

# CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF THE BUILDING INDUSTRY

PUBLIC WORKS • TENDERS • ADVANCE INFORMATION • 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. 13.

OCTOBER 8, 1902

No. 34

## THE CANADIAN CONTRACT RECORD,

PUBLISHED EVERY WEDNESDAY

As an Intermediate Edition of the Canadian Architect and Builder.

C. H. MORTIMER PUBLISHING COMPANY  
of Toronto, Limited,

CONFEDERATION LIFE BUILDING, TORONTO  
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## Drainage Contractors, Attention!

Ditching Dredge for sale this fall. May be seen working until November 1 on Concession 14, Grey Township, Huron County. Will dig ditch from 4 to 24 feet at bottom. Bargain will be given for cash. For price, terms, etc., apply to or write

GUHR & FOGAL,  
Cranbrook, Ont.

## TENDERS WANTED

Tenders will be received by the undersigned up to OCTOBER 15TH, from all trades for the erection and completion of a Public Library Building for the town of Lindsay.

The lowest tender not necessarily accepted. Plans and specifications can be seen at the office of architects.

G. M. MILLER & CO., Architects,  
57 Yonge Street, Toronto.



## Notice to Contractors

Tenders for Extension and Completion of the Cribwork on the Water Front West of Bay Street and Sewer.

Tenders will be received by registered post only, addressed to the Chairman of the Board of Control, City Hall, Toronto, up to noon on TUESDAY, OCTOBER 14TH, 1902, for the following works:

### CRIBWORK

Extension and completion of the crib-work on the water front, west of Bay street.

### SEWER

Tile pipe sewer on Barton-avenue, Howland to Albany-avenue.

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

Plans and specifications may be seen, and forms of tender obtained on and after Monday, the 4th day of October.

The usual conditions relating to tendering as prescribed by City By-law, must be strictly complied with, or the tender will not be entertained. The lowest or any tender not necessarily accepted.

O. A. HOWLAND (Mayor),  
Chairman of Board of Control,  
City Hall, Toronto, October 2nd, 1902.

## TO CONTRACTORS

Tenders will be received by the undersigned up to NOON OF THE 10TH INST., for alterations and improvements to, and fitting up the building on the corner King and Division streets for the Bank of Toronto, Cobourg, where plans and specifications may be seen.

Lowest tender not necessarily accepted.

POWER & SON, Architects,  
Kingston, Ont.

## CORPORATION OF THE City of Three-Rivers

Sealed tenders will be received at the office of the undersigned, until 4 o'clock p. m. WEDNESDAY, THE FIFTEENTH (15TH) DAY OF OCTOBER NEXT, for the purchase of Debentures of the following denominations: "St. Maurice Bridge Bonds" (to the amount of \$125,000); "Drainage Bonds" (to the amount of \$25,000); "Paving Bonds" (to the amount of \$10,000); "New Consolidated Debt" (to the amount of \$7,000); "School Debentures" (to the amount of \$8,000), all of which will be redeemable in 50 years from the first of May, 1901, and bearing interest at the rate of 4 per cent. per annum, payable semi-annually.

L. T. DESAULNIERS,

Sec.-Treas. T. R. Corporation.

City-Hall, Three-Rivers, 16th September, 1902.

## STURGEON FALLS WATER WORKS

Sealed Tenders, endorsed "Tender for Water Works," will be received by the Town Clerk until 5 p. m. on

Wednesday, October 15th, 1902,

for the labor necessary for laying about 12,500 lineal feet of cast iron water pipes, sizes 4 inch, 6 inch, 8 inch and 10 inch, with necessary hydrants, valves, etc.

The materials will be furnished by the Corporation.

Deposit, \$500. Bond, \$1,000  
Plans and specifications may be seen at the office of the Town Clerk, Sturgeon Falls, or at the office of the Chief Engineer, Toronto, on and after the 9th October, 1902.

Z. MAGEAN, Mayor.

J. A. LEVIE, Town Clerk, Sturgeon Falls, Ont.

WILLIS CHIPMAN, Chief Engineer,  
103 Bay Street, Toronto, Ont.

## CONTRACTS OPEN.

LEAMINGTON, ONT.—The proposed St. John's Episcopal church will cost about \$10,000.

NOVAR, ONT.—Rev. J. Pardoe will receive tenders up to October 11th for erection of St. Mary's church.

GRAVENHURST, ONT.—A by-law to raise \$1,700 to purchase a park was carried by the ratepayers last week.

HENSALL, ONT.—J. C. Stoneman, village clerk, desires tenders by 15th inst. for purchase of \$8,000 local improvement debentures.

NIAGARA FALLS SOUTH, ONT.—Plans have been prepared for a residence to be built near the post office by F. E. Dalton.

HALIFAX, N.S.—New tenders have been invited up to 7th inst. for erection of school house on Quinpool road; H. E. Gates, architect.

CAMPBELLTON, N. B.—Plans are being prepared for a large saw mill to be built here by the Kilgour Shives Lumber Company.

LONDON, ONT.—Plans have been prepared for the drill hall to be built in this city, and tenders will likely be invited this week.

SYDNEY, N.S.—The Dominion Iron & Steel Co. have decided to convert the large rail mill in course of construction into a structural steel mill.

SHERBROOKE, QUE.—C. H. Fletcher and C. H. Nutter have bought the Hotel Vendome at Lake Scaswanepus and will remodel it next spring.

KAMLOOPS, B.C.—Plans have been completed for the new C.P.R. hotel to be built here, although work will not be commenced until next spring.

PORTAGE LA PRAIRIE, MAN.—J. O. Cadham has purchased property on Saskatchewan avenue on which a brick block will likely be built next year.

LACHUTE, QUE.—The Great Northern Railway Co. is considering the construction of a branch line from this place to Ste. Phillippe, Argenteuil county.

BATH, N. B.—The foundation for the proposed Methodist church will be put in this fall.—Rupert Hutchison is about to begin the erection of a warehouse.

FREDERICTON, N. B.—It is reported that Donald Fraser & Sons intend building a large saw mill at this place to take the place of the present mill at Cabane.

CALGARY, N. W. T.—Excavations are now in progress for a wing 72 x 75 feet to be added to the Calgary Brewing & Malting Co.'s works, to be of steel and stone.

BEAUPRE, QUE.—The Beupre Power Co. has been organized, with capital of \$150,000, to develop power and engage in the manufacture of lumber and pulp.

DARTMOUTH, N. S.—Alfred Elliot, town treasurer, is taking bids up to 4 p. m. of October 8th for a loan of \$5,000, the funds to be used for extending the water and sewerage systems.

COLLINGWOOD, ONT.—The Lieutenant-Governor-in-Council has given permission to the city council to issue further debentures to the extent of \$10,000 for municipal improvements.

NIAGARA FALLS, ONT.—The bridge of the Niagara Falls Park and

River Railway over the ravine near the Whirlpool Rapids is to be replaced by an embankment, for which plans have been prepared.

**PORT COLBORNE, ONT.**—The Dominion Government is asking for tenders by October 9th for installation of hot water heating apparatus in public building in this town. Plans on application to William Armstrong.

**SASKATCHEWAN, N.W.T.**—Tenders will be received by M. Turriff, clerk of the municipality, up to October 15th for construction of bridge over Little Saskatchewan River at McKellar's Ford; dimensions, 75 feet span, 16 feet wide, steel on stone abutments.

**SAULT STE. MARIE, ONT.**—The steps to secure a Jesuit College have advanced so far that 9 acres of land have been purchased for the purpose. It is proposed to erect a stone building to cost about \$150,000. F. H. Clergue is interested in the matter.

**HAMILTON, ONT.**—The Hamilton Bridge Co. have taken out a permit for a steel factory building, to cost \$18,000. Other additions are contemplated.—W. & W. Stewart, architects, are building a brick stable at corner Shaw and Emerald streets for the Norton Manufacturing Co., to cost \$1,600.

**LINDSAY, ONT.**—The Methodists of the East Ward are considering the question of enlarging their church. Rev. A. J. H. Strike is pastor.—The question of constructing an asphalt or tar macadam pavement on Kent street, at a cost of about \$30,000, was taken up at last council meeting, but no decision was arrived at.

**BILLINGS BRIDGE, ONT.**—John Foitheringham, of Ottawa, has purchased property on Dufferin street on which he will build a fine residence next spring.—Jos. Perrault and R. Findlay, architects, have prepared plans for the projected civic hospital. The plans provide for seven pavilions to cost in the neighborhood of \$100,000.

**ACADIA MINES, N.S.**—A syndicate of Montreal men, including Geo. E. Drummond and T. K. Drummond, have purchased the blast furnaces, mining lands and water powers of the Londonderry Water Power Co. at this place and propose to develop the property on a large scale. The plant will be rebuilt and put in first-class condition.

**ST. JOHN, N.B.**—Plans have been prepared for the proposed addition to the Pettingill warehouse, to cost \$2,250.—Before calling for tenders for the erection of the Carnegie public library, the architect, G. E. Fairweather, will inspect some of the leading libraries in the Eastern States.—It is reported that A. Cushing & Co. contemplate building a pulp mill at Cushing's Point.

**VANCOUVER, B.C.**—As a result of the visit to this city of A. Guttrey, of the Great Northern Railway, it is stated that a deal has been practically arranged for the consolidation of the schemes of the Victoria, Sydney and Liverpool and the proposed extension of the Great Northern into Vancouver, and that plans are being prepared for bridging the Second Narrows.

**NORTH SYDNEY, N.S.**—The council has agreed to grant exemption from taxation to A. C. Thompson & Co. to establish a plant here for the manufacture of stoves and furnaces. The proposed buildings, for which plans have been prepared by James A. Booth, will include a main building 345x70 feet; store room 50x30 feet; pattern shop 45x30 feet; pattern vault 30x25 feet; machine shop 75x60 feet; and engine room 30x35 feet.

**OWEN SOUND, ONT.**—The Owen Sound Iron Works Co. have purchased property in rear of C.P.R. hotel on which

they will erect a foundry 300x50 feet—John Harrison, Son & Co. have purchased the saw mill of T. H. Withun, at Warton, and will re-erect it on their property here.—An announcement will likely be made this week regarding the successful competitor for the plans for the proposed House of Refuge. Charles Gordon, chairman of the committee, has the matter in hand.

**VICTORIA, B.C.**—The Department of Lands and Works has decided to build a new school house at North Vesuvius, Salt Spring Island.—The time for receiving tenders for the substructure of the Point Ellice Bridge has been extended to 4 p. m. of October 27. This extension has been granted in order to enable English bridge builders to submit tenders.—Extensive improvements to St. Paul's Presbyterian church, Victoria West, are contemplated.

**EDMONTON, N.W.T.**—M. H. McLeod, chief engineer of the Canadian Northern Railway, is having surveys made eastward and westward from this town for the proposed Canadian Northern extension. It is expected that the main line from the Assiniboine Crossing to Edmonton will be put under contract during the coming winter. The proposed road will necessitate the construction of several bridges, some of which will require to be 1,500 feet in length.

**WINNIPEG, MAN.**—It is reported that McKenzie, Mann & Co. have purchased property on Main street on which they intend building a station, office building, and freight sheds for the Canadian Northern Railway.—George Browne, architect, is this week taking tenders on a brick branch bank at Arcola, Man.—It has been decided to proceed immediately upon the opening of spring with the other half of the Strathcona block. This section will correspond exactly with the one now in course of erection.—At time of going to press the names of successful tenderers for meters and other waterworks supplies had not been learned.

**OTTAWA, ONT.**—The James W. Woods building on Queen street, adjoining the Bell Telephone building, will be vacated next July, when it will be transformed into an office building. Mr. Woods will, during the coming winter and spring, erect a new building near the canal basin on Slater street.—St. George's Society has secured a site adjoining the Carruthers Co's. dry goods store, and will have plans prepared at once for their new building.—Tenders close October 14th at the Department of Public Works in this city for erection of post office building at Richibucto, N. B. Plans at above department and at post offices at Richibucto and Buctouche.—Alex. Fraser and J. B. Fraser have purchased 100 acres of land at Deschenes on which it is proposed to build a large modern saw mill.—J. R. Booth states that the new central depot will be built next year.—The Dominion government is asking for tenders up to October 23rd for erection of post office at L'Assomption, Que.—Jos. Kilgour, of Kilgour Bros., Toronto, was in the city on Monday last looking for a suitable site on which to build a paper mill.—Recent permits include the following: William Armstrong, double brick-veneered dwellings, Second ave., cost \$2,700; W. Laplante, brick veneered dwelling, Bridge street, cost \$1,300; R. Irvin, brick manufactory, Slater street, cost \$2,000; F. E. Latimer, brick-veneered dwelling, Gilmour street, cost \$1,200.

**MONTREAL, QUE.**—Plans for residences on Westmount avenue for John Michaels and Mrs. Jacobs were prepared and tenders taken thereon by R. Percy Barnes, architect, instead of R. Percy

Brown, as given in last issue.—Work has been commenced on the new technical school on St. James Square in connection with Laval University. The building will be 125x80 feet, four storeys high, of stone, and will cost about \$110,000.—A deputation last week laid before the Mayor a scheme for the extension of the court house.—During the month of September 68 permits were issued for new buildings, representing a value of \$192,280.—H. C. Stone, architect, is calling for tenders for roofing, painting and glazing of the United Shoe Machinery Co.'s building on Lagauchetiere street. Same architect is calling for tenders for plumbing and heating of warehouse for W. H. Evans, 563-565 St. Paul street.—Building permits have been granted as follows: Mrs. P. Sicard, two three-storey houses and one store, Bertrand street, cost \$7,500; Collette & Cie, three-storey house, Chambard street, cost \$3,000; S. Robinson, two-storey house, 3 Lalonde avenue, cost \$1,500; F. N. Wattier, two-storey house, 382 Huntley st., cost \$1,000; Bell Telephone Co., cistern, corner Aqueduct and Mountain streets, cost \$4,149; A. F. X. Beaudry, two two-storey houses, 62 Napoleon st., cost \$2,500; C. H. Meredith, one stable, corner Peel and Pine avenue, cost \$5,500; D. Bertrand, three 2-storey houses, Bertrand st., cost \$3,000; Mrs. A. C. Phillips, three-storey house, St. Mark st., cost \$11,000; Jos. Lepine, three-storey house, Fullum st., cost \$5,000; L'Oenore & Fabrique de St. Louis de France, alterations to church, corner Laval and Roy streets, cost \$9,480.

**TORONTO, ONT.**—The time for receiving tenders for library building at Lindsay, Ont., has been extended to October 15th; G. M. Miller & Co., this city, architects.—The Consumers Gas Co. are negotiating for the purchase of the west wing of the old court house on Adelaide street east, the intention being to enlarge their offices.—The Dominion Government has promised to build a new groyne for the island shore near Hooper avenue next year.—Tenders are invited by the Board of Control up to 14th inst. for extension of crib work on the water front, west of Bay street, and for a tile pipe sewer on Birton avenue, from Howland avenue to Albany avenue.—The city engineer is preparing a report upon the proposal of the Lake Simcoe Water Co. to bring a water supply to Toronto from Lake Simcoe. The cost is estimated at \$5,000,000.—The provincial secretary is prepared to receive tenders up to October 31st for the boring of artesian wells or developing other springs to furnish a supply of water for the Asylum for the Insane at Hamilton. Information may be obtained from the Superintendent of the Asylum.—The construction of a pavement on Avenue road, from Davenport road to the city limits, will be commenced as soon as the residents decide as to the class of pavement desired.—A sub-committee of the property committee has

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## MUNICIPAL DEBENTURES

been appointed to report on the revised plans for repairs to No. 1 police station, estimated to cost about \$8,000.—A by-law will likely be submitted to the rate-payers to raise about \$36,000 for school accommodation, including \$12,500 for enlargement of Kew Beach school, \$3,500 for completion of Withrow avenue school, \$2,000 for completion of Winchester street school, and \$3,500 for completion of Essex street school.—Tenders are invited up to October 15 for laying, at Sturgeon Falls, Ont., 11,500 feet of cast iron water pipes, 4 to 10 inches, with necessary hydrants, valves, etc. Plans at office of Willis Chipman, C. E., 103 Bay street.—The promoters of the Metropolitan Bank have not yet decided upon the character of their new building, but it is understood that it will be an expensive structure and that it will be located at the corner of King and Jordan streets. A. E. Ames, 18 King street east, is interested.—Building permits have been granted as follows: Digmun & Moneypenny, cut stone and pressed steel warehouse, north-west corner Bay and Wellington streets, cost \$22,000; G.T.R., office building and freight shed, Cherry street, cost \$2,500; American Abell Engine Co., brick machine shop, 48 Abell street, cost \$10,000; Mrs. George M. Bryan, brick residence, Walker avenue, cost \$3,800; R. Smith, two-storey brick residence, 39 Albany avenue, cost \$2,500; Weston & Spink, two-storey bakery, corner Sibo and Phoebe streets, cost \$3,500; Jos. Booth, dwelling, 540 Ossington avenue, cost \$1,000; Western Printing Co., three-storey brick and stone printing office, corner Duncan and Queen streets, cost \$4,000; M. W. Wilson, pair dwellings, 253 and 255 St. Clarens ave., cost \$4,000; R. S. Unwin, pair dwellings, 575 and 577 Bathurst street, cost \$5,000; A. Batho, pair dwellings, 21 and 23 Trafalgar avenue, cost \$2,000.

**FIRES.**

Anchor Flour Mills at Orangeville, Ont., totally destroyed; loss about \$6,000.—Summer hotel at Delta, N.W.T., owned by W. Richardson, of Portage la Prairie.

**CONTRACTS AWARDED.**

LINDSAY, ONT.—P. G. Pilkie was the only tenderer for sewer on Sussex street.

EDMONTON, N. W. T.—Station for Canadian Northern Railway: Mr. May, contractor.

AMHERST, N.S.—Winter Fair building: Rhodes, Curry & Co., contractors, cost about \$10,000, steam heating.

BRIGHT, ONT.—Blandford Council has let the contract for Calder drain to Charles Pratt & Son, at \$1,245.

OTTAWA, ONT.—Rink on Ann Street for Dey Bros.: Carpenter work, Falls & Kemp; metal roofing, Douglas & McFarlane.

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Head Office, Owen Sound, Ont

MERRICKVILLE, ONT. — The council has purchased a Ronald fire engine from the Canadian Fire Engine Company, of Brussels; price, \$2,400.

McLEOD, N. W. T. — Erection of building for Dominion Government. E. Navan, of Cranbrook, B. C., successful tenderer. The building will cost about \$12,000.

BELLEVILLE, ONT.—New building for county: General contractor, Walter Alford; heating, William McGie.—The Hamilton Bridge Co. has been awarded the contract for the Beaver Creek bridge.

BRANTFORD, ONT.—Building for George Watts' Sons: Shultz Bros., contractors.—Eighteen tenders were received for erection of library building, Shultz Bros. being successful; price about \$75,000.

PETERBOROUGH, ONT. — Rink for the Peterborough Skating Rink Co., William Langford, contractor. The Canada Foundry Co., Toronto, will supply the iron work. The building will be of stone, brick and steel.

HAMILTON, ONT.—Sewer construction: Schurman ave., D. Newlands,

\$1.35 per ft., King street east, J. Garvie, \$1.10 per ft., John street and Otis elevator sewer, J. J. Armstrong, 33 cents and 30 1/4 cents respectively.

ST. BONIFACE, MAN.—Three tenders were received by the council for new sewers on La Vrandyre street, as follows: J. A. Cusson, \$8,422.20; Dobson & Jackson, \$8,077.25; Cass & Couture, \$7,493.50. The latter tend has been accepted.

TORONTO, ONT.—It transpires that the report that contract for the Temiscaming Railway had been secured by Ross, Barry & McRae was premature, as the successful tenderer is A. R. Macdonell, of Glengarry. The contract calls for 110 miles of road, clearing right of way, grad.

(Continued on Page 6.)

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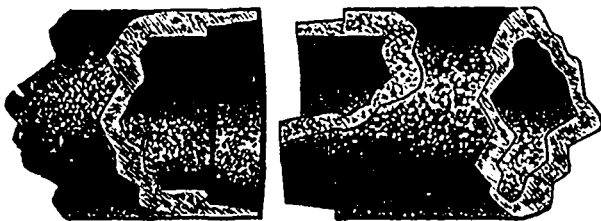
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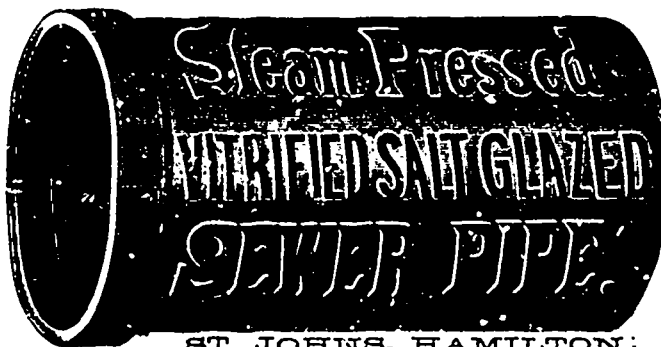


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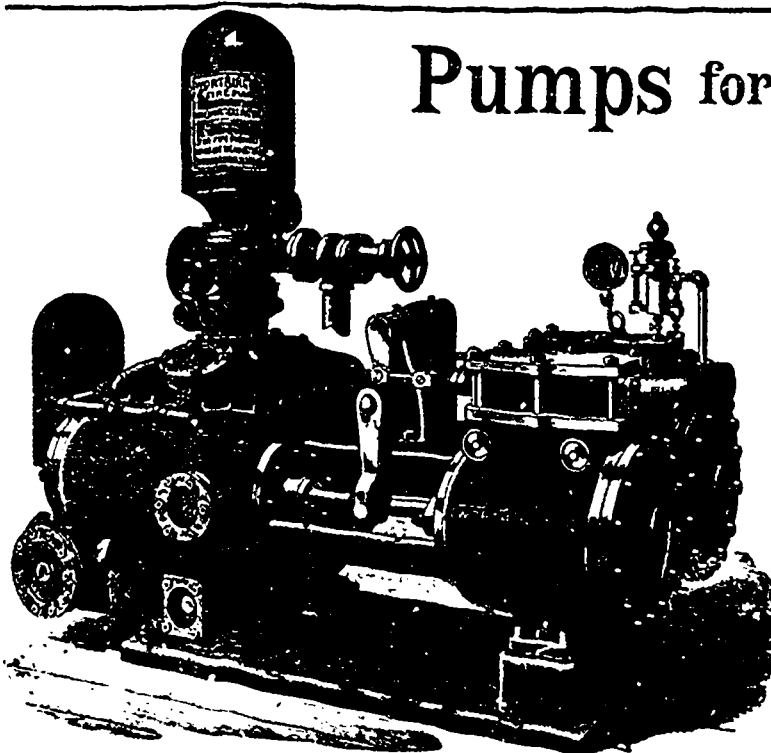
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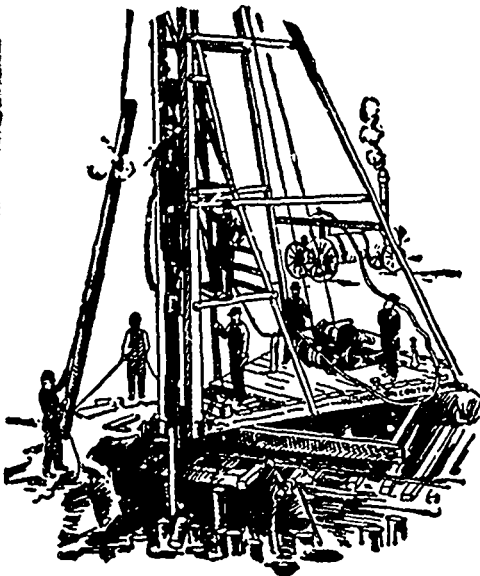
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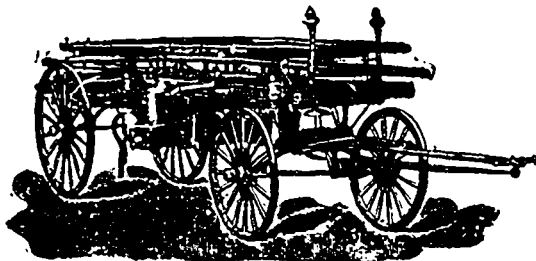
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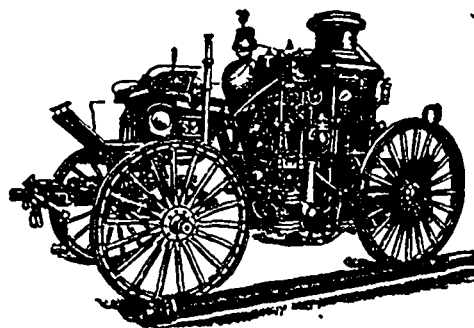
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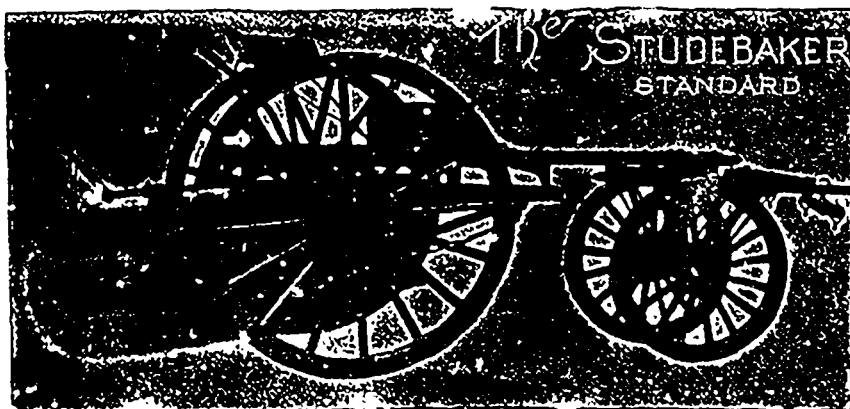
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ing, ballasting, bridging and track-laying. The Commission will furnish rails, fastenings and superstructure for bridge at Montreal river. The contractor is to manufacture the ties, fence posts, culverts and telegraph poles from the timber along the right of way.—The Board of Control last week awarded contracts as follows: Concrete sidewalks—Toronto Contracting and Paving Co., Jamieson ave., both sides, G.T.R. tracks south, 59½ cents per lineal foot; W. R. Payne, Bolton avenue, east side, Queen to Gerrard; 97 cents; R. A. Rogers, Sword street, west side, Gerrard to Spence, 94½ cents. Asphalt pavement—Simcoe street, Queen to Caer Howell, Constructing and Paving Co., \$11,375. Brick track allowance, Queen street to Greenwoods avenue to Woodbine, \$6,840, John McBean. — The McIntosh Granite Co., Limited, of this city, have secured the contract for granite lining for the tunnel of the Canadian Niagara Power Co. at Niagara Falls.

#### BIDS.

ST. CATHARINES, ONT.—Eight tenders have been received for the construction of the Carnegie library building, ranging from \$31,000 to \$35,000. The contract has not yet been awarded.

#### BUSINESS NOTES.

L. H. Bastien, contracting carpenter, Hamilton, is announced to have assigned to F. H. Lamb.

Corbelle & Lemarre, painters, Ste. Henri de Montreal, Que., have registered partnership.

The dissolution is announced of Metcalf & Zimmerman, painters and wall paper, Hamilton.

Anna Giroux has registered proprietress of the plumbing business of Joseph Giroux, Ste. Henri de Montreal, Que.

The firm name of the Smart-Eby Machine Company, Hamilton, has been changed to the Smart-Turner Machine Company.

George W. Simser, farmer and contractor, Cambridge township, Ont., is reported to have assigned to Morris Shaver.

The A. A. Mabee Company, sash and door manufacturers, St. John, N. B., has been succeeded by the North End Wood-Working Company.

The Rowan Stone Company, of Toronto, artificial stone manufacturers, has been incorporated, with capital of \$60,000. The provisional directors include B. Jarvis, H. D. Eby and R. G. Smellie.

The International Portland Cement Company, of Toronto, has received a charter of incorporation, with a capital of \$1,000,000. W. F. Cowham, of Jackson City, Mich., and P. W. Stanhope, of Toronto, are interested.

A meeting of the shareholders and directors of the Superior Portland Cement Company, Limited, was held in Toronto on September 30th, when officers were

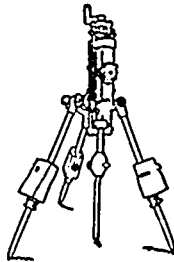
electd as follows: President, Judge Morgan; first vice-president, James McCulloch; second vice-president, C. C. VanNorman; secretary, R. J. Daly; treasurer, J. J. Follett; manager W. H. Jackson. The company own large deposits of marl and cement at the Caledon Lake, near Orangeville. Works of modern equipment, with proposed capacity of 600 barrels of cement per day, are to be erected and put in operation as soon as possible. The head offices of the company are at 4 Richmond street east, Toronto.

#### THE CEMENT MARKET.

There continues to be a scarcity of cement and a further appreciation in price. Recently the Grey & Bruce Cement Company advanced the price to \$2.20 and \$2.30 a barrel. This is an advance of 70 cents from the spring quotations. Canadian manufacturers have their output for some time to come under contract, orders having been accepted recently for several thousand barrels. Foreign cement is also higher, although some dealers claim to have a supply to meet the demand for that article for some time to come.

#### 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 insure 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.



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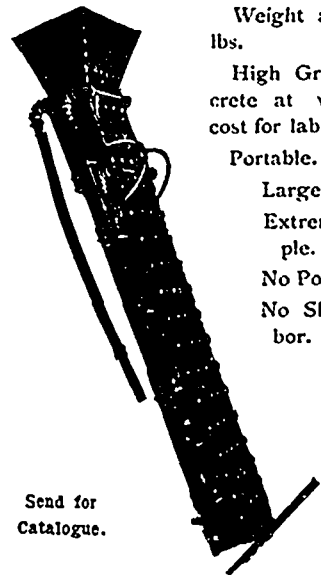
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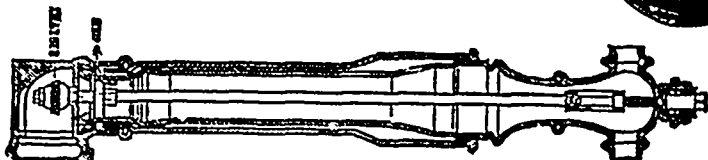
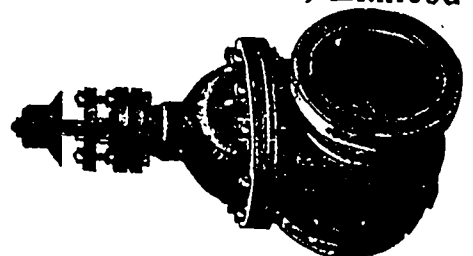
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# MUNICIPAL DEPARTMENT

## BIOLOGICAL PURIFICATION OF SEWAGE.\*

In the year 1884 I was instructed to endeavour to treat the sewage of a town upon an extremely small area of land, without incurring the expense of chemical precipitation. I constructed a chamber with an iron grating near the bottom. On this grating I placed layers of stones of various sizes and the crude sewage passed upwards, the bulk of the suspended matter in the form of sludge being arrested. This was pumped out at intervals and disposed of on farm land adjoining. I found that the solids thus arrested became liquified and the resultant fluid gave better agricultural results than had previously been obtained from crude sewage. I arrived at the conclusion that the liquefaction of the solids was due to a cess-pit action having been set up in the interstices of the stones, whereby the first putrefactive change was effected and the subsequent further treatment, either on land or otherwise, facilitated. Since that time I have had to advise with reference to works where both anaerobic and aerobic chambers have been employed, and I have obtained excellent results by anaerobic action with interstices. I am quite aware, and desire to recognize the fact, that good results are being obtained by cess pit or septic action without such interstices.

As regards aerobic action, there are several ways in which impure effluents from sewage works can be purified. My opinion on this point may be stated in the words that I employed at the conference on water supply and river pollution over which I presided last October: "Where sufficient land is not available or where it is unsuitable for sewage disposal, then the further treatment of the liquid in aerobic beds enables any required standard of effluent to be attained. Inasmuch as the purification of foul fluid by aerobic action is dependent on aeration, it would appear best to subject the fluid constantly to exposure to the air. This would be better effected when the liquid trickles over open surfaces of hard stone, clinker or other materials in the aerobic beds than would be the case were the beds worked on the intermittent system—namely, first filled, then emptied, and then left to rest. I am aware that difference of opinion exists on this point, and prefer to keep an open mind on the subject at present."

I have stated that the material placed in bacteria beds should be of suitable quality, as this is an essential to success. I have had to examine beds which have been pronounced complete failures, owing to the fact that they were filled with all sorts of unsuitable material, which inevitably caused an early choking of the inter-

\*Abstract of a paper by Prof. Henry Robinson read before the Sanitary Institute, Manchester, Eng.

stices. I have also seen sewage applied to beds without the necessary arrangements having been provided for arresting inorganic and other matters before the admission of the fluid to the bed. Any works will be failures if the necessary conditions for success are not observed.

## ACTION OF WEATHER ON CEMENT.

The action of freezing weather on cement mortar was made the subject of special investigation in the office of the State Engineer of New York during 1900 and 1901, and the results of some of the experiments are given in his last report. As soon as the briquettes were made up one-half were put outside and allowed to freeze, and the other half were kept inside and under a damp cloth. Results were thus obtained giving the effect on mortar mixed with a salt solution and not frozen, as well as that which was frozen. Care was taken that those briquettes which were placed outside were kept from the sun's rays. During the period of exposure a record of the temperature was kept, and thus it became possible to note now many times the mortar became frozen and thawed. Tests were made with a mortar mixed with 20, 40 and 60 per cent. salt solutions, as well as with fresh water. The results already published seemed to show that the final strength of a mortar not allowed to freeze is slightly less when mixed with a 20 per cent. brine than when fresh water is used, the difference in most cases becoming greater in proportion to the strength of the brine. With mortar allowed to freeze and thaw that mixed with a 20 per cent. brine gave the best results for the 1-year test, the main exception being a 3:1 Rosendale mortar, which gave a uniformly stronger test with fresh water than with brine. Whether or not allowed to freeze, the specimens mixed with brine almost invariably gave values in the 7-day test greater than those mixed with fresh water.

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## OTTAWA'S SEWERAGE SYSTEM.

At a cost of \$472,397.81, Ottawa has at last achieved a complete main drainage system. The work on section one was finished a fortnight ago, and that city will henceforth be one of the best drained cities in America. The sewage is carried across the Rideau River and discharged into the centre of the channel of the Ottawa River, where there is a depth of forty feet and a current of a mile per hour. There is a double line of steel pipes, each five feet in diameter, laid side by side to line and grade. Between the brick sewer and the steel pipe outfall is a connecting chamber 10 x 12 feet in size, built of brick, except the bottom, which is of the original rock. The brick sewer enters this chamber at a height of nine feet above the bottom. One of the outfall pipes leaves the chamber at the level of the bottom, and the other at a height of eleven feet above, dropping to the level of the first pipe at a point twenty feet away. The ordinary water level in the Ottawa is midway between these pipes. The work was started on February 22nd, 1899.

## THE DRAINAGE OF PROPERTY.

Drainage from a higher property must be endured by a proprietor of a lower property in the country, but Mr. Justice Tremholme, of Montreal, decided last week that in the city where streets are artificially raised the same rule does not apply. The case before him was that of N. Lambert vs. H. Riopel. The defendant had dug a trench and thrown up a wall of earth which, during rainy weather, ran down on to plaintiff's property. The defendant pleaded that his property was higher than that of plaintiff and that the drainage water was simply the natural flow. Mr. Justice Tremholme did not agree with this, but granted \$25 damages and ordered the defendant to remedy the nuisance within two months.

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