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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL

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.

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TOWN OF PERTH

TENDERS FOR WATERWORKS

The Corporation of the Town of Perth is prepared to grant a franchise for a term of years for the putting in and operating of a

SYSTEM OF WATERWORKS

for the said town. All necessary information can be had by application to the undersigned.

JNO. A. KERR,
Clerk Town of Perth.

IMITATION OF OLD OAK.—It is said that the color of the old brown-black oak wood can be imitated by using a decoction of 1 part tan from freshly ground oak bark of young stems and 4 parts water mixed with 1/20 part soda. The ooze is applied hot upon the wood (preferably ash or elm), which when pretty dry, is stained again with a 10 per cent. solution of bichromate of potash.

CONTRACTS OPEN.

GILFORD, ONT.—A new church will be built here next summer.

HESPELER, ONT.—The erection of a market building is under consideration.

OTTERVILLE, ONT.—The construction of a water works system is being agitated.

SMITH'S FALLS, ONT.—A new bridge will be constructed across the Rideau river here.

PALMERSTON, ONT.—Hugh Williams will probably erect a new building on Main street.

BUCKINGHAM, QUE.—A by-law authorizing the borrowing of \$15,000 by the town has been passed.

MERRICKVILLE, ONT.—It is rumored that a new bridge will be built over the Rideau river at this point.

SWAN CREEK, N. B.—Henry Estabrooks, whose house was destroyed by fire last week, will not rebuild this fall.

ST. JOHN, N. B.—It is stated that improvements are contemplated by the Dominion Government on Partridge Island.

ST. MARYS, ONT.—The plans for a proposed water works system were considered last week by the Provincial Board of Health.

FREDERICTON, N. B.—Mr. Baird intends to erect a new structure next spring on the site of his present office and warehouse.

MAISONNEUVE, QUE.—An American syndicate desires a bonus of \$10,000 towards the erection of a brewery in this municipality.

NEWINGTON, ONT.—Tenders are invited until the 16th inst., addressed to James Martin, Reeve, for the purchase of eighteen drainage debentures of \$741.45 each.

ST. CATHARINES, ONT.—The trustees of the Niagara street Methodist church have decided to make extensive improvements, at an expenditure of several hundred dollars.

RENFREW, ONT.—It is understood that the two rival electric light companies, McKay & Guest and A. A. Wright & Co., have amalgamated, and that a large new power house will be erected.

KINGSTON, ONT.—A reply has been received from Mr. Hugh McLennan, of Montreal, refusing to accept the offer of the city council in connection with the construction of a grain elevator.

WINNIPEG, MAN.—A deputation of citizens recently waited upon the Minister of Public Works for the Dominion urging the necessity of the government constructing dams at St. Andrews rapids.

CHATHAM, ONT.—Plans have been prepared by a local architect for extensive improvements to A. E. Ham & Co.'s premises. A modern front will be put in and the store widened 5 ft. by the removal of the stairway.

PERTH, ONT.—The corporation will receive tenders until the 1st of December for the franchise for a term of years for constructing and operating a system of water works. For particulars address John A. Kerr, town clerk.

WICKHAM, N. B.—Tenders for the repairs to Wickham wharf will be received by M. H. McDonald, commissioner, until noon on Teusday, November 10th. Plans and specifications may be seen at the store of T. Melbourne Carpenter.

HALIFAX, N. S.—The Midland Railway Co., of which Mr. Strachan, of Montreal, is president, will build a line of railway 60 miles in length from Windsor to Truro. The company has a charter from the Dominion Government and has also been given a subsidy of \$3,200 per mile.

PARRY SOUND, ONT.—A syndicate of capitalists has been formed with the intention of promoting the construction of the James Bay railway from Parry Sound to James Bay. Among those interested are Messrs. George A. Cox, William McKenzie and George H. Berttram, of Toronto.

GUELPH, ONT.—Mr. G. B. Jones, manager of the Dominion Cold Storage Co., has addressed a letter to the Board of Trade here stating their intention of erecting a cold storage warehouse in this city.—The Bank of Commerce contemplate making extensive alterations in their banking office here.

VICTORIA, B. C.—J. Gerhard Tiarks, architect, is receiving tenders for a brick cottage at Victoria west, a two storey residence near Fort street, and a two storey frame residence, with brick foundation, on Parkington street.—Improvements are required at the Old Men's Home, including an addition.

BEACHBURG, ONT.—Tenders for the construction of a stone culvert over Mill Creek, on road leading from Westmeath to Pembroke, will be received until the 20th of November. Plans may be seen at the office of H. R. Dunn, township clerk, to whom tenders are to be addressed, or on application to J. L. Morris, C. E., Pembroke.

NEW WESTMINSTER, B. C.—The proprietors of the Gulf of Georgia Cannery will build an addition to their present structure.—The promoters of the Automatic Can Company have decided to locate here. H. Bell-Irving, of Vancouver, is interested in the company. According to the agreement with the city, the necessary buildings and plant will cost \$80,000.

OTIAWA, ONT.—Plans have been prepared for a large opera house to be built by the Russell House Company in rear of the hotel. The frontage will be 186 feet on Queen street and 65 feet on Canal street, and the seating capacity 1600. The building will be built of stone and brick and as near fire proof as possible. The floor will be laid on concrete. The

architects are Messrs McElfrick & Son, of New York.—It is probable that the intercolonial bridge from Hull to Nepean Point will be commenced this winter.—The Provincial Board of Health have sanctioned the proposed plans of the sewerage system. An official estimate of the cost of the system places the figure at \$444,458. The question will shortly be submitted to a vote of the ratepayers.

BARRIE, ONT.—Eustice Bird, architect, has received instructions to prepare plans for a hospital building.

VANCOUVER, B. C.—Mr. G. R. Maxwell, M. P., who has recently returned from Ottawa, states that the new drill shed will be erected in the spring, and that a \$6,000 lighthouse will be built at the first narrows.—At a recent meeting of the Board of Trade, it was decided to petition the Dominion Government to grant assistance towards the proposed railway from the coast to Kootenay.

ROSSLAND, B. C.—Mr. Taylor, architect, is preparing plans for a large opera house to be erected by C. A. Baldwin, the contract for which will be let at an early date. It will be 44 x 66 ft. in size, with a large additional stage in rear. The building will be three stories in height, and will cost about \$10,000.—It is estimated that buildings aggregating in value \$150,000 are now in course of construction at this place.

HAMILTON, ONT.—Wm. & Walter Stewart, architects, have taken out building permits for the buildings for the sewage disposal works, to cost \$9,000, also for alterations to four stores corner Queen and King sts., for Jas. Lottridge, to cost \$8,000. The same firm have also made drawings for an office and dwelling to be built at Huntsville, Ont.—Alderman Brown will lay before the Property Committee a scheme to purchase the block bounded by York, Merrick, McNab and Park streets for market purposes.—Building permits have been granted as follows: James Mercier, alterations to 68 East avenue north, cost \$1,000; R. & J. Poag, two storey brick dwelling on Catharine street north, cost \$1,100; Erskine Smith, two storey brick dwelling on Robert street, for E. & C. Truscott, cost \$1,200; Thomas Larkin, three detached frame dwellings on Birch avenue, cost \$2,400.

QUEBEC, QUE.—Henry Menier, the owner of Anticosti, is now purchasing material for the extension of the Narrow Gauge railway. Over 120 miles will be constructed next spring.—W. Speer, president of the Glens Falls Paper Co., has been examining sites along the line of the Lake St. John railway with a view to erecting two large pulp mills. The location of these will probably be at Riviere-a-Pierre and Miquick.—W. D. Baillarge, assistant city inspector, will receive tenders until Friday, the 30th inst., for the masonry and ironwork of a swing bridge to be erected over the river St. Charles. Plans may be seen at the office of the city engineer.—A proposal is on foot to form a syndicate here for the construction of a large conservatory of music.—David Ouellet, architect, is calling for tenders for extensive works to be done at the sacristy and church of St. Epiphane, Temiscouata.

MONTREAL, QUE.—Mr. J. C. Wilson has offered to donate the sum of \$5,000 towards the construction of a Technical Institute in Montreal, on condition that the government will contribute a similar amount.—Hon. A. G. Blair, Minister of Railways and Canals, was recently interviewed in regard to the resolutions of the Board of Trade favoring a 30 ft. channel from Quebec to Montreal, and 14 ft. channels westward. The Minister promised consideration.—J. Alcide Chausse is preparing plans for a new presbytery for St. Zouque parish. Tenders will be

invited in a few days.—Messrs. Sincennes & Courval, architects, are calling for tenders for a house to be erected for C. Charbonneau.—A. F. Dunlop, architect, is receiving tenders for the plumbing of a house to be erected on Redpath street for C. L. Shorey.—Eric Mann, architect, has received tenders for one factory to be erected on St. Paul st., for James Cores-tines & Co. L. R. Montbriand has received tenders for a factory to be erected on St. Catharine street for Berard Major.—Sincennes & Courval, architects, have received tenders for one house to be erected on Clark street for M. Charette.—More commodious quarters are to be secured for the Montreal Military Institute.

TORONTO, ONT.—The Fire and Light Committee have decided to request the Board of Control to invite new tenders for a fire engine.—Ten feet will be added to the height of the Bay street fire hall, and a furnace placed in the new addition.—In his fortnightly report presented to the Board of Works on Monday last, the city engineer estimates the cost of repairing that portion of Lake Shore road within the city limits at \$2,300. The cost of diverting the dry weather flow of the Fort Rouille sewer along Dominion street to Dufferin street would be approximately \$6,500.—The City Clerk has received a sufficiently signed petition against the construction of a brick pavement on Palmerston avenue, between College and Robinson streets.—A number of property owners on Spadina avenue, between King and Queen streets, waited upon the Board of Works on Monday last regarding the proposed pavement on that street. It was stated that if the city would bear the cost of two out of the four stone kerbings the property owners would agree to the work being proceeded with.—The City Council has given notice of its intention to carry out the following work: Brick pavements—Dovercourt road, Queen to College street, cost \$26,400; Foxley street, Dundas street to Dovercourt road, cost \$3,270; Huntley street, Bloor to Earl street, cost \$8,540. Asphalt roadway—Dundas street, Queen to Arthur street, cost \$18,600. Macadam roadway—Grange avenue, Spadina avenue to Beverley street, cost \$1,570. Cedar block roadways—Lisgar street, Queen street to Dundas street, cost \$5,200; Afton avenue, Northcote avenue to Lisgar street, cost \$1,350. Cement concrete sidewalk—Bay street, east side, Adelaide street to a point 124 feet north, cost \$279.—The Harbor Commissioners are applying to the government for the patent for the water lots between Queen's wharf and Garrison creek sewer, with a view to constructing cribwork which will prevent the sewage from Garrison creek from being carried into the western channel.—The Technical School Board have appointed a committee to wait upon the City Council regarding the question of providing a permanent building for the school.—Ald. Hallam has prepared an estimate of the cost of improving Queen street avenue. The amount required will be \$5,000.—Building permits have been granted as follows: John L. Coffee, Board of Trade, pr. s. d. 2 storey and attic bk. dwellings, 78-80 Beatley ave., cost \$3,500; R. C. Clute, bk. stable, s.e. cor. Walmer rd. and Castle ave., cost \$1,500; B. Homer Dixon, 2 story bk. add. and alterations to dwelling, s.w. cor. Lowther ave. and Walmer rd., cost \$2,300; S. H. Janes, alterations to store, 15 King st. w., cost \$1,000; F. H. Herbert, architect, det. 2 story and attic bk. dwelling, 9 Lampart ave., cost \$3,800; Mrs. Annie Monkhouse, 96 Spencer ave., 2 story and attic bk. dwelling, cost \$3,000.

FIRES.

A saw mill on St. Lawrence street, Montreal, owned by Lalonde & Emond, was completely destroyed by fire on Mon-

day last. The loss will reach \$10,000.—At Peterborough, Ont., on the 25th inst., J. R. Donnell's planing mill and C. W. Green's pump and wind mill establishment were totally destroyed by fire. The loss is partially covered by insurance.—Patrick O'Connor's soda water factory at 306 Seaton street, Toronto, has been damaged by fire to the extent of \$2,000.—William Hanson's saw mill at Spruce Lake, N. B., was consumed by fire a few days ago.—Fire at Notre Dame de Grace, a suburb of Montreal, destroyed Mr. Tottier's bakery, Savage's carriage factory, the dwelling of Mrs. Savage and the residence and workshop of R. Decary. The loss is estimated at \$40,000.—Property to the value of \$25,000 at Levis, Que., was destroyed by fire on the 25th inst. Mr. Beaulien's Commercial & Industrial Co. lost their foundry, work shops and other buildings. The loss is estimated at \$15,000.—The brick residence of John Munro, at Southwold, Ont., was totally destroyed by fire on Monday last. Loss, \$2,000.—A two storey brick-encased building on St. Lawrence street, Montreal, used as a sash and door factory by Lalonde & Girard, has been burned. The loss will reach \$8,000.

CONTRACTS AWARDED.

ORILLIA, ONT.—Park debentures have been sold to J. A. Meldrum, of Toronto, at \$10,890.

HULL, QUE.—Wright & Co. have supplied the cement for the repairs to the Rideau canal.

CHESLEY, ONT.—The contract for erecting a chair factory here has been let to D. Steven, a local contractor, for \$2,100.

ST. JOHN, N. B.—John E. Wilson has been awarded the contract for the galvanized iron work at the Lefebvre memorial hall, St. Joseph's college.

KASLO, B. C.—The contract for the supply of valves and hydrants for the new water works system has been given to the Kerr Engine Co., Walkerville, Ont.

OTTAWA, ONT.—The Department of Railways and Canals has awarded the contract for the new bridge across the Rideau Canal at Smith's Falls to Mr. Grant, of this city.

HAMILTON, ONT.—Contracts for sewers have been let as follows: Herkimer street, to David Newlands, 43 cents per foot; Stanley avenue and Hunter street, to James Nolan, at 35 and 33 cents a foot respectively.

MONTREAL, QUE.—Contracts have been awarded as follows by Chs. Chausse, architect, for two houses on Park avenue: Masonry, Louis Veinette, jr.; brick, E. Paquette; painting, L. N. Denis; plastering, M. Charbonneau.—L. R. Montbriand, architect, has awarded contracts as follows for four houses on Esplanade street, 12 dwellings in all, for J. P. Martel: Masonry, H. Dufort, carpenter and joiner's work, Pierre Chapleau; brickwork, S. Rochon. Same architect has let the contract for one building, two stories, on Esplanade street for C. Gratton: Carpenter and joiner's work, M. Papineau; roofing, plumbing and heating, Pelletier & Brosseau; plastering, T. Leclair.—Perrault & Lesage, architects, have let the following contracts for a block of four houses, twelve dwellings in all, and one store, cor. Lagauchetiere and St. Andre sts. for Dame S. Monast, of St. Hyacinthe: Excavation and drainage, N. Laporte; masonry, Ouimet & Labelle; carpenter and joiner's work, L. Beaudry; brick work, Isidore Morache; roofing and plumbing, Lesperance & Theriault; plastering, Ephraim Morache.—Jos. Venne, architect, has let contracts as follows for one temporary chapel to be erected, corner Fullum and Lariviere streets, for the Syndic of the churchwardens: Masonry, Z. Benoit;

carpenter and joiner's work, L. L. Jette; brick work, Z. Benoit; painting and glazing, N. Desjardins.—Sincennes & Courval, architects, have let contracts for one building on Laval avenue for Mde. A. E. Clement as follows. Masonry, Latour, Goulet & Co.; carpenter and joiner's work, Mennier & Labreche; roofing, plumbing and heating, Martin & Vezina; brick work, Jos. Pepin; plastering, H. Contant; painting and glazing, Rollin, Parizeau & Co.—Building permits have been granted as follows: Two houses, three stories, brick front, on Vitre street for C. E. Joslin—masonry, John Matheson; carpenter and joiner's work, Robert Neville; brick work, A. E. Wand. Two houses, two stories, on Ryde st. for L. Lamarre. Modifications of a house on Belmont street for W. A. Stephenson—architects, Wright & Son; contractors, all trades, Kelly & Bulmer.—The bridge of the Drummond County railway at Maddington Falls, which was carried away by freshet, is to be replaced by a steel structure. The contract has been awarded to the Dominion Bridge Co., of this city, and the cost of the work will be \$26,000.

BUSINESS NOTES.

Albert Bulmer and M. F. Kelly, contractors, Montreal, have commenced business.

Albert E. Bishop and James E. Madden have registered a partnership in Montreal as plumbers, under the style of Bishop & Madden.

An important failure in the plumbing trade is that of Drapeau, Savignac & Co., of Montreal. The liabilities are scheduled at \$41,470. About a year ago they were said to have claimed an apparent surplus of nearly \$30,000.

WHO BUILDS THE HOUSE.

The relation of a man who builds a house to the man who designs it, and the relations of both to the owner, who is to pay the bills—these are vexed questions which each man tries to settle for himself, and which are, therefore, in what an Irishman would call, a permanently unsettled condition.

In the first place, the owner has an indistinct idea of what he wants, and a very positive idea about how much it ought to cost him, and is also firmly convinced that he knows all about it. He therefore engages an architect in order to have the privilege of telling him how to build his house for him, and incidentally also to make the designs and drawings and superintend things generally.

When it comes to matters of detail, the owner supposes that the architect will take care of them; if not, why have one at all? And so after many changes and much discussion, the drawings are accepted, and the specifications and contracts are prepared. At this stage the owner begins to appreciate the fact that there is a builder in the case and that his province after all is to make the house for him.

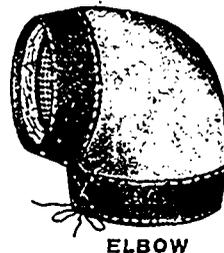
Among the three parties there seems to be an impression in the mind of each that he is really the man who builds the house. The owner talks freely of the house he is building, while the architect does not hesitate to call it his, however much his idea may be cut and hacked; and in the meantime the builder goes ahead with the work, and with many portions does pretty much as he pleases.

The result of this combination, which a diplomat would call a "tripartite agreement," but which is much more frequently a disagreement, is not always to the benefit of the work, and as the owner is the one who pays the bills, and generally lives in the house, the relations of the others to him are sometimes more interesting. Of course, he wants to get the best for the money, but he doesn't always know just what he does want, and hence it is the function of the architect to tell him what he wants, and the function of the builder to get it for him, and furthermore it is the province of the architect to see that he gets it.

This brings us the real question in hand, the function of the builder. He is expected to take the contract at the lowest possible figure, and to execute it in the best possible manner, and incidentally to make a fair margin of profit for himself, he not being in the business from purely philanthropic motives. In carrying out these laudable objects, he has his chart, his specifications, and the drawings, and if he keeps strictly to the imitations he does well. Much of the fault which is found with the builder is uncalled for, either in justice or in the specifications, and when his shortcomings, which are so frequently denounced, are heard, one is sometimes reminded of the housemaid who, when reproved for not having devined the intentions of her mistress, retorted: "Did you expect to get a mind reader for three dollars per week?"

The builder is all right if he is only given a fair chance; but before he is called in at all, the owner and the architect should make up their minds as to what they really want and say so clearly and unmistakably, in specification and drawings. The articles which the owner should himself select ought clearly to be stated as being omitted from the specification and to be furnished when required; and then, with the addition of a limited amount of common sense, there may be good reason to expect mutual satisfaction, and what is still more desirable, a fairly good building when all is done.—The Trefoil.

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PAINTS FOR METALS.

An account of some interesting researches on the value of paints for iron-work, made by Professor J. Spennrath, has recently been published in the "Deutsche Bauzeitung." As one result of these, Professor Spennrath concludes that none of the metallic oxides commonly used combine chemically with linseed oil. The drying process depends exclusively on the absorption of oxygen by the oil, which is facilitated by the presence of the pigment in a purely mechanical way. The value of the different pigments used varies. Thus, zinc white, when used for outside work, rapidly swells to double its previous volume, owing to the absorption of carbonic acid gas and water. Sulphuretted hydrogen will cause red or white lead to act in a similar way, but, when pure, Professor Spennrath considers these two latter pigments satisfactory. Carbon paints are very stable, as in heavy spar, but the covering power of the latter is small. In order to test the relative durability of various paints, sheets of zinc were coated with a number of different kinds. The zinc was then dissolved away by acid, leaving a film of paint. All these films, it was found, could be destroyed by the action of dilute nitric or hydrochloric acids, while the vapors of sulphuric and acetic acids acted similarly. Alkaline fluids and gases also destroyed the paints rapidly. Pure water was found to be more injurious than salt water; hence the destructive action of sea water is to be attributed mainly to the mechanical effects of wash. Hot water was found to act more rapidly than cold. The most important discovery made was, however, the great influence of temperature. Films similar to those already described completely lost their elasticity and became brittle when exposed to a temperature of 203° Fahr. There was at the same time a large contraction. Similar effects are produced by prolonged exposure to considerably lower temperatures. Blistering he finds due to the inner coat of paint being so thick that it has not hardened thoroughly before the second coat is applied.—Varnish.

AQUARIUM CEMENT.—Two parts (by weight) of common pitch and one part gutta percha, melted together in an iron vessel, and thoroughly incorporated by stirring.

STRAIGHTENING A CHIMNEY STACK.

Mr. W. B. Seamans, superintendent of the Concrete Manufacturing Company, of Earnest, Pa., recently accomplished a job of straightening a chimney stack in a novel and ingenious way. The height of the stack is 122 feet, and it is 11 feet square at the base. It weighs 400 pounds and is slightly tapering at the top, the walls being 36 inches thick. The top was found to be leaning 45 inches from a vertical line. To sink the side 4 1/2 inches, 10 1/2 inches of brickwork was removed from the foundation on three sides. As the bricks were removed square blocks of wood were inserted, one after the other, until three sides of the stack rested on the blocks. Between the blocks, supporting the stack temporarily, substantial brick piers 6 inches high were built, leaving a space 4 1/2 inches between the top of the piers and the bottom of the undermined brickwork. The blocks were then set on fire and all were kept burning briskly. If one burned faster than the others the fire on that particular block was checked, so that all were made to burn uniformly, and as the blocks were being reduced to ashes the stack slowly righted. As the top gradually swung back through the 45 inch arc small fissures appeared near the base. Into every crevice a steel wedge was driven, maintaining the solidity of the walls.

It took one full day to complete the work and one hour was consumed in reducing the wooden blocks to ashes.

USEFUL HINTS.

Iron that is to be buried in the earth may be painted with a mixture of 100 parts of resin, 25 parts gutta percha, and 50 parts paraffin, to which 20 parts of magnesia and some mineral oil have been added.

CEMENTING COPPER AND GLASS.—Copper and glass may be united by a cement, of which the composition is given in a recently published German formula, as follows: In 5 ounces of water boil 1 ounce of caustic soda and 3 ounces of

resin. With this mix half the quantity of plaster-of-Paris. The cement is hard in half an hour or three-quarters of an hour. Neither water, heat, nor petroleum affects it. If zinc white, white lead, or slaked lime is used in place of plaster-of-Paris, the setting proceeds more slowly.

Messrs. R. H. Buchanan & Co., of Montreal, have put in the river St. Lawrence at Prescott, an intake pipe 550 feet long into 15 feet of water for supplying clear water to Messrs. J. P. Wiser & Sons' distillery. To the shore end three

powerful steam pumps are connected. At a test recently the three pumps drafted the water in a very satisfactory manner.

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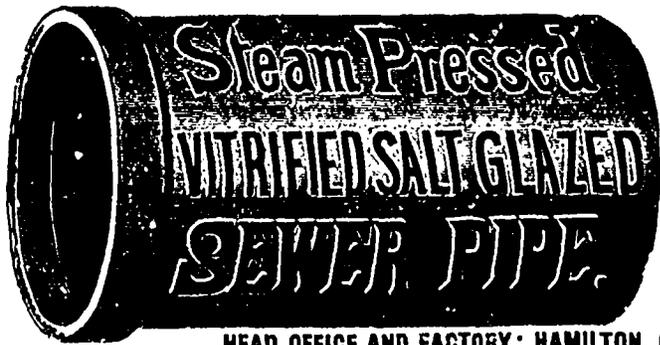
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THE CHEMICAL SYSTEM OF SEWAGE DISPOSAL.*

After stating the importance of pure water and good sewage and their intimate connection with each other, and also touching lightly on early and primitive methods of securing them, Mr. Wisner discussed the Chicago Drainage Canal, which he said was decided upon by a commission of experts as the only means of effectually ridding that big city of its excrement and converting it into a fit place of habitation. It has cost millions and has given rise to much national and international discussion because of its presumed effect on the lake levels, but it is still a question whether the scheme that has been pushed with so much vigor will give the best results obtainable by any possible means.

This commission decided against the system of disposing of sewage by chemical precipitation, estimating that it would cost Chicago \$35,000,000 for the plant and \$2,000,000 a year to run it. When it is considered that in London, with more than 4,000,000 inhabitants, the sewage is being treated by the chemical process at an annual cost of only \$755,000, with a plant costing, including six ships for transporting sludge, only \$4,729,000, this estimate seems excessive. The commission says, furthermore, "that to discharge the sewage from cities into comparatively large bodies of water is often the best method for its disposal." Considered merely as a means of getting rid of sewage, this opinion might be admissible, but since such bodies of water are the sources from which water for domestic purposes must be obtained, the method cannot be too strongly condemned.

There is scarcely a city on the lakes that is not in danger of epidemic from the bad effects of such a system. Excluding, therefore, the method of water disposal, there remain practically only two methods of sewage disposal which have given satisfactory results—land disposal and chemical precipitation. In Europe the former has met with popular favor where there has been land suitable for filtration beds.

At Berlin, previous to 1870, the river Spree, which flows through the heart of the city, was said to have been as filthy as the Chicago and Cuyahoga rivers are now, but since the completion of the disposal works nobody would suspect that the filth of a city of 2,000,000 people was being discharged into it. The country surrounding Berlin consists of sandy land, in every way suitable for sewage treatment. The city secured 11,000 acres and

prepared it with sub-drainage, so that the filtered water from the sewage irrigating ditches is conducted back to the river in a comparatively pure condition. In Paris the same method is employed. In the London watershed there are 39 towns and cities that dispose of their sewage in this way, the effluent going into the Thames, but it may be stated here that all water from this river delivered to consumers is carefully filtered first. In London proper the cost of disposing of sewage by chemicals is 20 cents per capita, whereas in good American practice such expense is rarely less than 50 cents. This is largely due to the comparatively small amount of chemicals used to produce the resultant effluent free from odor and organic matter in suspension.

In modern practice in Europe and the United States the chemical tanks are made long and narrow and the flow continuous, thus allowing any desired amount of chemicals to thoroughly mix in with the sewage before entering the tanks. In these tanks 99 per cent. of the organic matter in suspension and 60 per cent. of that in solution may be precipitated. The effluent is odorless and the works may be located wherever most convenient without creating a nuisance. The method in this regard has a great advantage over that of land disposal, for the reason that in warm weather the filtration areas of the latter system have but little attraction for any one not suffering from the last stages of catarrh.

Where sewage is discharged into an open lake or river that part of the organic matter which is carried in solution is soon oxidized by coming in contact with the air and the oxygen in the water. The organic matter carried in suspension, however, gradually settles to the bottom of the stream and there decomposes in the absence of air, causing the entire body of water to become foul. At Chicago this deposit of filth is often from 2 to 5 feet deep, and the whole river is so saturated that no form of life is known to exist in it above the Clark street bridge.

The Cuyahoga river is equally as bad, to remedy which it is now proposed to flush it with water pumped from Lake Erie, a plan which is certain to completely pollute the only source of water supply for the city.

In Detroit the sewage is discharged into a river having a flow of 225,000 cubic feet of water per second, yet the pollution is such that the water is entirely unfit for domestic purposes below the city. The water works has been moved once 3 miles up stream to get above the sewage contamination, but the city has already outrun that limit, and the question is being agitated whether the sewage from Grosse Pointe and the floating population on Lake St. Clair and the population along the St. Clair river may not be responsible for much of the disease in the city.

The great difficulty in adapting the chemical system to the older cities is the peculiar construction of the sewers for storm and sewage discharge; they would have to be remodeled so as to

separate the storm water before the chemical method could be economically applied. An estimate of cost for disposal works for any city where sewers have already been constructed would have to be based on the change needed in the system, the amount of sewage to be treated in the plant, the cost for construction and maintenance and for disposal of the sludge.

Mr. Wisner closed his paper with a recitation of the number of cities that have been compelled by the courts to find other methods of disposing of their sewage than by dumping it into rivers and lakes, and with a description of the chemical disposal plant which was built for the Wayne County buildings under his direction.

This plant treats from 40,000 to 80,000 gallons per day and cost about \$10,000. The sewage entering the building from the grounds passes through screens and then into the mixing channel, where it is joined by the lime and alum in solution. Along the channel are vertical wings or deflectors to make cross currents and thus mix the sewage and chemicals. The lime is slaked on the upper floor of this house. The three precipitation tanks are at right angles and immediately adjacent to the mixing channel. The sewage after leaving the mixing channels flows through precipitation tank No. 1 and enters tank No. 2 at the further end of the building over a weir and down a flume to the bottom, breaking up surface flow. Through tank No. 2 the sewage flows into tank No. 3, through a float valve. It finally is discharged into the open air at the farther end of tank No. 3, where, after passing over a set of aerating steps on the outfall, it enters a brook. The tanks are 75 feet long by 4½ feet wide, and drain into a sludge well, and may each be thrown out of service for cleaning without disabling the other two. The cost of running and furnishing chemicals is estimated at about 80 cents per capita per annum for a population of 800.

LEGAL DECISIONS AFFECTING MUNICIPALITIES.

PAISLEY V. CORPORATION OF CHILLIWACK.—This was an appeal by the plaintiff from the judgment of Judge Spinks. The case was tried at the County Court, Chilliwack, B. C., and the plaintiff was non-suited. One Ennis had done some work for the respondents under an alleged contract, which was not under seal, and had given the appellants an order on the respondents for payment of the monies alleged to be due to him from the municipality. Subsequently, however, the municipality paid the money to another person. Paisley then brought the action. Held, by the Supreme Court of British Columbia, that the contract must be under seal, and that the language of sec. 82 in the Municipality Act of 1892, is imperative, not directory.

The city assessors' figures show the population of Ottawa to be \$51,540, an increase of 1,866 over last year. The valuation has gone up by \$958,015, and is now \$22,079,735. The increase in real estate is \$795,415, and in personal property \$162,000. The public school supporters are assessed on \$16,467,110, and the separate school supporters on \$5,577,910.

* Abstract of paper by George Y. Wisner, M. Am. Soc. C. E., of Detroit, Mich., read before the Engineering Society of Detroit, August 22, 1896

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INDEX TO ADVERTISEMENTS

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Architects.
Ontario Directory... III
Quebec Directory... II

Architectural Sculptors and Carvers.
Beaumont, H. II
Carroll, Robert. II
Dom. Art Woodwork
Company II
Holbrook & Molling-
ton. I
Lanar & Metge. II
McCormack, W N. II

Architectural Iron Work.
Dominion Bridge Co. I
Art Woodwork
Dom. Art Woodwork
Company II
Southampton Mfg. Co. xi

Boiler Covering
Mica Boiler Covering
Co. VII

Bricks (Pressed)
Beamsville Pressed
Brick Co. I
Brockville Pressed
Brick Co. IV

Builders' Supplies.
Bremner, Alex. IV
Currie & Co. W&F.P. xii
Lawrence & Wiggin. IV
Montreal Directory... x
Ontario Lime Associa-
tion. III
Rice Lewis & Son. IV
Toronto Directory... x

Building Stone Dealers.
Credit Forks Mining
& Mfg. Co. VII

**Builders' Hard-
ware.**
Gurney, Tilden Co. V
Rice Lewis & Son. IV

**Church and School
Furniture.**
Can. Office & School
Furniture Co. I
Globe Furniture Co. VII

Cresote Stains
Cabot, Samuel. IV

Chimney Topping.
Bremner, Alex. IV
Currie & Co. W&F.P. xii

**Contractors' Plant
and Machinery**
Rice Lewis & Son. IV

Cements.
Bremner, Alex. IV
Currie & Co. W&F.P. xii
Owen Sound Portland
Cement Co. IV

Drawing Tables.
Laughlin-Hough Draw-
ing Table Co. II

Drain Pipe
Bremner, Alex. IV
Currie & Co. W&F.P. xii
Hamilton and Toronto
Sewer Pipe Co. xii

Elevators
Fensom, John. I
Leitch & Turnbull. I
Miller Bros & Toms. VI

Electrical Engineer
Heathcote, W. II

Engravers.
Can. Photo-Eng Bu-
reau. II

Fire Brick and Clay
Bremner, Alex. IV
Currie & Co. W&F.P. xii

**Galvanized Iron
Workers.**
Ormsby & Co., A. B. I

Granite
Brunet, Jos. II

**Grates, Mantles,
and Tiles.**
Holbrook & Mollington I
Rice Lewis & Son. IV
Rogers & Sons Co.,
Charles. II

Heating.
Clare Bros. IV
Gurney Foundry Co., ix
King & Son, Warden III
McClary Mfg Co. xi
Ormsby & Co., A. B. I
Pease Furnace Co. iv
Toronto Radiator Mfg
Co. III
The James Smart
Mfg. Co. xii
The Howard Furnace
Co. VI

Interior Decoration
Castle & Son. VIII
Elliott, W. H. VI

Lime.
Currie & Co. W&F.P. xii
Mille Roches Lime
Co., The. IV
Ontario Lime Associa-
tion. III

Legal.
Denton & Dods. VIII

Machinery
Petrie, H. W. III

**Mortar Colors and
Shingle Stains.**
Cabot, Samuel. IV
Muirhead, Andrew. I

**Ornamental Plas-
ters.**
Hynes, W J. VII

Painters.
Montreal Directory... x
Toronto Directory... x

Plasterers
Hynes, W J. VII

Paints and Varnishes
Cottingham, Walter H vi
Muirhead, Andrew. I

Parquetry Floors
Elliott, W H. VI

Plate Glass
The Consolidated Plate
Glass Co. II

Prismatic Glass.
Prismatic Glass Co. V

Plumbers
Montreal Directory... x
Toronto Directory... x

Roofing Materials
Ormsby & Co., A. B. I
Metallic Roofing Co. xii
Pedlar Metal Roofing
Co. V

Roof Snow Guards.
Gunn, R A. IV

Reflectors
Frink, I. P. V

Roofers
Ormsby & Co., A. B. I
Montreal Directory... x
Toronto Directory... x

**Sanitary Appli-
ances**
Dakin & Co., F. B. VII
Toronto Steel Clad Bath
& Metal Co. VIII
The Young & Bro.
Co., Ltd. IV

Shingle Stains
Cabot, Samuel. IV

**Stained and Decora-
tive Glass**
Castle & Son. VIII
Horwood & Sons, H. V
McKenzie's Stained
Glass Works. V
Lyon, N. T. V
Prismatic Glass Co. V

Shingles and Siding
Metallic Roofing Co. xi
Ormsby & Co., A. B. I
Pedlar Metal Roofing
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CONDITION OF THE MARKET.

TORONTO: A fair movement is reported in most lines of builders' supplies, although the market is devoid of special features. Cut and wire nails are selling freely and discounts remain unchanged. Cement is quiet; Portland in car lots sells at \$2.35. The demand for bar iron is a little heavier, while more business is also announced in iron pipe. Several orders have also been booked for galvanized iron. Glass and paints and oils are only in moderate enquiry.

MONTREAL: More life has characterized the market in this city. A greater number of enquiries is received for building paper, galvanized iron, glass and paints and oils. The arrivals of cement last week were 3,800 barrels English and 5,320 Belgian. The demand has fallen off somewhat, but there yet remains a fair trade. A lot of 1,200 barrels of Belgian has been placed on western account at firm prices, and other sales are said to have been made.

LUMBER.

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Table listing lumber prices for various types of wood, including clear picks, Am. ins., pickings, Am. ins., inch clear, dressing and better, mill run, dressing, common, spruce culls, and various siding and flooring options.

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Table listing void quotations for mill cull boards and scantling, shipping cull boards, stocks, Hemlock scantling and joist, and various other lumber products.

B. M.

Table listing B. M. (Building Materials) prices for various types of flooring, dressing, and other lumber products.

Table listing prices for various types of bricks, including Common Walling, Good Facing, Pressed Brick, and Roof Tiles.

SAND.

Table listing prices for sand per load of 1 1/2 cubic yards.

STONE.

Table listing prices for various types of stone, including Common Rubble, Large flat Rubble, Foundation Blocks, and various granite and marble products.

OHIO FREESTONE, FROM THE GRAFTON STONE CO.'S QUARRIES.

Table listing prices for Ohio freestone products, including Buff Promiscuous, Blue Promiscuous, and various ashlar and granite products.

SLATE.

Table listing prices for various types of slate, including Roofing, Terra Cotta Tile, and Ornamental Black Slate Roofing.

PAINTS. (In oil, \$ lb.)

Table listing prices for various types of paint, including White lead, Red lead, Yellow ochre, Green chrome, and various oil-based paints.

CEMENT, LIME, etc.

Table listing prices for various types of cement and lime, including Portland Cement, Hydraulic Cement, and various lime products.

HARDWARE.

Table listing prices for various types of hardware, including Cut nails, Steel, and various iron products.

FINE BLUED NAILS.

Table listing prices for fine blued nails.

CASING AND BOX, FLOORING, SHOOK AND TOOL, COO BOX NAILS.

Table listing prices for casing and box, flooring, shook and tool, and coo box nails.

FINISHING NAILS.

Table listing prices for finishing nails.

SLATING NAILS.

Table listing prices for slating nails.

COMMON BARREL NAILS.

Table listing prices for common barrel nails.

CLINCH NAILS.

Table listing prices for clinch nails.

SHARP AND FLAT PRESSED NAILS.

Table listing prices for sharp and flat pressed nails.

STEEL WIRE NAILS.

Table listing prices for steel wire nails.

Iron Pipe.

Table listing prices for iron pipe.

Galvanized Iron.

Table listing prices for galvanized iron.

Structural Iron.

Table listing prices for structural iron.

(Corrected up to October 28th)