

the annual pressure test was made the average pressure on the low service hydrants was 35 pounds. In March, 1909 the average pressure had increased to 37.38 pounds, or about 7 per cent. This also is a new experience in Halifax in recent years. In every case where a complaint has been made against meters the consumption has been larger than it should be and in many the waste was deliberate, the plumbing being exposed to the frost.

While the meter way may not be the popular way, and consequently may not be a vote winner, it must be apparent to any fair minded man that it is the right way, and in time it will be adopted generally in Halifax. It is already popular with those who find it cheaper. In St. Boniface, Manitoba, and Gananoque, Ontario, Canadian cities, having every service metered, the daily consumption is 25 and 31 gallons respectively per capita; in Halifax over ten times the quantity.

The number of meters in service April 30th, 1909 was 1148. One hundred and one were installed during the year, forty-nine less than the number of new services. Mr. Arthur L. Smith, who was employed in March, 1908, made all repairs, and since that date no meters have been condemned. Previous to that time many of the Siemens meters went to the scrap heap. The number of meters repaired was 74 or  $6\frac{1}{2}$  per cent. of the total number in use during the year. The average cost of repairs was 48 cents per meter repaired or  $3\frac{1}{10}$  cents per meter in use.

#### CLEANING MAINS.

The high service main was cleaned on September 1st. The cost of cleaning 36,340 feet, \$34.07, was larger than usual, and the time, 10.28 to 5.58, was larger. The valve on the Venturi meter had not been closed and the scraper became by-passed in running through the meter house at Chain Lake. In working the valves while locating the scraper the top was broken off one of the spindles. Notwithstanding the delay caused, the cleaning was completed and the water turned on early in the evening.

#### PURITY OF SUPPLY.

The possibility of contamination of the low service lakes having been again under discussion, the following report from your Engineer was read in Council December 10th, 1908:—

"There is a possibility of contamination of the low service water supply from houses on the water shed, from the highway and from the railroad, although in most cases the possibility is more remote than in those which we have been watching. In the case of the Halifax and South Western Railway the line runs a short distance north of the upper and lower Chain Lake and crosses water courses which are dry in Summer but which during and immediately after rains carry the surface water to the lakes. When the line was under construction I used every effort to prevent contamination of the water in consequence of the number of men employed along the hill side above the lake. Now that the line is open there is still a remote possibility of disease germs being dropped from a passing train and carried in the water courses already mentioned to the lake. Typhoid fever is a water-born disease and while there is a possibility, no matter how remote, every precaution should be taken to guard against contamination of the water. In large cities the lavatories and closets are closed while the trains are within the City limits for the purpose of cleanliness principally. The doors are not unlocked by the brakemen until the train has passed beyond the City limits. I can see no reason why the closets on the Halifax and South Western trains should not be kept locked between Beech Hill and Halifax. While there is no cause for alarm, yet the precaution should be taken. The nearest house to the lakes on the slopes draining to them is Mr. John Umlah's at the forks of the Prospect and Margaret's Bay road. Mr. Umlah keeps pigs on his property and has a stable. There is no water course running from his premises to the lakes, but during rains and when the snow is melting off, the water runs over the surface from his property to the lakes, which are not far away. This property is a menace to the purity of the water in the lakes, and the City should purchase it at the first favorable opportunity. In the meantime it should be closely and carefully inspected at frequent intervals, and the City Health authorities should be notified at once of any disease in the house. Section 617 of the City Charter gives the City power to deal with certain conditions which might impair the quality of the water for domestic uses. While this house and premises is nearer to the lakes than any other on the water shed there are a number of others from which the water supply might be injuriously affected more easily. In Beech Hill there are several instances in which the barn and privy are very close to the surface water course running directly to Long

Lake, from which the City's water supply in the low service district is drawn through the Chain Lakes. If the City could afford it there should be no residences allowed on the water shed. If, however, they must be allowed to remain the same rigid inspection and enforcement of the regulations is necessary in Beech Hill as in connection with Mr. Umlah's property. I did not ascertain the names of the owners of properties in Beech Hill which are near the water course, but could point them out to the Health Inspectors."

The matter was referred to a special committee of the Council who recommended that Mr. Umlah be offered \$3,500 for his property, and that he be allowed to remove the buildings within three months from April 1st, 1909, and to cut and remove the wood from the land at any time within the next five years. Their recommendations were adopted March 26th, 1909, and Mr. Umlah accepted subsequently.

#### PRECIPITATION.

The number of days on which precipitation was recorded was only one hundred and forty and a trace on twenty days, but the total, 64.870 inches, is 111 per cent. of the mean for the past forty years (56.458 inches.)

Long Lake filled to the waste weir in each month except October and November. The lowest level reached was on October 30th, when the surface of the lake was 203.29 or 2.70 feet below the waste weir. Spruce Hill Lake reached its highest level for the year, 364.54, on May 2nd, and its lowest level, 361.48, on October 30th. As wells were dry and storage reservoirs all around us low, and the number of days on which precipitation is recorded unusually small, the condition of Long Lake during the season seems remarkable.

The reason, however, is not difficult to discover. The total consumption in the low service district in 1907, the year before the new meters were put on to stop waste, was 800,000,000 gallons greater than the total consumption last year, 1908. That quantity of water if drawn from Long Lake in a dry season like 1905, would lower the surface seven or eight feet which would bring us face to face with exactly similar conditions as our experience of four years ago, when we were forced to pump to get any water at

all, and yet there are men who claim that another or larger pipe should be laid so that more water could be drawn from Long Lake to be wasted, and drain the lake.

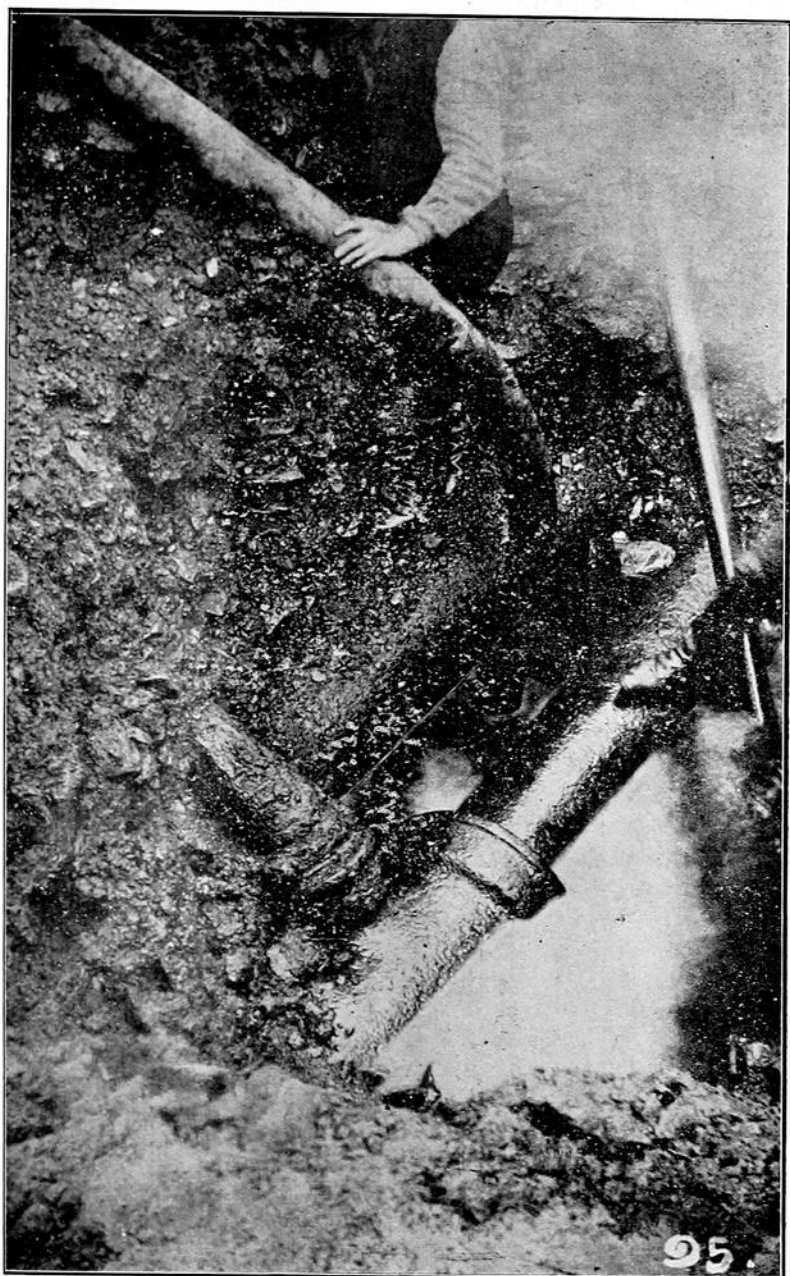
#### RECOMMENDATIONS.

During the coming year the distribution system should be improved by laying mains twelve inches in diameter, (to replace mains which have become inadequate to meet the modern demands for fire protection) in Morris Street, from Pleasant Street to Park Street; Gerrish Street from Brunswick to Gottingen; North Street from Lockman to Brunswick; and Proctor Street from Water to Brunswick St. The nine-inch main in Duke Street should be extended from Argyle to Barrington Street and the Albemarle Street main should be removed.

A twelve-inch main should be laid in Oxford Street from the low service supply main on Quinpool Road southwardly to connect with the existing Coburg Road and Oxford Street distribution system. This district is supplied now from the high service mains and the lowest taps are almost at tide level. The pressure on such taps is the heaviest in the City and the waste, and even the consumption for ordinary domestic purposes, is increased in consequence. No time should be lost in transferring this district to the low service system by laying the Oxford Street main, as there is urgent necessity for reducing the consumption and increasing the pressure in that system by every means available. A twelve-inch main is recommended looking to the future when the whole district south of Quinpool Road and West of Oxford St., also as far East as the water will rise, must be supplied from this proposed main distribution pipe. When it is needed this twelve-inch main should be extended to Inglis Street to connect with the Park Street main.

The usual routine work was carried on during the year, including estimating and reporting on petitions for main pipe extensions, giving lines and grades for pipe laying, preparation of plans, supervision of contracts, tabulation of records, investigation of complaints, etc. The office work was very largely increased by the studies, research, estimates, calculations, surveys, plans, etc., required by the City Solicitor in the Fenerty suit.

Investigations and tests were made by the City Electrician to



BLOW OFF ON HIGH SERVICE MAIN, DUTCH VILLAGE ROAD

determine the electrical conditions existing between the water pipe system and the tramway as shown in his report attached.

#### STREETS.

The greater part of the sidewalk construction which was carried out during the season was ordered in 1906 and 1907. 9127 square yards of cement concrete sidewalks were laid varying in cost from \$1.28 to \$2.08 according to conditions. Included in the sidewalk work there was 2433 feet of straight granite curb, 456 feet of corner granite curb, 3031 feet of straight granite gutter, 489 feet of corner granite gutter and 1535 feet of straight combined concrete curb and gutter.

The Barber Asphalt Paving Company completed that portion of their contract remaining unfinished at the close of 1907. The work included the paving of Lockman Street from Gerrish Street, to the north side of the King Edward Hotel and Pleasant Street from South Street to Inglis Street. At North Street the intersection west of the car tracks was paved with scoriae blocks. East of the tracks on the hill 4 inch granite setts laid with wide joints were used instead of scoriae at the request of hackman who have to use this approach to the railway station. At Cornwallis Street scoriae was laid on one half and granite on the other both being set with wide joints. This intersection is subjected to heavy traffic, practically all of the north end freight to and from the Deep Water Terminus and freight sheds passing over it. The result of the experiment at Cornwallis Street and North Street will be of great value in future in selecting a permanent pavement for hill streets or intersections.

These steep grades make one of the most difficult problems that we have to deal with in our street work. When the City was planned the east and west streets were laid out climbing straight up the steep hill in the most direct manner as if the shortest way should be the best way. If diagonal streets had been provided for heavy traffic and more direct communication we should not have to consider to-day the opening of new diagonal streets in the older part of the City.

It does not seem to have occurred to the City designer that it is harder to raise a team and load one foot than to move it three feet on the level, and that consequently less power is expended in

going one mile around a hill than one-third of a mile up it. In fact, after a sleet storm many of our hills are practically impassable for loaded teams.

Moreover it is much more difficult and expensive to keep hilly streets in good repair than level ones, and not only is energy wasted by every person who uses such a road, but the waste must continue for years to come. Every team must load for the steepest hill on its route, and hence, only partial loads can be carried.

Across the Atlantic they are much more particular to-day in these matters than they must have been when the man who planned Halifax came out. Sfrenuous efforts are made not to exceed a four per cent. grade. The power required to haul a load on a four per cent. grade is three times as great as on a level street yet some of our grades are more than four times four.

The following table from "Shaler's American Highways" deserves careful study before dealing with proposals now before the Council for opening diagonal streets.

Rate of grade in ft. per 100 ft. in length.	Power required in pounds to haul one ton on grade.	Equivalent length of level road for same expenditure of power in miles.	Maximum load in pounds which a horse can haul up the even grade.
0.00	45.00	1,000	6,270
0.25	50.60	1,121	5,376
0.50	56.20	1,242	4,973
0.75	61.80	1,373	4,490
1.00	67.40	1,500	4,145
1.25	73.00	1,622	3,830
1.50	78.60	1,746	3,584
1.75	84.26	1,871	3,290
2.00	90.00	2,000	3,114
3.00	112.20	2,484	2,486
4.00	134.20	2,982	2,083
5.00	157.00	3,444	1,800
6.00	179.40	3,986	1,568
7.00	201.80	4,844	1,367
8.00	224.20	4,982	1,235
9.00	246.60	5,480	1,125
10.00	269.00	5,977	1,036

Good roads require constant attention or they will soon cease to be good roads.

The Department has been severely criticised for using other material for binder than stone screenings, and where it has been used on level or flat grades the criticism is merited. On steep grades, however, there is a different story to tell. There is but one unfailing test of the relative durability of road materials and that is actual wear.

On the hills the traffic comes on the new metal long before it can be sufficiently compacted by rolling. Our two rollers cannot keep up with the work in the middle of the season, but must go from one job to another, leaving as soon as the repairs are passable. The rains washing down over the steep surface, the caulks of the horses' shoes especially during dry weather, the fresh breezes following hot days and other causes remove the screenings and permit raveling of the surface. It becomes necessary therefore to adopt a more tenacious binder for hill streets. It seems almost impossible to get a bond on the hills without using some of the ferruginous gravel found overlying the rock in different parts of the City. One of the evil results of using a dirt binder is that when workmen are allowed to throw on these local earths they will apply too much unless they are restrained constantly. It is difficult too to make foremen understand the difference between ferruginous gravel and ordinary mud or dirt. However, until we stop entirely the deluging of our steep sidewalks and roadways with the outpour from downspouts and surface drainage from yards, we must continue to use material with better cementing qualities than broken stone and stone screenings. In our experience the ferruginous gravel is the best binder available to prevent raveling on hills as it packs very hard and remains a long time on the surface sustaining a great amount of wear.

The use of similar material on the suburban streets when it can be obtained in the neighborhood is necessary because it costs less than hauling broken stone from Rockhead and the appropriation is not large enough to afford the best. The Association for the Poor induces the Works Committee to order more stone than we can use and this further reduces the amount of work done by tying up money in the stone yard that should be available to haul road metal.



The increase in wages in 1908 further reduced the quantity of work that can be done, but the Council has not increased the appropriation.

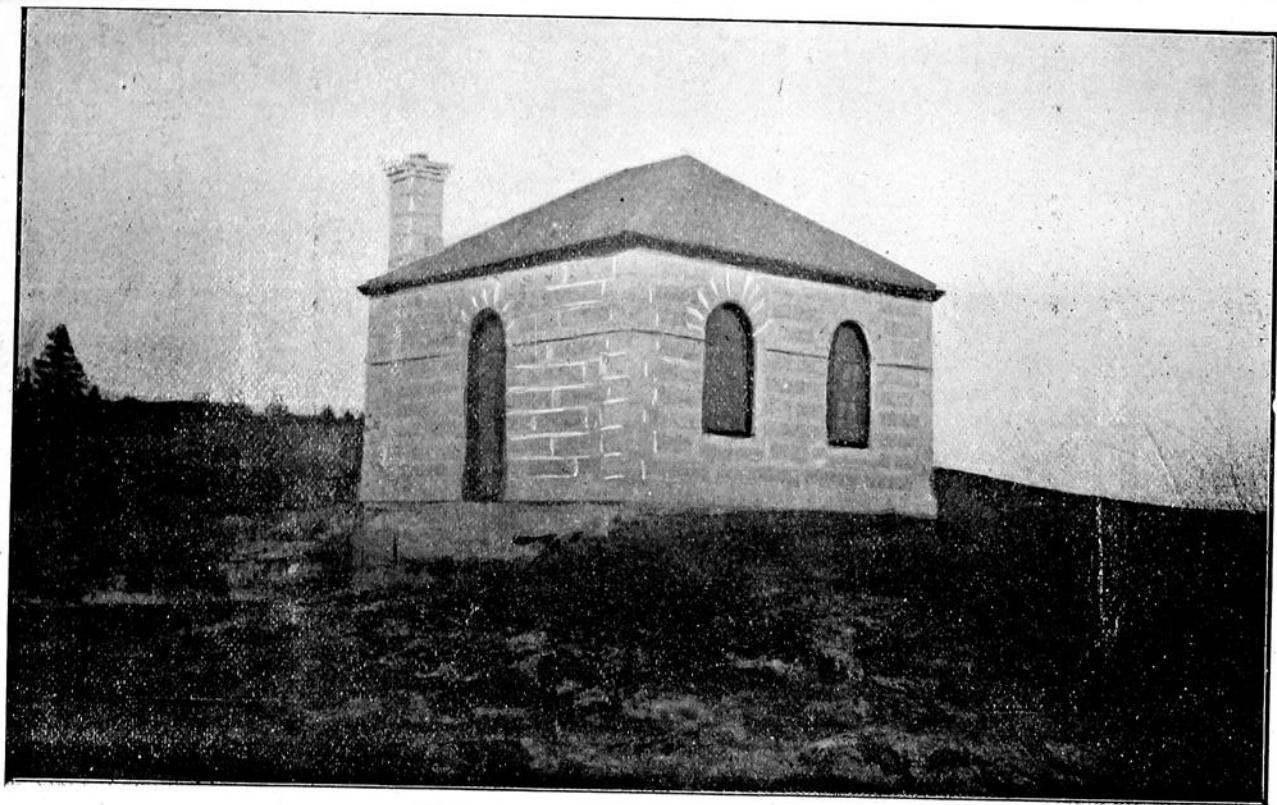
In 1904 the appropriation for streets was \$25,000. In December of that year the Council reduced the appropriation for the next year \$3,000 and in April 1905 increased the wages which further reduced the quantity of work that could be done by probably \$2,000 at least. With an appropriation capable of doing only four-fifths of the work that could be done in 1904 the street officials were abused because they were not doing as much work nor using as much money in material. In 1906 the Council realizing the cause restored the estimates to \$25,000.00 and that amount was spent in 1907 on the streets now unpaved.

In April 1908 the wages were again increased. Although this increase with the difference in cost of broken stone reduced the quantity of work that can be done on streets by not less than \$3000, yet the estimate passed last December was not increased to correspond. It is impossible for your officials to make the same showing with the expenditure as before the increase in wages. It has been argued that the paving of the streets released some of the money, but that is not correct. Since the \$25,000.00 was restored no part of it was expended on the streets now paved.

It would require at least \$30,000 to-day to do the street work which we were able to overtake in 1904 and \$28,000 to perform the same work in repairing unpaved streets as we did in 1907.

A few years ago the Council in its wisdom decided to increase the amount available for street repairs by levying a tax on certain special privileges granted to private citizens and corporations. Other cities (Toronto especially) derive a considerable income from such privileges.

It seems reasonable for the City to expect an adequate remuneration for occupying space above and under sidewalks and streets. The city is under expense on account of the necessary supervision by the City officials when these special privileges are installed, built or otherwise executed. Such special privileges for occupying streets include scales, railway tracks, areas or hatches, coal holes, steps, porches, bay windows, poles, pipes, conduits,



NEW GRANITE GATE HOUSE, CHAIN\_LAKES

awnings, house moving, enclosures for building purposes or material, etc.

An ordinance was passed providing that no new areas or coal holes should be permitted except under lease and at a fixed rental. This Department is carrying out the law by requiring property owners to obtain a lease. As the collection of the rent is the duty of other officials it is not within the knowledge of your Engineer whether that part of the City revenue is obtained or not. The ordinance also provided that a rental should be paid for areas and coal holes existing at the passing of the ordinance. Naturally this provision was unpopular with property owners who had been enjoying these special privileges free although they have no right to them and their views are being allowed to prevail. These fortunate influential individuals are saving a few cents a year while the general taxpayers who do not get any such special privilege lose \$1000,00 a year that might be added to the small dole with which it is expected the demands for street work shall be satisfied.

On residential streets where sidewalks have been laid during the year the space between the curb and sidewalk has been sodded or boulevarded. The work is popular in the City and makes a great improvement in the appearance of the streets on which such work has been done. On some streets, however, the individual property owner does not appreciate the improvement and not only takes no care of the new work but assists by his own acts in its destruction. Fortunately such men are the exception not the rule.

If the City would commence the construction of the boulevard laid out on Morris Street from Park Street to Robie Street and on Robie Street to the north side of the Common and keep it in good order during the season, it would not only afford an object lesson to the individual property owner, but would greatly improve the appearance of these avenues which could be made the handsomest in the City without any costly work. In order to carry out the work without taxing the appropriation too heavily in one year, one block could be finished each season until the whole distance is boulevarded. If one block were done so that residents and property owners in the district could see the improvement made, it is safe to say that they would want it completed. A beginning might be made when boulevarding the "Island" acquired last year at the junction of Coburg Road and Robie Street.

## RAILWAY CROSSINGS.

The Silliker Car Company completed their railway crossing on Almon Street by erecting gates. Such gates are more useful as a warning to the public than as an obstacle. They do not prevent either children or adults from crossing the railway track if they insist on doing so, nor will they stop a runaway team. The crossing is much safer, however, with the gates than it would be without them.

The heaviest part of the work necessitated by the diversion and depression of Kempt Road at the crossing of the branch line to the new yard was constructed by the Intercolonial Railway. The traffic was transferred to the subway although the work is not yet completed. The concrete retaining walls and bridge abutments were erected. A cast iron pipe storm water drain 18 in. dia. was laid through the subway discharging at the sewer outlet running northwardly from the railway yard and buildings. The roadway was roughly graded and the lights installed.

At the Campbell Road crossing the work is also unfinished. This crossing is at grade as the old one was, but while the former crossing had only one railway track on the Cotton Factory branch and two on the main line, the two crossings being some distance apart, the new one will have four tracks. In the opinion of your Engineer this is a very dangerous crossing and a watchman should be stationed there or the grade crossing should be abolished. There are two plans by which the danger to traffic could be removed. First by depressing Campbell Road and carrying the highway traffic under the tracks through a subway, second by diverting the road along the south side of the I. C. R. branch line to a junction with Longard Road, depressing Longard Road, passing under the branch line and following a natural hollow under the H. & S. W. and I. C. R. main line to a junction with Campbell Road east of Africville. If some similar suggestion is not adopted there is danger of perhaps fatal accidents as a train approaching from the North cannot be seen by a pedestrian or driver approaching the crossing from the south.

The retaining wall at the Hillis property on the east side of Veith Street was constructed of concrete by Contractor George Low,

Hillis & Son being paid \$1200 in accordance with their offer accepted last year.

Mr. E. Sullivan's boat house lease at North Ferry was transferred to A. J. Cole.

A petition was received for the opening of a diagonal street from the corner of Argyle and Duke Streets, to the corner of Brunswick Street as shown on the official plan.

Another petition was presented about the same time asking for the opening of a street from Grafton Street midway between Duke Street and Buckingham Street to Brunswick Street at Hurd Street also for the extension of Brunswick Street northwardly through the Admiralty property and Wellington Barracks to Albert Street. No action was taken by the Council.

#### STREET RAILWAY.

The double track on South Park Street was extended from Morris Street to Inglis Street. This work enables the Company to give a better service on the loop, but it will not be satisfactory until Inglis Street is also double tracked. When that work is done there will be no single track on the main line south of Wellington Barracks.

#### OFFICIAL PLAN.

The sections of the City Plan completed in 1907 were after many delays dealt with by the Council at the meeting held on April 13th, 1909. Sections 9, 10, 12, 13, 14, 15, 16, 18, 19 and 20 were approved except the following streets:—

Armview Drive.

City Hall Street.

Oxford Street between Oakland Street and Inglis Street.

Hollis Street " South Hollis Street and Inglis Street.

The consideration of section 17 was deferred.

During the coming year street monuments will be established on the streets approved.

The lines having been established steps should be taken to fix

permanent grades and a resurvey should be made to check levels. Permanent bench marks should be set up to take the place of hydrant bench marks which are not reliable owing to the danger of a change being made during repairs, or alterations.

The remaining sections of the plan should be finished without delay and two engineers were employed on this work at the close of 1907-8. Immediately after the beginning of the year your Engineer was instructed to discharge these men and the work was abandoned, hundreds of dollars worth of work being thrown away which a comparatively small expenditure would have given the City the benefit of.

The plans finished before the beginning of 1908-9 are of great benefit to the City and it is the desire of the Engineer's Department that plans shall be made from them so that the public may be given without delay answers to the many inquiries respecting property lines, sewers, drains, underground pipes, conduits, poles, sidewalks, curbs, lights, accepted and unaccepted streets, service pipes, manholes, hatches, encroachments, city property, exempted property, trees, tree lines, curb lines, catchpits and many other matters of public interest.

In that part of the work abandoned we must begin again and it will take some time to prepare it for approval and not until it has been approved can the City reap the benefit. The need for such records becomes more urgent every year.

#### SEWERS AND DRAINS.

Seven sewers were completed during the season, and Hanover Street outlet was extended to the beach. The total length of sewers laid was 3199.5 feet, and the average cost per foot \$5.81.

The length of sewers constructed under the Sewer Act from 1890 to 1908, inclusive, is 137,497 feet, or 26 miles.

Thirty concrete catchpits were constructed, making the total 868.

Two hundred and eight permits were issued for laying, cleaning or repairing drains.

The Plumbing Inspector reports approval of 422 applications for permission to do plumbing work—an increase of 93.

The Board of Plumbing Examiners held seven meetings. Eight applicants were examined, six of whom received a certificate of registration as a journeyman plumber and two were permitted to work for one year.

Only 118 certificates for completion of work were issued, or 304 less than the number of permits granted. The cause of this failure to overtake the work was the illness of Mr. D. P. O'Neill, the City Plumbing Inspector. During his absence from his work Mr. John E. Burns was detailed to perform his duties, but as he was unfamiliar with the plumbing constructed previous to his appointment he did not overtake the old work. Unfortunately Mr. O'Neill's malady proved fatal and the City has lost a faithful official who was well fitted for the office of Plumber Inspector in consequence of his thorough knowledge of the work and the tact which he exercised in performing at times unpleasant duties.

The district along Coburg Road, on the slope towards the North West Arm, is being built up with a desirable class of residences. All through this district the rock crops out and the installation of cesspits must hasten the time when it will be absolutely necessary to construct a sewer system. As the shallow soil becomes charged with the sewage overflowing from the cesspits the surplus will reach the surface and become offensive, and the City should get ready to meet these conditions before they menace the health of the residents.

The outlet for the western slope must empty into the Arm, and it is probable that the system adopted must differ from that used on the eastern slope. While the latter carries off sewage and storm water in the same conduit, on the western side of the peninsula separate sewers may have to be provided so that the house sewage may be clarified before it is discharged into the Arm.

This problem is closely allied with the water problem. The quantity of house sewage to be carried away and disposed of is regulated by the quantity of water consumed in the houses drained. The house sewers, which will not carry any rain water, must be designed larger or smaller as the quantity of water to be carried is likely to be larger or smaller. The cost must be met by the taxpayers accordingly. If meters are installed to prevent waste then the sewers may be made smaller or of the size required to carry off a minimum consumption of water. If waste is to continue unchecked

then the sewers must be designed to carry four or five times as much water or sewage and many thousands of dollars will be added to the cost of the house sewer system for the western slope of the City. Every new service pipe put in on the western slope should have a meter before the water is turned on. That part of the problem would then take care of itself.

#### INTERNAL HEALTH.

The amount expended in this service was divided generally, as follows:—

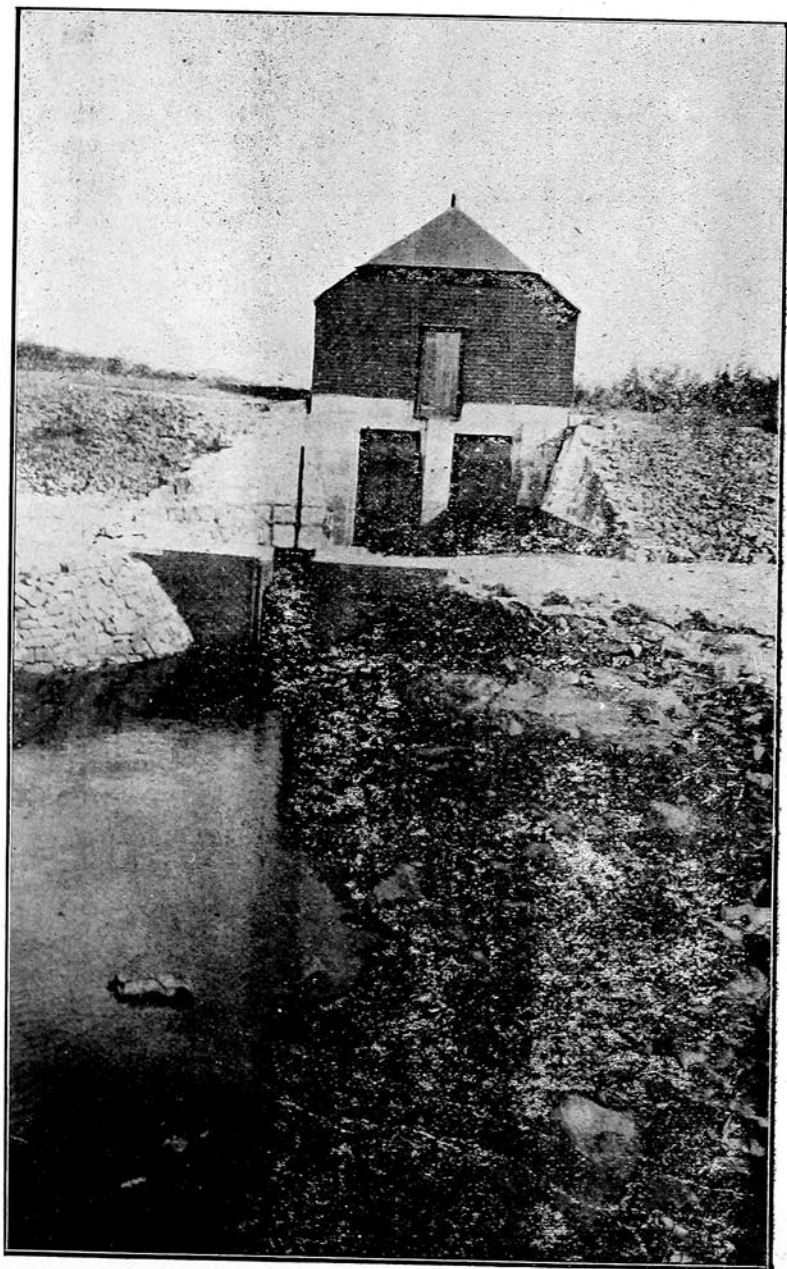
Cleaning streets outside the paved districts.....	\$6,616 12
“ paved streets.....	5, 00 00
“ catchpits.....	2,593 47
Sprinkling.....	2,476 63
Repairing carts.....	622 10
Removal of ashes and garbage.....	3,761 84

To the above sums should be added the cost of the work performed by City teams in scavenging or sprinkling.

The regulations providing for the separation of ashes and garbage are carried out strictly and we are thus able to use thousands of loads of ashes every year in the grading of streets and sidewalks, work which otherwise we should not be able to overtake with our limited street appropriation. While the scavenging work costs more than it did some years ago, the streets are getting the full benefit of the increase. If the ashes and garbage were mixed as formerly, thousands of loads would be wasted annually by throwing them into the dumps. As the dump is farther away than the streets on which the ashes are deposited, more teams and men would be required and the cost of scavenging would be greater, to say nothing of the value in dollars and cents of the street work performed with the ashes which we should be obliged to get along without. If householders reading the foregoing will try to realize that the separation of ashes and garbage means thousands of dollars annually to the taxpayers it may be the means of softening the feeling of antagonism which Works Department officials occasionally encounter in their efforts to perform their duties in accordance with the regulations.

Garbage is deposited at the Exhibition Grounds and the area of





OLD GATE HOUSE, CHAIN LAKES

the hollow inside the half-mile track is being reduced rapidly. In another year or two this place of deposit will be filled in. During Exhibition week we have difficulty in finding any place where the garbage may be deposited without becoming a nuisance. In the very near future some other method of disposal must be provided. The City should not dump garbage where it may some day be built upon, but a modern garbage crematory should be erected, designed so that the heat may be used to furnish steam for the operation of light or power machinery. The preparation of plans and specifications, the letting of contracts including the investigation of the merits of different designs, the construction of a plant and putting it in operation consume time and steps should be taken by the Council to avoid conditions which we have to meet during Exhibition week now, but which in a short time will constitute a menace to health during every day of the year.

Street and catchpit cleaning work has been reduced in the same way that street repair work has suffered. The increase in wages in April 1905 reduced the quantity of work that could be done, and in December of that year the Council increased the estimate from \$14,000.00 to \$17,000.00. In April 1908 truckmen got a twenty-five per cent. increase in wages and laborers two cents an hour. No increase has been made since in the estimates to enable the Department to continue the work that was being done in 1907, and your officials are unable to do as much street and catchpit cleaning as they could before the increase in wages. Not only is the quantity of such work reduced by the increase in wages on such work, but we cannot reduce the quantity of work performed in removing ashes and garbage and sprinkling, and the increase in cost of this work still further decreases the amount available for cleaning.

#### PUBLIC BATHS.

The Beach Bath was opened July 1st and closed October 2nd. The number of bathers was 5,302, expenditure \$690.36, receipts \$256.75

#### BUILDINGS.

The building operations were larger than during the previous year.

1907-8.	Permits for new buildings.....	127	value	\$474,861
	Permits for repairs, etc.....	422	value	203,919
1908-9.	Permits for new buildings.....	172	value	725,180
	Permits for repairs, etc.....	436	value	227,230
1907-8.	Total number of permits .....	549	total value	678,780
1908-9.	Total number of permits .....	608	total value	952,410

#### BUILDING PERMITS ISSUED FROM MAY 1, 1908, to MAY 1, 1909.

NEW BUILDINGS.			ALTERATIONS, ADDITIONS, & C.		
Month.	No.	Value.	Month.	No.	Value.
May.....	24	\$180,065	May.....	47	\$14,350
June.....	14	58,200	June.....	42	3,580
July.....	23	44,675	July.....	65	15,100
August.....	9	43,880	August.....	39	106,040
September.....	17	157,355	September..	51	23,015
October.....	19	33,455	October....	49	8,030
November.....	11	18,410	November..	33	4,255
December.....	16	21,975	December..	17	13,400
1909.					
January.....	4	12,100	January..	11	5,445
February.....	5	19,340	February..	10	2,730
March.....	15	86,900	March.....	40	23,035
April.....	15	48,825	April.....	32	8,250
	172	\$725,180		436	\$227,230

Violations of the law were reported to the City Solicitor, as follows:—

Date of Report.	OWNER.	LOCATION.	VIOLATION.
1908.			
July 15	J. P. Fairbanks ...	Hollis Street.....	Window encroachments.
Oct. 14	Mich. Brine.....	Livingston Street....	Erecting building without permit
1909.			
Feb. 8	Arch. King .....	Maynard Street .....	Erecting building in violation of the Act.
July 29	Margt. Kelly .....	Beech Street.....	Erecting building without permit
Sept. 7	C. W. Nickerson ..	Quinpool Road .....	Erecting building in violation of the Act.
" 7	L. A. Dolan.....	North Street.....	Erecting building not in accordance with Act.
" 22	R. A. Corbin .....	Oak Street .....	Erecting building without permit
Oct. 6	Geo. C. Cook .....	Upper Water Street .	Erecting building in violation of the Act.
Dec. 11	R. A. Corbin.....	Oak Street .....	Erecting building not in accordance with the Act.

## CITY PROPERTY.

The construction of new workshops, stores and stables was the most important work in the above service.

The contract for the excavation and concrete walls was awarded to George B. Low, last year. The building is 540 feet long and 63 feet wide. The plans show five concrete partition walls dividing the structure to prevent fire from spreading. The east block with an extreme length of 115 feet is two storey and will have on the lower floor twenty-three horse stalls and two box stalls, harness room, lavatory, coach house grooming and wash floors. On the second floor will be stored hay, straw, oats, bran, cracked feed and the lighter vehicles and plant when out of season. Between the stables and the centre block the building for a length of 141 ft. 6 in. is one storey and will provide accommodation for the ash carts and sleds, sprinkling carts, trucks, tools, etc.

The centre block, 79 ft. long, is two storeys and will contain on the lower floor Storekeeper's office, plumber's shop, meter store, lavatory, and room for use of Engineer's staff. On the upper floor there will be a large room for light stores, and living apartments for two men. One of these men will be an employee of the Water Department who will be immediately available for night or Sunday emergency calls. The other will be a stable man whose duties will include a prompt response to night and Sunday fire alarms with the driving horse used by the Water Department.

Between the centre and west block the building is one storey and has a length of 122 ft. 6 in. It will be used for the storage of sand, gravel, cement, water works supplies, brick, drain pipe, etc., and the manufacture of concrete blocks for sewers.

The west block, 82 feet long and two storeys high, will contain blacksmith shop, shoeing shop, repair shop (two storey), carpenter and machine shop, paint shop, lumber room and store room.

The City Engineer's specification provided that "the Contractor shall excavate for all piers, walls and chimneys to a hard bottom." This provision compelled bidders to ascertain for themselves the depth at which hard bottom would be found and estimate accordingly. Mr. Low's tender was \$13,216.00, but provided that all

concrete more than a foot below grade should be considered as extra work and be paid for at \$7.50 per cubic yard, that price to include excavation. The next regular tender in accordance with specification was Mr. Marshall's, \$24,000. The Council accepted Mr. Low's tender and the contract was made.

As the excavation for the foundation progressed hard bottom was reached at a depth of four feet at the east end, unsatisfactory material at the west end and a soft, treacherous bog between. Testing with bars, the soft material was shown to have considerable depth and to be full of water. To excavate the peaty soil and pump out the water to hard bottom meant a most difficult piece of work and had been estimated by Mr. Marshall, as shown by his tender, to cost about \$11,000.00 (concrete included). Piles could not be used as there is no permanent level of ground water and should the piles decay the building on its narrow foundation would go down. Your Engineer was obliged either to instruct Mr. Low to carry out his contract, go to hard bottom and let the City pay for the extra work estimated to cost \$11,000.00 or make some change in the mode of construction of the foundation which would save the City a part of that sum.

A consultation with the Contractor resulted in a change to a spread foundation. The Freshwater trunk sewer passes through the property and there was no water above that structure. The excavation was made five feet wide and to the depth of the sewer in the worst material. In the bottom of the trench condemned granite crossing stones and other refuse blocks were laid crosswise and close together. Above the granite blocks four twisted wire cables were stretched taut and anchored at distances of about thirty feet with heavy blocks of granite. Half-way between the anchor blocks the cables were raised by a slab of stone on edge pressed under them.

Where the underlying material was very soft a footing of 1 : 2 : 4 : concrete was laid on the granite blocks before placing the cables. This footing was five feet wide and varied in thickness from one foot to two feet according to the character of the subsoil. After the cables were in place the sheeting for the foundation walls was erected and the concrete work continued. For the two-storey portion of the structure the foundations were 23 inches wide and for the remainder 15 inches. Two strands of the twisted wire cables were embedded

in the concrete at above every 12 inches to the top of the foundation walls.

All piers, buttresses and pilasters were reinforced with four 7/8 inch square steel bars. Over large door openings two 7/8 inch bars and expanded metal were used. Over small openings two 3/4 inch bars and expanded metal were placed. Bars 1/2 inch square were embedded in the concrete elsewhere throughout the work.

Sydney Cement (Rampart) was used during the warm weather, the proportion being 1 : 2 : 4. Pilasters, buttresses, belts and mouldings were given a smooth finish bringing out the whiteness of the cement.

The remainder of the exterior of the concrete was rough cast, a dark Portland cement being adopted to obtain a contrast.

Expansion and contraction joints were provided, but the building was not completed before cold weather set in and the February frosts developed a few contraction cracks which closed again as the weather became milder. No appearance of weakness or tendency to settle can be discovered in any part of the structure and the foundation adopted has evidently met all requirements and at a minimum cost.

Mr. Marshall's tender was.....	\$24,000.00
Mr. Low was paid amount named in tender,	\$13,216.00
Concrete below 4 ft. 396.5 cu. yds. @ \$7.50	2,973.75
Placing footing stone \$205.33 & 5% \$30.80	236.14
	<hr/>
	\$16,425.89
Deducted for finish of base.....	20.00
	<hr/>
Total amount paid.....	16,405.89
	<hr/>
Saving by plan adopted.....	\$ 7,594.11

The building like all other work performed by Mr. Low is a monument to his conscientiousness in carrying out his contract.

As the appropriation paid in at the time the contract was awarded would not complete the building, it was intended that the roof, doors and windows should be finished so that the structure would be

available for the storage of the Works Department plant, tools and materials. In furtherance of this intention window and door frames were made at the City shops.

In August tenders were received for the wood-work, the City to supply window and door frames, sashes (unglazed) and roof covering material. The Council awarded the contract to Freeman Bros., \$4500.00, but their tender was withdrawn. As the next tender was \$4728.00 and the City Carpenter's estimate \$4200.00 it was decided to do the work by day's work. Mr. George W. Brush, who superintended the work, demonstrated his ability by completing it, notwithstanding serious unforeseen handicaps, for \$4,211.14.

The contract for roofing was awarded to Wm. McFatriidge for Warren's Asphalt Ready Roofing, with ten year guarantee, at \$4.25 per square. The contract amounted to \$1487.50.

The remaining lot fronting on Tower Road in the Exhibition Grounds, measuring 53 feet by about 143 feet, was sold by tender to Falconer and MacDonald, for \$1810.00. Subsequently the first lot west on College Street, about 37 feet by 126 feet, was sold to Falconer and MacDonald and R. G. Beazley for \$1000.00.

The Governors of Dalhousie College asked for terms upon which they could acquire the block of land in front of the College and bounded by Carlton Street, College Street, Summer Street and Morris Street Boulevard. Legislation was obtained authorizing the City to dispose of the property (including Carlton Street) to the College by sale, lease or gift.

The construction of a concrete walk along the east side of the Grand Parade, from George Street to the City Hall, was recommended last year, but has not been ordered. The board walk used for years during the muddy season is beyond repair and was neither ornamental nor permanent. Visitors to the City offices and Library cause considerable damage to the lawn by making a thoroughfare of the sod.

The electric wiring in the City Hall was reconstructed so that it would comply with the provisions of the Wiring Ordinance.

The Intercolonial Railway expropriated from the City a lot of

## Total Length in feet of Cast Iron Water Mains in the Water Supply System of the City of Halifax.

	SIZE OF PIPE IN INCHES.										Less than 3 in.	Total.
	27	24	20	15	12	9	8	6	4	3		
Length on December 31st, 1907.....	14560	20524	6732	44236	37749	45660	663	148225	34472	30466	898	384165
Laid during 1908 .....						1478		2482				3960
<b>Total December 31st, 1908 .....</b>	<b>14560</b>	<b>20524</b>	<b>6732</b>	<b>44236</b>	<b>37749</b>	<b>47138</b>	<b>663</b>	<b>150707</b>	<b>34472</b>	<b>30466</b>	<b>898</b>	<b>388125</b>

Equal to  $73 \frac{2685}{280}$  miles.

N. B.—Pipes from main to hydrants (except on wharves) laid previous to 1897 not included in above summary.



## Pipes Re-cleaned by Mechanical Scraper, 1908.

DATE.	LOCATION.	Diameter of Pipe in inches	Length cleaned in feet.	Cost.	Remarks.
	High Service .....	20	6712	\$34 07	Re-cleaned.
	High Service .....	15	29628		

## New Service Pipes, 1908.

$\frac{1}{2}$ inch. Feet.	$\frac{3}{4}$ inch. Feet.	1 inch. Feet.	$1\frac{1}{2}$ inch. Feet.	$2\frac{1}{2}$ inch. Feet.	3 inch. Feet.	Total feet.
5359	134	.....	.....	84	.....	5595

## House Services Renewed, 1908.

$\frac{1}{2}$ inch. Feet.	$\frac{3}{4}$ inch. Feet.	1 inch. Feet.	$1\frac{1}{2}$ inch. Feet.	$1\frac{1}{2}$ inch. Feet.	$2\frac{1}{2}$ inch. Feet.	Total feet.
2382	35	.....	.....	.....	.....	2417

land about 950 feet in length along the Cotton Factory Branch for the double track right-of-way. The plan was filed in the Registry of Deeds on the 22nd day of July, 1908.

#### ELECTRIC WIRING.

The legislation regulating the performance of electric wiring work in buildings became effective at the first of the year. Mr. P. R. Colpitt, City Electrician, has been able to apply the new methods with a minimum of friction and the difficulties at first encountered are now of rare occurrence.

Mr. Colpitt's report appended gives a more detailed account of the work.

#### EXPENDITURE.

The report of the Clerk of Works shows the totals:—

Water Maintenance.....	\$ 81,945.34
Water Construction.....	22,754.89
Sewer Construction.....	33,967.31
Sewer Maintenance.....	1,126.00
Streets.....	29,886.58
Internal Health, Street Cleaning, Scavenging, etc.....	20,038.24
Patrol Cleaning paved streets.....	5,500.00
Street Lighting.....	22,843.50
City Hall Lighting.....	822.89
Teams and Stables.....	7,518.68
City Property.....	2,604.03
Fire Insurance.....	782.74
Fuel City Hall.....	1,099.98
Baths.....	667.75
Telephones.....	316.61
Quinpool Road Widening.....	2,288.40
Paving.....	22,432.88
Sidewalks.....	17,357.05
Workshops and Stables.....	22,129.24
Contingent Expenditure.....	233.15
Electric Wiring Equipment.....	172.09
Electric Wiring Inspection.....	272.48
Public Gardens Fence.....	250.00
	<hr/>
	\$297,009.83

Decrease in expenditure below 1907 .....	111,902.70
Total labor payroll .....	111,420.82
Decrease below 1907 .....	21,327.87

The usual reports and statements are appended.

Respectfully submitted.

F. W. W. DOANE,

City Engineer.

The report of the Clerk of Works shows the totals:—

Water Maintenance .....	\$ 81,007.34
Water Construction .....	22,754.89
Sewer Construction .....	38,927.21
Sewer Maintenance .....	1,122.00
Streets .....	29,820.24
Internal Health, Street Cleaning, Sewerage, etc. ....	20,022.24
Latrine Cleaning paved streets .....	1,700.00
Street Lighting .....	22,243.20
City Hall Lighting .....	822.80
Teams and Stables .....	7,512.68
City Property .....	2,604.00
Fire Insurance .....	782.74
Fuel City Hall .....	1,099.98
Baths .....	667.75
Telephones .....	312.01
Outdoor Road Widening .....	2,288.40
Paving .....	22,282.88
Sidewalks .....	17,267.00
Workshops and Stables .....	22,128.24
Contingent Expenditures .....	228.16
Electric Wiring, Equipment .....	172.00
Electric Wiring Inspection .....	272.48
Public Gardens Fences .....	250.00
	<hr/> \$297,009.88

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**REPORT OF WATER DEPARTMENT.**

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HALIFAX, N. S., April 30th, 1909.

F. W. W. DOANE, ESQ.,  
*City Engineer.*

SIR,—I beg to submit the annual report of stock belonging to the Water Department, length of mains laid, and mains Richmond, also service pipes laid with location of houses supplied with water during the year, 1908.

Respectfully submitted,

E. MORRISON,  
*Foreman Water Department.*





CORPORATION SHOPS AND STABLES UNDER CONSTRUCTION

## New Hydrants, 1908.

STREET.	LOCATION.	Design.	Service.	Size of Pipe in Inches.		Length of Pipe in Feet.		No. of Nozzles.		Distance Valve from Hydrant.	
				Ft.	In.	Ft.	In.	Ft.	In.		
Pepperell.....	570 ft. W. of Louisburg St.	City.	H.	6	12	0	3	8	8	11	
Gottingen.....	Opp. Trachoma Hospital	"	H.	6	9	0	3	5	0		
Kane.....	Creighton St	"	H.	6	11	0	3	5	4		
Agricola.....	Cor. Kane St	"	H.	6	12	6	3	9	6		
Agricola.....	Cor. Stairs St	"	H.	6	12	0	3	9	4		
Agricola.....	Cor. Stanley St	"	H.	6	12	0	2	9	8		
Agricola.....	Cor. Columbus St	"	H.	6	12	0	3	9	0		
Agricola.....	Cor. Cabot St	"	H.	6	4	0	3	2	3		

## Old Hydrants Replaced with Frost Jacket Hydrants.

STREET.	LOCATION.	Design.	Service.	Size of Pipe in Inches.		Length of Pipe in Feet.		No. of Nozzles.		Distance Valve from Hydrant.	
				Ft.	In.	Ft.	In.	Ft.	In.		
Queen.....	Con. Morris.....	City	L	6	...	3	3	3	7		
Morris.....	Cor. Dresden Row.....	"	"	6	...	3	5	0			
Morris.....	Cor. Birmingham.....	"	"	6	...	3	2	2			
Henry.....	Cor. South.....	"	H	6	1.6	3	9	10			
Seymour.....	Cor. Coburg Road.....	"	"	6	...	3	5	10			
Hurd.....	Cor. Starr.....	"	L	6	2.0	3	...	...			
Creighton.....	Cor. Cogswell.....	"	"	6	...	3	...	...			
Maynard.....	Cor. Cogswell.....	"	H	6	...	3	...	...			
Gottingen.....	Cor. North.....	"	"	6	...	3	4	0			
Brunswick.....	Opp. George.....	"	L	6	...	3	4	9			

## Summary of Hydrants.

No. of Hydrants on Streets	December 31, 1907	384
"	Wharves	20
"	Military and Naval Property	20
"	Private Property	13
"	in use December 31, 1907.	437
"	set on Streets in 1908.	8
"	in use Decem 31, 1908.	445

## Valves Set during 1908.

## ON MAINS.

STREETS.	LOCATION.	Size.	Service.
Agricola .....	N. line Kane St., 26' 10" from E. line Agricola .....	9	High.
Agricola .....	S. line Stanley St., 26' 8" from E. line Agricola .....	9	"
Agricola .....	At Merkel St., 25' 0" S. from N. line Merkel, 25' 0" W. from E. line Agricola St. ....	9	"
Cedar .....	E. line Walnut St., 26' 7" from S. E. Cor. ....	6	"
Clifton .....	S. line North St., 35' 4" from S. E. Cor. ....	6	"
Kane .....	W. line Gottingen St., 25' 3" from N. W. Cor. ....	6	"
Kane .....	E. line Agricola St., from N. E. Cor. ....	6	"

## ON HYDRANTS.

Agricola .....	At Stanley Street, 9' 8" from hydrant .....	6	High.
" .....	Kane Street, 9' 6" .....	6	"
" .....	Stairs Street, 9' 4" .....	6	"
" .....	Columbus, Street 9' 0" .....	6	"
" .....	Cabot Street, 2' 3" .....	6	"
Brunswick .....	George Street, 4' 6" .....	6	Low.
Gottingen .....	North Street, 4' 0" .....	6	"
" .....	Tracoma Hospital, 5' 0" .....	6	High.
Henry .....	South Street, 9' 10" .....	6	"
Kane .....	Creighton Street, 5' 4" .....	6	"
Morris .....	Dresden Row, 5' 0" .....	6	Low.
" .....	Birmingham Street, 2' 2" .....	6	"
Pepperell .....	570' W. Louisburg St., 8' 11" .....	6	High.
Queen .....	Morris Street, 3' 7" .....	6	Low.
Seymour .....	Coburg Road, 5' 10" .....	6	High.

## Total Number of Valves.

	27"	24"	20"	15"	12"	9"	6"	4"	3"	1 1/2"	1 1/4"	1"	3/8"	HYDRANT VALVES.		Total
														6"	4"	
In use Dec. 31st, 1907 .....	1	8	2	29	58	73	363	110	112	1	9	2	11	95	1	861
Set in 1908 .....						3	4							15		22
In use Dec. 31st, 1908 .....	1	8	2	29	58	76	367	110	112	1	9	2	11	110	1	883



## Pipe Stock on Hand December 31st, 1908.

No. of pieces.	Diameter in inches.	Weight of one in lbs.	Total weight in lbs.	Value per lb. in cents.	Total value.	REMARKS.
2	27	2870	5740	1 $\frac{3}{4}$	\$ 100 44	Class A. T. & B. 12 ft.
3	27	3206	9618	1 $\frac{3}{4}$	168 10	Class B. T. & B. 12 ft.
1	27	3658	3658	1 $\frac{3}{4}$	64 01	Class C. T. & B. 12 ft.
6	24	2360	15160	1 $\frac{3}{4}$	202 13	
4	20	1263	5062	2 $\frac{1}{4}$	113 67	
8	15	1200	9600	2 $\frac{1}{4}$	216 00	
2	12	960	1920	2 $\frac{1}{4}$	52 40	12 ft. long.
14	10	550	7700	2 $\frac{1}{4}$	173 25	
36	9	500	18000	2	360 00	9 ft. old pipe.
13	9	660	3580	2 $\frac{1}{4}$	80 55	12 ft. long.
2	8	386	772	2 $\frac{1}{4}$	17 37	
18	5	222	3966	2 $\frac{1}{4}$	89 91	
770	4	156	120122	2 $\frac{1}{4}$	2702 70	9 ft. long.
32	4	202	.....	2 $\frac{1}{4}$	145 44	12 ft long.
42	.....	26	1092	2 $\frac{1}{4}$	24 57	Service pipes.
15	.....	12	180	2 $\frac{1}{4}$	4 00	Service plates.
50	.....	6	300	2 $\frac{1}{4}$	6 00	Service caps.
40	.....	6	240	2 $\frac{1}{4}$	5 40	Service caps, old.
15	.....	2	30	2 $\frac{1}{4}$	67	Service thimbles.
300	.....	22	66000	2 $\frac{1}{4}$	148 50	Service sleeves and cap.
16	.....	34	544	2 $\frac{1}{4}$	12 24	Sleeves main stopcocks.
14	.....	54	756	2 $\frac{1}{4}$	17 01	Plates main stopcocks.
1405	.....	.....	274038	.....	\$4704 36	

## Pipe-Specials.

No. of pieces.	Diameter in inches.	DESCRIPTION.	Weight of one in lbs.	Total weight in lbs.	Value per lb. in cents.	Total Value.
11	27	Thimbles .....				
2	27	Bell Mouth .....	831	1662	2 $\frac{1}{4}$	\$ 37 39
13	27	Bevel Collars .....	795	10335	2 $\frac{1}{4}$	210 05
1	27	Plain Special, 2 ft. long, Class A .....	404	404	1 $\frac{3}{4}$	7 04
1	27	" 2 " B .....	460	460	"	8 05
1	27	" 3 " B .....	700	700	"	12 25
1	27	" 4 " B .....	920	920	"	16 10
1	27	" 5 " B .....	1248	1248	"	21 84
2	27	" 5 " B .....	1144	2288	"	40 04
2	27	" 5 " C .....	820	1640	"	28 70
1	27	" 5 " C .....	1332	1332	"	28 31
1	27	" 4 " C .....	1068	1068	"	28 69
2	27	Saddles 27" x 6" .....				
1	24	Bevel Collar .....	688	688	2 $\frac{3}{4}$	15 48
9	24	Thimbles .....	396	3564	"	80 19
2	24	Saddles 24" x 6" .....				
1	24	Cap .....	290	290	2 $\frac{1}{4}$	6 52
6	24	Split Thimbles .....	620	3720	2 $\frac{3}{4}$	93 00
4	20	Thimbles .....	230	920	2 $\frac{1}{4}$	20 07
1	20	Split Thimbles .....	453	453	"	11 32
3	15	Four-way Branches .....	896	2688	"	60 48
3	15	Four-way Branches, 15" x 6" .....	660	1980	"	44 55
1	15	Three-way Branches .....	812	812	"	18 27
2	15	Y's .....	1112	2224	2 $\frac{1}{2}$	50 04
1	15	Thimbles .....	234			
1	15	Three-way Branch, 15" x 12" x 6" .....	580	580	2 $\frac{1}{4}$	13 30
1	15	Reducing to 6" .....	400	400	2 $\frac{1}{4}$	9 00
9	15	Split Thimbles .....	260	2340	2 $\frac{1}{2}$	58 50
3	15	Saddles, 15" x 3" .....	55	165	2 $\frac{1}{4}$	1 61
1	15	Saddles, 15" x 6" .....	67	67	"	1 51
4	12	Four-way Branches .....	615	2460	"	55 35
2	12	Four-way Branches, 12" x 9" .....	500	1500	"	33 75
4	12	Four-way Branches, 12" x 6" .....	475	1900	"	42 75
3	12	Four-way Branches, 12" x 3" .....	425	1275	"	28 69
3	12	Three-way Branches .....	524	1572	"	35 37
1	12	" " 12" x 9" .....	499	499	"	11 11
2	12	" " 12" x 9" x 6" .....	500	1000	"	22 50
5	12	" " 12" x 6" .....	490	2450	"	55 12
3	12	Reducing to 9" .....	240	720	"	14 20

## PIPE SPECIALS.—(Continued.)

No. of pieces.	Diameter in inches.	DESCRIPTION.	Weight of one in lbs.	Total weight in lbs.	Value per lb. in cents.	Total Value.
3	12	Reducing to 6".....	200	600	24	\$ 13 50
2	12	Reducing to 6" with faucet.....	200	400	"	9 00
14	12	Thimbles.....	160	2240	"	50 40
10	12	Split Thimbles.....	222	2886	24 <sup>3</sup> / <sub>4</sub>	64 93
2	12	Cap.....	45	90	24 <sup>3</sup> / <sub>4</sub>	2 02
2	12	Saddles, 12' x 3".....	45	90	"	2 02
1	12	Saddles, 12' x 2".....	43	45	"	1 01
2	9	Six-way Branches, 9' x 9' x 9' x 3".....	450	900	"	20 25
5	9	Three-way, 9' x 9'.....	355	1775	"	39 74
1	9	Four-way, 9' x 9' x 9' x 6".....	400	400	"	9 00
3	9	Three-way, 9' x 6" x 6".....	335	1005	"	22 61
3	9	Reducing to 6".....	157	471	"	10 50
13	9	Thimbles.....	112	1456	"	32 76
16	9	Split Thimbles.....	139	2224	24 <sup>3</sup> / <sub>4</sub>	55 60
1	9	Offset.....	156	156	24 <sup>3</sup> / <sub>4</sub>	3 51
2	9	Caps.....	34	68	"	1 53
1	9	Saddle, 9' x 3".....	40	40	"	90
7	6	Four-way Branches.....	255	1785	"	40 16
12	6	Three-way Branches.....	209	2508	"	56 43
2	6	Three-way Branches, 6' x 4'.....	200	400	"	9 00
2	6	Three-way Branches, 6' x 3" short.....	131	262	"	5 89
6	6	Reducing to 4".....	114	684	"	15 39
9	6	Reducing to 3" with faucets.....	100	900	"	20 25
8	6	Offsets.....	140	1120	"	25 20
11	6	Thimbles.....	75	825	"	18 56
21	6	Split Thimbles.....	92	1932	"	48 30
6	6	Bends.....	140	840	"	18 90
4	6	Reducing to 3".....	100	400	"	9 00
19	6	Caps.....	19	361	"	8 12
16	5	Caps for Main stopcocks.....	16	256	"	5 76
20	4	Four-way Branches.....	123	2400	"	55 35
8	4	Three-way Branches.....	114	912	"	20 52
5	4	Y Branches.....	96	480	"	10 80
2	4	Reducing to 3", no faucet.....	84	168	"	3 78
1	4	Reducing to 3", with faucet.....	90	90	"	2 02
3	4	Offsets.....	66	198	"	4 45
24	4	Thimbles.....	29	696	"	15 66
4	4	Bends.....	88	352	"	7 92
2	4	Split Thimbles.....	64	128	24 <sup>3</sup> / <sub>4</sub>	2 88
7	3	Crosses.....	90	270	24 <sup>3</sup> / <sub>4</sub>	6 07
3	3	Three-way Branches.....	60	180	"	4 05
9	3	Thimbles.....	29	261	"	5 87

## PIPE SPECIALS.—(Continued.)

No. of pieces.	Diameter in inches.	DESCRIPTION.	Weight of one in lbs.	Total weight in lbs.	Value per lb. in cents.	Total Value.
30	3	Split Thimbles .....	48	1440	2½	\$ 56 00
4	2	Four-way Branches .....	30	120	2¼	2 70
2	2	Y Branches .....	23	46	2¼	1 03
4		Fire Hydrants with faucets .....				266 00
6		Fire Hydrants (old style .....				240 00
1		Castings for fire plugs .....	418	418	3	12 54
1		Jackets for fire plugs .....	349	340	3	10 20
7		Extension pieces for fire plugs .....	124	868	3	26 04
12		Cast Iron Caps for suction hose .....	8	96	3	2 88
20		Cast Iron Caps for fire hydrants (small) .....	5	100	3	3 00
7		Sets Brass Fittings for fire plugs .....				84 00
1		Base for fire hydrant, 6" x 3" .....	15	150	3	4 50
		Tin Tubing .....		200	33	66 00
605				92788		\$27145 16

## Joint Staves.

For 6 inch pipe.	For 9 inch pipe.	For 12 inch pipe.	For 15 inch pipe.	For 20 inch pipe.	For 24 inch pipe.	Key Wedges	Cost of each.	Total Cost.
5900	1300	2700	1500	2500	3300	.....	11	\$227 50
.....	.....	.....	.....	.....	.....	2000	4	5 00
								\$232 50

## Valves.

No.	Diameter in inches.	DESCRIPTION.	Weight of one in lbs.	Weight of whole.	Value of each.	Total Value.
1	12	Regulating Valves .....				\$206 66
1	6	" .....				103 33
2	15	Gate Valves .....			\$60 00	120 00
1	12	" .....			40 00	40 00
5	9	" .....			25 77	128 85
21	6	" .....			20 00	420 00
21	4	" .....			17 00	357 00
3	3	" .....			16 00	48 00
1	1 1/4	Service Stopcocks .....			3 00	3 00
25	1	" .....			2 50	62 50
19	1	" .....			2 00	38 00
38	1	" .....			1 50	57 00
98	1 1/2	Curb Cock .....			1 50	147 00
5	15	Gun Metal Spindles .....	28	140	60	84 00
1	12	" .....	19	19	60	11 40
3	9	" .....	14	42	60	25 20
4	6	" .....	9	36	60	21 60
5	4	" .....	6	30	60	18 00
8	3	" .....	5	40	60	24 00
262						\$1925 54

## Meters in Stock.

No. of pieces.	Diameter.	DESCRIPTION.	Value of each.	Total Value
3	6	Siemen's Meters .....	\$143 42	\$ 430 26
5	4	" .....	86 75	443 75
25	3	" .....	65 67	1641 75
4	2	" .....	44 65	178 60
1	1½	" .....	34 42	34 42
4	1¼	" .....	29 16	116 64
8	1	" .....	21 50	162 00
2	¾	" .....	15 50	31 00
		" .....	14 50	.....
1	2	Trident Meters .....	62 60	62 60
4	1½	" .....	37 60	150 40
6	1	" .....	21 00	126 00
518	1	" .....	11 97	6205 64
1	1	Buffalo Meters.....	9 85	9 85
1	1	Keystone Meters.....	15 40	15 40
1	1	" .....	12 00	12 00
1	1	" .....	11 95	11 95
1	1	Hersey Meters.....	15 00	15 00
1	1	Worthington Meters.....	11 88	23 76
2	1	Nash .....	11 20	5947 20
531	1	Lambert .....	25 00	25 00
1	1	Crown .....	21 00	21 00
1	1	Disc. Pittsburg .....	8 75	8 75
1	1	Standard .....	8 47	16 94
2	1	Niagara .....	14 53	14 53
1	1	Empire .....		
1125				\$15705 41

## Miscellaneous.

No. of pieces.	DESCRIPTION.	Value of each.	Total Value.
1	Pipe tapping machine .....		\$127 60
1	" " .....		100 00
1	5 H. P. steam engine and pump.....		625 00
1	Electric motor .....		203 00
1	Electric pipe thawing machine .....		350 00
3	Derrick winches .....	\$ 7 00	21 00
2	Hand winches .....	8 00	16 00
2	Platform scales .....	25 00	50 00
1	Boring machine .....		80 00
1	2" to 6" pipe cutting machine.....		22 10
3	Laths .....		200 00
4	Pressure gauges .....	10 00	40 00
1	" " .....		50 00
	Tape packing for meters.....		50 00
	Blacksmith tools.....		150 00
			<b>\$2084 70</b>

## Recapitulation.

DESCRIPTION.	No. of Pieces.	No. of Pounds.	Value.
Pipes .....	1405	274038	\$ 4704 36
Specials .....	605	92768	2742 62
Joint staves .....	18200		232 50
Valves .....	262		1925 54
Meters .....			15795 44
Miscellaneous .....			2084 70
			<b>\$27485 16</b>

### Rented Domestic Hydrants.

STREET.	LOCATION.
Cedar .....	N. E. corner Louisburg Street.
Duncan .....	N. E. corner Harvard Street.
Preston .....	S. W. corner Jubilee Road.
Tower Road .....	At Fay's Lane.
Duffus .....	S. E. corner Gottingen Street.
Oak .....	S. E. corner Beech Street.
Sullivan .....	Opposite May's Brewery.
Atlantic .....	Corner Brussels Street.
Mott .....	N. E. corner Seldon Street.

### Free Pumps Maintained by City.

No.	LOCATION.
1	Leahyville.
1	Lady Hammond Road.
1	Duffus Street.
1	Africville.
1	North Kline Street.
1	Mott Street for Healey.
1	Quinn Street.

### Hydraulic Hoists in Operation.

NAME.	BUSINESS.	Size of Service.	How Rated.
Dominion Government .....	Appraisers' Office .....	3 inch .....	Meter.
G. M. Smith & Co .....	Dry Goods .....	4 " .....	"
Dillon Bros .....	Groceries .....	3 " .....	"

### Motors.

Brunswick St. Church (Methodist) .. Organ .....	2 inch .....	Indicator.
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## Public Drinking Fountains.

No.	LOCATION.
1	Market Square.
1	St. Paul's Street, near Barrington Street.
1	Park Street, opposite Cogswell Street.
2	Public Gardens.

## Ornamental Fountains.

No.	LOCATION.
3	Public Gardens.
1	Grand Parade.

## Service Pipes Laid 1908.

Number.	Name of Owner or Agent.	Location of Premises.	Number of Stopcock.	Size of Pipe.	Purpose for which water is used.
1	S. G. Hawkins	N. side Black	7272	1/2	Dwelling.
2	Gray & Flinn	S. side Morris	7273	"	"
3	E. A. Sullivan	W. side Robie	7274	"	"
4	E. A. Sullivan	W. side Robie	7275	"	"
5	Amelia Morton	S. side Almon	7276	"	"
6	H. McC. Hart	E. side Lockman	7277	3/4	Shop & Dwelling.
7	H. McC. Hart	W. side Lockman	7278	1/2	Lot.
8	Walter McKay	N. side Seaforth, this pipe comes from Summit St., opposite No. 16	7279	1/2	Dwelling.
9	Alex. Hobrecker	W. side Young Ave	7280	3/4	Fountain.
10	W. G. Ross	N. side Lawrence	7281	1/2	Dwelling.
11	A. P. Calnan	W. side Young Ave	7282	1/2	"
12	S. M. Brookfield	W. side Plover	7283	1/2	"
13	Thos J. Clarke	W. side Clifton	7284	1/2	"
14	John Shiers	N. side Macara	7285	1/2	"
15	Silliker Car Co	E. side North	7286	"	"
16	E. E. McKinlay	W. side Hunter	7287	"	"
17	Mary J. Smith	S. side Uniacke	7288	"	"
18	C. H. Curby	E. side Clifton	7289	"	"
19	S. H. James	E. side Kline for house Oxford	7290	"	"
20	A. G. McDonald	W. of N. W. Arm	7291	"	"
21	Judge Drysdale	S. side Harvey	7292	1/2	Stable.
22	W. A. Isnor	N. side Macara	7293	"	Dwelling.
23	Gray & Flinn	E. side Edward	7294	"	"
24	C. G. Sanford	E. side Edward	7295	"	"
25	H. McC. Hart	E. side Lockman	7296	1 1/2	Dwellings.
26	E. E. Appleby	N. side Yukon	7297	1/2	Dwelling.
27	Isabella A. Higgins	N. side Yukon	7298	1/4	"
28	E. H. Hawkins	E. side Edward	7299	3/4	"
29	M. Maltus	N. side Pepperell	7300	3/4	"
30	A. R. Grant	W. side Windsor	7301	"	"
31	Chas. Redfearn	S. side Pepperell	7302	"	"
32	Mrs. Wm. Stroud	W. side Clifton	7303	"	"
33	W. E. Croucher	S. side Pepperell	7304	"	"
34	J. Gallagher	S. side Pepperell	7305	"	"
35	Jas. Pitcher	S. side Lawrence	7306	"	"
36	Chas. Carmichael	S. side Lawrence	7307	"	"
37	W. H. Cleverdon	W. side Henry	7308	"	"
38	Wm. Smeltzer	S. side Lawrence	7309	"	"
39	H. R. Rossee	E. side Windsor	7310	"	"
40	W. end Baptist Church	W. side Preston	7311	"	Church.
41	W. J. Harvey	S. side W. Harvey	7312	"	Dwelling.