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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF

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ADVANCE INFORMATION •
AND MUNICIPAL PROGRESS

EVERY THURSDAY

7,000 papers reach 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. 6.

DECEMBER 12, 1895

No. 45.

THE CANADIAN CONTRACT RECORD,

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

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TENDERS FOR TOWN HALL

Sealed Tenders, marked "Tenders for Town Hall," will be received by the undersigned up to six o'clock p. m. on

Monday, December 23rd, 1895

for the construction of a Town Hall, in the Town of Blenheim, according to the plans, contract agreement and specifications of J. L. Wilson & Son.

The said plans and specifications are now on view at the offices of the architect and the undersigned.

Tenders will be received in part or bulk. Satisfactory security required.

The lowest or any tender not necessarily accepted.

J. W. GIBSON,
Town Clerk.

Blenheim, Dec. 5th, 1895.

NEW COMPANIES.

PARRY SOUND, ONT.—Parry Sound Electric Light Co., incorporated; capital, \$20,000.

PORT ARTHUR, ONT.—Empire Gold Mining Co., organized; capital, \$1,000,000; to develop McKellar's property at Jackfish.

VICTORIA, B. C.—North Saanich Coal Mining Co., applying for incorporation; objects, general prospecting and mining; capital \$250,000.

PERTH, ONT.—Perth Canning Co., incorporated; capital \$20,000. incorporators, T. A. Code, John Hart, Andrew McArthur and others.

BROCKVILLE, ONT.—Brockville Electric Street Railway Co., incorporated; capital \$200,000; promoters, W. H. Comstock, W. A. Gilmour, C. S. Cossitt and others.

ST. VICTOR DE TRING, QUE. Senator Bolduc, Rufus H. Pope, M.P., and others, are applying for incorporation as the Whitton Granite Quarry Co., with capital of \$50,000.

TORONTO, ONT.—Prismatic Glass Co., incorporated; capital, \$5,000; to develop the Pennywick patents in prismatic glass. Promoters, J. L. Spink, C. B. Watts, T. W. Horn and others.

SHEDIAC, N.B.—Northumberland Stone Co., seeking incorporation; capital \$10,000; applicants, James Frier and Foster Pickard, of this place, B. B. Teed and W. C. Milner, of Sackville, and N. LeBlanc, of Botsford.

HALIFAX, N. S.—Golden Group Mining Co., applying for incorporation; capital \$100,000; promoters, A. A. Haward, of Waverley, F. S. Andrews, of South Essex, Mass., and H. H. Bell, A. M. Jack and Hector McInnes, of this city.

ST. CATHARINES, ONT.—Lincoln Street Railway, Traction & Light Co., incorporated; capital \$90,000; objects, to build an electric railway and to distribute electricity for light, heat and power; incorporators, R. H. Hill, H. A. King, J. S. Campbell, and others.

TORONTO JUNCTION, ONT.—Toronto Junction Foundry Co., applying for incorporation; capital \$24,000. Promoters, W. H. Gore, Elgin, Illinois; C. C. Going, R. J. Leigh and W. I. Gore, of Toronto Junction, Ont., G. W. Marsh, of London, and W. L. E. Marsh, of Toronto.

OTTAWA, ONT.—North American Graphite Co., seeking incorporation; to acquire and operate mineral lands; capital \$250,000. Among the applicants are A. Lumsden, contractor, and W. R. Askwith, mining engineer, of this place.—Canada Aluminum Power & Pulp Co., applying for incorporation; to manufacture aluminum. Chrysler & Lewis, solicitors.

VANCOUVER, B. C.—Western Light, Heat & Power Co., charter applied for; capital \$150,000; object, general electrical business; promoters, C. D. Crandell, J. E. W. McFaren, Geo. H. Cowan, and

Wm. T. Steward.—Fishback Hydraulic Gold Mining Co., incorporated at Seattle, to do business in British Columbia; capital, \$300,000.—Homestake Gold Mining Co., incorporated; capital \$500,000; promoters, Thomas Dunn, J. E. W. Macfarlane, E. E. Evans and others.

CONTRACTS OPEN.

CHATHAM, N. B.—W. T. Harris has purchased a lot on which to erect a brick block next spring.

BRANTFORD, ONT.—It is stated that the Albion street school has been condemned as unsafe.

WELLINGTON, ONT.—The Episcopal congregation have decided to build a new rectory next spring.

PARRSBORO, N. S.—The Methodist congregation have decided to build a new church in the spring.

WALLACEBURG, ONT.—The question of the construction of waterworks will probably be revived by the next council.

GUELPH, ONT.—The city engineer has been requested to prepare a plan and estimated cost of a sewerage system for the city.

KINGSTON, ONT.—It is reported that tenders are being taken for new barracks for regulars here. It may be built at Portsmouth.

MIAMI, MAN.—The sum of \$8,000 has been subscribed towards the flour mill to be erected here next spring by a joint stock company.

VANCOUVER, B. C.—N. S. Hoffer, architect, is calling for tenders for erecting business premises for the Province Printing & Publishing Company.

GRAVENHURST, ONT.—The by-law granting a bonus of \$10,000 towards the establishment of a consumptives hospital has been carried by the ratepayers.

ST. JOHNS, QUE.—A deputation from this town has urged the Dominion Government to construct a culvert under the culvert here as a sanitary measure.

HULL, QUE.—The Union Bank has sold the C. B. Wright brick yard to Messrs Arthur, Walter and Thomas Farley, who will put in new machinery.

CORNWALL, ONT.—The Watson Heating Co. have under consideration the location of their works at this point, and will submit a definite proposition to the council at an early date.

SEAFORTH, ONT.—A syndicate represented by A. S. Dickson, of Blyth and James Lockart, of McKillop, have purchased timber lands in McKillop, and purpose erecting a saw mill.

ST. JOHN, N. B.—Joseph A. Likely has purchased a lot on Mill street and will erect a three-story bk. building. The ground floor will be used as a dry goods store and the top flats for dwellings.

DANVILLE, QUE.—H. Stavely, architect, of Quebec, is preparing plans for the new English church to be built here. It

will be of brick, seventy by twenty-eight feet, with side tower and spire 75 feet in height.

ALLANDALE, ONT.—The council is discussing the question of waterworks and a House of Refuge.

ST. FAUSTIN, QUE.—Sealed tenders will be received for the erection of a school house until the 24th inst. For plans, specifications and other information apply to F. Aseelin, Sec.-Treas.

ALEXANDRIA, ONT.—James Adams, architect, of the Kingston Penitentiary, is preparing plans for the Dominion reformatory to be built here.—The erection of a new public hall is agitated.

LEVI, QUE.—The proposed system of waterworks, drainage and electric light is estimated to cost \$180,000. It is proposed to pump the water supply from the river into a reservoir on the Levis heights.

AURORA, ONT.—The scheme for an electric or steam railway from Aurora to Schomberg is being pushed, a deputation having recently interviewed the Government authorities regarding the securing of a charter.

MISSION CITY, B. C.—W. C. A. Pilling, clerk to commissioners, invites tenders until the 20th inst., for the construction of two bulkheads and certain additions to the present dyke at Matsqui. Plans may be seen at the office of J. H. Brownlee, Victoria.

LANG, ONT.—Separate tenders are invited by George Fife, Secretary of Building Committee, until Saturday, the 21st inst., for the erection of a brick church with stone basement on lot 21, 5th concession of Otonabee. Plans may be seen at Mr. Fife's residence.

NIAGARA FALLS, ONT.—The electric light company has accepted plans and specifications for their new power house, and the erection of a building will probably be commenced at an early date. It will be located on the south side of Park street, near Muddy Run creek.

ST. BONIFACE, MAN.—It is said that next year an effort will be made to build a traffic bridge across Red river at James or McDermott streets. The Winnipeg City Council will be asked to renew its offer of \$10,000 towards its construction.

NAPIERVILLE, QUE.—The Napierville Junction railway is an electric line proposed between St. Remi and Stottsville, a distance of 22 miles, running through the parishes of St. Michael, St. Edward, Douglasburg, and St. Philippe. The Dominion Government has subsidized the road to the extent of \$3,500 per mile.

BROCKVILLE, ONT.—The congregation of Wall street Methodist church has decided to enlarge and improve the church next summer, at a cost of \$20,000. The plans prepared by Power & Son, architects, of Kingston, have been accepted.—The erection of a new structure to replace the James street school is under consideration by the School Board.

FREDERICTON, N. B.—Mr. Willis Chipman, C. E., of Toronto, is expected here shortly to consult with the authorities regarding plans for a sewerage system.—A building boom is anticipated here next year. Several stores and residences are already spoken of.—John T. Clark & Son have purchased a lot and purpose erecting a brick business block.

ST. THOMAS, ONT.—A deputation consisting of Mayor Idsardi, Ald. McCully, Ald. Wallis and City Engineer Campbell visited Detroit recently and interviewed President Ledyard, of the Michigan Central, in regard to a subway at the crossing of the railway at Ross street. The company's engineers estimate the cost for roadway and passage of street cars at \$24,000.

COLLINGWOOD, ONT.—The cost of the proposed improvements to the harbor

here, tenders for which close on the 2nd of January, will be about \$90,000. The specifications call for a channel 20 feet deep and of sufficient width to enable the largest craft on the lakes to enter.—A by-law to provide for the erection of a House of Refuge will be submitted to the ratepayers at the municipal elections.

RENFREW, ONT.—A meeting of ratepayers was held a few days ago to discuss the question of constructing waterworks and sewerage systems, at which Mayor Craig, the Reeve and Deputy Reeve were appointed a committee to ascertain the probable cost of the same, in order that the ratepayers may decide whether to undertake the work of construction or give a franchise to a company. A report will be presented at an early date.

CHATHAM, ONT.—Superintendent Val-leau, of the Waterworks Department, has written to the Water Committee strongly urging the purchase of another 500,000 gallon filter.—Delegates in connection with the proposed electric railway are expected to visit the city at an early date.—The cost of the various systems of water supply have been estimated as follows:—The Chenal Ecarte, \$200,000, Lake Erie \$93,000, and the River Thames \$350,000, the latter being merely an addition to the present filtration plant. The question will be voted on at the coming municipal elections.

STRATFORD, ONT.—H. J. Powell, architect, is preparing plans for a new R. C. church at Tilbury, to cost \$5,000, to replace the one recently destroyed by fire, and upon which work will shortly be commenced.—At a meeting of the County Council held last week, a report was presented by the House of Refuge Committee. The cost of construction is placed at \$16,000 and a vote of the electors of the county will be taken at the same time as the municipal elections.—A new bridge between Wallace and Howick will have to be built next year by the County Council.—The council has instructed the market committee to secure plans and estimates of cost of proposed improvements to the market buildings.

WINNIPEG, MAN.—T. C. Livingstone had an interview last week with the Premier at Ottawa regarding the scheme which he is promoting for the improvement of St. Andrews' rapids.—The Minneapolis, Northern & Rainy River Railway Company proposes to build a line of railway from Rainy Lake Falls to Minneapolis, a distance of 252 miles.—It is said that extensive improvements to St. Mary's church have been decided upon by the congregation and will be carried out next spring at a cost of \$12,000.—The City Engineer, having been requested by the Board of Works to report on the condition of the Main street bridge and a bridge near St. John's college, will recommend a new centre pier and end pieces.

HAMILTON, ONT.—W. A. Edwards, architect, is receiving tenders for a brick store and dwelling on Locke street. Chisholm & Logie, solicitors, invite proposals until the 21st inst. for the purchase of a number of debentures.—The improvements to the waterworks system, for which the ratepayers will be asked to grant the sum of \$175,000, will consist of the enlargement of the laterals, the construction of a twenty inch main into the northerly portion of the city from the present mains on Sherman avenue, and the laying of another and larger intake pipe from Lake Ontario to the filtering basin.—Mr. A. T. Wood has made a formal offer to the city council to build the T. H. & B. Railway from Hamilton to Toronto, without a bonus.—Building permits have been granted as follows: E. Smith, two two-story brick dwellings on Erie Ave., cost \$4,000; John Faulkner, two story bk. dwelling on Caroline st., between Bold and Hunter, cost \$1,000;

A. W. Peene, five two-story bk. dwellings, corner of John and Yonge streets, cost \$7,500.

MONTREAL, QUE.—Excavating is in progress for C. W. Lindsay's new building on St. Catherine street.—The sketch plans submitted by the C. P. R. for the proposed East End station, have been approved by the Finance Committee. The building will be a station and hotel combined, four stories high, with large central tower and two smaller ones at either end, exterior walls of dressed stone to top of first story and upper walls of white pressed brick with cut stone facings. The high pitched roof will be covered with copper. The building will be 300x60 feet, and will cost \$350,000.—In interviewing the Dominion premier regarding the funds required for harbor improvements, a memorandum was submitted by the Harbor Commissioners showing that about \$300,000 would be required for next year to complete the new works now in progress, and \$766,000 to complete plan No. 6 in 1897.—Messrs. Dunlop & Heriot, architects, are calling for tenders for a store on St. Catherine street, for Chas. W. Lindsay.—Building permits have been granted as follows; Jos. Dickenson, one story building, St. Catherine st.; Mrs. L. Lavoie, cottage on Breboeuf street; W. E. Phillips, 4 stores and dwellings, corner St. Catherine street.

TORONTO, ONT.—The School Board of East Toronto recently obtained plans for a four-roomed section of a proposed twelve-roomed school house, but afterwards decided to postpone its erection until next year, and returned the plans to the architect, who subsequently brought suit to recover the value of the plans.—The difficulty regarding the Queen street subway seems likely to be settled at no distant date, and work will probably be proceeded with in the early spring.—The representatives of the city and the railway companies held a conference a few days ago in connection with the York street bridge difficulty. The C. P. R. were willing to accept stone foundation and iron pillars on substructure for the bridge, but the G. T. R. insisted on masonry for the piers up to the rails as well as for the foundation. It is probable that the matter will be referred to the Railway Committee of the Privy Council.—The City Council has given notice that it is proposed to construct the following works; macadam roadways on Jarvis street, from King to Queen street, cost \$1,400; on Bloor street, from Yonge street to Avenue road, cost \$1,700. Brick sidewalk on south side of Queen street, from John street to Spadina ave., cost \$3,288.—A building permit has been granted to R. R. Tildge & Son, Bracondale, pair attached 2 story and attic bk. dwellings, 121 and 121½ Lippincott st., cost \$2,000.

LONDON, ONT.—The architects of the new Bank of Toronto are Messrs McBride and Farncombe.—The warehouse for Mr. Santon will have an electric hoist and other modern appliances. Herbert Matthews, architect.—A permit has been issued to J. B. McNee, to build a frame house on St. James street.—The London street Railway Co. will remodel their car sheds in the spring.—A large amount of money will be expended on the extension of the water mains next year.—W. Thompson has bought the oatmeal mills at Woodstock and will remodel them.—The ratepayers will vote at the municipal elections on the question of spending \$25,000 to replace the western fair buildings, recently destroyed by fire, and to make other extensive improvements.—McBride & Farncombe, architects, are receiving tenders on a building for Geo. T. Hiscox.—Building permits for the month of November were issued as follows; B. F. Clampitt, double 2 story bk. residence, Bathurst and Colborne st., cost \$2,000; Wm. Eckert, residence on

Dundas st., cost \$1,750, architect, W. A. Gauld; Mas. Downs, bank barn and shed on Hamilton road; Geo. Crew, cottage, Elias st., cost \$700; E. Gage, stable on Colborne st.; Fox & Brown, 2 bk. veneered cottages on Pall Mall street, cost \$1,400 each; Mrs. Angles, bk. veneered one and one half story residence, cost \$800; Geo. Kettle, residence on Maitland st., W. A. Buffy, architect, cost \$1,500; J. A. Thomas, rebuilding store and dwelling, Craig & Wortley streets, cost \$1,000; W. Thompson, addition to oatmeal mill, cost \$3,000, architects, Moore & Henry; Geo. Howe, residence, Maitland st., cost \$2,000; Jno. Esson, residence, Hyman st., cost \$2,000; J. F. Madden, bk. residence, Central ave., cost \$1,200; Wm. Copp, bk. cottage on Elmwood ave., cost \$1,200; W. A. Westland, 2 frame cottages on Bruce st., cost \$700 each.

OTTAWA, ONT.—The Board of Trade has approved of the proposed grant of \$40,000 by the city towards the improvement of the Central Fair grounds and the erection of new buildings.—A new home is required for friendless women, which, it is estimated would cost in the vicinity of \$20,000. The directors of the Y. W. C. A. are moving in the matter.—At the coming session of Parliament the Pontiac Pacific Junction Railway Company will apply for an act to revive its power to extend its railway to Pembroke and to build over the Ottawa river the bridges necessary therefor; also to extend the time for the construction by the company of a bridge over said river.—The Ottawa Amateur Athletic Club propose to increase their accommodation, and are considering two schemes, one being the erection of an entirely new building, and the other of extensive additions to their present premises. The latter scheme is likely to be carried out, and is estimated to cost about \$18,000. Among the members of the club are David Maclaren, J. W. Macrae, and D. P. Ross.—Plans were last week submitted to the building committee of the Protestant Hospital for the proposed addition to the institution. The architects are Messrs. Arnoldi & Ewart, and the execution of their plans will entail an expenditure of \$58,000.—The Dominion Government has been requested by the City Council to construct a bridge over the Rideau Canal at Concession street.—Local capitalists have under consideration the erection of a large hospital on which it is said about \$100,000 will be expended. The promoters have been in communication with D. D. Wilson, of Toronto, to secure his co-operation in the undertaking.—Tenders are invited by N. Champagne, until the 24th inst. for supplying 300 toise of syenite or granite stone.—The Lindsay, Bobcaygeon and Pontypool Railway Company will ask for an extension of time in which to complete their line.—Incorporation has been asked for the Queenston Heights Bridge Company, for the purpose of constructing, maintaining and operating a bridge across the Niagara river at or near Queenston Heights, in the County of Lincoln. Application has also been made to incorporate a company to construct a canal from Nelson River to Hudson Bay.

FIRES.

A large frame building at Teeswater, Ont. owned by Thos Weir, was burned on the 5th inst. Loss, \$3,000.—The Roman Catholic Church at Beloeil Village, Que. was destroyed by fire on the 7th inst. The church was recently repaired at a cost of \$30,000, and was valued at \$75,000.—The residence of James Loudin, at Peterboro, Ont., was destroyed by fire recently. Loss fully covered by insurance.—Begin & Lemieux's tannery at Sherbrooke, Que., has been badly gutted by fire.

Fred. Reid, builder, London, Ont., is reported to have assigned.

CONTRACTS AWARDED.

PETERBORO', ONT.—The contracts for the erection of an addition to the Oriental hotel have been awarded, Mr. J. J. Hartley receiving the contract for the brick work and excavating, and Mr. T. Rutherford that for the carpenter work.


CARLETON PLACE, ONT.—F. McEwan, proprietor of the Dominion Quarry, Beckwith, has received the contract for the cut stone for the new town hall. About 2,000 feet will be required.

ROSSLAND, B. C. Charles King, of Tacoma, has been awarded the contract for building a narrow gauge railway from Trail Landing to this village, at a contract price in the neighborhood of \$100,000.

TORONTO, ONT.—The Fire and Light Committee have adopted the report of the Chief of the Department recommending the purchase of a Waterous engine at \$5,300, guaranteed for five years, and in the event of a second engine being purchased the La France engine, guaranteed

for ten years is recommended, at \$4,900.—The tender of Britnell & Co. has been accepted by the City Council for the supply of 100 toise of stone for the House of Industry, at \$9,60 a toise.

ASPHALT PAVEMENTS IN BERLIN. At a meeting of the Board of Aldermen of Berlin, Germany, September 18, a very important decision was rendered. It was decided that in the years 1896-97 no other than asphalt pavements should be laid, except where the condition of grade or extraordinary heavy traffic made stone necessary; that the extension of asphalt pavements should be encouraged in every way, and that the bids in the future should be open to any contractor, and not as in the past, only to a certain number of them. This decision was arrived at principally through the large number of petitions sent in by citizens in favor of asphalt.



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SUSTAINING POWER OF SOILS.

Before incurring expensive preliminary investigations or needlessly costly foundations, and to avoid insufficient foundations, the sustaining unit power of the soil at the level of the foundation base should be tested. This is usually done by loading a unit area of one or more square feet of iron or wood, sufficient weight to make it sink appreciably, and noting the lapse of time between the gaugings of the sinking. A convenient manner of loading the unit area is by setting a vertical pole on the centre of the plate and keeping it vertical by three or four guy ropes in balancing directions made fast to stakes driven in the ground. A cross-frame surrounds the pole, on which the weights are distributed round the pole, so that the guys will be equally tight. The guys should not be so tight as to add by the induced stress to the force produced by the loading weights, including the weight of the pole and guy ropes, cross-frame, etc.

AN INDISPENSABLE COMPANION.

We have received many expressions of appreciation of the CONTRACT RECORD daily calendar desk pad for 1896, of which the following is a sample:—

Clerk's Office,
Dunnville, Ont., Nov. 23, 1895.

Publisher CANADIAN CONTRACT RECORD.

DEAR SIR,—Permit me to thank you for the daily calendar desk pad for 1896, which you were good enough to send me. I consider this an indispensable desk companion, being so easy to refer to present as well as to future dates, with plenty of room for memoranda on each page during the whole year; and it cannot help being a useful reminder of THE CONTRACT RECORD, which for the municipal news it contains makes it very acceptable to municipal clerks.

Wishing you abundant success,
I am respectfully yours,
J. W. HOLMES.

ORIGIN OF THE WORD "BOSS."

Even the dread name of "boss" is an inheritance from the Dutch period. It is derived from baas, meaning foreman or master. A hundred years after English became the official language, men of wealth and character, like "Boss" Walton of the famous Walton house, in Franklin Square, received the appellation from persons who wished to be deferential. And to-day a workingman may use the title in its original sense when addressing his employer or accosting a stranger.

The Water Commissioners of St. Catharines, Ont., in their report for 1894 have briefly described some of the improvements they have made in the grounds surrounding their reservoirs by planting ornamental trees, hedges, etc., thus adding materially to the attractiveness and beauty of the landscape. They say that they have considered it their duty not merely to manage the works with care and economy, and to furnish the inhabitants at all times with an abundance of good water, as well as an efficient pressure for the extinction of fires, but have also thought it incumbent to beautify and adorn the grounds; and they rely upon

the refined taste and higher sentiments of the citizens for support and approval of their efforts to give the reservoirs the best setting which natural scenery and tastefully laid-out and well-kept grounds can afford.

James Ryan has been registered proprietor of the plumbing business of Walter Ryan & Co., Montreal.

A dissolution of the firm of Howard & O'Connell, plumbers, Montreal, is announced.

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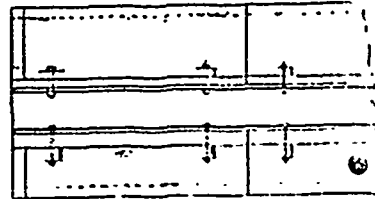
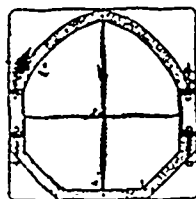
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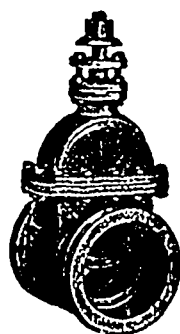


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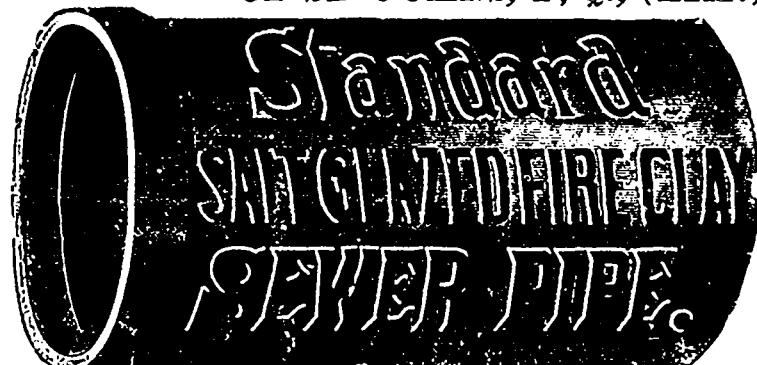


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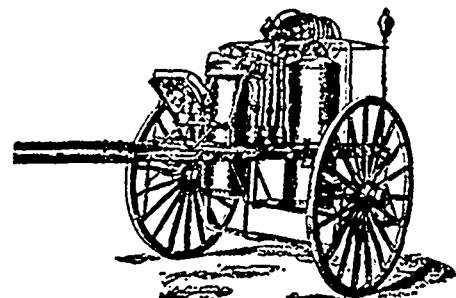
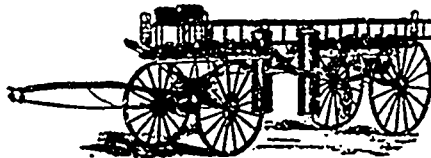
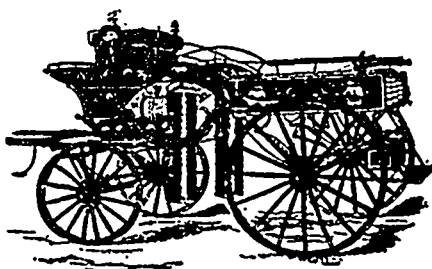
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MUNICIPAL DEPARTMENT

PURIFICATION OF SEWAGE BY RIVER-WATER SUPPLIES.

(Continued.)

It will perhaps be argued in this connection that an increase in the number of organisms does not necessarily imply increased danger, that the probability of a disease being conferred by water is not only dependent upon the prevalence of such disease, but also on the possibility of discharges from patients being carried into the source of supply. But it is well to bear in mind why these organisms abound in larger numbers in river water during the winter months, which is contrary to what would naturally be looked for. This result is brought about by the large volume of surface waters which discharge into rivers at this season of the year, and which carry with them numberless organisms which are washed from their lodgment in the soil. Now, if we take this into consideration with the well-established fact that pathogenic as well as non-pathogenic organisms may take up their residence in soil,* adapting themselves to a saprophytic condition of life, and in some cases even engaging in the ordinary process of nitrification, and yet when favourable circumstances occur may return to their original mode of life with harmful consequences, the danger will appear a real one, and, moreover, it will become evident that no great reliance must be placed on calculations considering the amount of disease within a given watershed, and the possible degree of contamination within a stated period.

On the other hand, the statement which has frequently been made that pathogenic organisms are naturally parasitic, living away from the influence of light and in high temperatures, and that consequently when they are brought into the outer air they are surrounded by conditions unfavourable to them, with the result that their virulence is rapidly diminished, is in a certain degree correct, but the statement is only a half-truth and carries with it the usual element of danger. Loss of virulence sometimes takes place concurrently with increase of resistance, and when we further remember what a wonderful power these low forms of life display in adapting themselves to changes in environment, the statement does not carry with it the consolation which it otherwise would do, although it may undoubtedly be urged, on the other side, that bacteria being primarily saprophytic, the greater tendency is to revert to that condition.

The conclusion arrived at by the last Royal Commission on the Water Supply of the Metropolis was to the effect that, in the case of towns having river supplies

*Karlinski has shown that typhoid bacilli survive for months in the soil ("Public Health Problems," J. F. J. Sykes).

with the intakes at a point above such towns, the only disease from which danger is to be feared is typhoid or enteric fever. Cholera—the only other disease which it was deemed possible might be water-borne—was not considered, as it was stated to invariably travel from the mouth of a river towards its source. But while this is probably true, it would seem to be possible that its disappearance may be delayed by the contamination of a source by fecal discharges from an infected district. The previously-mentioned outbreak of cholera at Altona would tend to support this view, as the inefficiently-filtered water was drawn from the Elbe at a point below the Hamburg sewage outfall and the outbreak occurred previous to its disappearance in that city.

In the report referred to on the pollution of the River Trent, the author, after stating that should a visitation of cholera occur the people drinking Trent water would be in danger of catching the disease owing to discharges higher up the river, would seem to suggest that in the case of previous visitations the Trentside populations suffered somewhat severely in this way.

That considerable variation in results and contradiction in statements should exist with regard to bacteriological knowledge bearing upon water supplies can hardly be matter for surprise when we remember that not only is the science a comparatively new one, but that the necessary investigations are surrounded by great difficulty; and it is to be regretted that this contradiction and variation, together with the grossly exaggerated statements of alarmists, have led some to undervalue, and even ridicule, the really substantial knowledge which we now possess.

While the larger argument—that the possibilities of contamination are very much greater in the case of river than in mountain supplies—is irrefutable, some smaller arguments which have been used are not substantiated by more recent knowledge. The statement that pathogenic organisms require for their subsistence an amount of nutriment not likely to be found in water used for potable purposes has been found to be untrue, and the fact is indisputable that so far, at least as the bacteria of typhoid are concerned, they can live in very pure—even distilled water for a considerable period of time. And it must be further admitted that multiplication is more rapid in comparatively pure or sterilized water than in that possessed of a less degree of purity; this has been stated by Miguel to be owing to the absence of products of previous bacterial life, which inoculation has a tendency to retard future increase. But this fact is one which requires modifying by the further statement that whereas multiplication is rapid in spring and moorland water, it is also transitory, whereas multiplication in impure waters is slow and persistent.* This is not only proved by the experiments of Miguel but the investigations of the Massachusetts State Board of Health point clearly to the conclusion that the decrease of typhoid germs is less

rapid in natural river water than in that of greater purity.

To use this fact of the more rapid multiplication of bacteria in very pure water as an argument in favour of river supplies, as some have already done, is both dangerous and absurd. If the presence of organisms in large quantities is the condition to be aimed at, it is easily attained, but it is well to remember that the number which will be removed by subsequent filtration will only be proportional to that originally present. The idea of completely removing the bacteria and at the same time preserving the innoculating products is, taken in consideration with our present methods of filtration on a large scale, somewhat fanciful.

But while increased knowledge may have demanded certain modification in our ideas, and may have weakened some of the arguments advanced, it must be admitted that the uncertainty which still exists on several important points is largely on one side, when the greater possibility of contamination is taken into account; for while it is established beyond doubt that the two diseases—cholera and typhoid—may be water-borne, and can be communicated by ingestion, it may yet be discovered that other diseases may be similarly carried and conferred. Moreover, there is still much doubt as whether particular organisms are necessary to the development of certain maladies, or whether such result may not be brought about simply by products resulting from their life processes. The experiments of Pasteur, Löffler, and Roux and Yersin strongly support such possibility. But the value which will be put upon arguments in favour of the discontinuance of river-water supplies will depend largely upon whether it is considered sufficient to regard the question from the point of view of probability, or whether it should be regarded from that of possibility, for while the probability of disease being spread by such a supply when proper precautions have been taken may be remote, the possibility is undeniable. The facts which demand the recognition of such possibility may be briefly summarised: (a) pathogenic organisms which are the direct or indirect cause of disease are water-borne, (b) such organisms not only live, but retain their virulence in waters of varying degrees of purity sufficiently long to be a source of danger; (c) the removal of these organisms is dependant upon a process of filtration, the self-purifying power which rivers display being insufficient to ensure their destruction; (d) sand filtration under the most favourable circumstances cannot be relied on for their entire removal,* and whereas under ordinary conditions the number is greatly reduced, there is frequently variation of a dangerous character.

A new waterworks system at Chicoutimi, Que., has recently been put in operation. The source of supply is about two miles north of the town, in the Lotbiniere Falls. They were built at a cost of \$35,000. Ninety houses have been supplied with taps, on an average of three per building. The water pressure is 85 pounds to the square inch. The town has seventeen hundred feet of hose for fire purposes, and has been supplied with twenty-five hydrants.

* In filtration experiments carried out by Fraenkel and Piefke, in which cholera and typhoid bacilli were purposely added to the unfiltered water, both varieties were found in the filtrate, although the rate of filtration had been reduced to a minimum. The cholera bacilli appear to have been more completely retained than those of typhoid (Ibid, p. 158).

* "Micro-Organisms in Water," P. Frankland, p. 228.

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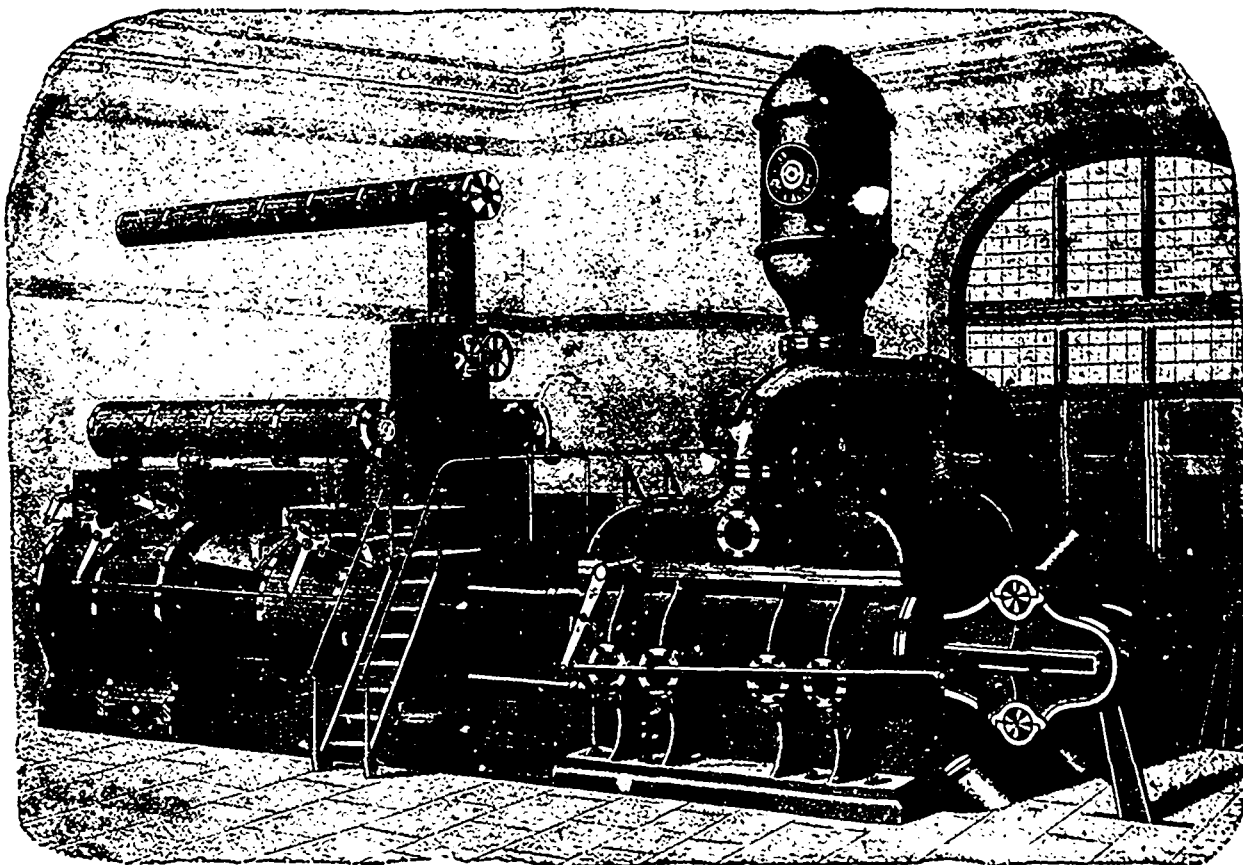
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MONTREAL: Importers are asking 10 cents per barrel more for cement, as the result of the fixing of winter prices. The market is quiet, and the stock on hand small. The glass market is firm, and advices from Belgium note an advance there. The heavy metal trade is steady, galvanized iron being in most demand.

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