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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. 7.

OCTOBER 22, 1896

No. 38.

## THE CANADIAN CONTRACT RECORD,

PUBLISHED EVERY THURSDAY

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## Notice to Contractors

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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.

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C. H. MORTIMER, Publisher,  
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## NOTICE TO CONTRACTORS



Tenders will be received by registered post only, addressed to the Chairman of the Board of Control, City Hall, Toronto, up to 12 O'CLOCK, NOON, ON THURSDAY, OCTOBER 29TH, 1896, for erecting an

### IRON FENCE IN THE QUEEN'S PARK,

between the University Grounds and the Park. Specifications may be seen at the office of the Park Commissioner on and after Friday, October 23rd, 1896. Each and every tender must be accompanied by a marked cheque, made payable to the order of the City Treasurer or a cash deposit equal to 5 per cent. of the amount of the tender if under \$1,000, or 2½ per cent. if over that amount.

The lowest or any tender not necessarily accepted.

R. J. FLEMING, Mayor,  
Chairman Board of Control.

Toronto, Oct. 20, 1896.

## Town of Goderich

### TENDERS FOR SEWERS

Tenders will be received by registered post only, addressed to Robert Thompson, Chairman Public Works Committee, up to 4 o'clock, p.m., on THURSDAY, OCT. 29TH, 1896, for the supply of material for and the construction of, approximately, four and a quarter miles of

### SEWERS

with their appurtenances. Tenders will be received in the three manners following:

- 1st. Supplying Sewer Pipes and Junctions.
- 2nd. Excavating and Back Filling Trenches, Laying and Joining Pipe, etc.
- 3rd. The whole work, including Supply of Pipes, Excavation, Laying, etc.

Specifications, plans and profiles may be seen and forms of tender obtained at the office of the Town Clerk, Goderich, on and after Monday, October 19th, 1896.

A deposit in the form of a marked cheque, payable to the Town Treasurer of the Town of Goderich, for the sum mentioned in the special form of tender shall accompany each tender, except in the case of one contractor or firm of contractors putting a lump sum bid as well as separate bids, in which case the \$300.00 mentioned will cover the three tenders.

The lowest or any tender not necessarily accepted

ROBT. THOMPSON,  
Chairman Public Works,  
Goderich, Ont.

WALTER BROUGH, Engineer

## TENDERS FOR LOAN

Sealed Tenders, marked "Tenders for Loan," addressed to the undersigned, Town Clerk of the town of Chatham, New Brunswick, will be received up to and including the

### First Day of November next

for the purchase of bonds of the said town. The whole issue authorized is \$20,000.00, and tenders will be received as follows:

1. For the whole or any part of \$10,000.00, with accrued interest from the 15th day of July, 1896; money payable on delivery of bonds.
2. For the whole or any part of the entire loan of \$20,000.00, payable as follows—\$10,000 with accrued interest from the 15th day of July, 1896, on delivery of bonds; the remaining \$10,000 on the 15th day of July, 1897, from which date interest is to run.

This is the first issue of bonds of the Town of Chatham, incorporated 1896, and is authorized by Chapter 40, 59 Victoria, Acts of General Assembly of New Brunswick. The proceeds of the loan are to be expended in the opening, widening and improving of streets and sidewalks; purchasing fire engine and the erection of town buildings, etc. The bonds are redeemable in 40 years from the date of issue and will be issued in denominations of \$500.00 each, interest payable semi-annually on the 15th day of January and 15th day of July in each and every year, at the rate of four per cent per annum. Interest coupons and bonds at maturity payable at office of Town Treasurer. The highest or any tender not necessarily accepted. For further information address the Town Clerk

JOSEPH B. BENSON,  
Mayor.

W. T. CONNORS,  
Town Clerk.

Chatham, N. B., Oct. 6th, 1896.

### CONTRACTS OPEN.

DUNDAS, ONT.—The town is to be lighted by electricity.

BACK RIVER, QUE.—T. D. Bell is building a large summer residence here.

LACOLLE, QUE.—Joseph Duquette intends building a new residence on his farm.

FORT WILLIAM, ONT.—J. G. King will build a large block, 100x60 feet, and three stories high.

CHARLESBURG, QUE.—The Municipal Council has decided to erect a public edifice for meetings.

SHAWVILLE, QUE.—The question of constructing a system of waterworks is under consideration.

GRIMSBY, ONT.—The question of establishing a system of waterworks is being considered.

CHARLOTTETOWN, P. E. I.—Rev. Dr. Brechen has offered a site on which to erect a hospital building.

HINTONBURG, ONT.—The by-law to raise \$9,000 for street improvements has received its first reading in council.

DARTMOUTH, N. S.—The citizens have under consideration a project to build a new ferry steamer, at a cost of \$30,000.

PAKENHAM, ONT.—The congregation of which Rev. Mr. Logue is pastor will shortly erect a new edifice, at a cost of \$10,000.

RENFREW, ONT.—In January next the ratepayers will vote on a by-law authorizing the construction of a system of water works.

PRESTON, ONT.—The council will grant a bonus of \$10,000 to a company which purpose manufacturing a line of specialties.

SHERBROOKE, QUE.—It is understood that McKechnie Bros. contemplate erecting a large commercial block on Wellington street.

BLENHEIM, ONT.—A resolution has been passed by the Board of Trade granting the sum of \$1,800 to Mr. Cawthrope to rebuild the Diamond mills.

SOREL, QUE.—The Dominion government will expend \$15,000 in dredging at this point. Steps will also be taken to prevent floods at St. Anne de Sorel.

WINNIPEG, MAN.—It is thought that some action will be taken by the present Dominion government respecting the improvements to the St. Andrew's rapids.

FREDERICTON, N. B.—The Cameron building will be remodelled.—The question of purchasing road machinery is under consideration by the City Council.

BERLIN, ONT.—The plans for the new G. T. R. depot to be erected here are now in the hands of Mr. Doye, the agent, and tenders will likely be called for immediately.

ST. JEROME, QUE.—A by-law to provide \$50,000 as a bonus to the Boston

Rubber Co. was carried on the 14th inst. The company propose to erect an establishment, 200x70 feet, and four stories high.

ROSSLAND, B. C.—The Bank of British North America have purchased a site and will erect a brick banking house.—Over 100 buildings are now in course of erection in this town.

VICTORIA, B. C.—The council have decided to proceed with the construction of the Point Ellice bridge. A by-law to raise \$150,000 therefor has been read a second time in Council.

PORT PERRY, ONT.—Debentures to the amount of \$39,000, bearing 4 per cent. interest, and payable in twenty years, are offered for sale. The date limit is November 10th. F. M. Yarnold, town clerk.

PARRY SOUND, ONT.—The officials of the Canada Atlantic railway and the Ottawa, Arnprior and Parry Sound railway were in town last week locating the site for the new depot, round house and other buildings.

GEORGETOWN, ONT.—The formation of a joint stock company for the purpose of building a skating rink is under consideration.—J. C. Drinkwater will erect a planing mill on Main street south, of frame, 30x60 feet.

CHESTER, N. S.—Charles Robinson is preparing to build a store at the corner of Queen and Pleasant streets. It is also rumored that a Halifax gentleman intends to erect a stylish bungalow near the parade.—Several summer residences are said to be in contemplation at this point.

ST. JOHN, N. B.—The Board of Public Works has been authorized to contract for 500 barrels of asphalt for street pavements.—Engineer Shewen, of the Public Works Department, has prepared plans for contemplated improvements to the break-water and repairs at the Port Dufferin breastwork.

HAWKESBURY, ONT.—A proposal is under consideration to connect the Great Northern railway with the Parry Sound system at this point, on the Ontario side of the river, with a bridge estimated to cost \$360,000. A by-law will be submitted to the ratepayers granting a bonus of \$10,000 towards the same.

KEEWATIN, ONT.—The Keewatin Power Co. is preparing to utilize the water power secured through its dam at this place by making a contract for the transmission of 5,000 h. p. to Winnipeg. The company are said to be prepared to enter into a contract for constructing the necessary works in connection therewith.

WELLAND, ONT.—At a recent meeting of the Town Council it was decided to put in the necessary fire alarm improvements requested by the Fire Underwriters' Association. The improvements consist of an electric alarm, two chemical extinguishers, a new fire hall in ward 3 and an automatic alarm striker.

ST. ZOTIQUE, QUE. J. Alcide Chausse, architect, of Montreal, is preparing plans for the new presbytery to be erected here for Rev. E. A. Coalier, parish priest. The building is to be 41x47 feet, with an extension kitchen 16x30 feet, two and a half stories, to be built of pressed bricks; walls to be in cement plaster, hardwood floors and cotton wood inside finish. Tenders will be called for in about a fortnight.

VANCOUVER, B. C.—A letter has been received from the Department of Public Works, Ottawa, stating that an engineer would be sent to make surveys in connection with and report on the Fraser river improvements.—The Vancouver, Victoria & Eastern Railway & Navigation Co. will apply to Parliament for a charter to construct a railway from Burrard Inlet to a

point on the eastern boundary of the province, with a branch line to Kamloops.

CORNWALL, ONT.—The Roman Catholic congregation will likely purchase the old Sandfield Macdonald property and convert it into an hospital.—Mr. Hibbard, of the Central Counties Railway, has laid before the council a scheme for the construction of a railway from this town to a point on the Canada Atlantic, probably South Indian. The distance is about 45 miles. A charter is held by the company which permits of operations being commenced before April, 1898.

QUEBEC, QUE.—An error having been made in considering the tenders for the construction of a bridge over the St. Charles river, the City Engineer has been authorized to invite new tenders for the work.—The estimated cost of a bridge across the St. Lawrence river at this point is in the neighborhood of \$5,000,000. In view of this fact it is not probable that the scheme will be carried out.—The Dominion government, it is said, are making arrangements to erect a large intercolonial station at Levis, which it is estimated will cost about \$200,000.

LONDON, ONT.—G. J. Carty purposes building a brick veneer dwelling on South street.—McBride & Farncombe, architects, have in hand a brick residence on Albert street for J. Jones.—Mr. Wm. Copp will build a \$1,600 two-storey brick house on Elmwood avenue.—The City Engineer has received instructions to proceed with the preparation of detailed plans and specifications for the proposed sewage system. The intention is to push the construction of the South London sewer. The main sewer will have to be constructed in order to afford an outlet.—John Jones, of Lichfield street, will build a brick house.

KINGSTON, ONT.—Ald. Hewton states that if the city will grant a bonus of \$50,000 he will bring about the establishment here of an industry that will give employment to 1,000 hands.—Tenders are invited until the 23rd inst., for the purchase of \$16,000 of school debentures, \$15,000 waterworks debentures and \$22,000 debt arrangement debentures. Address F. C. Ireland, city treasurer.—The question of constructing a grain elevator at this point is still under consideration by local capitalists. The estimated cost of a suitable structure would be \$150,000.—The Queen City Oil Company of Toronto has sent a communication to the City Council asking that they be allowed to locate a branch of their barrelling works in this city.

HAMILTON, ONT.—Tenders are being received this week for pipe sewers on Stanley avenue and Herkimer st.—The old post-office building has been purchased by the Sun Life Assurance Co., which proposes to convert it into a large office building.—A deal is said to have been consummated whereby the Westinghouse Air Brake Manufacturing Co., of Pittsburg, will establish a branch manufactory in this city.—The Parks Committee of the City Council has decided to recommend that a public skating rink be built in Victoria park this winter.—The T. H. & B. Railway Company has taken out permits for its round house, west of Garth street, to cost \$3,000, and its car repair shops at the corner of Garth and Main streets, to cost the same amount.

OTTAWA, ONT.—At the annual meeting of the Arts Association a fortnight ago, the executive committee presented a report recommending the erection of a building, at a cost of \$60,000. A committee was appointed to further the scheme.—Robert Thackray recently purchased the Carlton House property on Wellington street, and will probably erect thereon two rows of stores.—It is reported that the government has decided to take the con-

tracts for sections 4, 5, 6, 7 and 12 of the Soulanges canal out of the hands of the contractor, and invite new tenders for the work.—A large deputation from the city has requested aid from the Dominion government towards the proposed inter-provincial bridge. The city has given \$150,000, the Ontario legislature \$50,000, Quebec is expected to give \$50,000, and the Dominion is asked for \$250,000. The work will cost \$500,000. The Premier has promised to comply with the request.

MONTREAL, QUE.—The Canada Axe & Harvest Tool Manufacturing Co., Ltd., are asking tenders this week for steam heating their factory at Cote St. Paul.—The Finance Committee are still pressing their request for an appropriation for the construction of east end sewers.—The chief of the fire department has presented a report showing that the sum of \$10,000 is urgently needed for repairs to fire stations.—A special meeting of the Road Committee was held on Monday last to take action regarding the plans for the East End station. It was decided that as the plans provided for the expenditure of \$309,000 while the company's agreement with the city called for a \$375,000 station, the company be asked to include in the plans fire-proof floors, incurring a further cost of \$16,000. The original agreement provided for fire-proof floors. It was also resolved that the building be faced with Laprairie pressed brick, and that the waiting room accommodation be increased.

TORONTO, ONT.—At the last meeting of the Board of Control the proposed 24-inch water main on Front street was approved of. It was decided to oppose the application to pave the lower ends of Mowat and Fraser avenues. The report recommending the construction of two sixteen feet brick pavements on Shaw street, from Queen to Arthur, was referred back to the Board, with a recommendation to provide for a pavement within the means of the people living on the street.—The recommendation for a brick pavement on Spencer avenue has been withdrawn.—A resolution has been passed in Council urging the Dominion government to assist the Dominion Cold Storage Company in establishing plants.—In the annual report of the Industrial School at Mimico, attention is directed to the necessity of a proper water supply, sanitary arrangements, and electric light appliances.—The Board of Control has decided to cancel the tenders for plumbing and heating for the new city buildings, and new proposals will be invited, probably during the present week.—Specifications for the extension of the harbor at Buffalo, N. Y., have been prepared, and bids for the work will be received until November 30. The Federal government has appropriated \$2,250,000 for the work. Canadian dealers will be allowed to compete for the supply of stone.—It is understood that the railway authorities have under consideration a scheme to turn the arch under the Toronto Union Station into a waiting room, and fit it up with seats and radiators.—Building permits have been granted as follows: John Beatty, 1407 Queen st. w., pr. s. d. 2 story and attic bk. dwellings, 1636 King st. w., cost \$4,500; Nasmith & Co., alterations to bakery, cor. Adelaide and Francis sts., cost \$2,000.—Mr. F. H. Herbert, architect, 9 Toronto street, has charge of the alterations being made to the residence on Walmer road recently purchased by B. Homer Dixon. The same architect has also prepared plans for a new residence on Lampart avenue, Rosedale, for James L. Ross, barrister, also alterations to store, 15 King street west, and a new brick stable on Walmer road and Castle avenue for R. C. Clute, Q. C., tenders for which are now being invited.

**FIRES.**

The dwelling house of Henry Eastabrooks, at Fredericton, N. B., was destroyed by fire on the 14th inst. Loss \$2,500.—Barnes cotton batting factory, at Georgetown, Ont., was totally destroyed by fire last week. Loss, \$1,000; no insurance.—A cheese factory at Brighton, Ont., owned by A. E. Horsley, has been burned. Insurance, \$1,600.—W. Tobey & Co.'s tannery at Collingwood, Ont., together with a number of outbuildings, have been destroyed by fire. The loss is estimated at \$40,000, partially covered by insurance. Rebuilding will be commenced at once.—W. Palmer's hop-house at Corbyville, Ont., has been consumed by fire. Loss \$1,200.—The residence of Lefe Hill at Niagara Falls South, Ont., was burned on Wednesday of last week. The loss is placed at \$1,000.—The premises of Gilmour Bros. & Co., St. Peter street, Montreal, were gutted by fire last week. The loss on the building is estimated at \$20,000.—The Shawville Flour Mills at Shawville, Que., and a saw mill in connection therewith, were burned on Saturday last. The loss is between \$9,000 and \$10,000, a small portion of which is covered by insurance.—A bakery and dwelling owned by J. C. Adams, and a brick stable owned by J. F. Logan, at Port Burwell, Ont., have been burned.—The Polley shoe factory, on St. Valler street, Quebec, owned by Harvey & Van Norman, of Toronto, was partially gutted by fire. The loss will probably reach \$20,000.

**CONTRACTS AWARDED.**

ST. CATHARINES, ONT.—\$5,000 of drainage debentures have been sold to Hanson Bros., of Montreal.

WINNIPEG, MAN.—The tender of Doidge & Co., at \$745, has been accepted for block paving Stanley street.

GALT, ONT.—The Goldie & McCulloch Co. have been awarded the contract for putting in the engine in connection with the artesian well at the Agricultural College, Guelph.

FREDERICTON, N. B.—Willard Kitchen, of this city, has been awarded the contract for building the granite piers of the Memramcook bridges. The price is in the vicinity of \$7,000.

COLLINGWOOD, ONT.—The municipal council have awarded a contract for laying a cement sidewalk on St. Paul street, to Henry Wynes. The sidewalk extends from Huron street to Hume street, and will contain several thousand yards surface measure. The contract price is 11½ cents per foot, or \$1.05½ per yard.

TORONTO, ONT.—Contracts have been awarded by the city as follows: 12-foot granolithic pavement, west side of York street, A. Gardner & Co., at \$1.78 per lineal foot; plastering Bay street fire hall, John M. Gander, 99 Rose avenue, \$130; three sleighs for the fire brigade, Matthew Guy, at \$49.50 each; seventeen fire alarm box doors, Wilson & Cousins, at \$14.70 each.

ST. JOHN, N. B.—The following tenders were received for heating and ventilating the new High School building: James H. Doody, \$6,758; P. Campbell & Co., \$7,750; Robb Engineering Co., of Amherst, \$6,388; Thomas Campbell, \$3,960; G. & E. Blake, \$6,937; B. F. Sturtevant & Co., of Boston, \$4,675; W. J. Gosline, Boston, \$6,718; Conduit & Insulating Co., of New York, \$7,078. The tender of Thomas Campbell has been accepted.—Contracts for W. H. Thorne & Co.'s new warehouse have been let as follows: Mason work, B. Mooney & Sons; carpenter work, E. Bates. Estimated cost \$10,000.

QUEBEC, QUE.—Jos. P. Ouellet has prepared plans for extensive reparations to a residence, contracts for which have

been awarded as follows: Masonry and plastering, Emile Coté; carpenter and joiner's work and painting, W. L. Henreux; plumbing, P. Dobbin.—The tenders for the construction of St. Alphonse church of Thetford have been opened, and the contract has been awarded to Jos. St. Hilaire.—Building permits have been granted as follows: Reparations of a house on Richelieu street, for Amand Robitaille—contractor, M. V. Morin. Reparations of a house on Saurageau street for S. Faucher.

LONDON, ONT.—The Grand Trunk shops, the contract for which has been given to George Mills, of Hamilton, will consist of the following: Passenger car shop, 238x80; paint and varnish shop, 238x80; cabinet shop, 60x80; wood-working shop, 275x80; freight car and truck shop, 536x80; blacksmith, iron, machine, and wheel shop, 237 6x80; tinsmith shop, 125x32.6; upholsterers' shop, 125x32.6; oil and paint shop, 115x32.6; fire engine house, 30x32.6; dry lumber house, 300x50; scrap shed, dry kiln, stores and offices, having a total floor area of 165,000 superficial feet. The walls will be built of white brick, and the roofs covered with slate. Steam heating will be used.

MONTREAL, QUE.—The masonry contract for four houses to be erected on Esplanade street for J. P. Martel has been awarded to H. Dufort. L. R. Montbriand is the architect.—Building permits have been granted as follows: Alterations of a house, corner Roy and Cadieux streets, three stories, for J. A. Desjardins. One depot and one hotel, 300x116 feet, with tower 170 feet, on Craig street, for the Canadian Pacific Railway Co., architect, Bruce Price, of New York—masonry and brick, Labelle & Payette. Estimated cost, from \$300,000 to \$350,000. One residence on Sherbrooke street for J. B. Gratton. W. E. Doan, architect—masonry, Oumet & Labelle, carpenter and joiner's work, J. B. Gratton.

**BIDS.**

WINDSOR, ONT.—The following are the tenders received for the central sewer system in this city. No. 1, \$7,606.75; No. 2, \$7,672.25; No. 3, \$7,797; No. 4, \$8,713; No. 5, \$9,160.50; No. 6, \$9,198. The estimate of Mr. Wm. Newman, the engineer, was \$7,795.

**BUSINESS NOTES.**

Boucher & Hiberdeau, masons, Montreal, have dissolved partnership.

Wm. Bremner & Son have commenced business as plasterers at Montreal.

T. E. Bulwer has been registered proprietor of the firm of H. E. T. Bulwer, electrical supplies, Montreal.

John and Robert Steele, brick manufacturers, Enniskillen township, are reported to have assigned.

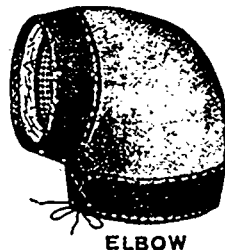
**MAKING BLUE PRINTS.**

The following item will be of interest to every carpenter and builder.

The process of making blue prints is neither an expensive nor a difficult one, and any person of average intelligence can do the work in such a way as to meet ordinary requirements. In making a blue print the first thing is to secure a supply of ferro-prussiate paper, which may be obtained from any large dealer in photographic or artist's materials. If our correspondent is unable to conveniently obtain the paper he can make it with comparatively little trouble. Almost any white paper of good quality may be used for the purpose. This paper may be prepared by subjecting it to a sensitizing solution, made by taking one ounce of citrate of iron and ammonia and four ounces of water, and mixing it with one ounce of red prussiate of potassium and four ounces of water. The two solutions are mixed in equal quantities and to an amount sufficient to sensitize the paper required for immediate use. The solution may be applied to the paper with a sponge or flat brush, or, if convenient, the paper may be floated in the solution, the latter plan being generally considered the better way. After this has been done the paper should be dried in a weak light. The paper prints better when fresh, and it would be well, therefore, for our correspondent to prepare his paper only as required for use. In this connection we should suggest the citrate of iron and ammonia be kept in a dark bottle from air and light. The paper should be stored in a dry place and be entirely shielded from daylight before being used and while putting it into the printing frame.

After the paper is ready for use and a print is desired the printing frame is placed upon the table and the blackboard removed. A negative, with the film side up, is then placed upon it and a piece of ferro-prussiate paper with its colored side toward the film put in. The back part is then placed in position in the printing frame and fastened by slipping the springs attached to it under the buttons screwed into the frame. The printing frame is then exposed in a place where the sunlight will fall directly upon every part of the front. It is thus placed in

(Concluded on Page 4.)



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order to make the print equally intense in every portion and is left for from fifteen to thirty minutes or longer, according to the strength of light and the intensity of the negative. In order to ascertain if the exposure is sufficient the frame may be removed to a place where the light is weak or subdued, one-half of the back opened and the paper bent back in order that the print upon its surface may be seen. If it is clear and distinct the paper may be taken out and placed in a pan of clear water, where it should be left until the whites of the print are clearly brought out. The paper being no longer sensitive may be dried wherever most convenient. The paper should soak from fifteen to thirty minutes, when it may be taken out of the pan and washed a few seconds in water. After the print is dry it may be neatly trimmed and mounted on card-board if desired. If the printing frame containing the paper is not exposed long enough the picture will very likely have a pale blue instead of the indigo hue desired. If what should be white in the picture has a blue tint it indicates overprinting or that the picture was exposed to a bright light before the paper was washed. The blue print can be conveniently written on by using a solution of common soda-thickened with gum arabic. Adding the soda to red ink will give a fluid by means of which a brilliant red line may be made on the print. From these suggestions we think our correspondent will be able to make blue prints which will serve his purpose.

**ELECTRIC MOTORS IN BUILDING OPERATIONS.**

"An ingenious application of electricity has recently been made at the hotel Cecil which," says the Builder, "as it may often save time and labor, is worth recording. In the marble staircase of this building the balusters had been placed so far apart that it was quite possible for a child to slip through between them, and so in order to make it perfectly safe it was resolved to put a brass baluster between every two marble ones. In order to do this as quickly as possible with the minimum of noise and dirt, Mr. Jacob, of Messrs. Waring & Sons suggested an electric motor with flexible shaft and twisted drill. A small iron-clad motor

was used of about 1 h.p. which could be run from the house mains at 110 volts and could be started and stopped by an ingenious switch worked by the foot of the operator. The holes in the lower side of the handrail are 1/4 inch broad by 1 inch deep; on the steps smaller holes were made. The rate at which they were drilled was 25 of the large ones and 30 or 40 of the smaller ones in a day. The mere drilling took very little time but arranging the guide for the drill had to be carefully done, as the balusters were often at different distances apart. The holes made were neat and clean, with very little fracture at the edges. It is an admirable method for rapidly drill-

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# MUNICIPAL DEPARTMENT

## COMBINED VS. SEPARATE SYSTEM.

In a recent report to the city council of Galt regarding the best sewerage system for that city, Mr. Willis Chipman, C. E., gives the following synopsis of his views regarding the comparative merits of the separate and combined systems.

When sewers are designed of sufficient size to carry off the storm water as well as the sewage proper, the system is known as the "combined" system. This is the system of the older cities of Europe and America. The quantity of sewage from an acre of land in a densely populated part of a city is, however, so small as compared with the rainfall that in designing the combined system the sewage flow may be entirely neglected. This is evident from the following consideration.

The sewage proper from an acre of land in the most densely populated part of any city does not exceed 500 cubic feet per 24 hours, or 21 cubic feet per hour. At times this rate may become 63 cubic feet per hour. One inch of rainfall on one acre represents about 3,600 cubic feet, and a rainfall at the rate of two inches per hour is not uncommon, and much higher rates have been recorded in Ontario. Assuming half this rainfall to reach the sewer, the proportion of sewage to rainfall is about one in forty.

For several years after the construction of combined sewers everything may work satisfactorily, but year by year as streets are improved and sewered, buildings erected, sidewalks built, etc., the amount of storm water entering the sewers increases until the carrying capacity is exceeded, then cellars are flooded, and relieving sewers become necessary. This has been the history of the combined system in nearly every city in America.

If the liquid house wastes and excreta only are to be removed by the sewers, the system is known as the "separate" system. In this case the sewage to be carried is a comparatively fixed quantity and may be taken as approximately equal to the water supply.

The removal and disposal of the storm water is a mechanical problem that can be best studied in conjunction with street improvement.

### THE COMBINED SYSTEM.

The "combined system" is open to many sanitary objections:

1. The sewers are generally too small for excessive rainfalls, which therefore gorge the sewers and force sewage, water and dirt into the connecting cellars. Action against the corporation are common in towns thus sewer'd.

2. The sewers are so large that the dry weather flow (which is the sewage only) cannot remove the mud and sand carried in by rains, consequently these deposits

become saturated with sewage, which decomposes and produces offensive odors, and may become a menace to health.

3. The rainfall is usually relied upon for flushing the sewers. As, however, sewage commences to decompose in two days, and rainfalls may be weeks apart, it is evident that the sewers cannot be in a good sanitary condition at all times.

4. The ventilation and flushing of large sewers cannot be done economically or thoroughly.

5. If a stoppage occurs in a sewer from any cause, cellars become flooded, and if the cellar trap becomes dry, sewer air may enter the building. In some cases the discharge of closets, etc., on an upper flat in a building, through a vertical soil pipe, will cause a back flow of sewage into the cellar or through the trapped inlet.

6. The catch basins along the street, if made water tight, become foul if not cleaned out frequently; if not made water tight the contents may soak into adjoining basements and cellars.

When it is necessary to remove storm water by underground channels, and where the raw sewage can be disposed of readily without chemical treatment or disposal on land, it may be more economical to adopt the combined system, but this system has nothing in its favor from a sanitary standpoint.

### THE SEPARATE SYSTEM.

The advantages of the "separate system" are as follows:

1. The rainfall being excluded, the flow of sewage proper is comparatively small, but of uniform quantity. The sewers, therefore, may be made much smaller than in the combined system.

2. The sewers being small, no deposits occur, as they can be flushed out daily by automatic flush tanks placed at every dead end of the sewer system.

3. The cellars generally have no connection with the sewer proper. A stoppage in the sewer cannot, therefore, cause flooding with sewage.

4. The sewers can be ventilated easily and thoroughly and in some proportion to the quantity of sewage disposed of. This is accomplished by allowing each soil pipe to pass directly through the building connected, with no obstruction on it or the drain from the house to prevent a flow of air between the sewer and the air above the building.

5. The cost is less than half the cost of the combined system, consequently a larger area can be served with the same amount of money.

By adopting this system the cost can be kept within reasonable limits, a large proportion of the population can be served, and a simple system of payment can be adopted.

In Petrolea, Ont., water has hitherto been brought from a distance in cart tanks, and sold for one cent a pail. But the waterworks now nearing completion will give Petrolea an ample supply of water for domestic purposes. The water will be brought from Lake Huron, a mile or two above Sarnia. The distance from the lake to the town is about eleven miles.

## REDUCTION OF WATER WASTE IN BOSTON, MASS.

For some months the consumption of water in Boston has exceeded the supply and measures have been taken to curtail all possible waste, and to prevent too great a draft on the storage basins. In a statement issued recently Water Commissioner Murphy reports that the daily supply and consumption are now about equal, while in September the stored supply was called upon for 474,100,000 gallons. To detect the waste the Deacon system of waste water inspection was re-established, and showed that in some parts of the city the waste had increased from 100 to 200 per cent. since 1894, when the last test was made. The most probable causes of the waste seem as follows: Use of garden hose outside of regular hours, leaky fixtures of water-takers, excessive use by city departments, the practice of allowing water to be taken in many instances by steamboats through hydrants unmetered, and increased number of water posts, to which everybody has access. At present the daily consumption of water is about 64,000,000 gallons. Mr. Murphy thinks this can be reduced to 50,000,000, and says that if the consumption goes on increasing as it has for the last two years, the situation next year may be worse than it has been this.

### AN INTERESTING DECISION.

A judgment was rendered in the Court of Appeals recently which is of great interest to all municipal corporations. It was in what is known as the Montreal injunction case. The court unanimously decided that the Legislature has power to override the authority of municipal corporations over their streets and to grant special privileges to gas, electric light, telephone or other companies to dig them up to lay down pipes, conduits, etc. It was for the corporations to take precautions to protect their rights when such bills were before the Legislature, whose wisdom it was not the business of the courts to question, whatever might be thought of the expediency of granting such powers. Judge Wurtele delivered the judgment of the court, which was unanimous. It maintained the judgment of the court and the injunction of the Standard Light and Power Company, and dismissed the Montreal City Corporation's appeal with costs.

### WINNIPEG BOARD OF CONTROL.

The city of Winnipeg is about to establish a Board of Control, similar to that existing in Toronto. The duties of the board are summarized under three heads: 1. To prepare the whole of the estimates. 2. The absolute control of the officials, to be appointed by the council, and the appointment of all subordinate and temporary clerks. Should the board dismiss an official he can only be re-instated by a two-thirds vote of the council. 3. The conduct of the public works, letting of contracts, etc. The council will recommend works to be done; the board will be the executive body.

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MONTREAL: There is a well distributed demand for such lines of builders' supplies as are required at this season of the year for completin buildings, and although the volume is not large, the market shows considerable life. A fair trade is doing in cut nails, plumbers' supplies, and pig iron. Window glass has advanced five cents on first break, and 10 to 20 cents on second break. Cement is in short supply, and dealers are having difficulty in filling orders. An advance in freight rates may result in a rise in quotations. Local and western buying is brisk.

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B. M.

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Toronto. Montreal.

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Table listing brick prices for various types, including Common Walling, Good Facing, and Pressed Brick.

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Table listing casing and box nails prices for various sizes.

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Table listing slating nails prices for 5d, 4d, and 3d.

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Table listing common barrel nails prices for 1 inch and 3/4 inch.

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Table listing clinch nails prices for various sizes and types.

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Table listing sharp and flat pressed nails prices for various sizes.

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Table listing structural iron prices for various types, including Steel Beams and Sheared steel bridge plate.