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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF CONTRACTS AND TENDERS

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.

AUGUST 5, 1897

No. 27.

THE CANADIAN CONTRACT RECORD,

PUBLISHED EVERY THURSDAY

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

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TENDERS FOR DRAINAGE

Tenders will be received at Dr. Meyer's private hospital for nervous diseases, Deer Park, until 5 p.m. on SATURDAY, AUGUST 14TH, 1897, for Drainage Work.

Plans and specifications may be seen at the office of Peter S. Gibson & Sons, township engineers, Willowdale.
No tenders necessarily accepted.

TENDERS

FOR

STEEL BRIDGE

Sealed Tenders addressed to the Engineer in charge, will be received up to 6 p.m. MONDAY, AUGUST 9TH, 1897, for the construction of a Steel Bridge at Hanover. The following tenders are required:

- (1) For the construction of a steel bridge with floor span 72 feet, roadway 18 feet clear, travelling load 120 lbs. per square foot, height above top of water 12 feet F. of S.
- (2) For the construction of two rough ashlar abutments per cubic yard, estimate 300 cubic yards.
- (3) For the construction of two iron pile abutments per lineal foot, to sustain a load 100,000 lbs. on each abutment. Estimated length, 25 feet.
- (4) For the construction of two iron steel cylinder abutments same as No. 3.

Each party will submit plans and strain sheets subject to the approval of the engineer. Tenders will be opened at Hanover on Thursday, August 12th, 1897. Lowest or any tender not necessarily accepted.

R. McDOWALL,
Engineer in Charge,
Box 621, Owen Sound.

CHAS. McKINNON, Commissioner for Grey Co.
ROBERT LONG, Commissioner for Bruce Co.
Owen Sound, July 24th, 1897.

FOR SALE

16 inch "Foster" Y level, nearly new; cost \$100, will sell cheap. Box 26, CONTRACT RECORD.

GRANOLITHIC WALK

Tenders, addressed to the undersigned, and marked on envelope "Tender for Walks," will be received by the Town of Cornwall until six o'clock, p.m., of FRIDAY, AUGUST 13TH, 1897, for the construction of about 528 lineal feet of Granolithic Walk, four (4) feet wide. Specifications can be had on applying to the Town Clerk.

The lowest or any tender not necessarily accepted
GEORGES JARVIS,
Town Clerk.

Town Hall, Cornwall, July 24, 1897.

Brick and Tile Sewer

Tenders will be received at this office up to 5 o'clock on THURSDAY, 12TH AUGUST, for 1,694 feet brick sewer, 18 inch dia., and 3,000 feet 18 inch tile laid in concrete.

Plans and specifications may be seen here.

ORMSBY GRAYDON,
City Engineer, London, Ont

WILLIS CHIPMAN, C.E.,
Consulting Engineer.

Notice to Contractors

Tenders for Removal of Steel Stand Pipe



Tenders will be received, by registered post only, addressed to the Chairman of the Board of Control, and marked "Tenders for Removal of Stand Pipe," up to noon on MONDAY, AUGUST 16TH, 1897, for the removal of the 6-foot Steel Stand Pipe at the High Level Reservoir on Avenue Road.

Conditions may be seen and forms of tender obtained at the office of the City Engineer, Toronto, on and after Wednesday, the 4th of August, 1897.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 2 1/2 per cent. on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained.

Tenders must bear the bona fide signatures of the contractor and his sureties, or they will be ruled out as informal.

Lowest or any tender not necessarily accepted.

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

City Hall, Toronto, August 3rd, 1897.

Messrs. Etienne and Prudent Robert, contractors, Montreal, have formed a partnership.

Messrs. Edmond Laberge & Alphonse Gauthier have commenced business in Montreal.

Mr. Contine, contractor, is erecting a block of brick stores and several residences at St. Joseph, Ont.

CONTRACTS OPEN.

KASLO, B.C.—The Kaslo Electric Light Co. has secured a site for a new power house.

MILTON, N.S.—The Acadia Pulp Co., Ltd., propose to erect a second mill at this place.

PARRY SOUND, ONT.—It is rumored that H. H. Cook will erect a pulp mill at this place.

LISTOWEL, ONT.—The waterworks by-law submitted to the ratepayers on the 27th ult. was defeated.

MORDEN, MAN.—The C.P.R. Co. are being urged to erect a creditable station building at this place.

LONDON, ONT.—Ex-Alderman Wilkey has commenced the erection of three brick houses on Lorne avenue.

ST. MARYS, ONT.—The St Marys' Creamery Co. have purchased a site on which to erect a new building.

BELLEVILLE, ONT.—The Works Committee have recommended the purchase of 50,000 feet of lumber for sidewalks.

FORT WILLIAM, ONT.—The council are being urged to undertake the construction of waterworks and sewerage systems.

GODERICH, ONT.—The town council propose to have constructed two and a half miles of extensions to the sewerage system.

HATCHELY, ONT.—The Baptists are building a brick church, 30 x 42 feet, from advice furnished by a Brantford firm of architects.

CLINTON, ONT.—The council have decided to proceed immediately with the construction of the Stavelly memorial hall in the Market square.

WOODSTOCK, ONT.—The council give notice of a by-law to raise the sum of \$4,650 for the erection of a building in which to keep the fire appliances.

KAMLOOPS, B.C.—The proprietor of the Dominion Hotel proposes to erect a large brick hotel and opera house. A new cigar factory is under contemplation.

WINDHAM CENTRE, ONT.—The Presbyterian church is being erected from the plan of Mr. Jackson, architect, Simcoe, by Philip Henry Secord, builder, Brantford.

NEW WESTMINSTER, B.C.—The council have asked Mr. Morrison, M.P., to urge upon the Dominion government the necessity of establishing here a military school.

EXETER, ONT.—Local capitalists are reported to be promoting an electric railway from Grand Bend to St. Marys. A power distribution station is part of the scheme.

CORNWALL, ONT.—It is understood that the government has adopted the plans submitted by the Ottawa & New York Railway for a bridge across the St. Lawrence river at this point.

DURHAM, ONT.—Building operations

are about to commence on the new McIntyre block. It is said that a number of other buildings are in contemplation.

CHATHAM, ONT.—Tenders are asked for the erection of a new House of Refuge for Kent county.

BERLIN, ONT.—The Grand Trunk Railway Co. have had plans prepared for a new depot 120 feet long.

WATERLOO, ONT.—At a public meeting recently held, a feeling was manifested in favor of the erection of a large skating rink.

COLLINGWOOD, ONT.—The council has given notice of its intention to construct a cement sidewalk on the north side of Simcoe street, at an estimated cost of \$643.

FREDERICTON, N.B.—The city treasurer has been authorized to negotiate a loan for the sum of \$3,000, which amount it is proposed to expend on repairs to the city hall.

HALIFAX, N. S.—H. S. Tremaine, Queen building, will receive tenders until the 10th inst. for fitting up heating apparatus in the Roy building now under construction.

KINGSTON, ONT.—The council will submit a by-law to the electors authorizing the granting of \$30,000 to the Montreal Transportation Company, to aid in the erection of an elevator.

CHICOUTIMI, QUE.—Mr. J. C. Blais, government engineer, is superintending improvements about to be made to the wharves at this place and also at Ste. Anne and St. Alphonse.

MARIPOSA, ONT.—The council have granted permission to the trustees of school sections 14 and 21 to raise by debenture the sum of \$1,350, for the erection of a new school building.

RAT PORTAGE, ONT.—The council have decided to have plans and specifications made for sewers on Main, Second and Matheson streets, tenders for construction to be called for at once.

SEAFORTH, ONT.—Mr. J. T. Cairns, Varna P.O., will receive tenders until the 9th inst. for the construction of two bridges, plans and specifications for which can be seen at the office of Mr. Cairns.

TILSONBURG, ONT.—The vestry of St. Johns church propose to remove the church building to a new site and to brick veneer the building for use as a school-room, when a new church building can be erected.

SMITH'S FALLS, ONT.—It is proposed to raise, by way of debentures, the sum of \$2,500, for the purpose of extending the Beckwith street sewer and to provide sanitary and heating appliances for the Central school.

FARNHAM, QUE.—E. Audette, secretary-treasurer, invites tenders on behalf of the corporation of this town until noon on the 10th inst., for the consolidation of a part of the town debt, amounting to from \$75,000 to \$100,000.

WILLOWDALE, ONT.—Tenders are being asked by Messrs. P. S. Gibson & Son, York township engineers, to 6 o'clock Saturday next, at Moore Park steel viaduct, near Toronto reservoir, for cleaning and painting viaduct with graphite paint.

DOVER, ONT.—Messrs. King & Cavotte, commissioners, will sell by auction at the town hall, on the 9th inst., the contracts for three and a half miles of dredging, the plans and specifications for which can be seen at the clerk's office, North Chatham.

AMHERSTBURG, ONT.—The council has received from James Wilderspin and Joseph Wilson tenders for stone sidewalks at the price of 12½ cents per foot. The tenders were laid on the table, and the tenderers requested to submit specifications for the work.

DESERONTO, ONT.—George E. Cle-

ment, chairman waterworks committee, will receive tenders until the 9th inst., on behalf of the corporation, for the erection of a fire hall and hose tower, plans and specifications for which can be seen at the office of the town clerk.

MEAFORD, ONT.—Plans are being prepared at the Public Works Department, Ottawa, for piling along the river between Nelson and Trowbridge streets, and tenders will be invited shortly, so that materials can be got on the ground this winter and operations commenced early in the spring.

SANDRINGHAM, ONT.—R. C. McGregor, township clerk, of Roxborough, invites tenders until 6 p.m. on Thursday, the 17th inst., for the construction of Tayside creek drain. Plans and specifications can be seen at the clerk's office near Sandringham. The estimated cost of the work is \$3,266.83.

LINDSAY, ONT.—T. Matchett, county clerk of Victoria, invites tenders until the 13th inst., at noon, for the construction of a bridge and approaches at Pigeon creek, on the township boundary between the townships of Ops and Manvers. Plans and specifications are on view at the court house, Lindsay.

ST. THOMAS, ONT.—Negotiations are still going on between the city council and the promoters of the proposed electric street railway. The council have decided to obtain a proper estimate of the probable cost of the proposed railway before agreeing to guarantee as requested the bonds of the company to the amount of \$50,000.

MONCTON, N.B.—Mr. H. H. Ayer, on behalf of the School Board, invites tenders marked "Tenders for School Building," until the 10th inst., for the erection of a new brick and stone school building in this city, from plans and specifications to be seen at the office of Mr. C. Dumas, architect, Halifax, and at the office of Mr. Ayer, of this city.

AURORA, ONT.—A largely signed petition of taxpayers was presented to the King township council at its last meeting, asking that a bonus of \$12,000 be granted to assist the construction of the Schomberg & Aurora Railway from a point between Newmarket and King City to Schomberg. The government has already granted a subsidy of \$3,200 per mile towards the construction of this road.

ST. JOHN, N.B. Messrs. Andre Cushing & Co., lumber merchants, are reported to be interested in a company which will erect a pulp mill at the mouth of the St. John river.—A site has been purchased for a new waterworks pumping house at the north end.—The Mayor recommends the submission to the Minister of Railways of a thoroughly considered plan of harbor improvement and dock extension.

NELSON, B.C.—Mr. W. J. Boutel, acting assistant commissioner of lands and works for the province, invites tenders for the erection of a provincial jail, at an estimated cost of \$10,000. The building is to have a stone basement and frame superstructure.—Mr. A. G. McCulloch has been appointed as resident engineer in charge of the construction of waterworks and sewerage systems.

SHERBROOKE, QUE.—It is reported that the difficulties in the way of the opera house scheme have been overcome, and that the project will now go forward. The sum of \$8,000 has been subscribed, and plans are being prepared by Messrs. Clift & Pope, and the work will proceed at once. Mr. Nuter, the promoter of the undertaking, intends to have this opera house ready by the 1st of January.

QUEBEC, QUE.—It is reported that New York capitalists are about to erect a large pulp mill near the mouth of the river Aux Sables.—The Quebec Bridge Co. had a conference a few days ago with officials of the C.P.R., G.T.R., Quebec Central and

Intercolonial and Canada Atlantic railways regarding the proposed site for the bridge and other matters connected with the undertaking.—E. M. Talbot, architect, is preparing plans for two residences, one for P. C. Lacasse, on the Ste. Foye road, and the other for Ed. Ruel, at St. Joseph of Levis.

VICTORIA, B. C.—A dispute having arisen between the city corporation and the contractors for the construction of the waterworks at Beaver Lake. Messrs. Walkley, King & Casey, the council have notified the contractors that they will proceed to complete the works. At the last meeting of the council it was decided to obtain the services of a qualified consulting engineer, to consult with the city engineer in regard to the best means to be employed to carry out the work in a satisfactory manner.—The Mayor has announced his intention of recommending to the council a by-law to raise by loan the sum of \$100,000 for the improvement of the streets.

HAMILTON, ONT.—Building permits have been taken out by E. & C. Truscott for two 2 story brick dwellings on Robert street, between John and Hughson streets, to cost \$1,800, and by E. B. Patterson, for two 2-story brick dwellings on Hunter street, between Spring and Wellington streets, for John Jones, to cost \$1,800.—Mr. W. H. Kober, of Pittsburg, Pa., visited this city a few days ago with the object of selecting a suitable site on which to build a large canning factory.—Only one tender having been received for brick paving Macnab street, the city engineer has been instructed to ascertain and report on the cost of materials before a contract is given for the work.—The council give notice of a by-law to raise \$110,000 for the construction of permanent roadways.—The council have decided to proceed at once with the construction of the sewerage disposal works at Ferguson avenue.

TORONTO, ONT.—A committee of the city council, of which Ald. Sheppard is chairman, has been granted an appropriation of \$100, with instructions to report as to the cost and other details connected with the establishment of a civic electric lighting plant at the pumping station.—Mr. Beaumont Jarvis, architect, has prepared plans for an addition to Loretto Abbey, to cost about \$55,000.—The Dominion government is said to be about to commence the construction of dykes for the protection of the Island. An appropriation of \$20,000 has been made for this and other improvements at the Island.—R. Greenwood, 6 Victoria st., invites tenders for the purchase and immediate removal of greenhouses at Chestnut Park, the residence of the late Sir David McPherson.—A building permit has been granted to D. P. Austin, 525 Bloor st. w., for two 2 story and attic bk. dwellings, 42 and 44 Winchester st., cost \$4,800.

OTTAWA, ONT.—In response to a sufficiently signed petition, the city council have decided to pave Queen street, between O'Connor and Banks streets.—Additions and improvements are to be made to the Royal Exchange Hotel on Wellington street.—The city clerk will receive tenders until Friday, the 6th inst., for the erection of a fire station on Lyon street. Plans and specifications may be seen at the office of Mr. M. C. Edey, architect. Tenders will also be received on the same date for 4,000 feet of 2½-inch fabric or rubber hose, with couplings. Tenderers must submit samples, with guarantees of pressure not less than 450 lbs. to the square inch.—Mr. Beemer, of the Gatineau Valley Railway Co., is reported to be engaged in raising the necessary capital for the interprovincial bridge. He is sanguine of securing the necessary capital from American sources, and it is believed that operations will shortly be commenced.—Surveyors are going over the proposed

route of the Pembroke Southern Railway, the construction of which is expected to commence almost immediately.—A building permit has been granted for the erection of a building, to cost \$12,000, on Sparks street south, near Bank street.

WINNIPEG, MAN.—The Provincial Minister of Public Works invites tenders until noon to-day, the 5th inst., for a Bacteriological Institute, from plans prepared by Chas. Wheeler, architect.—Mr. McGowan, architect, has received instructions to prepare plans for a new wing to the General Hospital, to cost \$50,000.—Mr. Herring, waterworks expert of New York, has been in the city for some time past investigating the Poplar springs and other sources of water supply, with a view to determining on what plan the city water works system should be constructed. It is believed that Mr. Herring's report will recommend the utilization of wells in the city by the erection of a central pump house and distributing station to which water from the surrounding wells can be carried through pipes laid underground, below freezing point. The system could be so planned that in future years, if desired, other sources of supply in the neighborhood could be utilized.

MONTREAL, QUE.—The engineer of the Harbor Board submitted to a recent meeting of the Board, plan No. 6, for the proposed harbor improvements. It was decided that the plan should be completed and forwarded to the Minister of Public Works for approval.—Cox & Amos, architects, have called tenders for a church, St. Mathias, to be built on Cote St. Antoine road.—Camelin & Huot, architects, are preparing plans for a house to be built on Huntley street for M. A. Deloges; also six houses on Berri street, for Jos. Girard; and improvements on St. Denis street for A. Perrault. Tenders for the above buildings will be called shortly.—G. A. Monette is calling tenders for two houses to be erected on St. Antoine street, Westmount, for M. A. Mongeau.—Messrs. Gamelin & Huot, architects, are calling tenders for three tenements to be built on Amherst street for Mr. Joseph Daniel.—Eric Mann is calling tenders for the painting, glazing, plastering and heating of M. G. Denman's three residence flats to be erected on Drolet street.—The Finance Committee has concurred to the extent of \$50,000 in a report of the Water Committee, asking for the balance of their appropriation of \$60,000. \$24,000 of this appropriation will be expended on valves and repairs to reservoir.

FIRES.

The Convent building at St. Ours, Que., was totally destroyed on the 27th ult. Loss, \$27,000; no insurance.—The parish church at St. Victor de Tring, Que., was destroyed by fire on July 27th, during a lightning storm.—The school-house at Lakeville, seven miles from Moncton, N. B., was recently destroyed by fire. No insurance.

CONTRACTS AWARDED.

MITCHELL, ONT.—Mr. John Avery has secured the contract for brickwork on the new Trinity church in this town.

MORRISBURG, ONT.—Mr. W. J. Poupore, M. P., has been given the contract for the erection of the Roman Catholic parochial residence.

INGERSOLL, ONT.—The council have accepted the tender of the Imperial Bank for the purchase of \$35,000 of debentures at a premium of \$854.00.

RICHMOND HILL, ONT.—Mr. John Kelly has been given the contract for the masonry and brickwork of the new high school building at this place.

HAMILTON, ONT.—Contracts for carpeting and upholstering the interior of St. James Baptist church have been given to

Finch Bros. and Thos. C. Watkins respectively.

ROSSLAND, B.C.—N. B. Davey has received the contract for the portion of the city sewerage system which it has been decided to construct at the present time. The price is \$32,744.

RENFREW, ONT.—In connection with the new waterworks system, tenders have been awarded as follows. Water tower, John Inglis & Sons, Toronto, \$4,850; boilers, Polson Iron Works, Toronto, \$2,046, pumping machinery, Kerr Engine Works Co., Walkerville, \$3,210. A. T. Lang has been appointed as local engineer in charge of the work.

SHERBROOKE, QUE.—Contracts for motors and generators for the proposed street railway have been given to the Canadian General Electric Company, for closed cars to Messrs. Rhodes, Curry & Co., Amherst, N. S., and for open cars to Messrs. Ahearn & Soper, Ottawa.—Messrs. Loomis & Sons have secured the contract for the mason work of the new electric street railway power house.

GALT, ONT.—Mr. Daniel Allen has received the following roofing contracts. From Wilson Bros., Collingwood, for covering the Tohey tannery, and from the Bryan Manufacturing Co. of the same town for brush coating their building with roofing cement; from the Waterloo Mfg. Co., J. B. Snider, Waterloo; the proprietor of the Iroquois hotel, Galt, and Mr. H. L. Janzen, Berlin.

CHATHAM, ONT.—The public school board has received tenders for the heating of the new central school building as follows. Record Foundry and Machine Company, \$975; Jas. Watt & Sons, \$2300; Smead, Dowd Company, Toronto, \$2400, \$2500, \$2275; McClary Manufacturing Company, London, \$1050; J. F. Pease Furnace Company, \$1545. The board decided to award the contract to the Smead, Dowd Company.—George F.

Fielder has been given the contract for the new electric light building at the price of \$1,542.

MONTREAL, QUE.—Adolphe Leveque, architect, has awarded contracts for a house on Laprairie street, St. Gabriel ward, for Mr. Adolphe Laprairie, as follows. Masonry, John Quinlan; carpenter and joiner's work, Isaac Collins; bricklaying, Jos. Decarie.—Eric Mann, architect, has given contracts for extension and alterations of offices on St. Nicholas street, for James Corestine & Co., as follows. Masonry, Heggie & Stewart; carpenter and joiner's work, R. Neville; plastering, Knott & Gardiner; painting, Z. Dezouche; art glass, Castle & Son.

QUEBEC, QUE.—Building permits have been granted as follows. Large shed on Colomb street, for O. Poliquin; contractor, N. Lagaré. House on St. Louis street, for Dr. Elliott, contractors, Bedard & Co.—Mr. E. M. Talbot, architect, has given the contract for the erection of Notre Dame des Anges church, in wood, 170 x 55 feet, to Mr. Dion, contractor. The same architect has awarded contracts for two houses, corner of Ste. Julie and St. Eustache streets, for Mr. M. Painchaud, as follows. Masonry, A. Fackney; carpentry and joinery, J. Bussiere; metallic roofing, P. P. Giguere; painting, M. Gingras; plumbing, Vaudry & Matte. Probable cost, \$7,500.

ETERBORO, ONT.—The council have received tenders for the construction of sewers as follows. Section No. 1, Kennedy & Wade, \$5,796, McQuillan & Co., \$9,080.26, Langford & Bogue, \$6,280. Section No. 2, Kennedy & Wade, \$4,120; McQuillan & Co., \$6,767.44, Langford & Bogue, \$5,048. These tenders do not include supplying pipes, cement, etc. Tenders, including both materials and labor for both sections, were received as

(Concluded on Page 5.)

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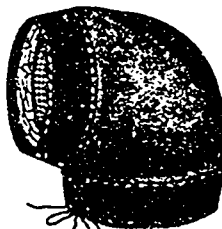
- THE McDONALD BUILDING, Victoria Square, Montreal.
- THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION BUILDING, Montreal.
- THE ROYAL VICTORIA COLLEGE, Montreal.
- THE PROTESTANT INSANE ASYLUM, Verdun, near Montreal.
- THE GRAND HOTEL, St. Hyacinthe, Que.
- THE NEW CUSTOMS-APPRAISERS STORES, NEW YORK, now building, which will consume 5,000 tons.
- THE PARLIAMENT BUILDINGS, OTTAWA, portion of which was recently destroyed by fire and rebuilt.

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follows: Kennedy & Wade, \$16,515; McQuillan & Co., \$19,351.13; Langford & Hogue, \$17,095; P. Sheehy, \$24,700.10. The council have accepted the tender of Messrs. Kennedy & Wade for construction work only of sections one and two at \$9,916, of the Rathbun Company for cement and of the Ontario Sewer Pipe Co. for sewer pipes. Mr. Kennedy is a resident of Owen Sound and Mr. Wade of Peterboro.

FLAT SLATE ROOFS.

Builders and roofers generally regard slate as adapted only for roofs having a high degree of pitch, and that sheet metal is the proper material for all classes of roofs of low pitch, or entirely flat. This opinion is based on the past experience in roofing, says a writer in an English contemporary, but has no foundation in fact. A flat roof may be constructed of slate, having all the advantages of any other slate roof. The slate, instead of being split into thin slabs and cut in various sizes of ordinary roofing, is sawed into large blocks of any convenient size, with square corners and straight edges, and split into slabs varying in thickness from one-half inch to two inches, according to the strength of roof required. The edges of these slabs are carefully smoothed and jointed, so as to fit closely, and placed side by side so as to form a plain smooth surface, instead of lopping. The joints or edges are laid in cement, which unites the pieces and renders them water tight. The slabs are kept in position by their own weight, or may be fastened to their supports by galvanized iron or copper bolts or screws. A roof of this construction requires no painting and very little repairing. It has a decided advantage over sheet metal, in that expansion and contraction from heat and cold are practically inappreciable in slate. By using iron trusses or beams as supports, a perfectly fire-proof roof may be constructed in this manner, a want long felt but never fully realized in the erection of fire-proof buildings.

HOLLOW BRICKS.

Hollow brick, it is said, are coming into more general use in Eastern cities, and quite a number of large buildings have been built with them. They crush at 30,

000 pounds, or about the pressure which the best solid brick will stand. They are made 8 x 8 x 12, with walls one inch thick. It is claimed that they cost one-third less than the regular form, making walls proof against fire, moisture and frost, being warm in winter and cool in summer. They require a peculiar clay in their manufacture, one that will not shrink when dried or burned. The bricks are set on end, thus making a wall hollow from top to bottom.

An experiment in the way of a substitute for paint is being tried on railway cars on one of the American lines. This substitute is known as oxidized copper, and is put on in thin sheets, which can be made in any color. The claim is made that it will wear much longer than paint, and that it can be put on in less time than paint and varnish.

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THE CAUSES AND PREVENTION OF WATER FERMENTATION.

Rapid progress in biological science, coming, as it does, to the aid of chemical science, and, in such cases as water analysis, furnishing what hydraulic engineers have long felt to be a needed supplement, within twenty years has changed the theories and practice of our medical authorities, and is rapidly leading, in agriculture and otherwise, to radical changes important to public welfare, writes Mr. Samuel McElroy in the Engineering Magazine.

The fermentation of water is a subject which grows in importance with the rapidly-growing demand for, and distribution of, water in the various centres of population. The careful student who has collated the experience of the more populated centres on this point finds that fermentation is an ancient and universal law of deuration in reservoirs and other bodies of water, and demands a systematic attention which it has not, as yet, received in water-supply design.

Contamination, year after year, both in summer and winter, of the most prominent supplies has shown, at times, to any careful observer, the effects of the process by which nature deaurates contaminated water. These effects have differed in period and intensity, but their occurrence has been common.

Actuated by local pride, when troubles come which should have been anticipated and prevented, city authorities have, in various times and ways, glossed over, tried to explain away, or ignored these evidences of contamination; and quite a number of those who ought to know better—chemists, biologists, engineers, commissioners—have insisted that the trouble was only temporary, its causes more or less mysterious, its effects more or less mythical, and its sanitary effects harmless. The good name of the supply is to be guarded, and the suffering consumers are cautioned against any public clamor.

The general panacea of these men is

flushing the mains at the street hydrants an operation performed at night, to save critical eyes from a shock. This shows what deposits the mains collect under their usual slow motion, and discharge under rapid currents; and it usually aggravates the trouble, since the oxids of constant pipe-disintegration are, in themselves, valuable correctives, and if the reservoir is contaminated by what it accumulates in its depths, the renewed supply more surely shows it, under the erroneous practice which neglects surface flow into the mains.

To the hydraulic engineer who has made this process a study, and is familiar with the theories and remedies of ancient practice, the causes and effects are plain, and the remedies equally so. Unfortunately, however, in the engineering profession struggling through a transition stage, studied experience has no adequate market value, and centres of population gain lessons by a prolonged suffering which is strangely universal.

Two great natural laws come into action here. From its abrasive weight, its absorbing power, its active solutions and its incessant motion, water as rain, as flowing veins and currents, as expanding ice, or when distilled by evaporation, becomes rapidly contaminated in its descent through the atmosphere and its flow over or through the earth. It rapidly takes up, or becomes impregnated with, vegetable and animal matter, diseased or dead, and mineral salts.

Then, in the wonderful provision made for man's comfort and health, come into action the sanitary forces whose office is to deaurate this organic pollution. Sunlight, as heat and otherwise, has one function; oxygen in aeration and motion has another; and the teeming sanitary police of the lower organic world, the algaoid and fungoid ministry, with that of the protozoic forms, come in to fulfil their important share of the work. These forces—heat, air, and microbes—are the remedial trinity of diseased water.

The cause, then, plainly, is contamination by diseased or dead organic matter; and, since fermentation is, generally, nature's corrective remedy, the process here is putrefactive fermentation; and the odors and flavors observed are the usual evidence of this process, which must continue until deuration is accomplished. No scientific student considers heat, or oxidation, or microbes a direct cause of this phenomenon. He knows perfectly

well that each is simply remedial for a distinct organic cause.

The ancient engineers, by careful aeration subsidence, oxidized and deaurated the organic matter, and thereby, in a simple and natural way, greatly reduced the normal quantity of microbes by clarifying and removing their food supply. But in the expensive single-process sand filters of the day, so extravagantly lauded, through a bed of two and a half to four feet, all the organic matter, flood laden or otherwise, is accumulated, and with it a necessary accumulation of microbe organic slime, which pervades the entire bed, and through which every gallon the consumers drink is forced under hydraulic pressure!

EXCESSIVE RAINFALLS.

Mr. Alfred J. Henry, in the Engineering News (June 24), calls attention to the fact that, in some of the heavy storms of the past year, many central cities have found their facilities inadequate for the discharge of the precipitated water, and damage to property and litigation have resulted from these failures. In view of the importance of the subject, Mr. Henry now makes what he thinks is "a first attempt to draw some useful deductions from the records of automatic rain-gauges in use at weather-bureau stations," and has prepared a "table showing the accumulated amounts of precipitation for each five minutes during all storms in 1896 in which the rates equalled or exceeded one inch per hour at all stations of the weather bureau furnished with self-registering rain-gauges."

The records justify the division of excessive rains into two broad classes,—(a) rains of great intensity and short duration and (b) of light intensity and long duration. Of these two classes, those of the first are by far the most damaging and destructive. In extreme cases ninety-five per cent. of the downpour may quickly find its way into natural or artificial drainage channels. A rainfall of one-half inch in linear depth represents about 11,312 Imperial gallons per acre. Assuming that in extreme cases only five per cent. is absorbed, it is easily seen how great a quantity of water must flow into the drainage channels." Conditions for sudden condensation and precipitation for water vapor are "(1) a strong vertical temperature gradient; (2) high surface temperature and humidity,—in fact, the general conditions of humidity and instability of the atmosphere necessary to the formation of thunder-storms and tornadoes."

It is evident that the records of the weather bureau can be made available for the supply of needed engineering data.

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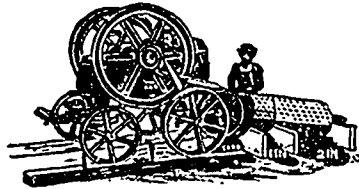
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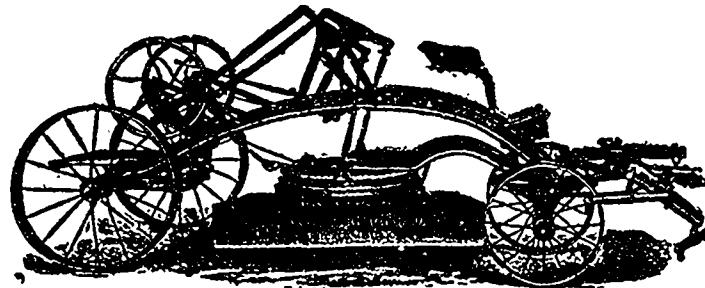


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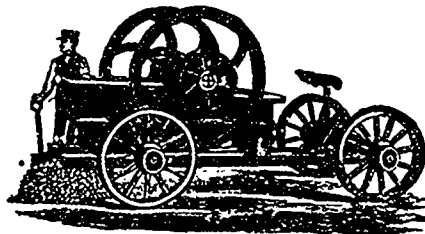
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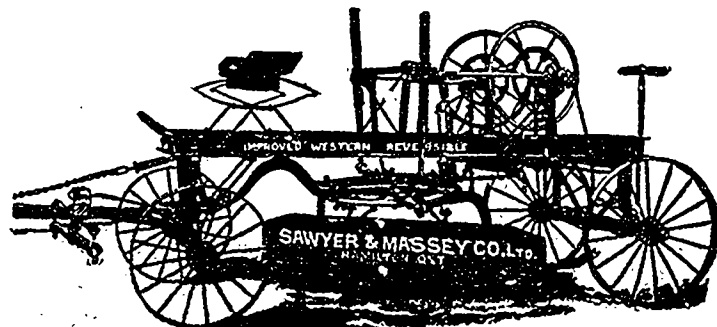


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