

REPORT
OF THE
CHIEF ENGINEER OF WATER WORKS,
TO THE
EXECUTIVE BOARD,

APRIL 2, 1894.

WATER WORKS ENGINEER'S OFFICE, }
ROCHESTER, N. Y., April 2, 1894. }

To the Honorable the Executive Board:

GENTLEMEN—The undersigned begs leave to transmit to you herewith the following general statement of the operation and condition of the municipal Water Works for the fiscal year ending April 2, 1894:

THE CONDUIT.

The conduit from Hemlock Lake to Mt. Hope reservoir has remained in good condition throughout the year, and it has not been necessary to interrupt the regular flow of water during the entire period for any purpose. The full capacity of the pipe has therefore been available at all times. Although a number of leaks in the lead joints of the pipe have occurred, yet owing to the vigilance of Messrs. Crennell and Coyne, who are in charge of the two divisions of the conduit between Hemlock Lake and Rush reservoir, the necessary repairs were made before the leaks attained serious proportions.

The gaugings of the discharge of the conduit into Rush reservoir during the past season have shown no appreciable diminution of delivery from those made in the previous year, and from the records of the self-registering pressure gauges at the two reservoirs, it is shown that the flow has been practically uniform throughout the whole period, varying only in slight degree with the relative elevations of the water in the lake and the reservoirs.

In my report of last year, reference was made to the necessity of replacing several of the old timber stop-valve boxes with permanent vaults of brick and stone work. These improvements have been completed, as well as the placing of new timber guards around a number of the air-valves. The conduit therefore appears to be in good order for its entire length.

HEMLOCK LAKE.

As in previous years, great care has been taken to maintain a high standard for the sanitary protection of Hemlock Lake, and thorough inspections of the whole territory were made independently by Supt. D. H. Westbury, and by Dr. J. A. Biegler and the writer. Only a few objectionable features were disclosed in these examinations, and the same are now reported as having been abated. The pail-system service for collecting objectionable refuse and excreta from hotels, cottages and habitations, on the east and west shores of the lake, has been continued as in the preceding year.

RUSH AND MT. HOPE RESERVOIRS.

The general condition of both Rush and Mt. Hope reservoirs appears to be good, so far as can be determined without drawing off the water. Some repairs to the slope walls are needed in both places, as well as more or less repair to the puddled clay bottoms; but inasmuch as this cannot be done without serious inconvenience until the completion of the new conduit, this work must be postponed for another season.

SUPERINTENDENTS' RESIDENCES.

The old frame dwellings on Highland avenue for the gate-keepers at the Mount Hope reservoir have been abandoned and turned over to the Park Commissioners for removal, and in their places a handsome new double dwelling has been erected near the gate-house on Reservoir avenue.

A desirable lot was also purchased in the village of Honeoye Falls, and a substantial frame dwelling built thereon for the use of Mr. Robert Crennell, the superintendent of the northern division of the conduit. Extensive improvements, by painting, etc., to the dwellings and barns at Rush reservoir, Richmond Mills and Hemlock Lake, have also been made.

PRESSURE REDUCTION SERVICE.

It has been necessary to maintain the method of balancing the daily inflow and outflow from the reservoirs by artificially reducing the available pressure of the water in the city distributing pipes. The details of this process have been fully described in my previous reports, and need not be repeated. It is to be hoped that this service may be discontinued by the completion of the new conduit early next autumn.

TEMPORARY ADDITIONAL WATER SUPPLY.

Early in April, 1893, a contract was entered into between the city and the Rochester Water Supply Company, whereby a considerable additional water supply from artesian wells in Brighton was to be delivered by said Company into Mt. Hope reservoir. Work on this undertaking was immediately afterwards commenced, and prosecuted as rapidly as possible. On June 12, 1893, the works were finished, and in the forenoon of that day the

water began to flow from the deep well pumps into Mt. Hope reservoir at the rate of about one-half million gallons per day. Efforts were made to increase this quantity by boring additional wells and providing additional pumps, but unfortunately the subterranean supply was found inadequate, and the delivery has been limited to the amount named above, which has, however, been continued without interruption up to the present time. Although the amount thus obtained is much smaller than was anticipated, yet a substantial improvement in the water service has been attained thereby, inasmuch as it enabled the Department to materially lengthen the hours of good pressure.

ENLARGEMENT OF FEEDING MAINS.

The demonstration given in my previous reports of the inadequacy of the two 16-inch mains, which at present deliver the entire quantity of Hemlock Lake water from the distributing reservoir into the city, has resulted in the adoption by the Common Council of measures for laying two new lines of 36-inch pipe from said reservoir to the central part of the city. An Act authorizing the city to issue its bonds for the payment of this new work is now before the Legislature, and will doubtless be passed and approved promptly. In this event, every effort will be made to obtain and lay the pipe during the coming season, so that an immediate benefit from the completion of the new conduit may be derived.

THE DISTRIBUTING SYSTEM IN THE CITY.

On April 2, 1894, the total length of all pipes, classed as distributing mains, in the city was 251.24 miles, of which 232.83 miles belonged to the Hemlock or Domestic system, and 18.41 miles to the Holly system. The lengths of different sizes of pipe are contained in the appended Table A.

The following sums have been expended in city distribution extensions of both the Domestic and Holly systems.

Commencing in 1876, when the original construction account was closed:

Inserted in the Tax Levy of 1876.....	\$	75,000	00
" " " " " 1877.....		30,000	00
" " " " " 1878.....		50,000	00
" " " " " 1879.....		35,000	00
" " " " " 1880.....		35,000	00
" " " " " 1881.....		37,749	00
" " " " " 1882.....		50,000	00
" " " " " 1883.....		75,000	00
" " " " " 1884.....		75,000	00
" " " " " 1885.....		96,374	00
" " " " " 1886.....		60,000	00
" " " " " 1887.....		65,000	00
" " " " " 1888.....		127,000	00
" " " " " 1889.....		58,000	00
" " " " " 1890.....		42,000	00
" " " " " 1891.....		50,000	00
" " " " " 1891	} By City Note for Holly mains. }	40,000	00
" " " " " 1892			
By Water Works Fund Ites. C. C. May 16, 1893.....		59,911	50
Total.....		\$1,122,034	50

Connected with the distributing systems are 2,450 hydrants and 2,438 stop-gates. Of the hydrants, 2,160 belong to the Domestic, and 290 to the Holly system. Of the stop-gates, 2,203 are inserted in the mains of the Domestic, and 235 in those of the Holly system. The complete list of the hydrants and stop-gates set previously and during the past year is hereto appended.

For supplying street-sprinkling carts, 69 water-cranes were available during the past season, 42 being located on the east side and 27 on the west side of the city. Of these hydrants, 40 were taken from the Holly system and 29 from the Domestic. The public watering troughs for animals set in different parts of the city are 38 in number, all of them being connected with the Domestic system.

STATEMENT A.

SHOWING LOCATION OF SPRINKLING HYDRANTS, EAST SIDE OF RIVER.

1.—NEW PATTERN.

No.	System.	STREET.	LOCATION.
1	H	Andrews street	9 feet West of West line Chatham st. South.
2	H	Central avenue	18 feet West of North Clinton street.
3	D	North Clinton street	41 feet South of Kelly street.
4	D	North Clinton street	South-east corner Sellinger street.
5	H	Clinton Park	At Pipe Yard office.
6	D	Cypress street	4 feet West of South avenue.
7	H	East avenue	North-west corner of Hawthorn street.
8	H	Goodman street	Opposite North-east cor. Anderson avenue.
9	H	Hudson avenue	67 feet North of North avenue.
10	H	Hudson avenue	60 feet North of North avenue.
11	D	Hudson avenue	South-east corner Drayton street.
12	H	East Main street	South-east corner North Goodman street.
13	H	East Main street	North-west corner Windsor street.
14	D	East Main street	219 feet East of Alexander street.
15	D	Monroe avenue	15 feet East of West line Marshall street.
16	D	Monroe avenue	284 feet West of tree line Averill avenue.
17	D	Monroe avenue	8 feet East of West line Maple place.
18	D	Mt. Hope avenue	North-east corner of Averill avenue.
19	D	North avenue	14 feet South of Wesley street.
20	D	Park avenue	32 feet West of curb line Oxford street.
21	D	Prince street	19 feet South of University avenue.
22	D	Rowley street	33 feet South of curb line Park avenue.
23	D	St. Joseph street	111 feet North of Central avenue.
24	D	St. Joseph street	33 feet North of Hamburg street.
25	D	St. Joseph street	On North line of Morris street.
26	H	North St. Paul street	110 feet South of Ward street.
27	H	South street	36 feet North of Arsenal.
28	D	Stevens street	21 feet West of North avenue.
29	D	South Union street	18 feet South of East Main street.
30	D	South Union street	40 feet North of Court street.
31	H	University avenue	77 feet East of North avenue.
32	H	University avenue	East side 35 feet West of East Main street.
33	D	University avenue	4 feet East of West line Beacon street.
34	D	Vick Park, Avenue A	220 feet South of curb line East avenue.
35	H	Vincent Place	90 feet West of North St. Paul street.
36	H	North Water street	South-east corner of Mortimer street.
37	H	Wood street	3 feet East of West face Arsenal.
38	H	Wood street	50 feet East of South street.

STATEMENT A—Continued.

2.—OLD PATTERN.

1	H	Central avenue, South side.	41 feet East of E. curb line of N. St. Paul st.
2	H	Central avenue.	East side of Triangular plot at N. St. Paul st.
3	H	Franklin street, West side.	30 feet East of North avenue.
4	H	South Union street, East side.	75 feet South of East avenue.

TOTALS: 21 on Holly (H), and 21 on Domestic (D) System.

WEST SIDE OF RIVER.

1.—NEW PATTERN.

No.	System.	STREET.	LOCATION.
1	D	Adams street.	Near the corner of Jefferson avenue.
2	H	Aqueduct street.	At the Erie Canal Aqueduct.
3	D	Brown street.	Near the corner of West avenue.
4	D	Brown street.	About 100 feet East of Frank street.
5	H	Cameron street.	Near Lyell avenue.
6	D	Clarissa street.	Near the corner of Greig place.
7	H	Exchange street.	Opposite Troup street.
8	H	Exchange street, East side.	324 feet South of Troup street.
9	H	Exchange street.	167 feet North of Adams street.
10	H	North Ford street.	Corner of West avenue.
11	H	Front street.	Near Mumford street.
12	H	Greig Place, East side.	At Hubbell Park.
13	D	Jones avenue.	Near Ambrose street.
14	D	Lake avenue.	Corner of Augustine street.
15	D	Lake avenue.	South-west corner Selye Terrace.
16	H	Lyell avenue.	Near Erie Canal—East side.
17	H	Lyell avenue.	Near Erie Canal—West side.
18	H	Platt street.	Corner of State street.
19	H	Platt street.	Corner of Warehouse street.
20	D	Phelps avenue.	Corner of Fulton avenue.
21	H	Spring street.	Corner of Pine alley.
22	H	South Washington street.	Between West Main street and Erie canal.
23	H	Vincent Place.	Near the corner of State street.
24	H	West avenue.	At City Hospital.
25	H	West avenue.	At boiler-house for St. Mary's Hospital.

2.—OLD PATTERN.

1	H	Platt street, South side.	94.60 feet South of State street.
2	H	South Washington street, W. side.	81 feet South of West Main street.

TOTALS: 19 on Holly (H) and 8 on Domestic (D) System.

STATEMENT B.

SHOWING LOCATION OF DRINKING TROUGHS FOR ANIMALS.

No.	STREET.	LOCATION.
1	Alexander street	Near Broadway.
*2	Ames street, East side	South of Jay street.
*3	Bronson avenue	North-east corner of Reynolds street.
*4	Brown street	Near Maple street.
*5	Caledonia avenue	Near Plymouth avenue.
*6	Central Park	At Alexander street
*7	Child street	At corner of Jay street.
*8	North Clinton street	About 50 feet North of Buchan park.
*9	Exchange street	Near Troup street.
*10	South Fitzhugh street	South-east corner West Main street.
*11	Franklin street	Corner of Andrews street.
*12	Goodman street	At Monroe avenue.
13	Kelly street	Corner of Hudson avenue.
*14	Kent street	Near N. Y. C. & H. R. R. Co.'s Freight House.
*15	Lake avenue	At Driving Park avenue.
*16	Lyell avenue	Near the corner of Child street.
17	East Main street	Corner of University avenue.
18	Maple street	Near the corner of Child street.
*19	Mt. Hope avenue	Corner of Gregory street.
20	Mt. Hope avenue	Corner of Cypress street.
*21	Mt. Hope Reservoir	In front of Gate House.
22	Monroe avenue	At Marshall street.
*23	North avenue	At Bay street.
24	North avenue	At Stevens street.
25	North avenue	At Clifford street.
*26	S. Clinton street	North-east corner of Meigs street,
27	S. Clinton street	Corner of Yale street.
*28	Plymouth avenue	Corner of Greig Place.
29	St. Joseph street	Near corner of Central avenue.
*30	St. Joseph street	Near corner of Kelly street.
31	North St. Paul street	Near corner of Norton street.
*32	South St. Paul street	Opposite Marshall street.
*33	State street	Near Smith street.
34	State street, East side	Near Factory street.
*35	South avenue	Opposite Grand street.
*36	North Water street	Near Andrews street.
37	Webster avenue	Corner of Bay street.
*38	West avenue	Corner of Chili avenue.

Those marked by asterisks (*) were turned on 1891-92.

STATEMENT C, showing streets grouped into the Twenty Wards constituting the city, since January 29th, 1892, in which water mains have been laid from April 3d, 1893 to April 2d, 1894. The lengths here given also include the pipe required for hydrants and lateral streets.

NAMES OF STREETS.	FROM AND TO.	Length in lineal feet in each street.	Length in lineal feet in each ward.
FIRST WARD.			
Church street.....	Connection at State street.....	97.30	
Moran alley.....	Elizabeth street to 109.5 feet east.....	130.00	
Mumford street (D)	South side river bridge.....	300.12	
Mumford street (H)	North side river bridge.....	293.34	
State street (H).....	Hydrant set 106 feet south of Market street.....	44.02	
State street (H).....	Hydrant set 55 feet north of Mumford street.....	47.47	
			912.25
SECOND WARD.			
Center street (H)...	Mill street to near Brown's Race.....	203.10	
Platt street (H)....	Hydrants changed at Oak, Kent and Frank streets	26.03	
			229.13
THIRD WARD.			
Court street.....	50 feet east of Exchange street to Kimball's Court	297.19	
" " (H).....	North side river bridge (2 lines).....	531.57	
" " (D).....	North side river bridge (2 lines).....	531.33	
" " (D).....	South side river bridge (4 lines).....	1041.50	
Glasgow street.....	Change of hydrant.....	1.25	
Grieg place (H)....	S. P. hydrant set at Hubbell park.....	8.42	
			2411.26
FOURTH WARD.			
Court street (D) ..	North side river bridge (2 lines).....	531.43	
Court street (H)....	North side river bridge (2 lines).....	531.57	
Court street (D)...	South side river bridge (4 lines).....	1041.50	
Clinton park (H) ..	North side canal crossing.....	1.40	
			2105.90
FIFTH WARD.			
Andrews street (H).	North side of river bridge	293.34	
Andrews street (D).	South side of river bridge	300.12	
Andrews street (D).	North St. Paul street to North Clinton street	699.50	
Andrews street (H).	North St Paul street to Franklin street.....	641.93	
Avenue B.....	Last hydrant 59.33 feet east.....	55.66	
Avenue C.....	Conkey avenue to 367.24 feet east.....	375.89	
Division street..	End east of North St. Paul street to 326 feet east..	337.65	
Medrow alley.....	Cole street to 114 feet east.....	129.00	
Pleasant street....	Change in main at North Clinton street.....	18.95	
N. St. Paul street..	Hydrant moved near Deaf Mute Asylum.....	30.20	
			2882.24
SIXTH WARD.			
Franklin street (H)	Changing S. P. hydrant near North street.....	23.94	
East Main street (H)	Franklin street to University avenue.....	2296.43	
University ave. (H)	East Main street to 54 feet north	109.75	
			2430.12
SEVENTH WARD.			
Andrews street (H).	Changing S. P. hydrant at Chatham street..	28.55	
Andrews street (D).	North Clinton street to North street.....	1125.47	
Chatham street.....	Franklin street to Andrews street.....	769.01	
Franklin street....	Connection at Chatham street.....	12.27	
			1935.30

STATEMENT C—Continued.

NAME OF STREET.	FROM AND TO.	Length in lineal feet in each street.	Length in lineal feet in each ward.
EIGHTH WARD.			
Drayton street....	Change in main at American Brewery.....	0.41	
East Sellinger street	Hydrant moved east.....	12.48	12.89
NINTH WARD,			
Vincent place (H)..	Change in location of S. P. hydrant east of State st	39.29	39.29
TENTH WARD.			
Big Ridge Road..	Primrose street to 68 feet west.....	16.00	
Kislingbury park...	Change of hydrant at Pierpont avenue	5.43	
Willard park.....	Change of hydrant at Pierpont avenue.....	12.00	103.43
ELEVENTH WARD.			
Canal street.....	Hydrant changed first north of Cunningham's ..	7.86	
Clark street.....	Brown street to Grape street.....	485.84	493.70
TWELFTH WARD.			
Bowen street.....	End of cast-iron main to 101 feet east.....	101.50	
Crosman's Seed House.....	Changing hydrant.....	40.80	142.30
THIRTEENTH WARD.			
Clinton park (H)..	Canal crossing in Pipe Yard and Clinton park.....	116.56	
Crouch's Island...	Service for L. V. R. R.....	218.20	334.76
FOURTEENTH WARD.			
Karges place.....	South Clinton street to 314 feet east.....	372.07	
Raymond street ..	End of cast-iron main to 76 feet west.....	79.00	
Wall street.....	South avenue to 164 feet west.....	165.50	616.57
FIFTEENTH WARD.			
Felix street... ..	Sherman street to 315 feet east.....	354.04	354.04
SIXTEENTH WARD.			
Davis street	End of cast-iron main to 40 feet east.....	48.00	48.00
SEVENTEENTH WARD.			
Clifford street.....	Hebard avenue to Cummings street.....	362.00	
Grafton street.....	At North avenue	56.82	
Griebel street.....	At North avenue	59.95	
Hudson terrace ..	537 feet east of Hudson avenue to North street. ...	406.40	
Lux street.....	At North street.....	42.18	
North avenue	716 feet north of Kress street to Chapin street.....	2395.72	
North street	Hudson terrace to 86 feet north.....	150.50	
Onondaga street.....	At North avenue.....	59.30	
Randolph street ..	At North avenue.....	57.71	
Stewart street.....	Connection at North avenue.....	6.53	
Weyl street.....	End of 2 inch main to 30 feet east.....	35.00	3632.11
EIGHTEENTH WARD.			
Baldwin street.....	North and south at Grand avenue.....	49.25	
Clifford street.....	Hebard avenue to Cummings street.....	362.00	
Denver street.....	North at Garson avenue	11.08	
Denver street.....	North and south at Grand avenue.....	57.81	

STATEMENT C—Continued.

NAME OF STREET.	FROM AND TO.	Length in lineal feet in each street.	Length in lineal feet in each ward.
EIGHTEENTH WARD—Continued.			
Denver street.....	Extension of laterals N. and S. at Parsell's avenue	57.50	
Dringer park.....	North Goodman street to 442 feet east.....	458.75	
Garson avenue.....	Leighton street to Culver street.....	2416.49	
Grand avenue.....	Denver street to Culver street.....	1676.50	
Greeley street.....	North at Garson avenue.....	12.15	
Greeley street.....	North and south at Grand avenue.....	74.90	
Greeley street.....	North and south at Parsells avenue.....	92.56	
Lampson street.....	Garson avenue to 104 feet south.....	134.50	
Leighton street.....	Extension of lateral north at Grand avenue.....	14.87	
Melville park.....	End of cast-iron main to 78 feet east.....	81.16	
Oswego street.....	North at Grand avenue.....	15.70	
Parsell's avenue.....	End east of Denver street to Culver street.....	1320.40	6835.62
NINETEENTH WARD,			
Bronson avenue.....	West at Warwick avenue.....	30.91	
Frost avenue.....	West at Warwick avenue.....	24.97	
McLean street.....	158 feet west of Genesee street to 135 feet west.....	135.80	
Plymouth avenue.....	Changing hydrant at Seward street.....	3.00	
Warwick avenue.....	Chili avenue to Bronson avenue.....	634.58	
Snyder street.....	Cady street west and south.....	403.00	1242.26
TWENTIETH WARD.			
Cedar street.....	Campbell street to 100 feet south.....	121.25	121.25

TAPS AND PERMITS.

The number of taps sold and inserted during the fiscal year ending April 2, 1894, is as follows:

NUMBER OF TAPS SOLD AND INSERTED DURING FISCAL YEAR ENDING APRIL 2, 1894.

SIZE.	NUMBER.	PRICE.	RECEIPTS.
1/8 inch	708	\$2 00	\$1,416 00
3/8 "	55	2 50	137 50
1/2 "	43	3 00	129 00
3/4 "	48	4 00	192 00
	854		\$1,874 50

At the present time there are 26,908 taps or service pipes connected with the two systems of water mains, the diameters of these pipes ranging from 3/8-inch to 6 inches. Of this number, 854 were inserted during the year which has just elapsed. It should also be remarked that in many instances a single tap and service pipe extending from the water main to the street curb, is divided at the curb into two arms for the separate supply of two adjacent dwellings or double houses, each having its own account with the Water Works Department, so that the number of accounts for buildings served with water is in excess of the number of taps. In such cases the account with the second building is called an extra account. During the past fiscal year, 565 new accounts were opened, of which 65 are extra accounts; and at the beginning of the present year there is a total of 27,435 accounts, of which 1,508 are classed as extra accounts. The number of taps of the different sizes in use is exhibited in the following table:

STATEMENT D.

NUMBER OF TAPS AND T-BRANCHES INSERTED IN THE WATER MAINS AND REMAINING IN USE UP TO APRIL 2, 1894.

SIZE OF TAPS.	NUMBER.	SIZE OF T-BRANCHES.	NUMBER.
3/8 inch	126	1/2 inch	32
1/2 "	22,736	1 "	2
5/8 "	1,802	1 1/2 "	6
3/4 "	1,332	2 "	36
1 "	665	2 1/2 "	4
Total No. of Taps	26,661	3 "	25
" No. of T-Branches	247	4 "	119
Total No. of Taps and Branches	26,908	5 "	6
		6 "	17
		Total No. of Branches	247

As in former years, numerous permits for the temporary use of water from the city mains for building purposes have been granted, and as the number of such permits afford an indication of the growth of the city during the past year, the following statistics may prove of interest :

STATEMENT E,
SHOWING NUMBER OF PERMITS ISSUED FOR USE OF WATER FOR BUILDING PURPOSES DURING THE YEAR ENDING APRIL 2, 1894.
APRIL 1893 TO APRIL 1894.

Ward.	Brick Blocks.	Brick Dwellings.	Brick Flats.	Repairs to Brick Buildings.	Frame Blocks.	Frame Dwellings.	Frame Flats.	Repairs to Frame Buildings.	Schools.	Churches.	Brick Barns.	Frame Barns.	Total Number.
1				2									2
2	1			3		3		5	2				14
3	4	1		5		13		6					29
4	3			1				2					6
5	1			4		5		3		1			15
6	1	2		3		24		5			3	1	39
7	1			3	2	3		2					11
8	1	3		3	1	12	1	8		1	1		31
9	3			1		3		7					14
10	2			1		41		5				1	50
11	2			5	2	10		9			1		29
12	2			2		29	1	17				1	51
13	1					14		9					24
14				4		36		14		1	1		56
15	1				2	25		5					33
16						13		14			2		29
17	3	1		2	4	71		11					93
18	1				2	87		10		1	1	1	103
19	1	1				63		12					77
20	1			1	1	20		7					30
Total	27	9		40	14	472	2	151	2	4	11	4	736

The total receipts for the above mentioned permits were \$2,914.83

WATER METERS.

The use of water meters has been gradually extended and their introduction into private dwellings encouraged as much as possible. The total number of meters and stroke-indicators on hydraulic motors now set in this city is 3,724, of which 388 were set during the past fiscal year. In the following tables, the number, size and kind of meters set and removed is exhibited in detail.

STATEMENT F.

I.—NEW METERS SET DURING THE FISCAL YEAR ENDING APRIL, 2d, 1894.

Kind.	3/8"	1/2"	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	Totals.
Crown.....		304		34	18	1	1	4		361
Frost.....		1								1
Thomson.....		11			1	1	1			13
Union.....			9							9
Nash.....		4								4
Totals.....		320	9	34	19	2	4			388

II.—METERS SET ON PREMISES, IN PLACE OF METERS REMOVED, FOR VARIOUS CAUSES DURING THE FISCAL YEAR ENDING APRIL, 2d, 1894.

Kind.	3/8"	1/2"	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	Totals.
Crown.....	1	91		21	6	2	1			122
Thomson.....		13	10					1		24
Frost.....						1				1
Worthington.....			1							1
Union.....			1						1	2
Nash.....		1								1
Totals.....	1	105	12	21	6	3	1	1	1	151

REMOVALS FOR REPAIRS.

The total number of meters removed during the year ending April 2d, 1894, is 659. The causes for such removal are classified as follows: Stopped by accumulation of rust or mud, 201; defective valves, 104; ordered out by Executive Board or owners of premises, 88; injured by frost, 76; injured by hot water or steam, 20; broken or defective dial gearing, 9; broken or defective intermediate gearing, 80; noisy action, 2; examined for accuracy after use, 5; change of size of meter, 11; obstructed service pipes, 2; meters worn out, 10; defective pistons, 47; broken base, 1; fire, 1; location changed, 2.

III.—METERS REMOVED FROM VARIOUS PREMISES DURING THE FISCAL YEAR ENDING APRIL 2, 1894, DEDUCTED IN FORMING GENERAL SUMMARY.

Kind.	3/8"	1/2"	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	Totals.
Crown.....	1	65		17	6	1	2			92
Frost.....		91		10	1	2				104
Thomson.....			4			1	1	1		7
Niagara.....		4								4
Worthington.....			2							2
Gem.....							1	1	2	4
Union.....			3							3
Ball and Fitts.....					1					1
Nash.....		1								1
Totals.....	1	161	9	27	8	4	4	2	2	218

STATEMENT F.—Continued.

IV.—GENERAL SUMMARY OF ALL METERS SET AND IN USE APRIL 2d, 1894.

Kind.	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1'	$1\frac{1}{2}$ "	2'	3'	4'	Totals.
Crown.....	4	2460		466	182	45	51	6	2	3216
Frost.....		133		45	2	2	2	1		185
Thomson.....		24	160	8	1	4	1	1		199
Hersey.....			30	6	5				2	43
Niagara.....		10								10
Worthington.....			15	1	1					19
Union.....			13	5		2	1	5	3	29
Gem.....		1		1			4	3	2	11
Ball and Fitts.....				2	1	1	2			6
Desper.....		1								1
Nash.....		4								4
Empire.....					1					1
Totals.....	4	2633	218	534	193	55	62	16	9	3724

STATEMENT G.

V.—NUMBER, KIND AND SIZE OF NEW AND OLD METERS TESTED DURING THE FISCAL YEAR ENDING APRIL 2d, 1894.

Kind.	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1'	$1\frac{1}{2}$ "	2'	3'	4'	Totals.
Crown.....		759		113	40	8	13			933
Thomson.....		25	19	1	1	2	1	1		50
Ball and Fitts.....				1		1				2
Hersey.....			6	1						7
Frost.....				4		1				5
Worthington.....										1
Union.....			11							11
Buffalo "A".....			1							1
Nash.....		8								8
Totals.....		792	38	120	41	12	14	1		1018

STATEMENT H.

GENERAL SUMMARY of labor performed by the Meter Department of the Rochester Water Works for the year ending April 2d, 1894.

Setting new meters.....	\$ 755 32
Removing, repairing and resetting meters.....	2,393 97
Inspection of meters.....	999 96
Cutting pipe, nipples, etc.....	91 56
Examining metered services and services to be metered.....	551 50
Repairing leaks in meters.....	11 30
Testing meters.....	249 02
Shop attendance.....	545 55
General expense of maintenance.....	1,009 76
Work at Hemlock Lake.....	14 00
Salary of meter superintendent.....	1,200 96
Salary of meter clerk.....	469 50
Work for Rochester Water Supply Co.....	31 27
	\$8,422 67

In this connection it affords me pleasure to refer to the excellent services of Superintendent P. C. Fleming, in giving prompt attention to complaints, as well as for the skill and economy displayed in repairing defective meters

THE HOLLY SYSTEM AND PUMPING STATION.

The usual number of minor repairs to the pumping machinery of the Holly system have been required during the past season, as will be seen from the appended report of James H. Glavey, engineer in charge of the pumping station on Brown's Race. Much of this work was done by the employees themselves in the course of the year. It affords me pleasure to state that the works have been able to respond promptly at all times to any demand which has been made upon them for the suppression of fires, and to bear witness to the fidelity of Mr. Glavey and his assistants to their duties.

LIFT BRIDGES.

The seven lift bridges over the Erie Canal at Plymouth Avenue, Caledonia Avenue, West Avenue, Allen Street, Brown Street, Smith Street and Lyell Avenue are all operated by hydraulic power derived from the Holly system. As the motors for raising these bridges consume water at relatively large rates, it sometimes happens that when several such motors happen to be operated simultaneously, a temporary fall of pressure in the mains of the Holly system occurs, which becomes aggravated in proportion as other demands for water from the system are made during the same period of time. I therefore desire to repeat my recommendations of previous years, that as many of the existing bridges as possible be equipped with other suitable motors, in order to relieve the severe duty which is at times imposed upon the pumping machinery.

The number of lifts made by the several bridges during the greater part of the season of canal navigation is given in the following table :

STATEMENT J, showing number of times that the bridges at Plymouth avenue, Caledonia avenue, West avenue, Allen street, Brown street, Smith street and Lvell avenue were lifted during the season of 1893. Reported by George Underhill, Foreman.

MONTH.	NUMBER OF DAYS.			Lyell Ave.			Smith St.			Brown St.			Allen St.			W. Main St. and Cal'da Ave. (3 bridges.)			Plymouth Ave.			
	No. of Lifts in each Month	Max. No. of Lifts per Day.	Min. No. of Lifts per Day.	No. of Lifts in each Month.	Max. No. of Lifts per Day.	Min. No. of Lifts per Day.	No. of Lifts in each Month	Max. No. of Lifts per Day.	Min. No. of Lifts per Day.	No. of Lifts in each Month	Max. No. of Lifts per Day.	Min. No. of Lifts per Day.	No. of Lifts in each Month	Max. No. of Lifts per Day.	Min. No. of Lifts per Day.	No. of Lifts in each Month	Max. No. of Lifts per Day.	Min. No. of Lifts per Day.	No. of Lifts in each Month	Max. No. of Lifts per Day.	Min. No. of Lifts per Day.	
																						No. of Lifts in each Month
May	24	1055	52	16	1029	52	16	1013	50	19	1044	53	14	1114	53	18	1183	53	23			
June.	30	1174	60	26	1217	58	26	1156	57	24	1210	56	26	1200	58	25	1188	58	35			
July	31	1200	106	36	1204	90	35	1198	88	35	1174	92	31	1198	90	36	1218	91	36			
August. ...	31	1399	61	35	1369	57	34	1370	58	36	1378	57	35	1380	58	35	1383	58	34			
September	30	1302	58	32	1334	61	33	1336	58	34	1368	59	34	1360	59	35	1359	59	34			
October....	31	1324	57	28	1321	55	29	1318	55	28	1345	55	29	1330	54	27	1317	54	27			
November .	30	1097	60	10	1092	58	8	1098	62	10	1082	59	12	1108	59	10	1108	59	10			
December..	2	10	8	2	8	6	2	8	6	2	5			5			5					
Totals ...	209	8591			8574			8497			8606			8695			8761					

THE REPAIR FORCE.

A large amount of work has been done by the employees of the repair force during the past year in the examination and re-calking of joints in street mains, the lengthening of service pipe, the re-adjustment of curb cocks and boxes to new curb lines, and the trimming of stones for stop-gate boxes in streets where permanent new pavements were laid. Much work was also done in repairing main and service pipes which were broken by contractors for sewers, areas and other excavations in the streets as well as in repairing leaks of all descriptions, and in the examination and repair of stop-gates. Considerable expense has also been involved in the replacement of service pipes in the vicinity of the power house of the Rochester Railway Company, which were greatly injured by electric currents. It is gratifying to state, however, that the Railway Company is making strong efforts to stop further deterioration of the water pipes by providing efficient copper conductors for returning the electric currents to the power station.

Further details relating to the operations of the repair force will be found in the appended report of Superintendent Daniel O'Neil, to whose zeal and energy the undersigned takes pleasure in bearing witness.

PERMANENT ADDITIONAL WATER SUPPLY.

The work on the two contracts for the construction of the new conduit from Hemlock Lake to Mt. Hope reservoir has progressed as rapidly as possible, and it is hoped that both sections will be so far completed by next August as to allow the water from Hemlock Lake to flow regularly into Rush reservoir. It is not expected that the conduit between Rush and Mt. Hope reservoirs will be completed before next October, but if a new supply can be discharged into Rush reservoir, a great improvement in the water service of the city can be obtained, owing to the greater capacity of the old conduit from Rush to Mt. Hope over that from Hemlock Lake to Rush. At the present time about one-half of the whole work involved in the two contracts has been completed.

CONCLUSION.

Attention is invited to the appended reports from Messrs. Glavey and O'Neil; also to the various statistical tables prepared by Mr. Radenhurst, which exhibit the details of the pipe extensions during the past year, and the general summaries of pipe and appurtenances embraced in the two distributing systems.

The undersigned also takes pleasure in acknowledging here the excellent services which have been rendered by Messrs. Edwin A. Fisher, Gaylord Thompson and LeGrand Brown, together with their assistants, in the construction of the new conduit, as well as the similar services of Messrs. William N. Radenhurst, George A. Hotchkin and the other assistants, to whom the details of carrying out work within the city and the operation of the system have been entrusted.

Respectfully submitted,

E. KUICHLING,

Chief Engineer of Water Works.

REPORT OF ENGINEER IN CHARGE OF HOLLY PUMPING STATION

FOR THE FISCAL YEAR ENDING APRIL 2, 1894.

ROCHESTER, N. Y., April 2, 1894.

EMIL KUICHLING, Esq.,

Chief Engineer Rochester Water Works:

SIR:—I beg to present my report on the Holly Pumping Station for the season ending April 2, 1894.

The repairs made were as follows:

On May 14th, 1893, pump No. 4, on the south water set, was bored out and new connection boxes on the cross heads inserted. July 27th, 1893, pump No. 4, on the north water set, was also bored out. On April 14th, a new pump was set on No. 1 south water set and a new step placed on the north water set. April 11th, 1893, a new bushing was inserted in pump No. 1, north water set; the old bushing in this pump has been in continuous service since July 11th, 1891.

All the machinery and floors have been thoroughly painted and the boiler room floor re-paired. This work has been done by the pump house force.

Table showing amount of water pumped monthly from April 3d, 1893, to April 2d, 1894.

YEAR.	MONTH.	U. S. GALLONS PER MONTH.	U. S. GALLONS. PER DAY, AV'GE.	REMARKS.	
1893.	April	52,320,545	1,777,352	Maximum. Sprinkling carts and lift bridges in full operation.	
"	May	54,428,305	1,755,751		
"	June	68,674,938	2,389,165		
"	July	67,987,564	2,193,147		
"	August	69,300,155	2,235,489		
"	September	54,844,965	1,828,165		
"	October	55,792,914	1,799,771		
"	November	52,472,285	1,749,076		
"	December	45,865,420	1,479,530		
1894.	January	44,583,430	1,431,723		Minimum. Sprinkling carts and lift bridges not in operation.
"	February	42,767,339	1,527,405		
"	March	45,968,502	1,482,855		
		655,006,352	1,804,119		

The maximum number of gallons pumped in 24 hours was on June 15, 1893, namely, 2,950,816. The minimum number of gallons recorded for the same period was 1,290,830, which were delivered January 20, 1894.

The coal consumption during the year is shown in the following tabulated statement:

YEAR.	MONTH.	Consumption per month.		Approximate consumption per day.
		NET TONS.	LBS.	LBS.
1893.	April.....	83.15		5,534
"	May.....	44.11		2,859
"	June.....	50.65		3,336
"	July.....	60.05		3,871
"	August.....	90.03		5,807
"	September.....	68.00		4,534
"	October.....	32.00		2,065
"	November.....	30.00		2,000
"	December.....	72.00		4,645
1894.	January.....	36.16		2,323
"	February.....	42.13		2,723
"	March.....	50.00		3,226
Total and average.....		657.064		3,432

RECOMMENDATIONS.

The wheel pit is in a bad condition, owing to overhead leakage, and should, I submit, be thoroughly repaired this Fall. Three of the pumps in the water sets will require re-boring, and an entirely new pump should be set.

The water wheels are worn out, requiring new cast steel gates. In past years, during the dry season, the pump house has had the use of Mr. J. Emory Jones' water rights during the night. Mr. Jones has made an arrangement with the Rochester Gas and Electric Light Company to allow them to use these water rights in the night time. This will necessitate the use of our steam power for the twenty-four hours, and in case of a large fire, it would in my opinion, be difficult to keep up the required pressure. I respectfully submit that an arrangement should be made with some other water right owners to allow the use of water during the night, as heretofore had.

The works at all times have been ready to maintain the required pressure for fire and other purposes.

I beg to express my appreciation of the cordial support received by me from the employes under my charge.

Respectfully,

JAS. H. GLAVEY,

Engineer in Charge of Pumping Station.

CONTINUATION OF TABLE " A " of Report of 1877.

(49)

STATEMENT showing the location, amount and kind of distribution pipe regarded as mains for the Rochester Water Works and which has been laid in the city by the Water Works and Fire Board from April 3, 1893 to April 2, 1894.

STREET.	LOCATION.	SYSTEM.	NUMBER OF LINEAL FEET OF CAST-IRON MAINS LAID:					NUMBER OF LINEAL FEET OF GALVANIZED IRON AND LEAD PIPE FOR MAINS LAID.				Total No. of feet of pipe mains laid.		
			12	10	8	6	4	1 1/4	1	3/4	1/2	DOM.	HOLLY.	
			inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.			
Andrews street.....	From North street to North Clinton street	D			1114.82	10.65							1125	47
Andrews street.....	Hydrant branch for sprinkling hydrant near Chatham street.....	H							28.55					28.55
Andrews street.....	From N. Clinton street to N. St. Paul st.	D			699.50								699.50	
Andrews street.....	From Franklin street to N. St. Paul street.	H			617.32	24.61								641.93
⊕ Andrews street new stone arch bridge..	North side, from the east to the west side of the bridge.....	H			*586.69									586.69
⊕ Andrews street new stone arch bridge..	South side, from the east to the west side of the bridge.....	D			*600.25								600.25	
Avenue B.....	From east hydrant to 59.33 lineal feet east..	D								55.66			55.66	
Avenue C.....	From Conkey avenue to 367.24 lin. ft. east..	D				360.04	9.85						375.89	
Baldwin street.....	Extension of laterals N. & S. at Grand ave	D				49.25							49.25	
Big Ridge Road.....	From Primrose street to 68.00 lin. ft. west.	D							86.00				86.00	
Bowen street.....	From end of cast iron pipe 101.00 lin. ft. E.	D								101.50			101.50	
Bronson avenue.....	At Warwick avenue lateral to west.....	D			30.91								30.91	
Canal street.....	Changing location of first hydrant north of Cunningham's factory.	D					7.86						7.86	
Cedar street.....	From Campbell street to 108.75 lin. ft. south	D								121.25			121.25	
Center street.....	From Mill street to near Brown's Race.....	H			203.10									203.10
South Chatham street	From Andrews street to Franklin street.....	D			760.51	8.50							769.01	
Church street.....	Connection at State street.....	D				94.08	3.22						97.30	
Clark street.....	From Brown street to Romeyn street.....	D					215.12						215.12	
Clark street.....	From Romeyn street to Grape street.....	D					266.37		4.35				270.72	
Clifford street.....	From Hebard avenue to Cummings street	D								362.00			362.00	
Clinton park canal crossing.....	At north side of Erie canal on towing path	H		1.40										1.40
Clinton park pipe yard.....	In the pipe yard, south side.....	H		37.15	2.35	26.98								66.48

⊕ Laid under sidewalks, see official notes.

* See official notes.

TABLE "A"—Continued.

(50)

STREET.	LOCATION.	SYSTEM.	NUMBER OF LINEAL FEET OF CAST-IRON MAINS LAID.					NUMBER OF LINEAL FEET OF GALVANIZED IRON AND LEAD PIPE FOR MAINS LAID.				Total No. of feet of pipe mains laid.		
			12 inch.	10 inch.	8 inch.	6 inch.	4 inch.	1½ inch.	1 inch.	¾ inch.	½ inch.	DOM.	HOLLY.	
			Clinton park.....	Immediately north of north curb line....	H		19.77			30.31				
Court street, including race crossing..	From 50.00 lin. ft. east of Exchange st. to the court yard of the Peerless Tobacco Factory.....	H	256.43		3.26	37.50								297.19
⊕Court street new stone arch bridge..	North side, under sidewalk, 2 lines of pipe.	H			1063.14									1063.14
⊕Court street new stone arch bridge..	North side, under sidewalk, 2 lines of pipe.	D			1062.67									1062.67
⊕Court street new stone arch bridge..	South side, under sidewalk, 4 lines of pipe..	D			2083.01									2083.01
Crosman's seed house.	Changing location of hydrant.....	D					40.80							40.80
*Crouch's Island.....	Service from 6 inch cast iron main south into L. V. R. R. Co.'s coal office	D								218.20				218.20
Davis street.....	From east end of cast iron pipe 40.00 lineal feet farther east.....	D									48.00			48.00
Denver street.....	At Garson avenue to north.....	D				11.08								11.08
Denver street.....	At Grand avenue to north and south.....	D				57.81								57.81
Denver street.....	At Parsells avenue to north and south.....	D				57.50								57.50
Dringer place.....	From N. Goodman st. to 41.75 lin. ft. east.	D					450.25	8.50						458.75
Division street.....	Former end east of north St. Paul street to 326.15 lineal feet east.....	D												337.65
Drayton street.....	Changing position of main at American Brewing Company.....	D					0.41							0.41
Felix street.....	From Sherman street to 315.00 lin. ft. east..	D					354.04							354.04
Franklin street.....	Connection at South Chatham street.....	D			12.27									12.27
Franklin street.....	Sprinkling hydrant 28.00 ft. south of North street removed to S. E. cor. of North street.....	H					23.94							23.94
Frost avenue.....	Lateral at Warwick avenue to south.....	D				24.97								24.97
Garson avenue.....	From Leighton street to Culver street	D			2336.43	2.91	77.15							2416.49

⊕ Laid under sidewalk, see official notes.

* See official notes.

TABLE "A"—Continued.

(51)

STREET.	LOCATION.	SYSTEM.	NUMBER OF LINEAL FEET OF CAST IRON MAINS LAID.					NUMBER OF LINEAL FEET OF GALVANIZED IRON AND LEAD PIPE FOR MAINS LAID.				Total No. of feet of pipe mains laid.		
			12	10	8	6	4	1½	1	¾	½	Dom.	Holly.	
			inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.			
Glasgow street.....	Hydrant on south side 250 feet east from Caledonia avenue moved south.....	D					1.25						1.25	
Grafton street.....	At North avenue lateral to the east.....	D			56.82								56.82	
Grand avenue.....	From Denver street to Culver street.....	D			1614.65	2.95	58.90						1678.50	
Greeley street.....	Lateral at Garson avenue to the north.....	D				12.15							12.15	
Greeley street.....	Laterals at Grand avenue N. and S.....	D				74.90							74.90	
Greeley street.....	Laterals at Parsells avenue N. and S.....	D				88.11	4.45						92.56	
Greig place.....	Setting S. hydrant near S. E. corner of Hubbell park.....	H						8.42						8.42
Griebel street.....	Lateral at North avenue to east.....	D				59.95							59.95	
Hudson terrace.....	From 537.00 lin. ft. east of Hudson ave., to North street.....	D			400.20		6.20						406.40	
Karges place.....	From South Clinton street to 314.02 lin. ft. north.....	D				352.62	19.45						372.07	
Kislingbury street..	Change in location of hydrant at N. W. cor. of Pierpont avenue.....	D					5.43						5.43	
Lampson street....	From Garson avenue to 104.00 lin. ft. south.....	D								*134.50			134.50	
Leighton street.....	Extension of lateral at Grand ave. to north.....	D					14.87						14.87	
Lux street.....	Lateral at North avenue to west.....	D			34.73		7.45						42.18	
McLean street.....	From 158.50 lin. ft. west of Genesee street to 135.80 lin. ft. farther west.....	D											135.80	
E. Main street.....	From East avenue to University avenue.....	H	2189.86			37.80	68.77						2296.43	
Medrow alley.....	From Cole street to 114.00 lin. ft. east.....	D								120.50	8.50		129.00	
Melville park.....	From east end of C. I. pipe to 78.00 lin. ft. farther east.....	D									*81.16		81.16	
Moran alley.....	From Elizabeth street to 109.50 lin. ft. east.....	D								*130.00			130.00	
North avenue.....	From 716.00 lin. ft. north of Kress street to Chapin street.....	D	2288.00		73.97		33.75						2395.72	
North street.....	From Hudson terrace to 86.00 lin. ft. north.....	D								146.50	4.00		150.50	
Oneida street....	Lateral at North avenue to the east.....	D				59.30							59.30	
Oswego street.....	Lateral at Grand avenue to the north.....	D					15.70						15.70	

* See official notes.

TABLE "A"—Continued.

(52)

STREET.	LOCATION.	SYSTEM.	NUMBER OF LINEAL FEET OF CAST-IRON MAINS LAID.					NUMBER OF LINEAL FEET OF GALVANIZED IRON AND LEAD PIPE FOR MAINS LAIDS.				Total No. of feet of pipe mains laid.		
			12 inch.	10 inch.	8 inch.	6 inch.	4 inch.	1/4 inch.	1 inch.	3/4 inch.	1/2 inch.	Dom.	Holly.	
Parsells avenue.....	From former end east of Denver street to Culver street.....	D			1285.23	2.37	32.80						1320.40	
Platt street.....	Location changes in hydrants at corners of Kent, Oak and Frank streets.....	H					26.03							26.03
Pleasant street.....	Change in location of main at N. Clinton street on account of areaway.....	D					18.95						18.95	
Plymouth avenue....	At Seward street change in hydrant location to accommodate street railroad....	D					3.00						3.00	
Randolph street.....	Lateral at North avenue to the east.....	D											57.71	
Raymond street.....	From end of cast iron pipe to 76.00 lin. ft. west.....	D		57.71									57.71	
N. St. Paul street.....	First hydrant north of Deaf-Mute Asylum changed on account of railroad tracks....	D					30.20						30.20	
State street.....	Hydrant set 106.00 lin. ft. south of Market street.....	H				44.02								44.02
State street.....	Hydrant set 55.40 lin. ft. north of Mumford street.....	H				47.47								47.47
E. Sellinger street....	Easterly hydrant moved 10 feet farther east.....	D					12.45						12.45	
⊕ Snyder street.....	From Cady street W. and S. see official notes.....	D						40.00	363.00				403.00	
Stewart street.....	Connection at North avenue.....	D				6.53							6.53	
University avenue....	From East Main street to 54.00 lin. ft. north.....	H			87.94		21.81							109.75
Vincent place.....	Change in location of Sp. hydrant east of State street.....	H				39.29								39.29
Wall street.....	From South avenue to 164.00 lin. ft. west....	D							165.50				165.50	
Warwick avenue.....	From Chili avenue to Bronson avenue.....	D				640.58	4.00						644.58	
Weyl street.....	From east end of 2 inch wrought iron pipe to 30 feet farther east.....	D							35.00				35.00	
Willard street.....	Change in hydrant location at Pierpont ave.....	D					12.00						12.00	
	Totals.....		4734.29	116.03	14729.77	2239.92	1801.28	586.05	52.85	1921.36	338.91		20986.55	5533.91

⊕ See official notes.

I.—Domestic Mains.

DESCRIPTION.	NUMBER OF LINEAL FEET OF CAST IRON MAINS LAID.									Number of lineal feet of Wrought Iron, Galvanized Iron, Asphaltum Coated and Lead Pipe laid.									TOTAL.
	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	3 in.	3 in.	2½ in.	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.	¼ in.	
Totals in feet and lengths of mains laid, up to April 3, 1893	156.13	5642.02	43571.99	68337.65	35352.89	163436.37	505346.61	336927.85	44.80	2682.65	1176.78	13373.84	10129.93	6556.24	10196.04	8004.50	255.66	1326.20	1212518.15
Totals in feet and lengths of mains laid from April 3, 1893, to April 2, 1894.....				2288.00	57.71	12165.97	1982.25	1593.45						586.05	52.85	1921.36		338.91	20986.55
Sum.....	156.13	5642.02	43571.99	70625.65	35410.60	175602.34	507328.86	338521.30	44.80	2682.65	1176.78	13373.84	10129.93	7142.29	10248.89	9925.86	255.66	1665.11	1233504.70
Deductions—See Table B.....						2324.44	46.53	935.04					702.94		142.60	23.65			4175.20
Total number of lineal feet of Domestic Mains in use April 2, 1894.....	156.13	5642.02	43571.99	70625.65	35410.60	173277.90	507282.33	337586.26	44.80	2682.65	1176.78	13373.84	9426.99	7142.29	10106.29	9902.21	255.66	1665.11	1229329.50
Total number of miles of Domestic Mains in use April 2, 1894.....	0.030	1.069	8.252	13.376	6.708	32.818	96.076	63.939	0.009	0.508	0.222	2.534	1.785	1.353	1.914	1.875	0.048	0.315	232.8294

GENERAL SUMMARY OF APPENDIX TO TABLE A.—Continuation from pp. 71 and 72 of Report No. 17 of Executive Board. 1893. (54)

II.—Holly Mains.

DESCRIPTION.	NUMBER OF LINEAL FEET OF CAST IRON MAINS LAID.									Number of lin. ft. of Wro't Iron, Galvanized Iron, Asphaltum Coated and Lead Pipe laid.			TOTAL.
	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	3 in.	2 in.	1 in.	¾ in.	
Totals in feet and lengths of Mains laid, up to April 3, 1893.....	*3480.60	2658.60	2643.50	16497.79	20747.23	17814.01	16270.26	12720.77	114.65	173.15	38.34	168.00	93326.90
Totals in feet and lengths of Mains laid from April 3, 1893, to April 2, 1894.....				2446.29	58.32	2563.80	257.67	207.83					5533.91
Sum.....	*3480.60	2658.60	2643.50	18944.08	20805.55	20377.81	16527.93	12928.60	114.65	173.15	38.34	168.00	98860.81
Deductions—See Table B.....				3.08		795.76	550.88	294.10					1643.82
Total number of lineal feet of Holly Water Mains in use April 2, 1894.....	*3480.60	2658.60	2643.50	18941.00	20805.55	19582.05	15977.05	12634.50	114.65	173.15	38.34	168.00	97216.99
Total number of miles of Holly Mains in use April 2, 1894.....	*0.6592	0.5035	0.5006	3.5870	3.9400	3.7090	3.0250	2.3030	0.0217	0.0327	0.0072	0.0318	18.4123

*Supply Pipe to Holly pumping station, of which 3383.00 lineal feet is Wrought Iron Pipe and 97.60 lineal feet is Cast Iron.

GENERAL SUMMARY OF AMOUNT OF ALL WATER PIPES REGARDED AS DISTRIBUTING MAINS LAID IN THE CITY.

BY WHOM LAID.	DATE.	NUMBER OF LINEAL FEET OF CAST IRON MAINS.									Number of lineal feet of Wrought Iron, Galvanized Iron, Asphaltum Coated, and Lead Pipe for Mains laid.								Total number of feet laid in each system.		TOTAL.	
		24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	3 in.	3 in.	2½ in.	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.	¼ in.	Dom.		Holly.
WaterWrks authorities.	Up to April 3d, 1893.....	3636.73	8300.62	46215.49	84835.44	56100.12	181250.38	521616.87	349648.62	44.80	2797.30	1176.78	13546.99	10129.93	6556.24	10234.38	8172.50	255.66	1326.20	1212518.15	92326.90	1305845.05
Executive Board,.....	From April 3d, 1893, to April 2d, 1894.....	.....	.....	.....	4734.29	116.03	14729.77	2239.92	1801.29	.....	.....	.....	.....	.....	586.05	52.85	1921.36	.....	338.91	20966.55	5533.91	26520.46
Sum.....		3636.73	8300.62	46215.49	89569.73	56216.15	195980.15	523856.79	351449.90	44.80	2797.30	1176.78	13546.99	10129.93	7142.29	10237.23	10093.86	255.66	1665.11	1233504.70	98860.81	1332365.51
Deduct from both Systems for small pipe taken up and replaced by larger pipe, for reducers taken out to continue larger pipe, and for lapping of hubs of new pipe upon spigot ends of pipe formerly laid, from April 3, 1893, to April 2, 1894.																						
Table B.....					3.08		3120.20	597.41	1229.14						702.94	142.60	23.65			4175.20	1643.82	5819.02
Total lineal feet of Mains in actual use April 2, 1894.....		3636.73	8300.62	46215.49	89563.65	56216.15	192859.95	523259.38	350220.76	44.80	2797.30	1176.78	13546.99	9426.99	7142.29	10144.63	10070.21	255.66	1665.11	1229329.50	97216.99	1326546.49
Total miles of Mains in actual use April 2, 1894.....		0.689	1.572	8.753	16.963	10.646	36.527	99.102	66.332	0.009	0.530	0.222	2.566	1.785	1.353	1.986	1.907	0.048	0.315	232.829	18.412	251.241

TABLE "B."

(56)

TABLE showing location, size and amount of all Water pipes considered as mains which have been removed or abandoned from April 3, 1893 to April 2, 1894, to be deducted from the grand total of Table "A."

STREET.	LOCATION AND DESCRIPTION.	SYSTEM.	LINEAL FEET OF CAST-IRON PIPE.				LINEAL FEET OF WROUGHT IRON PIPE.			TOTAL.		
			12 in.	8 in.	6 in.	4 in.	1½ in.	1 in.	¾ in.	DOM.	HOLLY.	
Amity street	*Connection at South Chatham street	D				1.90					1.90	
Andrews street	Pipe removed at North St. Paul street	H		17.00		17.60						34.60
Andrews street	Hydrant branch removed at Franklin square	H				25.25						25.25
Campbell street	Southeast corner Child street, hydrant branch shortened ..	D				5.00					5.00	
Center street	*Mill street to Brown's Race	H		5.72		197.53						203.25
South Chatham street ..	*Andrews street to Franklin street	D				749.85					749.85	
Church street	Northwest corner of State street	D				29.00					29.00	
Clark street	*Romeyn street to Grape street	D					223.66				223.66	
Clifford st. S. side	†Hudson avenue to 435.00 lineal feet east	D					479.28	13.60			492.88	
Court street	*Hydrant branch at Erie railroad station	D				9.00					9.00	
Franklin street	At South Chatham street	D			12.27						12.27	
Grand avenue	At Denver street	D			3.85						3.85	
Grand avenue	At Northeast corner of Webster avenue	D				8.08					8.08	
East Main street	*East avenue to Windsor street	H	3.08	773.04	398.35	53.72						1228.19
North avenue	*From 716.00 lineal feet N. of Kress street to Chapin street ..	D				2324.44	23.09	127.79				2475.32
North St. Paul street ..	*At Andrews street	D				7.32					7.32	
State street	From Mumford street to 123 feet north	H				152.53					152.53	
Warwick avenue	*At Bronson avenue to north 106.00 feet ..	D						129.00	23.65		152.65	
Wilder street	Northeast corner Orchard street, hydrant branch shortened ..	D				4.42					4.42	
	Totals		3.08	3120.20	597.41	1229.14	702.94	142.60	23.65	4175.20	1643.82	

* Replaced by larger pipe.

† Large main laid on the north side of street service connected therewith.

TABLE "H."

SHOWING LOCATION AND KIND OF HYDRANTS SET FROM APRIL 3, 1893 TO APRIL 2, 1894.

STREET.	LOCATION.	SYSTEM		KIND.			
		Dm	H'y	SINGLE VALVE.		DOUBLE VALVE.	
				4 inch.	6 inch.	4 inch.	6 inch.
Andrews street...	N. E. corner Franklin square..	D			2n. M.		
Andrews street...	South side 5.00 ft. east of N. St. Paul street.....		H			2n. M.	
Andrews street...	South side 242.00 ft. west of Franklin street.....		H			2n. M.	
Avenue C.....	North side 329.00 ft. north of Conkey avenue.....	D		2n. M.			
S. Chatham street	N. E. corner of Amity street..	D			2n. M.		
Church street....	N. W. corner of State street..	D			2n. M.		
Clinton park.....	At the city's pipe yard....		H	S. C.			
Felix street.....	South side 258.00 ft. east of Sherman street.....	D		2n. M.			
Garson avenue....	N. E. corner of Leighton street	D		2n. M.			
Garson avenue....	North side 395.00 ft. east of Leighton street.....	D		2n. M.			
Garson avenue....	N. W. corner of Denver street	D		2n. M.			
Garson avenue....	North side 397.00 lin. ft. east of Denver street.....	D		2n. M.			
Garson avenue....	N. W. corner of Greeley street	D		2n. M.			
Garson avenue....	North side 251.00 lin. ft. east of Greeley street.....	D		2n. M.			
Garson avenue....	N. W. corner of Culver street.	D		2n. M.			
Grand avenue....	North side 391 lin. ft. east of Denver street.....	D		2n. M.			
Grand avenue....	N. W. corner of Greeley street	D		2n. M.			
Grand avenue....	North side 368.00 lin. ft. east of Greeley street.....	D		2n. M.			
Grand avenue....	N. W. corner of Culver street.	D		2n. M.			
Greeley street...	N. E. corner of Parsells ave....	D		2n. M.			
Hudson terrace...	N. W. corner of North street..	D		2n. M.			
Karges place.....	West side 305.00 ft. north of S. Clinton street.....	D		2n. M.			
Lux street.....	N. W. corner of North avenue	D		2n. M.			
East Main street.	N. W. corner of Belmont park		H			2n. M.	
East Main street.	North side 257.00 lin. ft. east from Belmont park....		H			2n. M.	
East Main street.	N. E. corner of Gibbs street..		H			2n. M.	
East Main street.	N. W. corner of Scio street....		H			2n. M.	
East Main street.	N. E. corner of Richmond pk.		H			2n. M.	
East Main street.	S. W. corner University ave....		H				2n. M.
North avenue ..	West side 842.00 lin. ft. north of Kress street.....	D				2n. M.	
North avenue ..	West side 318.00 lin. ft. south of Lux street.....	D				2n. M.	
North avenue ..	West side 214.00 lin. ft. north of Oneida street.....	D				2n. M.	
North avenue....	West side 18.00 lin. ft. south of Chapin street.....	D				2n. M.	
Parsells avenue..	North side 437.00 lin. ft. east of Greeley street.....	D		2n. M.			
Parsells avenue..	N. W. corner of Culver street	D		2n. M.			
Randolph street.	N. E. corner of North avenue.	D				2n. M.	
State street.....	West side 106.00 lin. ft. south of Market street.....		H				3n. M.
State street.....	West side 56.00 lin. ft. north of Mumford street.....		H				3n. M.
University ave....	East side 35.00 lin. ft. north of East Main street.....		H	Sp. Ct.			
Warwick avenue.	East side 268.00 lin. ft. south of Chili avenue.....	D			2n. M.		
Totals.....		28	12	21	6	10	3

HYDRANT CHANGES.

The water from the Holly system of distribution mains was, as in the past few years, exclusively used for street sprinkling. Some few changes were made in the location of Sprinkling Hydrants, which are shown in the following tables:

1. NEW STYLE SPRINKLING HYDRANTS.

WHERE SET.			WHERE OBTAINED.				
SYSTEM.	STREET.	SIDE OF STREET.	LOCATION.	SYSTEM.	STREET.	SIDE OF STREET.	LOCATION.
H	Clinton pk.	N.	At W. W. Pipe Yard...	D.	Broadway..	E.	9 ft. N. of Alexanderst.
H	Greig place	E.	20 ft. S. of Hubbell park	H.	Plymo'th a.	W.	S.W. cor. of Glasgowst.
H	Univ'rt'y a.	E.	N. of E. Main street...	H.	E. Main st..	N.	N.W. cor. Windsor st..

These changes have been considered in the preparation of the table entitled General Summary of Hydrants hereinafter given, where sprinkling hydrants have been taken from either system; their places have been supplied by fire hydrants.

2. ANDREWS STREET. Additional water mains (both systems) were laid in this street between North street and North St. Paul street during the period that the street improvements were in progress and some changes made in the hydrant service, as follows: The 2-4 inch s. v. 2n. M. Dom. hydrants, respectively located 5.00 ft. east of North St. Paul street and 242.00 ft. west of Franklin street, were removed from the Dom. system, and 2n. M. s. v. hydrants with 6 inch feed were set at the same location, but on the Holly system. The 4 inch sp. ct. Holly hydrant on the north side of the street at Franklin square was re-set on the same side of the street at a point 45.00 lin. ft. farther east.

3. CAMPBELL STREET. The 4 inch branch of the Dom. 2n. M. s. v. hydrant, S. E. cor. of Childs street, was shortened up 5.00 lin. ft.

4. CANAL STREET. The 2n. M. s. v. Dom. hydrant, west side of street, 72.00 lin. ft. north of Smith's alley, was moved 6.70 lin. ft. farther north to allow of the construction of a driveway at that point.

5. SOUTH CHATHAM STREET. At the N. E. cor. of Amity street, the 2n. M. s. v. Dom. hydrant, with 4 inch feed, was changed to a 2n. M. s. v. Dom., with a 6 inch feed branch, the 4 inch Dom. main in South Chatham street between Franklin and Andrews streets having been removed and an 8 inch main laid in its place.

6. COURT STREET. The 2n. M. s. v. Dom. hydrant, with 4 inch branch, on the south side of the street, immediately opposite the main entrance to the N. Y., L. E. & W. R. R. station, was removed, and a 2n. M. s. v. Holly hydrant, with 6 inch feed branch, substituted.

7. CROSMAN'S SEED HOUSE. The 2 $\frac{1}{2}$ M. s. v. Dom. (4 inch) hydrant belonging to the Messrs. Crosman Bros., formerly set in front of the east entrance into Seed House, was found to be in the way, and was removed to a point 57.00 lin. ft. farther south.

8. FRANKLIN STREET. The new Secoud Baptist Church has its main entrance on Franklin street, this necessitated the removal of the sprinkling hydrant (Holly) at that point. For fire protection an ordinary 2 $\frac{1}{2}$ M. s. v. Holly hydrant was set on North street on the N. E. cor. of Franklin street.

9. KIMBALL'S COURT YARD. The 2 $\frac{1}{2}$ M. s. v. Dom. hydrant which was set in the court yard of the Peerless Tobacco Works, in 1880, was removed in order that the Grinnell system for automatic sprinkling might be laid. The hydrant removed is a private one, and is only noticed here because it was attached to the Domestic system. The new hydrants set in the court yard and on the north side of Court street, at the west side of driveway, are "Chapman" hydrants, and were set by the American Tobacco Factory Association as part of the Grinnell System of Fire Protection. The water used is entirely River water and has no connection with the city's potable water system.

10. EAST MAIN STREET. The removal of the 8 inch, 6 inch and 4 inch Holly mains in this street between East avenue and Windsor street and replacing the same by a twelve (12) inch Holly main, required a re-adjustment of hydrant locations. The following single valved hydrants were removed: One at N. E. cor. of Belmont park, one at N. W. cor. of Gibbs street; also one of the Holly sprinkling hydrants set on the N. W. cor. of Windsor street. Double valved 2 $\frac{1}{2}$ M. (4 inch) hydrants have been set in their places. For exact location see table "H."

11. NORTH AVENUE. The construction of the sewer in this street from Kress street to Norton street, made it necessary to remove the eight (8) inch Domestic main laid about twenty-seven feet west of the east line of the avenue from a point 716.00 lineal feet north of Kress street to Chapin street, and the laying of a twelve (12) inch Domestic main on the west side of the street in place of the pipe removed. Six 2 $\frac{1}{2}$ M. s. v. (4 inch) hydrants were taken up. Double valve 2 $\frac{1}{2}$ M. Dom. hydrants have been set from off the new construction. For locations of same see table "H," ante.

12. PLATT STREET. The old Ludlow-Holly hydrant on the S. E. cor. of Frank street was taken up and replaced by a 2 $\frac{1}{2}$ M. (4 inch) hydrant.

13. PLYMOUTH AVENUE. The sprinkling (Holly) hydrant on Plymouth avenue, S. W. cor. of Glasgow street, was taken up and set from off the Holly system on the east side of Greig place, twenty (20) lin. ft. south of Hubbell park. An ordinary 2 $\frac{1}{2}$ M. Holly (4 inch) hydrant was set in the place of the sprinkling hydrant removed.

14. EAST SELLINGER STREET. The 2 $\frac{1}{2}$ M. s. v. Dom. hydrant at the east end of this street was moved 11.34 lin. ft. farther east to allow of the construction of a driveway for adjacent house.

15. VINCENT PLACE. At the request of the abutting owner, the Holly sprinkling hydrant on the south side of Vincent place, near the corner of State street, was moved east 33.00 lin. ft.

Slight changes have been made in the position of hydrants owing to alteration of curb lines of streets undergoing improvements. These and the changes above detailed have been considered in the preparation of tables A and H of this report.

GENERAL SUMMARY OF HYDRANTS.

BY WHOM SET.	SYSTEM.	KIND AND NUMBER.				TOTAL.
		3n. M.	2n. & S. M.	2n. M.	2n. L.	
Former Water Works authorities up to April 3, 1893...	D	35	2	2107	1	2145
	H	12	4	254	9	279
Executive Board from April 3, 1893, to April 2, 1894....	D	.....	.....	15	.....	15
	H	2	.....	9	.....	11
TOTALS		49	6	2385	10	2450

NOTE.—2n. M. d. v. and 2n. M. s. p. hydrants are classed in the Summary as 2n. M. The new style s. p. hydrants as well as the old style stand pipes, which are not fire hydrants, are tabulated.

ABBREVIATIONS.

"D" stands for Domestic System.

"H" stands for Holly System.

2n. M. stands for Two-nozzle Matthews Hydrant.

3n. M. stands for Three-nozzle Matthews Hydrant.

2n. & S. M. stands for Two-nozzle and Steamer Suction Hydrant.

2n. M. d. v. stands for Two-nozzle Matthews Double Valve Hydrant.

2n. M. s. p. stands for Two-nozzle Matthews Stand-pipe Hydrant.

2n. L. stands for Two-nozzle Ludlow Hydrant.

SHOWING NUMBER, SIZE AND LOCATION OF STOP GATES INSERTED IN THE PIPE MAINS OF THE CITY DISTRIBUTION,
FROM APRIL 3D, 1893, TO APRIL 2D, 1894.

NOTES.—The measurements of the first column of "Co-ordinates" are taken at a right angle to the respective lines of the streets, curb lines, or tree lines (T. L.) in which the Mains containing the Gates are located; those in the second column are taken in a direction at a right angle to the former, or parallel respectively to the lines of the aforesaid streets, except in cases particularly specified.

All these measurements are taken in feet and tenths of a foot.

The letter in the parenthesis (), following a Co-Ordinate, denotes the direction of sight in taking the measurements; the other letters in these columns of "Co-Ordinates" refer to the points of the compass, and the line (L) of street, and the face (F) of some building.

The letters D., H., S. P., F. C., B. O., H. B., and C. B., in the column of "System" denotes respectively "Domestic," "Holly," "Supply Pipe," "Flange Connection," "Blow-Off," "Hydrant Branch," "Cross Branch," the covers of the corresponding gate boxes being thus marked.

All Gates of a less diameter than 4 inches, turn to *left* to open, or in a direction *opposite* to the motion of the hands of a watch.

A 4 inch Gates requires from 14 to 15 turns to open.	A 12 inch Gate requires from 41 to 42 turns to open.
A 6 " " " 21 to 22 " "	A 16 " " " 51 to 52 " "
A 8 " " " 27 to 28 " "	A 20 " " " 63 to 65 " "
A 10 " " " 33 to 35 " "	A 24 " " " 79 to 81 " "

STREET.	LOCATION.	System.	Size,		CO-ORDINATES.
			(In.)		
Andrews st	N. E. cor. N. St. Paul st.....	D	8	5.8 S. of N. curb Andrews st. (E.)	8.5 E. of E. curb N. St. Paul st. (N.)
Andrews st.....	N. W. cor. N. Clinton st....	D	8	9.2 S. of N. curb Andrews st. (W.).....	4.7 W. of W. curb N. Clinton st.
Andrews st.....	N. E. cor. N. Clinton st.....	D	8	9.4 S. of N. curb Andrews st. (E.).	6.8 E. of E. curb N. Clinton st. (N.)
Andrews st.....	N. W. cor. North ave.	D	8	7.2 S. of N. curb Andrews st.....	8.0 W. of W. curb North ave.
Avenue A.....	N. W. cor. Conkey ave.	D	6	7.4 S. of N. curb Avenue A (W.).....	13.9 W. of W. curb Conkey ave.
Avenue B.....	7.0 E. of last hydrant.....	D	½	19.9 S. of N. L. Avenue B.	7.6 E. of last hydrant.
Baldwin st	N. E. cor. Grand ave.....	D	6	4.7 W. of E. curb Baldwin st.....	18.5 N. of N. curb Grand ave.

TABLE "C."—Continued.

(62)

STREET.	LOCATION.	System.	Size.	CO-ORDINATES.	
			(In.)		
Baldwin st.....	S. E. cor. Grand ave.....	D	6	4.6 W. of E. curb Baldwin st.....	19.0 S. of S. curb Grand ave.
Big Ridge road ..	S. W. cor. Primrose st.....	D	¾	28.0 N. of S. L. Big Ridge road.....	35.0 W. of hydrant S. E. corner.
Bowen st.....	8.0 E. of last hydrant.....	D	½	7.7 S. of N. L. Bowen st.....	8.0 E. of last hydrant.
Brown's race	In Brown's race.....	D	3	15.8 W. bldg. E. side of race.....	51.7 S. of S. L. Furnace st.
Cedar st.....	S. E. cor. Campbell st.....	D	½	12.0 W. of E. L. Cedar st.....	6.0 N. of S. L. Campbell st.
Center st.....	<i>S. E. cor. Mill st.....</i>	<i>H</i>	<i>8</i>	<i>12.0 N. of S. curb Center st.....</i>	<i>7.9 E. of E. curb Mill st.</i>
Chatham st.....	N. E. cor. Franklin st.....	D	8	8.8 W. of E. curb Chatham st.....	14.0 N. or N. curb Franklin st. (E.)
Chatham st.....	S. E. cor. Andrews st.....	D	8	8.2 W. of E. curb Chatham st.....	10.4 S. of S. curb Andrews st. (E.)
Churchst.....	Opp. N. W. cor. State st.....	D	6	28.1 S. of N. L. Church st.....	33.8 W. of E. L. State st.
Clark st.....	N. E. cor. Grape st.....	D	1	28.4 E. of W. L. Grape st.....	6.0 S. of N. curb Campbell st.
Clifford st.....	N. W. cor. Hebard ave.....	D	¾	19.9 E. of W. L. Hebard ave.....	0.5 N. of S. L. Clifford st.
meter gate	124 ft. E. of Hebard ave.....	D	¾	20.0 S. of N. L. Clifford st.....	124.0 E. of E. L. Hebard ave.
Clinton pk.....	<i>Air chamber in pipe yard.....</i>	<i>H</i>	<i>6</i>	<i>On N. L. of lead house.....</i>	<i>30.0 N. of N. L. Clinton pk.</i>
Davis st.....	462 ft. W. of N. Union st.....	D	½	10.0 N. of S. L. Davis st.....	462.5 W. of W. L. N. Union st.
Denver st.....	S. W. cor. Grand ave.....	D	6	8.0 E. of W. curb Denver st.....	15.2 S. of S. curb Grand ave.
Denver st.....	N. W. cor. Grand ave.....	D	6	8.5 E. of W. curb Denver st.....	16.4 N. of N. curb Grand ave.
Diringer pk.....	N. E. cor. N. Goodman st.....	D	1	0.5 N. of S. L. Short st.....	16.0 W. of E. L. N. Goodman st.
meter gate	45 ft. E. of N. Goodman st.....	D	1¼	44.8 E. of E. L. N. Goodman st.....	13.0 S. of N. L. Diringer pk.
Felix st.....	N. E. cor. Sherman st.....	D	4	25.6 N. of S. L. Felix st.....	3.5 E. of W. F. house No. 94.
Fourth ave.....	N. E. cor. Hayward ave.....	D	8	10.6 W. of T. L. Fourth ave.....	6.3 N. of T. L. Hayward ave. (W.)

STREET.	LOCATION.	System.	Size.	CO-ORDINATES.	
			(In.)		
Fourth ave	Opp. S. E. cor. Peck st.	D	8	11.2 E. of T. L. Fourth ave	6.4 S. of T. L. Peck st. (E.)
Fulton ave.	124 ft. N. of Jones ave.	D	$\frac{3}{4}$	2.0 E. of W. L. Fulton ave.	123.7 N. of N. L. Jones ave.
Garson ave.	N. E. cor. Leighton st.	D	8	12.4 S. of N. T. L. Garson ave.	0.6 E. of T. L. Leighton st.
Garson ave.	N. E. cor. Denver st	D	8	12.3 S. of N. T. L. Garson ave.	3.0 E. of T. L. Denver st,
Grafton st.	N. E. cor. North ave.	D	8	Sec official notes.	
Grand ave.	N. E. cor. Greeley st.	D	8	7.1 S. of N. curb Grand ave.	2.0 E. of E. curb Greeley st.
Greeley st.	S. E. cor. Grand ave.	D	6	3.1 W. of E. curb Greeley st. (S.)	17.4 S. of S curb Grand ave.
Greeley st.	N. E. cor. Grand ave.	D	6	7.0 W. of E. curb Greeley st. (N.)	15.8 N. of N. curb Grand ave.
Greeley st.	N. E. cor. Parsells ave.	D	6	5.2 W. of hydrant on N. E. cor.	6.4 S. of hydrant on N. E. corner.
Griebel st	N. E. cor. North ave.	D	6	Sec official notes.	
Karges pl.	N. E. cor. S. Clintonst.	D	6	12.0 N. of S. curb Karges pl.	6.5 W. of E. L. S. Clinton st.
Lampson st.	S. E. cor. Garson ave.	D	$\frac{3}{4}$	15.0 W. of E. L. Lampson st.	30.0 N. of S. L. Garson ave,
Lux st.	N. W. cor. North ave.	D	8	Sec official notes.	
E. Main st	<i>Near N. E. cor. Franklin st.</i>	<i>H</i>	12	<i>11.7 S. N. curb E. Main st.</i>	<i>47.7 E. E. curb Franklin st.</i>
E. Main st.	<i>N. W. cor. Belmont pk.</i>	<i>H H B</i>	4	<i>6.8 directly before hydrant.</i>	
E. Main st.	<i>213 ft. W. of Gibbs st</i>	<i>H H B</i>	4	<i>7.2 directly before hydrant.</i>	
E. Main st.	<i>N. E. cor. Gibbs st.</i>	<i>H H B</i>	4	<i>7.9 directly before hydrant.</i>	
E. Main st.	<i>N. W. cor. Windsor st.</i>	<i>H</i>	12	<i>13.2 S. N. curb E. Main st.</i>	<i>1.6 W. W. curb Windsor st.</i>
E. Main st.	<i>N. W. cor. Scio st.</i>	<i>H H B</i>	4	<i>7.2 directly before hydrant.</i>	
E. Main st.	<i>33 ft. E. of Richmond pk.</i>	<i>H H B</i>	4	<i>8.1 directly before hydrant.</i>	

TABLE "G" Continued.

(64)

NAME OF STREET.	LOCATION OF GATE.	System.	Size.	CO-ORDINATES.	
			(In.)		
E. Main st.....	N. W. cor. University ave....	H	12	12.9 S. N. curb E. Main st. (W.)	
E. Main st.....	S. W. cor. University ave....	H H B	6	9.7 directly before hydrant.	
McLean st.....	N. W. cor. Genesee st.....	D	1¼	30.0 S. of N. L. McLean st.....	2.0 W. W. L. Genesee st.
meter gate	157 ft. W. of Genesee st.....	D	1¼	30.0 S. of N. L. McLean st.....	13.6 W. W. L. Genesee st.
Medrow al.....	S. E. cor. Cole st.....	D	¾	3.0 S. of N. L. Medrow al.....	6.5 W. E. L. Cole st.
Melville pk.	15 ft. E. of last hydrant.....	D	¾	16.3 S. of N. L. Melville pk.....	15.0 E. of last hydrant.
meter gate	30 ft. E. of last hydrant.....	D	¾	17.0 S. of N. L. Melville pk.....	30.3 E. of last hydrant.
Moran al.....	S. E. cor. Elizabeth st.....	D	¾	5.0 S. of N. L. Moran al.....	10.6 W. E. L. Elizabeth st.
North ave.....	N. of Outlet sewer.....	D	12	11.8 E. of hydrant S. of Lux st.....	298.9 S. of hydrant S. of Lux st.
North ave.....	N. W. cor. Stewart st.....	D	12	17.0 E. of W. L. North ave.....	12.7 S. N. L. Stewart st.
North ave.....	S. W. cor. Kress st.....	D	8	24.0 E. of W. L. North ave.....	6.4 S. S. L. Kress st.
North st.....	N. W. cor. Hudson terr.....	D	¾	0.5 W. of W. L. North st.....	18.0 S. N. L. Hudson terr.
Oneida st.....	N. W. cor. North ave.....	D	6	See official notes.	
Park row.....	N. W. cor. Neilson pl.....	D	4	9.0 E. of T. L. Park row.....	5.0 S. N. L. Neilson pl. (W.)
Randolph st.....	N. E. cor. North ave.....	D	10	See official notes.	
Raymond st.....	101 ft. W. of last hydrant.....	D	¾	31.0 S. of N. L. Raymond st.....	101 ft. W. of last hydrant.
State st.....	106 ft. S. of Market st.....	H H B	6	13.3 W. E. curb directly before hydrant.	
State st.....	54 ft. N. of Mumford st.....	H H B	6	14.1 W. E. curb directly before hydrant.	
University ave....	N. W. cor. E. Main st.....	H	8	10.0 N. S. curb University ave.....	16.0 E. W. curb E. Main st. (S.)
	Controls S. P. hydrant at Main st.....	H H B	4	20.1 directly before hydrant.	

Summary of all Stop Gates in all water pipes regarded as mains set during the period between April 3d, 1893, and April 2d, 1894.

BY WHOM SET.	SYSTEM.	No. and Size of Gates in Wro't Iron, Galvanized Iron, Asphaltum Coated and Lead Pipe.					Number and Size of Gates in Cast Iron Mains					TOTAL.
		½ in.	¾ in.	1 in.	1¼ in.	3 in.	4 in.	6 in.	8 in.	10 in.	12 in.	
Executive Board, from April 3d, 1893, to April 2d, 1894.	D	4	11	2	3	1	2	12	14	1	2	52
	H	..	..	..	..	..	6	4	2	..	3	15
Total.....		4	11	2	3	1	8	16	16	1	5	67

Table showing Stop Gates removed during the year, which have been deducted from the General Summary for table "G," given hereafter.

STREET.	LOCATION.	SYSTEM.	SIZE IN INCHES.	REMARKS.
Centre st	S. E. cor. Mill st.....	H	4	4 inch main removed and 8 inch substituted between Mill st. and Brown's Race.
S. Chatham st.	S. E. cor. Andrews st.....	D	4	4 inch main removed and 8 inch substituted between Franklin and Andrews streets.
Clark st.	N. E. cor. Romeyn st....	D	1¼	Wrought Iron Pipe removed and 4 inch permanent Cast Iron Pipe laid.
Clifford st.....	S. E. cor. Hudson st	D	1	Wrought Iron Pipe removed and 8 inch permanent Cast Iron Pipe laid.
Crouch's Island	Mt. Hope av. 147.00 lin. ft. N. of Comfort st.....	D	3	Wrought Iron Pipe imperfect; cut off and abandoned.
E. Main st.....	N. E. cor. of Franklin st.	H	8	Large construction (12 inch) laid in st.
E. Main st.....	N. W. cor. of Gibbs st....	H	6	Large construction (12 inch) laid in st.
North av.....	40 ft. N. of first hydrant } E. side of st.....	D	4	Blow off removed and laid at north end of new construction near Chapin st.
North av.....	65 ft. N. of first hydrant } E. side of st.	D	8	Twelve (12) inch laid on west side of st.; eight (8) inch taken up.
North av.....	N. W. cor. of Stewart st.	D	8	Twelve (12) inch laid on west side of st.; eight (8) inch taken up.

NOTE. - The 4 inch Domestic Gate in Church street, on the N. W. corner of State street, was cut out and re-set at a point 31.50 lin. ft. west of its former location.

GENERAL SUMMARY OF ALL STOP GATES IN ALL THE WATER PIPES
REGARDED AS MAINS.

BY WHOM SET.	SYSTEM.	Number and size of Gates in Wrought Iron, Galvaniz'd Iron, Asphaltum Coated and, Lead Pipe Mains.										Number and Size of Gates in Cast Iron Mains.								TOTAL.
		½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	2½ in.	3 in.	3 in.	4 in.	6 in.	8 in.	10 in.	12 in.	16 in.	20 in.	24 in.		
Board of Water Commissioners, Executive Board and Water Works and Fire Board, up to April 2d, 1894.	D	12	71	55	17	14	30	4	4	...	608	891	245	45	90	45	9	1	2141	
	H	.....	.....	.....	.....	.....	1	.....	.....	1	57	67	35	35	23	4	3	.....	226
	B. O. D.	.....	.....	1	.....	.....	4	.....	.....	.....	41	3	.....	.....	1	.....	.....	.....	50
	B. O. H.	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1	.....	.....	.....	.....	.....	.....	5
	F. C. D. } D. & H. }	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	9	.....	.....	.....	.....	12
	S. P.	2	2
	B. O. S. P.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1
	F. C. D. } & S. P. }	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
	Total..	12	71	56	17	14	35	4	4	1	710	966	280	90	114	49	12	3	2438

Continuation of table showing location and size of Stop Gates in large services and private mains connected with the City Water Works, and not included in the Stop Gate tables published from year to year. From April 3, 1893 to April 2, 1894.

NAME OF STREET.	Side of Street.	Name of Owner or Occupant.	Nature of Service.	System.	Size of Gate.	CO-ORDINATES.	
						Inch.	
Centre st.	S	<i>Roch. Electric R. Co.</i>	<i>Boiler</i>	H	4	17.0 N. S. L. Centre st.	108.5 E. E. L. Mill st.
Clifton st.	N	St. Mary's Asylum	Domestic	D	1 1/4	12.5 S. N. L. Clifton st.	47.0 W. W. L. Summer st.
Crouch's island		Lehigh Valley R. R.	Domestic	D	3/4	See official notes.	
Exchange st.	E	<i>Edison Electric Co.</i>	<i>Boiler</i>	H	2	<i>Gate in area off J. A. Smith's service.</i>	
Graves st.	N	<i>Butts Estate</i>	<i>Aut. Fire</i>	H	4	11.1 S. of Bee hive	64.4 W. W. L. Graves st. (N.)
	N	Butts Estate	Aut. Fire	D	2	See official notes.	
E. Main st.	S	<i>F. Cook</i>	<i>Elevator</i>	H	4	16.0 S. N. Curblin E. Main street	4.1 E. E. L. Liberty alley.
E. Main st.	N	F. Ellwood	Service Dom.	D	2	22.3 S. N. L. E. Main st.	5.8 E. E. L. Exchange st.
Matilda st.	S	Am. Ballot Mach. Co.	Dom. and Boiler.	D	2	46.0 S. N. L. Matilda st.	168.0 E. E. L. Fourth ave.
Pleasant st.	S	Michaels Stern Co.	.....	D	1	10.0 N. S. L. Pleasant st.	63.4 W. W. L. N. Clinton st.
Pindell al	E	<i>Wisner Bldg</i>	<i>Elevator</i>	H	3	4.9 W. E. L. Pindell al	14.0 S. S. L. Church st.
N. St. Paul st.	W	Roch. Photo. Mater. Co.	Commercial	D	2	9.6 E. W. L. N. St. Paul st.	98.7 N. of 1st hyd. N. of Av. E.
Snyder st.	W	C. Pike	Domestic	D	1	16.5 N. S. L. Cady st.	1.7 W. E. L. Snyder st.

TABLE "C."

General Summary of all Stop Gates in large service and private mains connected with the City Water Works System and not included in the Stop Gate table published yearly—up to April 2d, 1894.

BY WHOM SET.	System.	Number and sizes in Wrought and Galvanized iron services.									Cast Iron Services.				Totals.
		$\frac{1}{8}$ in.	$\frac{3}{8}$ in.	1 in.	$1\frac{1}{4}$ in.	$1\frac{1}{2}$ in.	2 in.	$2\frac{1}{2}$ in.	3 in.	3 in.	4 in.	6 in.	8 in.		
Executive Board and other Water Works authorities up to April 2d, 1894.	Dom.	1	9	23	35	24	72	10	9	2	90	6		281	
	Holly.		1		2	2	9	6	9		84	21	1	135	
Totals.....		1	10	23	37	26	81	16	18	2	174	27	1	416	

The six inch Holly gate formerly set in State street, northeast corner Mumford and controlling the large service to elevator in property belonging to the Seth Green estate, has with the service been removed, the elevator not having been used for some time. Proper deduction has been made for this removal in the above table.

Summary for Table "C" Year Ending April 2d, 1894.

BY WHOM SET.	System.	Number and Size in Wrought Iron Services.					Cast Iron Serv.	Totals.
		$\frac{3}{4}$ inch.	1 inch.	$1\frac{1}{4}$ inch.	2 inch.	3 inch.	4 inch.	
Executive Board, from April 3d, 1893, to April 2d, 1894.	Dom.	1	2	1	4	....	....	8
	Holly.	....	....	....	1	1	3	5
Totals.....		1	2	1	5	1	3	13

TABLE showing the streets in which the Hemlock system of water pipe is laid or commenced, together with the size of the water mains, the width of the streets, the side of the streets upon which the water pipe is laid, and the distance of said pipe from the line of the street or curb, from April 3d, 1893, to April 2d, 1894.

NOTE.—In consequence of the frequent changes in lines of curb and streets, there may be found some variations from the distances given in the following table. Parties desiring to know the location of the mains with great exactness must verify the table by personal examination on the street.

NAME OF STREET.	LOCATION.	Size of Main in inches.	Side of Street on which Main is laid.	Width of Street. Feet.	Distance of Main from line of street—i. e., from buildings or fences—feet.	Distance of Main from Curb—feet.
Andrews st.	North st. to Chatham st.	8	North.....	60	20	7.0
Andrews st.	Chatham st. to North Clinton st.	8	North.....	60	24	10.0
Andrews st.	North Clinton st. to 118 ft. E. of North St. Paul st.	8	North.....	60	22	9.0
Andrews st.	End above to North St. Paul st.	8	North.....	60	22 to 19	9 to 6
Avenue B.	449 ft. E. of Conkey av. to 59 ft. east.	$\frac{1}{2}$	North.....	58	20	
Avenue C.	Conkey av. to 367 ft. east.	6	North.....	58	22	
Baldwin st.	N. and S. at Grand av.	6	East.....	60		5.0
Big Ridge road.	Primrose st. to 68 ft. west.	$\frac{3}{4}$	South.....	69 $\frac{1}{2}$	28	
Chatham st.	Franklin st. to Andrews st.	8	East.....	61	22	8.0
Clark st.	Romeyn st. to Grape st.	4	East.....	50	18	
Clark st.	Brown st. to Romeyn st.	4	East.....	50	18	
Clifford st.	Hebard av. to Cummings st.	$\frac{3}{4}$	North.....	60	20	
Denver st.	N. and S. at Grand av.	6	West.....	60		8.0
Denver st.	At Garson av.	6	West.....	60		
Denver st.	N. and S. at Parsells av.	6	West.....	60		
Diringr pk.	North Goodman st. to 442 ft. east.	1 $\frac{1}{4}$	North.....	33	13	
Division st.	Former end E. of North St. Paul st. to 326 ft. east.	4	North.....	33	13	
Felix st.	Sherman st. to 315 ft. east.	4	North.....	40	15	
Garson av.	Leighton st. to Culver st.	8	North.....	60	22	
Grafton st.	At North av.	8	North.....	50	18	
Grand av.	Denver st. to Culver st.	8	North.....	75	31 to 25	
Greeley st.	At Garson av.	6	East.....	60		
Greeley st.	S. at Grand av.	6	East.....	60		3.0
Greeley st.	N. at Grand av.	6	East.....	40		7.0

TABLE P—Continued.

(70)

NAME OF STREET,	LOCATION,	Size of Main in inches.	Side of Street on which Main is laid.	Width of Street. Feet.	Distance of Main from line of street—i. e., from buildings or fences—feet.	Distance of Main from Curb—feet.
Greeley st.....	At Parsells av	6	East.....	40	14	.....
Griebel st.....	At North av	6	North.....	50	18	.....
Hudson terrace.....	Former end to North st.	8	North.....	40	15	.....
Karges place.....	South Clinton st. to 314 ft. east.....	6	North.....	35	9	.....
Lampson st.....	Garson av. to 104 ft. south.....	3 $\frac{1}{2}$	East.....	50	14	.....
Lux st.....	At North av.....	8	North.....	49	17	.....
McLean st.....	From 158 ft. W. of Genesee st. to 135 ft. west.....	11 $\frac{1}{4}$	North.....	77	30	.....
Medrow alley.....	Cole st. to 114 ft. east.....	3 $\frac{1}{2}$	South.....	14	3	.....
Melville pk.....	End of Cast Iron Pipe to 78 ft. east.....	3 $\frac{1}{4}$	North.....	45	17	.....
North av.....	From 716 ft. N. of Kress st. to Chapin st.....	12	West.....	66	Irregular.	.....
Oneida st.....	At North av.....	6	North.....	50	18	.....
Oswego st.....	At Grand av.....	4	East.....	60	22	.....
Parsells av.....	Former end E. of Denver st. to Culver st.....	8	North.....	80	30	.....
Randolph st.....	At North av.....	10	North.....	50	18	.....
Raymond st.....	End of Cast Iron Pipe to 76 ft. west.....	3 $\frac{1}{2}$	North.....	50	12	.....
Wall st.....	South av. to 164 ft. west.....	3 $\frac{1}{2}$	North.....	.....	12	.....
Warwick av ..	Chili av. to Bronson av.....	6	East..	60	22	.....

Amount of Hemlock water, used by months, through 3,014 meters, sub-
divided as follows :

Domestic.....	1,093 meters.
Commercial.....	1,618 meters.
Manufacturing.....	303 meters.
Total meters used entire fiscal year.....	3,014

MONTHS.	Feet.	Gallons.
April.....	10,889,341	81,670,057
May.....	9,713,925	72,854,437
June.....	10,485,199	78,638,992
July.....	10,763,780	80,728,350
August.....	10,373,398	77,800,485
September.....	10,677,845	80,083,837
October.....	9,945,570	74,591,775
November.....	9,864,006	73,980,045
December.....	9,524,691	71,435,182
January.....	9,875,180	74,063,850
February.....	9,909,123	74,318,422
March.....	8,868,908	66,516,810
Total for year.....	120,890,966	906,682,245

RECAPITULATION.	Feet.	Gallons.
Domestic meters.....	18,023,595	135,176,962
Commercial meters.....	52,818,308	396,137,310
Manufacturing meters.....	50,049,063	375,367,973
Totals.....	120,890,966	906,682,245

STATEMENT showing water used in June, July and August, as compared with December, January and February, as used for Domestic, Commercial and Manufacturing purposes:

DOMESTIC.		Feet.
June.....		1,654,016
July.....		1,588,105
August.....		1,600,848
Totals.....		<u>4,842,969</u>
December.....		1,471,543
January.....		1,638,259
February.....		1,640,456
Totals.....		<u>4,750,258</u>
COMMERCIAL.		
June.....		4,632,323
July.....		4,730,581
August.....		4,327,964
Totals.....		<u>13,690,868</u>
December.....		4,161,903
January.....		4,464,307
February.....		4,586,693
Totals.....		<u>13,212,903</u>
MANUFACTURING.		
June.....		4,197,860
July.....		4,445,094
August.....		4,444,586
Totals.....		<u>13,087,540</u>
December.....		3,891,245
January.....		3,772,614
February.....		3,681,974
Totals.....		<u>11,345,833</u>

AVERAGES FOR YEAR, MONTHS AND DAYS.

	Domestic.	Commer- cial.	Manufact- uring.
Average number cubic feet per day.....	49,378	144,707	137,121
Average number cubic gallons per day.....	370,342	1,085,302	1,028,408
Average number cubic feet per month.....	1,501,966	4,401,526	4,170,755
Average number cubic gallons per month.....	11,264,745	33,011,445	31,280,633
Average number cubic feet per day per acc't.....	45	89	452
Average number cubic gallons per day per acc't.....	337	667	3,390
Average number cubic feet per month per acc't.....	1,124	2,729	13,765
Average number cubic gallons per month per acc't.....	8,430	20,400	103,237
Average number cubic feet per year per acc't.....	16,430	32,641	165,178
Average number cubic gallons per year per acc't.....	123,675	244,807	1,238,835
Average feet per day, all uses.....			331,208
Average gallons per day, all uses.....			<u>2,484,000</u>