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# THE 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, Purchasers of Municipal Debentures and leading Contractors in all lines throughout Canada.

VOL. 7.

MARCH 19, 1896

No. 7.

## THE CANADIAN CONTRACT RECORD,

PUBLISHED EVERY THURSDAY

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## TENDERS

Will be received at the office of the City Clerk, Chatham, Ont., up to NOON OF MONDAY, THE 30TH DAY OF MARCH, INST., for the following supplies and works for corporation purposes, for one year from 1st April, 1896.

So much per foot for vitrified sewer pipe, to be delivered in such quantities and at such times and places in the City of Chatham as may, from time to time, be required.

So much per lineal foot for stone curbing, to be delivered free on board cars at Chatham.

So much per square foot for putting down such stone walks or crossings as may be required.

Also so much per square foot for imitation stone walks, all excavations made and material found by the contractor. All measurements of areas or openings in walks when they occur to be deducted, all tenders for this work to be accompanied by a specification of the work to be done.

Specifications and further information to be had on application at this office.

The council reserve the right to reject any and all tenders.

JOHN TISSIMAN,  
County Clerk.

Chatham, Ont., March 17th, 1896.

Office of S. HAMILTON TOWNSEND, Architect,  
15 Gerrard St. E., Toronto.

Tenders will be received until NOON ON SATURDAY, MARCH 21st, for the various works necessary in the

ERECTION OF A TOWN CLUB HOUSE  
for the Royal Canadian Yacht Club, on the water front.  
The lowest or any tender not necessarily accepted

### CONTRACTS OPEN.

WESTFIELD, N. B.—T. H. Bullock will erect a summer residence here.

GALT, ONT.—The Agricultural Society propose erecting a new building.

GLENDAL, ONT.—The erection of a new church will be commenced at an early date.

GANANOQUE, ONT.—A new wharf will be built at the foot of Store street, to cost \$4,000.

BLENHEIM, ONT.—Tenders are now being taken for the building of the new town hall.

BOTHWELL, ONT.—The question of installing an electric light plant is under consideration.

EVERTON, ONT.—The Methodist congregation propose building a new church next summer.

AMHERSTBURG, ONT.—Tenders are being received for a new residence for James Honor.

AMHERST, N. S.—Improvements are contemplated to St. Stephen's Presbyterian church.

CRYSTAL CITY, MAN.—It is stated that Premier Greenway will build an oatmeal mill in this town.

THAMESFORD, ONT.—The C. P. R. will rebuild the bridge over the Thames river at this place.

PILOT BAY, B. C.—The Kootenay Mining & Smelting Co. is about to erect works here for refining purposes.

FREDERICTON, N. B.—A bill has been introduced in parliament to provide \$400,000 for public improvements.

ORILLIA, ONT.—The Town Council have under consideration a proposal to erect a brick fire hall, at a cost of \$5,000.

GLAMMIS, ONT.—The Presbyterians have decided to build a new church, with basement. It will be heated with hot air.

WOLSELEY, N. W. T.—A by-law to grant \$6,500 to build a grain elevator will be voted on by the ratepayers on the 21st. inst.

GRAND MANAN, N. B.—It is reported that Messrs. Ingersoll, Dixon and Watt, of North Head, will erect a cold storage building.

BROCKVILLE, ONT.—The Chairman of the Board of Works has been instructed to call for tenders for one hundred thousand feet of lumber.

ARDEN, ONT.—The congregation of the Church of England have purchased a lot and intend building a brick church. Rev. H. Spencer, rector.

CREDITON, ONT.—The cost of the new brick church to be erected here, tenders for which were invited in the *CONTRACT RECORD* last week, will be \$8,000.

HULL, QUE.—The by-law to issue debentures to the extent of \$108,000 to consolidate the floating debt of the city, has been sanctioned by the ratepayers.

IVY LEA, ONT.—W. Shipman is preparing to build a large residence for the accommodation of summer tourists. F. Shipman intends enlarging his residence.

KENTVILLE, N. B.—New buildings are to be constructed in the spring on the site of Scotia block and the Blanchard block. Several new dwellings are also contemplated.

ST. CATHARINES, ONT.—The bill incorporating the Lincoln Electric Radial Railway Company has passed the Railway Committee of the Ontario parliament.

EDMONTON, N. W. T.—Plans are being prepared for a two-storey brick wholesale house for McDougall & Secord.—D. W. McDonald is building a new drug store on Jasper street.

HALIFAX, N. S.—The Esson property, corner Pleasant and South streets, recently acquired by J. A. Farquhar, will be improved. An additional storey and two wings will be added.

HIGHGATE, ONT.—The question of erecting a Methodist church has been under consideration for some time. At a recent meeting of the trustees it was decided to take no action until the fall.

RIDGEWAY, ONT.—Stockholders in the Crystal Beach Improvement Co. have subscribed \$4,500 for the construction of the Beecher Single Rail Elevated Railway. Work will be commenced on the road at once.

ALBERNI, B. C.—The bill incorporating the Alberni Water, Electric & Telephone Co., has received its second reading in the legislature. One of the objects of the company is to provide a water supply.

NEWMARKET, ONT.—The council propose submitting a by-law to raise \$9,000 to put in a system of arc lights for the streets and incandescent lights for commercial and domestic purposes. The dynamos will be operated by steam power.

COBOURG, ONT.—A deputation, among whom were Messrs. Parser, Pratt & McCaul, recently waited upon the Minister of Militia requesting an appropriation for a new drill hall at this place. The question of harbor improvements was also considered.

QUEBEC, QUE.—The plans of Messrs. Taylor & Gordon, architects, of Montreal, for the new building for the Jeffrey Hale hospital, have been adopted by the Board of Governors. The cost of the work will be about \$40,000, tenders for which will be asked at an early date.

SAULT STE MARIE, ONT.—James Basingthwaite, Secretary School Board,

will receive tenders until the 28th inst. for the erection of a four roomed brick or stone school house. Plans may be seen at the secretary's office and at the office of C. J. Gibson, architect, Toronto.

**PETERBORO, ONT.**—A deputation recently waited on the Minister of Railways and Canals, the purpose being to secure control of the power of one of the dams on the river above Nassau, the power to be utilized in the plan for the electric lighting of the town.

**GRAND FALLS, N. B.**—The Grand Falls Power Co. are preparing for the immediate development of the natural power of the falls. Engineering operations will be commenced next month, and the erection of works will be proceeded with as soon as the engineer's report is presented.

**RENFREW, ONT.**—It is stated that an iron bridge will be built across the Bonnechere river, between Bonnechere Point and Renfrew.—The Burnstown and Whitelake bridge over the Madawaska river is in need of repairs, and an effort will be made to have an iron bridge erected.

**WOODSTOCK, N. B.**—Application is being made to the local legislature by J. T. Allan Dibblee, Julius T. Garden and J. N. W. Winslow, for incorporation of the Woodstock Electric Railway, Light and Power Company. The object of the company is to generate electricity for the purpose of supplying power and light.

**NORMAN, MAN.**—At a recent meeting of the Public School supporters of Norman and Rat Portage, a motion was adopted favoring the building of a two-story brick building at Norman, at a cost of \$4,700, and to raise two wings and build a new wing to the Central school, Rat Portage, at a cost of about \$7,500.

**CAMPBELLTON, N. B.**—Tenders, addressed to D. Murray, M. D., Chairman School Board, will be received until Saturday, the 4th of April, for the purchase of \$15,000 of school debentures.—J. Alexander & Co. will build a new store this spring.—The Orangemen intend building a new hall in the summer, a site for which has been secured.

**WINDSOR, ONT.**—The Y. M. C. A. has adopted the plans of Mr. W. T. Williams, architect, for an association building, to be erected on the north side of Ouellette square. The building will be two-stories in height, 50 x 100 feet, with basement and an attic storey. It will be constructed of stock brick and blue sand stone, heated by steam and lighted by electricity. The first floor will be finished in red oak and the basement and second floor in Georgia pine. Estimated cost \$8,000.

**KINGSTON, ONT.**—The plans of Mr. Ellis, architect, have been finally accepted for the new school building. Tenders will be invited for both brick and stone buildings, and a decision made after the tenders are received.—It is rumored that the Montreal Bank authorities will build a new bank structure on the corner of Brock and King streets.—Arthur Ellis, architect, has been instructed to prepare plans for a new Presbyterian church to be erected in Westport. The new building will be of solid brick, and will cost about \$5,000.

**HAMILTON, ONT.**—The Y. W. C. A. are considering the erection of a new building.—Messrs. John M. Lake and M. Hopkins are the promoters of an electric railway from Hamilton via Hall's Corners, York and Indiana to Cayuga or Dunnville, with a spur to Caledonia.—Mr. John Patterson, who is promoting the radial railway from Hamilton to Burlington, affirms that the road will be in operation by the 1st of June.—Building permits have been granted as follows: Stanley Mills & Co., alterations to 11 King street east, cost \$5,000; Charles Mills, alterations to St. John Presbyterian Church Sunday school, cost, \$1,000.

**ST. JOHN, N. B.**—The government are said to have promised assistance towards the construction of a cold storage warehouse in this city.—The City Engineer has prepared a report on a scheme for harbor improvements, involving an expenditure of \$1,427,000, as follows: First berth on south of Protection slip, cost \$60,000; second berth, cost \$80,000; south Rodney wharf, \$425,000; Union street wharf, \$70,000; cross wharf on harbor line, \$250,000; dredging basin, \$500,000; seven warehouses, \$42,000.—It has been stated that the C. P. R. Company contemplates building an extension to their present Sand Point wharf 400 feet in length.

**MONTREAL, QUE.**—A site for the proposed Roman Catholic church at St. Lambert has been purchased on Lorne ave.—Mr. H. C. Ames has purchased property at the corner of William and Inspector streets upon which he will erect three storey buildings.—The Academy of Music is considered unsafe and architects have been requested to report on the advisability of rebuilding the structure.—J. H. Macduff, architect, has prepared plans and is receiving tenders for the following works: one store and dwelling, one cottage, three-storey, stone front, and five three storey stone tenement buildings on St. James st., St. Henri, for Mr. J. B. Gazelais. Same architect is preparing plans for two three-storey houses on Prince Arthur street for M. A. Lachapelle.

**LONDON, ONT.**—McBride & Farncombe, architects, will receive tenders until the 21st inst. for erecting a brick residence on Hyman street.—Mr. Brooks intends to erect a two storey brick house on the south side of Dundas street.—The Trustee Board of the North Street Methodist church, Westminster, have decided to make extensive improvements. An addition will be built to the rear end of the present building and new stained glass windows put in. The church will also be repainted within.—The Board of Education have decided to erect twenty new rooms to the present school buildings. The new rooms and the estimated cost in each case will be as follows: Four rooms near corner of Waterloo and Grey streets, cost \$6,000, four rooms near corner of William and St. James, cost \$7,000, four rooms near corner of Chertside and Richmond, cost \$6,000; two room addition at Rectory street, cost \$6,000; two room addition at Lorne avenue, cost \$3,000, two room addition at Wortley road, cost \$5,000, ten rooms at Colborne street, cost \$20,000.

**WINNIPEG, MAN.**—It has been decided to proceed at once with the improvements to St. Mary's church. S. Hooper, architect.—Count de Lense, of St. Laurent, will improve his Manitoba property this summer to the extent of \$200,000. He will erect a slaughter house and refrigerator.—The Fire, Water and Light Committee have resolved to submit a by-law to the rate-payers to provide for establishing a system of waterworks. It is proposed to obtain the supply from a group of artesian wells. The estimated cost is \$700,000.—The City Solicitor has been instructed to prepare two by-laws for submission to the rate-payers, one for the construction of a gas light plant, and one for an electric light plant.—The Dominion government have under consideration the granting of an appropriation for the construction of a lock on the Red river near this city, which will enable vessels from Lake Winnipeg to reach the city.—Mr. Martin, M. P., has brought before the Dominion parliament the desirability of building a railway from Lethbridge or Dunmore through the Crow's Nest pass to the Kootenay district.

**TORONTO, ONT.**—Voting on the by-laws to authorize the issue of debentures to defray the cost of replacing the wooden conduit across the bay with a six-foot

steel pipe and to cover the city's proportion of the cost of the York street bridge, will take place on Saturday, April 18th.—Mr. E. F. Gunther, 23 Adelaide street east, is advertising for a lot suitable for a church between Bernard avenue, St. George street and Yonge street.—A joint stock company is being formed at Scarborough to build a hall and rink for the village.—Plans for the new club house and stables for the York County Jockey Club have been prepared by C. L. Fellowes, architect. The stables will accommodate four hundred horses, while the club house will be a large building. It is estimated that \$40,000 will be required to erect these structures. The site is on the old Newmarket track, near York station, and it is proposed to reconstruct the course.—A building permit has been granted to Rev. Peter Addison for a two-storey and attic bk. dwelling, e. side Markham st., n. of Harbord, to cost \$2,100.

**OTTAWA, ONT.**—The O. A. C. have approved of the plans of Mr. A. M. Calderon, architect, for an annex to their building. Tenders for construction will be invited within a short time.—The Gatineau Point council is considering a proposal of Messrs. L. Laurin and J. Cousineau to put in an electric light plant and water works system.—The city council will shortly be asked to assist in erecting a dam in the Chaudiere, the object being to utilize the water for manufacturing purposes. The dam will cost \$40,000, and is to be erected this summer.—Building permits have recently been granted as follows: Sgt. Major Hogan, solid brick house on Waverly st., cost, \$3,000; Jas Brownlee, brick veneered house on McLaren street; P. Elment, double house, brick front, Nepean street, cost, \$2,000; W. Box, dwellings on Archibald street.—The waterworks committee has decided to recommend the following extensions and improvements: Eight inch main on Kent street to Mitchmor, cost \$4,500; to replace the five inch main on Botelier street from Dalhousie to King, with eight inch pipe, \$1,550; five inch main on Kenny street, \$1,350; five inch main on Spruce street, \$1,350; to replace with eight inch the five inch main on Middle street; improvements in aqueduct, \$5,000; replacing small pipes on McDougall, Alice, Peter, Grove and Friel, \$1,375; to repair leaks in the mason work at the pump house, \$5,000.—Tenders for general supplies for the waterworks department will be received until the 31st inst.—It is reported that two pulp mills will be constructed this summer on the Rouge river, near the point where it empties into the Ottawa river. The promoter is Eugene Swan, of New York, and the capital of the company will be one million dollars.—The council of Ottawa East is considering the question of a water supply. Messrs. Rainboth Perry have submitted plans for an independent service, recommending that the water be taken from a spring near the Exhibition grounds, at a cost of \$20,000.

#### FIRES.

H. C. Hall's tannery at Stanbury East, Que., has been burned. It will be rebuilt at once.—The premises of Moses Davis, shipping and customs broker, Montreal, were recently damaged by fire to the extent of \$10,000, covered by insurance.—At Sussex, N. B., on the 12th inst., fire destroyed a large portion of the town, the damage being \$125,000. Among the losers are Hustis & White, C. H. Fairweather, G. W. Fowler and Allison & King.—A frame addition of Harris & Co.'s glue factory on Danforth avenue, Toronto, was burned on Saturday last. The loss is about \$2,500.—Fire at Westville, N. S., totally destroyed The Press newspaper plant and building. The total loss is \$5,000, covered by insurance.—

Wm. McCormick's dwelling at Port Dal housie, Ont., was burned on the 15th inst. Loss about \$1,000.—Fire at Emsdale, Ont., on the 16th inst., destroyed buildings as follows: James Craig & Sons, building totally destroyed; Guide printing office, building destroyed; the Central hotel, owned by Chas. Morton, totally destroyed.

**CONTRACTS AWARDED.**

**SARNIA, ONT.**—Ellis & Robson have secured the masonry work on the House of Refuge.

**DARTMOUTH, N. S.**—The council has accepted the tender of the Dartmouth Iron Foundry Co. for water pipes, at \$41 per ton.

**PEMBROKE, ONT.**—Dunlop & Co., of this town, have received the contract for waterworks supplies. In all four tenders were received.

**BROCKVILLE, ONT.**—The contract for the erection of the new addition to the Wall Street Methodist church has been awarded to W. G. Tompkins, of this town.

**BLYTH, ONT.**—The Ontario Life, of Waterloo, were the successful tenderers for the purchase of school debentures. Price, \$5,682, with accrued interest, for \$5,500 debentures.

**TORONTO, ONT.**—Medler & Arnot have been awarded the contract for the new sand pump, at the price of \$13,527.—The tender of the A. R. Williams Machinery Co., for a stone crusher, at \$350, has also been accepted.

**OTTAWA, ONT.**—The tenders of the Canadian Granite Company for artificial stone sidewalks and P. Burns for plank sidewalks have been accepted.—E. C. Arnoldi has been awarded the contract for the steel joists and beams for the new Slater and Sherwood buildings, Sparks st., and the Sweetland building, Rideau st. Mr. Arnoldi is the Canadian representative of the Chardon Iron Works, of Brussels.

**MONTREAL, QUE.**—Mr. W. E. Doran, architect, has awarded contracts as follows for one four storey building, corner of Notre Dame and Mountain streets for Madame Vincent: Masonry, John Quinlan; carpenter and joiners' work, Remi Guertin; roofing, Montreal Roofing Co., plumbing, Carroll Bros.; brick, Euclide Gauthier; plastering and iron work not yet let; painting and glazing, H. O'Brien & Co. Same architect has let the contract for alterations to a house on Lagachetiere street for Wm. Johnston, to John O'Leary.—J. A. Chaussie, architect, St. Hyacinthe, Que., has awarded contracts as follows for alterations and additions of a store on Cascades street, for Pagnuelo Bros. Masonry, brick, plastering and painting, L. P. Morin; heating, M. A. Blondin & Co.—G. A. Monette, architect, has awarded contracts as follows for alterations and additions to a house on St. Denis street, for M. Guillaume Boivin. Carpenter and joiners' work, N. Lavoire; plumbing and heating, Omer Ouimet.—A. M. Ligouin, architect, has awarded contracts as follows for 2 cottages on Laval avenue for M. Beaudreau: Masonry, J. B. St. Louis; carpenter and joiners' work, A. Latour; plumbing, roofing, heating, plastering, painting and glazing, A. Latour; Brick, Olo. Deguise; iron work, A. Latour.

**BIDS.**

**VICTORIA, B. C.**—Tenders for the building of an operating room to the Jubilee hospital have been received from Edward Bragg, George Moore, Thomas Catterall, W. H. Humber, T. E. Matthews, J. McEachern and J. E. Thomas. A committee has been appointed to report.

**HAMILTON, ONT.**—Tenders for building the Collegiate Institute and Ontario Normal School were submitted according to four different designs prepared by the

architect. The awards have not yet been made, but a committee has recommended the acceptance of design No. 1. The aggregate of the tenders for the several designs is as follows. No. 1, \$114,207; No. 2, \$117,610; No. 3, \$110,528; No. 4, \$107,198. Forty-three tenders in all were received.

**BUSINESS NOTES.**

J. Peart, plumber, Welland, Ont., has been succeeded by Peart & Giles.

J. J. Kerr, contractor, Chilliwack, B. C., is reported to have left the country.

Robert Knott, a well known contractor, of Victoria, B. C., died last week at the age of 53 years.

W. Angus, painter, Pembroke, Ont., is reported to have assigned to Andrew Johnston.

A. E. and O. Randle, plumbers, are opening at Nanaimo, B. C., under the style of Randle Bros.

Robert Heath, carpenter and builder, Toronto, has placed his estate in the hands of an assignee. The liabilities are about \$15,000 and assets \$25,000.

The Credit Forks Mining and Manufacturing Co., Toronto, have been incorporated, with a capital stock of \$200,000, to manufacture lime, bricks, terra cotta, etc.

Joseph Douglas, late of Douglas Bros., roofers and galvanized iron workers, Toronto, is about to commence business on his own account at 211 Wellington street, Ottawa.

Mrs. Margaret Pfeiffer has issued a writ against Contractor Onderdonk for \$10,000 damages for the death of her husband, who was killed in the construction of the T. H. and B. tunnel.

Jeremiah O'Neill has obtained a verdict for \$450 for personal damages from the Hamilton Bridge Company. He was employed on the Simpson building, when an iron girder fell upon his foot, crushing it badly.

**"PITTING" OF PLASTER.**

A correspondent signing himself "A Country Architect" tells in a recent issue of the Engineering Record how to prevent plaster from pitting or blistering. The trouble is one which many of our readers may have experienced and we therefore present herewith the letter of the writer in question: "In several cases where lime was used for plastering, I had trouble with the surface being injured by the slacking of small particles of lime in the wall instead of in the mortar bed, even after the mortar had been laid four to six weeks before being put on the walls. I then tried the expedient of mak-

ing my plastering mortar by a new method, which succeeded beyond my expectation in remedying the defects and also improving the quality of the plastering

I had all time to be used run out of the lime box through a small sieve into a putty-box and kept well covered with water for about two weeks, then mixed with the sand and the hair. To get the ingredients well mixed the mortar had to be well tamped or you would see the streaks of lime and sand. The mason at first objected strongly to making the mortar by this method because of the increased cost of mixing, but he afterward said it was offset by the less labor required by the mason to make a good wall, and it certainly made a stronger and harder wall than by the old method on account of the increased labor or better tempering which the mortar received."

**A NEW METHOD OF BLASTING.**

A new method of blasting, invented by Mining Councillor L. Jaroljmek, of Austria-Hungary, has been tested during the past year with results which are said to have been very satisfactory. In this method the priming is based on a chemical reaction, which is produced within the hole by water introduced into a body of caustic lime which is arranged above the charge. The heat developed by the slacking of the lime is allowed to act from the outside upon a peculiarly constructed cap, which by its detonation explodes the charge within a certain time. By a timing arrangement the operator is able to fix the time of the explosion. This arrangement is very simple. The body of the lime is covered more or less with a sheet of tin foil. Thus the access of the water is limited to a larger or smaller surface of the lime body, whereby, on account of the heat being developed quicker or slower, the charge is exploded correspondingly sooner or later. The tests proved the method to be practicable even under the most unfavorable conditions. The difficulty of conducting water to vertical holes is removed by laying wet moss or peat upon the cap. In addition to the other advantages of this method, it is claimed that the use of water in the drill hole is a complete safeguard against the ignition of mine gases by a blast.

Ox gall, diluted, is an excellent thing for cleaning off painted ceilings that are badly smoked.

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**BRIDGE BUILDERS**

**BELLEVILLE, ONT.**

**PROBLEM IN MOVING A THREE STOREY BRICK STRUCTURE.**

Chicagoans are watching the moving of a brick building 50 feet wide and 73 feet deep and three stories high, which has been cut in two lengthwise and is now being moved as two independent buildings.

When the Northwestern Elevated was arranging its route a three storey house, 147 Center street, was in its way. The company bought the house and lot, paying \$26,000 or more therefor. Later it sold the house to Fred. Schreiber, 169 Sheffield avenue, who owns the two vacant lots adjoining his house on the north. He paid only \$2,200 for the house, but for a time it looked as though he had an elephant instead of a bargain on his hands.

Schreiber wanted to move it to his Sheffield avenue lots, but the only space through which there was any prospect of getting it from Center street to Sheffield avenue was over a lot nearly opposite his residence. This, however, was only 46 feet wide—4 feet narrower than the building. Then August Baumann, the contractor, and Luther Friestadt, the mover, devised a plan by which a 50-foot building was made to fit a 46 foot lot with room to spare. They cut the building in two lengthwise, separating the two halves by moving one in a straight line and the other at a slight angle.

Then a fresh difficulty presented itself. The owner of the 46-foot lot fronting on Sheffield and abutting on Center demanded \$1,000 for its use. Mr. Schreiber declined to pay it, and two weeks ago started his building down the elevated right of way to Clay street. Thence they will go west to Sheffield and north to the excavation now being made for them.

The routine of life in one of the moving buildings is not disturbed by the fact that the property is on rollers. Charles Holz, with his family, lives in one of them and is enjoying a free ride, which is a great deal of a novelty.

The present instance is said to be the first where a brick building originally built as one solid structure has been cut in two, moved in fragments, to be afterwards reunited in its original form.

**LAYING OUT DOORS AND WINDOWS.**

Following are a few calculations which will assist in laying out openings for doors and windows. Take a common size outside door, for example, 2 ft. 8 in. by 6 ft. 8 in., and allowing the jambs to be 1 1/2 in. thick, the sill 1 3/4 in., the threshold 3/8 in., and allowing proper room to plumb and level the frame, we find that the size of the opening between studding and between floor joists and header should be 2 ft. 11 1/2 in. by 7 ft. Thus we see that a common outside door requires an opening 3 1/2 in.

wider and 4 in. longer than the size of the door used. Of course transom frames have to be calculated according to the thickness of the transom bar and the size of the transom used. Inside frames should be calculated somewhat differently, as they have no sills, and the jambs are usually only 3/4 in. thick. For these pick out nice straight studding, be careful to set them plumb, and leave the opening 2 1/4 in. wider and 3 in. longer than the size of door used.

The size of window frames is usually estimated from the size and number of lights in the window. A window is usually composed of two sashes, and has two, four or eight lights, or as the case may be. Windows are nearly always marked glass measure on the plans, and the carpenter has these calculations to make when laying out the frames. On two light windows we allow 4 in. in width and 6 in. in length for wood. Thus a window marked 20 in. by 28 in., two lights, would require 24 in. by 62 in. inside jamb measure. A window using the same glass measure, but having four lights, 10 in. by 28 in., would require 25 in. by 62 in. inside jamb measure. In laying out studding for two-light windows we must add 10 in. to the glass measure for width of the opening. If the width of glass is 20 in. the proper space between studding will be 30 in. If it is a four-light window of the same glass measure, then the space should be 31 in. For the length between headers we have to count the sill, sub-sill, head jamb, and allow 1 in. play. Thus, if we have a two-light window with glass 28 in long, we add 11 in. to twice the length of glass, and have 77 in., the proper distance to take between headers for the frame.

These calculations are easy to make, and will aid very much to ensure correctness in laying out openings for frames. I have seen many mistakes in laying out door and window frames, causing much annoyance and lost time in doing work over the second time, or doing that which would not have been necessary had the proper method been taken at first.

There is nothing like making accurate calculations in every detail of the building trade, and those who will make it a special feature of their work and get everything right the first time, will find that they can accomplish more work, besides doing it easier and quicker than in going at it in the rough and ready way.—The Carpenter.

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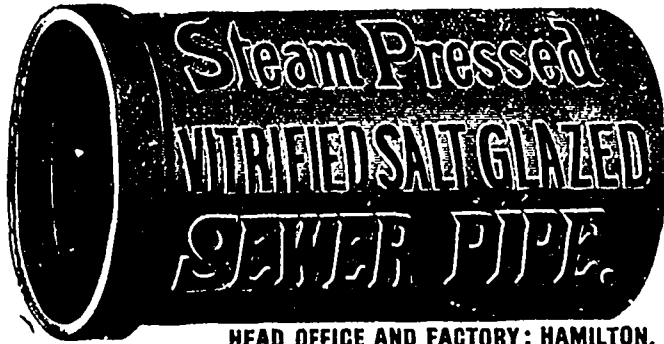
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# MUNICIPAL DEPARTMENT

## MAINTENANCE OF A SEPARATE SYSTEM OF SEWERS.\*

By T. HARRY JONES, A. M. Can. Soc. C. E., Brantford.  
(Concluded.)

In addition to the fungus growth above mentioned, the leakage of sand into the pipes has helped to cause this sewer to back up.

Excepting the 18 inch iron syphon under the canal, through which the plunger is passed twice during the year, none of the sewers above 12 inches in diameter have yet required special treatment in this way.

### FLUSHING APPARATUS.

Instead of using the ordinary copper or wooden spherical "pill" which has a diameter 2 inches less than that of the sewer to be flushed, we have found the following apparatus to be much more effective.

It consists of a reel or plunger, formed of two rubber discs of the same diameter as the sewer to be flushed, cut from  $\frac{1}{4}$  inch rubber belting. These are backed by wooden discs, from  $1\frac{1}{4}$  to  $1\frac{1}{2}$  inches in thickness and from 2 to 3 inches less in diameter than the sewer. These discs are strung about 8 inches apart on a  $\frac{1}{2}$  inch iron rod, and are kept apart by a piece of gas pipe sliding on the rod, and are held in position by a collar near one end of the rod and a nut at the other end. The rod is provided with an eye at one end, and a swivel at the other end, for attaching the ropes, which are each some 25 feet longer than the distance between the manholes.

### METHOD OF FLUSHING.

In flushing a sewer the plunger is usually put through twice. The sewer is first flushed block by block, beginning with the lowest block on the sewer, and using the plunger suitable for a smaller pipe. Then the sewer is flushed straight from the upper end, using the plunger which fits the pipe.

Beginning at the upper manhole of the block of sewer to be flushed, the leading rope is passed through the pipe to the manhole below. Then the plunger follows, and is taken through principally by the pressure of water backed up behind, the trailing rope serving to keep the plunger from going too fast, while the leading rope is serviceable if the plunger is inclined to stick. The usual method of passing the leading rope from manhole to manhole, by means of a float with a string attached, having been found to cause so much delay, we adopted the following plan: Elm strips 2 inches wide,  $\frac{1}{2}$  inch thick, and 12 feet in length are bolted together end to end by two iron straps and four stove bolts to each joint, the straps being

\* Paper read at the annual meeting of Ontario Land Surveyors.

1 inch by  $\frac{1}{2}$  inch by  $6\frac{1}{2}$  inches and the bolts 1 inch by three-sixteenths of an inch.

These form practically one long slat which will reach from manhole to manhole, and will bend readily, and can be pushed down the manhole and through the sewer. To this the rope is attached.

These strips can easily be pushed 400 feet through a 9 inch pipe, and 100 feet through a 4 inch pipe, and are of great service in locating faults and stoppages.

### RATE OF FLUSHING.

A gang of three men will flush about 700 feet in a day.

### HOUSE SEWERS.

The sewer assessment adopted by this city of seventy-nine and one-tenth cents per foot frontage or 4 cents per foot for 40 years, covers also the cost of the construction of the house sewers by the city to the street line. The lot portion of the house sewer is usually put in by the plumber, but all under city inspection. We have found that in street mains 10 feet in depth or over that T junctions laid on the back with stand pipes carried straight up, are preferable to the Y junctions, as the house sewer can then be carried out to the main on its ordinary grade, and connected with stand pipe by a T junction. When bends are used to make connection with the main, it is important to see that they have not become contracted or flattened in burning.

### STOPPAGES IN HOUSE SEWERS.

These generally occur at the junction with the main, which formerly had commonly been made with a bend, and are usually caused by foreign substances from the buildings having been allowed to enter the sewer.

In two or three instances stoppages have occurred from the roots of trees having forced themselves through the joints. We have found that the roots of soft maple, elm, poplar, and willow are inclined to follow the sewer on account of the dampness, and will work through any joint not well cemented. When even almost invisible root fibres once find an entrance into the sewer, they will spread rapidly and soon completely fill the pipe.

One 9 inch sewer which was laid in a shallow trench, became completely blocked by the roots of trees, some of which stood forty feet from the sewer. If all joints are well made with good cement, the pipe being clean before the joint is made, there can be no trouble from this cause, and when it occurs the only remedy is to re-lay the pipes.

We have had on an average about fifteen stoppages per year and the cost of removal has been about \$4.25 each.

In the great majority of cases the cost of this work has been repaid to the city, the householders having been shown to be at fault.

### INSPECTION.

The more important manholes are inspected every fortnight, and the iron gratings placed at the foot of the sewers from the Ontario Institution for the Blind, the Hospital, and the Grand Trunk Railway station are cleaned every two weeks. The flush-tanks are inspected

monthly, and the whole system twice a year.

### RECORDS.

Plumbing plans are filed by licensed plumbers, and the plumbing tested before connection is allowed with the sewers, a fee of \$2.00 being paid with each plan. A working and final plan of each sewer is prepared.

Permits are issued for each connection with the sewer, and a plan of each connection entered in a specially prepared book. Complete plans and records are kept of all work done.

### MAINTENANCE ACCOUNT.

	1893	1894	1895
	\$	\$	\$
Stoppage in house sewers.....	30	25	33
Flushing with the plunger.....	127	97	68
Repairs.....	128	130	144
General maintenance.....	225	223	224
	510	475	469

About 50 per cent. of the cost of flushing and repairs is chargeable to the Clarence Street sewer.

The rate of wages paid has been \$1.60 for a working foreman, and \$1.25 per day for the men.

The prices given in the above table do not include any allowance for engineering or inspection.

### THE PURIFICATION OF SEWAGE.

The following is a summary of the conclusions arrived at as the result of experimental investigations by the State Board of Health of Massachusetts upon the Purification of Sewage:

1. The suspended matters of sewage (sludge) can be mechanically withheld by straining slowly through suitable material.

2. The filth accumulated by this straining material can be destroyed, and the straining medium restored to a clean condition by mere aeration.

3. The successive alternate operations of fouling and cleansing can be carried on indefinitely without renewal of the straining material.

4. The purification obtained by this straining process practically equals that accomplished by chemical precipitation, and is sufficient to admit of discharge into any considerable body of water not used as a source of domestic supply, or for manufacturing purposes requiring great purity.

5. Such filters can be maintained in constant and efficient operation by suitable aeration.

6. The erection of a plant capable of purifying large volumes of sewage upon a relatively small area calls for no costly construction. Repairs and renewals are merely nominal. The attendance required is but slight. There is no outlay for chemicals, etc. The only expense of mechanical operation is the driving of the blower or air-compressor.

7. The process admits of wide variation in the selection of filtering material, and nearly every community can find in its local resources something suitable for the purpose.

### HISTORY OF HOUSE NUMBERING.

Berlin is preparing to fete the hundredth birthday of the house number. In the London and Paris of a century ago ciphered houses did not exist. The coat of arms, the house name or the sign board were the only indications to guide our ancestors' wandering feet by day or dark. Berlin began to number houses in 1795. Starting from the Bradenburg gate, the Prussian ediles counted straight on to infinity, neither beginning afresh with fresh streets nor numbering the houses by odds and evens. Vienna adopted the latter reform in 1803, and Paris followed in 1805.

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(Corrected up to March 18th)