

side of Sparks street, between Honor and Bank streets, and will erect large stores, at a cost of \$10,000.—G. F. Stalker, architect, has prepared plans for alterations to the residences of Messrs. T. Ahearn and A. McLean, and new residences for Dr. Bell and I. clan. He is also preparing plans for reconstruction of Mr. Wm. Davis' new residence recently destroyed by fire.—It is reported that the Dominion Government contemplates the erection in the near future of a reformatory for young criminals, the site selected being at Alexandria, midway between Montreal and Ottawa.—Mr. Ernest Marceau, Acting Superintending Engineer, will receive proposals until Monday next, the 11th inst., for the construction of a sewer pipe drain between the town of Valleyfield, Que., and the municipality of Belleville.—The Russell Company, which was incorporated a few weeks ago to acquire the Russell House property, has decided to erect a large opera house on the vacant land in rear of the hotel and fronting on Canal street. It is expected that work will be commenced next spring.

TORONTO, ONT.—Mr. Albert D. Benjamin, president of the "Holy Blossom" congregation, and his brother, have subscribed \$10,000 towards the erection of the proposed new synagogue.—Plans are being prepared at the City Engineer's office for new stone steps, up the south embankment of the Rose Hill Reservoir. There will be 44 steps, of bush hammered stone or granolithic, 11 feet wide. The parapets and pillars, which will be three feet high, will be of cut stone.—The City Engineer has been requested to prepare plans for a system of docks and wharves on the city water front, as stipulated by the Esplanade agreement.—It is proposed to construct a cedar block roadway on Water street, from Bathurst street to Markham street, cost \$870, and on Mansfield avenue, from Bellwoods avenue to Grace street, cost \$700.—Messrs. Horley & Kindru have purchased the Avondale hotel on Simcoe street. An addition of 20 rooms is contemplated.—Mr. Malone is about to erect a pair of houses over the lot.—Building permits have been granted as follows: T. M. Lee, cor. Gerrard and River sts., alterations to building, n. w. corner Gerrard and Sackville sts., cost \$200; T. Eaton Co., Ltd., 4 story blk. warehouse, 13 Albert st., cost \$22,000.

MONTREAL, QUE.—The C. P. R. has a scheme under consideration to enlarge the Dalhousie Square station by expropriating the fire station and other buildings on the Square, and erecting new freight sheds on Berri street and a new passenger station on Craig street. Negotiations to the end are now pending with the City Council, and it is reported that most of the aldermen favor the idea.—It is said that a well-known contractor has decided to erect a large hotel at the corner of St. Denis and Craig streets, at an estimated cost of half a million dollars.—Mr. L. J. Seargeant, General Manager Grand Trunk Railway, invites tenders until Wednesday, the 13th inst., for the supply of ties required by the company on the line east of Montreal during the coming winter.—A Dubreuil, architect, is preparing plans for two tenement houses to be erected on Green avenue, Cote St. Antoine.—P. Lortie & Son, architects, are preparing plans for two houses at St. Henri for Mr. L. M. Bedard, residence for Mr. Jos. Payette at same place, and residence for Mr. L. Hubert.—J. H. Bernard, architect, is calling for tenders until tomorrow (Friday) for two stores and dwellings, corner St. Lawrence street and Pine avenue, for Mrs. Beauchamp.—J. B. Reuther & Son are preparing plans for stables to be erected in rear of Geo. H. Matthews' proposed new residence on Inspector street.

FIRES.

The large grist mill at Winterbourne, Ont., owned by David S. Clemens, was destroyed by fire on Tuesday of last week. Loss, \$15,000; insurance, \$5,000.—Ford's furniture store at Merlin, Ont., was burned

recently; fully insured.—The stables and granary of John Farnhi, at Gladstone, Man., were destroyed by fire on Saturday last. Loss, \$4,000.—F. Vancamp & Co.'s hardware store at Hastings, Ont., was burned to the ground on the 3rd inst. The building was owned by the Peter's estate, and was insured for \$1,500.—The Hewis House at Midland, Ont., owned by David Hewis, was burned to the ground last week. Loss, \$10,000; insurance, \$2,000.—The rake factory and dry sheds of M. S. Buschlin at Port Elgin, Ont., together with the residence of Mrs. Stickney, were totally consumed by fire recently; total loss on machinery and buildings, \$6,000.—Dr. Moore's residence at Brandon, Man., was destroyed by fire on the 4th inst. Loss, \$2,000.—Young's sawmill at Warton, Ont., containing the electric light plant, was burned on Tuesday last; insurance, \$1,500.

CONTRACTS AWARDED.

QUEBEC, QUE.—The contract for the construction of the new Beauport asylum aqueduct has been awarded to Mr. Perreault, of Deschambault.

PETERBORO, ONT.—The contract for the erection of the brick car house for the Street Railway Company has been awarded to Mr. Richard Sheehy. Mr. T. A. Hay, C.E., will superintend the work.

OTTAWA, ONT.—The contract for renewing the pier at Port Dalhousie has been let by the Department of Railways and Canals, to Mr. John Riley, of St. Catharines.—The contract for supplying steel pipes required in connection with the Sault-Sie Marie Canal, has been awarded to Messrs. Ryan & Haney.

TORONTO, ONT.—Messrs. Grant & Company have been awarded the contract by the Board of Works for paving certain streets with stone sets, at the following prices: Front street, from Simcoe to Church street, \$11,161; Yonge street, from Front to King street, \$2,263; Church st., from Front to Queen streets, \$4,500.—The Waterous Engine Works Co., of Brantford, have been awarded the contract for two Fitzgibbon boilers required by the Ontario Government for the School of Practical Science.

MONTREAL, QUE.—J. B. Resther & Son, architects, have awarded contracts as follows for a three story building on Inspector street for Geo. H. Matthews; masonry, Chapeau & Lemay; carpentry, A. Lavallee; brickwork, E. Paquette; other trades not yet let.—A. F. Dunlop, architect, has let contracts as follows for a three story building containing three stores and three dwellings, on Bleury st., for Alex. Douglas; masonry, Wm. Owen; carpentry, Louis Beaudry; plumbing, McCrae & Watson; painting, O. Cauchon; plastering, Wm. Brimmer.

THE EFFECTS OF WELL WATER ON URINALS, WASTE PIPES, AND COPPER LINED CISTERNS.

The water used in the Grand Hotel, Cincinnati, O., for flushing the water closets and urinals is pumped from a well 600 feet deep, and contains a great proportion of magnesia. The action of the water on the soldering of the copper lined cisterns and copper floats, within four months after the plumbing was remodelled was demonstrated by solder being entirely eaten away.

The action of the water on the urinals waste pipes was also fully demonstrated as within twelve months the two inch waste pipes were entirely closed up, the urinals being flat back Bedfordshire lipped urinals flushed by automatic flushing tanks.

They have been changed to Carlisle Syphon urinals and the large flow of water discharged at intervals from these urinals, appear to have overcome the difficulty, as upon examination, three months after being put in, the waste pipes were found perfectly free from any slime or corrosion accumulating on them. There are five urinals in line which discharge all at one time filling the three-inch main

waste to its full capacity and thoroughly scouring the waste pipe out.

Glass balls had to be substituted for the copper balls of flushing cisterns and the copper lined tanks lined with lead and Barnett and painted with asphaltum paint.

A NEW METHOD OF EXCAVATING.

The new building for the Manhattan Life Insurance Company, which is to be sixteen stories high is to have its foundations built by a method familiar enough in bridge engineering, but rarely used in building, although we think there have been several other cases in which it has been employed. The soil in that part of New York is a fine sand, about fifty feet deep, overlying rock. It would be hazardous to put so heavy a structure on sand, but to excavate the sand in order to carry piers down on the rock would be likely to undermine the neighboring buildings, especially as the sand is saturated with water. This difficulty is to be overcome by sinking caissons, or cylinders of steel-plate to the rock, so that the sand can be excavated from the inside of the cylinders without fear of affecting the neighboring soil. In the case of the Manhattan building, however, a modification of the ordinary system is to be introduced, about the merit of which we may be permitted to entertain some doubts. In order to enable the excavation inside the caissons to be carried on under water, they are made with a tight top like a diving-bell, and air is forced into them, so as to keep the exterior sand and water from entering while the workmen dig away the sand from the inside and under the edges. To remove it entirely, pipes are provided, through which it is forced by the atmospheric pressure. As the caissons hold a long volume of air, there might be some difficulty in sinking them to their place; so it is proposed, while the men are excavating inside, to have the masons at work outside, building the stone foundation piers on the flat top of the caisson. The excavation inside the caisson is so regulated that the caisson sinks about as fast as the pier on the top of it is built up; the masons thus working always above the water-line, while the caisson sinks farther and farther below it. When the caisson reaches the rock, the workmen inside level the rock, so as to give it a firm bearing, and then fill it with concrete, which, we are told, is to be "carefully packed," so that the space from the rock to the roof of the caisson may be solidly filled, and the whole is left in place, the building thus standing on cylinders of steel-plate filled with concrete, surmounted by piers of stone and brick.—*American Architect.*

John F. Armour, contractor, has commenced suit against the Toronto Harbor Commissioners to recover the sum of \$2,871, being an account for pile driving.

MUNICIPAL DEPARTMENT.

THE BRANTFORD SEWERAGE SYSTEM.

The final report of the engineer, Mr. Willis Chipman, C.E., for the sewerage system of Brantford, has just been published. The contract for the construction of the sewers, 61 in number, was awarded on May 28th, 1891, to Mr. Geo. A. Dana, of Brockville, at the price of \$76,112. This price was subsequently modified somewhat on account of permission having been given the contractor to substitute Canadian for Scotch sewer pipe for the 9 inch sewers. The extent of the system is as follows:

Total Length of Main Sewer.....	10,483 feet.
" " Sections A, B, C, D.....	"
(exclusive of House Sewers).....	53,715 "
Total Length of Hospital and Institute for Blind Sewers.....	2,945 "
Total.....	66,943 "
	Or 22.67 miles.
Total Length of House Sewers.....	28,041 1/2 feet.
The estimated cost of the system was \$126,300, and the actual cost, \$126,137.90.	

LEGAL DECISIONS AFFECTING MUNICIPALITIES.

IN RE OLIVER AND THE CITY OF OTTAWA.—A municipal corporation has no power, without a by-law assented to by the electors, to enter into contracts involving the expenditure not payable out of the ordinary rates of the current financial year, and resolutions for the execution of contracts for the building of a bridge, payment for which was to be made partly in the current financial year and partly in the next, were quashed as being a contravention of the Municipal Act.

WATER METERS.

In his last annual report, Supt. George Reyer, of the Nashville, Tenn., Water-Works, speaks as follows on the use of water meters:

Public statistics, based upon actual experience and observation, establishes the fact that between 50 and 75 per cent. of all the water supplied cities is wasted, and the adoption of the most expedient, thorough and economic method of preventing this waste has been the subject of much thought and discussion by those interested in the judicious management of water-works.

The waste is attributable principally to two sources—willful carelessness in allowing closet and other fixtures to run continuously, and leakage caused by defective pipes and fixtures. Two remedies have been tried: First, increased surveillance over consumers by vigilant inspectors; secondly, governing the quantity by actual measurement through a meter. The first has been found inadequate and expensive, while the system of metering has proven the only real solution of the problem, and has evoked universal endorsement wherever adopted.

In previous reports I have urged the metering of all consumers, the larger ones first and the lesser as rapidly as possible. During the past year over 500 meters have been put in, and the result only strengthens my advocacy of their use. From reports of superintendents throughout the country it is ascertained that in cities where meters are largely used the average daily consumption is from 30 to 50 gallons per capita, while in cities which depend upon inspection the average varies from 100 to 200 gallons. In Nashville the daily average for the past few years has even exceeded these figures, and was gradually increasing. The rate at which the use of a meter diminishes the waste is fully demonstrated by a comparison of the quarterly bills for water, the first being invariably double, and sometimes treble, the subsequent ones.

It is a difficult thing to convince people of the amount of water that is actually wasted by leaking pipes, or permitting fixtures to run; but the meter soon forces them to realize the fact and remove the cause. Numerous instances might be quoted from the records showing wherein the meter has discovered appalling wastes, but one case will suffice. A private residence, having only the ordinary plumbing for a family, was metered, and in the first 75 days the meter registered 374,002 gallons, or an average of about 125 barrels per day, an amount sufficient to supply the legitimate needs of a dozen families. It is needless to add that the next quarter the amount consumed was very moderate, the leaking fixtures having been promptly repaired! Each meter set is previously tested and guaranteed as correct by the manufacturers; nevertheless when a consumer is presented with an unusually large bill the first complaint is that the meter does not register correctly. In order to satisfy such consumers that the water has actually been used or wasted I have constructed a simple and accurate testing apparatus. In every one tested so far the per cent. of difference between the registered gallons by meter and the actual weight of the water reduced to gallons has been less than 1 per cent., and in every instance the variation is in favor of the consumer.