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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.

OCTOBER 21, 1897

No. 38.

THE CANADIAN CONTRACT RECORD, PUBLISHED EVERY THURSDAY

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

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Will be received up to 5 o'clock p.m., THURSDAY, NOV. 11TH, for the construction of Sections L, M, N and O of the London Sewerage System, consisting of 8,100 ft. of Brick Sewer and 3,632 ft. of 18-inch Tile Sewer.

Plans and specifications may be seen at the City Engineer's office, London.
The lowest or any tender not necessarily accepted.

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City Engineer.

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- E. Supplies.

Specifications to be had on application to T. Ed. Oakley, Secretary to Commission, Fort William, Ont. Tenders to be in not later than 30th October.

TENDERS TO BRICKLAYERS

Tenders will be received up to 5 p. m. on TUESDAY, THE 20TH INSTANT, for the following trades: Mason, Cut Stone, Brickwork, Drains and Concreting only, required in the erection of

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CONTRACTS OPEN.

SWAN LAKE, MAN.—A new Methodist church will be built here this fall.

CASSELMAN, ONT.—Steps are being taken at once to rebuild the village.

SHERBROOKE, QUE.—Mr. Whiting purposes building a new block of stores.

SCHOMBERG, ONT.—A new building will be erected by James A. Kitchens.

TILBURY CENTRE, ONT.—Tenders have been invited for the erection of a rink.

PRESCOTT, ONT.—It is probable that another grain elevator will be erected here.

AHMIC HARBOR, ONT.—J. Arthurs is erecting a two-story brick block 100 x 50 feet.

KINGSTON, ONT.—W. H. Macnee will erect a brick dwelling on Lower Union street.

MAGOG, QUE.—Prospects are favorable for the construction of a system of waterworks.

WARMINSTER, ONT.—Patrick Walsh intends building a brick residence next summer.

BRUCEFIELD, ONT.—Josiah Watson intends placing stave machinery in his saw mill.

HIGHGATE, ONT.—We are informed that a new hotel will be erected in this village.

KAMLOOPS, B.C.—The question of constructing a sewerage system is under consideration.

NORTH BAY, ONT.—William Martin will build an office building adjoining the post-office.

PRESTON, ONT.—The sum of \$2,000 has been subscribed towards the erection of a rink.

NEUDORF, ONT.—The German Lutherians are about to build a church, to cost over \$1,000.

SACKVILLE, N. B.—The sum of \$10,000 has been voted for the building of a new high school.

HULL, QUE.—The Hull Lumber Co. will, it is said, shortly commence to rebuild their saw mill.

WATERLOO, ONT.—The foundation of the new Anglican church on Allan street has been completed.

WALKERVILLE, ONT.—Over \$10,000 will be raised by the issue of debentures for town improvements.

DUNDAS, ONT.—The tenders for fire alarm boxes have been laid over until a future meeting of council.

GREENWOOD, B. C.—The Greenwood Waterworks Company will likely construct a system of waterworks this fall.

FREDERICTON, N. B.—It is rumoured

that a large saw mill, now located at Ashland, will be removed to this city.

THAMESVILLE, ONT.—J. G. Cameron will shortly commence the erection of a residence on the Ferguson survey.

WOODSTOCK, N. B.—Arthur W. Seely has purchased property on Main street on which he will build a residence next spring.

VICTORIA, B. C.—Tenders are invited for the construction of quarters for the Sergeant-Major at the drill hall in this city.

LONGFORD, ONT.—It is the intention of the Longford Lumber Co. to erect a new saw mill at Depot Harbor or Cravenhurst.

PAKENHAM, ONT.—It is probable that A. Brazeau will utilize his water power here by putting in a plant for sawing stone.

FORT FRANCES, ONT.—The question of providing additional school accommodation is under consideration by the School Board.

PORT DOVER, ONT.—Tenders are wanted before November 1st for lighting the village by gas or electric light. R. M. Taylor, clerk.

LOMBARDY, ONT.—The R.C. congregation purpose building a church next spring, for which the sum of \$1,900 has already been subscribed.

GALT, ONT.—The officials of the Grand Trunk Railway have stated that a new railway station will be erected here next spring, probably on Main street.

SPRINGBANK, N.W.T.—The ratepayers will vote on a by-law to raise \$40,000 for constructing a canal, flumes, reservoirs, etc., for the irrigation of the district.

ATWOOD, ONT.—T. Fullerton, clerk, will receive tenders until Saturday next for the construction of the Hannan drain and culvert, in the township of Elma.

SUSSEX, N. B.—The question of providing waterworks and sewerage systems is under consideration, and a committee has been appointed to report to council.

TILSONBURG, ONT.—The sum of \$3,700 has been subscribed towards the proposed church to be built by St. John's congregation. A \$5,000 building is contemplated.

VANCOUVER, B. C.—The city council has accepted the offer made by a London company to erect a smelter and refinery here. A bonus of \$65,000 will be given.

ST. THOMAS, ONT.—In connection with the proposal to build a new city hall, Mr. A. W. Mann has offered to grant a free site on Woodworth avenue for the purpose.

WOODSTOCK, ONT.—Mr. A. P. McDonald, of Indianapolis, is endeavoring to form a company of eastern capitalists to build an electric railway between this city and Ingersoll.

BURKS FALLS, ONT.—A vote of the ratepayers has been taken to determine the location of the proposed bridge across the Magnetawan river. The decision was in favor of the old site.

THREE RIVERS, QUE.—The Harbor Commissioners have asked permission from the Government to issue debentures to the amount of \$75,000 for carrying out harbor improvements.

TRENTON, ONT. The Advocate is authority for the statement that a large manufacturing concern will probably locate in this town, in which case they will build works to cost \$300,000.

SMITH'S FALLS, ONT.—J. McEwen, secretary Board of Education, invites tenders until 4 p.m., Saturday, 23rd inst., for plumbing, carpentering, excavating and other repairs to the Central school.

VALLEYFIELD, QUE.—The Montreal Cotton Mills Co. has made a proposition to the town to construct an addition to its factory, at a cost of \$100,000, provided further exemption from taxation for 21 years is granted.

PORT STANLEY, ONT.—The Minister of Public Works has promised that the question of improving the harbor here will be given careful consideration. It is probable that an expenditure of \$50,000 will be required for the work.

CORNWALL, ONT.—Leitch & Pringle have purchased property on which they will erect a new store—J. D. Gillies will build a store corner Pitt and Third streets. M. A. McDonald & Co. have also purchased a building lot.

PEMBROKE, ONT.—Tenders are invited by J. A. Thibodeau, secretary, until Wednesday, November 10th, for the construction of the Pembroke Southern railway. Maps, etc., may be seen at the office of the secretary, in this town.

COLLINGWOOD, ONT.—It is stated that a company will be organized here to erect a grain elevator with a capacity of 1,000,000 bushels.—Fred. T. Hodgson, architect, has taken tenders for improvements to a block of stores, corner Hurontario and Simcoe streets.

GUELPH, ONT.—The Grand Trunk Railway Co. has prepared plans for a new station to be built in this city, for which the council will be asked to grant a site.—Mayor Hewer is endeavoring to promote the construction of an electric railway between this city and Hamilton.

PETERBORO, ONT.—At a meeting of the Ashburnham council Mr. Kennedy, C. E., who has charge of the sewer contract in this town, was authorized to prepare plans and estimates for extending the waterworks system to that village, also to estimate the cost of distribution pipes on several streets.

ST. JOHN, N. B.—The Minister of Railways and Canals has taken steps to provide terminal facilities for the Intercolonial railway at the head of the harbor. The improvements will include a long wharf to cover some ten acres. It is not expected that work will be commenced before the spring.

FORT WILLIAM, ONT.—Offers are invited for supplying electrical and steam apparatus for the town, including engines, boilers, alternating dynamos, arc dynamos and lamps, transformers and supplies. Specifications on application to T. Ed. Oakley, commissioners' secretary. Tenders close October 30th.

ST. FRANCOIS, QUE.—Tenders will be received by Joseph Dennis, secretary of the municipality, until the 1st of November, for the construction of an iron and steel bridge, of one span of 220 feet and two spans of 200 feet each, and for works to be performed in constructing two abutments and two piers in masonry.

QUEBEC, QUE.—Dr. Boulanger has been granted a permit for constructing a brick and stone residence, corner John and Sutherland streets, to cost \$5,000.—There is some talk of an elevator being placed in the court house.—A deputation from the Quebec Board of Trade recently

waited upon Sir Wilfred Laurier complaining of the Intercolonial Railway, extension and of the proposal to deepen the channel between Quebec and Montreal, and urging upon the government the construction of the Quebec bridge and the completion of the Great Northern railway.

LONDON, ONT.—Building permits have been granted as follows: N. Tackaberry, two brick residences on Maple street, cost \$1,800 each; M. Davis, brick cottage, 236 Simcoe street, cost \$850; C. P. Heal, alterations to residence on Lichfield street; Chas. Keene, brick residence on Stanley street, Mr. H. C. McBride, architect; Harry Hayman, two-story brick residence on Ontario street, cost \$1,800, and a two-story brick residence corner Cartwright street and Central avenue, cost \$1,800.—A meeting was held last week to consider matters relating to the sewerage system. Tenders were presented for the construction of the remainder of the South London trunk sewer, but they were laid over until a later date.

HAMILTON, ONT.—Tenders have been invited for the construction of a pipe sewer on Emerald street, from Main street south.—A large amount of the stock required for the construction of the Hamilton, Chedoke and Ancaster electric railway has been subscribed, and it is hoped to commence work at an early date.—Building permits have been granted as follows: Thomas Fanning, two 2-story brick dwellings on Lock street south, cost \$1,800; James Anderson, brick addition, 152 James street south.—It is reported that President Myles, of the Hamilton, Grimsby and Beamsville Railway, has succeeded in raising the sum of \$200,000 to build an electric line from Beamsville to St. Catharines.—F. J. Rastrick & Son, architects, invite tenders until 5 p.m. on Friday next for the erection of a pair of houses on John street south.

OTTAWA, ONT.—E. F. E. Roy, secretary Department of Public Works, will receive tenders until Thursday, Nov. 4th, for the construction of quarters for the Sergeant-Major at the drill hall, Victoria, B. C. Plans at public works office, Victoria.—The C.P.R. have filed new plans showing their entrance into Ottawa. These plans include a bridge across the Rideau river, between the present C.A.R. bridge and Hurdman's bridge.—Tenders are invited by the Department of Public Works for the reconstruction of the wharf at West Point, Prince county, P.E.I., and for the extension of breakwaters and the construction of breastwork and dyke at Tignish, P. E. I.—The government will this winter improve the Rideau canal with a view to lessening the liability to floods at Ottawa. The plan is to carry out the improvements at Back rapids.

MONTREAL, QUE.—The Atlantic & Lake Superior Railway Co. are about to commence work on the Great Eastern section of their road. Mr. Patton, C.E., and staff have left for the scene of their operations. The work to be carried out immediately will be between St. Francis and Nicolet river.—At a conference between the Minister of Public Works and representatives of the city organizations, a resolution was adopted instructing the harbor commissioners to proceed with two piers, but nothing definite was arrived at regarding the general plan of harbor improvement. The estimated cost of carrying out plan No. 19 is \$2,700,000, of which the city contributes \$1,000,000.—An agitation to have the Grand Trunk offices moved from Point St. Charles to some central location has resulted in a proposition being made by the management of the railway to erect a large building, provided the city will grant a site on the north end of Victoria square, with exemption from taxation for twenty years.—It is hoped that at an early date steps will be taken to extend Bonsecours market.—G. A. Monette, architect, is calling for tenders

for a residence to be erected at Westmount, Cote St. Antoine road, for J. L. Decarie.—Messrs. Messard & Daoust, architects, have invited tenders for an addition to the girls' school at St. Elizabeth, St. Henri.—Mr. Matthews, architect, of New York, will prepare plans for the new theatre to be built at the corner of Guy and St. Catherine streets, on the Macdonald property. The building will cost \$85,000.—The ratepayers of Cote St. Paul have resolved to construct drainage and electric light systems. The former will be commenced this fall.

WINNIPEG, MAN.—The plan of the City Engineer for an overhead bridge over the C.P.R. track has been accepted, and tenders for the superstructure will be invited.—The city council has given notice of its intention to construct a macadam roadway on Broadway, from Osborne to Maryland streets, at a cost of \$9,580, and a sewer on Yonge street, from Nellie ave. south, at a cost of \$1,300.—Several prominent Minnesota lumbermen have been in the city recently figuring on building a canal from Buffalo Bay, on the Lake of the Woods, to the Seine river. There is a fall of 300 feet between these points, and the scheme includes the supplying of water from the lower end of the lake to the city and a water power system.—On November 25th a by-law will be voted on to borrow the sum of \$700,000 for the construction of a system of waterworks. It is proposed to adopt the artesian well system, as recommended by Mr. Rudolph Hering. The cost is given as follows: Well plant, \$140,750; distribution reservoir, pumping station, pipes, hydrants, valves, meters, storehouse and machine shop, \$659,330.

TORONTO, ONT.—Mr. Jul. DeHorvate, architect, of Chicago, has prepared plans for the new hotel to be erected on the north-west corner of King and Simcoe streets, in this city. The building will be a seven-story fireproof structure, equipped with all modern improvements. The architect is expected in Toronto shortly with complete drawings, ready for figuring.—Ground has been broken on the north side of Bloor street west, opposite McMaster Hall, for a new detached residence for Mrs. G. E. Rowan, from plans prepared by Mr. F. H. Herbert, architect.—Mr. McLachlin, an electrical expert, has reported on the question of operating the lighting, elevator and ventilating plant at the new municipal buildings by electricity. He reports against the installation of a plant in the new buildings.—Tenders are advertised for in this issue by Mr. F. H. Herbert, architect, for the mason and brick work of a large residence on St. George street. Tenders close on the 26th inst.—It is rumored that a movement is on foot to construct an electric railway from Oshawa to this city.—Mr. A. J. A. Eckhardt, casket manufacturer, has just completed the purchase of the old Jacques & Hay factory on Esplanade street. Extensive alterations to the premises will be made.—Upon the return of Mr. W. J. Gage from England, a special meeting of the council will be held to take action regarding the offer made by Mr. Gage to build public swimming baths.—The following building permits have been granted: A. E. Plummer, two-story and attic brick residence, 65 Lowther ave., cost \$6,500; Miss Morrison, pair semi-detached two-story and attic brick dwellings, cost \$900; E. R. C. Clarkson, alterations to shop fronts, 71 King street west, cost \$1,200, and one-story brick addition and alterations, cost \$1,500; Victor Cawthra, two-story and attic brick dwelling, east side St. George street, north of Lowther ave., cost \$7,000; Dr. Cotton, additional story and alterations to No. 218 Simcoe street, cost \$3,000; Beaumont Jarvis, architect, two-story brick chapel and concert hall, north side Wellington place, cost \$50,000; F. F. Passmore, 47 Alexander street, pair

semi-detached dwellings, 85 Marlborough ave., cost \$1,000.

FIRES.

A large stone building at Rimouski, Que., containing the court house and jail, was burned on the 12th inst.—The varnish factory of McCaskill, Dougall & Co., Montreal, was damaged by fire last week to the extent of \$5,000, fully covered by insurance.—The bleach and boiler room of the Northumberland Paper & Electric Co., of Campbellford, Ont., was destroyed by fire on the 14th inst.—The planing mill of F. Smeeth at Goderich, Ont., was burned recently. Loss \$5,000; no insurance.—The Northern elevator at Nesbitt, Man., was destroyed by fire a few days ago. The loss is covered by insurance.—Several residences at Levis, Que., were consumed by fire last week, at a loss of \$5,000. Two of the houses were owned by E. Beaulain, and the others by J. Montigny and J. B. Gosseil.—At Harwood, Ont., fire destroyed the following buildings: Phoenix hotel, William Harstone's store and dwelling, and the Bell Telephone office and post-office.—The residence and outbuildings of P. Gallagher, two miles below Moncton, N. B., were totally destroyed by fire recently. Loss \$2,500; insurance \$1,500.—Fire at Windsor, N.S., on Saturday last destroyed about 400 business places and dwellings, at a loss of nearly \$2,000,000. Among the burned buildings are the following: C. M. Shaw, Marine block, \$17,000; Payzant's block, \$18,000; Graham's block, \$20,000; Victoria hotel, \$15,000; Blanchard block, \$22,000; C. & G. Wilson's block, \$18,000; Dimock & Armstrong's, \$22,000; J. B. Shaw's block, \$21,000; C. H. Dimock's block, \$14,000; Commercial block, \$26,000; Churchill block, \$28,000; new school building, \$7,000; Keith's building, \$8,000; Gerrish block, \$21,000; post-office and custom house, \$26,000; Empire block, \$16,000; John Lynch & Sons, \$10,000; Avon hotel, \$6,000; Somerset House, \$12,000; Gerrish Hall, \$15,000; gaol and court house, \$19,000; Methodist church, \$15,000; Baptist church, \$22,000; Presbyterian church, \$12,000; Catholic church, \$4,000; Windsor Foundry Co., \$40,000; Electric Light Co., \$32,000; Windsor Plaster Co., \$12,000. Among the residences destroyed were those of Dr. Black, Dr. Moody, Dr. Gossip, Dr. Reid, John Keith, John Lynch, Mrs. G. E. Forsythe, John Doran, W. O'Brien, T. B. Smith, J. E. Graham, W. M. Christie, W. A. Smith, Mrs. J. F. Carver, R. B. Dakin, Hon. M. H. Gudge, Mayor Smith, J. C. Gilbert and Arthur King.—A large warehouse at St. Johns, Que., owned by the Estate of F. X. Langelier, was destroyed by fire last week.—Fire at Kingsville, Ont., on Monday last destroyed Howard Scratch's building, loss \$2,500, and William Grenier's residence, loss \$3,000.

CONTRACTS AWARDED.

PEMBROKE, ONT.—J. Mick has contract for carpenter work of residence for A. T. Mackie.

GLENCOE, ONT.—The contract for electric lighting the town has been given to W. Gordon.

TRENTON, ONT.—S. B. McClung & Co. have been awarded the contract for heating the West Ward school.

STOUFFVILLE, ONT.—McQuillan & Co., of Toronto, have secured the contract for the waterworks system; price \$20,700.

RENFREW, ONT.—The foundation walls for the new Methodist church are now being erected. J. A. Jameson has been awarded the contract.

WALKERVILLE, ONT.—The Kerr Engine Co., of this town, have been awarded the contract for hydrants and valves for the Stouffville waterworks system.

DUNDAS, ONT.—The tender of Rowan

& Elliott, of St. Catharines, has been accepted by the town council for the construction of a dam; price \$4,911.

BROCKVILLE, ONT.—Brown & Temple have been awarded the contract for heating and plumbing for a block of stores, the new Ottawa Bank building, and residence of A. Mackay, M.P., Renfrew.

KINGSTON, ONT.—Debentures have been disposed of as follows: Oddfellow's Relief Association, \$46,000; J. A. Mel drum, Montreal, \$25,000.—George Wilson has the contract for erecting a residence for Professor MacGillivray.

OTTAWA, ONT.—Two tenders were received for building a hook and ladder truck, as follows: H. Duhamel, \$362; Ottawa Car Co., 274.50 (accepted).—Tenders were received as follows for the proposed Victoria fire hall: Holbrook & Sutherland, \$17,567; John J. Lyons, \$17,300; William Stewart, \$17,579. The tenders are in excess of the appropriation, and consequently no award has yet been made.

TORONTO, ONT.—The Board of Control have awarded contracts as follows: Spadina avenue, brick pavement, Burns & McCormack, \$4,525; macadam pavement, Carlton street, A. J. Brown, \$1,460; gravel pavement, Brock avenue, Bryce & Co., \$4,965; macadam, St. Albans street, Constructing & Paving Co., \$648.—The contract for gas and electric light fixtures in the new city building has been let to Messrs. Bennett & Wright, at \$28,706.—The brick paving of Robert street will be carried out by D. L. Vlack, at the price of \$16,619.

MONTREAL, QUE.—The Moseley Shoe Leather Co. have let the contract for their new building at St. Henri to Joseph Senecal. The building will be a two-story pressed brick structure, 170 x 40 feet, with two wings 25 x 40 feet. Macduff & Lemieux, architects.—In the RECORD of September 16th it was stated that Smith

& Bond, architects, had accepted tenders for a branch office for the Bank of Toronto at Point St. Charles. The architects should have been given as Smith & Bird, of Toronto and Barrie.—Fournier & Benoit, architects, have accepted the tender of D. L. Loomis & Son for an extension to the Grand Central hotel at Sherbrooke, Que., for J. A. Gauthier.—Bond & Smith, architects, have let contracts as follows for four dwellings at Peterborough for Sanford Fleming: General contractor, William Langford; plumbing, Adam Hall; heating, Fortye & Co.; electric wiring not let.—Building permits have been granted as follows. Two houses on Massie street for Joseph Brouillette, cost \$3,000. One house on St. Hubert street, stone front, for Mde. Marie Alice Martin; carpentry, Lambert & Son. One house on Chausse street for George Wilkins; carpenter, M. Deslauriers. One building, stone front, on St. Hubert street, for Eug. Dubois—architect, L. R. Montbriant; masonry contractor, N. Guilbault; carpenter, Ed. Presseault.

CORRECTION.

In the last issue of the RECORD it was stated that the city of Stratford had awarded a contract for cement to the Owen Sound Portland Cement Company, at the price of \$2 per barrel. We are advised by the company that they have no contract with that city, and that the price is considerably lower than the quotations for their cement, which is a first class article, commanding the best price on the market.

The Canada Marble Company, head office, Toronto, and capital stock \$30,000, is seeking a Dominion charter, to manufacture and deal in gypsum and other products. The promoters are Archibald Anderson Dickson, James Brebner, Ira D. Thayer, James Harvey McNair and Edwin James Checkley.

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THE GRAND HOTEL, St. Hyacinthe, Que.

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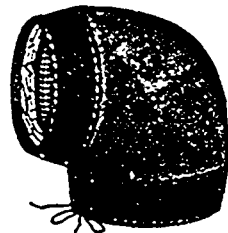
THE PARLIAMENT BUILDINGS, OTTAWA, portion of which was recently destroyed by fire and rebuilt.

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MARKET CONDITIONS.

Some material changes have lately taken place in the prices of building materials. Wire nails are now quoted in carload lots as follows: Montreal, \$1.85; Toronto, \$1.95; Hamilton, \$1.95; London, \$2. Carload lots will be ten cents per keg less. The above are the prices retailers are required to pay to the local jobbers, but the schedule does not affect the maritime provinces.

There has been an advance in price of wrought iron piping and tubing in the United States. In Canada prices of iron pipe, both black and galvanized, have advanced about 7½ per cent. The demand is good, and it is impossible to obtain prompt deliveries. The following are the prices under the new and old lists:

	New list. Per 100 ft.	Old list. Per 100 ft.
Black pipe.		
¼ inch.....	\$2 05	\$1 90
½ ".....	2 05	1 90
¾ ".....	2 45	2 35
1 ".....	2 90	2 84
1 ¼ ".....	4 20	3 91
1 ½ ".....	5 35	5 25
1 ¾ ".....	6 90	6 66
2 ".....	9 35	8 97
2 ½ ".....	13 60
Galvanized.		
¼ ".....	4 25	4 15
½ ".....	5 25	5 00
¾ ".....	7 25	7 00
1 ".....	10 00	9 70
1 ¼ ".....	14 00	13 00
1 ½ ".....	19 00	17 25

From Montreal comes the report of activity in the cement market. A sale of 1,500 barrels of English for western account was put through last week at \$2.10 ex wharf, and two other lots of 1,000 and 500 barrels respectively at \$1.85 and \$1.90. The freight on Belgian cement has advanced 2s 6d per ton, and this will no doubt have a tendency to strengthen the market. Over 148,000 fire bricks arrived last week. There is a fair demand at \$15 to \$21.

PLASTERING.

In damp locations, cellars that are partly under ground, should have their inside walls made of brick or stone, and they should be "strapped" inside, and lathed

and plastered with a mortar compound of one part of Portland cement, and two parts of clean sharp sand, says the National Builder. Lath for this mixture should be narrower than ordinary lath, and should have less key, as this mortar is stiff and crumbly, and will not stick on like other mortar. A good way is to first plaster the wall with common hair mortar, then, before this coat is quite dry, apply the cement about a quarter of an inch thick. A wall finished this way becomes as hard as rock, and is impervious to damp of any kind. The hose may be turned on it to clean it, without doing it the least injury.

Lathing should not be too dry when nailed in place, as when too dry they absorb the moisture from the mortar too suddenly and prevent the lime and sand from becoming homogeneous, which leaves the mortar impoverished and weak. Beside, the lath swell with the water absorbed, and then when dry, shrink back to their proper width, leaving the "key" loose between the lath. Some experienced builders wet their laths before using them, indeed, keeping them for from twelve to twenty-four hours in order to prevent them from "drinking" the water from the fresh mortar. Another thing, a lath having in it a streak of "fat," or "pitch," should never be used, as it will most assuredly keep the lime soft that covers it. Neither should lath "green" with sap be used. We have seen some capital plastered work spoiled because of "green" sappy

lath having been used, the dirty coloring of the sap having penetrated through the rough coats to the finish.

It is one of the crying faults with carpenters that they do not make their studs on strapped walls as true on the face as they might, and often the plasterer has to "true" up his wall by putting heavy patches of brown mortar here, and a very thin coat there, which, drying unequally, renders the plastering good in some places and weak and poor in others. It should be remembered that it is impossible to over-float a surface. The more it is floated and rubbed in, the stronger and better the work will be. This is doubly true of the last coat. Plasterers should devise some means by which the whole side of a room should be finished without moving their scaffolding, as nothing looks worse than to see where "laps" have been made in the finish coat.

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THE SANITARY ASPECTS OF WOOD PAVEMENTS.*

By CHAS. MASON, A.M.I.C.E.

The title of this paper has been chosen by the author mainly with the view of eliciting a discussion upon a subject which, in his opinion, requires more ventilation from those competent to form an opinion than has been accorded in the past. It is the author's firm opinion that most of the adverse criticism bestowed upon wood as a paving material is due to careless and improper methods of laying and subsequent maintenance rather than to the material itself. In the author's opinion wood, if properly selected and treated and thoroughly well laid, has advantages which should favour a continuance of its adoption as a carriage-way pavement until some better substitute has been discovered. In comparing different materials for street pavements, asphalt is undoubtedly the most sanitary of all, but its general adoption on other than comparatively level roads is practically prohibited until horse haulage becomes a thing of the past.

It is not for the author here to give you the history and development of wood pavements; a brief reference, however, to the different kinds of wood employed, their treatment and method of laying, is necessary to enable us to grasp the sanitary conditions of such pavements. The wood now employed is generally distinguished under the titles of "hard" and "soft" the former embracing the hard woods from Australia and other places at the Antipodes, mostly of the eucalyptus family; the "soft" wood now generally in use being red or yellow pine from North Europe. Hard woods are generally laid in their natural state—that is, not subjected to any preservative while the soft woods are now seldom laid unless previously treated with creosote or other preservative. An essential qualification for a good pavement is a cement concrete foundation formed to a proper contour and floated over to receive the wood blocks, which must be laid directly thereon with necessary falls longitudinally in the channels towards the gullies for surface drainage. The life of a wood pavement varies from 5 to 12 years, according to the amount of traffic, quality of wood, and method of laying. It is the author's object to show that the method of laying and maintaining wood pavements, coupled with the fact that the renewals are not sufficiently frequent, is mainly the cause of complaints as to the insanitary condition of wood pavements; of course excepting a faulty system of scavenging, which can easily be remedied.

The author intended taking samples of wood pavements that had been laid for a number of years in London, and analysing the blocks and their jointing materials to show you the quantity of matter injurious to health contained in, say, a square yard of pavement. This, however, has not been done, as the results would be misleading, so much depending upon the system of scavenging, contour of roadway, and other facts that would in the author's opinion render any statistics unreliable. Experience as to scavenging, method of paving, street watering, repairs, and other matters incidental thereto are far more important in determining the conditions of wood pavements. The author, therefore, from an experience of seven years in

the construction and maintenance of wood pavements in London, has arrived at the following conclusions:

Wood pavements are condemned on sanitary grounds, because (1) too little attention has been given in the past to the contour of the road to allow for a natural fall to the gullies; (2) the wood used has in many cases not been carefully selected and properly treated with a preservative; (3) the expansion joint in each channel is a source of nuisance; (4) repairs have not been carefully executed, and renewals have not been made at frequent intervals; (5) an inefficient system of scavenging has been allowed to exist.

Taking these seriatim: (1) The faulty contour of the carriage-way is due in many cases to the original foundation having been laid without due consideration to the falls. This foundation is, and should always be, treated as the roadway itself, the wood being merely a covering for convenience. In cases where this foundation is found to require re-forming, expense should not be spared in chipping over and re-floating when the wood is "up" for renewals. It is, I regret to say, more the rule than the exception upon a tolerably level street paved with wood to see the channels so arranged that water will not flow naturally to the gullies.

(2) The wood should be carefully selected, free from sap, and close and even grained. It is not necessary in paving works to have "thoroughly well-seasoned" wood, and the soft woods should be treated with creosote or other preservative. The author has used satisfactorily wood impregnated with creosote (10lb. to the cubic foot), and also wood treated with "carbolineum avenarius" (65 gallons to 1,000 blocks), and tests of the absorption of each of these compared with a plain block (yellow deal) have been made with the following results: No. 6 blocks measuring 3 in. by 9 in. by 5 in. immersed in water for 24 hours:

	Weight before.	Weight after.
Plain blocks.....	16lb.	18lb.
Creosoted blocks..	20½lb.	21lb.
Carbolized blocks.	18lb.	19½lb.

These statistics prove the wood to be less susceptible to absorption after treatment than before, the advantage being in favor of creosote. Creosote, however, having a strong smell which is often, the author regrets to say, objected to by adjoining occupiers, favors the introduction of carbolized blocks in special places.

(3) The expansion joint in the channel of a wood-paved road is, from a sanitary point of view, a great objection, and is the means of road detritus and other matter being retained thereon, and finding its way beneath the wood pavement. The author has frequently found from this cause large quantities of filthy black mud, etc., beneath the channels and surrounding the gullies, which is a considerable source of nuisance.

(4) The greatest care is necessary in carrying out repairs to gas, water, and other excavations. The foundation and pavement over should be done, if possible,

in a more skilful manner than the laying of the original pavement, and all defects in the wood likely to cause depressions for the reception of deleterious matter should also have immediate repair. The parsimonious manner in which public authorities often allow wood pavements to remain longer than their proper "life" is undoubtedly the chief cause of complaints as to the insanitary condition of such pavements, and on no account should an uneven and worn pavement be allowed to remain in what must naturally be an insanitary condition.

(5) Inefficient scavenging has only to be mentioned to receive the just condemnation it merits. Any sanitary authority who curtails the scavenging expenses to the detriment of efficient work ought to be immediately superseded by some more capable system of local government, for the root of the whole matter lies in a perfect system of scavenging, which can only be properly carried out when the necessary funds are allowed, and every official should have a free hand in this in order to carry out the work with credit to himself and the public whom he serves. The hard woods mostly used for street paving works are those known as "Karri" and "Jarrah," from Western Australia. These woods are generally laid close jointed, grouted with pitch and tar, and form an excellent sanitary pavement; their liability to contraction, however, has proved a drawback, as the spaces left between the blocks when contraction takes place become filled with horse dung and road detritus, which it is impossible to get out. It is to be hoped this wood will soon be supplied in such a condition that this, its only fault from a sanitary point of view, will soon be a thing of the past.

The foregoing remarks may be summarised by stating the essentials towards a satisfactory wood pavement to be (1) a properly constructed roadway; (2) careful maintenance and frequent renewals; (3) good scavenging.

Wood is, in the author's opinion, best suited for town pavements on account of its being less noisy and less slippery than any other kind of pavement suitable for heavy traffic, and in order to overcome the objections before mentioned, all soft woods should be properly creosoted (in vacuum, and not simply dipped), the blocks laid "close jointed" to a proper contour both transversely and longitudinally, and grouted with bituminous composition. This method is adopted by the author, and it has been found that the blocks do not when thus laid expand more than is requisite to bind the whole pavement together. Wood blocks thus laid and cleansed by periodically washing form as perfect a pavement for carriage-ways as it is possible to obtain, and the author refers those interested in the subject to that portion of the Strand between Trafalgar-square and Charing Cross Station, which has now been in use for four years and washed daily without any material defects, although subject to an enormous daily traffic.

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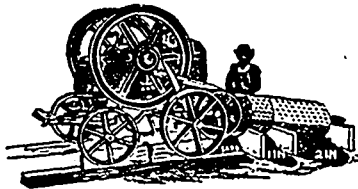
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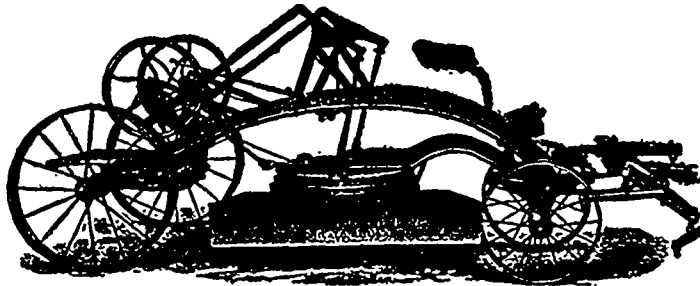
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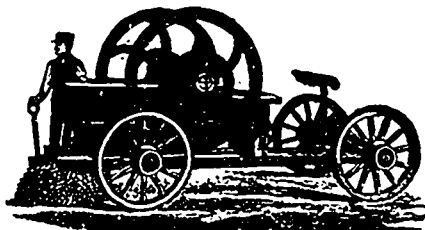
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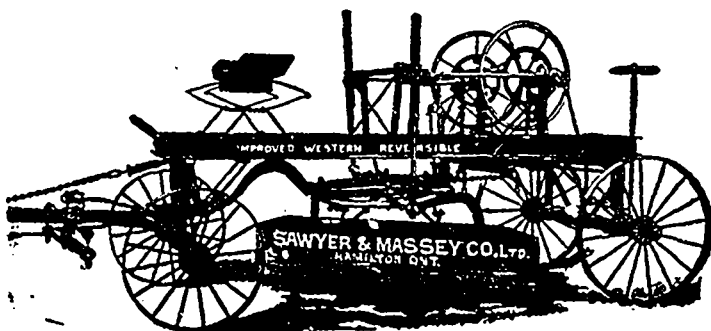
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