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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.

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BUSINESS NOTES.

Edward Morgan, plumber, Ottawa, has assigned.

Kerr & Legaré, painters, Quebec, have dissolved, D. Kerr continuing.

Labelle & Doyle, contractors, have started at St. Francois de Salles.

Tidman, McKimmie & Hadfield, contractors, Montreal, have dissolved partnership.

Shopland & Howard, builders, London, Ont., have dissolved partnership, John Shopland continuing.

E. de Longchamps, contractor, Shaw street, Montreal, has assigned on demand of John Towle. The liabilities are placed at $11,000.

CONTRACTS OPEN.

GALT, ONT.—The new Y. M. C. A. building will cost $40,000.

PRESCOTT, ONT.—The Electric Light Co. contemplate adding to their plant.

MIDLAND, ONT.—The Manitou Wood and Pulp Co. will erect a pulp mill here.

OSHAWA, ONT.—The McLaughlin Carriage Co. will add a wing to their factory

RENFREW, ONT.—The question of establishing a hospital has again been revived.

HILLSDALE, ONT.—The corner stone of the new Presbyterian church here was laid last week.

WINCHESTER, ONT.—It is probable that local parties will install an electric light plant here.

GUELPH, ONT.—The construction of Gow's bridge will probably be undertaken at an early date.

HINTONBURG, ONT.—The George Matthews Co. intend erecting a row of stores on their property.

PRINCE ALBERT, N. W. T.—The Imperial bank contemplate erecting a bank building here, to cost $10,000.

SUDBURY, ONT.—A new hospital will be constructed here, to be under the supervision of the Grey Nuns.

MONCTON, N. B.—The Intercolonial Railway Co. propose erecting a stone and brick station here, to cost $40,000.

BARRIE, ONT.—A severe storm has caused damage to property in the vicinity of this town to the extent of $50,000.

SHUBENACADIE, N. S.—A gentleman from Halifax is considering the question of installing an electric light plant here.

REVELSTOKE, B. C.—Tenders are being asked for the erection of a large hotel near the railway station, to cost $10,000.

EGANVILLE, ONT.—B. Dillon, architect, of Renfrew, is preparing plans for a new building to be erected by Dr. Chananhouse.

LANCASTER, ONT.—A. McArthur has purchased the site of the Fraser block on Main street and purposes erecting thereon a brick structure.

BROCKVILLE, ONT.—An electric light plant for the asylum will probably be installed.—Comstock's yacht will be fitted with an electric light plant.

PORT HOPE, ONT.—The street and bridge committee have recommended to the council that the electric light bridge be replaced by a new structure.

NEW WESTMINSTER, B. C.—The citizens will memorialize the Dominion government to grant financial assistance towards a scheme of reclamation works.

WOODSTOCK, N. B.—The town council have under consideration the application of the New Brunswick Cold Storage Co. for a site and exemption from taxation.

PARRSBORO, N. S.—Tenders are invited for the erection of a rink for the Parrsboro Amateur Atheletic Association. The building will be 160×60 ft., with a gymnasium 109 feet long.

SHERBROOKE, QUE.—M. Verrette is preparing plans for the restauration of the interior and exterior of the St. Lucie d'Israile church. Tenders will be invited next week.

SPRINGHILL, N. S.—The question of constructing waterworks is again receiving consideration. The town council has appointed an engineer to report upon the various schemes suggested.

PORTAGE LA PRAIRIE, MAN.—The improvements to Mr. Lauren's block will be carried out this fall, at an expenditure of $4,000.—John Costigan proposes making improvements to his building.

EMERSON, MAN.—John Mallor, C. E., has completed the preliminary survey and reports on the drainage on the municipality of Franklein. It is proposed to do the work under the Drainage Act of 1893.

NANIWAKI, QUE.—Father Laporte had an interview with the Minister of Public Works last week with the object of securing assistance towards building a bridge across the Gatineau river near this place.

DUNDAS, ONT.—A special meeting of the town council was held last week to consider repairs to the various bridges. J. F. Armour, C. E., submitted plans, and it was decided to call a special meeting at an early date to again consider the matter.

NORTH SYDNEY, N. S.—J. N. Armstrong, town clerk, will receive tenders until the 1st of September for the construction of intake, pumping station and connections for the waterworks system. Plans may be seen at the town clerk's office.

HUNTSVILLE, ONT.—The by-law to raise $25,000 for the construction of a system of waterworks and an electric light plant was carried by a large majority on the 17th inst. Vaughan M. Roberts, C. E., St. Catharines, has prepared plans and specifications, and the work will shortly be advertised.

LONDON, ONT.—The work of clearing the grounds for the rebuilding of the G. T. R. car shops will be completed in a few days. It is understood the new structures will be much more extensive than those destroyed by fire.—The time for receiving tenders for the London and Port Stanley Railway freight shed, round house, etc., is extended until the 22nd inst. A. O. Graydon, chief engineer.

OTTAWA, ONT.—G. M. Bayley, architect, is preparing plans for a solid brick residence on Frank st., for Frank Nelson, to cost $7,000.—The Dominion estimates will be presented to parliament at an early date.—As no tenders have yet been received for the Balsam Lake division of the Trent Valley canal, the Department of Railways and Canals have decided to extend the time. The postponement is not understood to mean the

abandonment of the work, which will likely be proceeded with when the scheme is more thoroughly understood by the present administration.

QUEBEC, QUE.—Building permits have been granted as follows: One house on Commissioners street for Jos. Ferland; contractor, F. Beaulieu. One house on Arago street for Ed. Devarenne.

ST. JOHN, N. B.—Application has been made for the incorporation of the New Brunswick Cold Storage Co., Ltd., with head offices in this city. The promoters are William Johnson, Montreal; George McVittie, St. John; J. D. Chipman, St Stephen, and others.—G. E. Fairweather, architect, will receive tenders until the 22nd inst. for the erection of a brick warehouse on Nelson street for W. H Thorne.

CHATHAM, ONT.—Archibald Lamont proposes to erect in this city a cold storage warehouse, plans for which have already been prepared. The main building will be 97 by 49 ft., three storeys high, with a wing 80 by 32 ft., of the same height. A site has not yet been selected. —King street property owners between Second and Fourth streets have petitioned for a permanent pavement. It is probable that vitrified brick will be used.

WOODSTOCK, ONT.—The New Barnes Cycle Co. contemplate the erection of a three storey brick factory, 180 by 80 ft., to cost between $5,000 and $6,000. Plans have already been prepared.—The town council has passed a by-law granting exemption from taxation to the Dominion Cold Storage Co., which purposes erecting a warehouse here.—It is said that the C. P. R. will shortly commence the construction of the proposed line from Brantford to this city.

WINNIPEG, MAN.—It is said that the Keewatin Milling Co. will erect an elevator near the C. P. R. track, between King and Princess streets.—C. H. Wheeler, architect, is preparing plans for converting A. W. Ross' house in Fort Rouge into a Keeley Institute. Same architect is receiving tenders for the erection of a solid brick and stone residence on Vaughan street.—The city council has abandoned its intention to construct asphalt pavements on certain streets, after receiving tenders for the work.

LISTOWEL, ONT.—On Friday next the ratepayers will vote on a by-law to raise the sum of $15,000 for extending the waterworks system and establishing an electric light plant.—W. E. Binning, architect, has prepared plans for additions and improvements to Mr. Carson's residence, including a new wing 24½ x 28 ft., plate and art glass windows, mantels, plumbing, etc. A combination hot water system of heating will probably be put in also. Same architect is receiving tenders for a two-storey brick addition to a house on Bay street for J. W. Scott, including hot and cold water fittings, bath, etc.

MONTREAL, QUE.—The Montreal Park & Island Railway Co. purpose erecting two new power houses, one at Lachine and the other at St. Laurent. The plans are now in course of preparation.—The Dominion Oil & Supply Co. is seeking incorporation, to manufacture oil, engine and boiler supplies, hardware, etc. Among the applicants are Tancrede Huot and Lewis H. Senecal.—Roy & Gauthier, architects, are preparing plans and specifications for a church and a sacristy to be erected at Stanford, Wis.—Gamelin & Huot, architects, are preparing plans for two residences to be erected on Drummond street for H. A. Weir.

WINDSOR, ONT.—Mr. S. H. Blake, Q. C., has offered to contribute $100 if the directors of the Y. M. C. A. will raise the additional $1,400 required to commence the construction of the proposed new building.—The project of the Michigan Central railway for building a bridge across the Detroit river has been favorably reported upon by the United States Senate. The structure will be 160 feet high with two piers 1100 feet apart.—James G. McLean, architect, is preparing plans for a two-storey brick double store for J. Askew, to cost $2,500, and for enlarging and remodelling a two-storey frame residence for J. Atkinson.—J. Edward O'Connor will receive tenders until Wednesday, the 26th inst., for building a brick boiler house and furnishing two boilers and smoke stack and all necessary steam and water pipes, radiators, heaters, pipe coverings, etc., for heating the Crawford house in this town. Plans may be seen at the office of Mr. O'Connor, and at the office of W. Allan Pendry, C. E., Chamber of Commerce, Detroit, Mich.

HAMILTON, ONT.—It is said that the proposed sewage disposal works will be located at the foot of Victoria avenue, as recommended by Mr. Kuichling in his report.—William & Walter Stewart, architects, have been granted a permit for alterations to 35 King street west, for the Nicholson estate, to cost $1,250.—Mr. John Patterson, who has the Cataract Power Co.'s plans in hand, states that the power house will be located at DeCew Mills.—An American capitalist named Bollinger, from Williamsport, N. Y., had a conference with the Mayor recently regarding the establishment of a factory in this city for the manufacture of boots and shoes.—Mr. F. G. Beckett, the promoter of the Hamilton, Chedoke & Ancaster Electric Railway, is said to have secured the necessary right of way, and steps will be taken at once to complete the organization of the company.—Negotiations are still pending for the conversion of the Hamilton & Dundas railway into an electric road.—A building permit has been granted to E. B. Patterson for two stores and alterations to dwelling, corner York and Hess streets, for C. S. Cochrane, cost $2,000, also for a two-storey dwelling on East avenue for George McGregor, cost $2,400.

TORONTO, ONT.—Mr. Gordon, of Cincinnati, has been in the city recently looking for a factory site. He will ask the usual exemption from taxation.—The County Council of York will probably rebuild the tollgate on Yonge street, destroyed by fire on Saturday last, with corrugated iron.—A petition has been received by the city clerk for a brick pavement on Spencer avenue, from King to Huxley streets.—Owners of property on Carleton street, from Ontario street east, have petitioned for a Trinidad asphalt pavement.—The City Engineer has recommended the construction of the following pavements: Cedar block, Wellesley street, Parliament to Sackville; Prospect street, Rose avenue to Parliament; Afton avenue, Northcote to Lisgar; Lisgar street, Queen to Dundas. Brick, Beaconsfield avenue, Queen to Afton; Dovercourt road, Queen to College; Howard street, Sherbourne to Parliament; Winchester street, Ontario to Parliament; Gerrard street, Parliament to River. Asphalt, Parliament street, Queen to Gerrard; Front street, Yonge to Church street, York street, Front to Queen; King street, Simcoe to Strachan; Queen street, Yonge to Bathurst; King street, Sherbourne to River. Macadam, Gerrard street, Yonge to Jarvis; Victoria street, Queen to Gerrard. Brick pavements on sufficiently signed petitions are also recommended on Lowther avenue, from Avenue road to 630 feet west; Huron street, from College street to Bloor, and Grand Opera House lane, off Adelaide street.—At a meeting of the Provincial Board of Health held in this city on Tuesday last, the Board considered the proposed system for the disposal of sewage in the city of London, approved the plans for furnishing the town of Deseronto with water, and reported favorably on the suggested extension of the Cobourg sewage system.—The North Toronto Council have resolved to invite tenders for the enlargement and lowering of the pumps at the waterworks.

FIRES.

At Hawkesbury, Ont., on the 15th inst., the Hawkesbury Milling Co.'s oatmeal mill and kiln were destroyed by fire. The loss is partially covered by insurance. —A brick block on Metcalfe street, Ottawa, owned by Senator Clemow, was damaged by fire on Saturday last to the extent of $3,000.—Fire at Deschenes Mills, Que., last week destroyed thirteen dwellings. Several were owned by Conroy Bros., lumbermen. Fords' tannery at Kingston, Ont., was destroyed by fire on the 14th inst. Loss $10,000, insurance $5,000.—The Apohaqui Machine & Knife Works at Moncton, N. B., had been burned. Loss $8,000, insurance $2,500. J. Walshaw's woolen mill, dry house and saw mill at Bolton, Ont., were consumed by fire on the 12th inst. Loss about $25,000, partially covered by insurance.—The Georgian Bay Lumber Co.'s mill, store and storehouse at Port Severn, Ont., was completely destroyed by fire on the 17th inst. The loss is placed at $50,000, partially covered by insurance.—A brick house at Burlington, Ont., owned by Mrs. McKay, has been burned. Loss, $1,000. —H. Cawthorp & Co.'s large roller mills at Ridgetown, Ont., were totally destroyed by fire on Tuesday last. The loss is $18,000 on machinery and building, and $4,000 on stock.—Herbert Matthews' brick residence at Simcoe, Ont., has been burned. Small insurance.

CONTRACTS AWARDED.

CHATHAM, ONT.—The tenders have been awarded for the new Central school. The work will cost about $30,000.

MONCTON, N. B.—$12,000 of Albert county 4 per cent. bonds have been purchased by the Bank of Montreal.

TILBURY, ONT.—Harry Lewis and Charles Janes, local contractors, have secured the contract for erecting the Wilson block on Queen street.

HALIFAX, N. S.—S. M. Brookfield has received the contract for putting a pressed brick front in the main building of the Convent of the Sacred Heart.

WINGHAM, ONT.—The tender of A. Graham, of London, Ont., has been accepted for the construction of about 10,000 sq. ft. of concrete sidewalk in this town.

SUNDRIDGE, ONT.—The debentures which were issued as a bonus to the woollen mill, amounting to $5,100, have been sold to G. A. Stimson & Co., of Toronto.

COMBER, ONT.—The township of Tilbury West have accepted the offer of G. A. Stimson & Co., Toronto, for the government drain debentures, amounting to $9,046.46.

WALKERTON, ONT.—Hunter Bros., of Kincardine, have been awarded the contract for the erection of a steel bridge over the Yokasippi river at Cargill, for the sum of $1,775.00.

DESERONTO, ONT.—The tender of John Hartnett, of Toronto, for the excavation, pipe laying, setting of hydrants, etc., in connection with the water work system, has been accepted.

GALT, ONT.—The water committee have let the contract to the Goldie & McCulloch Co. for a compound steam pump, capable of pumping 1,000,000 gallons per 24 hours.

LONDON, ONT.—A new steel bridge is being built at Paton's Siding, on the G. T. R. William Gibson, M. P, of Lin-

coln, has the contract for supplying the stone for the abutments.

BROCKVILLE, ONT.—J. H. Loftus has the contract for applying his patent fire and water-proof cement roofing to the roofs of the Malleable Iron Works, Smith's Falls, and the Asylum, Toronto.

PETROLEA, ONT.—The second lot of tenders for pumps and machinery for the water works system were opened on Monday last. The tender of Messrs. Hughes, at $14,289, was accepted, including $500 for a special condenser.

HAMILTON, ONT.—Carpenter & Ramsay have been given the contract for supplying the steel rails, bolts, spikes, and fish plates for the H. G. & B. extension from Grimsby to Beamsville. The amount of the tender is about $30,000.

QUEBEC, QUE.—The contracts for the Quebec, Montmorency and Charlevoix depot have been awarded as follows: Masonry and brickwork, F. Fackney; painting, J. M. Tardivel; heating, plumbing and roofing, P. P. Giguire. S. Peters is general contractor.

LISTOWEL, ONT.—W. E. Binning, architect, has awarded contracts as follows for a residence for William Forest: masonry, brick and plastering, Hay & Purcell: plumbing, heating, glass, etc., Mr. Rogers, of Atwood, slating, Mr. Boxall, of Stratford, painting, Mr Marshall, of Atwood. The building will be encased with Milton pressed brick, with terra cotta panels, stone sills, circular tower and verandah, tile gables, slate roof, and plate and leaded glass windows. Improved plumbing and heating appliances will also be used. Cost $4,000.

TORONTO, ONT.—Worthington, Garrett & Armstrong have been awarded the contract for heating, plumbing and gas fitting of the John Eaton Co.'s store on Yonge street.—Alternate tenders for a swing bridge with steel or wooden superstructure across the Don at Cherry street were opened on Friday last. The lowest for steel was $6,055, and for wood $5,134. A. G. Boon gets the contract at $6,055 for a steel bridge.—The sub-committee of the Public School Property Committee have accepted tenders as follows for the erection of the Givens street school caretaker's cottage: Carpentry, A. Grant, $433; masonry, Wickett Bros., $143; plastering, E. Warren, $78; plumbing, Joseph Sherlock, $75; painting, George Peacock, $38; tinsmithing, G. Ringham, $13. Total $780.—The Gutta Percha and Rubber Manufacturing Company will supply 1,200 feet 2½ inch "Maltese Cross" fire hose, without couplings, at $1; 1000 feet 2½ inch "Eureka" at $1; 500 feet 3 inch "Eureka" at $1.30, and 1,150 feet 2½ inch "Paragon" at 85c. The Canadian Rubber Company will supply 500 feet 2½ inch "Maple Leaf" at 75c.—The Board of Works last week awarded contracts for pavements as follows: Brunswick avenue, north side, asphalt, David Chalmers, $9,250; Wellesley place, vitrified brick, D. L. Van Vlack, $2,038; Queen's Park crescent, west side, concrete walk, A. W. Godson, 91c. per lineal foot.—Ormsby & Co. have been awarded the contract for metal ceilings in the T. Eaton Co.'s new store addition.

MONTREAL, QUE.—Brown, MacVicar & Heriot, architects, Canada Life Building, have awarded contracts as follows for a Protestant Diss. school, St. Louis de Mile End: Masonry, J. B. St. Louis; brickwork, Tidman, McKinnie & Hadfield; carpentry, Thos. Forde; painting, Castle & Son; roofing, Montreal Roofing Co.; plastering, Thos. Wand: plumbing and heating, Garth & Co.; electric wiring, Montreal Electric Co. For a residence for R. J. Inglis, Westmount: Masonry and cut stone work, Heggie & Stewart; brickwork, Thos. Wand; carpentry, L. Paton & Son; other trades not let yet. For alterations to warehouse for Jas. Johnson & Co., Notre Dame street: Brickwork, plastering, ironwork and carpentry, L. Paton & Son; painting, Alex. Craig; roofing and floors, Geo. W. Reed; plumbing and heating, Gordon & Egan; electric elevator, Miller Bros. For fitting up barber shop at Windsor hotel: Carpentry, Simpson & Peel; painting, Castle & Son; plumbing, Mount & Co., marble work, R. Forsyth & Co. For new stone steps and general repairs to Presbyterian College building: Masonry, Heggie & Stewart; ironwork, Chanteloup Mfg. Co.; carpentry, Thos Forde; roofing, Geo. W. Reed. Plastering of house for S. C. Oxton, to Knott & Gardiner. Plastering of house for S. C. Davidson, to Knott & Gardiner.—J. H. McDuff, architect, has awarded contracts as follows for one house, stone and brick, on Silky street, Westmount, for P. Lalonde: Masonry, Gagnon & Charette; carpenter and joiner's work, P. Lalonde; brickwork, J. Deslauriers; plastering, S. Gosslin; painting, F. Brisebois; plumbing, not let; roofing, Bernier Bros.—W. McLea Walbank, architect, has awarded the following contracts for additions to the engine house of the Citizens Light & Power Co.: Masonry, M. Lynch; brickwork, carpenter and joiner's work, roofing and painting, Boucher & Jacob. For alterations and repairs to a house on Sherbrooke street, for E. K. Green: Masonry, carpenter and joiner's work, R. Neville; painting and glazing, L. Z. Mathieu; plumbing, T. O'Connell; roofing, G. Powell; plastering, Knott & Gardiner.—Chs. Lafond & Bros., architects, have awarded the following contracts for two cottages at West mount for Antoine Belanger: Masonry, Adolphe Huot; iron work, Dominion Bridge Co. For two houses on Berri street for Mde. L. X. Carriere: Masonry, Latreille & Bros.; carpenter and joiner's work, E. Robert.—A. C. Hutchison, architect, 181 St. James street, has let the contracts for doors and windows for the Montreal exhibition building to Jas Shearer. Other trades to be done by day work.—W. E. Doran, architect, has let the contract for two houses on St. Chs Borromee street for John Clifford, all trades to Bulmer & Kelly.

BIDS.

TORONTO, ONT.—Tenders for the widening of Queen street subway were made in two forms, one for widening the whole subway and the other leaving out the southwest corner. The bids were as follows:

	Whole work.	Exclusive of s. w. corner.
Tender No. 1.....	$63,300 and	$60,560
Tender No. 2.....	63,997 and	61,344
Tender No. 3.....	63,375 and	59,335
Tender No. 4.....	80,900 and	76,130
Tender No. 5.....	66,600 and	62,074
Tender No. 6.....	79,579 and	79,000
Tender No. 7.....	71,719 and	68,500
Tender No. 8.....	65,600 and	62,000

The Board of Control has deferred the awarding of the contract until the City Engineer reports on the cost of the railway superstructure.

STAINS AND STAINING.

Finishing wood by staining requires to be finely done, otherwise it were better not to attempt the work at all. This fact should cause the novice to hesitate before gaily waltzing into a field which only the artist is qualified to occupy. To do fine staining the workman should be intimately aquainted with the different woods, their fibres, natural charactistics, etc.

All first class authorities assert that woods have a peculiar quality, termed reflection. A piece of hard wood—oak or ash, for instance—will reflect a different appearance from different positions. The skilled wood stainer seeks to retain this quality in the wood after the stain is applied. He doesn't always accomplish his purpose; but the fact that he not infrequently meets with success is of itself gratifying.

Staining should not be attempted upon wood streaked with soft, sappy places, or flecked with knots. Sandpapering a surface that is to be stained ought to be strictly prohibited. The necessary surfacing must necessarily be done with the plane in order to insure the reflective, satiny finish sought for.

Coarse-grained surfaces really ought not to be stained at all; but if they are so treated, a coat of paste-filler should first be applied. This fills up the grain of the wood and prevents the stain from penetrating so deeply as to darken the wood more than it ought.

There is a limit to the woods which can be successfully imitated by staining. This limit includes rosewood, mahogany, walnut, and cherry; but it is exceeding doubtful whether cherry should be included. Certain it is that cherry is a very difficult wood to imitate. Men capable and experienced in the art of staining exclude oak entirely.

In the art of staining a great deal depends upon the quality of the ingredients used in making the stain. Use only the best. Then if the work is not a success, it is easy to find wherein failure is encountered. The office of a stain is to colour the wood without marring the neutral transparent richness of the grain.

BENDING TIMBER.

All bearing timber or timbers to be subjected to strains should before being used or placed in position, be felled at least two years, and be at least six months out of the water. Builders and lumbermen too often use timber soaked with water or inherent with fresh sap, and the result is great shrinkage or splitting under strain.

When framing timbers in large bearing constructions, such as trusses, bridges, and so forth, the timbers should be carefully examined so as to obtain the best permanent results, and have the timber placed in its most natural position. For example, if a stick be bent or curved and the upper part or side be under the strain of compression (as it will be, if placed cambered side up) the shrunken fibres on the round side will also very properly be in compression and the hollow side or compressed fibres in tension.

When the height of a post does not exceed seven or eight times its diameter or thickness, it crushes without bending; therefore, to obtain the utmost strength with the greatest stiffness a post or wooden column should not be higher than ten times the diameter (if round) or thickness (if square.)

Above ten times the diameter the strength decreases in the following proportions:—

For a post	12ft.	high	the decrease is	5/6
" "	24ft.	"	"	½
" "	36ft.	"	"	⅓
" "	48ft.	"	"	⅙
" "	60ft.	"	"	1/24
" "	72ft.	"	"	1/24

From the above table will be seen the necessity of strengthening posts or bearing uprights by braces or cross timbers, thus guarding against buckling or springing sideways, the strength of timbers braced being three times as great as that unbraced.

Regarding the bending of large timbers for structural framing or bridges, the writer would state that steaming being too long a process for rapidity or economy, its use has become obsolete and the simpler method of building up a curved beam by bending a series of thicknesses round a mould or form is now mostly employed. The author has seen curved beams or trusses built up by this laminated system, even to an elliptic shape, the thicknesses being ½ in. or ⅜ in. of yellow pine, and breaking joint, the full constructed thickness of the beam being 8 in. and its depth 14 in. The ends were kept in position by a tie rod of wrought iron 2 in. in diameter, screwed to a tension with a turn-buckle.

Wood is elastic, and when not too well seasoned, will readily bend without breaking, and as it becomes seasoned when bent, it retains its curvature without going back to its natural shape. This fact is much appreciated and employed by ship and boat builders in bending knee ribs or other curved structural parts for the frames of hulls, and might be followed with success in much of the circular outside finish in our modern frame cottages. In this connection I might state that there are really only two successful methods of bending for outside finish, and these are either cut the stuff out of the solid wood or build it up and bend in thicknesses.—Owen B. Maginnis, in Carpenter and Builder.

RELATIVE STRENGTH OF METAL AND TIMBER.

In a comparison made by Prof. R. H. Thurston of the relative strength of metal and timber, cast iron, he states, which weighs 444 pounds to the cubic foot, will sustain in a one-inch square bar a weight of 16,500 pounds; bronze, weight 525 pounds, tenacity, 36,000; wrought iron, weight 450, tenacity 50,000; hard "struck" steel, weight 490 tenacity 78,000; aluminium, weight 168, tenacity 26,000 In comparing equal weights of wood and metal the latter does not always prove the stouter, the instance being cited of a bar of pine just as heavy as a bar of steel an inch square and holding up 125,000 pounds, the best ash 175,000, and some hemlock 200,000 pounds. The best steel castings made for the United States navy are rated at a tenacity of 65,000 to 75,000 pounds to the square inch. By solidifying such castings under a great pressure, Whitworth got a tensile strength of 80,000 to 150,000 pounds. Fine steel wires and ribbons from ingots give a tenacity of 300,000 pounds to the square inch of cross section. Ordinary aluminium is only one-third as heavy as steel; a bar of it, with a square section of three inches, will hold up 78,000 pounds.

MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

LAYING BRICKS IN WINTER.

According to the Clay Worker, Indianapolis, the official experiments made by the German government in regard to laying bricks in winter show that, even without extraordinary precautions, good brick work can be readily put up in the coldest of weather, the principal thing governing the matter being to keep the brick dry and to see that the mortar does not freeze before the bricks are placed on top of it. Various devices are in use for keeping the mortar in proper condition on the mortar boards, such as the employment of sheet iron boards with lamps under them, and some other similarly contrived arrangements. A method which will secure an abundant supply of hot water to be conveniently thrown upon the mortar in very cold weather is found effective, though this kind of practice is resorted to only under the most adverse conditions, when the weather is exceedingly cold; in fact, in extreme temperatures only are such artificial or extra means brought into requisition.

MUNICIPAL DEPARTMENT

THE SANITARY WORKS OF BUENOS AYRES.*

The City of Beunos Ayres, situated on the western shore of the Rio de la Plata, where it was thirty miles in width, was described as being built upon a bank rising abruptly to a height of 60 feet above the river. Above and below the city were extensive marshes, the soil of which was composed of running silt, whilst the bank upon which the city was constructed was of hard clay. The annual rainfall averaged 33½in., but the district was subjected to violent storms during which 4 inches of rain frequently fell in one hour, the wind attaining a velocity of 100 miles. The water supply for the city, amounting to 20,000,000 gallons per day, and drawn from the river 3½ miles above the city, although very turbid, was found, when filtered, to be in every way suited for domestic purposes For the intake in the river a shaft was sunk, about 1,000 yards from the shore, communicating with a tunnel 3½ miles in length, of which the first mile was under the river bed and which terminated at a point on the outskirts of the city, where the water was pumped into settling ponds. These ponds, each intended for the treatment of 4,000,000 gallons per day, consisted of continuous channels, 3,100 ft. in length, through which the water flowed slowly, depositing during its transit a considerable quantity of the suspended alluvial matter. It then flowed on to sand filters, 2 feet in thickness, and passed downwards into covered storage reservoirs constructed beneath them. Subsequently the filtered water was pumped to a height of 162 ft. into a large service reservoir in a central position in the city. This reservoir consisted of a series of wrought iron tanks, supported on cast iron columns above the surface of the ground, the whole being enclosed in a building of elaborate architectural design, faced entirely with terra cotta manufactured in England. The tanks were arranged in three tiers, each tier supplying the corresponding zone of the city, according to their respective levels. The capacity of the entire reservoir was 15,888,000 gallons. In addition to the pressure resulting from the levels of these various tanks, arrangements were made by which the water could be pumped at a higher pressure direct into the mains whenever desirable. The water was distributed through the city by means of five main pipes, varying between 36 in. and 24 in. in diameter, from which branch pipes passed to each separate block of houses. A uniform arrangement of piping was repeated throughout the city, and a definite position assigned to each valve and hydrant. The internal services of both water supply and drainage were carried out in such a manner as to fulfil modern sanitary requirements. The sewering of the town was on the combined principle, the collecting sewers being capable of discharging a rainfall of 1½ in. per hour, which had been found amply sufficient to carry away the rain which fell during the heaviest storms. The sewers were ventilated by a pipe carried up the front of each house to a height of 6 ft. above the roof. This pipe was connected with the branch sewer immediately outside the syphon trap which cut off the sewer gas from the house. Air was admitted into the sewers by the gratings of the street manholes. The area of the city was divided into separate drainage districts, in each of which the collecting sewers formed an independent system converging to the lowest point and there connecting with the intercepting sewers. The capacity of these latter was sufficient to carry off a rainfall of ¼ in. in 24 hours, the difference between this quantity and that conveyed by the collecting sewers during storms being removed by large conduits discharging directly into the river in front of the city. The sewage passed from the collecting sewers of each district to the intercepting sewer over a trough, the capacity of which was limited to the quantity to be conveyed by the latter, so that any larger quantity was forced to overflow into the storm water conduits. The capacity of these troughs was regulated by means of a valve, and corresponded in each case with the discharge from the district, so that the quantity of storm water conveyed to the pumping station was reduced to a minimum. The conduits were for the most part 14 ft. wide by 12 ft. high, and the total quantity of water conveyed by them was about 9,000 cubic ft. per second. Over the greater area of the town the sewage found its way by gravitation into the intercepting sewers, pumping being resorted to only for the low district near the river. In two of the smaller districts the sewage was lifted by steam pumps, but in the large one lying to the south of the city an entirely different method was adopted, consisting of short pipe sewers, 6 in. and 9 in. in diameter, laid in shallow trenches, the rain water being entirely excluded from them. Over this area the sewage was raised at seventeen points by means of small pumps actuated by hydraulic motors worked automatically from one central power station. The pressure employed was 750 lbs. per square inch in the accumulator, and the pressure water was distributed to the motors through about 8 miles of hydraulic pressure piping varying between 3 in. and 6 in. in diameter. The pumps, which were in duplicate, were placed in wells sunk beneath the roadway, and were started and stopped automatically by floats actuated by the rise and fall of the sewage. The pressure water was admitted into a ram placed in the centre of the plunger, the return stroke being performed by two small push-back rams, constantly open to the hydraulic pressure. The pumps were 30 in. in diameter, some being of 3 ft. and others of 4-ft. stroke. The area provided for in this portion of the scheme was about 1,600 acres, and the ultimate population 200,000. In this district automatic self-closing manhole covers were adopted to exclude the floods, which frequently inundated it. Self-acting valves were provided for flushing the sewers by water supplied from the mains. The sewage was discharged into the river 12 miles below the city at a point where no trouble was caused by its being washed back. The outfall conduit, on leaving the city, passed beneath a tributary of the Rio de la Plata, 200 ft. in width, by an inverted siphon, consisting of three tubes of cast iron, 5 ft. high by 2 ft. 3 in. wide, imbedded in concrete and supported on cylinder foundations sunk into the bed of the river. To avoid obstructing the river during construction, these tubes were put together inside large horizontal cylinders of wrought iron, which, after being built on shore, were floated out and sunk into position. The space between the casing and the tubes was then filled with concrete, in which were embedded strong wrought iron girders with the object of giving sufficient strength to span the intervals of 50 ft. separating the cylinder foundations, and thus rendering the tubes independent of any support from the soft mud upon which they rested. The abutments of the siphon were also upon cylinder foundations, the body of the abutment being constructed within an annular coffer dam of 14-in. piling. As no solid foundation could be obtained for this work, reliance had to be placed upon the depth to which the cylinder foundations were sunk into the soft marerial of the river bed. To secure the fall necessary for discharging the sewage at the outfall, a pumping station was erected on the line of the conduit where the whole sewage was lifted a height of 43 ft. The paper was accompanied by tables of the daily consumption of water for the last 21 years, and also of the comparative death rates for the years proceeding and of those following the inauguration of the sewerage works, which afforded conclusive evidence that the annual death rate of the city had been reduced from 32 to 24 per thousand. Details of the cost of the works were given, and showed that about two and a-half millions sterling had been expended on the water supply, and three millions sterling on the sewerage and drainage, equivalent to 5£ 10s. and 6d. respectively per head of population served. There was also appended a brief account of the political and financial vicissitudes to which the works had been subject since inception in 1871, which prevented them from being completed until twenty years after their commencement.

* An abstract of a paper recently read before the London Institution of Civil Engineers by the Hon. R. C. Parsons, M. A., M. Inst. C. E.

The Windsor Gas Company was recently summoned before the Police Magistrate for digging up the streets without the consent of the Board of Works. The action was taken to prevent the laying of wrought iron pipe instead of cast iron, as called for by the by-law. Meanwhile the gas company have been granted an injunction on the city to restrain it from interfering with the extension of their system.

MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

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Prices of Building Materials.

CONDITION OF THE MARKET.

MONTREAL: The volume of business in builders' supplies remains much the same. The demand is chiefly for repair work. In the heavy metal trade there is a fair demand at current quotations. A slight improvement is also to note in window glass and paints and oils. The arrivals of cement for the past week were 2,600 barrels of English and 1,100 Belgian, as against 2,000 English and 3,400 Belgian for the preceding week. This makes a total to date of 41,163 barrels English and 30,415 Belgian. The tone of the market is steady, although sales are principally in small lots.

TORONTO: An improvement in some lines of building material has taken place within the past week, mainly in wire nails, cut nails, and plumbers' supplies. Orders are also coming in with some freedom for iron pipe, galvanized iron and soil pipe. Prices of glass are unsettled on account of the cutting by some dealers, and although values have advanced in Belgian about 10 per cent., making the cost of first break $1.25, several houses are making quotations as low as $1.15. As some buildings are nearing completion there is an increased demand for shelf hardware and paints and oils. Building paper is quiet.

LUMBER.

CAR OR CARGO LOTS.

	Toronto. $	Montreal. $		
1¼ to 2 clear picks, Am ins	33 00@36 00		40 00@45 00	
1¼ to 2 three uppers, Am ins.	37 00		40 00	45 00
1¼ to 2, pickings, Am ins	26 00		27 00	30 00
3 inch clear			40 00	45 00
1 x 10 and 12 dressing and better	20 00	22 00	18 00	20
1 x 10 and 12 mill run	16 00	17 00		19
1 x 10 and 12 dressing	20 00	22 00		18 00
1 x 10 and 12 common	13 00	14 00	8 00	10 00
Spruce culls	10 00	11 00	8 00	10 00
1 x 10 and 12 culls	9 00	10 00		9 00
1 inch clear and picks	28 00	3200	35 00	40 00
1 inch dressing and better	20 00	22 00	18 00	20 00
1 inch siding, mill run	14 00	15 00	12 00	16 00
1 inch siding, common	12 00	13 00	10 00	13 00
1 inch siding, ship culls	11 00	12 00	10 00	11 00
1 inch siding, mill culls	9 00	10 00	8 00	9 00
Cull scantling	8 00	9 00	8 00	9 00
1¼ and thicker cutting up plank	24 00	26 00	22 00	25 00
1 inch strips, 4 in to 8 in. mill run	14 00	15 00	14 00	15 00
inch strips, common	11 00	12 00	10 00	12 00
1¼ inch flooring	16 00	17 00	12 00	15 00
1½ inch flooring	16 00	17 00	12 00	15 00
XXX shingles, sawn, per M				
16 in	2 85	2 30	2 60	2 60
XX shingles, sawn	1 40	1 50	1 60	1 70
Lath	1 60			1 50
VALUATIONS.				
Mill cull boards and scantling		10 00	10 00	12 00
Shipping cull boards, promiscuous widths		13 00		13 00
Shipping cull boards, stocks		16 00		16 00
Hemlock scantling and joist up to 16 ft		11 00	12 00	10 00
Hemlock scantling and joist up to 18 ft		12 00	13 00	12 00	13 00
Hemlock scantling and joist up to 20 ft		13 00	14 00	13 00	14 00
Cedar for block paving, per cord			5 00		5 00
Cedar for kerbing, 4 x 14, per M			14 00		14 00
Scantling and joist, up to 16 ft			14 00		14 00
" " 18 ft			15 00		16 00
" " 20 ft			16 00		16 00
Scantling and joist, up to 22 ft			17 00		17 00
" " 24 ft			19 00		19 00
" " 26 ft			20 00		21 00
" " 28 ft			22 00		23 00
" " 30 ft			24 00		25 00
" " 32 ft			27 00		27 00
" " 34			29 50		29 50
" " 36 ft			31 00		31 00
" " 38 ft			33 00		33 00
" " 44 ft			34 00		36 00
Cutting up planks, 1¼ and thicker, dry		25 00	28 00	25 00	30 00
B. M.					
1¼ in. flooring, dressed, F M	26 00		30 00	28 00	31 00
1½ inch flooring, rough, B M	18 00		22 00	18 00	22 00
1¼ " dressed, F M	25 00		28 00	27 00	30 00
1¼ " undressed, B M	18 00		19 00	18 00	19 00
1¼ " dressed	18 00		20 00	18 00	22 00
1¼ " undressed	12 00		15 00	12 00	15 00
Beaded sheeting, dressed	20 00		35 00	22 00	35 00
Clapboarding, dressed			12 00	8 00	12 00
XXX sawn shingles, per M 18 in	2 60		2 70		3 00
Sawn lath	2 50		2 60	2 50	2 60
Cedar			2 90		2 90
Red oak	30 00		40 00	30 00	40 00
White	37 00		45 00	35 00	55 00
Basswood, No. 1 and 2	28 00		30 00	18 00	20 00
Cherry, No. 1 and 2	70 00		90 00	70 00	80 00
White ash, No. 1 and 2	24 00		35 00	30 00	35 00
Black Ash, No. 1 and 2	20 00		30 00	18 00	30 00
Dressing stocks	16 00		22 00	16 00	22 00
Picks, American inspection			30 00		40 00
Three uppers, Am. inspection			50 00		50 00

	Toronto.		Montreal.	
BRICK—$ M				
Common Walling		6 50		6 00
Good Facing		8 00		8 50
Sewer	8 50	8 00	8 50	9 00
Pressed Brick, Per M:				
Red, No. 1, f.o.b. Beamsville		16 00		
" " 2		14 00		
" " 3		9 00		
Buff		21 00		
Brown		24 00		
Roman Red		30 00		
" Buff		35 00		
" Brown		40 00		
Sewer		7 50		
Hard Building		6 00		
Roof Tiles		22 00		
Hip Tile (each)		20		
Ridge Tile "		60		
1st quality, f.o.b. at Port Credit		12 00		18 00
2nd " " " "		10 00		15 00
3rd " " " "		8 00		12 00
Hard building brick		6 50		
Ornamental, per 100	3 00	10 00		
SAND.				
Per Load of 1½ Cubic Yards		1 25		1 25
STONE.				
Common Rubble, per toise, delivered		14 00		14 00
Large flat Rubble, per toise, delivered		18 00		18 00
Foundation Blocks, per c. ft.		50		50
Kent Freestone Quarries Moncton, N. B., per cu ft., f.o.b.		1 00		
River John, N. S., brown Freestone, per cu. ft., f.o.b.		95		
Ballochmyle	80	90	65	75
New York Blue Stone				1 05
Granite (Stanstead) Ashlar, 6 in. to 12 in., rise 9 in., per ft.				25
Moat Freestone			60	70
Thomson's Gatelawbridge, cu. ft.			75	80
Credit Valley Rubble, per car of 15 tons, at quarry		8 00		
Credit Valley Brown Coursing, up to 10 inch, per sup. yard, at quarry		1 75		3 25
Credit Valley Brown Dimension, per cu. ft. at quarry		60		75
Credit Valley Grey Coursing, per superficial yard	1 50	2 00		2 15
Credit Valley Grey Dimension, per cubic foot		60		75
Clark's N. B. Brown Stone, per cubic foot, f.o.b.		1 15		1 00
Brown Free Stone, Woodpoint, Sackville, N.B., per cub. ft.		1 15		1 00
MadocRubble, delivered, per toise	14 00	14 50	14 00	14 50
Madoc dimension floating, f. o. b, Toronto, per cubic ft.	30	32		
Cape Bauld, N. B., Brown Freestone		90		70
Cocaigne, N. B., Gray Freestone (olive-green)		90		70
OHIO FREESTONE, FROM THE GRAFTON STONE CO.'S QUARRIES.				
No. 1 Buff Promiscuous		90		1 10
No. 1 Buff Dimension		95		1 05
No. 1 Blue Promiscuous		60		70
No. 1 Blue Dimension		65		75
Sawed Ashlar, No. 1 Buff, any thickness, per cub. ft.		1 10		1 20
Sawed Ashlar, No. 1 Blue, any thickness, per cub. ft.		80		90
Sawed Flagging, per sq. ft., for each inch in thickness		06½		07½
Above prices cover cost freight and duty paid. For small lots add 5 to 10 cents per cubic foot.				
Quebec and Vermont rough granite for building purposes, per c.ft. f.o.b. quarry	33	1 50		
For ornamental work, cu. ft.	35	2 0		
Granite paving blocks, 8 in. to 12 in. x 6 in. x 4½ in., per M		50 00		
Granite curbing stone, 6 in. x 20 in., per lineal foot		70		
SLATE.				
Roofing (☒ *square*).				
" red		18 00		20 00
" purple		00		10 00
" unfading green		9 00		6 00
" black		8 00		5 50
Terra Cotta Tile, per sq		25 00		
Ornamental Black Slate Roofing		8 50		
PAINTS. (In oil, ℔ lb.				
White lead, Can., per 100 lbs.	6 25	5 50	5 50	6 00
" zinc, Can., " "	6 50	7 50	6 50	7 50
Red lead, Eng	4 00	5 00	4 50	5 00
" venetian, per 100 lbs	1 60	1 75	1 60	1 75
" vermillion	90	1 00	90	1 00
" Indian, Eng	10	12	10	12
Yellow ochre	5	10	3	5
Yellow chrome	15	20	15	20
Green, chrome	7	12	7	12
" Paris	20	25	14	20
Black lamp	15	25	12	25
Blue, ultramarine	15	20	12	18
Oil, linseed, raw, ☒ *Imp. gal.*	50	59	58	59
" " boiled "	53	63	62	63
" " refined, "	78	85	75	75
Putty	2¾	2¾	2¾	2¾
Whiting, dry, per 100 lbs	60	80	60	75
Paris white, Eng., dry	90	1 25	90	1 00
Litharge, Eng	4	5	4 50	5 00
Sienna, burnt	10	15	12	15
Umber, "	8¾	12	12	15
Turpentine	40			
CEMENT, LIME, etc.				
Portland Cements.—				
German, per bbl		3 25	2 55	2 65
London "	2 50	2 75	2 92	05
Portland Cements.—				
Newcastle "			2 50	1 85	1 95
Belgian, Jesson, artificial	3 40		2 50	2 65	2 75
English, artifical, per bbl	2 60		2 90	2 55	2 65
Belgian, natural, per bbl	2 30		2 40	1 70	1 85
Canadian "	2 30		2 50	1 80	1 85
Roman "				2 00	2 25
Parian "	4 50		4 75	5 50	5 75
Superfine "	6 50		7 00	8 00	9 00
Hydraulic Cements.—					
Thorold, per bbl			1 50	1 25	1 50
Queenston, "			1 50	1 50	1 60
Napanee, "			1 50		1 50
Hull, "			1 50		1 50
Ontario, "			1 25		
Keene's Coarse "Whites"	4 50		4 75	4 50	4 75
Fire Bricks, Newcastle, per M	27 00		35 00	15 00	21 00
" Scotch "	27 00		35 00	19 00	21 00
Lime, Per Barrel, Grey			40		
" " White			50		
Plaster, Calcined, N. B			2 00		
" " N. S			2 00		2 50
Hair, Plasterers', per bag	80		1 00		
HARDWARE.					
Cut nails, 50d & 60d, per keg			2 75		2 75
Steel " " "			2 85		2 85
CUT NAILS, FENCE AND CUT SPIKES.					
40d, hot cut, per 100 lbs			2 80		2 80
30d, " " "			2 85		2 85
20d, 16d and 12d, hot cut, per 100 lbs			2 90		2 90
10d, hot cut, per 100 lbs			2 95		2 95
8d, 9d, " " "			3 00		3 00
6d, 7d, " " "			3 15		3 15
4d to 5d, " " "			3 35		3 35
3d, " " "			3 75		3 75
2d, " " "			4 25		4 25
4d to 5d cold cut, not polished or blued, per 100 lbs			3 25		3 25
3d to 5d cold cut, not polished or blued, per 100 lbs			3 65		3 65
FINE BLUED NAILS.					
3d, per 100 lbs			4 25		4 25
2d, " "			4 75		4 75
CASING AND BOX, FLOORING, SHOOK AND TOBACCO BOX NAILS.					
12d to 30d, per 100 lbs			3 25		3 25
10d, " "			3 35		3 35
8d and 9d, " "			3 50		3 50
6d and 7d, " "			3 65		3 65
4d to 5d, " "			3 85		3 85
3d, " "			4 25		4 25
FINISHING NAILS.					
3 inch, per 100 lbs			3 60		3 60
2½ to 2¾ " " "			3 75		3 75
2 to 2¼ " " "			3 90		3 90
1½ to 1¾ " " "			4 10		4 10
1¼ " " "			4 50		4 50
1 " " "			5 00		5 00
SLATING NAILS.					
5d, per 100 lbs			3 60		3 60
4d, " "			3 60		3 60
3d, " "			4 00		4 00
2d, " "			4 50		4 50
COMMON BARREL NAILS.					
1 inch, per 100 lbs			4 25		4 25
¾ " " "			4 50		4 50
¾ " " "			5 00		5 00
CLINCH NAILS.					
3 inch, per 100 lbs.			3 60		3 60
2½ and 2¾ " "			3 75		3 75
2 and 2¼ " "			3 90		3 90
1½ and 1¾ " "			4 10		4 10
1¼ " "			4 75		4 75
1 " "			5 25		5 25
SHARP AND FLAT PRESSED NAILS.					
3 inch, per 100 lbs.			4 10		4 10
2½ and 2¾ " "			4 25		4 25
2 and 2¼ " "			4 40		4 40
1½ and 1¾ " "			4 60		4 60
1¼ " "			5 25		5 25
1 " "			5 75		5 75
STEEL WIRE NAILS.					

Steel Wire Nails, 70c. and 5% discount from printed list.

Iron Pipe:

	6c.	6c.
Iron pipe, ¼ inch, per foot		
" " ⅜ " "	7	7
" " ½ " "	8½	8½
" " ¾ " "	12	12
" " 1 " "	17	17
" " 1¼ " "	24	24
" " 1½ " "	30	30
" " 2 " "	43	43

Toronto, 65 per cent. discount.
Montreal, 60 to 65 per cent. discount.

Lead Pipe:

Lead pipe, per lb	7c.
Waste pipe, per lb	7½

Discount, 30 % off in small lots.

Galvanized Iron:

Adam's—Mar's Best and Queen's Head:		
16 to 24 guage, per lb	4½c.	4¾c.
26 guage, "	4¾	5
28 " "	5	5¼
Gordon Crown—		
16 to 24 guage, per lb	4¼	4¼
26 guage, "	4½	4¼
28 " "	4¾	5

Note.—Cheaper grades about ¼c. per lb. less.

Structural Iron:

Steel Beams, per 100 lbs	2 75	2 50
" channels, "	2 85	2 60
" angles, "	2 50	2 30
" tees, "	2 80	2 65
" plates, "	2 55	2 35
Sheared steel bridge plate		2 35

(Corrected up to August 19th)