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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL

PUBLIC WORKS • TENDERS •
ADVANCE INFORMATION •
AND MUNICIPAL PROGRESS

EVERY THURSDAY

This paper reaches every week the Town and City Clerks, Town and City Engineers, County Clerks and County Engineers, Purchasers of Municipal Debentures and leading Contractors in all lines throughout Canada.

VOL. 8.

AUGUST 26, 1897

No. 30.

THE CANADIAN CONTRACT RECORD,
PUBLISHED EVERY THURSDAY

As an Intermediate Edition of the "Canadian Architect and Builder."

Subscription price of "Canadian Architect and Builder" (including "Canadian Contract Record"), \$2 per annum, payable in advance.

G. H. MORTIMER, Publisher,

CONFEDERATION LIFE BUILDING, TORONTO.
Telephone 2362.

New York Life Insurance Building, Montreal.
Bell Telephone 2299.

Information solicited from any part of the Dominion regarding contracts open to tender.

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TENDERS FOR DEBENTURES

Sealed tenders, addressed to the Town Council, Niagara Falls, Ont., and marked "Tenders for Debentures," will be received up to 1 p.m. on MONDAY, SEPTEMBER 6th, 1897, for the purchase of \$59,082.03 Sewer Debentures, bearing interest at 5 per centum, payable in from nine to thirty years from date of issue, viz., January 7th, 1896.

Tenders to include accrued interest from date of Debentures to September 6th, 1897. Interest accruing thereupon upon Debentures until delivery of same to be paid by tenderer in addition to amount of tender. Lowest or any tender not necessarily accepted.

JOHN ROBINSON,
Town Clerk.

Niagara Falls, Ont., Aug. 17th, 1897.



Notice to Contractors

Tenders will be received, by registered post only, addressed to the Chairman of the Board of Control, City Hall, Toronto, up to noon on WEDNESDAY, SEPTEMBER 15th, 1897, for the construction of the following work:—

GRAVEL ROAD

On Cowan Avenue, from King Street to Queen Street.

Specifications may be seen and forms of tender obtained at the office of the City Engineer, Toronto, on and after Monday, August 23rd, 1897.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 2½ per cent. on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained.

Tenders must bear the bona fide signatures of the contractor and his sureties, or they will be ruled out as informal.

Lowest or any tender not necessarily accepted.

JOHN SHAW (Mayor),
Chairman Board of Control.

City Hall, Toronto, August 19th, 1897.



NOTICE TO CONTRACTORS

Tenders, addressed to the Chairman of the Board of Control, City Hall, Toronto, will be received, through registered post only, up to noon on

Wednesday, September 1st, 1897,

for carrying out the following works in connection with the New Municipal Buildings, now in course of erection on Queen Street west, in the City of Toronto, viz.:

- (1) Hydraulic or Electric Elevators.
- (2) Electric and Gas Fixtures.
- (3) Pneumatic Clocks.
- (4) Steel and Wrought Iron.
- (5) Terra-cotta, Brick Arching and Concreting.

SPECIAL NOTICE,

Tenders must be marked on the outside so as to show for which of the above-mentioned works they are put in. Plans and specifications and forms of contract may be seen, and forms of tender and all other information obtained, upon application at the office of

E. J. LENNOX, Architect,
Cor. of King and York Streets, Toronto.

Although the specifications call for a Pneumatic Tower Clock, the Board of Control is prepared to receive tenders for a Tower Clock other than that mentioned in the specifications. Parties so tendering will be required to furnish with their tender proper specifications and plans for such work, and said specifications must provide for furnishing as complete a clock as called for in the specification for a Pneumatic Clock.

Each and every tender must comply with the terms of this advertisement and the specifications, and be accompanied by a marked cheque, made payable to the City Treasurer, for an amount equal to 2½ per cent of the amount of the tender.

Should any person or persons whose tender is accepted fail to execute the necessary contract and give security to the satisfaction of the City Treasurer for the due fulfillment thereof, his or their deposit will be forfeited to the City.

The deposits of unsuccessful tenderers will be returned.

Tenders must be on forms supplied by the Architect, which provide for the bona fide signature of the contractor and his sureties, and, in default of that, will be ruled out as informal.

The lowest or any tender not necessarily accepted.

JOHN SHAW (Mayor),
Chairman Board of Control.

Toronto, Aug. 12th, 1897.

POSTPONEMENT

The time for receiving the tenders called for in the foregoing notice has been extended until noon on

Monday, September 20th, 1897

JOHN SHAW (Mayor),
Chairman Board of Control.

Toronto, Aug. 20th, 1897.

P. Arthur Couture, roofer, has commenced business in Montreal.

Caisson & Lacombe, plasterers, of St. Henri, Montreal, have dissolved.

Pierre Legendre and Arthur Chayer, contractors, have commenced business in Montreal.

FERGUSON AVENUE SEWAGE DISPOSAL WORKS

Endorsed Tenders, addressed to the Chairman of the Sewers Committee, will be received by the underwritten up to 12 o'clock, noon, of MONDAY, AUGUST 30th, NEXT, for the Machinery required at the proposed Sewage Disposal Works, consisting of Centrifugal Pumps, Sludge Rammer Filter Presses, Chemical Mixers, &c., and also for the various works required in the erection of a Sewage Works Building.

Plans and specifications for building can be seen at the office of William & Walter Stewart, Architects.

Specifications for machinery and all other information can be obtained at the City Engineer's office.

Each tender must be accompanied with the names of two good and sufficient sureties and a marked cheque for 10 per cent. of the amount of the tender, payable to the City Treasurer, which will be forfeited should the party whose tender may be accepted fail with his sureties to execute the contract within four days after notice of tender being accepted.

The lowest or any tender not necessarily accepted.

T. BEASLEY, City Clerk.

Hamilton, August 23rd, 1897.



NOTICE TO CONTRACTORS

Tenders for Filling Old Filtering Basin on Island

Tenders will be received, by registered post only, addressed to the Chairman of the Board of Control, City Hall, Toronto, up to noon on WEDNESDAY, SEPTEMBER 15th, 1897, for the filling in of the OLD FILTERING BASIN on the south shore of the Island, just east of the Island Pumping Station.

Plans and specifications may be seen and forms of tender obtained at the office of the City Engineer, Toronto.

A deposit, in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 2½ per cent. on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained.

Tenders must bear the bona fide signatures of the contractor and his sureties, or they will be ruled out as informal.

Lowest or any tender not necessarily accepted.

JOHN SHAW (Mayor),
Chairman Board of Control.

City Hall, Toronto, Aug. 19th, 1897.

BUSINESS NOTES.

The assignment is announced of John Ahiborg, contractor, Rat Portage, Ont.

James Purvis, carpenter, Hamilton, Ont., has assigned to Walter Anderson.

Antoine Legault dit Deslauriers and P. Dugas, contractors, Montreal, have dissolved partnership.

The Laing-Ritchie Company, of Essex, Limited, has been incorporated, to deal in lumber, sash and doors, building materials, etc.

CONTRACTS OPEN.

BRYSON, QUE.—James McLeod is preparing the foundation for a residence.

ST. MARYS, ONT.—James Storey will shortly erect a two-story frame residence.

ORANGEVILLE, ONT.—A syndicate has been formed here to operate cement works.

AYLMER, QUE. It is rumored that the Hull Electric Company intend building offices here.

ASHCROFT, B.C.—Materials will shortly be purchased for the proposed waterworks system.

TROUT LAKE CITY, B. C.—N. E. Lay is making preparations to erect a large hotel building.

TILBURY CENTRE, ONT.—P. T. Barry is negotiating for a site on which to erect an hotel and store.

STRATFORD, ONT.—It is probable that the city will take steps to construct its own waterworks system.

LISTOWEL, ONT.—Plans for electric lighting and power are now under consideration by the town.

WOODSTOCK, ONT.—Howard Burt is about to commence the erection of a residence on Green street.

HALIFAX, N. S.—Fort Massey congregation have decided to enlarge the church building, at a cost of \$10,000.

CHATHAM, N. B.—It is probable that a factory will be established here for the manufacture of calcium carbide.

IROQUOIS, ONT.—A by-law authorizing the town to purchase the local waterworks system has been defeated.

GRAND FORKS, B. C.—The town has decided to borrow \$20,000 for an electric light plant and waterworks system.

DUNDAS, ONT.—On Monday next by-laws will be voted on by the ratepayers to raise \$5,300 to build the Ewart dam, and \$3,500 to erect a fire station.

KAMLOOPS, B. C.—Plans have been completed for the new Dominion hotel, which will be 60 x 75 feet, three stories in height, with basement, cost \$20,000.

NIAGARA FALLS, ONT.—John Robinson, town clerk, will receive tenders until 1 p.m. on Monday, Sept. 6th, for the purchase of \$59,082.63 sewerage debentures.

BROCKVILLE, ONT.—Power & Son, architects, of Kingston, have prepared plans for a residence for George E. Fulford, to be erected on his east end property.

CHARLOTTETOWN, P. E. I.—An agitation has been commenced to secure the erection of a large hotel. One gentleman has offered to subscribe \$5,000 towards the project.

VERNON, B. C.—The corporation wants tenders for \$75,000 of debentures, the funds to be used for waterworks and electric light purposes. Frank M. Gowan, City Clerk.

RENFREW, ONT.—Tenders for erecting a pump house and furnishing all materials will be received at the office of the town clerk until to-morrow (Thursday). Willis Chipman, C. E., engineer.

LONDON, ONT.—Dr. Nelles purposes erecting a brick residence on Ridout street.—At a special meeting of the city council it was decided to expropriate the land required for sewerage farm purposes.

COLCHESTER SOUTH, ONT. Tenders for the building of a school house in section No. 4, 5th concession, Colchester South, will be received by S. P. Teak, Harrow P. O., before Wednesday, September 1st.

NELSON, B. C.—It is announced that the Denver Smelting Co. will locate its works at Roseberry, on the Nakusp and Stocan, instead of at Nakusp, as reported. A mill with a capacity of 100 tons per day will be erected.

CORNWALL, ONT. Ground has been broken on the Ottawa & New York railway. Sub contracts have been let to T. B. Carroll, of Thorold, and Breen & Butler, of St. Catharines. Others will probably be let this week.

HULL, QUE.—The plans of F. A. Hibbard, C. E., have been adopted for the extension of the waterworks system, and the by-law to raise \$53,000 for the purpose will be submitted to the ratepayers. Work will commence as soon as the by-law is approved of.

CHATHAM, ONT.—Charles Francis is making preparations to erect a residence at the corner of Edgar and Lacroix streets.—The new sedimentation basin, 900 x 300 feet, in connection with the waterworks, has collapsed, at a loss of several thousand dollars.

ST. JOHN, N. B.—It is the intention of the Marine Department to make a series of test borings at the entrance to the harbor, in order to ascertain the character of the material it will be necessary to dredge should the plan for deepening that part of the harbor be carried out.

BILLINGS BRIDGE, ONT.—A company has been organized to supply the village with water and electric light. Included in the company are the following: James Perry, C. E., Ottawa; Robert Anderson, electrician, Ottawa; and A. Grabam, brickmaker, Ottawa East.

PEMBROKE, ONT.—The Pembroke Southern Railway Co. have elected the following persons as directors: Messrs. F. E. Fortin, Thomas Hale, Alex. Millar, J. A. Thibaudeau, Thos. Pink, C. Chapman and others. A change in the proposed route from Golden Lake to Killaloe is advocated.

ORILLIA, ONT.—It is the intention of C. Lawlor, of Bass Lake, to build a brick store on West street, in this town; two stories, 70 x 20 feet.—R. A. McGillivray & Co., of Toronto, have written to the town authorities to learn what inducements will be offered for the establishment of a seamless hosiery factory.

GUELPH, ONT.—G. R. Bruce, architect, has invited tenders for the erection of a double dwelling house for Charles Raymond.—The county council have decided to build a new bridge on the town line between Guelph and Puslinch, and tenders for both steel and combination superstructure will be invited. The length will be about 90 feet.

KINGSTON, ONT.—A by-law will be voted on to raise the sum of \$35,000 for the erection of a grain elevator.—W. A. Newlands, architect, has prepared plans for the new oil shed for the Queen City Oil Co. It will be built of stone, 40 x 80 feet, and two stories high. The plans have been submitted to the head office in Toronto for approval.

HAMILTON, ONT.—Building permits have been granted as follows: John McCormack, brick dwelling, corner West avenue and Robert street, cost \$1,000; D. Philp, residence on Liberty street.—Negotiations are still pending for the conversion of the Hamilton & Dundas Railway into an electric system.—A cement sidewalk will be constructed on the south side of Market square, between James and Macnab streets.—The Electrical Power and Manufacturing Company has asked permission from the city to erect poles for supplying light and power. The company has a capital of \$20,000.

WINNIPEG, MAN.—The Winnipeg gas works will be taken over by the electric street railway company.—The Scandinavian Baptist congregation have commenced the erection of a new church.—The city has given notice of its intention to construct macadam roadways on the following streets. Princess street, from Notre Dame avenue to Point Douglas ave., cost \$26,000; McDermid avenue,

from Main street to Princess street, cost \$5,600, and from Princess street to Penelope street, cost \$15,620; Smith street, from Assiniboine to Portage avenue, cost \$10,450; Carleton street and Edmonton street, from Assiniboine to Portage avenue, cost \$10,340 each.

MONTREAL, QUE.—J. R. Gardiner, architect, is calling for tenders for two houses to be built on Prospect street, Westmount, for Miss Ewans.—A. St. Louis, architect, is taking tenders for a house to be erected on Rachel street for Thos. Forest.—The C. P. R. will erect a station at Outremont, at the foot of Rockland avenue.—Gamelin & Huot, architects, have called for tenders for houses to be built on Berri street for J. Girard.—A. St. Louis, architect, is preparing plans for two houses, three tenements, to be built on Fairmount street, Montreal Annex, for F. X. Morency.—Mr. Richard Bell, secretary of the Sailors' Institute, states that plans are being prepared for a new building, to cost \$50,000, and to be erected on the property known as the Montreal House on Place Royale.

QUEBEC, QUE.—Building permits have been granted as follows. One house, two stories in brick, to be built on Grant street for Mde. Vve. Arel; contractor, C. Giguere. One house, four stories, 30 x 18 feet, on Huteuil street, for Mr. R. Ritchie. Reparation of a house on St. Jean street for Mr. Garant; contractor, D. Vezeina.—Tenders for steam and hot water heating apparatus and plumbing for the new car barn on St. John street will be received by A. Thompson until Saturday, 28th inst. H. Staveley, architect.—Peachy & Dussault, architects, have prepared plans for building a gymnasium, baths and a bowling alley at the Y. M. C. A. building, and tenders for construction will be received by the secretary until the 30th inst.—Rough sketches have been prepared of the building proposed to be erected by the Bell Telephone Company. The structure will be two stories, with basement, 30 x 65 feet; estimated cost, \$60,000.

OTTAWA, ONT.—The Health Officer has recommended that drains be constructed on a number of streets.—Property has been purchased at the corner of Water and Queen streets, in Ottawa ward, on which to erect a new fire station.—Mr. H. J. Beemer, president of the Gatineau Railway Company, recently had an interview with the city authorities regarding the extension of the railway from Aylmer to this city. The new Interprovincial bridge, on which the sum of \$50,000 is to be expended before December next, is a part of the scheme.—The excavation and masonry contract for the Y. M. C. A. swimming baths has been let to Holbrook & Sutherland. Tenders for the other portions of the work will be invited as soon as the funds are forthcoming. James Mather is the architect.—Ernest Marceau, superintending engineer, Department of Canals, Montreal, will receive tenders until September 8th, for the supply of timber lumber, cast and wrought iron, hardware, tools, oil, cement, etc., required on different canals during the next fiscal year.

TORONTO, ONT.—William Hardy, Commissioner of Public Works for Ontario, will receive tenders until noon of the 26th inst. for laying intake pipes from pump-house to lake at the Asylum for Insane, Mimico.—A petition has been presented against a brick sidewalk on the north side of Wellington street.—The city council has given notice of its intention to construct brick pavements on the following streets. Alexander st., north side, McMillan to Yonge st., cost \$649; Portland st., west side, Adelaide to Front st., \$732; Lippincott st., west side, Nassau to Bloor st., \$1,934; Palmerston ave., both sides, Queen to Robinson st., \$570; Robert st., from College to Bloor st., cost \$29,600; Spadina ave., from King to

Adelaide street, cost \$5,600. Gravel roadways will be constructed on Dovercourt road, from Queen to Dundas st., cost \$3,470; Spencer ave., from King st. to Springhurst ave., cost \$2,400, Portland st., from Front to King st., cost \$1,630; Brock ave., Queen to Dundas st., cost \$5,180.—A sitting of the Court of Revision will be held on the 7th of September for the hearing of appeals against the assessment for brick pavements on Berkeley street, from Wilton ave. to Gerrard, cost \$7,600; on Carlton street, Parliament to Sackville, cost \$5,770; on Bellevue ave., Bellevue place to Oxford street, cost \$5,780.

FIRES.

The Queen's hotel at Coaticook Que., was burned on the 19th inst., insurance \$1,500.—The store of John Clement at Paspebiac, Que., has been destroyed by fire.—The works of the Hamilton & Toronto Sewer Pipe Co., at Hamilton, Ont., were last week damaged by fire to the extent of \$15,000; largely covered by insurance. The buildings and machinery were almost totally destroyed.—The fire hall building at Galt, Ont., was damaged by fire on Saturday last to the extent of \$1,000.—A three story brick building on Nazareth street, Montreal, occupied by Baylis & Co., was partially destroyed by fire last week.

CONTRACTS AWARDED.

RENFREW, ONT.—The Kerr Engine Co., of Walkerville, will supply the pumping machinery for the water works system.

ST. JOHN, N. B.—J. H. Doody, of this city, has the contract for the heating and plumbing of the new I.C.R. station at Moncton.

WINNIPEG, MAN.—Spencer Bros. have been awarded the contract for the erection of the Government bacteriological laboratory.

ST. MARYS, ONT.—The tender of James Clyde for constructing granolithic sidewalks, at 13½ cents per square foot, has been accepted by the town.

PORTAGE LA PRAIRIE, MAN.—The heating and ventilating apparatus for the addition to the Home for Incurables will be furnished by Cotter Bros.

ST. GEORGE, N. B.—Tayte, Meating & Co. have secured the contract to build the pedestal for the Jubilee Memorial to be placed in Dominion Square, Montreal. About thirty tons of red granite will be required for the work.

COLCHESTER SOUTH, ONT.—The following tenders have been accepted for the new Baptist parsonage: supply of brick, Frank Laramie, of Malden; brick work and plastering, E. Davey; carpenter work, by day labor.

OTTAWA, ONT.—The Board of Governors of St. Luke's hospital have accepted tenders as follows for their new building: Cowan & Doran, masonry; J. Cameron, carpentering; McKinley & Northwood, plumbing; J. Storr, painting; the Rathbun Co., fire-proofing; Fenson Elevator Co. of Toronto, elevators.

LONDON, ONT.—The carpenter work of the Methodist mission on York street has been let to William Jeffrey and the brick work to John Hayman.—Mr. Beharriell, of Toronto, having made an error in his tenders for sections G and H of the sewerage system, the contract has been given to Crawford Beckett.

HALIFAX, N. S.—The Exhibition Association received tenders as follows for the completion of the speed track: Charles T. McDonald, \$5,568; Hugh McIntosh, \$6,500; Monaghan & Sutherland, \$4,980; Roderick Innis, \$11,100; John Washington, \$5,500; S. D. Oakes, \$4,500; James Adams, \$10,450. The tender of S. D. Oakes has been accepted.

KINGSTON, ONT.—The Goldie & Mc-

Culloch Co., of Galt, have secured the contract for the engine and boiler required for Mooers' elevator.—Contracts have been let as below for the convent for the Sisters of Notre Dame. Masonry, Alex. Newlands; carpenter and joiner work, M. Sullivan; other trades not let. Henry Smith, architect. The building will cost about \$10,000.

PETROLEA, ONT.—R. & J. Jackson have secured the contract for the new east end school. Kelly & Parkinson have the sub-contract for the excavation, plastering, brick and stone work.—Contracts for Frank Reilly's residence on Queen street have been accepted as follows: Masonry and plastering, William Whitlock; carpenter work, Alex. Kemp; plumbing and iron work, A. & S. Pollard. Petrolea red brick will be used.

MONTREAL, QUE.—Contracts have been awarded as follows: Saxe & Archibald, architects, warehouse on Peel street—masonry, Heggie & Stewart; carpenter and joiner's work, Wm. Hood & Son; brick, E. Gauthier; painting, Henry Gollidge; roofing, Geo. Reed & Co.; plumbing, James Ballantyne.—A. C. Hutchison, architect, has accepted the following tenders for a manufactory to be built on Parthenais street for the Dominion Oil Cloth Co.: Masonry, Boucher & Huberdeau; other trades not let.

LINDSAY, ONT.—The following were the tenders received for the construction of the Ops-Manvers bridge: W. M. Hendershot, Thorold, for whole work, with wooden superstructure, \$2,997; additional for steel superstructure, \$395; T. H. McQuade, Omemee, for approaches and piers, \$3,000; McDermid & McDonald, Toronto, whole work with wooden superstructure, \$2,537; approaches and piers only, \$2,010 (accepted); B. Bear & Co., Doon, combined wood and iron superstructure, own specifications, \$300; Edwin C. Lewis, Hamilton,

\$2,929 for approaches, piers and steel superstructure; Robt. Weddell, Trenton, for steel superstructure, \$520 (accepted).

QUEBEC, QUE.—The tender of L. H. Stevens for the construction of a retaining wall on St. Real street, at \$2,500, has been accepted by the city council. Harry Staveley, architect, has awarded contracts as follows: One house, stone and brick, three stories, on Huteuil street, for Mr. Robert Ritchie—masonry, A. Fackney; carpenter and joiner's work, E. Cote; painting, J. Gauthier & Bros. G. E. Tanguay, architect, has awarded the following contracts for a college at Ste. Marie de Beauce for the Christian Brothers: Masonry, M. Cantin, of St. Sauveur; carpenter and joiner's work, Th. Blodreau, of Ste. Marie, \$6,000; roofing, S. Faucher, of St. Sauveur, \$1,195; plumbing and heating, Charles Vezina, Quebec, \$2,045; painting, N. Laine, of Levis, \$925. Total amount, \$20,497.

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THE PROTESTANT INSANE ASYLUM, Verdun, near Montreal.

THE GRAND HOTEL, St. Hyacinthe, Que.

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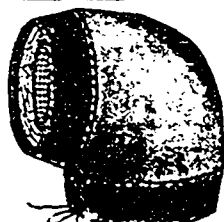
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until reduced by friction to clay or impalpable powder. As the polish depends almost entirely on these two operations, care must be taken that they are performed with a regular and steady movement. When the marble has received the first polish, the flaws, cavities, and soft spots are sought out and filled with mastic of a suitable color. This mastic is usually composed of a mixture of yellow wax resin and Burgundy pitch, mixed with a little sulphur and plaster passed through a fine sieve, which gives it the consistency of a thick paste, to color this paste to a tone analogous to the ground tints or natural cement of the material upon which it is placed, lampblack and rouge, with a little of the prevailing color of the material, are added. For green or red marbles, this mastic is sometimes made of gum lac, mixed with Spanish sealing wax of the color of the marble, it is applied with pincers, and these parts are polished with the rest. Sometimes crushed fragments of the marble worked are introduced into the cement but for fine marbles, the same colors are employed which are used in painting, and which will produce the same tone as the ground; the gum lac is added to give it body and brilliancy. The third operation of polishing consists in rubbing it again with a hard pumice stone, under which water is constantly being poured, unmixed with sand. For the fourth process called softening the ground, lead filings are mixed with the emery mud produced by the polishing of mirrors, or the working of precious stones, and the marble is rubbed with a compact linen cushion, well saturated with this mixture, rouge is also used for this polish. For some outside works, and for hearths and paving tiles, marble workers confine themselves to this polish. When the marbles have holes or grains, a lead muller is substituted for the linen cushion. In order to give a perfect brilliancy to the polish the gloss is applied. Well wash the prepared surfaces and leave them until perfectly dry, then take a linen cushion, moistened only with water, and a little powder of calcined tin of the first quality. After rubbing with this for some time, take another cushion of dry rags, rub with it lightly, brush away any foreign substance which might scratch the marble,

and a perfect polish will be obtained. A little alum mixed with the water used penetrates the pores of the marble, and gives it a speedier polish. This polish spots very easily, and is soon tarnished and destroyed by dampness. It is necessary when purchasing articles of polished marbles to subject them to the test of water; if there is too much alum the marble absorbs the water and a whitish spot is left.

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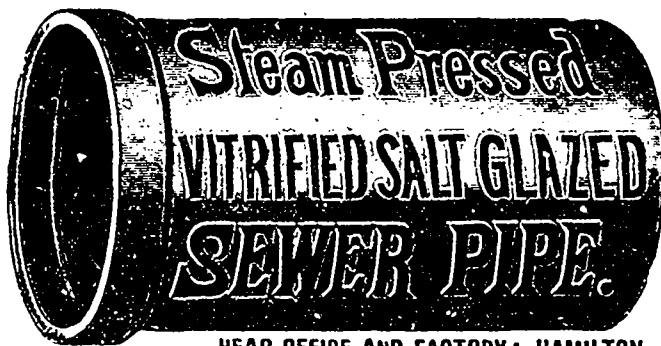
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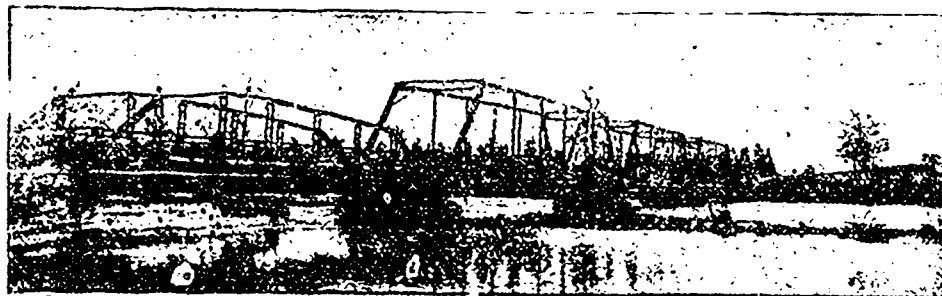
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MUNICIPAL DEPARTMENT

THE FINANCIAL MANAGEMENT OF WATER WORKS.

The April Proceedings of the American Society of Civil Engineers contains a paper under the above title by Mr. Emil Kuichling, M. Am. Soc. C. E., which merits careful attention, particularly from those parties or communities who seem still to entertain the idea that a public water supply should in some way or other furnish free water to consumers. The paper in no sense is intended as an argument against that erroneous idea, for Mr. Kuichling assumes a rational, business view of the subject as a starting point for his observations, but what he has to say is directly pertinent to that phase of the matter as well as to others. It is simply our purpose, however, to direct attention in passing only to this feature of the paper and to discuss more generally a number of points made, and well made by Mr. Kuichling.

He first points out the actual expenditures incurred in the construction and operation of a system of public water works and the sources of revenue to be derived from the consumption, both public and private, of the water supplied. These are financial matters about which, in their general character, there can be no question. It then becomes necessary to determine in what manner these expenditures shall be met, which is also a matter of regular business procedure. Municipalities, like individuals, must borrow money in order to carry out large enterprises, and having made loans it becomes necessary to pay interest on them; at the same time it is necessary to provide for repairs, renewals, extensions and operation. These sources of outgo mean that funds to meet them must be raised either by revenue from the works or by taxation, or by those methods combined. Again, it is only common business prudence to provide for a sinking fund sufficient to meet the bonded indebtedness at its maturity. As a result of accrued experience to the present time, Mr. Kuichling appears to be of opinion that it is reasonable to make an annual contribution to the sinking fund on the basis of liquidating the debt at the end of 30 years, together with an annual payment into a "depreciation fund" sufficient at the end of possibly the same length of time to cover the renewal of the perishable portions of the plant. All of this is no more than reasonable. It lays no burdensome duty on the present, and it scarcely can be considered more than fair to the future.

The total annual expense would then be divided into three classes—viz., interest on bonded debt, annual payments into sinking and depreciation funds on, say, a 30 years' basis, and annual operating ex-

penses, including ordinary repairs and minor betterments. There are certain other possible classes of annual costs, but the three preceding, under Mr. Kuichling's views, cover all that seem to be advisable. We think, however, that there may be some doubt whether "all extensions and material improvements of the system should be regarded as new construction work to be paid for by general taxation." Such "extensions and material improvements" may be on a scale to make them productive of considerable revenue, and when that is the case there seems to be no good reason why they should not be brought under debt, sinking and depreciation fund provisions, although the wisdom of paying cash without mortgage obligation for all practicable betterments, and even construction, is to be commended.

The methods of raising these annual expenses form problems of no little complexity, although it is perfectly clear that general taxation must be applied for all these benefits which the public as a whole (both persons and property) enjoys. This principle is beyond doubt, but the limits of its application are not well defined. Mr. Kuichling is of opinion that fully one-third of the annual charge on the cost of construction is due to adequate provision for fire protection, and that about the same amount is chargeable to the provision for future growth. As the original enlargement of plant for the latter purpose will be just sufficient for the needs "twenty to forty years" later, the annual charge decreasing until it disappears at the end of that period with correspondingly increased revenue will be but about half that due to fire protection. The operating expenses are also manifestly greater in consequence of the increased capacity of the plant for fire protection and for future growth. Mr. Kuichling considers that one-fifth the total operating expenses may reasonably be taken, at least in some cases, for this portion. He also considers that one-third of the annual contribution to the sinking and deterioration or renewal fund should, for the same general reason, be charged to the public. All these items, together with the cost of water used for public purposes at the regular rates, should be raised by taxation, leaving the remainder of the annual charges to be borne by the individual consumers of the water. While these proportions may not be critically correct for all

cases, they are fairly representative quantities and illustrate well the considerations which lead to stable and reasonably low water rates. They are worthy of careful attention in cities and towns where confusion regarding water-works financing still reigns, and they are not few. We commend them for the guidance of such communities. Engineering Record.

THE RENFREW WATERWORKS.

Mr. Willis Chipman, the well-known waterworks engineer, of Toronto, says the *Montreal Gazette*, passed through the city yesterday from a visit to Three Rivers, where he had been inspecting the Iron Works Company, looking over minutely the various pipes, hydrants, valves, etc., which the company will furnish in connection with its contract with the town of Renfrew. In discussing the capacity of the works, Mr. Chipman expressed himself as more than surprised at what he had seen, adding that a better plant could not be found on the continent, and as for the mechanical arrangements they are most complete, and reflect the greatest credit upon Mr. Duncan, the superintendent. Mr. Chipman said in conclusion that he had no idea that so extensive a concern existed in this province, and after testing the pipe for the Renfrew works he believed they would give every satisfaction.

A GARBAGE DESTRUCTION SCHEME.—Assistant Health Commissioner Reilly, of Chicago, proposes the construction of a large steel box inside the chimney of each of the city's pumping and electric light stations, so that the garbage now taken to the offensive dumps may be therein dried by the waste heat, that is estimated to average 400° Fahr., and fitted for use as fuel under the boilers.

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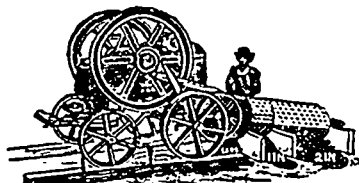
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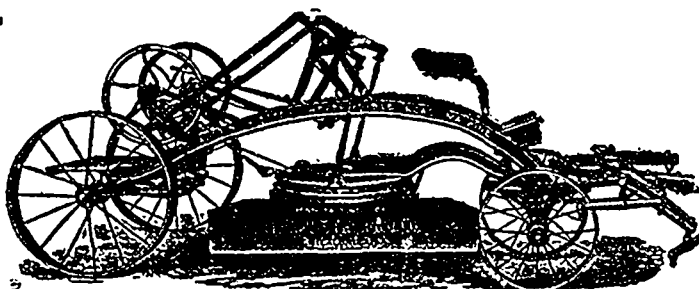
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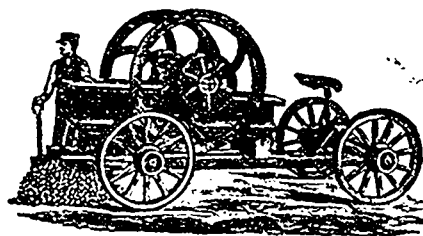
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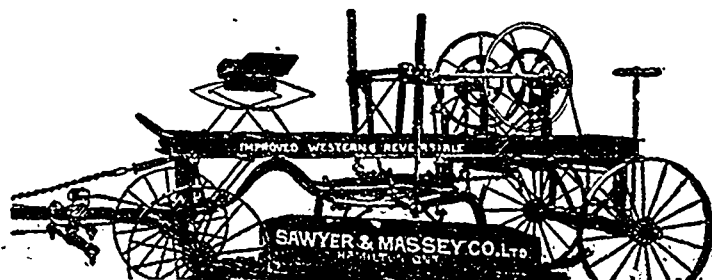
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Springer, O. T. iii

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Granite.

Brunet, Jos. vii Brodie, James... vii Moir, D. W. vii

Hoating.

Boston Blower Co. ... 163 Clare Bros. & Co. xii Darling Bros. ii Gurney Foundry ... viii Howard Furnace Co. vi Ives H R & Co. ix King & Son, Warden III McClary Mfg. Co. II Ormsby & Co., A. B. I Pease Furnace Co. 163 Toronto Radiator Mfg Co. v The James Smart Mfg Co. iii

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Holbrook & Mollington i Rice Lewis & Son... IV

Metal Chutes.

The Cutler Mfg Co. 164

Mortar Colors and Shingle Stains.

Cabot, Samuel ... IV Muirhead, Andrew... i

Mosaic Works.

Mosaic Marble and Enamel Co. 163

Ornamental Iron Work.

Meadows, Geo. B. ... 163 Toronto Fence & Ornamental Iron Works. vi

Painters.

Montreal Directory... xi Toronto Directory... xi

Plasterers.

Hynes, W. J. xi

Paints & Varnishes.

Muirhead, Andrew... i

Parquet Floors.

Elliott, W. H. vi

Plate Glass.

Hobbs Glass Works... ii Lyon, N. T. iii The Consolidated Plate Glass Co. ii

Plumbers.

Montreal Directory xi Toronto Directory... xi

Roofing Materials.

Ormsby & Co., A. B. I Metallic Roofing Co. iv

Reflectors.

Friek, I. P. i

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