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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. 8.

JUNE 24, 1897

No. 21.

## THE CANADIAN CONTRACT RECORD,

PUBLISHED EVERY THURSDAY

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

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Advertising Rates on application.

Subscribers who may change their address should give prompt notice of same. In doing so, give both old and new address. Notify the publisher of any irregularity in delivery of paper.

## Tenders Wanted

Tenders required for the excavation, concrete work, brickwork and cut stone necessary in the erection of foundation and cellar for the new Departmental Store for the Jno. Eaton Co., Ltd., on their premises at the corner of Yonge and Temperance Streets, Toronto.

Tenders close JUNE 30TH.

Plans and specifications may be seen at the office of the Company's architect,

Messrs. A. R. DENISON & CO.,  
20 King Street W., Toronto.

## Notice to Contractors

Tenders will be received by the undersigned between JUNE 17TH AND JULY 1ST, for the erection of a solid brick Hotel, 52 x 85 ft., three stories high, gravel roof, steam heating, electric wiring, also solid brick Stable, 41 x 90 ft., gravel roof, and frame shed 75 x 25 ft. The lowest or any tender not necessarily accepted. Plans and specifications can be seen by applying to S. P. TESCHART, Architect, Formosa, or to J. H. BRICK, Proprietor, Tecumseh.

## TO BUILDERS

### County of York

Tenders will be received by the undersigned up to noon of JULY 14TH, 1897, for the building of an Infirmary for the Industrial Home at Newmarket. Plans and specifications can be seen and all necessary information obtained at the Home or at the office of the undersigned on and after Friday, July 2nd, 1897.

Trades may bid separately or for the whole work. The lowest or any tender will not necessarily be accepted.

By order,  
JAS. McDOUGALL,  
County Engineer.

Court House, Toronto, June 23rd, 1897.

# \$72,000.00

OF THE

TOWN OF RENFREW Waterworks and Sewerage Debentures—  
\$53,000 Waterworks and  
\$19,000 Sewerage.

Sealed tenders will be received by the undersigned up to twelve o'clock, noon, on TUESDAY, THE TWENTY-NINTH DAY OF JUNE, 1897, for the purchase of the whole or any of the above-mentioned debentures.

These debentures are issued on the instalment plan, extending for 30 years from the 1st day of July, 1897. Interest payable yearly at the rate of 4 1/2% per annum. For further particulars apply to

J. K. ROCHESTER,  
Municipal Clerk.

JAS. CLARK, Mayor.

## CONTRACTS OPEN.

PICTON, ONT. The Royal Blues will build an orphanage.

WEYMOUTH, N. S.—It is proposed to erect a new Baptist church.

CLAYTON, ONT.—A new Presbyterian church will be erected here.

LENNOXVILLE, QUE.—C. R. Clough & Co propose erecting a grist mill.

LISTOWEL, ONT.—Tenders for granolithic walks will be invited by the town.

AMELIASBURG CENTRE, ONT.—The Methodist church here will be enlarged.

LOWER COVERDALE, N. B.—The Baptists are preparing to erect a new church.

ARNPRIOR, ONT.—The corner stone of the new post-office was laid on Tuesday last.

BRAMPTON, ONT.—The Peel County Council are taking steps to erect a poor house.

KINGSTON, ONT.—The by-law to grant a bonus to the elevator company has been carried.

PARRY SOUND, ONT.—It is rumored that Mr H. H. Cook will build a pulp mill here.

NAPANEE MILLS, ONT.—C. W. Thompson will make improvements to the paper mills here.

MAGOG, QUE.—A by-law will be voted on shortly to provide funds for an electric light plant.

PERTH, ONT.—The town will construct 2,000 feet of granolithic pavement in front of the town hall.

LINDSAY, ONT.—The city council will ask the county council to take steps to erect a poor house.

CAPELTON, QUE.—Contracts will shortly be let for six large buildings to be erected here by a German syndicate.

WATFORD, ONT.—Tenders are asked for the erection of an agricultural hall. Address, H. P. Lawrence, secretary.

TILBURY, ONT.—Tenders for \$14,730.90

drainage debentures are asked until July 17th. Address, J. A. Tremblay, clerk.

RENFREW, ONT.—Mr. Willis Chipman, C.E., of Toronto, has been engaged to construct the proposed waterworks system.

BARRIE, ONT.—A committee will recommend to the County Council the erection of a House of Refuge, at a cost of \$20,000.

NELSON, B. C.—The Sayward Lumber Co. will erect a saw mill. Steps are to be taken by the town to extend the waterworks system.

BROCKVILLE, ONT.—The proposed jail and jailer's residence will cost about \$14,000. The plans have been prepared by G. A. Allan, architect.

SHERBROOKE, QUE.—The Sherbrooke Street Railway Co. have commenced work on their power house, and are making surveys for the road-bed.

CHATHAM, ONT.—The city council have resolved to invite new tenders for an electric light plant, to be based upon more detailed specifications.

MONCTON, N. B.—The town will either erect a central school building, at a cost of \$35,000, or an addition to the present structure, to cost \$7,000.

STRATFORD, ONT.—A company is being organized, with a capital of \$30,000, to acquire the business of John Hogarth. New buildings will be erected.

GOLDEN, B. C.—The additions to the hospital will include the extension of the general ward 60 x 30 feet, and the provision of a new operating room.

MELITA, MAN.—Tenders are asked by W. F. Thomas, secretary-treasurer, until the 30th inst., for the construction of a wooden truss bridge and three pile bridges.

INGERSOLL, ONT.—W. H. Sutherland will receive tenders until June 30th for improving and tiling of the Cody and Huggins drains, in the township of West Zorra.

OTTAWA EAST, ONT.—Mr. Perry, C.E., has submitted a scheme to the council for supplying Hintonburg, Ottawa East and Billings Bridge with water from the Ottawa river.

COLLINGWOOD, ONT.—Plans are being prepared for the new post-office, to be built of pressed brick, laid with black mortar, and trimmed with Dunroon freestone, 30 x 60 feet, 2 stories. Tenders asked early in July.

LEVIS, QUE.—At the last meeting of the town council, it was decided to call for tenders for the construction of a waterworks system, for the electric lighting of the town by arc and incandescent lamps, and for the construction of an elevator.

WINNIPEG, MAN.—The Winnipeg Athletic Association have had plans prepared for a club building, 80 x 30 ft., with baths, hockey rooms, bowling alley, ladies' and gentlemen's dressing rooms, billiard rooms, entrance hall on ground floor, small gymnasium, reading and committee rooms.

A rink will be built in the rear, 80 x 180 ft. Estimated cost, \$25,000.—City Engineer Ruttan is preparing plans for the alterations necessary to place a large clock in the tower of the city hall.

**HAMILTON, ONT.**—Building permits have been granted as follows: J. A. Aimes, brick warehouse at 8 East avenue north, cost \$300; Thomas Curtiss, two-storey brick dwelling on West avenue south, cost \$1,000.—The city engineer will shortly prepare plans for the Ferguson ave. sewer.

**QUEBEC, QUE.**—The city will invite tenders for a retaining wall on Real street.—F. X. Berlinguet, architect, is preparing plans for the interior fittings of the Charlottetown cathedral, to be of Gothic style.—D. Ouellet, architect, is preparing plans for a presbytery to be erected for the new parish of Limoilou.

**LONDON, ONT.**—Improvements are being made to St. Peter's cathedral, at a cost of \$3,000.—Wm. C. Kipp is building a brick veneer cottage on the north side of Central avenue, near Maitland street, to cost \$1,000.—St. Andrew's church board are considering plans for enlarging the building, at a cost of \$25,000.

**GRAND FORKS, B. C.**—The city council is making arrangements to borrow \$20,000 for a waterworks system, electric light plant and fire system.—Arrangements are being made to put in a new waterworks system from some springs about half a mile west of the town. The city council is working on plans for sewerage and waterworks, and is also figuring on grading the streets.

**ROSSLAND, B. C.**—Mr. Long, city engineer, has completed plans for a sewerage system for this town. It is estimated that a main to the Columbia river will cost from \$40,000 to \$50,000, while only about \$30,000 is available for the work.—The city council have purchased a site for corporation buildings.—Tenders are asked until July 5th for the purchase of \$50,000 debentures. Address, W. McQueen, city clerk.

**St. JOHN, N. B.**—The provincial government have passed an order-in-council guaranteeing the bonds of the New Brunswick Cold Storage Co. A central storage house is to be built here, with branch houses at Fredericton, Sussex, Chatham and Moncton.—E. Manning, secretary Board of School Trustees, will receive offers until noon, July 15th, for \$25,000 of debentures.

**MONTREAL, QUE.**—The provincial government has the question of erecting a new morgue under consideration.—The City Council has concurred in the report of the Finance Committee to purchase a fire engine, at a cost of \$8,000.—L. O. David, city clerk, asks tenders until June 29th for the construction of stables for the scavenging department.—L. R. Montbriand, architect, is preparing plans for a cottage on Panet street for J. B. Racette, and tenders will be invited in a few days.

**OTTAWA, ONT.**—The plans for St. Luke's hospital are nearing completion, and tenders for construction will probably be invited this week. The building will be built on the corner of Ann and Elgin streets, will cost \$30,000, and will have elevators and other improvements.—The ratepayers will vote to-day on a by-law to bonus the Ottawa and New York railway to the extent of \$75,000. The road will extend from Ottawa to Cornwall, a distance of 52 miles, at which point a bridge will be built across the St. Lawrence river.—The city engineer has been instructed to obtain an estimate of the cost of a steam auxiliary plant at the waterworks plant.—Plans prepared by J. F. Alexander, architect, have been adopted by the Fire and Light Committee for two fire stations, to cost \$5,500 each, 30 by 66 ft., with octagonal hose tower 14 feet in height.—M.

C. Edey, architect, has prepared plans for a central fire station, 55 x 75 ft., with tower 120 ft. in height, solid brick, three stories. Tenders for the above work, also for improvements to No. 3 station and steam heating of No. 4 station, will shortly be asked.—The Dominion supplementary estimates have been presented, and include the following for Ontario: Kingston, drill hall, \$10,000. Ingersoll, public building, \$5,000. Port Colborne, public building, \$1,100. Woodstock, public buildings, \$5,000. Rat Portage, public buildings, \$5,000. Ottawa, grounds, new sidewalks and footways on Parliament square, \$15,000; public buildings, removal of old sheds in rear of Supreme Court building and erection of new greenhouse, \$5,000; Ottawa post-office, asphaltting esplanade in front of building, to complete, \$2,500. Kingston custom house, alteration of heating apparatus, \$1,200. Sarnia, public building, \$5,000. Alexandria reformatory, \$9,000. Manitoulin island, wharf, \$6,000. Bowmanville harbor, \$4,000. Port Stanley, assistance towards harbor improvements, \$10,000. North Bay, pile wharf, \$15,000. Fort Francis lock, towards construction, \$25,000. Bayfield harbor, closing gap in pilework and dredging, \$8,500. River Ottawa, improvement to steamboat channel above Pembroke, \$7,200. Port Elgin, extension of breakwater, \$5,000. The following grants are made for Quebec public buildings: Berthierville, \$5,000; military buildings, improvements, repairs, etc., at the Citadel, \$7,500; public buildings at Three Rivers, \$2,000; Montreal drill hall, new skylight and roof alterations, \$10,000; Montreal post-office, \$18,500; Montmagny post-office, \$7,500; Quebec drill hall, \$7,000; Richmond public buildings, \$5,000.

**TORONTO, ONT.**—Ald. Woods has given notice in Council that he will move to authorize the city engineer to prepare an estimate of the cost of an electric light plant to light all municipal buildings.—Wm. Harris has been granted exemption from taxation on the proposed abattoir.—The city engineer in his last report recommended the construction of the following pavements: Dufferin street, Peel avenue to Dundas, cost \$4,520. Gravel—Lisgar street, Aston avenue to Dundas, cost \$1,140; Fuller street, Queen to Pearson avenue, cost \$1,770; Peel avenue, Gladstone avenue to Dufferin street, cost \$560; Waterloo ave., Gladstone ave. to Dufferin street, cost \$555; Alma avenue, Gladstone avenue to Dufferin street, cost \$555; Pearson avenue, Sorauren to Roncesvalles avenue, cost \$2,020; Beaconsfield avenue, Aston avenue to Dundas street, cost \$1,540. Macadam—Richmond street, from Peter to York street, cost \$3,770; Front street, Jarvis to Parliament, cost \$3,650; Mutual street, Queen to Carlton, cost \$5,075; Sackville street, Eastern avenue to Gerrard street, \$5,400; Bathurst street, Niagara to Queen, cost \$3,000; Wellington place, from Spadina avenue to Portland street, cost \$1,960; Ontario street, Queen to Carlton, cost \$4,970; Shuter street, Yonge to Sherbourne, cost \$4,200; Portland street, Front to Queen, cost \$3,650; Elizabeth street, Queen to College, cost \$4,360. Brick sidewalks are recommended on the following streets: Lakeview avenue, College, Bond, Shuter, Gould, Palmerston avenue, Duncan, Dorset, Lippincott, Richmond, Duke, Princess, Frederick, Duchess, Maitland, Wood, Gloucester, Alexander, Isabella, Wellington, John, Queen, Drummond place, Bloor, Peter, Mercer, Portland, Clarence square, Winchester, Bell, Wellesley, Parliament. Building permits have been granted as follows: North American Life Company, Manning Arcade, alterations to bldg., 118 King st. west, cost \$15,000; H. L. Drayton, 2 storey and attic bk. dwelling, Elm ave., cost \$5,000; T. Rogers, Princess st., one storey bk. oil

warehouse and tank-room, cost \$5,000; Wm. Garside, 2 storey and attic bk. dwelling, Lowther avenue, cost \$4,000; W. A. Murray & Co., alterations to stores, King st. east, cost \$8,000; E. H. Gordon, 2 storey bk. dwelling, Rusholme road, w. Heppburn st., cost \$2,100; S. E. Wilson, one storey bk. addition, 60 Front st. west, cost \$4,000; Church of the Covenant, bk. school-house, n. e. cor. Avenue rd. and Roxborough ave., cost \$8,000; W. J. Selchfield, 2 storey bk. fronted residence, 94 De Grassi st., cost \$1,500; North Am. Life Ins. Co., pr. 2 storey bk. stables, cor. Russell and Spadina avenue, cost \$1,100; A. R. Murphy, att. 2 storey and mansard roof building, brick, 41 Collier st., cost \$1,600; J. N. Collins, 2 storey brick dwelling, 185 Brunswick ave., cost \$2,000.

#### FIRES.

The sheep and hog department of the Eastern Abattoir at Montreal has been burned, at a loss of \$30,000.—The Victoria Hotel, Quebec, was damaged by fire recently to the extent of \$1,200.—The residence of Frank Reilly at Petrolia, Ont., has been burned; insurance, \$1,000.—Buildings at Arnprior, Ont., owned by Robert Sullivan, were destroyed by fire last week.

#### CONTRACTS AWARDED.

**DANVILLE, QUE.**—The contract for the railway from Danville to Asbestos has been let to Mr. McCarthy, of Sherbrooke.

**RENFREW, ONT.**—The contract for the new ward school has been let to T. Burton, at \$1,950. There were 13 tenders. B. Dillon, architect.

**GUELPH, ONT.**—The corporation are putting down 100,000 sq. ft. of walks, for which the contract has been awarded to the Guelph Pavement Co.

**SARNIA, ONT.**—The architect for David Milne's house and the Episcopal church is Mr. H. G. Phillips, not Mr. Robson, as reported in last week's RECORD.

**OTTAWA, ONT.**—Debentures to the amount of \$300,000 have been sold to Aemilius Jarvis & Co., of Toronto.—The contract for the iron work of the Sun Life building has been awarded to Ernest Arnoldi.

**VANCOUVER, B. C.**—The contract for the first sixteen miles of the Slocan extension of the Columbia & Kootenay railway has been let to Poupore, McVeigh & Co., of Nelson. The extension will be thirty miles in length, and the balance of the contract will be let shortly.

**MOLESWORTH, ONT.**—W. E. Binning, architect, of Listowel, has let contracts as follows for a Presbyterian church: Carpentry, R. J. Wilson, of Brussels; stone work, Robert Blow, of Gorrie. The building will be red brick, 36 x 58 feet, stained glass windows, furnace, etc.; cost \$3,500.

**NEW WESTMINSTER, B. C.**—Eight tenders were received for the addition to the hospital for the insane. John Coughlan is the successful contractor; price \$19,500. W. R. Wilson, architect. The building will be 135 x 40 feet, with two wings, improved ventilation and plumbing, lavatories, etc.

**KINGSTON, ONT.**—Contracts have been let as follows for building a chapel for the House of Providence: Masonry, A. McCarty; carpentry, Hunter & Harold; plumbing and tinsmithing, Elliott Bros.; painting and glazing, T. Milo.—Elliott Bros. have received the contract for the plumbing and electric lighting of Dr. Bird's residence at Gananoque.

**LONDON, ONT.**—The tender of the Central Bridge & Engineering Company, of Peterboro, for a sixteen foot bridge at King street, has been accepted; price \$6,020.—The following tenders have been accepted for sidewalks: Silica Barytic

Company, artificial stone, 12½ cents per foot; P. L. Marden & Co., artificial stone, 17½ cents; Barber Asphalt Company, asphalt sidewalks, 14 cents.

**TORONTO, ONT.**—Mr. F. H. Herbert, architect, 9 Toronto st., has awarded contracts as follows for remodelling buildings on Jarvis st. for the Trust & Loan Company of Canada: Bricklaying, R. Chalkley; carpentry, Andrew Nelson; plastering, C. B. Simpson; painting, Faircloth & Co.; plumbing, Purdy, Mansell & Mashinter; galvanized iron, W. D. Hutson & Son; roofing, Geo. Duthie & Son. Same architect has also awarded contracts as follows for a new residence on Walmer road for John A. McKee: Bricklaying, Davidge & Lunn; carpentry, Geo. Rathbone, galvanized iron, A. B. Ormsby & Co.; roofers, R. Rennie & Son; plumbing and heating, Bennett & Wright; painting, H. W. Johnston; plastering, C. B. Simpson.

**QUEBEC, QUE.**—Building permits have been granted as follows. Restoration of building, corner Palace and Charlevoix streets, for B. Trudel, estimated cost \$5,000; reparation of a house on Ste. Marguerite street for Mde. Langtin—contractor, A. Laberge.—The contract for the steeple and alterations at Berthier church (Montmagny) has been awarded to Jos. Gosselin, contractor, of Levis. David Ouellet, architect.—Contracts have been awarded as follows for the restoration of St. Francois de Beauce convent: Carpentry, Jos. Gosselin, of Levis, masonry, Wm. Couture, Levis; plumbing, Charles Vezina, Quebec. Tanguay & Vallee, architects.

**ST. JOHN, N. B.**—The following tenders were received for the construction of the city engine house: Robert Maxwell and W. L. Prince, \$11,595; Geo. McArthur, \$11,200; B. Mooney & Sons, \$11,108; Jos. McArthur, \$11,256; John Flood, \$10,850; Isaiah W. Holder, \$12,000; Sproul & Corbett, \$10,675 (accepted); Chas. F. Tilley, \$11,200; John R. B. Wilson, \$10,000. For plumbing and heating apparatus the tenders were: J. H. Doady, \$1,650; F. E. McManus, \$1,850; Thos. Campbell, \$1,645 (accepted); G. & E. Blake, \$1,900; J. E. Fitzgerald, \$1,961; Doyle & Lambert (plumbing only), \$540.—The contract for C. T. Nevin's building has been let to John Duffy, at the price of \$4,500. H. H. Mott, architect.

**MONTREAL, QUE.**—The contract for the woodwork of the addition to the Longue Pointe asylum has been let to W. Baril, of this city.—Building permits have been granted as follows: Manufactory, lined in brick, for J. H. Larochelle; contractor, P. Plamondon. Reparations to a house on Ferland street for J. Dery; contractor, P. A. Lamonde.—Contracts have been awarded as follows: A. Prefontaine, architect, one building, two tenements, four stories, on Sherbrooke street, for Elzear Cote—roofing, plumbing and heating, Pelletier & Brosseau; plastering, Jeremie Lefebvre; painting and glazing, M. Lefebvre. One cottage at Pointe aux Trembles, for Andre Brisset—plumbing, Blouin, Desforges & Latourelle; masonry, carpentry and joiner's work, Beaudry & Bros.; plastering not let. L. R. Montbriand, architect, one house on St. Catherine street, three stories, including two tenements and two stores, for Lord & Bros.—roofing, Pelletier & Brosseau; plumbing, M. Thibault; plastering, T. Leclair.

#### BIDS.

**DARTMOUTH, N. S.**—Tenders for electric lighting the town are now under consideration.

**QUEBEC, QUE.**—A tender has been received from F. Parent for paving St. Louis street, at \$3.24 a square yard, or a total of \$19,469.

#### BUSINESS NOTES.

Brosseau & Bernard, builders, Montreal, have dissolved partnership.

J. Towle & Co., roofers, Montreal, have assigned to Lamarche & Benoit

C. Schack & Co., manufacturers of show cases, Toronto, have assigned.

David Wright, contractor, Emerson, Man., has retired from business.

Jos. Bourcier & Rosanna Bourcier, plumbers, Montreal, have formed a partnership.

The Compagnie Canadienne de Construction is being incorporated at Montreal. Capital stock, \$100,000.

Sanderson, Percy & Co., manufacturers and dealers in paints and window glass, Toronto, are in financial difficulties. An offer of 60 cents on the dollar has been made to their creditors.

#### STEPS.

"These," says Kidder in his Building Construction, "should always be built of some hard stone, preferably granite, and should have a solid bearing." Outside steps generally rest on a wall at each end, and if more than 6 feet long should have a support in the center. Each step should rest on the back of the one below at least 1½ inches. Steps to outside entrances should pitch outward about ¼ inch. Steps are much more comfortable when cut with a nosing, but owing to the increased expense this is only done in costly buildings. Stone stairs may be built with only one end supported. In European buildings, and many of our government buildings, the stairs are made to lap over each other with a sort of an angle joint, which throws the weight of the stairs mostly on the bottom step.

Railing to steps is generally of iron, drilled into the end of the steps and oftentimes leaded. Circular stairs built of stone demand a very considerable knowledge of geometry on the part of the builder, to insure good work and a graceful appearance.

#### IMITATION MARBLES.

Good Portland cement and colors that take on that material are mixed dry and made into a paste with the least quantity of water added. One paste has to be made for each color. The different pastes are placed on top of one another in layers of different thickness, the mass is pressed from all sides and beaten so that the colors of the different parts impress themselves on each other without uniformity. The result is that more or less deep veins penetrate the mass; this is then sawed into plates, which are pressed in a mould for 12 days, during which time it is necessary to keep them moist as long as they are not entirely hardened. The plates are polished in the same way as marble.

A small bar or rod of iron, flat at the end, if reddened in the fire and applied for two or three minutes to the head of a rusty screw, will, as soon as it heats the screw, render its withdrawal easy by the screw-driver.

Carpenters' apprentices should always remember that to drive a nail the entire length into hardwood is no easy task. If the point is dipped in lard, oil or tallow it can be done with a little care and a square blow of the hammer.

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**THE ROYAL VICTORIA COLLEGE**, Montreal.

**THE PROTESTANT INSANE ASYLUM**, Verdun, near Montreal.

**THE GRAND HOTEL**, St. Hyacinthe, Que.

**THE NEW CUSTOMS-APPRAISERS STORES, NEW YORK**, now building, which will consume 5,000 tons.

**THE PARLIAMENT BUILDINGS, OTTAWA**, portion of which was recently destroyed by fire and rebuilt.

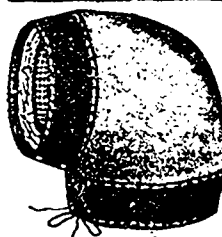
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**NEW FIREPROOF PAPER.**

A new and apparently fireproof paper is now made of ninety-five parts of asbestos fibr of the best quality, washed in a solution of permanganate of calcium, and then treated with sulphuric acid. After the fibre has been thus treated, five parts of ground wood pulp are added, and the entire mass is placed in an agitating box, with some lime water and borax. After a thorough mixing, the material flows out into an endless wire cloth, whence it enters the usual paper-making machinery. Paper produced in this way will, it is said, resist even the direct influence of a flame, and may be placed in a white heat with impunity. This invention is another small contribution to the diminution of fire risks.

**WEIGHT OF MORTAR.**

The average weight of one bushel of mortar is about 132 pounds, and of sand 120 pounds. The standard weight of one bushel of lime is 80 pounds. The standard weight of one bushel of hair is 80 pounds. When good mortar is dry it weighs 110 lbs. per cubic foot. A barrel of Rosendale cement weighs about 300 pounds, while a barrel of A No. 1 Portland cement never weighs less than 400 pounds. Mortar weighs 62½ pounds per cubic foot, and loose earth 95 pounds; and when pounded into place, 124 pounds per cubic foot; clay weighs about 135 pounds per cubic foot, and common brick average 125 pounds, while pressed brick may run up to 190 pounds.

**USEFUL HINTS.**

Experiments have proved that green oak posts will last longer in the ground than those from the same variety of seasoned timber.

Wash-basins in bed-rooms are dangerous, as sewer gas is subtle and will sometimes circumvent all plans and precautions against it. If they are very much desired there can be a small catch basin to receive their waste alone. They should not be connected with the main drain, sewer or cess-pool.

An imitation marble finish may be made

on plastering by streaking the fresh hard-finish coat with fine wavy lines of lamp-black with a paint-brush just before troweling. The troweling will blend the streaks of black, making them resemble the seams of marble. When well done the work has a fine appearance.

**TO PREVENT DRY ROT.**—To prevent dry rot in floors that are near to the ground it is a good idea to fill up the spaces between the joists to within three or four inches of the floor. This will prevent the cinders or the soil coming in contact with the floor. Floors laid in this way have stood the test of a dozen years. Upon examination they were in almost as good condition as when they were laid. If a circulation of air can be obtained it is well to do so. Floors are better with air than without it. However, if the floors

were laid directly in contact with the ashes it would not rot as readily as though the ashes were not present.

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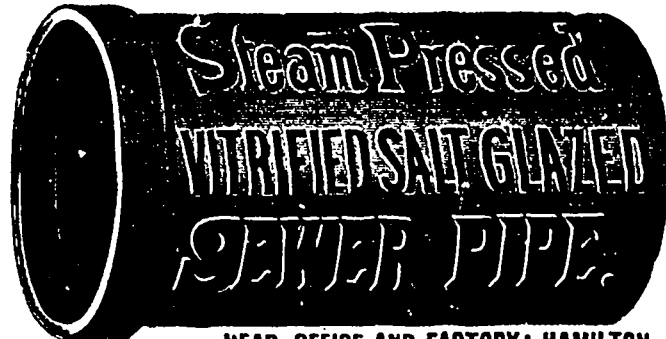
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### TO MUNICIPAL OFFICERS.

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### PORTLAND CEMENT CONCRETE CULVERTS FOR HIGHWAYS.

A suggestion that is worthy of more than a passing glance, says the Engineering Record, was made by Mr. George W. Bartholomew, jr., of Bellefontaine, O., in a paper read before the Ohio Society of Engineers last winter. This was in regard to the expense of maintaining the usual forms of small culverts along country roads, an item the steady and sturdy growth of which is well known to all who have had anything to do with road accounts. For about ten years Mr. Bartholomew has been driving almost daily over a country road on which there were about 30 culverts, nearly all of which had to be repaired during that time. Realizing the importance of these repairs in their effect on the annual road tax, Mr. Bartholomew made a study of the cost of these culverts for a long term as compared with Portland cement concrete culverts, a few of which had been tried with satisfactory results. A preliminary search showed that on 450 miles of pike there were about 2,700 culverts, an average of 6 to the mile. In addition to these there were about 600 miles of other roads having about the same number of culverts, but as data for these were lacking they were not considered. Examinations of the records and plans and specifications of these roads and inspection of these culverts showed that the 2,700 culverts were about equally divided among the four forms, wood, sewer pipe, stone-box and stone-arch. The stone was fairly good, having been taken from the bottom strata of the Coniferous or the top of the Heidelberg. The wooden box and sewer-pipe culverts were found to have an average life of about eight years, the stone-box about ten years, and the stone-arch about twenty years. Based on these figures, a table was made showing the cost of renewing these culverts for 100 years. Standard forms and sizes were used, but without wing walls, as the stone-box, wood and sewer-pipe culverts had no end walls and very few arch culverts had wing walls.

The average length of the culverts was 36 feet. The masonry, allowing an average haul for the stone of seven miles, cost about \$7 per perch. The oak lumber was estimated at \$20 per 1,000 and the sewer-pipe at about 75 per cent. off. To simplify matters repairs were not considered.

For the concrete culverts Mr. Bartholomew assumes a life of at least 100 years, basing his claim on the excellent condition at the present day of English structures, including the old Roman works, which have stood for 1,000 years. The cubical contents of the concrete masonry are estimated at about two-thirds of those of the stone, and the first cost at about three-fourths that of the limestone masonry. These figures make the cost of renewing the wood, pipe and stone culverts for 100 years about \$2,000,000 and the cost of the concrete culverts \$350,000. The omission of the cost of repairs and interest and the assumptions as to some of the other data make it necessary to consider the comparison only in the light of a suggestion, but one very pertinent to the well-known fact that small highway culverts are not given the care and good materials that are needed to make them durable. For instance, the short life of the pipe culverts as found by Mr. Bartholomew can only be assigned to inefficient workmanship in building the culverts or a false economy in making a proper foundation and suitable protection for the pipe at the ends of the culvert. If we remember rightly, the secret of success with small culverts is often summed up in the saying "The smaller the structure; the greater the care."

### EXCLUSIVE WATERWORKS FRANCHISES.

The possession of waterworks franchises by private parties probably has been the origin in one way or another of more business in court than any other one feature of municipal affairs. The whole difficulty lies in the fact that the intrinsic nature of the matter is such as to cause the interests of the owners of the franchise and of the public to be served to lie in different directions. The situation is quite unlike that of a well-founded private business designed to be permanently maintained in the face of actual or possible competition. Even in cases of patents it is frequently, if not usually, recognized that exclusive possession of the field is likely to be terminated in a

number of ways after a period rather short than long. Under such conditions it is obviously the part of the managers of a well-conducted business to maintain a high degree of excellence both in plant and product, so that the interests of the consumers are well conserved under policies dictated by selfish considerations regarding the conduct of the business. In the case of the private ownerships of waterworks the conditions are markedly different. Few, if any, waterworks companies can or do expect to maintain permanent ownership; indeed, it may be said to be usual practice where a franchise is obtained to stipulate for the possible purchase of the plant and franchise by the municipality. It is simply good business, under these conditions, to expend in construction and maintenance only such a minimum amount as will fairly well meet the expressed requirements. Now, if in addition to these features of the undertaking there be super-added doubts as to the exclusive character of the franchise, there will be created an admirable soil for an abundant crop of law-suits that can ordinarily be settled only by terms of purchase by the municipality, seldom reasonably satisfactory to both parties.

It is not to be supposed that the burden of the difficulties should be placed on the private owners of the franchise. The latter is generally secured in a proper manner and the requisite capital is invested in good faith. The municipal body or its authorized officials are hedged about by legal limitations not always recognized by those who acquire the franchise, and as the former always represent "the people," any doubts as to grants will almost inevitably be interpreted in their favor. Frequently private owners who have acted in the best of good faith will thus find themselves brought face to face with conditions radically different from those they originally contemplated—Engineering Record.

### TO PREVENT NOISE OF BRICK PAVEMENT.

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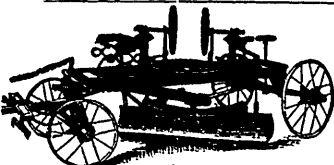
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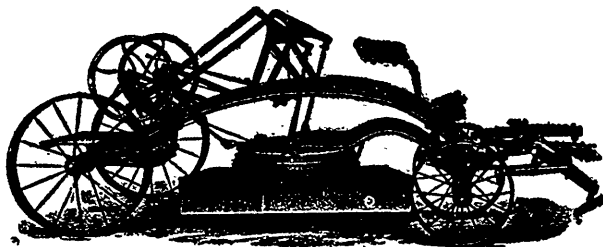
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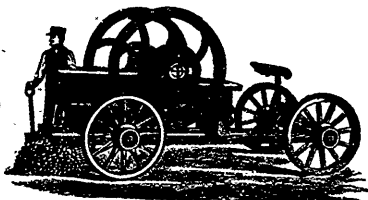
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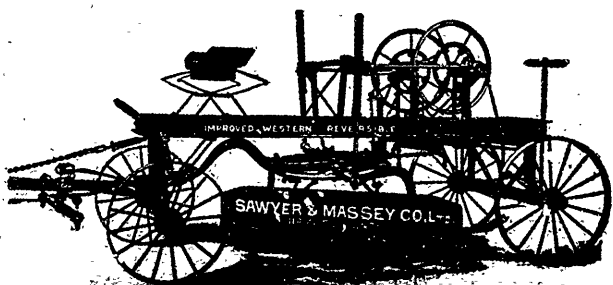
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