we have been obliged to draw the material such a distance that the cost of repairs are quite expensive. Horse Hill bridge and East Concord bridge have been repainted. Turkey river bridge, by the Moreland Farm, has had a new abutment, new stringers and new floor complete. The bridge on St. Paul's School old road has been replanked and two new stringers replaced. Sheep Davis bridge replanked on the Concord side. A small bridge across the canal at Penacook has been replanked, also the Main street and Twin bridge floors have been concreted, and a number of culverts have been rebuilt and lengthened.

The bridge on the Pembroke road, across the Soucook river, is in a bad condition and unsafe for heavy teaming. I recommend that an "Iron Gruder" be built next spring. The town of Pembroke, I am quite sure, will agree to this. Many of the small bridges about the city are in a bad condition, and will need repairing another year.

All catch basins built this year have been 8-inch wall, large enough to keep the sand from running into the sewer. We have had considerable complaint about sewer gas escaping

through the basins which were either untrapped or traps broken. It is impossible to prevent this if the traps are perfect, as the slightest amount of sand or small sticks will hold the traps down and allow the gas to escape. The work of cleaning basins this year has been greatly reduced by the use of Edson diaphragm pump, which pumps the water from the basins direct into the sewer, and this does away with allowing it to stand on the surface of the ground until the sand is removed and then allowed to run back into the basin.

The work of cleaning the streets this year was done thoroughly. Owing to a late winter, this department had ample time to cover the entire cleaning precinct; the grass was cut from the gutters giving the streets a neat appearance.

The public greatly accommodated this department in the fall by putting their garbage in boxes and barrels, and lessened the labor of the collectors greatly.

In many sections of the city there are a number of accepted streets that should be worked to grade. If these streets were properly graveled the road surface would be, as in many cases in the city proper, much higher than the sidewalk, and in the winter and spring would be covered with water, owing to the great amount of snow in this section. Some of the streets should be brought to grade every year; as the city enlarges, the demand for grading these streets will increase and the cost in many instances will be large. The appropriation for sidewalks this year was sufficient to build many that were much needed, and they, no doubt, will be appreciated.

The shade trees about the city are in a bad condition, and as they have been trimmed only by linemen, many limbs die and blow down with every high wind. Many have died on account of gas leaks and maple worms; these are taken down and the cost amounts to more than has been expended on the street where they were taken down.

SPRINKLING. Owing to the extraordinary dry season this year, the sprinkling appropriation was soon expended. I would respectfully recommend that this be large enough next season to allow for new sprinklers, and have the precinct enlarged, or as many streets sprinkled as the people may ask.

Some of the sprinklers will be found in a bad condition, having been in service ever since the inauguration of sprinkling streets.

The standpipes about the city have been changed to overhead standpipes, whenever a low one becomes out of repair. These, while perhaps not so ornamental, are much more inexpensive and will seldom, if ever, be found out of repair.

I would recommend paving Freight street with block paving taken from Main street, and replacing these with concrete. The large and increasing traffic, together with the steep grade of Freight street, combine to make it impossible to maintain gravel or macadam road. I also recommend the concreting of State street directly opposite the Government building. This will only need a top coat, and will add much to the appearance and travel. We should like to macadam that portion of North State street that leads out from Penacook, and hope sometime that a macadam road may be complete from Penacook to Concord.

Respectfully submitted,

HENRY H. JOHNSON,

Commissioner of Highways.

INVENTORY OF CITY PROPERTY, FEB. 1, 1899.

1 steam roller	$2,000.00	
9 sprinklers and fixtures	2,000.00	
1 portable crusher plant	1,200.00	
1 stationary crusher plant	800.00	
8 horses	600.00	
1 sand house	50.00	
3 sets double harness	75.00	
2 single harness	15.00	
1 tip cart harness	10.00	
4 two-horse carts	300.00	
1 one-horse cart	25.00	
1 stake wagon	50.00	
1 stone wagon	50.00	
3 two-horse sleds	200.00	
1 two-horse dump sled	40.00	
1 one-horse sled	15.00	
2 snow rollers	150.00	
2 stone rollers	100.00	
2 road machines	100.00	
4 wing snowplows	100.00	
7 common snowplows	25.00	
1 street sweeper	100.00	
2 hand carts	40.00	
1 boom derrick	80.00	
1 garbage furnace	300.00	
Lumber	150.00	
Curbstone	80.00	
Miscellaneous property	260.00	
		$8,915.00
West Concord miscellaneous property		18.00
Penacook miscellaneous property		22.00

New Concrete Crossings.

Street.	Location.	Ward.	Yds. Concrete.	Cost.
South,	Clinton and South,	7	29.4	$20.58
Rumford,	Blossom Hill Cemetery,	9	54.75	38.32
Rumford,	Rumford and Short,	5	18.91	13.24
Main,	Main and Street Railway,	1	54.75	38.32
Downing,	Downing and Pierce,	6	29.1	20.37
Morton,	West and Morton,	7	22.8	15.96
Summer,	Summer and Square,	1	57.45	40.21
Summer,	Cross and Summer,	1	39	27.30

Patching Concrete.

Street.	Location.	Ward.	Cost.
Pleasant,	Fowler block,	5	$0.60
Pleasant,	Masonic Temple,	5	.50
Blake,	Drew's,	5	1.00
Pleasant,	Knowlton,	5	.50
Pleasant,	Odd Fellows' building,	5	1.00
Main,	Chase's block,	5	.50
Main,	Jones' block,	5	.50
Main,	Brown's block,	5	1.00
South,			1.50
Pleasant,	Knowlton,	5	.50

RECORD OF LABOR ON STREETS.

Ward One.

WALNUT STREET.

Repairing road	$1.61
Repairing fence	3.58

CRESCENT STREET.

General repairs	3.67

CHARLES STREET.

Repairs, concrete	14.10
Trimming trees	4.33
Repairing	1.13

WASHINGTON STREET.	
General repairs	$11.53
New concrete sidewalk south of Exchange block	8.91
Repairs, concrete in front of engine house	126.42
BOROUGH ROAD.	
General repairs	1.93
Raking stone	4.56
MERRIMACK STREET.	
Paving gutter opposite F. Varney's	7.00
UNION STREET.	
General repairs	2.00
SPRING STREET.	
General repairs	2.00
CHURCH STREET.	
Repairing	.57
BOG ROAD.	
Railing at Culvert by R. H. Hoit	2.60
PENACOOK STREET.	
General repairs	3.11
ELM STREET.	
Hardening and drawing grade	9.20
Drawing and setting curbing	3.83
Repairing culvert	.33
Repairs, concrete crossing	.60
Repairs, concrete sidewalk opposite No. 27	1.50
New concrete sidewalk and curbing	124.59
MAIN STREET.	
General repairs	128.91
Repairs, concrete	95.23
New concrete crossing, street railway and Main street	38.32
Repairs, concrete crossings	55.75
RIVER ROAD.	
Removing tree	.80
General repairs	3.16

MERRIMACK STREET.	
Trimming trees	$5.13
Drawing gravel	10.74
CROSS STREET.	
General repairs	4.70
New concrete	75.16
Repairing sidewalk	66.80
Grading sidewalk	59.52
Grading street	6.00
Repairs, Cross street extension	1.47
EAST CANAL STREET.	
General repairs	2.37
Repairs, concrete sidewalk	2.58
CENTRE STREET.	
Repairing sidewalk	3.12
ROLFE STREET.	
Repairing Rolfe and Walnut streets	9.20
HIGH STREET.	
Removing trees	2.70
Repairing concrete sidewalk near Summit street	.72
SUMMIT STREET.	
General repairs	6.81
SUMMER STREET.	
New concrete sidewalk, Summer and Main streets	93.24
Putting in box	.57
New concrete crossing, Summer and Main streets	40.21
New concrete crossing, Cross and Summer streets	27.30

Ward Two.

EAST PENACOOK STREET.	
General repairs	$62.56
Repairing fence	5.55
Grading	150.19
Cutting bushes	3.56
Repairing culvert	19.35

Grading between River bridge and Wattanummon bridge	$196.02
New concrete, J. E. Pecker	5.81
Repairing sidewalk, C. E. Staniels'	5.30
EAST CLINTON STREET.	
Repairing	8.10
NORTH PEMBROKE STREET.	
Building water course	7.00

Ward Three.

ENGEL STREET.	
Repairing	$22.67
K STREET.	
General repairs	3.94
WEST STATE STREET.	
General repairs	268.57
Repairing sidewalk	17.45
Repairs concrete, Holden's mill	6.11
LAKE STREET.	
General repairs	24.31
Putting in crossing	3.11
Repairs culvert	.89
QUAKER STREET.	
General repairs	7.10
DOLAN STREET.	
Building street	46.17
SEWALLS FALLS ROAD.	
Cutting bushes	31.75
Building fence	2.78
Building sidewalk	51.10
SECOND STREET.	
Building fence	5.89
KNIGHT STREET.	
General repairs	32.90

BOG ROAD.	
Repairing	$5.28
Cutting bushes	14.06
PENACOOK ROAD.	
Repairing	1.56

Ward Four.

WASHINGTON STREET.	
Trimming shade trees	$3.81
General repairs	46.13
Top coating sidewalk south side from State to Washington street	3.96
CHARLES STREET.	
General repairs	.80
Top coating sidewalk east side	4.07
Repairing gutter	1 47
TREMONT STREET.	
General repairs	.40
Resetting curbstone	.83
Paving cobble gutter between Rumford and Lyndon streets	30.42
Repairing sidewalk near Jackson street	2.83
Setting curbstone and concrete sidewalk, A. F. Fosgate	37.51
Paving gutter from Jackson street east	9.53
Patching from Jackson street east	20.33
BEACON STREET.	
Building drivebox	3.53
General repairs	1.50
Paving gutter	17.26
Setting curbing at J. S. Dutton's	33.21
Repairs concrete	6.66
Trimming trees at J. S. Dutton's	1.98
Repairing sidewalk near Rumford street	1.70
Building crushed stone crossing, Beacon and Rumford streets	7.76
Repairing steps	4.86