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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF

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 THROUGHOUT CANADA.

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THE CANADIAN CONTRACT RECORD,
PUBLISHED EVERY THURSDAY
As an Intermediate Edition of the "Canadian Architect and Builder."
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CONFEDERATION LIFE BUILDING, TORONTO.
Telephone 2362.
62 Temple Building, Montreal.
Bell Telephone 2199.
Information solicited from any part of the Dominion regarding contracts open to tender.

ADVERTISING RATES ON APPLICATION.

At the Convention held in Toronto, Nov. 30 and Dec. 1, 1889, the Ontario Association of Architects signified its approval of the CANADIAN CONTRACT RECORD, and pledged its members to use this journal as their medium of communication with contractors with respect to advertisements for tenders.
The following resolution was unanimously adopted at the First Annual Meeting of the Province of Quebec Association of Architects, held in Montreal, Oct. 10th and 11th, 1890: "Moved by M. Perrault, seconded by A. F. Dunlop, that we the Architects of the Province of Quebec now assembled in Convention being satisfied that the CANADIAN CONTRACT RECORD affords us a direct communication with the Contractors, resolved, that we pledge our support to it by using its columns when calling for Tenders."
Subscribers who may change their address should give prompt notice of same. In doing so, give both old and new address. Notify the publisher of any irregularity in delivery of paper.

BARTER AND EXCHANGE.
This department has been opened for the speedy barter and exchange of second-hand plant or material, or small lots of new or second-hand materials by builders and others not regularly engaged in the sale of such articles. Advertisements other than those of the above description will not be inserted.
RATES—12 words and under, 15 cents; each additional word, 1 cent (three figures count one word); on two or more subsequent insertions a discount of 10 per cent. will be allowed. No more than four insertions of an advertisement can be granted.
Replies to advertisements may be addressed to a box at this office, in which case necessary stamps must be sent for re-mailing replies. Advertisements for this department must be prepaid.

TO DRAUGHTSMEN.—About 2½ quires of Whatman's Drawing Paper for sale (Imperial size), only \$6 for the lot. Box 151 at this office.

To Contractors.
A new edition of the Canadian Contractors' Hand-Book is now in press, and will be published before the first of June.
The Hand-Book has undergone thorough revision. Everything not considered to be of the greatest practical value has been eliminated from the new edition, while the size of the work has been increased by the addition of seventy-five pages of entirely new material. This book should be in the hands of every architect, builder and contractor who desires to have readily accessible and properly authenticated information on a wide variety of subjects adapted to his daily requirements.
C. H. MORTIMER, Publisher,
Confederation Life Building, TORONTO.

TENDERS WANTED.
Tenders will be received at the office of the undersigned until noon of Saturday, the 13th inst., for the several trades and works required in the erection and completion of a Women's Building in connection with the Kingston General Hospital, for the Board of Governors. The lowest or any tender will not necessarily be accepted. Contractors will be required to furnish satisfactory evidence of their ability, financial and otherwise, to properly execute the work.
POWER & SON, Architects,
Lion Block, Kingston.



Sale of Boat Houses, ESPLANADE.
Tenders will be received by registered post, addressed to the Chairman of the Committee on Works, up to 11 a. m.,
SATURDAY, THE 13TH MAY,

for the purchase of the boat houses known as the Forman boat house (now Wm. Armour) and the McManis boat house, situated on the south side of the Esplanade, between Simcoe and York streets.
Tenders may be on one or both of the said boat houses. The buildings to be removed on or before the 25th inst.
A marked cheque must accompany each and every tender to the amount of 10 per cent. of the purchase money, the balance to be paid before the removal of the buildings.
DANIEL LAMB,
Chairman Committee on Works,
Committee Room, Toronto, May 9, 1893.



Notice to Contractors
Pavements on Track Allowances.

Tenders will be received by registered post addressed to the City Engineer, Toronto, up to 11 o'clock a.m. on SATURDAY, MAY 13TH, 1893, for the construction of the following Pavements on Track Allowances:
College street, from Dufferin street to Jameson avenue, vitrified brick or cedar with toothing, on concrete.
Jameson avenue, from College street to Dundas street, vitrified brick, or cedar with toothing, on concrete.
Also Asphalt Pavements on Richmond street, from Bay to Victoria street. Earl street, from Sherbourne street to its west end.
Specifications may be seen, and forms of tender obtained, on and after Saturday, May 6th, 1893, at the office of the City Engineer.
A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent on the value of the material tendered for under \$1,000, and 2½ per cent. on the value of the material tendered for over that amount, must accompany each and every tender, otherwise it will not be entertained.
All tenders must bear the bona fide signatures of the contractor and his sureties (see specifications) or they will be ruled out as informal.
The Committee do not bind themselves to accept the lowest or any tender.
DANIEL LAMB,
Chairman of Committee on Works,
Committee Rooms, Toronto, May 1, 1893.

TENDERS WANTED.
Tenders will be received at the office of the undersigned from all trades, except mason and bricklayer, for the erection of a Music Hall for H. A. Massey.
The lowest or any tender not necessarily accepted. Security will be required.
Tenders will also be received from all trades for two houses on Carlton Street.
GEO. M. MILLER, Architect,
18 King St. E., Toronto.

WATERWORKS PLANT FOR SALE.

For sale—a waterworks plant consisting of two sets of pumping engines in first class order, and can be seen at the Parkdale Pumping Station, Toronto. One set of 3½ million gals. capacity with fly wheel, steam cylinder 20 inches, and 18 inch stroke, gun metal plungers 12 inches diameter and 18 inch stroke, and one set of 1,500,000 gals. capacity, steam cylinder 14 inches and 12 inch stroke, also two boilers, 4 feet diameter and 12 feet long. The reason for disposing of these is in consequence of Parkdale, a suburb, being annexed to the City of Toronto. These are as good as new, and can be purchased at a large reduction on cost price; also 150 feet of 16 inch, and 300 feet of 12 inch, Ward joint flexible intake pipe. Apply to John Laxton, 2457 Queen st. West, Toronto.

TO ARTISTS.

The Government of Canada propose erecting in the grounds of the Parliament Buildings, at Ottawa, a bronze statue, nine feet high, (9), of the late Sir John A. Macdonald.
Artists are invited to submit models, 2 ft. 3 in. in height, which must be accompanied with proposals for the bronze statue complete.
A premium of five hundred dollars will be paid the artist whose model and proposal are accepted. \$300.00 will be paid for the model considered next in order of merit, and \$200.00 for the third successful model.
The models must be delivered to the Department of Public Works, Ottawa, on or before the 1st day of November next, and the premium models will remain the property of the Department. The others will be returned to the artists, if they so express their desire when submitting them.
Copies of the conditions, &c., may be obtained on application at the office of the High Commissioner of Canada, No. 10 Victoria Chambers, London, S.W., England, Hon. Hector Fabre, 10 Rue de Rome, Paris, Direction Générale des Beaux Arts, Department of the Interior, Brussels, and to the Secretary of the Department of Public Works, Ottawa, Canada.
E. F. E. ROY,
Secretary,
Department of Public Works, }
Ottawa, April 17th, 1893. }

PAPER FOR FIREPROOFING.—The adaptability of paper is regarded as likely to lead to a solution of the problem of rendering dwellings and business structures fireproof. It is now found that paper can be made perfectly fireproof, while remaining amenable to the same treatment in the matter of color, polishing and handling as most woods. Such a material offers all of the advantages as an ideal substance for floors, and it can be used equally well for the walls of buildings. Besides this, it can be used in the finish and furniture of houses, and would unquestionably do much to reduce the peril of fire, against which insufficient provision is but too often taken.—*Industrial World.*

CONTRACTS OPEN.
EGANVILLE, ONT.—The Methodist congregation purpose building a new church.
BRUSSARLS, ONT.—Material is on the ground for a new post office to be erected this summer.
NELSON, MAN.—Steps are being taken to secure the erection of a hospital, the citizens having already subscribed \$1,222.
BEAMSVILLE, ONT.—Tenders are being called for the extension and alteration of the Presbyterian church. Wm. Gibson, chairman.
BATTLEFORD, N. W. T.—The ratepayers will be asked to provide the sum of \$2,300 for the erection of a brick R. C. school house.
CANNINGTON, ONT.—All Saints church have selected a site for the new Parochial School house. Messrs. Brick & Sons will do the work.
HESPELER, ONT.—Mr. A. W. Brodie will receive tenders until the 27th inst. for the erection of a brick manse for the Presbyterian church.
STRATFORD, ONT.—H. J. Powell, architect, has prepared plans for a three story block for Geo. Larkworth, and a cottage for Wm. Jeffrey.
SARNIA, ONT.—We understand that the Grand Trunk Railway Company are about to erect a new round-house on Dufferin avenue, near the tunnel.
BRANTFORD, ONT. Mr. W. Patterson, M. P., is calling for tenders for the erection of an additional four-story building in connection with his factory.
HULL, QUE.—At the next meeting of the Council a proposition will be discussed to raise the sum of \$40,000 for the extension of the water works and to build new sidewalks.
FOREST, ONT.—Tenders are wanted until the 13th inst. for the building of a bridge across Bear Creek. Plans and specifications may be seen at the office of the Reeve, R. J. McCormack.
TORONTO JUNCTION, ONT.—The by-law submitted to the ratepayers on Monday last to raise the sum of \$12,000 for extending the waterworks and street grading was defeated by a large majority.
NEWMARKET, ONT.—Mr. T. J. Robertson, Secretary School Board, invites tenders until the 13th inst. for the erection of a High School building in this town. Plans may be seen at the office of the Secretary.
PORTAGE LA PRAIRIE, MAN.—Tenders are wanted for the erection of a schoolhouse in Mount Pleasant school district. Plans and specifications can be seen at Mr. J. W. Jackson's office. James Brydon, Secretary.
PETERBORO', ONT.—Col. Geo. E. Waring, C. E., of Newport, R. I., the well known sewerage expert, has been engaged to inspect the sewerage system proposed by Mr. Alan Macdougall, of Toronto. He will arrive on the 15th inst.
WELLAND, ONT.—The Road and Bridge Committee of the County Council will let the contract for repairs to O'Reilly's bridge about May 16th, M. B. Barnhard, chairman.—Tenders are asked until the 15th inst. for all supplies required by the Street Committee for the year 1893. A. E. Taylor, chairman.

SYDNEY, C. B.—Tenders are asked until the 29th of May for the purchase of \$15,000 worth of debentures, the money to be used in the extension of the waterworks. Particulars may be obtained from Alexander Campbell, Town Clerk.

SIMCOE, ONT.—At a recent meeting of the Simcoe Town Council a grant of \$10,000 was made to the Board of Education for the purpose of building a new high school, the present accommodation for both high and public schools being inadequate.

VANCOUVER, B. C.—The City Engineer is preparing plans for the proposed enlargement and improvement of the market and wharf to cost about \$12,000.—Mr. H. A. Massey has given \$10,000 towards the new Columbian Methodist College, and the committee will begin the work of putting up a building at once.

BROCKVILLE, ONT.—Architect Johnston, of Ogdensburg, N. Y., is preparing plans for the new gallery to be placed in the First Presbyterian church in this town.—Mr. Geo. Allan, architect, has submitted plans to the School Board for adding another story to the school building in the east end of the town, at a cost of \$3,000.

KINGSTON, ONT.—Messrs. T. H. & R. C. Percival, plough manufacturers, of Merrickville, are asking for a bonus to remove their works to this city. They would erect a factory and expend the sum of \$100,000 in machinery, stock, etc.—Ald. McLeod proposes to erect a planing mill and sash factory, and is asking for exemption from taxation.—Dr. Isaac Wood has purchased property at the corner of Wellington and Johnston streets, on which to erect a surgery.

LONDON, ONT.—The Summer Homes Branch, Y. W. C. A., of London (Ltd.), has been incorporated, with a capital of \$3,000, for the purpose of buying or leasing land and erecting buildings thereon, and under the auspices of the Young Women's Christian Association of London, to let and manage the same as summer residences for females. The members of the company are Sarah E. Allen, widow; Mary Ware, Marion Baxter, Elizabeth Kirkpatrick and Daisy Emma Peel, spinsters.

MONTREAL, QUE.—The city intends to lay down a large amount of asphalt pavement this year, at the same time that the street railway company renews its tracks. Probably a dozen streets will be permanently paved in this way.—Laval University will put up a building this season on St. Denis street to cost \$150,000.—Sir Donald Smith has made a further donation of half a million dollars to McGill University, which will be expended in the erection and equipment of new buildings for the woman's department.—The Fire and Financial Committee has asked the City Council for a grant of \$5,000 for a new extension ladder and \$10,000 for repairs to fire stations.

HAMILTON, ONT.—Engineer Hartmann, of Toronto, has been over the proposed route of the Hamilton, Waterdown and Guelph electric railway. He thinks the scheme is practicable and will make an estimate as to the probable cost.—Mr. Stewart, architect, has been instructed to prepare plans for the rebuilding of the Grant Lottridge brewery which was destroyed by fire last week.—Building permits have been granted as follows: C. G. Carlson, two two-story brick dwellings on Market street, between Caroline and Hess streets, cost \$2,000; William Griffith, three two-story brick dwellings on Catharine street, between Young and Augusta streets, cost \$4,500; Trustees of the Victoria Avenue Baptist Mission, new church building, corner of Victoria and Evans street, cost \$8,000.

WINNIPEG, MAN.—Mr. John Gummon has purchased four lots at the corner of William and Marquette streets, and will build two fine houses thereon.—Mr. H. T. Champion contemplates building a house on Edmonton street. It is expected that work will be commenced shortly.—H. J. Macdonald, M. P., will build a handsome residence on Carlton street this summer.—The subscriptions to the building fund of the Wesley college have reached \$80,000.—Rev. C. T. Baylis, of Douglas, was in the city recently making arrangements for the erection of a new church at that place for the Methodist congregation. The cost will be about \$3,000.—Mr. Geo. Brown, architect, is preparing plans for an addition to the

Hudson Bay Company's store at Keewatin.—Mr. Black, of the Ogilvie Milling company, will this year erect a new residence on Edmonton street, near the Assiniboine river. It will be built of brick and have stone foundation. Mr. Chesterton will prepare the plans.—The Lake of the Woods Milling Company contemplates building one of the largest mills in America at this point.

OTTAWA, ONT.—The Manne Department is inviting tenders for a fog horn building to be erected at Nine Mile Point near Kingston, and for three light houses on French river.—Mr. Gildersleeve, president of the Kingston, Smith's Falls & Ottawa Railway company, is credited with the statement that there was a possibility that work on the new road would begin this summer. Nothing definite has been determined, but when construction did begin it would start at Smith's Falls, and proceed both ways, one party working towards Kingston and the other towards Ottawa.—The Court of Revision has passed by-laws confirming the construction of sewers on the following streets: Broad street, from Ottawa to Osgoode; Redpath street, from Sussex to McTaggart; Primrose avenue, from Division to Lorne avenue, Alexander, Thomas, Sussex, Mc Hay, Union, Charles, Creighton and Gloucester, lot 45 to Metcalfe. A number of granolithic and plank sidewalks were also passed.—Ald. Corry will erect six houses this season on MacLaren avenue and Somerset streets, costing from \$4,000 to \$6,500 each. They will be of solid brick on stone foundations, and will be fitted with every convenience.

TORONTO, ONT.—Notice has been given by the City Council that the following works will be carried out. Sewer on a lane between Queen street and Catherine street, cost \$380; asphalt pavement on Linden street, cost \$6,040, concrete sidewalk on Sherbourne street, from Gerard street to Wellesely street, cost \$3,727.—A Mr. McDonald is about to erect a \$6,000 residence on Kensington avenue, North Toronto.—Messrs T. Eaton & Co. propose enlarging their stables on Orde street.—Mr. Geo. R. Harper, architect, 46 Church street, is preparing plans for a new building to be erected on the site of the Oak Hall clothing store on King street. We understand it will be one of the most complete buildings of the kind in Canada.—It is said to be the intention of the management of the Imperial Bank to proceed shortly with the erection of a new building adapted to the requirements of the institution. It is rumored also that there is a probability of the work being given to a well known American architect.—The City Council has granted exemption from taxation to the Perfection Hoop & Veneer Company, who propose erecting a factory on the angle of land lying between Royce avenue and Campbell avenue. The office of the company is in the new Confederation Life Building, corner Richmond and Yonge streets.—The owners of property on Gerard street, between Parliament and River streets, are preparing a petition asking for an asphalt pavement instead of block, as originally intended.—Building permits have been granted as follows: Standard Fuel Co., one story bk. office, n. e. cor. Cherry and Mill streets, cost \$1,500; H. Needham, 37 Louisa st., 2 story det. bk. dwelling, 335 Crawford st., cost \$2,000; Dr. Hastings, additions to dwelling, n. w. cor. Wellesely and Rose ave., cost \$1,000; John Heaslip, alterations, 108 Grange ave., cost \$1,000; Standard Woolen Mill, Front st. e., 3 story bk. add. to factory, cost \$5,000; T. M. Scott, 308 Dovercourt Rd., five att., 2 story and attic bk. dwellings, n. w. cor. Melbourne and Gwynne aves., cost \$15,000; David Rands, 7 Lindsay ave., three att. bk. dwellings w. side Alice st., cost \$105,000; Rogers Bros., 150 Beaconsfield ave., pr. s. d. 2 story and attic bk. dwellings, e. side Madison ave., n. of Bernard ave., cost \$7,000.—Alterations and additions are to be made to Messrs. Whaley, Royce & Co's, premises at the s. w. corner of Richmond and Yonge streets.

FIRES.

Fenwick's grain elevator at Alexander, Man., was destroyed by fire last week. The total loss will be about \$25,000, half of which is covered by insurance.—The Grant-Lottridge brewery at Hamilton, Ont., situated on Mulberry street was

almost completely destroyed by fire on Wednesday of last week. The total loss will be about \$75,000. The company carried an insurance on the building and plant of \$60,000.—The hotel at Crystal Beach, a favorite summer resort on Lake Erie, has been destroyed by fire. Mr. J. E. Rebstock, president of the Crystal Beach company, places the loss at \$8,000 and the insurance \$2,000.—Curran Bros' steam saw mills situated on Salem road, two miles from Amherst, N. S., were totally destroyed by fire a few days ago. The loss is heavy, and is only partly covered by insurance.—Messrs. McCausland & Son's stained glass works on King street west, Toronto, were badly damaged by fire on Monday night last. The factory, the rear portion of which was completely gutted, is a four story building. The loss is estimated at \$15,000, which is mostly covered by insurance.—The Bedford hotel at Halifax, N. S., has been destroyed by fire. The loss is heavy, insurance \$5,000.

CONTRACTS AWARDED.

GLENCOR, ONT.—The contract for building the new English church has been awarded to Messrs. Anderson & Stevenson.

EGANVILLE, ONT.—Mr. John McIntyre has been awarded the contract for the building of the Episcopal church at Lake Dore.

TORONTO JUNCTION, ONT.—The High School Board have awarded the contract for building the new school to Messrs. Patterson & Merry, their tender being \$18,995.

MAGOG, QUE.—Mr. Jos. Corrivault has secured the contract for N. Lepine's new block on Main street. It will be 28 x 60 ft., three stories high, with plate glass front.

WINNIPEG, MAN.—The contract for the erection of the Stovel block, on the northwest corner of Arthur and McDermott streets has been let to A. G. Atkin, for about \$7,000.

VICTORIA, B. C.—The contract for the new quarantine buildings at William's Head has been awarded to Messrs. Bishop & Sherbourne, of this city. They will cost about \$11,000.

REGINA, N. W. T.—Messrs. Willoughby & Mollard have been awarded the contract for the erection of a hotel for Mrs. Doig, to cost \$30,000.—The contract for the brickwork of the Baptist church has been let to Mr. W. F. Eddy.

BROCKVILLE, ONT.—The Rathbun Company, of Deseronto, have been awarded the contract for supplying 100,000 feet of pine and cedar lumber for street purposes at the following prices: pine plank \$13 per thousand feet, cedar sleepers, \$12 85, crossing plank, \$15.

GUELPH, ONT.—Contracts have been awarded as follows for alterations to the European hotel. Brick and stonework and excavation, H. Benallick; carpentering, James Jarrett; plastering, P. Martin; tinsmithing, W. Sunley; painting, R. H. Barber; plumbing, Walker & Mahoney.

HAMILTON, ONT.—The Hamilton Gaslight Company have been given the contract to construct about \$4,500 yards of coal tar asphalt pavement on King William and John streets, at \$1.50 per square yard.—Mr. Edwards, architect, has accepted the tenders of the following contractors for a new building for the Victoria Avenue Baptist church: Mason work, George Webb; carpenter work, F. Taylor; plastering, F. Thomas; plumbing, George Trueman; painting and glazing, F. Kirk; seating, the Globe Furniture Company, of Walkerville.—The contract for sinking a well for the Hamilton Natural Gas Company has been awarded to Messrs. Carmody Bros., of Bradford.

According to the *American Architect*, the best ordinary process to arrest a decay in sandstone, consists in saturating the stone as deeply as possible with a solution of silicate of soda, followed by a solution of chloride of calcium. The double composition leaves the pores of the stone filled with silicate of lime, the chloride of sodium washing out. The application of the process requires care, and some experience. The solutions should be applied very weak, and several times, at intervals, alternating the soda and lime solutions. If the silicate of soda solution is too strong, it will form a gummy coating, which will prevent the penetration of the subsequent solutions, and will effloresce later, spoiling the appearance of the stone.

For the heating of the Masonic Temple at Chicago about 40,000 square feet of radiator surface is required, all of which is direct radiation. Steam is supplied upon the "overhead" system. A 6 in. main supply runs directly to the attic and there 1 inches, running around the outside walls, and is tapped off for connections to descending risers which supply the radiators. The water of condensation runs down these distributing risers and returns to a receiving tank located under the basement floor, and from this is pumped to the boilers. So far as is possible, all exhaust steam is used in heating, and what steam is taken direct from the boilers is reduced in pressure. The exhaust steam passes first through a feed-water heater and from this to the open air in summer and to the heating system in cold weather. For the power and steam heat required there is provided a battery of eight horizontal tubular boilers, having in the aggregate a nominal rating of 1,000 horse power, this amount being, as in other cases, sufficient to ensure absolute immunity from danger of any accident requiring the stoppage of any one part of the plant.

MUNICIPAL DEPARTMENT.

HOW TO DESIGN A SEWERAGE SYSTEM.*

When first called upon to design a system of sewerage the principal question to settle is, how we are going to dispose of the sewage. The principal requirement is that the sewage cause no offense. If it can be incidentally utilized so much the better, but in no case is it right to let the utilization of the sewage be the first consideration. Decomposition by means of oxidation is slow, because it is an organic process, and due to the action of bacteria. In the absence of air sewage will not be purified. The first thing to be done is to remove the coarse matter and so hasten the process. This is done by precipitation by means of chemicals or by mechanical straining. Then the sewage gets into a better position for exposing the liquid to the agents of purification.

This is done in several ways in practice. First by the dilution in running water and thereby supplying sufficient oxygen. For this purpose we need a stream of water which will give a summer flow of at least 150 to 200 cubic feet of water per minute for each 1,000 persons. If there is not sufficient water to dilute the sewage in its original condition, partially precipitate. This must be restored so as to remove some of the organic matter before directing it into the stream. The clarified liquid can then be diluted with less water. The best precipitants are milk of lime, or salts of aluminum or iron. Milk of lime is the least expensive one, and is probably sufficiently satisfactory. It throws down from one-half to two-thirds of the organic matter as a flocculent mass, which rapidly settles to the bottom. The salts of iron, however, give the best results, and then comes the salt of aluminum. When the sewage is acid better results are obtained when the same is neutralized with lime than when it is not. The second method of disposal of sewage is by an intermittent application and spreading over porous soil or sand and allowing it to filter. This is the best way to get purification when suitable soil is at hand. The method is so effective that all the impurities can be removed from 20,000 to 80,000 gallons daily by the use of one acre of ground. After the discharge of sewerage has continued for several hours, the ground must be allowed to rest for a day or two, so that the water is given a chance to gradually soak through, and by means of the bacteria become purified. It will simply run through without purification if it is continuously or too thickly applied; therefore, the discharges should be intermittent. Frost has no bad effect upon the purification. In Pullman, Ill., this system is used and has worked satisfactorily at a temperature of 15 degrees below zero. The same results have been noted at different places in Massachusetts. It is easily seen that local conditions will determine which method is to be used. The discharge into rivers is the cheapest. Most large cities, such as New York, Boston and Chicago, dispose of their sewage in this way. At Chicago the supply of running water is very insufficient, and there is in course of construction a channel 160 feet wide and 20 feet deep by which the sewage, properly diluted, will be carried to the Mississippi River.

The next question to be considered is how is the sewage to be collected? This is done by means of underground pipes called sewers. The rain-water must also often be disposed of in this way. Therefore, the question arises, shall it be carried in the same pipes with the sewage or separately? Some object to the combined system of sewerage upon the grounds that the sanitary conditions are not so good. Both systems, however, can be made good, as I found in some investigation of 12 or 13 years ago. Local decision should decide in favor of one or the other.

Finally, the third question is, what are the essential requirements of good sewers. They must be so constructed, first, that the sewerage is kept in motion from the time it leaves the receptacle in the house or on the streets down to the out-

*A lecture delivered at the Rensselaer Polytechnic Institute by Rudolph Herzig, M. Am. Soc. C. E. Reprinted in abstract from *The Polytechnic*.

MUNICIPAL ENGINEERS, CONTRACTORS, AND MATERIALS.

fall; secondly, that a minimum amount of suspended matter is deposited or retained within the sewer; and, thirdly, that such deposits and the growths attaching to the sides of sewers can be readily removed from time to time. These requirements can be fulfilled by giving the sewer a good alignment, a proper size, sectional shape and slope, by giving the interior a high degree of smoothness, by preventing eddies or back flow, and by providing means for readily inspecting and cleaning every part of the system.

(To be Continued.)

LEGAL DECISIONS AFFECTING MUNICIPALITIES.

CAMPBELL VS. VILLAGE OF LANARK.— Judgment on appeal by James Wier Campbell from an order of Galt, C. J., refusing an application to quash a by-law of the municipality providing for the issue of debentures to the amount of \$4,000, ostensibly for the purpose of making provision for a system of electric lighting for the village by securing the erection of a building suitable for the purpose and by acquiring water power for a period of 20 years, but really, as the applicants alleged for the purpose of aiding one Kate S. Coldwell to erect, equip and operate a grist mill. The applicant contended that it was in fact a bonus by-law passed in form stated, in evasion of the provisions of the municipal act of 1892 making bonus by-laws illegal. The respondents did not deny that they had in view the advantage to be derived by the village from the building of a grist mill, for the erection of which the by-law distinctly provided. Galt, C. J., stated that he was "unable to say that the sole object of the by-law was to give a bonus to the mill-owner," and dismissed the application on that ground. The court held that the by-law was a plain evasion of the wholesome provision of the statute forbidding the passing of a bonus by-law. Appeal allowed with costs.

CEMENT.

7,000 Barrels of the best London brand in stock and to arrive; also Fire Brick, and Drain Pipes, best quality and lowest prices.

F. HYDE & CO.

31 Wellington Street, MONTREAL.
Sole Agents for
"The Grathys" Smoke Test Machine, for applying the smoke-test to defective drains, soil pipes, gas pipes, &c., fumigating, disinfecting, destroying vermin, &c.

A. & E. LOIGNON,
CIVIL ENGINEERS.

Bridge and Structural Iron Work. Steel Beams kept in stock.
Plans, Estimates and Specifications.
WORKS: ST. COLUMBAN ST. AND CANAL SIDE, MONTREAL.
OFFICE: 7 PLACE D'ARMES, Telephone 977.

CORRUGATED SOIL PIPE AND FITTINGS (PATENTED)



This improvement marks an era in sanitary reform. Universal certificates in its favor from Architects, plumbing inspectors, master plumber associations, and others. Costs no more; more economical to use.

H. R. Ives & Co.

Montreal.

MUNICIPAL OFFICIALS

should see to it that in the erection of town and city PUBLIC BUILDINGS, the installation of water works plant, etc., the advantages of **MINERAL WOOL**



are made use of for deadening sound in floors and partitions, insulation of heat and cold, fireproofing, etc., also SECTIONAL MINERAL WOOL COVERING for steam pipes, boilers, exposed water pipes, etc.

Montreal Agent:
GEO. F. GOWAN,
Room 23, 204 James St.

Canadian Mineral Wool Co., Limited,
122 Bay Street, TORONTO

DEBENTURES WANTED.

Municipalities issuing debentures, no matter for what purpose, will find a ready purchaser by applying to **G. A. STINSON, 9 Toronto Street, Toronto.**
N.B.—Money to loan at lowest rates on first mortgage.

NOTICE

We manufacture the

Thorold Cement.

It is the best

Hydraulic Cement.

Write us for prices.

ESTATE OF JOHN BATTLE,

Thorold, Ontario.

WILLIS CHIPMAN, B.A., Sc.,

M. Can. Soc. C.E.; M. Am. Soc. C.E.,
M. Am. W. W. Ass'n.

CIVIL AND SANITARY ENGINEER

Water Works - Sewerage
Sewage Disposal

103 BAY STREET TORONTO.

J. McDougall, C. E.,

ENGINEER COUNTY OF YORK,

Consulting Engineer for Municipal Work.

Electric Railways and Bridges.

COURT HOUSE, - TORONTO.

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CONSULTING ENGINEER AND EXPERT

WATERWORKS, SEWERAGE, ETC.

Twenty-five years practical experience in Great Britain, United States and Canada.

Office, Rooms 99 and 100,
CANADA LIFE BUILDING, - TORONTO.

PORTLAND CEMENT

23,353 Barrels of Burham Brand were sold in Toronto in 1892, amounting to two-thirds of our total sales.

BURHAM IS THE BEST.

Nichols, Smythe & Co., - 25 George St., Toronto.
Telephone 1948 or call and see us.

HAMILTON AND TORONTO SEWER PIPE CO.

- FOR -

SEWERS,
CULVERTS,
AND

WATER PIPES.

INVERTS

Fire Brick Sewers

Write for Discounts.



HEAD OFFICE AND FACTORY, HAMILTON, CANADA.

Drummond McCall Pipe Foundry Company,

MONTREAL

MANUFACTURERS OF

CAST IRON WATER AND GAS PIPES

WORKS: LACHINE, QUE.

PRICES ON APPLICATION.

CANADA PIPE AND FOUNDRY CO.

MANUFACTURERS OF

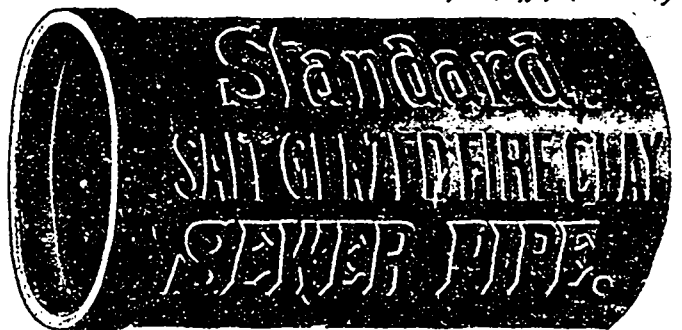
. Cast Iron Pipes and Special Castings

Works: MONTREAL AND ST. HENRI, QUE.

CORRESPONDENCE SOLICITED.

THE STANDARD DRAIN PIPE CO.

OF ST. JOHNS, P. Q., (LIM.)



Manufacturers of
Salt-Glazed,
Vitrified
SEWER
PIPES

Double Strength
Railway Culvert Pipes,
Inverts, Vents,

AND ALL KINDS OF FIRE CLAY GOODS.

Ontario Water Meter Co., Ltd.

MANUFACTURERS OF

WATER METERS

Meter Supports, Dial Extensions, Fixture Locks, Water Cart Registers, Strainers, Coupling Seals and Reservoir Indicators.

Send for Price Lists and Testimonials. Our Meters are adopted and in use in over 500 cities and towns in Canada and the United States. Highly endorsed by leading Engineers. A guarantee for five years given with all Meters. All information furnished on application to

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THE G. & J. BROWN MFG. CO.

Railway and Contractors' Plant.

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BELLEVILLE, ONT.

**CENTRAL BRIDGE AND -
- ENGINEERING COMPANY,**
(LIMITED)
Peterborough, Ont.
WM. H. LAW, Manager and Engineer.
MANUFACTURER OF

RAILWAY AND HIGHWAY BRIDGES

Viaducts, Piers, Roofs, Turntables and
Girders in Steel and Iron.

Tension members forged without welds. Riveting
done by hydraulic or compressed air machines.
Specialties: Good workmanship and strict adherence
to specifications and drawings.

CAPACITY: 2,000 TONS PER ANNUM.

OUR SALES OF
"BURHAM"

**Portland
Cement**

for the past 8 months have been
25,499 BAGS.

"Burham" Brand outranks all others.
Try it and be convinced.

Sole Consignees for Canada:

McRAE & CO., OTTAWA

Canada Pipe Foundry,

HAMILTON, ONTARIO.

ALEX. GAKTSHORE, Proprietor.

Manufacturer of

**CAST IRON WATER, GAS AND
SEWER PIPES.**

- ALSO -

Special Castings of every description.

CAPACITY: 50 TONS PER DAY.

In use from Vancouver to Sydney, Cape Breton.
Correspondence solicited.

Prices of Building Materials.

LUMBER.

CAR OR CARCO LOTS.

	Toronto.	Montreal.
1 1/2 to 2 clear picks, Am ins.	34 00	36 00
1 1/2 to 2 three tippers, Am ins.	37 00	40 00
1 1/2 to 2 pickings, Am ins.	27 00	30 00
3 inch clear.	27 00	30 00
2 x 10 and 12 dressing and better.	20 00	23 00
2 x 10 and 12 mill run.	23 00	24 00
2 x 10 and 12 dressing.	20 00	23 00
2 x 10 and 12 common.	18 00	20 00
2 x 10 and 12 spruce culls.	10 00	11 00
2 x 10 and 12 maple culls.	9 00	10 00
1 inch clear and picks.	18 00	20 00
1 inch dressing and better.	18 00	20 00
1 inch siding, mill run.	14 00	16 00
1 inch siding, common.	12 00	14 00
1 inch siding, ship culls.	10 00	11 00
1 inch siding, mill culls.	8 00	9 00
Cull siding.	8 00	9 00
1 1/2 and thicker cutting up plank.	22 00	25 00
1 inch strips, 4 in. to 8 in. mill run.	14 00	15 00
1 inch strips, common.	12 00	13 00
1 1/2 inch flooring.	14 00	15 00
1 1/2 inch flooring.	14 00	15 00
XXX shingles, sawn, per M.	2 30	2 35
XX shingles, sawn.	1 30	1 35
YARD QUOTATIONS.		
Mill cull boards and scantling	10 00	10 00
Shipping cull boards, promiscuous widths.	13 00	13 00
Shipping cull boards, stocks	16 00	16 00
Hemlock scantling and joist up to 16 ft.	11 00	12 00
Hemlock scantling and joist up to 18 ft.	12 00	13 00
Hemlock scantling and joist up to 20 ft.	13 00	14 00
Scantling and joist, up to 16 ft.	14 00	14 00
" " " " " " " "	15 00	15 00
" " " " " " " "	16 00	16 00
" " " " " " " "	17 00	17 00
" " " " " " " "	18 00	18 00
" " " " " " " "	19 00	19 00
" " " " " " " "	20 00	21 00
" " " " " " " "	21 00	22 00
" " " " " " " "	22 00	23 00
" " " " " " " "	23 00	24 00
" " " " " " " "	24 00	25 00
" " " " " " " "	25 00	26 00
" " " " " " " "	26 00	27 00
" " " " " " " "	27 00	28 00
" " " " " " " "	28 00	29 00
" " " " " " " "	29 00	30 00
" " " " " " " "	30 00	31 00
" " " " " " " "	31 00	32 00
" " " " " " " "	32 00	33 00
" " " " " " " "	33 00	34 00
" " " " " " " "	34 00	35 00
" " " " " " " "	35 00	36 00

Toronto. Montreal.

Cutting up planks, 1 1/2 and thicker, dry.	25 00	26 00	25 00	26 00
Cutting up planks, 1 1/2 and thicker, board.	18 00	22 00	18 00	22 00
Cedar for block paving, per cord.	5 00	5 00		
Cedar for Kerbing, 4 x 14, per M.	14 00	14 00		
1 1/2 in. flooring, dressed, F.M.	28 00	31 00	28 00	31 00
1 1/2 inch flooring, rough, F.M.	23 00	26 00	23 00	26 00
1 1/2 " " dressed, F.M.	30 00	27 00	30 00	27 00
1 1/2 " " undressed, F.M.	19 00	18 00	19 00	18 00
1 1/2 " " dressed.	22 00	18 00	22 00	18 00
1 1/2 " " undressed.	12 00	15 00	12 00	15 00
Beaded sheathing, dressed.	22 00	22 00	22 00	22 00
Clapboarding, dressed.	22 00	22 00	22 00	22 00
XXX sawn shingles, per M.	2 65	2 75	3 00	3 00
18 in. Sawn lath.	2 00	2 00	2 00	2 00
Cedar.	3 00	3 00		
Red oak.	30 00	40 00	30 00	40 00
White.	35 00	45 00	35 00	45 00
Basswood, No. 1 and 2.	18 00	20 00	18 00	20 00
Cherry, No. 1 and 2.	70 00	70 00	80 00	80 00
White ash, No. 1 and 2.	25 00	25 00	30 00	30 00
Black ash, No. 1 and 2.	18 00	30 00	18 00	30 00
Dressing stocks.	16 00	16 00	22 00	22 00
Picks, American inspection.	40 00	40 00		
Three uppers, Am. inspection.	50 00	50 00		
BRICK - M				
Common Walling.	7 50	6 00		
Good Facing.	9 00	8 50		
Sewer.	8 50	9 00	8 50	9 00
Pressed Brick, Per M:				
Plain brick, f. o. b. at Milton	16 00			
" " and quality.	14 00			
" " 3rd	8 00			
Hard Building.	4 50			
Moulded and Ornamental, per 100.	3 00	10 00		
Roof Tiles.	74 00			
Diamond locking tile.	16 00			
First quality, f. o. b. at Campbellville.	18 00	25 00		
and quality, f. o. b.	14 00	20 00		
3rd	12 00	17 00		
Ornamental, per 100.	3 00	10 00	3 00	10 00
Tiles.	24 00	26 00		
Plain brick, "A" f. o. b. Don Valley	18 00	25 00		
" " " " " " " "	16 00	22 00		
" " " " " " " "	13 00	18 00		
Trojan or Buff.	24 00	30 00		
Ornamental, per 100.	3 00	60 00	3 00	60 00
Plain brick, f. o. b. Port Credit	18 00			
" " and quality.	13 00			
" " 3rd	10 00			
Hard Building.	8 00			
Ornamental, per 100.	3 00	10 00		
SAND.				
Per Load of 1 1/2 Cubic Yards	1 25	1 25		
STONE.				
Common Rubble, per ton, delivered.	14 00	14 00		
Large flat Rubble, per ton, delivered.	18 00	18 00		
Foundation Blocks, per c. ft.	50	50		
Kent Freestone Quarries, Montreal, N. B., per cu. ft., f. o. b.	1 00			
River John, N. S., brown Freestone, per cu. ft., f. o. b.	95			
Ballochmyle	80	90	65	75
New York Blue Stone.			1 05	
Granite (Stanstead) Ashlar, 6 in. to 12 in., rise 9 in., per ft.			25	
Moat Freestone.	70	80		
Thomson's Gatelawbridge, cu. ft.	75	80		
Credit Valley Rubble, per ton, delivered.	13 00	14 00		
Credit Valley Brown Coursing, per superficial yard.	2 50	3 00	2 50	3 00
Credit Valley Brown Dimension, per cubic foot.	90	90		
Credit Valley Grey Coursing, per superficial yard.	1 50	2 00	1 50	2 00
Credit Valley Grey Dimension, per cubic foot.	75	80		
Madoc Rubble, delivered, per ton.	14 00	14 50	14 00	14 50
Madoc dimension floating, f. o. b. Toronto, per cubic ft.	70	32		
Ohio Freestone, No. 1 Blue Promiscuous, f. o. b.	60			
No. 1 Blue Dimension.	65			
No. 1 Buff Promiscuous.	80			
No. 1 Buff Dimension.	85			
The above prices means freight and duty paid.				
2 in. sawed flagging per sq. ft.	21			
3 " " " "	23 1/2			
4 " " " "	26 1/2			
5 " " " "	29 1/2			
6 " " " "	33			
Duty to be added to these prices.				
Quebec and Vermont rough granite for building purposes, per c. ft. f. o. b. quarry	33	1 50		
For ornamental work, cu. ft.	35	2 00		
Granite paving blocks, 8 in. to 12 in. x 6 in. x 4 1/2 in., per M	50 00			
Granite curbing stone, 6 in. x 20 in., per lineal foot.	70			
SLATE.				
Rocking (per square).				
" " red.	16 00	20 00		
" " purple.	9 00	10 00		
" " unfading green.	8 50	6 00		
" " black.	8 00	7 50		
Terra Cotta Tile, per sq.	22 00			
Ornamental Black Slate Roofing.	8 00			
PAINTS. (In oil, 1 lb.)				
White lead, Can., per 100 lbs.	6 25	6 50	6 00	6 25
" zinc, Can.	6 50	7 50	7 50	8 00
Red lead, Eng.	3 1/2	6 1/2		
" venetian, per 100 lbs.	1 60	1 75	1 60	1 75
" vermilion.	90	1 00	90	1 00
" Indian, Eng.	10	12	10	12
Yellow ochre.	5	10	4	6
Yellow chrome.	15	20	15	20
Green chrome.	7	12	7	12
" Paris.	25	40		

Toronto. Montreal.

Black lamp.	15	25	18	25
Blue, ultramarine.	15	20	12	18
Oil, linseed, raw, 1/2 gal.	65	68	63	65
" " " " " " " "	68	71	66	68
" " refined, "	78	81	75	78
Putty.	2 1/2	2 1/2	2 1/2	2 1/2
Whiting, dry, per 100 lbs.	75	1 00	60	75
Paris white, Eng., dry.	90	1 25	90	1 25
Litharge, Am.	6 1/2	7 1/2	6 1/2	7 1/2
Sienna, burnt.	15	21	12	15
Umber, "	15 1/2	19	12	15
OAKUM, LIME, etc.				
Cement, Portland, per bbl.	2 50			
" English	2 75			
" Belgium	3 25			
" Thorold	1 50			
" Queenston	2 25			
" Nanapanee	1 50			
" Hull	1 50			
" German	2 65	2 85		
" London	2 45	2 90		
" Newcastle	2 35	2 50		
" Belgium	2 30	2 40		
" Canadian	2 25	2 30		
" Roman	2 75			
" Parian	4 50	4 75		
" Superfine	6 50	7 00		
Keene's Coarse "Whites"	4 50	4 75		
Calced plaster, per barrel.	1 55	1 70		
Fire Bricks, Newcastle, per M	20 00	24 00		
Scotch	30 00	35 00		
Lime, Per Barrel, Grey.	40			
" " White.	55			
Plaster, Calced, N. B.	2 00			
" " N. S.	2 00			
Hair, Plasterers', per bag.	1 00			
HARDWARE.				
Cut nails, 5 d & 60d, per keg	2 40	2 25		
Steel	2 50	2 35		
CUT NAILS, FENCE AND CUT SPIKES.				
40d, hot cut, per 10 lbs.	5	5		
30d, " " "	10	10		
20d, 16d and 12d, hot cut, per 100 lbs.	15	15		
20d, hot cut, per 100 lbs.	20	20		
8d, 9d, " " "	25	25		
6d, 7d, " " "	40	40		
4d to 3d, " " "	60	60		
3d, " " "	1 00	1 00		
2d, " " "	1 50	1 50		
4d to 5d cold cut, not polished or blued, per 100 lbs.	50	50		

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3d to 5d cold cut, not polished or blued, per 100 lbs.	50	90		
PINK BLUED NAILS.				
3d, per 100 lbs.	1 50	1 5		
2d, " "	2 00	2 00		
CASING AND BOX, FLOORING, SHOOK AND TOBACCO BOX NAILS.				
12d to 30d, per 100 lbs.	50	50		
10d, " "	60	60		
8d and 9d, " "	75	75		
6d and 7d, " "	90	90		
4d to 5d, " "	1 10	1 10		
3d, " "	1 50	1 50		
FINISHING NAILS.				
3 1/2 to 2 1/2 inch, per 100 lbs.	85	85		
2 to 2 1/2 " " "	1 00	1 00		
1 1/2 to 1 1/2 " " "	1 15	1 15		
1 1/4 " " "	1 35	1 35		
1 " " "	2 25	2 25		
SLATING NAILS.				
5d, per 100 lbs.	85	85		
4d, " "	85	85		