

REPORT OF CITY ENGINEER.

CITY ENGINEER'S OFFICE, CITY HALL,
CONCORD, N. H., December 31, 1913.

To the Board of Mayor and Aldermen:

The twenty-first annual report of the Engineering Department is herewith submitted, in compliance with the ordinance creating this department.

The expenses of the department for the year 1913 were as follows:

Paid for engineer and assistants,	\$3,043.25
car-fares and livery,	65.21
express,	2.70
supplies,	88.35
telephone service,	24.84
repairs,	19.51
services and supplies, assessors' maps,	1,120.35
convention expenses,	44.30
	<hr/>
	\$4,408.51
Appropriation,	\$4,475.00
Expended,	4,408.51
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Unexpended balance,	\$66.49

SEWERS.

The expenditures for construction, repairs and maintenance, together with the recommendations relating to

needed changes in the city precinct, will be found in my report to the Board of Public Works, covering the work done under its supervision.

WATER-WORKS.

The question of additional water supply from sources within the town limits, required some field work and study of natural conditions, to determine the feasibility of any attempt to utilize the suggested sources of supply. The results of these investigations are in the hands of the superintendent of the works and the Board of Water Commissioners.

FIRE DEPARTMENT.

The plans covering the city proper and the Penacook district, showing the location of fire-alarm boxes and the location of all hydrants, have been brought up to date and blue prints of the same turned over to the chief engineer of the fire department.

BUILDING PERMITS.

Together with the chief of the fire department, I have attended thirty-one hearings on petitions for new buildings, or alterations to existing structures. All petitions were granted, with such restrictions as seemed advisable to us.

CEMETERIES.

One new block has been graded in Blossom Hill cemetery and will be ready to lay out in lots the coming season. Some provision to care for the brook, in the northwesterly portion of this cemetery, should be made in order that

future laying out of blocks, in this section, may be carried on in a symmetrical and economical manner.

The deed books of Blossom Hill Cemetery have been brought up to date, covering the sale of lots during the past year.

STREETS.

Lines and grades were given for macadam roadways on North State Street, North Maine Street, South Street, Merrimack Street, Ward One and for gravel roadway on the Loudon road, also for concrete sidewalk construction, when requested.

The monthly measurements for coal-tar concrete walks and street surface repairs were made and statements of the square yards laid, cost and location of the same made and delivered to the parties ordering the same.

ASSESSORS' MAPS.

The field work for these maps was carried on during the summer and fall and the territory lying between the Soucook River, the Merrimack River, the Loudon line, westerly from the Soucook River to the Oak Hill Road, down the Oak Hill Road to the residence of the late John T. Batchelder, the Batchelder Road, the Turnpike and Pembroke Roads to the Merrimack River.

The Plains section, so called, has brought out many owners heretofore unknown, the location of whose property has entailed a vast amount of record searching and many lots located whose owners did not know where their property was situated. We now have listed and shown on the maps about five thousand three hundred separate pieces of real estate.

The special appropriation for this work was \$1,000. There has been expended on this work \$1,120.55, the overdraft for which was charged to the Engineering Department.

MISCELLANEOUS.

Grades for rough grading the ball ground, at Rollins Park, were given and the grounds partially graded with material from South Street. Much more grading should be done on these grounds before they are in proper shape for their intended use.

Lines and grades, where established, have been given to all applicants.

Meetings of your board and the Board of Public Works have been attended when information from this department has been requested.

The work of the Board of Examiners of Plumbers and the Hydrant Commissioners have been placed before you in their respective annual reports to your board.

The employees of this department during the past season were: Fred W. Lang, principal assistant; Forrest F. Owen, assistant; Orion H. Hardy, transitman; William E. Nash, Harold H. Betton, George W. Burke, Arthur McCauley and Leland P. Robinson, rodmen.

The convention of the American Society of Municipal Improvements, held at Wilmington, Delaware, in October, was one of vital interest to all municipal officers, the papers and discussions, at this session, covered the questions of water-works, sewage, its removal and treatment, garbage and street cleaning, street lighting, fire prevention, the construction and maintenance of all kinds of street surfaces and the question of financing public works. I hope that some members of this board will attend the next

meeting of this society, which will be held in Boston, in October, 1914.

To the Mayor and the Board of Aldermen I wish to express my appreciation for the privilege of attending the above mentioned convention and for the many courtesies shown this department during the past year.

Respectfully submitted,

WILL B. HOWE,
City Engineer.

REPORT OF BOARD OF EXAMINERS OF PLUMBERS.

CONCORD, N. H., December 31, 1913.

To the Board of Mayor and Aldermen:

The fourteenth annual report of this board is herewith submitted.

The present membership of the board is as follows: Charles H. Cook, M. D., Patrick A. Clifford, a journeyman plumber; and Will B. Howe, city engineer.

Patrick A. Clifford is chairman of the board and Will B. Howe, clerk.

Five meetings were held. Three applicants for master's licenses and six for journeyman's licenses were examined and passed.

The total receipts from all sources were thirty-two and one-half dollars (\$32.50), for which amount the clerk of the board holds receipts of the city treasurer.

The total expenditures for the year were, one and one-half dollars (\$1.50) for postage and sixteen and thirty-eight one-hundredths dollars (\$16.38) for materials used in the practical work of the examinations.

The attached table gives the names of all plumbers authorized by this board to work at the business of plumbing for the year ending March 31, 1914, the date of renewal and expiration of said licenses, or certificates, the dates of examination, opposite the names of the men examined and the fees received.

PLUMBERS, CERTIFICATES AND LICENSES ISSUED AND RENEWED DURING 1913.

NAME.	Certificate number.	License number.	Class of plumber.	Date of renewal.	Date of expiration.	Fee.	Examination.
Bishop, William J.	.....	61	Journeyman.	April 3, 1913	March 31, 1914	\$0.50	
Bateman, Charles W.	.....	3	Master	8, 1913	"	.50	
Bunten, Arthur W.	.....	20	Journeyman.	March 21, 1913	"	.50	
Bean, W. Arthur	1	.....	Master	21, 1913	"	.50	
Beaudett, Joseph P.	.....	41	Journeyman.	" 31, 1913	"	.50	
Babb, Elmer E.	.....	13	Master	" 31, 1913	"	.50	
Corey, Edward C.	.....	25	Master	" 31, 1913	"	1.00	August 7, 1913.
Converse, Frederick F.	.....	4	Journeyman.	May 9, 1913	"	.50	
Cooper, Albert	.....	51	Master	1, 1913	"	.50	
Clifford, Mary E.	14	.....	Master	April 8, 1913	"	.50	
Clifford, Patrick A.	14	.....	Master	8, 1913	"	.50	
Cronin, John J.	.....	19	Master	March 27, 1913	"	.50	
Cherrier, Louis J.	.....	23	"	15, 1913	"	.50	
Donovan, Edward F.	.....	18	"	May 22, 1913	"	.50	
Edgeworth, Edward F.	.....	43	Journeyman.	April 1, 1913	"	.50	
Farrar, Merton D.	.....	63	"	March 19, 1913	"	.50	
Griffin, C. Nelson	.....	62	"	March 26, 1913	"	.50	
Goldsmith, Charles A.	.....	58	Master	" 31, 1913	"	.50	
Hood, Seth R.	.....	2	Master	" 18, 1913	"	.50	
Harwood, George A.	9	.....	Master	" 19, 1913	"	.50	
Hoyle, Albert	.....	68	Journeyman.	.....	"	1.00	December 20, 1913.
Johnson, Thomas	.....	26	Master	.....	"	1.00	August 29, 1913.
King, Philip	8	.....	Journeyman.	March 31, 1913	"	.50	
Kennedy, Harry H.	11	.....	Master	May 3, 1913	"	.50	
Keenan, John C.	.....	15	Master	March 24, 1913	"	.50	
Lemire, A. Joseph	.....	64	Master	May 3, 1913	"	.50	
Lee, Richard J.	6	.....	Master	March 31, 1913	"	.50	
Lee, William A.	4	.....	"	" 14, 1913	"	.50	
Lee, Michael J.	10	.....	"	" 17, 1913	"	.50	
Leary, P. Harrison D.	42	.....	Journeyman.	April 3, 1913	"	.50	
Milton, George S.	8	.....	Master	March 29, 1913	"	.50	
Macharg, Foster E.	.....	56	Journeyman.	March 31, 1913	"	.50	
Morin, John, Jr.	.....	47	Master	April 1, 1913	"	.50	
Morgan, Manley W.	.....	16	Master	April 1, 1913	"	.50	

McDonald, Frank E.....	69	Journeyman.	.....	.....	1.00	December 20, 1913.
McCarthy, Charles.....	67	"	.....	.....	1.00	October 30, 1913.
McDermott, William H.....	65	"	.....	.....	.50	August 29, 1913.
McGuire, William H.....	10	"	.....	.....	.50	
Nichols, G. Arthur.....	2	Master.....	March 28, 1913	.....	.50	
O'Brien, Richard.....	66	Journeyman.	April 7, 1913	.....	.50	
Parsons, Albert F.....	24	Master.....	.....	.....	1.00	August 29, 1913.
Parmenter, Harris.....	40	Journeyman.	March 27, 1913	.....	.50	April 8, 1913.
Riley, Henry.....	48	"	April 1, 1913	.....	.50	
Reagan, Charles J.....	52	"	March 21, 1913	.....	.50	
Robinson, Arthur W.....	3	Journeyman.	April 3, 1913	.....	.50	
Robbins, Willis H.....	9	Master.....	April 8, 1913	.....	.50	
Reagan, William L.....	44	Journeyman.	March 15, 1913	.....	.50	
Sutton, William M.....	11	Master.....	April 27, 1913	.....	.50	
Smith, John C.....	59	Journeyman.	April 3, 1913	.....	.50	
Stanley, William H.....	60	"	May 19, 1913	.....	.50	
Spead, Clarence J.....	55	"	April 2, 1913	.....	.50	
Stevens, James F.....	17	Master.....	March 31, 1913	.....	.50	
Turnbull, Frank.....	11	"	April 31, 1913	.....	.50	
Trask, Albert S.....	7	Journeyman.	April 1, 1913	.....	.50	
Trotter, William.....	50	"	.....	.....
White, Joseph E.....		"	.....	.....

PATRICK A. CLIFFORD,
 CHARLES H. COOK, M. D.,
 WILL B. HOWE,

} Board of Examiners of Plumbers.

REPORT OF BOARD OF HYDRANT COMMISSIONERS.

CONCORD, N. H., December 31, 1913.

To the Board of Mayor and Aldermen:

The eighth annual report of this board, showing its recommendations to the Board of Water Commissioners and the number of hydrants set during the year 1913, is herewith submitted:

On May 26, 1913, it was voted to recommend the placing of additional hydrants in Penacook as follows: one on Washington Street, westerly side, opposite the barn near the Rolfe sawmill; one on Fowler Street, opposite number 8, and one on Fowler Street opposite number 39.

On June 9, 1913, it was voted to recommend that a hydrant be set on the northerly side of the Hopkinton Road, opposite the center of the new infirmary, at Saint Paul's School.

On September 15, 1913, it was voted to recommend the placing of a high-service hydrant on North State Street, on the northerly line of Oliver Racine's lot, and one on Merrimack Street, Penacook, near Bye Street.

All the above hydrants have been set during the season.

Respectfully submitted,

WILL B. HOWE,

W. C. GREEN,

P. R. SANDERS,

Board of Hydrant Commissioners.

WATER DEPARTMENT.

1913.

BOARD OF WATER COMMISSIONERS.

CHARLES J. FRENCH, Mayor, *ex-officio*.

SOLON A. CARTER,	to March 31, 1917.
BURNS P. HODGMAN,	to March 31, 1917.
HENRY C. HOLBROOK,	to March 31, 1916.
FRANK P. QUIMBY,	to March 31, 1916.
EDSON J. HILL,	to March 31, 1915.
GEORGE D. B. PRESCOTT,	to March 31, 1915.
HARRY H. DUDLEY,	to March 31, 1914.
NATHANIEL E. MARTIN,	to March 31, 1914.

SOLON A. CARTER, *President*.

EDSON J. HILL, *Clerk of Board*.

SUPERINTENDENT.

P. R. SANDERS.

CLERK.

ALICE G. COCHRAN.

FOREMAN.

JAMES T. DAVIS.

INSPECTOR.

HARRY E. STEVENS.

ENGINEER.

HENRY A. ROWELL.

CONCORD WATER BOARD.

Date of election and length of service of members.

Abraham G. Jones,* <i>ex officio</i> ,	1872—three months.
John M. Hill,*	1872-1878.
Benjamin A. Kimball,	1872-1878.
Josiah Minot,*	1872. Resigned Jan. 10, 1874.
David A. Ward,*	1872-1874.
Edward L. Knowlton,*	1872. Resigned Sept. 25, 1875.
Benjamin S. Warren,*	1872-1873.
John Kimball,* <i>ex officio</i> ,	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,* <i>ex officio</i> ,	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,* <i>ex officio</i> ,	1878-1880.
James L. Mason,*	1878-1893.
James R. Hill,*	1878. Died in 1884.
Geo. A. Cummings,* <i>ex officio</i> ,	1880-1883.
Edgar H. Woodman,* <i>ex officio</i> ,	1883-1887.
Joseph H. Abbot,*	1884-1893.
George A. Young,*	1885-1894.
John E. Robertson, <i>ex officio</i> ,	1887-1889.
Stillman Humphrey,* <i>ex officio</i> ,	1889-1891.
Henry W. Clapp,* <i>ex officio</i> ,	1891-1893.
Willis D. Thompson,	1891-1895.

* Deceased.

William P. Fiske,	1891-1902.
James H. Chase,*	1891. Died in 1893.
John Whitaker,*	1892. Died in 1903.
Henry E. Conant,*	1892. Resigned Jan. 8, 1895.
Parsons B. Cogswell,* <i>ex officio</i> ,	1893-1895.
Solon A. Carter,	1893. Now in office.
Frank D. Abbot,	1893-1901.
William M. Mason,	1893-1899.
William E. Hood,	1894-1902.
Henry Robinson, <i>ex officio</i> ,	1895-1897.
Ebenezer B. Hutchinson,*	1895. Resigned Jan. 10, 1899.
Edson J. Hill,	1895. Now in office.
Albert B. Woodworth,* <i>ex officio</i> ,	1897-1899.
Nathaniel E. Martin, <i>ex officio</i> ,	1899-1901.
Henry E. Conant,*	1899. Died in 1911.
Timothy P. Sullivan,	1899. Resigned May 14, 1901.
Harry G. Sargent,* <i>ex officio</i> ,	1901-1903.
Obadiah Morrill,	1901-1905.
George D. B. Prescott,	1901. Now in office.
Harry H. Dudley,	1902. Now in office.
Nathaniel E. Martin,	1902. Now in office.
Charles R. Corning, <i>ex officio</i> ,	1903-1909.
Henry C. Holbrook,	1903. Now in office.
Harley B. Roby,	1905. Resigned Jan. 24, 1911.
Charles J. French, <i>ex officio</i> ,	1909. Now in office.
Burns P. Hodgman,	1911. Now in office.
Frank P. Quimby,	1911. 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.

* Deceased.

John Kimball,*	1875-1876.
Benjamin A. Kimball,	1876-1878.
John Kimball,*	1878. Resigned July 1, 1891.
William P. Fiske,	1891-1902.
Solon A. Carter,	1902. Now in office.

SUPERINTENDENTS.

V. C. Hastings,*	1873. Died March 14, 1907.
P. R. Sanders,	1907. Now in office.

* Deceased.

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
Humphrey & Farnum, for kit-shop privilege,	4,900.00*
flowage rights around Penacook Lake,	4,375.61
W. P. Cooledge, Hutchins lot,	1,050.00†
Mary C. Rowell, for land,	1,500.00
Moses H. Bradley, for land,	5,000.00
Harry Phillips, for land,	100.00
Joseph B. Walker, for land,	2,214.00
John G. Hook, for land,	370.00
A. S. Ranney, for land,	1,350.00
Alfred Roberts, for land,	1,275.00
Charles E. Ballard, for land,	2,500.00
Mary G. Carter, for land,	1,250.00
Elizabeth Widmer, for land,	1,564.50
A. L. Proctor, for land,	450.00
Robert Crowley, for land,	3,000.00
Miles Hodgdon, for land,	2,200.00
heirs of Lowell Brown, for land,	1,032.55
Coffin & Little, for land,	800.00

*Original cost, \$5,000; land sold for \$100.

†Original cost house and lot, \$2,250; portion of lot sold for \$1,200.

Paid O. F. Richardson, for land,	\$100.00
M. H. & C. R. Farnum, for land,	4,500.00
Cook & Hood, for land,	1,750.00
Charles H. Farnum, for land,	1,410.36
Fred N. Ladd, for land,	300.00
A. W. Hill, for land,	6,500.00
Helen G. Evans and others, for land,	2,000.00
Frank B. Kilburn, for land,	2,500.00
Joseph A. and Mary E. Hal- loran, for land,	600.00
Wheelock Club, for land,	1,400.00*
Dr. I. A. Watson, for land,	2,490.00†
Frank E. Horner, for land,	1,900.00
Frank E. and William H. Horner, for land,	100.00
C. H. Amsden, water and flowage rights,	5,000.00
Cost of property and rights of Tor- rent Aqueduct Association,	20,000.00
dam, gate-house and appurte- nances,	32,756.17
conduit and gate-houses,	29,818.94
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 Streets, and high service main from Penacook Street to Stark Street, Penacook),	182,241.70

*Original cost \$1,500; house sold for \$100.

†Original cost, \$2,700; house sold for \$210.

Cost of distribution pipe,	\$388,168.66
service pipe,	63,059.57
reservoir,	42,460.09
pumping station, shop, stable and storehouse,	24,017.60
pumping machinery,	17,000.42
engineering and superintendence,	14,913.12
incidentals,	6,531.19

Cost of works, January 1, 1914, \$1,034,949.48

Bonds of the city have been issued to pay a part of said cost, of which the following are still outstanding:

When due	Rate	Amount
Jan. 1, 1914,	4,	\$10,000.00
Jan. 1, 1915,	4,	5,000.00
Jan. 1, 1916,	4,	9,000.00
Jan. 1, 1917,	4,	10,000.00
Jan. 1, 1918,	4,	10,000.00
Jan. 1, 1919,	4,	10,000.00
Nov. 1, 1920,	3,	7,000.00
Nov. 1, 1921,	3,	4,000.00
April 1, 1921,	3½,	5,000.00
Jan. 1, 1922,	4,	347,000.00
March 1, 1922,	3½,	20,000.00
April 1, 1922,	3½,	30,000.00
Jan. 1, 1923,	3½,	15,000.00
Jan. 1, 1924,	3½,	15,000.00

\$497,000.00

REPORT OF BOARD OF WATER COMMISSIONERS.

To His Honor the Mayor and the Board of Aldermen:

The Board of Water Commissioners transmits herewith the reports of the superintendent and the engineer of the pumping station, exhibiting in detail the operations of this department for the year ending December 31, 1913, which are made a part of this report.

The expense of extensions has been less than in some previous years, affording an opportunity to make extensive repairs and improvements on the buildings and equipment of the system, which is now in a most satisfactory condition.

In the not distant future the cement-lined pipes supplying the St. Paul's School and the Penacook districts must be replaced with cast-iron. It is probable that the work of relaying the line to St. Paul's School will be undertaken the coming season, giving that important district a cast-iron main with an increased capacity over the present line.

Certain disinterested (?) parties have lately through the columns of one of our daily newspapers, criticized this board for its alleged failure to prevent the contamination of the water of Penacook Lake and possibly some sensitive individuals have been persuaded that in using the water supplied through our mains, their health has been endangered and that they are being poisoned by degrees.

The board avails itself of this opportunity to state its attitude on this question.

The ideal condition undoubtedly would be for the city to control the entire watershed supplying the lake. It is evident that such absolute control is impracticable if not altogether impossible.

It should be borne in mind that the present board, as well as its immediate predecessors, inherited the conditions complained of. It is no reflection upon the judgment of the honorable gentlemen and public spirited citizens who served the city upon the board at the time the system was installed, or their immediate successors, to state that they did not foresee the possibility of the location of a colony of summer cottagers near the shores of the lake.

The conditions complained of in the newspaper articles referred to have received the thoughtful consideration of the board for more than twenty years and the most objectionable features have been eliminated as rapidly as circumstances would permit.

For a detailed statement of the properties acquired by the city, you are referred to the construction account in the report of this department.

It has been the aim of the board to supply our citizens with an abundance of pure water. To accomplish our purpose, we have caused careful policing of the shores, inspection of suspected premises and frequent analyses of the water.

We have had the cordial co-operation of our local and state boards of health, whose suggestions and advice have been of great assistance and are gratefully acknowledged.

Respectfully submitted,

SOLON A. CARTER,
BURNS P. HODGMAN,
HENRY C. HOLBROOK,
FRANK P. QUIMBY,
EDSON J. HILL,
GEORGE D. B. PRESCOTT,
HARRY H. DUDLEY,
NATHANIEL E. MARTIN,
CHARLES J. FRENCH, *ex officio*,
Board of Water Commissioners.

REPORT OF THE SUPERINTENDENT.

To the Board of Water Commissioners:

I herewith present to you the forty-second annual report of the operations of this department, showing the receipts, expenditures and abatements, together with a statement of the extensions and improvements made during the year ending December 31, 1913.

RECEIPTS.

For water, from consumers by fixed rates,	\$15,057.37	
For water, from consumers by meter rates,	60,492.18	
From delinquents,	91.59	
For shutting off and turning on water,	2.00	
water for building purposes,	45.32	
pipe and stock sold and labor,	465.88	
wood sold,	60.00	
freight refunded,	36.65	
	<hr/>	\$76,250.99
Deduct abatements,		96.54
		<hr/>
Net receipts for 1913,		\$76,154.45

EXPENDITURES.

GENERAL EXPENSES.

Paid pay-rolls, salaries and labor,	\$9,183.19
S. G. Sanborn, rent of shop in Penacook,	24.00

WATER DEPARTMENT.

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Paid Ira C. Evans Co., printing and postage,	\$184.97
Rumford Printing Co., books,	16.00
Addressograph Co., office supplies,	22.09
Frost & Adams Co., office supplies,	6.93
A. R. Andrews, office supplies,	6.00
Chas. F. Nichols & Son, office supplies,	5.25
C. H. Swain & Co., bill case,	7.03
N. H. Patriot Co., advertising, Concord Evening Monitor, advertising,	11.30
Concord Electric Co., lighting,	7.10
N. E. Telephone & Telegraph Co., telephones,	15.64
J. M. Stewart & Sons Co., supplies,	99.20
Thorne Shoe Store, rubber boots,	6.00
Thompson & Hoague Co., hardware,	4.50
Concord Hardware Co., hardware,	82.78
A. H. Britton & Co., hardware,	23.27
A. G. Stevens, axes,	16.79
Joseph T. Walker, hay,	4.00
Walter S. Dole, grain and straw,	52.96
G. N. Bartemus & Co., grain and straw,	60.01
W. W. Critchett, pasturing horse,	70.00
	4.50

Paid Barrett Mfg. Co., paint,	\$21.09
Tragle Cordage Co., packing,	50.16
Howard & Morse, copper screens,	125.60
Clinton Wire Cloth Co., wire,	17.47
Boston Bolt & Iron Co., iron frames,	110.00
N. H. Forestry Commission, pine seedlings,	157.50
Edson Mfg. Co., trench pump engine,	102.75
Wilson & Silsby, spray hood,	16.00
Eagle Garage, automobile and supplies,	766.22
Chandler Eastman Co., truck body and seat,	53.50
Standard Oil Co., gasoline and tank,	112.65
Hoyt Electrical Instrument Co., supplies,	6.00
Concord Vulcanizing Works, supplies,	5.10
Page Belting Co., supplies,	33.56
C. M. & A. W. Rolfe, supplies,	4.20
Batchelder & Co., supplies,	21.43
C. H. Martin & Co., supplies,	13.49
C. W. Dadmun, electrical sup- plies,	24.93
Woodworth & Co., cement,	49.90
Dickerman & Co., cement,	32.25
R. D. Wood & Co., cast-iron pipe,	1,753.95
Andover Village Precinct, cast- iron pipe,	309.46

Paid Builders' Iron Foundry, castings,	\$129.60
New England Box Co., castings,	13.90
Concord Mfg. Co., castings,	7.00
Rensselaer Mfg. Co., valves and hydrants,	367.40
Ludlow Valve Mfg. Co., valves and hydrants,	174.27
Darling Pump and Mfg. Co., valves,	75.00
Norwood Engineering Co., hydrants,	66.00
Bingham & Taylor, gate-boxes,	78.84
Chadwick-Boston Lead Co., pig lead and lead pipe,	237.83
Richards & Co., lead wool,	35.50
A. M. Byers Co., wrought-iron pipe,	119.70
Hays Mfg. Co., service boxes,	75.75
Concord Foundry and Machine Co., castings,	46.96
F. L. Badger, brass castings,	6.19
George E. Gilchrist Co., tools and fittings,	107.70
Walworth Mfg. Co., tools and fittings,	71.06
Harold L. Bond Co., tools,	38.15
Nye Tool and Machine Co., pipe cutter,	2.25
Orr & Rolfe, fittings,	6.98
Concord Pipe Co., fittings,	3.38
National Meter Co., meters and repairs,	504.20

Paid Thomson Meter Co., meters and repairs,	\$201.60
Neptune Meter Co., meters and repairs,	222.20
Henry R. Worthington, meters,	72.00
Globe Horseshoeing Shop, smith work,	72.79
Ross W. Cate, smith work,	23.40
Jasper E. Brown, smith work,	7.12
Abbot & Downing Co., repairs,	66.97
George D. Huntley, repairs,	17.00
C. Pelissier & Co., repairs and supplies,	3.25
Henry M. Richardson, team work and labor,	237.25
E. L. Davis, team work,	43.00
George L. Theobald, team work,	26.75
Benjamin Farnum, team work,	13.50
Charles H. Farnum, team work,	4.50
E. S. King, auto hire,	13.00
John F. Waters, auto hire,	9.00
C. H. Carter, auto hire,	8.75
J. C. McGilvray, auto hire,	4.50
William S. Kaime, livery,	2.00
George F. Tandy, repairing concrete,	33.00
H. Levingston, repairing concrete,	5.11
Hutchinson Bldg. Co., lumber and labor,	27.79
Horne & Hall, lumber and labor,	10.93
M. L. Swain & Co., mason work,	101.71

WATER DEPARTMENT.

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Paid Rowell & Plummer, mason work,	\$8.50
George Abbott, Jr., painting,	211.97
B. Bilborough & Sons, painting,	42.30
Morrill & Danforth, insurance and bond,	287.96
Eastman & Merrill, insurance,	45.00
Boston & Maine Railroad, freight,	378.20
town of Webster, taxes,	40.00
state of New Hampshire, auto registration and license,	15.00
Engineering News,	5.00
A. G. Cochran, clerk, cash paid out, car fares, express and sundries,	192.19
Rochester Brass and Wire Works Co., fence,	963.00
Harry Phillips, land,	100.00
Silas S. Wiggin, estimating lumber,	10.00
incidentals,	65.48
	————— \$19,460.10

PUMPING STATION EXPENSES.

Paid pay-rolls, engineer and fireman,	\$1,832.25
labor on fuel,	60.49
labor on indicator,	13.75
Concord Lumber Co., coal,	1,076.04
H. M. Richardson, drawing wood,	30.63
W. C. Robinson & Sons Co., oil,	28.78
A. W. Harris Oil Co., oil,	25.83
Eagle Oil & Supply Co., packing, etc.,	53.25

Paid Revere Rubber Co., packing,	\$16.26
Jenkins Bros., packing,	36.50
Thompson & Hoague Co., supplies,	42.97
A. H. Britton & Co., supplies,	8.28
C. H. Martin & Co., supplies,	3.35
P. H. Larkin & Co., supplies,	1.55
Batchelder & Co., supplies,	1.28
Orr & Rolfe, fittings,	7.70
Union Electric Supply Co., electric supplies,	57.59
C. W. Dadmun, electric supplies,	6.29
Stuart-Howland Co., electric supplies,	4.59
Concord Electric Co., electric supplies,	4.45
Concord Wiring and Supply Co., electric supplies,	1.15
Horne & Hall, lumber and labor,	6.15
Henry M. Richardson, trucking poles,	9.50
George E. Winslow, indicator,	181.00
Harold L. Bond & Co., manhole cover,	18.45
Henry R. Worthington, repairs on pumps,	1,391.66
Page Belting Co., repairs on pumps,	198.51
J. H. Long Machine Co., repairs on pumps,	84.84
Hutchinson Building Co., repairs on pumps,	62.40
B. Bilborough & Sons, painting buildings and pumps,	207.43

WATER DEPARTMENT.

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Paid Nason Mfg. Co., valve,	\$1.05	
McLeod & Henry, fire brick,	47.75	
N. E. Roller Grate Co., grate bars,	60.00	
Ford & Kimball, grate bars,	1.95	
Rowell & Plummer, mason work,	59.30	
J. M. Stewart & Sons Co., lino- leum,	78.31	
George L. Lincoln & Co., shades,	11.73	
Granite State Mfg. Co., repairing chairs,	3.00	
Poole Mfg. Co., tube cleaner,	5.50	
Concord Light and Power Co., lighting,	14.88	
New England Telephone and Telegraph Co., telephones,	34.75	
Boston & Maine Railroad, freight,	8.32	
A. G. Cochran, clerk, cash paid out,	45.96	
incidentals,	2.21	
		\$5,847.63
		<u>\$25,307.73</u>

The expenditures are divided as follows:

GENERAL EXPENSES.

For office expenses,	\$1,221.14
maintenance,	6,874.38
inspection,	840.00
care and repair of hydrants,	277.46
new service pipes,	579.41
new distribution pipes,	4,244.88
new hydrants,	395.91

For new meters,	\$1,043.91
work at lake,	165.75
repairs at brick gate-house,	334.89
care of wood-lots,	1,280.06
automobile,	610.75
fence at pumping station,	1,050.00
land at pumping station,	100.00
incidentals,	441.56
	\$19,460.10

PUMPING STATION EXPENSES.

For salaries, engineer and fireman,	\$1,832.25
fuel,	1,167.16
oil and packing,	124.12
repairs,	388.66
supplies,	24.63
lighting and telephone,	49.63
repairing pumps,	1,898.06
indicator,	363.12
	\$5,847.63

EXTENSIONS AND IMPROVEMENTS.

Cast-iron distribution pipes have been laid and hydrants set during the year as follows:

In Hopkinton Road,

west from Pleasant Street, 615 feet 6-inch pipe in place of 4-inch pipe discontinued.

In Dartmouth Street,

extended south, 293 feet 6-inch pipe.

In Beacon Street,

extended east, 104 feet 6-inch pipe.

In Washington Street, Penacook,

extended west from Electric Avenue, to Rolfe's saw-mill, 712 feet 6-inch pipe.

In Fowler Street, Penacook,

east from Washington Street, 1,300 feet 6-inch pipe.

On hydrant branches,

128 feet 6-inch pipe; 6 feet 6-inch pipe discontinued.
Also 132 feet 1-inch pipe.

Seven new hydrants have been set as follows:

On Hopkinton Road, near new infirmary.

On School Street, near Giles.

On North State Street, near Racine's.

On Washington Street, Penacook, at Rolfe's sawmill.

On Fowler Street, Penacook, near Elliott's.

On Fowler Street, Penacook, at Charles Holmes'.

On Merrimack Street, Penacook, at Bye.

There have been set 11 gates; discontinued, 1.

SUMMARY OF THE FOREGOING.

NEW PIPES, HYDRANTS AND STOP-GATES.

<i>Pipes.</i>	<i>Hydrants.</i>	<i>Stop-Gates.</i>
1-inch, 132 feet.	In city, 3	6-inch, 10
6-inch, 3,152 "	In Penacook, 4	18-inch, 1
3,284 feet.	7	11
equal to .621 mile.		

DISCONTINUED.

<i>Pipes.</i>	<i>Hydrants.</i>	<i>Stop-Gates.</i>
4-inch, 475 feet.	In city, 1	4-inch, 1
6-inch, 6 "		
—	—	—
481 feet.	1	1
equal to .091 mile.		

Total length of main and distribution pipes now in use, 370,111 feet, equal to 70.09 miles.

Total number of gates now in use, 1,021.

Total number of hydrants now in use, 436.

SERVICE PIPES.

There have been laid during the year and connected with the main pipes, 42 service pipes, consisting of

38 ¾-inch,	948 feet.
1 1-inch,	33 feet.
1 4-inch,	18 feet.
2 8-inch,	40 feet.
—	—
42	1,039 feet.

There have been discontinued, 2; total number of service pipes at the present time, 3,792; total length of service pipes, 88,533 feet, or 16.76 miles.

We have set 76 meters during the year, total number now in use, 2,318.

There have been relaid 50 service pipes and 15 curbs have been placed on old supplies. There are still about one thousand services in the city without curb-stops and I would recommend that five hundred be placed on these old supplies the coming year.

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

January,	178.10	July,	180.45
February,	178.65	August,	179.55
March,	178.40	September,	178.60
April,	180.65	October,	178.30
May,	181.25	November,	177.80
June,	181.45	December,	177.25

The lowest point reached during the year was on December 31, being 176.85; the highest was on May 9 and June 2, and was 181.45; mean height for the year was 179.20, which was .34 foot higher than the mean height for the year 1912.

The triple expansion Worthington pumping engine which has been in operation since the high service was installed in 1892, was found to be in need of extensive repairs. The pump has been thoroughly overhauled by the manufacturers, the steam valves rebored, connecting rods renewed and the valves on the water end renewed. This engine is now in first-class condition and is capable of giving good service for many years. The No. 2 engine was also overhauled at the same time, but having been in service only since 1904 was found to be only slightly worn and with renewal of some minor parts is in as good condition as ever.

The wooden floor in the new gate-house at the dam, having rotted so as to become unsafe, was replaced with one of concrete, as was also the floor in the old gate-house.

A Winslow electrical recording indicator, which shows the height of water in the reservoir at any period of night or day and also makes a record of the same, has been installed in the pumping station. The indicator consists of a transmitter operated by diaphragm and lever at the

reservoir which is connected to the 10-inch blow-off pipe, and a register at the station. This gage is a much needed improvement at the station and a great help to the engineer in the operation of the pumps.

All of the buildings owned by the department have been painted and repaired and are in good condition.

An iron fence has been purchased to replace the present wooden fence at the pumping station, the old fence being in such condition that it was necessary to renew it. The iron fence has been received from the manufacturers but has not yet been erected, having arrived too late in the season for the work.

Thirty-one thousand pine seedlings from the state nursery at Boscawen have been set out on the pasture land owned by the city at Penacook Lake.

The growth of these pines will be watched with interest as departing from the usual custom of transplanting in the spring. These were set out in the fall after the season's growth was completed, upon the recommendation of State Forester Hirst.

I would recommend that the department purchase as many more to be set out in 1914.

A model 17 Buick touring car was purchased by the department early in the season of 1913, the tonneau removed, and converted into a service truck of about 1,200 lbs. capacity. This machine has been of great advantage, especially in carrying men and supplies to and from work and in answering the many calls which the care of the system demands.

The shores of the lake have been gone over several times during the year and all rubbish burned.

In my last report your attention was called to the presence of the gypsy moth in the woodlot on the south side of Forge Pond adjoining the Park and lots under control of the city, similarly infested, and also to the

damage that had been done by browntail moths among the white oak.

A joint meeting of the Land and Buildings Committees of the Water Board, the Park Commissioners and the City Government was held January 20, 1913, and it was voted to engage the services of an expert lumberman to examine the lots and estimate the amount of lumber on the same. The committees engaged Mr. Silas S. Wiggin, who estimated the lots at 500,000 feet.

On February 3, a meeting of the City Government was held and a resolution was passed authorizing the wood and timber on the city lot infested with gypsy moths to be cut and marketed under the direction of a committee of four consisting of the Mayor, one member of the Land and Buildings Committee of the Park Commissioners, one member of the Land and Buildings Committee of the City Government and the Superintendent of the Water-Works, and said committee was authorized to enter into a contract with responsible persons in the name of the city for the operation of said lots.

Bids were called for by this committee for cutting, sawing, sticking and marketing the hard and soft lumber.

The bids were advertised in the local papers and on February 13, the date set for opening them, the committee met and the following proposals were considered:

Albert J. Morrill, to cut, saw and stick, \$8 per M.

Knowles & Marston, to cut, saw and stick, \$8.50 per M.

Boutwell & Baker, to cut, saw and stick, \$6.50 per M.

to market, \$1 per M.

Boutwell & Baker, having made the lowest bid, the contract was awarded to that firm.

On March 24 the Board of Aldermen met and authorized the Mayor and Superintendent of Water-Works to deter-

mine the amounts due the contractors, the same to be charged to the account of incidentals and land damages.

Operations on the lot were commenced about the first of March and were completed the last of June.

As the lots under the separate control of the Water Board and the city were operated jointly, it was impossible to keep the lumber separate, so it was agreed, after looking the ground over thoroughly by the contractors and the committee, that the city's proportion of expenditures and receipts would be three-fifths, and that of the Water-Works, two-fifths, of the total.

A gang of men was put in to cut the cord wood at \$1.25 per cord; after working until July, we were obliged to raise the price per cord to \$1.60. The wood was measured by Mr. H. M. Richardson and amounted to 1124.5 cords. The cord wood will be removed from the lot during the winter and yarded where it will be convenient to handle.

A large portion of the lots has been cleared of the brush and it is our intention to clear the remainder ready to be reforested.

Following is a statement of the expenditures up to December 31, 1913:

EXPENDITURES.

Paid Boutwell & Baker,		
to sawing 874,396 ft.		
lumber at \$6.50		
per M,	\$5,683.57	
less 10% until final		
settlement,	568.35	
	<hr/>	\$5,115.22
to sawing 15,804 ft. W. W. logs		
at \$3 per M,		47.41

Paid Boutwell & Baker,		
to operating 41,213 ft. butts at		
\$4.25 per M,	\$175.16	
to operating 12,750 ft. tele-		
phone poles at \$1.75,	22.32	
to cutting 1,265 round posts at		
\$0.02,	25.30	
to delivering 2,512 ties to rail-		
road,	47.10	
to labor delivering sawed lum-		
ber, yarding and delivering		
poles, posts, butts, peeling		
and piling ties and extra		
work loading teams,	1,249.03	
	<hr/>	\$6,700.14
Paid H. M. Richardson, team work,		9.75
surveys,		20.00
advertising,		6.60
insurance,		102.00
		<hr/>
Expenditures for operating lumber,		\$6,828.49
Paid for chopping cord wood, 710.75		
cords at \$1.25,	\$888.44	
for chopping cord wood, 413.75		
cords at \$1.60,	662.00	
for yarding and delivering		
cord wood,	359.35	
	<hr/>	
Expenditures for chopping wood,		1,909.79
Paid for inspection and cleaning brush,		832.73
		<hr/>
Expenditures to December 31, 1913,		\$9,571.01

RECEIPTS.

Amount of lumber sold and delivered from city lots:

708,277 ft. sawed lumber,	}	\$16,688.78
41,213 ft. white oak butts,		
12,750 ft. telephone poles,		
205 round posts,		
Amount collected on above and paid into city treasury,		\$7,559.27
Amount collected on cord wood sold and paid into city treasury,		28.00
		<hr/>
Receipts to December 31, 1913,		\$7,587.27

Following this is the report of Mr. Rowell, the engineer, giving the operations of the pumping engines in detail.

Acknowledging the continued support and co-operation of your board, this report is

Respectfully submitted,

PERCY R. SANDERS,
Superintendent.

REPORT OF THE ENGINEER AT PUMPING STATION.

PUMPING STATION, CONCORD WATER-WORKS.

P. R. SANDERS, *Superintendent*:

SIR,—I would report that the pumping machinery at the pumping station is in a first-class condition.

Pump No. 1 has been thoroughly overhauled during the year, and is in good working order.

Pump No. 2 has had some repairs made, the air pump having new sleeves put in, also new valve stems made for the engine, and new rubber valves for the water end on both pumps.

The electrical indicator and recording gauge that was installed by your order is giving good satisfaction. It gives the exact height of the water in the reservoir at all times, day or night.

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

STATEMENT.

236 tons 1,255 pounds Pocahontas coal.
131 gallons valve oil.
15 gallons engine oil.
47 pounds of waste.
15 pounds of grease.
13 cords of wood.

ENGINE RECORD.

MONTHS.	No. days pumping engine No. 1.		No. days pumping engine No. 2.		Total days pumping.	Total hours pumping.	Average time pumping.	Total water pumped.	Daily average pumping.	Total coal consumed.*	Daily average coal consumed.	Total pounds of wood consumed.	Gallons pumped per pound of coal.
	No. 1.	No. 2.	No. 1.	No. 2.									
January	3	26	26			H. M. 269:30	H. M. 8:39	23,171,815	747,477	44,428	1,433	1,698	521
February ...	...	25	25			244:	8:42	21,925,126	783,040	41,016	1,464	1,650	534
March .....	...	25	25			255:	10:1	22,575,192	903,007	41,396	1,655	2,495	545
April	24	3	26			236:30	9:5	18,496,506	616,550	38,112	1,276	2,087	485
May	21	9	25			252:	10:4	21,415,395	690,819	41,420	1,336	2,521	517
June	13	12	31			295:30	9:51	25,384,981	846,166	46,699	1,556	2,150	543
July	15	19	31			328:30	10:35	29,316,964	945,708	53,677	1,731	.....	546
August	15	19	31			318:30	10:16	27,962,480	902,015	51,369	1,657	.....	544
September..	14	12	28			290:	9:40	25,076,675	835,889	46,537	1,551	870	538
October	16	16	27			284:30	10:32	23,762,965	785,902	44,976	1,452	1,519	528
November..	14	15	24			241:30	8:2	20,141,951	671,398	38,533	1,284	2,261	522
December..	15	18	26			262:	7:29	22,031,345	710,688	41,733	1,346	3,225	527
Total . . .	150	221	325		3,278:	.....	.....	281,261,395	773,318	529,895	1,451	20,494	530
Daily av'rage .....	.....	.....	.....	.....	.....	.....	8:58	773,318	.....	1,451	.....	.....	.....

* Amount of coal consumed includes that used for starting fires, banking fires and heating buildings.

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

HENRY A. ROWELL,
Engineer.

**CITY TREASURER'S CONDENSED STATEMENT OF
WATER-WORKS ACCOUNT.**

W. F. Thayer, treasurer, in account with Concord Water-Works.

RECEIPTS.

Balance on hand, January 1, 1913,	\$16,998.48	
P. R. Sanders, superintendent,	76,154.45	
	—————	\$93,152.93

EXPENDITURES.

Interest on bonds,	\$20,263.34	
Bonds paid,	15,000.00	
Orders paid,	25,307.13	
Cash on hand,	32,582.46	
	—————	\$93,152.93

AUDITOR'S STATEMENT.

I hereby certify that I have examined the books showing the receipts of the Concord Water-Works from January 1, 1913, to December 31, 1913, and find the same correct; and that the total amounts given therein correspond with the amount of receipts given by Percy R. Sanders, superintendent, in his report for the year, and also with the receipts reported by William F. Thayer, city treasurer.

HENRY E. CHAMBERLIN.

APPENDIX.

A.

RECEIPTS FOR EACH YEAR SINCE THE CONSTRUCTION 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
“ “ “ 1900,	*57,003.71
“ “ “ 1901,	62,253.61
“ “ “ 1902,	63,430.85
“ “ “ 1903,	65,088.45
“ “ “ 1904,	68,570.48

WATER DEPARTMENT.

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For the year ending December 31, 1905,		\$71,076.44
“ “ “ 1906,		73,063.45
“ “ “ 1907,		73,782.64
“ “ “ 1908,		71,362.67
“ “ “ 1909,		†67,307.84
“ “ “ 1910,		68,673.71
“ “ “ 1911,		71,881.34
“ “ “ 1912,		76,145.13
“ “ “ 1913,		76,154.45
		<hr/>
Total receipts for 39 years,		\$1,921,519.87

* No hydrant rental this year.

† No hydrant rental after 1908.

B.

MEAN HEIGHT OF WATER EACH YEAR.

1873,	175.86	1894,	172.81
1874,	179.50	1895,	171.15
1875,	180.00	1896,	178.96
1876,	180.28	1897,	183.33
1877,	176.46	1898,	184.31
1878,	179.50	1899,	183.49
1879,	179.74	1900,	183.09
1880,	175.30	1901,	183.86
1881,	174.70	1902,	184.98
1882,	179.15	1903,	184.75
1883,	176.40	1904,	184.40
1884,	178.18	1905,	183.37
1885,	176.80	1906,	183.94
1886,	178.10	1907,	183.59
1887,	179.04	1908,	183.41
1888,	181.96	1909,	181.40
1889,	180.91	1910,	180.22
1890,	181.90	1911,	177.60
1891,	180.00	1912,	178.86
1892,	174.32	1913,	179.20
1893,	173.38		

Broadway	2278	2052	6	154	1	2	1
Cambridge		508	763		4		1
Capitol			1077		3		4
Carter		3529	2650		4	1	3
Centre			306		9		4
Chandler			585	56	1		1
Chapel			585	516	1		1
Charles			265		5		1
Chestnut			100	547	2		2
Church			100				
Clarke			1663		1		1
Clinton		1942	180				
Columbus Avenue					1		1
Concord	2100		1593	286			2
Court			670				2
Curtice Avenue			422				2
Dakin			19	836			2
Dartmouth			352				2
Depot			387	242			1
Donovan			456				1
Downing			1977	92			1
Dunklee			1195				1
Durgin			265				1
Eastman			400	400			1
Electric			550				1
Elm			270	607			3
Fugel			388				1
Essex			587				1
Essex North			262				2
Fairbanks			74				1
Fayette			1187				3
Ferry			1000	1066			2
Fisher			343				2
Fiske			750				1
Fiske Road					1		1
Ford Place			628	225			1
Forest			180				2
Foster			1317				1
Franklin		2166	286		4		4
Freight		438					1
Fruit	120			500			2
Fruit North			1073				1
Fruit South			2653	16			3
Fuller				88			3

