

CHEMICAL ENGINE COMPANY, NO. 1.

<i>Badge Nos.</i>	<i>Names.</i>	<i>Occupations.</i>	<i>Residences.</i>
91	M. S. Wakefield,	Permanent engineer and driver,	Central Station.
92	M. J. Martin,	Permanent assistant engineer,	Central Station.

PIONEER STEAM FIRE ENGINE COMPANY, NO. 3.

Penacook.

OFFICERS.

HENRY ROLFE, <i>Captain.</i>	FRANK P. ROBERTSON, <i>Lieut., Clerk and Treas.</i>
WALTER H. ROLFE, <i>Engineer.</i>	JOHN B. DODGE, <i>Steward.</i>

MEMBERS.

<i>Badge Nos.</i>	<i>Names.</i>	<i>Occupations.</i>	<i>Residences.</i>
100	Henry Rolfe,	Highway agent,	26 Penacook Street.
101	Frank P. Robertson,	Machinist,	6 Church Street.
102	Walter H. Rolfe,	Foreman,	37 Center Street.
106	Fred H. Morrill,	Sash maker,	45 Summer Street.
108	Albert S. Andrews,	Teamster,	14 Summer Street.
109	Alfred Beddow,	Stationary engineer,	44 Elm Street.
110	John B. Dodge,	Janitor,	59 Merrimack Street.
112	Fred C. Ferrin,	Band-sawyer,	46 South Main Street.
113	Peter A. Keenan,	Table maker,	92 High Street.
116	Frank A. Faneuf,	Machinist,	13 Charles Street.
117	Fred J. Guild,	Electrician,	46 Summer Street.
118	George A. Griffin,	Painter,	15 Washington Street.
103	Harry F. Jones,	Teamster,	7 Washington Street.
119	Ruel G. Morrill,	Farmer,	75 Washington Street.
105	Fred Migneault,	Teamster,	19½ Washington Street.
121	Cornelius W. O'Brien,	Mill operative,	43 South Main Street.
122	Edward G. Kenney,	Machinist,	21 Pleasant Street.
123	William Corbett,	Axle maker,	44 Center Street.
104	Frank E. Goodwin,	Teamster,	19 Washington Street.
111	William H. McGirr,	Second hand,	46 Charles Street.
114	Thomas F. O'Brien,	Mill operative,	41 South Main Street.
120	Frank D. O'Brien,	Expressman,	19 Church Street.
107	Joseph A. York,	B. & M. shops,	20 Main Street.
124	Delmar R. Jones,	Teamster,	123 Merrimack Street.

OLD FORT ENGINE COMPANY, NO. 2.

East Concord.

OFFICERS.

GEORGE O. ROBINSON, *Captain.*
C. E. ROBINSON, *Lieut. and Clerk.*

JOHN C. HUTCHINS, *Treasurer.*
CHARLES P. WHITE, *Steward.*

MEMBERS.

<i>Names.</i>	<i>Occupations.</i>	<i>Residences.</i>
George O. Robinson,	Water dealer,	Penacook Street.
C. E. Robinson,	Clerk,	Penacook Street.
John C. Hutchins,	Engineer,	Penacook Street.
William L. Batchelder,	Farmer,	Potter Street.
Samuel G. Potter,	Milk dealer,	Appleton Street.
Charles P. White,	Janitor,	Pembroke Street.
William E. Virgin,	Carpenter,	Penacook Street.
Rufus C. Boynton,	Belt maker	Penacook Street.
Fred S. Farnum,	Carpenter,	Penacook Street.
Shad Cate,	Farmer,	Pembroke Street.
Ross W. Cate,	Horseshoer,	Penacook Street.
George E. Cate,	Blacksmith,	Penacook Street.
William A. Cowley,	Storekeeper,	Penacook Street.
Herbert Knowles,	Carpenter,	Shawmut Street.
James Cox,	Section foreman,	Penacook Street.
Daniel Lewis,	Driver,	Shawmut Street.
Thomas Spaulding,	Farmer,	Portsmouth Street.
Parker French,	Janitor,	Penacook Street.
Wesley Field,	Milkman,	Penacook Street.
John W. Sanborn,	Farmer,	Penacook Street.
Walter C. Sanborn,	Wood worker,	Portsmouth Street.
Arthur P. Swain,	Moulder,	Penacook Street.
Michael Lacroix,	Blacksmith,	Mill Street.
Clarence Tibbetts,	Clerk,	East Clinton Street.
Reuben L. Cate,	Carpenter,	Cemetery Street.
John T. Cate,	Carpenter,	Shawmut Street.
C. A. Chamberlin,	Farmer,	Shawmut Street.
William F. Page,	Painter,	Shawmut Street.
Lloyd Virgin,	Carpenter,	Penacook Street.

CATARACT ENGINE COMPANY, NO. 2.

West Concord.

OFFICERS.

HIRAM E. QUIMBY, *Captain.*ANDREW J. ABBOTT, *Treasurer.*ALFRED J. FRASER, *Lieut. and Clerk.*FRANK C. BLODGETT, *Steward.*PATRICK RYAN, *Foreman of Hose.*

MEMBERS.

<i>Names.</i>	<i>Occupations.</i>	<i>Residences.</i>
Hiram E. Quimby,	Stonecutter,	490 North State Street.
Alfred J. Fraser,	Stonecutter,	458 North State Street.
Andrew J. Abbott,	Farmer,	382 North State Street.
Jeremiah Cotter,	Blacksmith,	5 Engel Street.
Patrick Ryan,	Stonecutter,	50 Hutchins Street.
Abial C. Abbott,	Quarryman,	513 North State Street.
Frank G. Peterson,	Stonecutter,	346 North State Street.
James W. Powers,	Stonecutter,	3 Fisher Street.
William D. Harrington,	Mill operative,	50 Hutchins Street.
Frank C. Blodgett,	Stonecutter,	436 North State Street.
Edward Lovering,	Stonecutter,	1 Clark Street.
Abram D. Cushing,	Blacksmith,	517 North State Street.
Joseph Daley,	Blacksmith,	455 North State Street.
Luther E. Rowe,	Quarryman,	453 North State Street.
Robert Henry,	Silversmith,	513 North State Street.
Benjamin Kemp,	Laborer,	461 North State Street.
John Harrison,	Loom repairer,	519 North State Street.
Clarence J. Spead,	Plumber,	439 North State Street.
Arthur Spead,	Stationary engineer,	439 North State Street.
Matthew H. Peabody,	Stationary engineer,	14 View Street.

VETERANS' AUXILIARY COMPANY.

OFFICERS.

WILLIAM E. DOW, *Captain.*FRED S. JOHNSON, *Lieutenant.*

MEMBERS.

W. E. Dow,	Fred S. Johnson,
J. E. Howard,	A. L. Walker,
F. D. Hurd,	S. S. Upham,
G. H. Davis,	A. G. Jewett,
J. M. Colbert,	F. T. Smith,
E. F. Horne,	W. W. Kennedy,
D. Holloran,	A. O. Mansur,
C. E. Palmer,	O. Thompson,
C. C. Hill,	G. A. Mitchell,
C. L. Mason,	E. A. Saltmarsh,
W. M. Chase,	D. B. Newhall,
C. F. Thompson,	W. K. Wingate,
D. L. Neal,	C. H. Barrett,
A. H. Britton,	F. Leighton,
C. A. Herbert,	H. P. Bowers.

WATER DEPARTMENT.

1909.

BOARD OF WATER COMMISSIONERS.

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

SOLON A. CARTER,	to March 31, 1913.
HARLEY B. ROBY,	to March 31, 1913.
HENRY C. HOLBROOK,	to March 31, 1912.
HENRY E. CONANT,	to March 31, 1912.
EDSON J. HILL,	to March 31, 1911.
GEORGE D. B. PRESCOTT,	to March 31, 1911.
HARRY H. DUDLEY,	to March 31, 1910.
NATHANIEL E. MARTIN,	to March 31, 1910.

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 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.
William P. Fiske,	1891—1902.
James H. Chase,*	1891. Died in 1893.
John Whitaker,*	1892. Died in 1903.

* Deceased.

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. Now in office.
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. Now in office.
Charles J. French, <i>ex officio</i> ,	1909. 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,	1891-1902.
Solon A. Carter,	1902. Now in office.

SUPERINTENDENTS.

V. C. Hastings,*	1873. Died March 4, 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
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
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

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

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

Paid 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. Halloran, for land,	600.00
Wheelock Club, for land,	1,400.00*
C. H. Amsden, water and flow- age 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,	29,484.05
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 Streets, and high service main from Penacook Street to Stark Street, Pena- cook),	182,241.70
distribution pipe,	367,244.25
service pipe,	53,180.00
reservoir,	42,460.09
pumping station, shop, stable and storehouse,	22,000.00
pumping machinery,	17,000.42
Cost engineering and superintend- ence,	14,913.12
incidentals,	6,531.19
Cost of works January 1, 1910,	<hr/> \$997,203.01

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

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, 1910,	4,	\$5,000.00
Jan. 1, 1910,	3,	5,000.00
Jan. 1, 1911,	4,	5,000.00
Jan. 1, 1911,	3,	5,000.00
April 1, 1912,	3½,	10,000.00
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
Jan. 1, 1920,	3,	10,000.00
Jan. 1, 1921,	3,	5,000.00
April 1, 1921,	3½,	5,000.00
Jan. 1, 1922,	4,	400,000.00
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
		<hr/>
		\$600,000.00

REPORT OF WATER COMMISSIONERS.

OFFICE OF THE BOARD OF WATER COMMISSIONERS.

CONCORD, N. H., January 13, 1910.

To His Honor the Mayor and the City Council:

The Board of Water Commissioners transmits herewith the report of Percy R. Sanders, superintendent, exhibiting in detail the operations of the department for the year 1909, which is made a part of this report.

The past year has witnessed the practical completion of the work of substituting cast-iron for the cement-lined pipe on the original system which has drawn so heavily upon our resources for the past few years.

The board finds itself at the outset of the new year in a position that will not require the purchase of any new pipe to carry on the work contemplated for the coming year.

Reference to the report of the superintendent will show that more than the usual amount of work has been done the past year in policing and cleaning the shores of Penacook Lake and in improvements upon the dam and gate-house which was made possible by the low stage of water in the lake.

We feel sure that at no time since the installation of the system has the condition of the plant and all its appurtenances and appliances been more satisfactory than at present.

Further extensions of the system will undoubtedly be demanded in the future and the policy of the board will be to concede all reasonable demands, *i. e.*, where the prospective income will yield a fair return upon the cost.

During the year the board has considered a numerously signed petition from residents of the Plains district for an extension of the distributing mains to that section, which was referred to it by the city government.

A public hearing of which due notice was given, afforded the petitioners an opportunity to present the needs of that portion of the city.

The board fully realized the advantages to the petitioners which a compliance with their request would afford, but it was unanimously of the opinion that such action was impracticable for the the following reasons :

- 1st. The territory in question is not within the precinct.
- 2d. The intersecting streets through which the pipes must be laid to accommodate the petitioners have never been laid out and accepted as highways and the city cannot expend money on private land.
- 3d. The section cannot be served from our gravity or low service system, but every drop of water supplied would have to be pumped and distributed from the high service.
- 4th. The expense of the extension (including the crossing of the river), estimated at \$23,000, is entirely disproportionate to the prospective revenue, estimated at less than \$400 per annum.
- 5th. The installation of the high service in that section would necessitate a further large expenditure for sewerage.
- 6th. Any facilities for fire protection afforded by the proposed extension must be supplemented by very considerable further outlay for additional fire apparatus.
- 7th. The quantity and quality of the present supply when the promised improvements in the system are completed, will, in the judgment of the board, be adequate and reasonably satisfactory for domestic purposes.

Respectfully submitted,

SOLON A. CARTER,
 HARLEY B. ROBY,
 HENRY C. HOLBROOK,
 HENRY E. CONANT,
 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 thirty-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, 1909 :

RECEIPTS.

For water, from consumers by fixed rates,	\$21,095.08	
For water, from consumers by meter rates,	45,287.44	
From delinquents,	110.05	
For shutting off and turning on water,	2.00	
For water for building purposes,	47.60	
hay and apples sold,	25.00	
pipe and stock sold and labor,	467.17	
old brass and iron sold,	65.95	
wood sold,	104.00	
building sold,	100.00	
horse sold,	65.00	
	<hr/>	\$67,369.29
Deduct abatements,		61.45
Net receipts for 1909,		<hr/>
		\$67,307.84

EXPENDITURES.

GENERAL EXPENSES.

Paid pay rolls, salaries and labor,	\$9,654.13
S. G. Sanborn, rent of shop in Penacook,	24.00
Ira C. Evans Co., printing and postage,	186.10

Paid Rumford Printing Co., books,	\$26.00
A. P. Walker, office supplies,	2.79
George H. Richardson, office supplies,	1.50
Library Bureau, office supplies,	1.25
C. F. Nichols, office supplies,	1.00
Patriot Publishing Co., advertising,	7.50
<i>Concord Evening Monitor</i> , advertising,	1.25
Concord Electric Co., lighting,	12.64
New England Tel. & Tel. Co., telephones,	106.15
J. M. Stewart & Sons Co., supplies,	3.96
W. A. Thompson, rubber boots,	23.25
John C. Thorne, rubber boots,	22.00
Thompson & Hoague Co., hardware,	54.20
W. L. Jenks & Co., hardware,	44.08
A. H. Britton & Co., hardware,	20.31
C. H. Hanson & Co., horse,	270.00
Joseph T. Walker, hay,	110.79
Walter S. Dole, grain and straw,	153.99
G. N. Bartemus & Co., grain and straw,	30.67
James R. Hill & Co., harness,	32.50
Henry E. Conant, stable fixtures,	20.00
Elmer Trombly, tree climbers,	2.75
Highway Department, crushed stone,	18.00
George E. McQuesten Co., lumber,	54.08
Hutchinson Building Co., lumber and labor,	95.12
Concord Lumber Co., lumber,	51.64
Page Belting Co., stock and labor,	27.76
Batchelder & Co., oil, etc.,	23.90
C. H. Martin & Co., naphtha, lard oil, etc.,	13.35

Paid George Abbott, Jr., paint,	\$11.32
National Paint & Varnish Co.,	
paint,	9.00
E. DeF. Wilkinson Co., paint,	8.75
Woodworth & Co., cement,	167.25
Dickerman & Co., cement,	9.95
A. P. Smith Manufacturing Co.,	
tapping machine and connec-	
tion,	436.30
Lynchburg Foundry Co., cast-iron	
pipes,	4,941.33
Builders Iron Foundry, castings,	331.11
Concord Foundry & Machine Co.,	
castings,	54.37
Ford & Kimball, castings and	
coke,	25.80
Water Works Equipment Co.,	
castings and valves,	358.05
Ludlow Valve Manufacturing Co.,	
valves and hydrants,	698.68
Rensselaer Manufacturing Co.,	
hydrants,	360.00
Fairbanks Co, hydrant repairs	
and valves,	24.90
Lunkenheimer Co., valves,	59.65
Chadwick-Boston Lead Co., pig	
lead and lead pipe,	566.07
Bingham & Taylor, gate-boxes.	28.22
J. H. Cunningham Co., wrought-	
iron pipe and fittings,	263.79
George E. Gilchrist Co., fittings,	96.99
Crane Co., fittings,	62.23
Hays Manufacturing Co., curb-	
boxes,	15.25
Walworth Manufacturing Co.,	
tools and fittings,	171.70
H. Mueller Manufacturing Co.,	
brass goods,	129.32

Paid Concord Pipe Co., pipe and fittings,	\$14.45
M. E. Clifford & Co., pipe and fittings,	13.33
Orr & Rolfe, fittings,	7.56
Harold L. Bond & Co., tools,	122.19
National Meter Co., meters and repairs,	706.40
Thomson Meter Co., meters and repairs,	660.95
Henry R. Worthington, meters,	400.00
Union Water Meter Co., meters,	204.10
Neptune Meter Co., meters,	126.00
Pittsburg Meter Co., meters,	106.20
Globe Horseshoeing Shop, smith work,	54.95
Ross W. Cate, smith work,	19.20
Chandler Eastman Sons Co., repairs,	45.75
Abbot-Downing Co., repairs,	6.25
George D. Huntley, repairs,	2.95
C. Pelissier & Co., repairs and supplies,	56.75
James Cookson, repairs,	5.45
Henry M. Richardson, team work,	234.58
George L. Theobald, team work and horse hire,	69.28
F. W. Sanborn, auto hire,	12.00
N. A. Dunklee, horse hire,	8.00
H. T. Corser & Co., clipping horse,	2.00
George F. Tandy, repairing concrete,	122.55
John Lugg, mason work,	136.80
Rowell & Plummer, mason work,	18.74
Charles H. Barnett, repairing dam at Long Pond in Webster,	126.19
J. G. McQuilkin, use of steamboat,	110.00

Paid Morrill & Danforth, insurance and bond,	\$197.06
Eastman & Merrill, insurance,	9.00
Boston & Maine Railroad, freight,	1,159.13
town of Webster, taxes,	60.00
<i>Engineering News</i> ,	5.00
A. G. Cochran, clerk, cash paid out, car fares, express, postage, etc,	131.13
P. R. Sanders, expenses to Water Works Convention,	30.00
Wheelock Club, land and buildings,	1,500.00
incidentals,	8.21
	<hr/> \$26,418.84

PUMPING STATION EXPENSES.

Paid pay rolls, engineer and fireman,	\$1,655.00
labor on fuel,	52.61
S. P. Burton & Co., coal,	846.27
Concord Lumber Co., coal and slabs,	65.25
W. C. Robinson & Sons Co., oil,	91.20
Eagle Oil & Supply Co., packing,	11.00
Revere Rubber Co., packing,	34.95
Lunkenheimer Co., supplies,	27.87
Concord Foundry & Machine Co., supplies,	2.95
Walworth Manufacturing Co., supplies,	6.58
Page Belting Co., belting, etc.,	9.83
Rowell & Plummer, mason work,	17.43
Concord Pipe Co., fittings,	1.04
Thompson & Hoague Co., hardware,	7.68
W. L. Jenks & Co., hardware,	2.88
Morrill & Danforth, insurance,	75.00
Boston & Maine Railroad, freight,	286.71

WATER DEPARTMENT.

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Paid Concord Light & Power Co., lighting,	\$12.18	
New England Tel. & Tel. Co. telephone,	37.50	
	<u> </u>	3,243.93
Total expenditures for 1909,		\$29,662.77
The expenditures are divided as follows:		

GENERAL EXPENSES.

For care and maintenance,	\$3,937.38	
office expenses,	1,104.61	
inspection,	780.00	
care and repair of hydrants,	269.94	
new service-pipes,	1,231.41	
new distribution-pipes,	9,653.19	
new hydrants,	1,730.93	
meter account,	2,820.71	
repairs on dam,	1,500.84	
work at Penacook Lake,	922.38	
care of wood lots at Penacook Lake,	438.35	
repairs on dam at Long Pond in Webster,	210.07	
incidentals,	318.51	
	<u> </u>	\$26,418.84

PUMPING STATION EXPENSES.

For salaries, engineer and fireman,	\$1,655.00	
fuel,	1,248.23	
oil and packing,	137.15	
repairs,	68.31	
supplies,	10.56	
lighting and telephone,	49.68	
insurance,	75.00	
	<u> </u>	\$3,243.93

EXTENSIONS AND IMPROVEMENTS.

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

In Broadway,

south from Allison to Stone Street, 1,075 feet 12-inch pipe in place of 6-inch cast-iron pipe discontinued.

In Broadway,

south from Stone to below McKinley Street, 1,464 feet 10-inch pipe in place of 6-inch cast-iron pipe discontinued.

In Broadway,

extended south from below McKinley to Rockingham Street, 588 feet 10-inch pipe.

In Rumford Street,

north from School to Washington Street, 1,218 feet 8-inch pipe in place of 4-inch cement-lined pipe discontinued.

In Hutchins Street, West Concord,

extended west from Quaker Street, 589 feet 6-inch pipe.

In Garden Street,

west from Rumford to Huntington Street, 194 feet 6-inch pipe.

On hydrant branches,

179 feet 6-inch pipe; 15 feet 6-inch cement-lined pipe discontinued.

On blow-off,

39 feet 6-inch pipe; 39 feet 4-inch pipe discontinued.

Also 881 feet of 1-inch pipe.

Seventeen new hydrants have been set, as follows :

- On Franklin Street, between Auburn and High.
- On Garden Street at Huntington.
- On South Street at Pillsbury.
- On Broadway at Carter.
- On Broadway between McKinley and Rockingham.
- On Rockingham Street at Donovan.
- On Donovan Street at Wiggin.
- On Hutchins Street, West Concord, at J. O. Turcotte's.
- On Penacook line, opposite F. E. Frost's.
- On Penacook line, opposite F. H. Blanchard's.
- On Penacook line, at H. B. Annis'.
- On Penacook line, at W. H. Garvin's.
- On Penacook line, south of Willow Hollow.
- On Penacook line, at south end of Woodlawn Cemetery.
- On Centre Street, Penacook, at Michael Corbett's.
- On High Street, Penacook, at Stark.
- On Summer Street, Penacook, at Church.

There have been set 26 gates ; discontinued, 7.

SUMMARY OF THE FOREGOING.

NEW PIPES, HYDRANTS AND STOP-GATES.

<i>Pipes.</i>		<i>Hydrants.</i>		<i>Stop-Gates.</i>	
1-in.,	881 feet.	In city,	10	6-in.,	20
6-in.,	1,001 "	In Penacook,	7	8-in.,	4
8-in.,	1,218 "			10-inch.,	2
10-in.,	2,052 "				
12-in.,	1,075 "				
	<u>6,227 feet,</u>		<u>17</u>		<u>26</u>
equal to 1.179 miles.					

PIPES AND STOP-GATES DISCONTINUED.

<i>Pipes.</i>		<i>Stop-Gates.</i>	
4-in.,	1,242 feet.	4-in.,	3
6 in.,	2,613 "	6-in.,	4
	<u>3,855 feet,</u>		<u>7</u>
equal to .73 miles.			

Total length of main and distribution pipes now in use, 357,652 feet, equal to 67.74 miles.

Total number of hydrants now in use, 389.

Total number of gates now in use, 945.

SERVICE PIPES.

There have been laid during the year and connected with the main pipes, 48 service pipes consisting of

40 $\frac{3}{4}$ -inch,	993 feet.
1 1-inch,	21 "
5 2-inch,	122 "
2 6-inch,	60 "
48	1,196 feet.

There have been discontinued, 5; whole number in use at the present time, 3,670; total length of service pipes, 85,206 feet, or 16.14 miles. We have placed 52 service boxes at the curb on old services and have relaid 17 services.

We have set 234 meters during the year; 2 have been removed, making the total number now in use, 1,764.

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

January,	180.15	July,	183.80
February,	180.00	August,	182.45
March,	180.60	September,	181.20
April,	182.00	October,	180.50
May,	184.60	November,	179.95
June,	184.45	December,	179.30

The lowest point reached during the year was on December 31, being 179.20; the highest was on May 10 and was 184.65; mean height for the year was 181.40, which was 2.01 feet lower than the mean height for the year 1908.

The work of cleaning up the shores of the lake has been continued this season, and we have been able by reason of the low stage of the water to remove a very large number of

stumps. These were placed in large piles and, as soon as they became sufficiently dry, were burned.

The underbrush was also cleaned back a short distance from the shore, to enable a more thorough inspection, and this was disposed of in the same manner as the stumps.

The cleaning and thinning of the woodlots was carried on during the winter months by cutting out old and dying trees and trimming the underbrush.

The construction work of the year in the laying and relaying of new mains was carried out, as shown by the schedule. The most important was the relaying on Broadway, the 6-inch cast-iron from Pillsbury to below McKinley Street being replaced by 12-inch and 10-inch iron, and the extension of the 10-inch iron from below McKinley to Rockingham Street. The 6-inch pipe taken up was in good condition, and is stored at the pipe yard at the pumping station and will be laid again as needed.

On Rumford Street, the 4-inch cement-lined from School to Washington Street was replaced by 8-inch cast-iron.

We have set 17 new hydrants this season, as recommended by the hydrant commission, thereby enabling the system to be of greater efficiency in case of fire.

The purchase of a tapping machine this season, for making 2, 4, 6 and 8-inch cuts under pressure, has permitted the department to set six hydrants on the 14-inch cement-lined main between West Concord and Penacook and to make several other connections without interfering with the supply.

We have made some repairs on the east fence on the dam at Penacook Lake by building a concrete curb and gutter, and a concrete walk has been laid from the road to the gate house.

The road across the dam from Hutchins Street to the Park has been placed in first-class condition by the addition of a heavy coating of stone chips and crushed stone.

The wooden dam at the outlet of Long Pond in Webster having become insecure by reason of age, it was decided, after inspection by members of your Board, to replace it with a structure of the same material. The lumber was furnished by

the department and the labor by C. H. Barnett of Penacook, and the dam is now in better condition than ever.

I wish, in submitting this report, to thank the president and members of the Board for their advice and assistance to me during the past year.

Respectfully submitted,

PERCY R. SANDERS,

Superintendent.

REPORT OF THE ENGINEER OF THE 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 good working order. Boiler No. 2 will need a set of new grates this coming year.

Following will be found 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.

101 tons 64 pounds Cumberland coal.
150 tons 391 pounds Pocahontas coal.
91 gallons of oil.
43 pounds of waste.
17 cords of wood.
18 pounds of grease.

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 pumped.	* Total coal consumed.	Daily average consumed.	Total pounds of wood consumed.	Gallons pumped per pound of coal.
January	14	16	26	H. M. 287:	H. M. 9:15	24,467,601	789,277	48,098	1,551	1,631	508
February ...	8	19	24	265:	9:27	22,973,677	820,488	43,082	1,538	1,660	533
March.....	15	18	27	287:30	9:15	24,406,033	787,291	46,832	1,510	2,079	521
April.....	11	16	26	253:	8:26	22,397,327	726,577	43,586	1,452	2,542	513
May.....	6	22	26	277:	8:56	23,441,180	756,167	44,706	1,442	2,509	524
June.....	9	24	27	310:	10:20	27,260,988	908,699	50,819	1,693	1,265	536
July.....	12	23	28	317:30	10:14	28,199,846	909,672	51,896	1,648	1,678	543
August.....	6	26	27	307:30	9:55	26,969,647	869,988	48,647	1,569	2,093	554
September..	4	23	27	276:30	9:13	24,254,527	808,484	44,883	1,496	1,668	540
October.....	4	25	25	278:	8:58	25,496,894	822,480	47,107	1,519	1,649	541
November .	14	18	25	287:	9:34	25,753,569	858,452	49,385	1,646	2,549	521
December ..	3	26	27	256:	8:15	23,493,727	757,862	43,654	1,408	2,105	538
Total....	106	256	315	3,402	.....	299,115,016	819,493	562,695	1,541	23,428	531
Daily av'ge. ....	.....	.....	.....	.....	9:19	819,493	.....	1,541	.....	.....	.....

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

Amount of coal consumed per thousand gallons pumped, 1.83 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, 1909,	\$24,412.40	
P. R. Sanders, superintendent,	67,307.84	
	<hr/>	
		\$91,720.24

EXPENDITURES.

Interest on bonds,	\$23,375.00	
Bonds paid,	10,000.00	
Orders paid,	29,662.77	
Cash on hand,	28,682.47	
	<hr/>	
		\$91,720.24

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
	<hr/>
Total receipts for 37 years,	\$1,628,665.24

* No hydrant rental this year.

B.

MEAN HEIGHT OF WATER EACH YEAR.

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

D.

FIRE-HYDRANTS.

STREETS.	LOCATIONS.	Number.	Total.		
North Main...	Southwest 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			
	Northwest corner North Main and Franklin	1			
	East side North Main, opposite Pearl	1			
	Northwest corner North Main and Washington	1			
	West side North Main, opp. Historical Society rooms ..	1			
	East side North Main, opposite Chapel	1			
	Northwest corner North Main and Court	1			
	Northwest corner North Main and Pitman	1			
	Northwest corner North Main and Montgomery	1			
	East side North Main, opposite Montgomery	1			
	Northwest corner North Main and Centre	1			
	Southeast corner North Main and Bridge	1			
	Southwest corner North Main and Park	1			
	East side North Main, opposite Park	1			
	Northwest corner North Main and Capitol	1			
	Northwest 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			
	Northwest corner North Main and Warren	1			
	West side North Main, at Central Block	1			
	Northeast corner North Main and Depot	1			
	Northwest corner North Main and Pleasant	1			
	South Main...	Southeast corner South Main and Pleasant		1	27
		Northeast corner South Main and Freight		1	
		East side South Main, opposite Fayette		1	
		East side South Main, opposite Thompson		1	
		Southeast corner South Main and Chandler		1	
Northwest corner South Main and Wentworth Avenue ..		1			
Northwest corner South Main and Thorndike		1			
East side South Main, opposite St. John's Church		1			
Northwest 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			
East side South Main, near West		1			
Northeast corner South Main and Gas		1			
West side South Main, opposite Holt Bros. Mfg. Co.		1			
Southwest corner South Main and South State		1			
Northwest corner South Main and Pillsbury		1			
East side South Main, opposite Pillsbury		1			
West side South Main, opposite Langdon		1			
West side South Main, at J. H. Lamprey's		1			
West side South Main, at W. J. Sawyer's		1			
Water	West side Water, near Capt. James Thompson's	1	20		
	Hall	1			
Hall	West side Hall, opposite Rolfe and Rumford Asylum ..	1	1		
	West side Hall, near E. W. Robinson's	1			
	West side Hall, near F. H. George's	1			
	West side Hall, opposite Hammond	1			
	West side Hall, below Hammond	1			
	East side Hall, opposite W. H. Page's	1			
	East side Hall, near Rumford Field	1			
	Hammond	North side Hammond, near Bridge		1	7
		Railroad		1	
	Railroad	East side Railroad, opposite Ford & Kimball's		1	1
Fiske	West side Fiske, near North State	1			
Summer	Northeast corner Summer and Pitman	1	1		
Durgin	East side Durgin, opposite Toof's laundry	1			

FIRE-HYDRANTS.—Continued.

STREETS.	LOCATIONS.	Number.	Total.
North State...	Southwest corner North State and Penacook	1	13
	Northwest corner North State and Walker	1	
	Northwest corner North State and Church	1	
	Northeast corner North State and Franklin	1	
	Northwest corner North State and Tremont	1	
	Northeast corner North State and Washington	1	
	West side North State, opposite Court	1	
	Southwest corner North State and Maple	1	
	Southeast corner North State and Centre	1	
	Southeast corner North State and Park	1	
	Southwest corner North State and School	1	
	Southeast corner North State and Warren	1	
	Northwest corner North State and Pleasant	1	
	East side South State, opposite Wall	1	
South State...	Northwest corner South State and Thompson	1	
	Southwest corner South State and Monroe	1	
	East side South State, opposite Laurel	1	
	Northeast corner South State and Downing	1	
Mills	Northeast corner South State and West	1	
	Southwest corner South State and Harrison	1	
	West side Mills, near Levi Call's	1	
Dakin	Northwest corner Mills and Allison	1	
	West side Dakin, near C. E. Harriman's	1	
Dunklee	West side Dunklee, 150 feet south of West	1	
	Northwest corner Dunklee and Allison	1	
Broadway.....	Northwest corner Dunklee and Pillsbury	1	
	West side Broadway at H. H. Metcalf's	1	
	Northwest corner Broadway and Allison	1	
	Northwest corner Broadway and Carter	1	
	Northwest corner Broadway and Stone	1	
	West side Broadway at Rollins Park	1	
	West side Broadway, opposite McKinley	1	
Donovan.....	West side Broadway, betw'n McKinley and Rockingham	1	
	Northeast corner Donovan and Wiggin	1	
Green.....	Northwest corner Green and Prince	1	
	East side Green, opposite Prince	1	
South ..	Northwest corner Green and Warren	1	
	West side South, opposite Wall	1	
	Northwest 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, opposite Pillsbury	1	
West side South, near Abbot farm	1		
Bradley	West side South, opposite I. W. Bushey's	1	
	Northwest corner South and Iron Works Road	1	
	East side South, at Quint's	1	
	West side South, near Bow line	1	
	Southwest corner Bradley and Penacook	1	
	Northwest corner Bradley and Walker	1	
Union.....	East side Bradley, opposite Highland	1	
	Northwest corner Bradley and Franklin	1	
Jackson.....	Northwest corner Union and Maple	1	
	Northeast corner Jackson and Church	1	
Lyndon.....	Southwest corner Lyndon and Tremont	1	
	East side Lyndon, opposite Abbott	1	
North Spring..	East side Lyndon, opposite Abbott	1	
	Northeast corner North Spring and Maple	1	
South Spring..	Southwest corner North Spring and Centre	1	
	East side North Spring, opposite High School	1	
	Southwest corner South Spring and Oak	1	
Academy.....	West side South Spring, opposite Concord	1	
	West side So. Spring, opp. Perley proposed extension	1	
Rumford.....	East side Academy, at William E. Dow's	1	
	West side Rumford, south of cemetery gate	1	

FIRE-HYDRANTS.—Continued.

STREETS.	LOCATIONS.	Number.	Total.
Rumford.....	West side Rumford, opposite Perkins.....	1	
	Northeast corner Rumford and Albin.....	1	
	Northeast corner Rumford and Franklin.....	1	
	Northwest corner Rumford and Beacon.....	1	
	Northeast corner Rumford and Abbott.....	1	
	Northeast corner Rumford and Cambridge.....	1	
	Northwest corner Rumford and Centre.....	1	
Huntington...	Northeast corner Rumford and School.....	1	9
	West side Huntington, at head of Short.....	1	
Tahanto.....	Northwest corner Tahanto and School.....	1	1
Pine.....	Southwest corner Pine and Centre.....	1	2
	Southwest corner Pine and Warren.....	1	
Holt.....	East side Holt, at Nason's.....	1	1
High.....	Northwest corner High and Auburn.....	1	3
	East side High, opposite Forest.....	1	
	Southwest corner High and Franklin.....	1	
Valley.....	Northeast corner Valley and Forest.....	1	1
Auburn.....	Northeast corner Auburn and Forest.....	1	1
Ridge Road...	West side Ridge Road, opposite J. B. Campbell's.....	1	1
Giles.....	Southeast corner Giles and School.....	1	1
Princeton.....	Southwest corner Princeton and Clinton.....	1	2
	Northwest corner Princeton and Noyes.....	1	
Fruit.....	Northeast corner Fruit and Woodman.....	1	3
	East side Fruit, opposite W. W. Critchett's.....	1	
	East side Fruit, opposite Kilburn's.....	1	
Minot.....	West side Minot, north of Odd Fellows' Home.....	1	3
	West side Minot, south of Odd Fellows' Home.....	1	
Penacook.....	Northwest corner Minot and Pleasant.....	1	7
	South side Penacook, near Concord Lumber Co.....	1	
	South side Penacook, east of P. B. Co.'s storehouse.....	1	
	South side Penacook, near P. B. Co.'s.....	1	
	South side Penacook, near P. B. Co.'s office.....	1	
	Southeast corner Penacook and North Main.....	1	
	Southwest corner Penacook and Rumford.....	1	
Walker.....	Southeast corner Penacook and Columbus Avenue.....	1	1
	Southwest corner Walker and Martin.....	1	
Albin.....	North side Albin, near D. Weathers'.....	1	1
Highland.....	Northeast corner Highland and Rumford.....	1	1
Church.....	South side Church, east of Bradley.....	1	3
	North side Church, opposite Lyndon.....	1	
	Northeast corner Church and Rumford.....	1	
Franklin.....	Northwest corner Franklin and Jackson.....	1	6
	Northeast corner Franklin and Lyndon.....	1	
	Southwest corner Franklin and Rumford.....	1	
	South side Franklin, opposite W. J. Ahern's.....	1	
	North side Franklin, between High and Auburn.....	1	
Tremont.....	Northeast corner Franklin and Auburn.....	1	2
	North side Tremont, east of Harrod.....	1	
Pearl.....	Southwest corner Tremont and Jackson.....	1	1
Beacon.....	North side Pearl, at Kimball Flanders'.....	1	3
	North side Beacon, opposite Merrimack School.....	1	
	Northwest corner Beacon and Jackson.....	1	
Rowell.....	South side Beacon, opposite Charles.....	1	1
Blanchard...	Northeast corner Rowell and White.....	1	1
Ferry.....	Northwest corner Blanchard and Essex.....	1	4
	North side Ferry, opposite Ford's foundry.....	1	
	North side Ferry, near N. E. Granite Works.....	1	
Washington...	North side Ferry, east of C. & M. R. R.....	1	4
	Northwest corner Ferry and Huntoon Avenue.....	1	
	North side Washington, opposite Rollins.....	1	
	Southwest corner Washington and Union.....	1	
	Northeast corner Washington and Lyndon.....	1	
	Northwest corner Washington and Rumford.....	1	1
	Northwest corner Washington and North Essex.....	1	1

FIRE HYDRANTS.—Continued.

STREETS.	LOCATIONS.	Number.	Total.
Washington..	North side Washington, opposite Perry Avenue.....	1	6
Chapel.....	South side Chapel, near Methodist Church.	1	1
Montgomery.	South side Montgomery, opposite Mrs. George Minot's.	1	1
Centre	Northeast corner Centre and North State.....	1	
	Southwest corner Centre and Green	1	
	Northwest corner Centre and Union.....	1	
	Northwest corner Centre and North Spring.....	1	
	South side Centre, opposite Essex.....	1	
	Southwest corner Centre and Summit Avenue.....	1	
	Northeast corner Centre and Ridge Road.....	1	7
Bridge.....	South side Bridge, near easterly barn	1	
	North side Bridge, opposite Concord Coal Co's.....	1	
	North side Bridge, opposite Concord Shoe Factory.....	1	3
Park	North side Park, at St. Paul's Church.....	1	1
Capitol.....	Northeast corner Capitol and North State.....	1	1
Garden.....	Northeast corner Garden and Huntington.....	1	1
School ...	Northwest corner School and Green.....	1	
	Northwest corner School and North Spring.....	1	
	Northwest corner School and Rumford.....	1	
	Northwest corner School and Merrimack.....	1	
	Northwest corner School and Pine	1	
	Northeast corner School and Liberty.....	1	
	North side School, opposite E. B. Woodworth's.....	1	7
Warren.....	Southeast corner Warren and Fremont.....	1	
	Northwest corner Warren and North Spring.....	1	
	Northwest corner Warren and Rumford.....	1	
	Southwest corner Warren and Merrimack.....	1	
	Northwest corner Warren and Tahanto.....	1	
	Northeast corner Warren and Liberty.....	1	
	Northeast corner Warren and Giles.....	1	
	Junction of Warren and Pleasant, near Fruit	1	8
Depot.....	South side Depot, at north end of train shed	1	
	Northwest corner Depot and Railroad Square.....	1	2
Blake.....	South side Blake, at John B. McLeod's	1	1
Orchard	South side Orchard, opposite Sherburne's.....	1	1
Pleasant.....	Northwest corner Pleasant and Railroad Square	1	
	Southeast corner Pleasant and South.....	1	
	Northeast corner Pleasant and Fremont.....	1	
	Southwest 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, near city stable.....	1	
	South side Pleasant, near Gale	1	
	South side Pleasant, opposite Mrs. Aiken's.....	1	
	South side Pleasant, near Mrs. Eddy's cottage.....	1	
	North side Pleasant, near James Lane's.....	1	
	North side Pleasant, near J. McC. Hammond's.....	1	
	South side Pleasant, opposite Fiske Road.....	1	
	Southwest corner Pleasant and School Avenue.....	1	
	North side Pleasant, opposite infirmary.....	1	
	South side Pleasant, in field near gasometer.....	1	
	South side Pleasant, near new Upper School.....	1	19
Mill Road.....	East side Mill Road, near laboratory.....	1	
St. P. School..	North side Mill Road, at Orphans' Home.	1	
	South side Mill Road at tenement No. 7.....	1	3
Old Hopkin- ton Road....	Junction old and new Hopkinton Roads.....	1	1
Wall	Northeast corner Wall and Elm.....	1	1
Marshall.....	North side Marshall, opposite Fuller.....	1	1
Freight.....	North side Freight, at southwest cor. passenger station	1	1
Hill's Avenue	Southwest corner Hill's Avenue and Railroad Square...	1	
	Northeast corner Hill's Avenue and South Main.....	1	2
Fayette.....	Northwest corner Fayette and Elm.....	1	1

FIRE HYDRANTS.—Continued.

STREETS.	LOCATIONS.	Number.	Total.
Thompson.....	North side Thompson, opposite Jefferson.....	1	1
Chandler	South side Chandler, opposite Railroad.....	1	1
Concord	Southwest corner Concord and South State.....	1	
	Northwest corner Concord and Jefferson.....	1	
	Northeast corner Concord and South.....	1	3
Monroe.....	North side Monroe, opposite Grove.....	1	1
Thorndike ...	Northeast corner Thorndike and Grove.....	1	
	North side Thorndike, opposite Pierce.....	1	
	Northeast corner Thorndike and South Spring.....	1	3
Laurel	Northwest corner Laurel and Grove.....	1	
	Northwest corner Laurel and Pierce.....	1	2
Perley	Southwest corner Perley and South State ..	1	
	Northwest corner Perley and Grove.....	1	
	Northeast corner Perley and Pierce.....	1	
	South side Perley near old brook.....	1	4
Downing.....	South side Downing, opposite Grove.....	1	
	Southeast corner Downing and Mills.....	1	
	Southwest corner Downing and Redwood Avenue..	1	3
Clinton.....	North side Clinton, opposite Harvard.....	1	
	North side Clinton, opposite Avon.....	1	
	Northeast corner Clinton and Fruit.....	1	
	North side Clinton, near Snell's.....	1	
	North side Clinton, at State Fair grounds.....	1	5
West.....	North side West, near South Main.....	1	
	North side West, near Badger.....	1	
	Northeast corner West and Mills.....	1	
	North side West, opposite Dakin.....	1	
	Northwest corner West and Broadway.....	1	5
Avon.....	Northwest corner Avon and South.....	1	
Harrison.....	Northwest corner Harrison and Morton.....	1	1
Humphrey....	North side Humphrey, near Kimball.....	1	1
Allison.....	Northeast corner Allison and Badger.....	1	1
Pillsbury.....	North side Pillsbury, opposite Foster Ward.....	1	
	Northeast corner Pillsbury and Broadway.....	1	
	Northwest corner Pillsbury and Kimball.....	1	3
Carter.....	Northeast corner Carter and Eastman.....	1	1
Stone.....	North side Stone, 300 feet from Bow.....	1	1
Holly.....	North side Holly, west of South Main.....	1	1
Rockingham..	Northeast corner Rockingham and Broadway.....	1	
	North side Rockingham, at Donovan.....	1	2
Iron Wk's Rd.	South side Iron Works Road, at Brown's.....	1	1
Prospect.....	Northwest corner Prospect and Granite Avenue.....	1	1
Curtice Ave..	North side Curtice Avenue, near John C. Kenney's.....	1	1
North State...	West side North State, at Water-Works storehouse.....	1	
	Northeast corner North State and Foster.....	1	
	Northeast corner North State and Curtice Avenue.....	1	
	East side North State, near W. H. Perry's.....	1	
	East side North State, near north entrance Blossom Hill Cemetery.....	1	
	West side North State, near Calvary Cemetery.....	1	
	East side North State, near A. L. Colburn's.....	1	
	East side North State, near Thomas Fox's house.....	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	
	Northwest corner North State and Palm.....	1	
	West side North State, near Concord Woodworking Co.....	1	
	East side North State, near C. H. Farnum's.....	1	
	East side North State, near Cyrus R. Farnum's.....	1	
	East side North State, near M. H. Farnum's.....	1	
	East side North State, opposite Dolan.....	1	
	East side North State, opposite John H. Flood's.....	1	
	West side North State, opposite S. Abbott's.....	1	19
Palm.....	North side of Palm, west of Fairbanks.....	1	1

FIRE HYDRANTS.—Continued.

STREETS.	LOCATIONS.	Number.	Total.	
WEST CONCORD.				
North State...	Southeast corner North State and K.....	1		
	Northeast corner North State and Peabody.....	1		
	East side North State, at George Partridge's.....	1		
	East side North State, near engine house.....	1		
	East side North State, opposite D. Holden's.....	1		
	West side North State, near west mill.....	1		
	East side North State, opposite Simeon Partridge's.....	1		
	East side North State, near Mr. Harrington's.....	1		
	East side North State, opposite A. Hollis'.....	1		
	East side North State, near Sewall's Falls Road.....	1	10	
Electric.....	Northeast corner of Electric and North State.....	1		
	North side Electric, near power station.....	1	2	
Clarke.....	Northeast corner Clarke and Fisher.....	1	1	
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		
	North side Hutchins, at Turcotte's	1	3	
Penacook Rd.	West side Penacook Road, opposite Frost's.....	1		
	West side Penacook Road, opposite Blanchard's.....	1		
	West side Penacook Road, near Warner Road.....	1	3	
PENACOOK.				
Main	West side Main, at Annis's.....	1		
	West side Main, at Garvin's.....	1		
	West side Main, south of Willow Hollow.....	1		
	West side Main, near Carrier's.....	1		
	West side Main, at south end of Woodlawn Cemetery... ..	1		
	West side Main, at north end of Woodlawn Cemetery... ..	1		
	West side Main, opposite Stark.....	1		
	West side Main, near Prescott's.....	1		
	Southwest corner Main and Union	1		
	Washington Square, opposite Washington.....	1		
	Northwest corner Main and Charles.....	1		
	North side Main, opposite East Canal.....	1		
	North side Main, near iron bridge.....	1	13	
	West Main....	West side West Main, opposite cemetery.....	1	
		West side West Main, at Pine.....	1	2
High.....	Northwest corner High and Stark.....	1		
	East side High, opposite Summit.....	1		
	Northwest corner High and Maple.....	1		
Washington..	Northwest corner High and Spring.....	1	4	
	Southeast corner Washington and Union.....	1		
Elliott.....	South side Washington, opposite John Whitaker's.....	1		
	South side Washington, opposite Charles	1		
	South side Washington, near Contoocook bridge.....	1	4	
Charles.....	Northeast corner Elliott and Electric Avenue	1	1	
	Southwest corner Charles and Warren.....	1		
West Canal...	North side Charles, near George W. Corey's.....	1	2	
East Canal....	Southeast corner West Canal and Warren.....	1	1	
	North side East Canal, near Contoocook Mfg. Co.....	1		
Crescent.....	North side East Canal, near Crescent.....	1	2	
	West side Crescent, north 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		
	South side Merrimack, opposite Symond's factory.....	1		
	North side Merrimack, near road to island.....	1		
	Northwest corner Merrimack and Penacook.....	1	7	

FIRE HYDRANTS.—*Concluded.*

STREETS.	LOCATIONS.	Number.	Total.
Summer.....	North side Summer, opposite High.....	1	
	Northeast corner Summer and Centre.....	1	
Spring	North side Summer, opposite Church.....	1	3
	Northeast corner Spring and Church.....	1	
Maple.....	Northeast corner Maple and Pleasant.....	1	1
Winter.....	North side Winter, near Pleasant.....	1	1
Centre.....	Northwest corner Centre and Spring.....	1	
	West side Centre, at Corbett's.....	1	
Cross.....	Southwest corner Cross and Summer.....	1	2
Rolfe.....	North side Rolfe, near James Corbett's.....	1	1
	Northwest corner Rolfe and Penacook.....	1	
Penacook.....	West side Penacook, opposite A. W. Rolfe's.....	1	2
	West side Penacook, at E. L. Davis'.....	1	
	East side Penacook, at John Chadwick's.....	1	
Whole number public hydrants.....			389
PRIVATE HYDRANTS.			
	Concord Shoe Factory.....	1	
	Boston & Maine Railroad, upper yard.....	4	
	Boston & Maine Railroad, new shops.....	15	
	State Prison.....	6	
	Abbot-Downing Co.	6	
	Page Belting Co.....	10	
	W. P. Ford & Co.	1	
	N. H. State Hospital.....	10	
	Concord Gas Light Co.....	1	
	St. Paul's School.....	1	
	Water Works Pumping Station.....	1	
	Wm. B. Durgin Co.....	1	
	N. H. Spinning Mill.....	4	
	Crescent Worsted Co.....	2	
Whole number private hydrants.....			63

E.

SUMMARY OF STATISTICS.

FOR THE YEAR ENDING DECEMBER 31, 1909.

In form recommended by the New England Water Works Association.

CONCORD WATER WORKS.

CITY OF CONCORD, COUNTY OF MERRIMACK, STATE OF NEW HAMPSHIRE.

GENERAL STATISTICS.

Population by census of 1900—19,632.

Date of construction—1872.

By whom owned—City of Concord.

Source of supply—Penacook Lake.

Mode of supply—Gravity, also pumping to reservoir for high service and fire protection.

PUMPING STATISTICS.

1. Builders of pumping machinery—Henry R. Worthington, Harrison, N. J.
2. Description of fuel used—*a.* Kind—bituminous.
b. Brand of coal—Pocahontas and Cumberland.
c. Average price of coal per gross ton delivered, \$4.56.
3. Coal consumed for the year—251.203 tons.
4. (Pounds of wood consumed) ÷ 3 = equivalent amount of coal—7,809.333.
5. Total equivalent coal consumed for the year for pumping purposes—254.644 tons.

6. Total pumpage for the year without allowance for slip—299,115,016 gallons.
7. Average static head against which pump works—200.46 feet.
8. Average dynamic head against which pump works—205.07 feet.
9. Number of gallons pumped per pound of equivalent coal—524.3.
10. Duty=

$$\frac{299,115,016 \text{ gallons pumped} \times 8.34 \text{ (lbs.)} \times 100 \times \text{dynamic head, 205}}{\text{Total fuel consumed 570,504 pounds}} = 89,639,571$$

Cost of pumping figured on pumping station expenses, \$3,243.93.

11. Per million gallons pumped—\$10.845.
12. Per million gallons raised one foot (dynamic)—\$0.053.

STATISTICS RELATING TO DISTRIBUTION SYSTEM.

MAINS.

1. Kind of pipe—cast iron and cement-lined.
2. Sizes—from two-inch to twenty-four-inch.
3. Extended—2,416 feet during year.
4. Renewed—3,811 feet during year.
5. Discontinued—3,855 feet during year.
6. Total now in use—67.74 miles.
7. Number of leaks per mile for year—
8. Length of pipes two inches and less diameter—3.35 miles.
9. Number of hydrants added during year—public, 17; private, none.
10. Number of hydrants now in use—public, 389; private, 63
11. Number of stop gates added during year—19.
12. Number of stop gates now in use—945.
13. Number of stop gates smaller than four inch—none.
14. Number of blow-off gates—82.
15. Range of pressure on mains at center of city—88 pounds high service and 48 pounds low service.

SERVICES.

16. Kind of pipe—cement-lined.
17. Sizes—three-fourth-inch to ten-inch.
18. Extended—1,196 feet.
19. Discontinued 116 feet.
20. Total now in use—85,206 feet.
21. Number of service taps added during year—48.
22. Number now in use—3,670.
23. Average length of service—23.216 feet.
24. Average cost of service for the year—
25. Number of meters added during year—234.
26. Number now in use—1,764.
27. Percentage of services metered—48.7.
28. Percentage of receipts from metered water—67.3.
29. Number of elevators added—none.
30. Number now in use—10.
31. Number of standpipes for street watering—39.

REPORT OF CITY ENGINEER.

OFFICE OF THE CITY ENGINEER,
CONCORD, N. H., December 31, 1909.

To the City Council:

The seventeenth annual report of the engineering department is herewith submitted.

The expenses of this department have been as follows:

Paid engineer and assistants,	\$2,847.00
for supplies,	77.68
livery and car fares,	149.15
repairs,	3.40
express,	2.90
telephone service,	27.00
real estate transfer cards,	10.45
	<hr/>
Total,	\$3,117.58
Appropriation,	3,000.00
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Overdrawn,	\$117.58

ASSESSORS' MAPS.

No appropriation was made for this work and no field work was done during the past season. This is unfortunate for the new board of assessors coming into office in 1911, who will need something in this line to aid them in their work.

Transfers of real estate in the city have been reported to this office monthly, by the register of deeds, at an expense of \$10.45. The maps already made will be brought up to date for the assessors' use April 1, 1910.

PARKS.

Little work was done for the park commissioners during the season of 1909.

FIRE DEPARTMENT.

The plan showing all the hydrant locations and the location of the fire-alarm boxes in the city proper has been brought up to date, copies made and turned over to the chief engineer of this department.

A plan showing the location of the hydrants and fire-alarm boxes in Penacook has been made, copies of which have been forwarded to the assistant chief in that district.

CEMETERIES.

In Blossom Hill Cemetery one new block has been laid out, surveys made for additional blocks on the northerly side of the cemetery, the State Hospital lot laid out and lines and grades given for the grading of the Cummings lot.

In the Old North Cemetery a survey has been made of the lots as occupied, and a plan will be made this winter showing occupants and owners of the lots so far as information is obtainable.

BUILDING PERMITS.

In company with the chief engineer of the fire department I have attended twenty-three hearings on petitions for new buildings and for alterations of existing structures. In one case no action was taken, as the petitioner decided to build of brick before the hearing was completed. One case was referred to the mayor and aldermen, and twenty-one petitions were granted.

HIGHWAY DEPARTMENT.

Grades and lines have been given for street and sidewalk improvements when requested, the usual monthly measurements made and statements prepared showing the amounts of coal-tar concrete laid on roadways and sidewalks during the season in which this work was laid.

There is an old tradition concerning the mileage of our highways, to the effect that we have 300 miles of roads. This is incorrect, as we have a total mileage of one hundred and seventy and seven tenths (170.7) miles, forty-four and forty-four one hundredths (44.44) miles of which are in the more compact portion of the city.

WATER WORKS.

A plan showing the highways in the "Plains" district was made and turned over to the superintendent of the works.

LANDS AND BUILDINGS.

Some time was spent on surveys and plans for locations of the proposed fire station in Ward 7. Preliminary plans were made for a three-piece house, upon which plans estimates of cost were made.

SEWERS.

In the city precinct nothing has been done to improve the condition of the over-loaded mains, and the unusually dry season was truly fortunate and the complaints from flooded premises were very few.

Liberal appropriations should be made and work done to relieve the congested conditions in our sewerage system, as these conditions become more serious from year to year, owing to additional laterals, improved street surfaces and more connections with the system.

The appropriation for this precinct was overdrawn \$275.47. There was paid from the \$2,000 appropriation an overdraft of \$337.35 from the 1908 account, and the cost of the Gladstone Street sewer was increased about three hundred dollars above the estimate on account of rock work necessitated and not expected in such amount in this locality.

A detailed statement of the expenditures from this appropriation will be found on the accompanying pages.

WEST CONCORD SEWER PRECINCT.

The 20-inch outlet in this precinct was the source of trouble in the low land near its outlet. Necessary repairs were made, the sewers flushed and minor repairs made. The appropriation was overdrawn \$52.47.

EAST CONCORD SEWER PRECINCT.

No repairs were made and no money expended in this precinct during the past season. The amount available for construction and repairs remains the same as last year, viz., \$127.53.

ST. PAUL'S SCHOOL SEWERAGE PRECINCT.

A flush tank in the Hopkinton Road was changed on account of macadamizing the roadway, and the usual annual payment made to the city water works, leaving a balance unexpended of \$3.86.

The employees during the past season have been: Fred W. Lang, principal assistant; Clarence A. Little, rodman, who have rendered efficient services in their respective positions.

The work of the hydrant commissioners and the board of examiners of plumbers will be found under their respective headings in their reports to the city council.

To the mayor and the city council I wish to express my appreciation for their support and coöperation, and to the heads of other departments for courtesies extended to this department.

CITY PRECINCT, NEW SEWERS.

Sewer from Perkins Street to Penacook Street, across land of J. N. Patterson.

262 feet of 6-inch Akron pipe.

Paid for labor,	\$35.63
pipe,	31.74
cement,	1.85
trucking,	1.50
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	\$70.72

Average cost per foot, \$0.269+.

Material excavated, sand and gravel.

HAMMOND STREET.

374 feet of 10-inch pipe laid.

Paid for labor,	\$103.31
pipe,	105.13
cement,	5.55
brick,	12.05
castings,	12.45
trucking,	9.00
	<hr/>
	\$247.49

Average cost per foot, \$0.661+.

Material excavated, sand.

CITY OF CONCORD.

GROVE STREET.

93 feet of 10-inch pipe laid.	
Paid for labor,	\$44.31
pipe,	23.04
cement,	3.80
brick,	8.50
castings,	12.50
trucking,	3.03
concrete repairs,	7.20
	<hr/>
	\$102.38

Average cost per foot, \$1.10+.

Material excavated, sand and gravel.

DUNKLEE AND HUMPHREY STREETS.

283 feet of 10-inch pipe laid.	
Paid for labor,	\$97.69
pipe,	80.30
cement,	3.80
brick,	9.78
castings,	12.15
wrought iron,	.45
oil,	1.40
trucking,	9.39
	<hr/>
	\$214.96

Average cost per foot, \$0.759+.

Material excavated, sand.

GLADSTONE STREET.

212 feet of 10-inch pipe laid.	
Paid for labor,	\$525.11
pipe,	74.16
cement,	6.00
brick,	8.50
castings,	11.25
wrought iron,	.30
hardware,	1.20