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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL
OF
PUBLIC WORKS • TENDERS • ADVANCE INFORMATION • AND MUNICIPAL PROGRESS

EVERY THURSDAY

This paper reaches every week the Town and City Clerks, Town and City Engineers, County Clerks and County Engineers, Purchasers of Municipal Debentures and leading Contractors in all lines throughout Canada.

Vol. 6.

JANUARY 16, 1896

No. 50.

THE CANADIAN CONTRACT RECORD,

PUBLISHED EVERY THURSDAY

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

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A new and thoroughly revised edition of the *Canadian Contractor's Hand-Book*, consisting of 150 pages of the most carefully selected material, is now ready, and will be sent post-paid to any address in Canada on receipt of price. This book should be in the hands of every architect, builder and contractor who desires to have readily accessible and properly authenticated information on a wide variety of subjects adapted to his daily requirements.

Price, \$1.50; to subscribers of the CANADIAN ARCHITECT AND BUILDER, \$1.00. Address
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TENDERS

Will be received at the offices of the undersigned until noon of JANUARY 18TH, for

HIGH SCHOOL FURNITURE AND LABORATORY FITTINGS

Lowest or any tender not necessarily accepted.

POWER & SON, Architects,
Lion Block, Kingston.

Debentures For Sale

The Municipal Corporation of the County of Lambton will receive sealed tenders up to

Friday, January 17th, 1896,

at 2 o'clock p.m., at the office of the County Clerk at Sarnia, for the debentures under By-law No. 905, amounting to \$16,000, payable in 20 annual payments, interest at 4 per cent. semi-annually.

Further information and copies of By-law can be obtained on application to the clerk.

The highest or any tender not necessarily accepted.

JOHN DALZIEL,
County Clerk, Sarnia.

Dated, January 4th, 1896.

TO CONTRACTORS

Tenders will be received by the undersigned up to WEDNESDAY, the 22nd inst., at 5 p.m., for the several trades required in the erection of a

BRICK RESIDENCE AT ORILLIA, ONT.,

for Wm. M. Harvey, Esq.

Plans, specifications, and all other information may be had at the office of

GEO. W. GOVINLOCK, Architect,
53 King St. East, Toronto.

The lowest or any tender not necessarily accepted.

TENDERS

Will be received at the offices of the undersigned until NOON OF JANUARY 18TH, INST., for

ALTERATIONS AND IMPROVEMENTS TO BUILDING, AND BANK FITTINGS FOR THE MERCHANTS' BANK OF CANADA

Lowest or any tender not necessarily accepted.

POWER & SON, Architects,
Lion Block, Kingston.

Notice to Contractors

Sealed Tenders addressed to either of the undersigned will be received until noon on the 20th inst. for building

TWO STONE OR CONCRETE ABUTMENTS

for a bridge to be built over Kettle Creek, about one mile from Belmont Station, C. P. Ry. If built of stone quantities will be about 51 cut yards stone work and 8 cut yards concrete for each. If built of concrete about 60 cut yards each.

Plans and specifications can be seen and forms of tender obtained at the offices of the undersigned. A marked cheque payable to the Treasurer of either the County of Elgin or Middlesex must accompany each tender.

The lowest or any tender not necessarily accepted.

JAS. A. BELL, F. B. TALBOT,
Co. Engineer, Co. Commissioner,
St. Thomas, London.

TO CONTRACTORS

Sealed Tenders, endorsed "Tenders for House of Refuge," will be received by the undersigned up till noon on

Tuesday, the 28th day of January,

1896, for the erection of a House of Refuge for the County of Lambton. Tenders may be en bloc or separately for the various branches, including heating by steam or hot water.

Plans, specifications and details may be seen at the office of Mr. J. C. Robson, Architect, Sarnia, at any time (Sundays excepted) between the hours of 9 a.m. and 8 p.m., after Thursday, the 2nd day of January next.

Printed copies of specifications may be had on application to Geo. A. Proctor, Esq., Reeve, Sarnia.

Satisfactory security equal to the contract price must be furnished for the due completion of the work.

The lowest or any tender not necessarily accepted.

Napier, December 26th, 1895.

ARCH. MCINTYRE,
Reeve of Brooke,
Sec. of Committee.

Several New Brunswick parties are seeking incorporation as the Northumberland Stone Co., with a capital of \$10,000,

CONTRACTS OPEN.

HENSALL, ONT.—W. J. Millar will erect a carriage factory.

KNOWLTON, QUE.—Moses Greer is preparing to build a house.

INGERSOLL, ONT.—Subscriptions are being collected for a hospital.

CARDINAL, ONT.—An agitation is on foot for a system of waterworks.

ARNPRIOR, ONT.—It is said that the C. P. R. will build a station here.

DIGBY, N. S.—The New France Milling Company will build an electric railway.

BRANTFORD ONT.—The by-law to raise \$25,000 for a new school has been defeated.

PORT DOVER, ONT.—The west pier is to be extended some hundred feet in the spring.

ST. THOMAS, ONT.—The negotiations for electrifying the railway system are said to be cancelled.

NORTH GOWER, ONT.—The ratepayers of school section No. 11 have decided to build a new school.

ANDOVER, N. B.—The villages of Perth and Andover will probably unite in establishing a waterworks system.

VANCOUVER, B. C.—The construction of an electric tramway from Vancouver to Fort Langley is again talked of.

MORRISBURG, ONT.—It is not yet known to whom the contract for deepening the canal here will be awarded.

ACTON, ONT.—The Baptists are considering the erection of a new church. A committee has been appointed to report.

ALICE, ONT.—The trustees of school section No. 4 desire tenders for building a school. Plans at W. Spauling's, Pembroke.

GRANBY, QUE.—The site is being cleared for the new Nicol block. It will be of brick, 70 feet frontage and two stories high.

LONDON, ONT.—Wm. Wyatt has been granted a permit to erect a three-story shop on Talbot street, to cost \$2,500.—It is proposed to purchase 500 chairs for use in the City Hall.

ROSSLAND, B. C.—F. E. Wood is applying for incorporation of a company to construct a railway from Trial Creek to a point on the Okanagan Lake, in West Kootenay district.

AYLMER, QUE.—The Deschenes Electric Co. has been incorporated to build and operate works for the distribution of electricity. R. H. and John C. Conroy are among the promoters.

QUEENSTON, ONT.—Engineers have been making surveys for the proposed new suspension bridge which is to span the gorge between Lewiston and Queenston.

ST. JOHN, N. B.—A company has been formed to build and operate a railway across the northern part of the province from Campbellton, through Restigouche,

Victoria and Madawaska counties to the Maine border. Work will be begun in the spring.

KINGSTON, ONT.—The ratepayers having sanctioned the issuing of debentures for the erection of a new school, steps will be taken at once towards securing a site and having plans prepared.

NIAGARA FALLS, ONT.—John Robinson, Town Clerk, writes that work on the sewerage system will be commenced in about two months. The materials will be inch sewer tile, cement, etc. Cost \$109,000. Engineer not yet appointed.

PETERBORO', ONT.—Tenders are invited by R. B. Rogers, superintendent engineer of the Trent Valley canal, for the labor required in the construction of one deck and two pump scows at Lakefield. Plans on application to Mr. Rogers.

WINNIPEG, MAN.—The Saskatchewan Railway and Mining Co. will apply next session for a renewal of charter.—The southeastern railway scheme will probably be revived. The promoters are Walter Ross and D. C. Cameron, of Rat Portage.

NEW WESTMINSTER, B. C.—A company has been formed composed of residents, to erect a fruit cannery here. Ample capital has been subscribed and a site secured. Another local company is arranging to build a salmon cannery on the water front near the Boutilier cannery.

HALIFAX, N. S.—Extensive works are contemplated by the People's Heat and Light Co., including track extensions and water supply. Engineers have been engaged on plans for the water supply, and it will probably come from Williams lake on the western side of the arm, being brought across the arm in pipes laid on the bottom.

HAMILTON, ONT.—The Y. W. C. A. require a larger building, and have the matter under consideration.—The question of extending the Hamilton, Grimsby and Beamsville railway to Beamsville has not yet been settled.—The statement is made that Mr. Geo. E. Tuckett proposes building a music hall on the rear portion of the post-office.

HULL, QUE.—The Ottawa Powder Co. have been notified not to rebuild their factory within corporation limits.—Mr. Theo. Viau, projector of the electric railway scheme for Hull and Aylmer, has taken over the stock held by the other shareholders and will at once proceed to form a joint stock company to carry out the work. He has leased a valuable water power on which to erect the power house, containing water wheels and requisite machinery. The first part of his scheme will be the installation of an electric light plant.

ALEXANDRIA, ONT.—Additional particulars have come to hand regarding the new reformatory to be built here. Already \$30,000 has been voted for the work, and \$100,000 more will probably be voted this session. There are to be five wings, each 150 feet in length, with additions attached to the front wing, with offices, class rooms, library, vaults and chapels. The portion for which tenders are now called will cost \$150,000. The cost of the other four wings will probably bring the cost of the work well up to \$1,000,000. The building is to have a capacity for 1,000 convicts.

TORONTO, ONT.—The architect for the new city hall and court house estimates that the additional sum of \$250,000 will be required to complete the buildings, made up as follows: Masonry work, (to complete the Elliott and Neelon contract), \$110,000; furnishings, \$30,000; electric lighting plant and fittings, \$15,000; levelling grounds, \$5,000; charges on debentures, \$80,000; sundries, \$10,000. The purchase of an electric light plant is strongly recommended. At the next ses-

sion of the Ontario legislature authority will be sought to issue debentures to cover the above amount.—The ratepayers of Deer Park are desirous of obtaining a water supply from the town of North Toronto.

OTTAWA, ONT.—The Department of Public Works invites tenders until Thursday, the 23rd inst., for the construction of hot water heating apparatus at the public building at Pictou, N. S. Plans may be seen at the above department, and at the Clerk of Works office, Pictou.—The three money by-laws have been voted down by the ratepayers. They were \$40,000 for improvements to the Central Fair grounds; \$45,000 for new fire station; and to establish a public library.—Mr. J. R. Booth proposes to erect a lath mill on the site of the mill recently burned.—Messrs. Arnoldi, Ewart & Calderon, architects, have each submitted plans for the proposed addition to the Protestant Hospital, on which the sum of \$45,000 is to be expended. A report thereon will probably be presented this week. It is expected that Mr. J. R. Booth will shortly begin the excavation for the new canal basin on the west side of the canal. The basin has to be built before the time for opening navigation next spring. It will take three months to complete it. It is understood the plans for the new basin dockage are now being prepared.

MONTREAL, QUE.—A report is current that the Liverpool, London and Globe Insurance Co. propose building a new building on the site of their present one, corner Place d'Armes square.—Preparations for the immediate commencement of the building of the bridge over the St. Lawrence to Longueuil are now being pushed forward. A selection of three of the best plans has been made by Walter Shanly, the Montreal Bridge Company's consulting engineer. The first prize design shows a bridge of magnificent proportions, combining great strength with elegance and moderate cost. With track elevated 150 feet above mean water level, and a principal span of 1,250 feet, it will be next to the Forth bridge, the largest of its kind in the world. The central span over the top channel will spring from two huge towers, one situated on Isle Ronde, the other on the wharf front a little west of Belle River park. Work will be commenced on the masonry early in the season, or as soon as the plans have been finally approved by the Government and other authorities. Together with the approaches, the bridge will be nearly two miles in length. Building permits have been granted as follows: C. Gauthier, two storey brick tenement building on St. Hypolite st., cost \$1,200; G. Gervais, two storey brick tenement building on Morianne st., cost \$1,200.

FIRES.

Zion Methodist church, about four miles from St. Marys, Ont., was burned on the 13th inst. It was a brick structure.—The general store of Potvin & Brown, at Byng Inlet, Ont., has been burned. Loss on building, \$1,000.—The dwelling house of James Dickson at Napan, N. B., has been burned. Insurance, \$700.—Fire at Kentville, N. S., on the 12th inst., destroyed the Scotia block and a building adjoining, owned by J. R. Blanchard.—A large portion of the village of Winchester, Ont., was destroyed by fire on Tuesday last.

CONTRACTS AWARDED.

QUEBEC, QUE.—Mr. D. Ouellet, architect and contractor, has been awarded the contract for the erection of three altars for the church Ste. Germaine du Lac Etchemin.

NEW WESTMINSTER, B. C.—The contract for constructing the Delta drainage and dyking works has been let to H. D. Benson, the price being between \$42,000

and \$43,000. The debentures for carrying out the work were purchased by the Yorkshire Guarantee and Securities Corporation.

WALKERVILLE, ONT. The Kerr Engine Co. have been given a contract by the town for a pumping engine, to cost \$10,000, and having a pumping capacity of eleven million gallons per 24 hours.

TORONTO, ONT.—Large quantities of Hayes patent metallic lath have recently been supplied by the Metallic Roofing Co. for the Trinity College school at Port Hope.—The ceiling of J. B. Robinson's jewelry store in Bradford has been covered with embossed metallic ceiling supplied by the Metallic Roofing Co., of this city.

SOME CONDITIONS OF CONTRACTS.

The second of the series of monthly meetings of the Building Trades Exchange, Glasgow, was held in the exchange on the 18th ult., when Mr. Robert Scott, measurer, Glasgow, delivered a paper on "Some Conditions of Contracts." Colonel Bennett presided, and there was a large attendance.

Mr Scott said that his object was to further one of the chief purposes for which the exchange was instituted by inciting discussion and the free expression of the members belonging to the several branches of the building trade, so that unfair conditions of contract might be exposed and abolished, and that equitable and just principles in the letting of contracts might be established and maintained. He believed that unfair and unreasonable conditions invariably increased the cost of building, as the premium for hazardous risks had to be paid and was added to the rates. The subject he had chosen had many parts and was many sided, but he proposed to take up only four of the general conditions usually found in an ordinary estimate such as was met with every day, and say something as to their definition and application.

(1) Condition as to Extent and Character of Work.—This condition usually ran: "That the work is to be executed according to plans now produced, as well as of such other detail drawings and instructions as shall be furnished during the progress of the work," and was also virtually repeated in form of tender, in the words "hereby offer to execute the—work according to plans thereof now shown in conformity with and to the extent of the foregoing estimate." This condition took it for granted that the plans had been carefully prepared, so as to give a fair and true indication of what was to be contracted for as regard area, height, construction and style of architecture of the building, and that the detail drawings to be furnished during the progress of the works should be only developments from the contract drawings; and such being the case the instructions required must necessarily be reduced to a minimum and confined very much to directing the progress of the various parts. Further, the estimate or bill of quantities, which was such an important factor in the contract, should contain an accurate representation of the nature, quality, and measurement of the material and labor required in the carrying out of the work, each part being

measured on certain well-defined principles and so specified and classified that any offerer could easily understand what he was pricing, so that there would be no disappointment nor discontent when the time arrived for the execution of the work. Some of our architects should and did prepare careful and complete drawings before they put them into the measurer's hands, and he believed that all could do it; it was merely a matter of letting their clients understand that time was required. The result would be that generally the details would be fixed and have some relation to the contract drawings. Assuming that they had seen the last of pencil sketches in place of plans, they should see no more estimates that were merely classifications or statements of generalities where distinct parts of the work, such as door-pieces, pediments, dormers, and such like, were covered by single items, the information given being as likely to mislead as to guide, and offerers referred to drawings, which was just laying upon offerers the work for which the measurer or surveyor was paid. If contracts were based on such estimates as had just been described, the benefits of the competition that proceeded on them might be entirely nullified through the operation of extra prices. The architect or measurer, or both, along with the contractor, would have the duty of adjusting these prices, sometimes a very unpleasant one. The building proprietor would be misled as to his outlay, and perhaps have his business crippled, through having to encroach on the capital required for conducting it on a financial basis. These results were not the creation of fancy, but had occurred, and could not but occur in such circumstances. The architect was entitled to expect and to get an accurate estimate when he prepared his plans in the manner desiderated, and the measurer who could not produce such was not worthy of the name. It often happened that the architect did not get the credit due to him for the care and attention he bestowed on the planning, designing and detailing, as well as the superintending of buildings entrusted to him, through the disgust engendered in the mind of the proprietor by the ultimate cost greatly exceeding the amount he was assured would be the cost.

(2) Condition as to Variations.—This condition was usually stated thus: "Full power is reserved to make alterations on plans or mode of executing the work, and to increase, lessen or omit such portions of the work as may be thought proper." There was a full-fledged, full-blown clause, with a fine elasticity about it; and like an elastic band required to be carefully used. If stretched to its limit its recovery was all the sharper in extra prices; if beyond it, it virtually made the contract null and void—that is, not applicable. The exercise of the power reserved in this clause was very often fraught with serious consequences to both employer and contractor, and the architect who could successfully carry out and complete his work by taking the least possible advantage of

the power it conferred, would be the most successful in obtaining the appreciation of his clients and maintaining the best possible feeling between himself and his contractors. An idea was abroad that contractors were rather fond of having alterations made on their contracts, but it was an entire hallucination, and could only be entertained by those who knew nothing about building, or, knowing, did not look at facts. When alterations were made they almost invariably deranged the conduct of the work and upset the calculations of the contractor and his foreman, caused delay when there was not one workman less employed, and the workmen were turned to some other work which could be advantageously executed in its proper course. It must be very difficult to ascertain the loss directly and indirectly accruing from very trifling alterations, and it was next to impossible to put a true value on such without having the appearance and giving rise to the suspicion of extortion. The power reserved in this clause must be exercised within reasonable limits, as it did not permit of what might be termed "material" alterations being made on the general structure; and the limit was sometimes fixed at 25 per cent., which he thought rather high. Contractors sometimes complained that alterations were made for the purpose of taking advantage of some specially cheap rate, but he could not sympathise much with that complaint, as they could put the matter right by simply pricing the several items in an equitable manner.

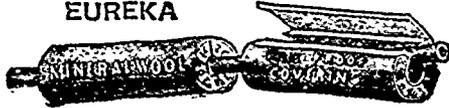
(3) Condition as to Extras.—There was not usually any clause directly providing for the pricing of extras, but they were held as referred to generally in the clause: "The work will be measured when finished and valued at the rates contained in this estimate or others in strict accordance therewith." This clause could only be applied to the pricing of extras which were similar to work specified in the contract, but when changes had been made in the carrying out of the work it naturally followed that there were items of extras for which there were no rates in the contract directly or inferentially. For such items of extras he had no hesitation in affirming that fair and reasonable prices should be paid. He would recommend measurers who had no authority to finally

adjust such rates to leave them severely alone, and give contractors the opportunity of making what they considered a fair claim, and not unjustly debar them from their rights; in this way the measurer maintained his neutral position, and was free to give his opinion or to act as arbiter on the differences that might arise between architect and contractor as to those rates. He himself had frequently so acted.

(4) Condition as to Arbiter.—When any conditions as to arbiter appeared it was in the following or similar form. "Should any disputes or differences of opinion arise on any matter connected with this contract the same shall be and are hereby referred to Mr. ———, architect, whose decision shall be final and binding on all parties without appeal." It was customary for architects who put in such a clause to thus arbitrarily fix themselves as arbiters. Now, seeing that the contract gave the architect full power over the work while in progress, and it was to be completed to his satisfaction, and there could practically be no refusal to carry out his instructions he submitted that the arbiter named in such a contract should be some properly qualified person other than the architect for the building. The architect of the building was an interested party to the contract, employed by the proprietor to attend to his interests, and, perhaps, to keep the cost within limits fixed by himself or by instructions, tempted to carry out such improvements on his design as might present themselves to him during the progress of the work, so that he might produce a building as complete in plan, as pleasing in design, and as architecturally perfect as possible. How could an architect so placed claim to be disinterested in the financial results of his work? Further, the arbiter should be mutually elected by both parties to the contract, and, failing their agreeing on an arbiter, the appointment to be made by the sheriff of the county or some such authority.

The total length of sewers in the city of Hamilton according to the last report is 266,302 feet, or 50.43 miles, constructed at a cost of \$628,391.02. During last year 9,058 feet of sewers were built.

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USEFUL HINTS FOR BUILDERS.

Old material should never be destroyed simply because it is old.

When putting away old stuff, see that it is protected from rain and the atmosphere.

It costs about fifteen per cent. extra to work up old material, and this fact should be borne in mind, as I have known several contractors who paid dearly for their "whistle" in estimating on working up second-hand material.

These remarks apply to woodwork only. In using old brick, stone, slate, and other miscellaneous articles, it is well to add double price for working up.

Workmen do not care to handle old material and justly so. It is ruinous to tools, baneful to handle, and very destructive to clothing.

In my experience I have always found it pays to advance the wages of workmen, skilled mechanics, while working up old material. This encouraged the men, and spurred them to better effort.

Sash frames, with sash weights, locks, and trim complete, may be taken out of old buildings that are being taken down, and preserved just as good as new by screwing slats and braces on them, which not only keep the frames square, but prevent the glass from being broken.

Doors, frames, and trims may also be kept in good order until used by taking the same precautions as in window frames.

Counters, shelving, drawers, and other fittings should be kindly dealt with. They will be wanted sooner or later.

Old scantling and joists may have all nails drawn or hammered in before piling away.

Take care of the locks, hinges, bolts, keys, and other hardware. Each individual piece represents money in a greater or lesser sum.

Sinks, wash basins, bath tubs, traps, heating appliances, grates, mantels, and hearthstones should be moved with care. They are always worth money, and may be used in many places as substitutes for more inferior fixings.

Marble mantels require the most careful handling.

Perhaps the most difficult fixings about a house to adapt a second time are the stairs. Yet I have known where a man so managed to put up new buildings that the old stairs taken from another building just suited. This may have been a "favorable accident," but the initiated reader will understand him. Seldom such accidents can occur.

Rails, balusters, and newels may be utilized much easier than stairs, as the rails may be lengthened or shortened to suit variable conditions.

Gas fixtures should be cared for, and stowed away in some dry place. They

can often be made available, and are not easily renovated if soiled or tarnished.

It is not wise to employ men who have nothing but their strength to recommend them. As a rule they are like bears, they have more strength than knowledge and lack of the latter is often an expensive consideration. Employ for taking down the work good, careful mechanics, and do not have the work "rushed through." Rushers of this sort are expensive.

Have some mercy on the workman's tools. If it can be avoided, do not work up old stuff into fine work. If not avoidable, pay the workmen something extra because of injury to tools.

THE SEASONING OF STONE.

Stone, like lumber, requires seasoning. Stone is often spoken of as the synonym of solidity,—“as solid as a rock,” we say,

DEBENTURES PURCHASED

Municipalities issuing debentures, no matter for what purpose, will find a ready purchaser by applying to G. A. STIMSON & CO., 9 Toronto Street, Toronto. Any assistance required in computing calculations in connection with sinking fund, etc., will be gladly given. N.B.—Money to loan at lowest rates on first mortgage.

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The London and Canadian Loan and Agency Co., Ltd.

Capital, \$5,000,000.00.

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but as a matter of fact, stone is very far from being solid. A cubic foot of the most compact granite, for instance, weighs about 164 pounds, while the cubic foot of iron weighs 464 pounds. This plainly shows that in between atoms which compose the mass of the most enduring stone there exists much space for air, moisture, etc. This seasoning of stone prior to use for building purposes has been well understood by the architects of all ages, but in the modern rush of the nineteenth century building too little attention has been paid to it. Now it enters into the calculations of every good architect.

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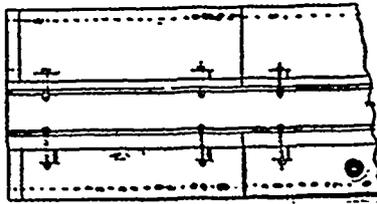
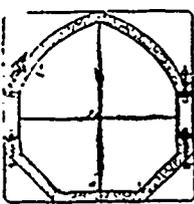
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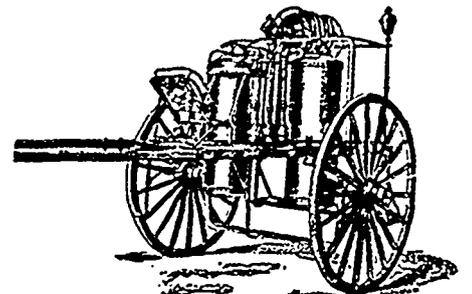
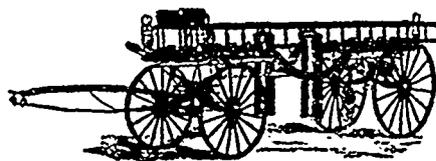
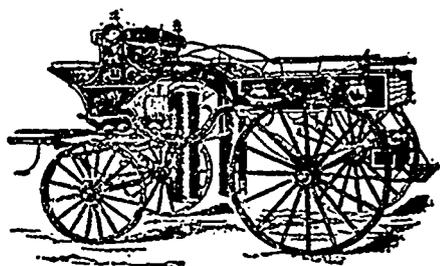
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MUNICIPAL DEPARTMENT

A PLEA FOR GOOD DRAINAGE.*

By HENRY CARRE, M.E.

Thousands of dollars have been spent in the Old Country as well as in the New World in experimenting on sanitary matters. The best chemists have turned their attention to the question of "sewage disposal," and engineers have done their best to design the most perfect system of drainage. "Systems" have been designed to suit almost every case. We have the now well known "combined" and "separate" systems with their perfectly laid brick sewers and salt-glazed pipes, forming a perfect underground net-work of pipes, the size of each portion accurately calculated to convey the estimated amount.

Volumes have been written showing the danger we run from the want of due care in removing at once the refuse which is collected around our dwellings. 'Tis not sufficient that we are notified once or twice a year to clean our back yards, for it is a well-known fact that three or four days are sufficient to produce putrefaction, and therefore that it requires daily care to remove everything that may become noxious, from around our houses. The danger is increasing from year to year, never decreasing, until the proper course is adopted and each one is not only enabled, but compelled, to keep clean. Should we not then take lesson from the experience of others and not wait until the plague comes before applying the remedy—"a stitch in time saves nine."

The general excuse for not doing so is poverty and hard times. "We cannot afford the cost." "Why, the engineer tells us it will cost \$200,000 for a complete system of sewerage for the city, how could we stand that? We are overtaxed as it is."

Now let us look into this frightful bug-bear; 'tis the best way, I think, in every case to look every trouble square in the face. Take out your pencil and find a small bit of paper, an old envelope will do; now then set down the frontage of your lot—60 feet you say. Well, a nine inch tile pipe costs on an average \$1 per foot, including manholes and flushtanks. Sixty feet at \$1 a foot is \$60, but as your opposite neighbor has to pay one-half of this, your share is then only \$30, which can be arranged to be paid off gradually in a number of years.

Now, compare this with your water tax, for instance, which will soon be universal, and may rise. Here in our city of Belleville we pay \$6 a year for every tap in our house or lawn (and it is well worth the money), that is \$30 in five years, \$60 in ten years, and so on with compound interest, doubling and tripling itself.

* Abstract of paper read at the tenth annual meeting of Executive Health Officers of Ontario.

Now you see that five years of water tax on one tap, would pay your sewerage tax in toto—no more to pay, though the benefit still goes on. 'Tis like a paid up insurance policy, and even better, for it goes on after you are dead and gone and your property also rises in value from the day the sewer is built.

There is, however, another point which we must not forget, and that is this, a nine inch pipe is not sufficient in all sections of the city. As we approach the outlet the volume of sewage increases. Intercepting sewers must be provided along certain streets, and an expensive outlet sewer must be put in. How is this to be paid for? Are those living on the street where an 18 inch pipe has to be laid, to pay the full price, on the same principle as the street with a nine inch pipe? To this we say certainly not. It would not be fair to do so. The enlarged pipe is necessary for the common good, and the excess of cost should be paid out of the public treasury, and included in the municipal tax, each one bearing his share, so that those living on a street where a main or intercepting sewer has been laid would only pay for the cost of laying a nine inch tile, as on any other street, and their due proportion of the outlet and main sewers when divided among all the tax payers. It might be a good idea, in this age of business, to offer a bonus to the street that first built a sewer, as an inducement to get the thing started.

If then, I say, we look at the comforts which without sewerage we cannot have, such as bath-rooms and W. C.'s in our houses, as well as the decrease in the death rate, which has been clearly proved to be consequent on the adoption of sewerage, and compare the cost of all this with what we have to pay for other necessary things, there is little doubt but that every sensible man will vote for sewerage every day and twice on Sundays. But above all things if you do decide on a system of sewerage let us copy the ancients and let it be well done. Let there be no bad work—see that the pipes are laid true to a regular grade, so that the water entering the sewer at any point, will never rest till it reaches the outlet, no matter how far away, and thus avoid the danger of turning portions of your sewers into long cess-pools; because a danger is hidden and out of sight, it does not lose its sting, but like a coward it stabs you in the dark and it attacks the weak and delicate first.

For the sake then, of our wives and children and our aged parents, let us have sewerage.

SANITARY PLUMBING.

The papers read before the recent Sanitary Congress in Liverpool, and the discussions these elicited, again bring the dangers to health and life through the spread of infection by sewers to public attention. There can remain no doubt in the minds of intelligent and well-informed men that to avoid such dangers the whole system of house drainage should be constructed from beginning to end in accordance with the most advanced principles and methods of sanitary plumb-

ing and sewer construction. People with small means hesitate when sanitary plumbing is named, because, in the popular mind, this term is thought to mean also expensive plumbing. The newspapers describe the gorgeous appliances and fittings going into some millionaire's houses in glowing language, and speak of this sort of thing as sanitary plumbing; and the man of small means gets the idea that sanitation is an accompaniment of splendid living only possible to the wealthy. This is a great mistake. Sanitary plumbing means nothing more than plain plumbing done on sound principles, the practical application of which need cost very little more, either in material or labor, than a defective job. It will cost the plumber who does it something more than the common inferior sort of plumbing. It will demand more brains, knowledge and skill.

The leading plumbers in this country have acquired leading knowledge and skill, and are prepared to do their work as perfectly as the present state of art will permit; and if fancy work be not demanded, will do it in sanitary respects as well for the man of limited as it can be done for a millionaire. — Engineering Magazine.

WATER PIPES AND LIGHTNING.

M. A. Houdry, in a recent issue of the *Génie Civil*, described a curious case of damage to water pipes, caused by lightning. On October 9th it was found that the water supply of a suburb of Havre was cut off, although the pressure at the distributing point should have been 36 to 44 lbs. per square inch. It was evident that a leak or a stoppage had taken place. Tests showed that it was a leak. The mains were examined, and it was found that a number of lengths of pipe were split. On looking into the matter more closely the pipe was found completely perforated at a spot where the root of a tree was just touching it. Now, on October 9th this very tree had been struck by lightning, and from the point of puncture for a distance of 80 metres almost every length of pipe was split longitudinally. M. Houdry thinks it worth while to call attention to this curious instance, with a view of warning those who are entrusted with the laying of water pipes to keep as far away as possible from trees, not only on account of the damage that may mechanically be done to the pipes by their roots, but on account of the damage that may be done by lightning.

THE ABSORPTION TEST.

Cincinnati will abandon the absorption test in fixing the value of paving brick. Several years ago a considerable area was paved with brick known to absorb a large per cent. of water. As this area has withstood traffic and the weather in a very satisfactory manner, the test is believed to be of no value; and the city hereafter will buy any brick that has stood the test of wear on the streets.

Mr. H. F. Switzer, town clerk of Midland, Ont., is dead.

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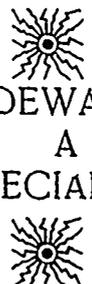
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Prices of Building Materials.

CONDITION OF THE MARKET.

MONTREAL: The market for builders' supplies remains in an inactive state, and for weeks to come little improvement is looked for. The various nail associations meet in Toronto this week, when some action will probably be taken. Some lots of cement are moving on local account. Firebricks are steady at \$15 to \$1 per thousand.

TORONTO: Trade generally is quiet, the only line moving being lead pipe, galvanized iron, and paints and oils. A firm feeling exists in the last named commodities. In building paper some cutting has been going on. Prices run as follows: Plain, 40c. per roll; tarred lining, 50c. per roll; tarred felt, \$1.60 per 100 lbs.

LUMBER.

CAR OR CARGO LOTS.

Toronto. Montreal

Table with columns for item description and prices for Toronto and Montreal. Items include clear picks, Am ins., spruce culls, mill run, siding, shingles, and lath.

VAID QUOTATIONS.

Table with columns for item description and prices for Toronto and Montreal. Items include mill cull boards, shipping cull boards, hemlock scantling, cedar for kerbing, and cutting up planks.

B. M.

Table with columns for item description and prices for Toronto and Montreal. Items include flooring, dressed, B.M., undressed, beaded sheathing, and XXX sawn shingles.

BRICK—M

Table with columns for item description and prices for Toronto and Montreal. Items include Common Walling, Good Facing, Sewer, Pressed Brick, and various types of Red and Buff bricks.

Toronto. Montreal.

Table with columns for item description and prices for Toronto and Montreal. Items include Roof Tiles, Hip Tile, Ridge Tile, 1st quality, 2nd, 3rd, Hard building brick, Ornamental, P. O. B. DON VALLEY, Red A, B, C, Trojan and Corinthian, Pompeian, Athenian and Egyptian, Tyrian, Sicilian, Roman, Ca thaginian, Ornamental, Common insides, Hard sewers, and Vitrified pavers.

SAND.

Table with columns for item description and prices for Toronto and Montreal. Item: Per Load of 1 1/2 Cubic Yards.

STONE.

Table with columns for item description and prices for Toronto and Montreal. Items include Common Rubble, Large flat Rubble, Foundation Blocks, Kent Freestone Quarries, River John, Freestone, Ballochmyle, New York Blue Stone, Granite, Moat Freestone, Thomson's, Credit Valley Rubble, Credit Valley Brown Coursing, Credit Valley Brown Dimension, Credit Valley Grey Coursing, Credit Valley Grey Dimension, Clark's N. B. Brown Stone, Brown Free Stone, Madoc Rubble, and Madoc dimension floating.

OHIO FREESTONE, FROM THE GRAFTON STONE CO.'S

Table with columns for item description and prices for Toronto and Montreal. Items include No. 1 Buff Promiscuous, No. 1 Buff Dimension, No. 1 Blue Promiscuous, No. 1 Blue Dimension, Sawed Ashlar, Sawed Ashlar, Sawed Flagging, Quebec and Vermont rough granite, For ornamental work, Granite paving blocks, Granite curbing stone, and SLATE.

SLATE.

Table with columns for item description and prices for Toronto and Montreal. Items include Roofing, red, purple, untadng green, black, Terra Cotta Tile, and Ornamental Black Slate Roofing.

PAINTS. (In oil, @ lb.

Table with columns for item description and prices for Toronto and Montreal. Items include White lead, zinc, Red lead, venetian, vermilion, Indian, Yellow ochre, Green, Paris, Black lamp, Blue, Oil, Putty, Whiting, Paris white, Litharge, Sienna, and Umber.

CEMENT, LIME, etc.

Table with columns for item description and prices for Toronto and Montreal. Items include Portland Cements, German, London, Newcastle, Belgian, and English.

Toronto. Montreal.

Table with columns for item description and prices for Toronto and Montreal. Items include Portland Cements, Belgian, Canadian, Roman, Parian, Superfine, Hydraulic Cements, Thorold, Queenston, Napanee, Hull, Ontario, Keene's Coarse Whites, Fire Bricks, Lime, Plaster, and Hair.

HARDWARE.

Table with columns for item description and prices for Toronto and Montreal. Items include Cut nails, 5c & 6c, per keg and Steel.

CUT NAILS, FENCE AND CUT SPIKES.

Table with columns for item description and prices for Toronto and Montreal. Items include 4c, hot cut, 3c, 2c, 1c, 10d, 8d, 6d, 4d, 3d, 2d, 1d, 3d to 5d, 4d to 5d, 3d to 5d.

FINE BLUE NAILS.

Table with columns for item description and prices for Toronto and Montreal. Items include 3d, per 100 lbs. and 2d.

CASING AND BOX, FLOORING, SHOOK AND TOBACCO BOX NAILS.

Table with columns for item description and prices for Toronto and Montreal. Items include 12d to 30d, 10d, 8d and 9d, 6d and 7d, 4d to 5d, 3d.

FINISHING NAILS.

Table with columns for item description and prices for Toronto and Montreal. Items include 3 inch, 2 1/2 inch, 2 inch, 1 1/2 inch, 1 inch.

SLATING NAILS.

Table with columns for item description and prices for Toronto and Montreal. Items include 5d, 4d, 3d, 2d.

COMMON BARREL NAILS.

Table with columns for item description and prices for Toronto and Montreal. Items include 1 inch, 3/4 inch, 3/8 inch.

CLINCH NAILS.

Table with columns for item description and prices for Toronto and Montreal. Items include 3 inch, 2 1/2 inch, 2 inch, 1 1/2 inch, 1 inch.

SHARP AND FLAT PRESSED NAILS.

Table with columns for item description and prices for Toronto and Montreal. Items include 3 inch, 2 1/2 inch, 2 inch, 1 1/2 inch, 1 inch.

STEEL WIRE NAILS.

Table with columns for item description and prices for Toronto and Montreal. Items include Steel Wire Nails, Iron Pipe, Iron pipe, Waste pipe, Galvanized Iron, Adam's-Mar's Best and Queen's Head, Gordon Crowe.

Lead Pipe.

Table with columns for item description and prices for Toronto and Montreal. Items include Lead pipe, Waste pipe, Galvanized Iron, Adam's-Mar's Best and Queen's Head, Gordon Crowe.

Structural Iron.

Table with columns for item description and prices for Toronto and Montreal. Items include Steel Beams, channels, angles, tees, plates, Sheared steel bridge plate.