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# CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF THE PUBLIC WORKS AND MUNICIPAL PROGRESS

EVERY WEDNESDAY

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. 9.

NOVEMBER 16, 1898

No. 42.

## THE CANADIAN CONTRACT RECORD, PUBLISHED EVERY WEDNESDAY

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

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

Advertising Rates on application.

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.

## TENDERS FOR ANNUAL SUPPLIES

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

**MONDAY, DECEMBER 5TH, 1898,**

for the following supplies for the year ending December 31st, 1899:

Lumber,	Paving Brick,
Pit Gravel, screened and unscreened,	Hydrants,
Sand,	General Supplies,
Sewer Pipe,	Wire Nails,
Brass and Bronze Castings,	Cedar Paving Posts,
Brass Work for Services,	Horse Feed, Etc.
Coal and Wood,	Cast Iron Pipe,
Lead Pipe,	Lubricating Oils, Etc.
Stop Valves,	Purposes,
Special Castings,	Rubber Valves, Etc.
Iron and Steel,	Iron Valve and Stop Cock Boxes,
	Lake Gravel,

Contents of envelopes containing tenders must be plainly marked on outside.

Specifications may be seen and forms of tender obtained at the office of the City Engineer, Toronto, on and after Monday, November 21, 1898.

A marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. of the amount tendered for up to \$1,000, and 2½ per cent. of the amount over that sum, must accompany each and every tender, otherwise it will be ruled out as informal. The lowest or any tender not necessarily accepted.

JOHN SHAW (Mayor),  
Chairman Board of Control.

Toronto, November 14th, 1898.

## THE CORPORATION OF THE City of Three Rivers

Scaled tenders, for the Construction of a

### Pier and Suction Pipe

into the River St. Maurice, in this city, will be received by the undersigned up to the 15th DECEMBER, 1898, at 4 o'clock p.m.

Plan and specifications may be seen at the office of the undersigned.

Tenders must bear the bona fide signature of the contractor, and must be accompanied by an accepted cheque made payable to the order of the Corporation of the City of Three Rivers, equal to five per cent. of amount of tender. This cheque will be forfeited if the party declines the contract or fails to complete the work contracted for, and will be returned in case of non-acceptance of tender.

The lowest or any tender not necessarily accepted.

L. T. DESAULNIERS,  
Sec.-Treas. T. R. Corporation.

City Hall, Three Rivers, and November, 1898.

## TENDERS

FOR

### ELECTRICAL POWER TRANSMISSION PLANT

ORILLIA, ONTARIO, CANADA

The Corporation of the Town of Orillia, Ontario, Canada, invites tenders for the supply and installation of a plant for the Transmission of Electrical Energy from a point on the Severn River to the Town. The plant to consist of:

ALTERNATING CURRENT GENERATORS—Two of 300 k.w. capacity each.  
STEP-UP AND STEP-DOWN TRANSFORMERS—600 k.w. capacity.  
TRANSMISSION LINE AND CONSTRUCTION—Eighteen miles.  
SWITCHBOARD EQUIPMENT—For Generating and Receiving Stations.  
HYDRAULIC MACHINERY—Including Masonry Construction.

Tenders to be mailed at despatching office not later than WEDNESDAY, THE 30th DAY OF NOVEMBER, 1898.

Copies of specifications and all information can be obtained on application to the undersigned.

RODERICK J. PARKE,  
Consulting Electrical Engineer,

C. J. MILLER,  
Chairman Fire, Water, and Light Committee,  
Orillia, Ont., Can.

### DATE OF PUBLICATION.

Architects, Engineers, Municipal Authorities and others are reminded that the CONTRACT RECORD is printed every Tuesday afternoon, and that advertisements should reach the office of publication not later than 2 o'clock p.m. on that day to ensure insertion in the issue of the current week. Advertisements are frequently received too late for insertion, to avoid which special attention is directed to this announcement.

### CONTRACTS OPEN.

BRYSON, QUE.—R. J. Rae is excavating for a new residence.

ORILLIA, ONT.—A new High School building will be erected here.

FRASERVILLE, QUE.—A chapel will probably be erected in this district.

COOKSHIRE, QUE.—A new school house is to be erected in Ditchfield.

FREDERICTON, N. B.—John McClish purposes erecting a residence on Union street.

GATINEAU POINT, QUE.—Dr. J. E. Laurin is building a dwelling house and office.

GREENWOOD, B.C.—Plans are wanted by the school trustees for a new school house.

RUSSELL, ONT.—P. R. McDonald has purchased a lot, on which he intends building.

BERLIN, ONT.—The town council are in favor of granting a site for the proposed armory.

ST. MARYS, ONT.—James Storey will next spring erect two one and one-half story dwellings.

PERTH, ONT.—An addition will be made to the Perth foundry by the proprietor, John Dittrick.

TRURO, N. S.—It is understood that M. M. Bentley intends building a new wharf at this port.

LIVERPOOL, N. S.—It is probable that the town will construct waterworks and sewerage systems.

POINT EDWARD, ONT.—A rumor is again current that the C.P.R. will build a tunnel here.

DRESDEN, ONT.—The village offers ten years' exemption from taxation for the erection of a flour mill.

THORNHILL, ONT.—H. M. Brown has purchased a lot on Church street, on which he will erect a dwelling.

SYDNEY, N. S.—The Dominion Coal Co. contemplate making extensive repairs and improvements at the intercolonial pier.

ST. ETIENNE, QUE.—Tenders for a new church are asked up to 19th inst. Address, Rev. M. Clouthier, curate of St. Etienne.

MERRITON, ONT.—Tenders have been taken on the rebuilding of No. 2 ward school. R. Clark is secretary of School Board.

TRENTON, ONT.—The Co-operative Lumber Cutting & Furniture Manufacturing Co. has been organized here, with a capital of \$30,000.

CHATHAM, ONT.—Mr. W. H. Tighe, of the evaporator works, intends building another brick factory and putting in modern machinery.

SHERBROOKE, QUE.—The Council has agreed to give a bonus of \$15,000 to the Canadian Rand Drill Co., to assist in the erection of buildings and plant.

WATERLOO, ONT.—Voting on the by-law to raise \$50,000 for the purchase and

completion of the waterworks system will take place on Monday next.

**FARNHAM, QUE.**—At the last meeting of the town council, a company made a proposition to build an extensive furniture factory in consideration of a bonus of \$20,000.

**MIDLAND, ONT.**—The management of the Grand Trunk Railway is said to be considering the advisability of erecting another elevator here.

**BRANTFORD, ONT.**—At a recent meeting of the Board of Health, it was decided to memorialize the city to take steps looking to the erection of an isolation hospital.

**ARTHABASKAVILLE, QUE.**—J. E. Perreault, of this place, asks incorporation for the Arthabaska Railway Company, to construct a steam or electric railway from Dudswell to Maddington Falls.

**LINDSAY, ONT.**—The Council is taking steps to carry to completion the Fenelon Falls power transmission scheme. This project was inaugurated by Messrs. George White-Fraser and J. A. Culverwell.

**TWEED, ONT.**—The Beaver Portland Cement Co. will probably expend about \$50,000 in erecting buildings and kilns in connection with the cement works at the village of Marlbank, on the Bay of Quinte railway.

**LOUISBURG, N. S.**—British capitalists are reported to have decided to establish extensive iron works here. It is also probable that the erection of a ship-building plant will follow the development of the iron works.

**KINGSTON, ONT.**—Improvements to the penitentiary here are said to be contemplated.—Mr. William Newlands, architect, is preparing plans for a brick terrace to be built on the corner of Barrie and Williams streets, for D. Lavery.

**HINTONBURG, ONT.**—The Ottawa Suburban Waterworks Company having failed to carry out its agreement to construct a waterworks system for this village, the Council has decided to arrange with other parties to construct the same.

**CASCADE CITY, B. C.**—The Cascade Water Power & Light Co. are having plans prepared for developing the power at this place. It is contemplated to build the dam, flumes, etc., this winter, and to install the machinery early next spring.

**ROSSLAND, B. C.**—The Presbyterian home mission authorities have decided to erect mission buildings near the largest mines at Rossland, Nelson and White Water. The buildings will include rooms for religious, social and educational purposes.

**HULL, QUE.**—The Lighting Committee of the City Council has recommended that the city engineer be instructed to prepare plans for the installation of a municipal electric light plant, utilizing the water power owned by the city on Brewery creek.

**TORONTO JUNCTION, ONT.**—W. J. McBride, of this place, is one of the promoters of a scheme at New Toronto for the manufacture of hard paving brick. The site has been purchased, and it is said that the necessary machinery has been arranged for.

**CARP, ONT.**—A vigorous effort is being made to secure the construction of the proposed Carp, Almonte and Lanark railway. The promoters have held a charter for this road for some time, and have recently completed a survey of the route.

**ST. CATHARINES, ONT.**—Messrs. W. German, M.I.P., Welland, James Battle, Thorold, George Dawson, of this place, and others, have asked the Minister of Railways and Canals at Ottawa for increased water power privileges on the Welland canal.

**MIDLAND, ONT.**—Chew Bros., of this

place, have purchased the mill property at Dollartown, and will, it is said, erect a large box factory there.—The management of the Grand Trunk Railway is said to be considering the advisability of erecting another elevator here.

**ST. JOHN, N. B.**—The Common Council has authorized the director, Mr. Chipman Smith, to advertise for tenders for 1,000 feet of fire hose, 300 feet to be rubber and 700 feet cotton, rubber lined.—B. Frank Smith, of the firm of A. C. Smith & Co., will build a residence at Florenceville.

**HOPEWELL HILL, N. B.**—C. & I. Prescott have made arrangements with an English company to build a large wood-working factory for the manufacture of boxes. The building will be erected at West River, and will be 200 x 60 feet, equipped with modern machinery.

**BROCKVILLE, ONT.**—The Round Island Park Association contemplate expending \$50,000 next season on new buildings and improvements to the Frontenac hotel. Charles G. Emery is president of the association.—Improvements, to cost about \$8,000, are contemplated to the Victoria Hall.

**RENFREW, ONT.**—Mr. A. W. Campbell, C.E., Toronto, is preparing plans for road improvements in this town, including the construction of artificial stone walks, it being the intention to spend a considerable sum of money in this manner. A by-law authorising the expenditure will be submitted to the ratepayers in January.

**MIDWAY, B. C.**—Mr. Owen, of Kaslo, proposes building a two-story building, 25 x 50 feet, corner Sixth street and Chamblet ave.—J. McNicol has purchased the Jones block, and intends building an addition thereto.—F. Dittmer has purchased property on Fifth street on which to erect a business block.

**VICTORIA, B. C.**—A movement has been started to convert the Grim block on Johnson street into a modern opera house, with a seating capacity of 1,100. The B. C. Land & Investment Co. are interested.—J. G. Tiarks, architect, of this city, is taking tenders this week on a brick and stone building to be built at New Westminster.

**MIDDLETON, N. S.**—The new wood-working factory of F. S. & W. E. Roop & Co. will consist of a main building, 41 x 91 feet and three stories high, brick engine room 20 x 35 feet, and dry kiln and storage room 34 x 35 feet, two stories. The buildings will be fitted with the latest improved machinery.

**SARNIA, ONT.**—It is understood that the management of the Lake Erie & Detroit River Railway contemplate building car ferry slips and accessories here, at a cost of from \$12,000 to \$15,000. The building of a large elevator on the company's property is also said to be among the possibilities of the near future.

**ST. THOMAS, ONT.**—Percy Domville, of Hamilton, has been engaged to make an estimate of the cost of installing a municipal electric light plant for this city.—The by-law to grant \$20,000 to the Lake Erie & Detroit River Railway, to assist in the construction of an extension from Ridgetown to this city, was carried by the ratepayers last week. Work will accordingly be proceeded with.

**VANCOUVER, B. C.**—Work is shortly to be commenced on the marine railway in the east end, under the superintendence of Mr. Kenworthy.—A report is current that the Great Northern Railway Co. will buy the Hastings mill property as a site for their terminus in this city.—The city engineer has been instructed to prepare plans for two Queen trusses for the Granville street bridge swing.

**HALIFAX, N. S.**—Herbert E. Gates, architect, has prepared plans for the following: Alterations and additions to a house on Spring Garden road, for A. P.

Torrence; four-story brick addition to soda water factory on Granville street; and business block on Water street, Dartmouth, for C. E. Reveril.—The Royal Engineers are surveying properties in the north end which are considered suitable sites for the proposed barracks.

**BARRIE, ONT.**—The ratepayers have sanctioned the by-law to raise \$100,000 to purchase the existing waterworks plant and make extensions thereto.—The town is negotiating with the Barrie Electric Light Co. for the purchase of its plant. The sum of \$35,000 has been placed in the hands of the Council to purchase a municipal plant, and the question is whether the existing plant will be taken over or an entirely new plant installed.

**LONDON, ONT.**—U. A. Buchner, barrister, has submitted a proposal to the city council asking for a street railway franchise. Mr. Buchner states that if the franchise is granted, seven miles of railway will be built.—Samuel Stewart has been granted a building permit for two brick detached residences on Maitland street, between King and Dundas streets, to cost \$1,700 each.

**NEW WESTMINSTER, B. C.**—Errell & Costello, of Vancouver, are about to commence operations on a large fish curing factory, three storeys high, and to cost, with plant, \$50,000.—D. S. Curtis is inviting tenders for rebuilding his block.—T. J. Trapp & Co. purpose commencing their brick block, corner Columbia and Lorne streets, at an early date.—J. C. Armstrong, having purchased a portion of the Curtis Burns property on Columbia street, will shortly build thereon, in addition to rebuilding on the site of the Armstrong-Young block.

**WOODSTOCK, ONT.**—The appointment of a town engineer, in succession to Mr. W. M. Davis, was considered at the last meeting of the Board of Works. The opinion seemed to prevail that for the present it would be advisable to engage an engineer only as his services are required. A permanent appointment will probably be made next year.—The Board of Trustees of Norwich ave. Methodist church have decided to build a new church provided the necessary funds can be raised. The cost is placed at \$6,000. To enlarge the old building would, it is said, cost \$2,500.

**PEMBROKE, ONT.**—The council has authorized the town solicitor to prepare a by-law to raise the funds necessary to construct a sewerage system, in accordance with plans prepared by J. L. Morris, C.E. The system will include the outlets and mains on Pembroke, Moffatt, McKay and Peter streets, the sub-mains and lateral sewers to be put in as required under the local improvement system.—The Pembroke Southern Railway Co. are laying the foundation for their station, which will be of brick, 32 x 50 feet, with freight shed adjoining, 100 x 30 feet. A round house will also be erected.

**MONTREAL, QUE.**—The Road Committee will ask the City Council to take steps to have all trolley wires placed underground.—The City Surveyor has presented a report to the City Council asking for an appropriation of \$3,700 to close the ramps in the dyke in St. Gabriel ward and to operate the sewer flushing pumps until the end of the year.—The Canadian Plate Glass Co., head office in this city, and capital of \$10,000, is seeking incorporation.—At the next session of the Newfoundland legislature, application will be made to incorporate the Newfoundland Bleached Pulp Co., capital \$2,000,000. Mr. William Reid, of this city, is the chief promoter of the company.

**HAMILTON, ONT.**—Mr. W. W. Lachance, architect, is preparing plans for a Presbyterian church to be built in the township of Albion. Tenders will be in-

vited as soon as the necessary funds are raised.—The Board of Works has recommended that the City Council submit a by-law to the electors in January next to raise the sum of \$200,000 for road improvements.—The Board of Education will procure an estimate of the cost of the necessary alterations in the old Collegiate Institute building to convert it into a public school.—Richard Buscombe has secured a permit for a two-story brick dwelling on Eric ave., to cost \$1,800.—The International Radial Electric Railway Company have not yet commenced the construction of the proposed line to Guelph, and it is said that a different route than the one first proposed is being considered.

WINNIPEG, MAN.—The City Council having decided to construct the asphalt pavement on Portage ave. by day labor, it will be necessary to purchase an asphalt plant at once. The cost of this is estimated at \$10,000.—The Northern Elevator Co., of this city, will erect an elevator at Solsgrith, Man.—The Canadian Bank of Commerce has purchased the Bannatyne block on Main street. It is the intention to erect on this property large bank premises, the plans for which are now being prepared by Darling & Pearson, architects, of Toronto. Mr. C. H. Wheeler, of this city, will superintend the construction.—The by-law to raise \$20,000 for a free public library building, \$50,000 for an electric lighting system, and \$18,000 for a crematory, has been given its second reading in Council.—Plans will be prepared at once by H. McCowan, architect, for a large addition to the Seymour hotel, owned by John Baird. Work is expected to commence in March next.—The council of the University of Manitoba have accepted the site given by the government for the proposed University building.

OTTAWA, ONT.—Bryson, Graham & Co. are building an addition to their departmental store.—It is rumored that the Moore homestead on the Aylmer road will be purchased by the Victorian Order of Nurses, to be used as a hospital.—The Railway Committee of the Privy Council has concurred in the application of the Pontiac and Pacific Junction railway for the extension of its line from Aylmer to Hull. The company will build an overhead crossing over the Hull Electric, C.P.R. and Aylmer road.—A Belgian syndicate has under consideration the establishment of an extensive glass factory in Canada, and may locate in this city.—A deputation from the county of Russell last week interviewed the Minister of Railways and Canals regarding the prevention of the Rideau floods. The question of building a bridge across the Rideau canal from Ottawa East to a point in the city of Ottawa was also considered, but no agreement was arrived at.—J. R. Booth is considering the advisability of lighting with acetylene gas the coaches of the Canada Atlantic and Ottawa, Arnprior & Parry Sound railways.—The promoters of the abattoir scheme expect to select a site at an early date for their proposed establishment.—J. R. Booth states that the new central depot will probably be located on the site of the present station, and that work will be commenced as soon as the Militia Department secure other quarters for militia stores now on the premises. The city has contributed \$50,000 towards the building of the station.—Over \$3,000 has been subscribed towards the proposed memorial to Dr. H. P. Dwight.—Rev. Father Mangin, parish priest of Masson, Que., has received a donation which will enable him to push forward the construction of the proposed convent on the Aylmer road.—The money for the new altar in St. Alban's church has all been subscribed, and steps will be taken at once to have it erected.

TORONTO, ONT.—Messrs. Darling &

Pearson, architects, are preparing plans for a new building to be built in Winnipeg by the Canadian Bank of Commerce. Construction will likely commence next spring.—It is reported that the Queen City Yacht Club have in view the erection of a new club house.—Mr. S. G. Curry, architect, 90 Yonge street, wants tenders by 5 p.m. 10-day (Wednesday) for an addition to a house on Carlton street.—Mr. David Roberts, architect, invites tenders up to noon on Thursday, 17th inst., for building a warehouse on Simcoe street.—The Vinegar Trust has made arrangements to secure a fixed present assessment of \$8,500 on the property which it proposes to improve at the north-east corner of Front street and Spadina ave., and of \$10,000 on such buildings as they may choose to erect.—The Royal Canadian Bicycle Club propose to erect a club building, on which work will likely be commenced within one month.—The Bell Piano Company, of Guelph, Ont., will probably locate in this city in the near future.—Dr. Sheard has recommended the enlargement of the Isolation Hospital. He considers that from \$20,000 to \$30,000 would be required for the purpose.—The Board of Control have appointed Mr. Matthew Sheard, architect, to report upon the most suitable plans for the enlargement of St. Lawrence market.—A proposition has been made to the city by Messrs G. P. Magann, C. S. Ransom and Dr. R. A. Pyne, on behalf of the Anglo-American Electric & Supply Co., for the supply of electric energy to the city. In a letter to the Council, the statement is made that the company propose to put in a 10,000 horse power plant, at a cost of about \$1,000,000.—Tenders were opened last week for the supply of an electric plant for civic and commercial lighting and power. The tenders were found to be incomplete, and as a result the city engineer has recommended that none of them be accepted, it being impossible, owing to the small number of tenders received, to arrive at even an approximate estimate of the cost of a plant.—Building permits have been granted as follows: William Murray, brick dwelling on Madison ave., cost \$4,000; W. F. Young, 2-story brick store and dwelling, 558 Queen west, cost \$1,400; P. J. Dillon, 2-story and attic brick residence, north side Paton road, near Symington ave., cost \$1,000 (R. Smith, architect); George St. Leger, addition to 214 Yonge street, cost \$1,000.—At the annual meeting of the Board of Trustees of the National Sanatorium Association held on Saturday last, a committee was appointed to report on the question of building in this city a receiving home for free patients. It was stated that the part remaining unpaid of the subscriptions of the late H. A. Massey and Mr. Gage, amounting to \$10,000, could be used for this purpose. Mrs. J. M. Treble and several others expressed their willingness to build cottages in connection with the Toronto home, and Mr. Walter Massey offered to undertake the building of a laboratory at the Muskoka sanatorium.—The city engineer will be asked to report on the cost of reconstructing the roadway between the tracks on Queen street and King street, from River street to the Don, by day labor, also as to the cost of two large stone or brick culverts spanning the Don, 66 feet wide, at Queen street east, and of roadway and sidewalks above the same.

#### FIRES.

Recent fires included the following: Benoit's saw mill at Weedon, Que., totally destroyed.—At Deloraine, Man., the Queen's hotel, loss \$7,000; Rocket's harness shop, \$3,000; Henry Bros.' livery, \$2,000, and Boyd & Co.'s store, \$3,500.—Paul Bros.' paning mill at Midland, Ont.; loss \$5,500 insurance \$1,500.—The Brandon hotel property at Fenelon Falls, Ont.; loss \$1,000, partially covered by in-

urance.—Pillow & Hersey's extensive bolt and nut works on Mill street, Montreal; building and machinery totally destroyed; loss \$15,000, covered by insurance.—Grocery store of John Gibb, at Elora, Ont.; loss \$2,000.—The steam yacht Sophy, owned by Henderson Bros., of Kingston, Ont.; loss \$5,000, insurance \$3,800.

#### CONTRACTS AWARDED.

BRANDON, MAN.—Sylvester Bros. have let the contract for a large office building.

WINNIPEG, MAN.—The contract for the new Auditorium rink has been let to S. B. Ritchie.

MAGOG, QUE.—The tender of Francois Lassur has been accepted for a dwelling for the city electrician.

GRANBY, QUE.—The issue of bonds, amounting to \$50,000, has been taken by Frank Thompson & Co., of Sherbrooke.

ST. JOHN, N. B.—D. W. Clark & Son have received the contract for building wharf, 100 x 250 feet, at head of Rodney wharf.

KINGSTON, ONT.—The Canadian Locomotive & Engine Works have secured the contract to build six locomotives for the C.P.R.

WALKERTON, ONT.—The contract for building a sewer from the House of Refuge has been secured by Ald. Luzcombe, of Belleville; price, \$1,700.

COTTAM, ONT.—The township council has sold \$6,126 worth of drainage debentures to Mr. Morris, of Hamilton, receiving a premium of \$315.

BERLIN, ONT.—The heating and plumbing contract for the Isolation Hospital has been awarded to P. Gies, and the painting contract to H. Better.

TORONTO, ONT.—The Public School Board have let contracts as follows for a new room in connection with Dewson street school: Carpenter work, W. Hutchinson, \$190; painting, J. Plunemore, \$12; plastering, Thomas Ginder, \$50.—The Board of Control last week accepted the following tenders: 19 keyless doors for fire alarm boxes, Dean Bros., at \$10 each; 6 foot granolithic walk on the south side of Wellesley Crescent, between Homewood avenue and Sherbourne street, A. Gardner & Co., at 69 cents per lineal foot; 4 foot granolithic walk on Duncan street, City Engineer, at 45 cents per lineal foot (A. Gardner & Co.'s tender was 48 cents.)

#### BUSINESS NOTES.

The death is reported of F. Horton, plumber, Montreal.

Ross, Barry & McRae, contractors, have registered a partnership at Three Rivers, Que.

A meeting of the creditors of W. A. Bowers, marble dealer, Brockville, Ont., is being held to-day.

Amelia M. J. Kelly has registered proprietress of the business of W. Kelly & Co., builders, Montreal.

R. L. Hillman, painter, Leamington, Ont., is reported to be offering to compromise at 50 cents on the dollar.

The sash and door factory of the James Shearer Co., Limited, Montreal, was recently partially damaged by fire and water.

Thomas Orrell, painter and wall paper, Kingston, Ont., is announced to have assigned to E. V. Louchs.

Lead and zinc do not really unite. When melted together and allowed to cool slowly, the lead falls to the bottom. If kept together in fusion and repeatedly stirred, the zinc sublimes with great rapidity.

**CITY ENGINEER FOR OTTAWA.**

The City Council of Ottawa, Ont., decided, on Monday last, to appoint Mr. John Galt, C.E., of Toronto, to the position of City Engineer; at a salary of \$3,500 per year. Mr. Galt is a native of Scotland, and took his C.E. and M.E. degrees at Glasgow and London universities. For several years past he has been practising as a consulting engineer, and his services have been called upon by many municipalities throughout the Dominion. At the present time he is engaged on plans for a large amount of municipal work, including water works and sewerage systems for Oshawa, Stayner and Prescott. Having given much attention to the design and construction of sewerage and waterworks systems, his experience is certain to be of great value to the city of Ottawa, where a drainage system involving an expenditure of more than half a million dollars is about to be undertaken. In connection with his duties as city engineer, Mr. Galt will in all probability superintend the carrying out of this important work.

**THE QUALITY OF MORTAR.**

Nearly all of our modern masonry constructions, and certainly all brickwork, is built on the assumption that the individual blocks, whether brick or stone, are to be imbedded in a matrix of mortar, uniting the whole into a homogeneous mass. As a matter of fact this assumption is rarely perfectly correct, for the reason that the mortar, though forming the key to the strength of the whole wall or pier, and, consequently, of extreme importance as a factor in building operations, very often fails to receive the proper care, and a scientific knowledge of the properties of the material is often sadly lacking, on the part of our builders. It is, however, encouraging to notice how much advance has been made in a comparatively few years in the uniformity of the product which is used in our more important buildings. The old-fashioned way of preparing mortar was to burn the lime in a more or less crudely-constructed kiln, and to mix the materials as they were required on the job in small batches, the lime being partly slaked and then being immediately covered with a blanket of sand, theoretically to keep the heat in, but practically checking the thorough slaking of the particles. Then the mortar, whether with lime or cement as a base, was worked over by hand on a board close to the wall, and the brickwork was laid up with very little attention to anything except to get the material in place.

**MACHINE-MIXED MORTAR.**

The necessities of modern building operations, no less than the scientific study which a few of our best builders have devoted to the subject, have resulted

in a modern compound specifically known as machine-mixed mortar, which is so far ahead of the average product which we were formerly obliged to depend upon that, though it has not achieved perfection, and the results are not as good as were brought about by the Roman methods of centuries ago, it is a vast improvement over the average hand-mixed mortar. Unfortunately this machine-mixed mortar cannot be obtained in all cities. It has been used a great deal in New York, and to a certain extent, we believe, in the other large cities, but as far as we know it has not been found practicable to ship it to any great distance without increasing the cost over hand-mixed mortar, though if considerations of the quality of the work were to be put above a matter of a few cents per cubic yard in cost, it would be far better for the builders in our small towns to have the machine-mixed mortar shipped to them. The cost is claimed to be some 25 cents per 1,000 bricks less than the average cost of hand-mixed mortar, while it is claimed that an additional saving of 22 cents per 1,000 can be effected in the labor of laying the brick.

**ECONOMICAL CONSTRUCTION.**

It is extremely satisfactory to feel that a good material, which is a decided improvement upon old methods, results not only in a better construction, but in a distinct saving of money. We should be inclined to look upon it in another way, and urge that even if the cost were 30 cents or 40 cents per 1,000 bricks, it would be well worth the difference to use machine-mixed mortar. This, of course, is on the assumption that the quality of the mortar is uniform and is kept up to high standard. It is much easier to do this mechanically than by trusting to manual labor. Anyone who has watched the ordinary laborer mix mortar will undoubtedly appreciate

how very variable the quality is. A brick-layer will try to judge of the mortar by the way it feels under the trowel. We know of one instance where an attempt was made to ascertain how much value could be placed upon such means of judgment. Three mixtures were made, one with two parts of sand to one part of Rosendale cement; the second with three parts of sand to one of cement and half a portion of ordinary loam; the third mixture was one part cement, one part of loam, and four parts of sand. The color of the mortar in each was so nearly the same as to be difficult to distinguish. Three bricklayers, to whom these batches of mortar were submitted, united in declaring that the one with equal parts of cement and loam was the best, their judgment being based simply upon the smoothness with which the mortar could be laid in the wall.

(To be Continued.)

The mordants used for dyeing with sumac are either tin, acetate of iron, or sulphate of zinc. The first gives yellow, the second gray or black, according to strength, and the third greenish-yellow.

Many times it is very convenient to make an article of cast iron that needs to be finished, and which should be very hard. Cast iron can be hardened as easily as steel, and to such a degree of hardness that a file will not touch it. Take one half pint vitriol, one peck of common salt,  $\frac{1}{2}$  lb. saltpetre, 2 lb. alum,  $\frac{1}{4}$  lb. prussiate potash, and  $\frac{1}{4}$  lb. cyanide potash; dissolve in ten gallons of water. Be sure that all the articles are dissolved. Heat the iron to a cherry red and dip it in the solution. If the article needs to be very hard, heat and dip the second and even the third time.

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## MUNICIPAL DEPARTMENT

### A SHORT HISTORY OF SEWAGE DISPOSAL AT THE ASYLUM FOR THE INSANE, LONDON, ONTARIO.\*

By R. M. BUCKE, M.D.

London asylum was ready for the reception of inmates in the autumn of 1870, and by the end of that official year 457 patients had been admitted, chiefly from the Malden and Orillia branch asylums, which were thereupon closed. The sewage of the new asylum was thrown into a small creek three miles above the opening of the same into the south branch of the Thames, the said opening being three miles above the city of London. Every summer the creek became nearly or quite dry, and it was not very long before the farmers and others who lived along its course complained bitterly of the nuisance caused by the asylum sewage. Complaints and threatened prosecution were met by the establishment of a charcoal and gravel filter at the lowest point of the asylum land. The said filter was operated intermittently with more or less (chiefly less) success for some fifteen years. It would do its work fairly well when fresh charged; but it proved impossible, by any reasonable expenditure of labor and charcoal, to keep it in a state of continuous efficiency. The protests of the property holders along the creek, which had been partially silenced by the establishment of the filter, broke out anew, and were naturally intensified by certain cases of typhoid fever which occurred among them. It became clear that some more radical remedy for the evil would have to be adopted, and it was finally decided to adopt that method of sewage disposal which goes by the name of Intermittent Downward Filtration.

A piece of sandy land, four acres in extent, was selected for the purpose. This, in the first place, was graded perfectly flat, and was then laid out in alternate beds and trenches; the beds being ten feet and the trenches eight feet wide. The difference in level between the surface of the beds and the bottom of the trenches is twenty inches. The length of the beds and trenches is 220 yards. The number of trenches is eighteen. The whole plot was provided with an elaborate system of tile drainage, many thousand feet of two inch tile being used. These were supposed to carry the purified water of the sewage to a well situated at the southwest corner of the field, which well was expected to overflow into a surface drain, and its water to run to the head of an adjacent small creek. Experience showed, however, that this tile drainage was almost or quite unnecessary and useless. Of late years the tiles have been dug up here and there for the purpose of examina-

tion, and it has been found that no water ever passed into them—they were in precisely the same state as when they were put down that is, they were apparently quite new and unused. In one part of the field, however, in which the soil is not so sandy, some water does pass into the tile in wet seasons. On the whole, however, water seldom runs into the well, and I have no doubt the field would do its work as well without the tile as with it.

The sewage field is on a slightly higher level than that on which the asylum itself stands; it is therefore necessary to use a pump. The sewage from all parts of the institution (including, of course, all laundry and other impure water), is run into an underground tank 80 feet long, 40 feet wide and 15 feet deep. From this tank it is thrown once a day by a centrifugal pump through a six inch iron duct into a small well at the north-east angle of the sewage field. This well, after being filled, overflows into a long trough made of three two inch planks spiked together. Opposite each trench there is a short spout made with similar two inch plankings. Each spout is fitted with a sliding gate, and just beyond each spout the trough is fitted with a similar gate. By means of these gates the sewage is turned into any trench desired. The whole arrangement is exceedingly simple, cheap and efficient. The centrifugal steam pump churns up the sewage so that when it comes to the field it resembles dish-water in appearance and is so dilute that it has very little odor.

The population of London asylum is in round numbers 1,000 patients and 200 sane people. The quantity of sewage made in a day averages about 75,000 gallons. It requires two and a half hours each day to throw this on to the field, and within from half an hour to six hours (according to the season of the year and the moisture or dryness of the earth) after it is thrown into the trenches, it has been absorbed by the soil. It is never seen again by us, doubtless it reappears at the surface somewhere as pure spring water. Only two to four trenches are used each day, so that the soil as used is always ready to absorb the sewage. There is no pollution of the soil: it is as sweet to-day as before it was used at all for the purpose in question. The disposal of the sewage then is absolute, as complete, indeed, as if it had passed out of existence. But it will be asked, how is it when the ground is soaked with long-continued rain, or when it is frozen hard in very cold weather. Neither of these conditions trouble us. The sewage always disappears in the soil, the process only somewhat checked by previous soaking, and only slightly checked by frost; for the sewage, even in winter, is always many degrees above the freezing point, and it thaws the soil sufficiently to make way for itself. Granted then a sufficiently porous soil, which can be found within moderate distance anywhere, this mode of

sewage disposal is simple, certain and cheap. No expensive plant is needed, and there are no chemicals or other supplies to purchase to carry it out.

But this is not all, these are not its only recommendations. For the first few years after adopting this method at London asylum, we used the field for sewage disposal only; we simply kept it clean of weeds and grass, and maintained the level and form of the trenches. But seven or eight years ago the temptation to experiment with the field as a garden took possession of us. All that we did in this direction prospered. We watered the plants grown on the field with the sewage, being careful not to use it at such times as it could taint such a crop as (for instance) strawberries. We found from the first that in the beds between the trenches (although the soil in them was poor) we could grow by aid of the sewage immense crops. For six years now we have cultivated this field to its full capacity, with the result that we grow upon it year by year crops of fruit and vegetables to the value of over \$200 per acre. So that over and above the disposal of our sewage in a cheap and cleanly manner, the sewage itself is so used as to bring us in several hundred dollars a year more than the field in its original condition could possibly (without the sewage) be made to produce. The crops we have grown upon the sewage field in the last six years have been as follows: Water and musk melons, squash, pumpkins, celery, peppers, cucumbers, tomatoes, peas, radishes, chilies, lettuce, beans, cabbage, beets, carrots, corn, onions, turnips, salsify, sea-kale, asparagus, parsnips, strawberries. Every one of the crops grown on the sewage field has done well. One of our most successful crops is melons, both musk and water, which we grow there every year. The yield is immense and we have grown better melons on this field than I have ever eaten grown elsewhere. We have had immense crops also of cabbage and celery, and the quality of the crops has been much above the average. I need hardly say that the fruits and vegetables grown on the field are as wholesome as those grown elsewhere. Neither is the health of those who work upon the field in the least affected; there are no healthier people about the institution than they. Why not? The field is simply a beautiful garden, which is kept well manured and irrigated.

To sum up. The advantages of this mode of sewage disposal are many and great. It is cheap, simple, cleanly, not liable to get out of order, wholesome. It would seem to be nature's own plan of refuse riddance. It seems clear that solid excrement, including dead bodies, should be returned to the earth whose chemistry is competent to deal with it and utilize it without itself receiving taint or injury, and not to the waters which have no use for it, and which are tainted and grievously injured by it.

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Cedar for kerbing, per cord....		5 00		5 00
per M.....		14 00		14 00
Scantling and joist, up to 16 ft		14 00		14 00
" " " 8 ft		15 00		16 00
" " " 20 ft		16 00		16 00
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" " " 24 ft		19 00		19 00
" " " 26 ft		20 00		21 00
" " " 28 ft		22 00		23 00
" " " 30 ft		24 00		25 00
" " " 32 ft		27 00		27 00
" " " 34 ft		29 50		29 50
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Beaded sheeting, dressed.....	20 00	35 00	22 00	35 00
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XXX sawn shingles, per M				
16 in.....	2 40	2 35		3 00
XX sawn shingles.....	1 60	1 50		
Jawwath, No. 1.....	1 75	2 0	2 50	2 60
Cedar.....		2 90		2 90
Red oak.....	30 00	40 00	30 00	40 00
White.....	37 00	45 00	35 00	55 00
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Table with 2 columns: Name and Address. Includes Bremner, Alex., Currie & Co., Owen Sound Portland Cement Co., and The Ratibur Co.

Cresosote Stains.

Table with 2 columns: Name and Address. Includes Cabot, Samuel.

Drain Pipe.

Table with 2 columns: Name and Address. Includes Bremner, Alex., Currie & Co., Hamilton and Toronto Sewer Pipe Co., and Elevators.

Elevators.

Table with 2 columns: Name and Address. Includes Fensom, John, Leitch & Turnbull, and Miller Bros & Toms.

Electrical Apparatus.

Table with 2 columns: Name and Address. Includes Barrie & Co.

Engravers.

Table with 2 columns: Name and Address. Includes Can. Photo-Eng Bureau.

Fire Brick and Clay.

Table with 2 columns: Name and Address. Includes Bremner, Alex., Currie & Co., and Fording Partitions.

Galvanized Iron Workers.

Table with 2 columns: Name and Address. Includes Ormsby & Co.

Grilles and Railings.

Table with 2 columns: Name and Address. Includes Dennis Wire & Iron Co., Malleable Iron Co., Toronto Fence & Ornamental Iron Works, and Southampton Mfg. Co.

Granite.

Table with 2 columns: Name and Address. Includes Brunet, Jos., Brodie, James, Boston Blower Co., Dominion Radiator Mfg. Co., Gurney, Tilden Co., Ormsby & Co., and The James Smart Mfg. Co.

Heating.

Table with 2 columns: Name and Address. Includes Brunet, Jos., Brodie, James, Boston Blower Co., Dominion Radiator Mfg. Co., Gurney, Tilden Co., Ormsby & Co., and The James Smart Mfg. Co.

Interior Decoration.

Table with 2 columns: Name and Address. Includes Elliott & Sen Company.

Lime.

Table with 2 columns: Name and Address. Includes Currie & Co., Ontario Lime Association, and Creosote Stains.

Luxfer Prisms.

Table with 2 columns: Name and Address. Includes Luxfer Prism Co.

Legal.

Table with 2 columns: Name and Address. Includes Denfon & Dods, Quinn & Morrison.

Machinery.

Table with 2 columns: Name and Address. Includes Jencks Machine Co.

Mantles, Grates, and Tiles.

Table with 2 columns: Name and Address. Includes Chat. Rogers & Sons, Holbrook & Mollington, Mosaic Marble & Enamel, and Rice Lewis & Son.

Metal Chutes.

Table with 2 columns: Name and Address. Includes The Cutler Mfg. Co.

Mortar Colors and Shingle Stains.

Table with 2 columns: Name and Address. Includes Cabot, Samuel, and Muirhead, Andrew.

Ornamental Iron Work.

Table with 2 columns: Name and Address. Includes Dennis Wire & Iron Co., Ives & Co., Malleable Iron Co., Toronto Fence & Ornamental Iron Works, and Painters.

Painters.

Table with 2 columns: Name and Address. Includes Montreal Directory, Toronto Directory, and Plasterers.

Plasterers.

Table with 2 columns: Name and Address. Includes Hynes, W. J., and Paints & Varnishes.

Paints & Varnishes.

Table with 2 columns: Name and Address. Includes Muirhead, Andrew, and Parquetry Floors.

Parquetry Floors.

Table with 2 columns: Name and Address. Includes Elliott & Son Company, Plate Glass, Hobbs Glass Works, Lyon, N. T., The Consolidated Plate Glass Co., Pressed Brick, Taylor Bros., Plumbers, Montreal Directory, Toronto Directory, Reflectors, Friek, I. P., and Reversible Win Lows.

Plate Glass.

Table with 2 columns: Name and Address. Includes Hobbs Glass Works, Lyon, N. T., The Consolidated Plate Glass Co., Pressed Brick, Taylor Bros., Plumbers, Montreal Directory, Toronto Directory, Reflectors, Friek, I. P., and Reversible Win Lows.

Pressed Brick.

Table with 2 columns: Name and Address. Includes Taylor Bros., Plumbers, Montreal Directory, Toronto Directory, Reflectors, Friek, I. P., and Reversible Win Lows.

Plumbers.

Table with 2 columns: Name and Address. Includes Montreal Directory, Toronto Directory, Reflectors, Friek, I. P., and Reversible Win Lows.

Reflectors.

Table with 2 columns: Name and Address. Includes Friek, I. P., and Reversible Win Lows.

Reversible Win Lows.

Table with 2 columns: Name and Address. Includes Duval & Co.

Roofers.

Table with 2 columns: Name and Address. Includes Campbell & Gilday, Duthie & Sons, Forbes, Nicholson & Co., Ormsby & Co., Rennie & Son, Reggin, John, Stewart & Co., Williams & Co., Roofing Materials, Ormsby & Co., Metallic Roofing Co., Sanitary Appliances, Garth & Co., Toronto Steel Clad Bath & Metal Co., The James Robertson Co., The James Morrison Brass Mfg Co., Stained and Decorative Glass, Horwood & Sons, Hobbs Glass Works, Lyon, N. T., Leonard, B., Mackey Stained Glass Co., McKennie's Stained Glass Works, Reardon's Art Glass Works, The Robert McCausland Stained Glass Co., Wood & Co., Shingles and Siding, Metallic Roofing Co., Metal Shingle & Siding Co., Ormsby & Co., Soil Pipe, Toronto Foundry Co., Storm Doors, Hillock & Co., Typewriters, Archibald, Chas., Ventilators, Boston Blower Co., Wallberg, E. A., Wall Plaster, Albert Mfg. Co.

Roofing Materials.

Table with 2 columns: Name and Address. Includes Ormsby & Co., Metallic Roofing Co., Sanitary Appliances, Garth & Co., Toronto Steel Clad Bath & Metal Co., The James Robertson Co., The James Morrison Brass Mfg Co., Stained and Decorative Glass, Horwood & Sons, Hobbs Glass Works, Lyon, N. T., Leonard, B., Mackey Stained Glass Co., McKennie's Stained Glass Works, Reardon's Art Glass Works, The Robert McCausland Stained Glass Co., Wood & Co., Shingles and Siding, Metallic Roofing Co., Metal Shingle & Siding Co., Ormsby & Co., Soil Pipe, Toronto Foundry Co., Storm Doors, Hillock & Co., Typewriters, Archibald, Chas., Ventilators, Boston Blower Co., Wallberg, E. A., Wall Plaster, Albert Mfg. Co.

Sanitary Appliances.

Table with 2 columns: Name and Address. Includes Garth & Co., Toronto Steel Clad Bath & Metal Co., The James Robertson Co., The James Morrison Brass Mfg Co., Stained and Decorative Glass, Horwood & Sons, Hobbs Glass Works, Lyon, N. T., Leonard, B., Mackey Stained Glass Co., McKennie's Stained Glass Works, Reardon's Art Glass Works, The Robert McCausland Stained Glass Co., Wood & Co., Shingles and Siding, Metallic Roofing Co., Metal Shingle & Siding Co., Ormsby & Co., Soil Pipe, Toronto Foundry Co., Storm Doors, Hillock & Co., Typewriters, Archibald, Chas., Ventilators, Boston Blower Co., Wallberg, E. A., Wall Plaster, Albert Mfg. Co.

Shingles and Siding.

Table with 2 columns: Name and Address. Includes Metallic Roofing Co., Metal Shingle & Siding Co., Ormsby & Co., Soil Pipe, Toronto Foundry Co., Storm Doors, Hillock & Co., Typewriters, Archibald, Chas., Ventilators, Boston Blower Co., Wallberg, E. A., Wall Plaster, Albert Mfg. Co.

Soil Pipe.

Table with 2 columns: Name and Address. Includes Toronto Foundry Co., Storm Doors, Hillock & Co., Typewriters, Archibald, Chas., Ventilators, Boston Blower Co., Wallberg, E. A., Wall Plaster, Albert Mfg. Co.

Storm Doors.

Table with 2 columns: Name and Address. Includes Hillock & Co., Typewriters, Archibald, Chas., Ventilators, Boston Blower Co., Wallberg, E. A., Wall Plaster, Albert Mfg. Co.

Typewriters.

Table with 2 columns: Name and Address. Includes Archibald, Chas., Ventilators, Boston Blower Co., Wallberg, E. A., Wall Plaster, Albert Mfg. Co.

Ventilators.

Table with 2 columns: Name and Address. Includes Boston Blower Co., Wallberg, E. A., Wall Plaster, Albert Mfg. Co.

Wall Plaster.

Table with 2 columns: Name and Address. Includes Albert Mfg. Co.

For ornamental work, cu. ft. 40

Table with 2 columns: Description and Price. Includes Granite paving blocks, Granite curbing stone, and Slate.

SLATE.

Toronto. Montreal.

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes Roofing (per square), Terra Cotta Tile, and Ornamental Black Slate Roofing.

PAINTS. (In oil, per lb)

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes White lead, Red lead, Yellow ochre, Green chrome, Black lamp, Oil, linseed, Putty, Whiting, Paris white, Litharge, Sienna, and Turpentine.

CEMENT, LIME, etc.

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes Portland Cements, German, London, Newcastle, Josson, North's, English, Belgian, Canadian, Roman, Parisian, and Sulfuric, and Hydraulic Cements.

Toronto. Montreal.

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes Hull, Keen, Fire Bricks, Lime, Plaster, Hair, and Hardware.

HARDWARE.

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes Cut nails, Steel, and Cut nails, fence and cut spikes.

CUT NAILS, FENCE AND CUT SPIKES.

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes 40d, hot cut, 20 to 24, 8d, 6d, 4d to 5d, 3d, and Cut spike.

Steel Nails, 1c. per keg extra.

Iron Pipe:

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes Iron pipe, 1/2 inch, 26 gauge, 28 gauge, and Note.

Lead Pipe:

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes Lead pipe and Waste pipe.

Galvanized Iron:

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes Adam's-Mar's Best and Queen's Head, 16 to 24 gauge, 28 gauge, and Note.

Structural Iron:

Table with 4 columns: Description, Price in Toronto, Price in Montreal, and Price in Quebec. Includes Steel Beam, channels, angles, tees, plates, and Sheared steel bridge plate.