

CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF

EVERY

PUBLIC WORKS • TENDERS •
ADVANCE INFORMATION •
AND MUNICIPAL PROGRESS

WEDNESDAY

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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MARCH 6, 1901

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THE CANADIAN CONTRACT RECORD, PUBLISHED EVERY WEDNESDAY

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TENDERS WANTED

For the erection of a Methodist Church in the town of Clinton, Ont. Tenders to include outside walls in either brick or field stone. Full plans and specifications may be seen at the office of the undersigned. Sealed tenders to be in by MARCH 25TH, 1901. The lowest or any tender not necessarily accepted.

W. DOHERTY,
Chairman Building Committee,
Clinton, Ont.

CAST IRON WATER PIPES and Special Castings

Office of the Water and Sewerage Department,
Saint John, N.B., Canada, February 25th, 1901.

Sealed proposals, addressed to the Common Clerk, and endorsed "Tender for Water Pipes," or "Tender for Special Castings," as the case may be, will be received at the City Building, No. 110 Prince William street, Saint John, N.B., until WEDNESDAY, MARCH 21st, 1901, at noon, for furnishing and delivering about 118 tons (of 2,000 lbs.) of cast iron water pipe of 6, 8, 10, and 12 inches diameter, and about 12 tons of special castings.

Prices are to include delivery, free of all charges, except wharf dues, on one of the city's wharves, or for cars in the said city, on or before the first day of June next, but in the event of local foundries supplying the specials, they are to be delivered at such places inside the city limits as may be designated by the superintendent.

Bids will be received separately for pipe and special castings.

Each proposal must contain the full name of the party or firm making the same, and must be accompanied by a certified cheque for four hundred dollars (\$400) in the case of pipe, and one hundred dollars (\$100) if the bid is for special castings; such cheque to be payable to the Mayor of the City of Saint John, N.B., and given as surety that if the proposal be accepted, a contract will be entered into, and as a guarantee of the performance of the work.

Prices named in the proposals are to be in writing and in figures also, and no tenders will be considered unless they be on the printed forms supplied from this office.

The city reserves the right to reject any or all bids. Specifications and forms of tender may be had from the undersigned.

WILLIAM MURDOCH,
Engineer and Superintendent.

NOTICE OF REMOVAL.

Oakley & Holmes, Contractors, have removed from Wellington street to 1111 Yonge street. Estimates given on cut stone, brick work, etc. Telephone 3663.

TENDERS WANTED

Tenders will be received by the undersigned until 5 p.m. on TUESDAY, MARCH 12TH, for the various works required in making additions and alterations to the Presbyterian church, corner of College and La-downe streets, Toronto.

The lowest or any tender will not necessarily be accepted.

GORDON & HELLIWELL, Architects,
Confederation Life Building.

TENDERS

Tenders will be received by the undersigned up till noon, MARCH THE 12TH INST., for all trades required in the erection of a branch office for the Canadian Bank of Commerce, on the north-west corner of Queen and Bathurst streets.

Plans and specifications may be seen at the office of Messrs. DARLING & PEARSON, Architects,
Imperial Bank Building, Toronto.

The lowest or any tender not necessarily accepted.

CONTRACTS OPEN.

DIGBY, N.S.—The town may purchase a road machine.

COMBER, ONT.—A Catholic church will be built here.

SEVERN BRIDGE, ONT.—W. H. Miller intends building a large store.

MOUNT BRIDGES, ONT.—A residence will be built this year by J. K. Kidd.

CALGARY, N.W.T.—The C. P. R. will next summer construct a subway here.

EGANVILLE, ONT.—The ratepayers are agitating for the erection of a town hall.

BURFORD, ONT.—Mr. Manuel contemplates putting in an electric light plant.

WATERDOWN, ONT.—The Presbyterians will build a brick church to cost \$2,000.

NEWCASTLE, N.B.—G. A. Lounsbury & Co. are taking tenders for erection of brick building.

HARROW, ONT.—Robert Heaton is preparing to erect a two-storey brick veneer building.

FORT SASKATCHEWAN, N.W.T.—J. A. Powell is organizing a company to build a grist mill here.

MIDLAND, ONT.—It is said that Mr. Brown, of Elmvale, will erect a sash and door factory here.

ORILLIA, ONT.—A meeting will be held this week to discuss the proposed erection of a hospital.

DESERONTO, ONT.—The contract for the construction of the superstructure of the new post office has not yet been awarded.

BERLIN, ONT.—Jackson & Cochrane purpose building a new foundry this spring, to cost \$8,000.

FIELD, B. C.—Plans are being prepared for a new C.P.R. hotel to be built here, to cost \$20,000.

COTTAM, ONT.—A proposition is under

way to build an I.O.F. hall, to be 45x25 feet, with store beneath.

THESSALON, ONT.—The town councillors have decided to take steps to install an electric light plant.

COBDEN, ONT.—The Hornerite denomination contemplate the erection of a brick church next summer.

GUELPH, ONT.—The ratepayers of S.S. No. 7, Guelph township, have decided not to build a new school this year.

PORTAGE LA PRAIRIE, MAN.—W. McCulloch will erect a brick stable on his farm west of this town, to cost \$2,000.

TILBURY, ONT.—The ratepayers will vote on a by-law on 18th inst. to grant a bonus towards a flax mill to be built here.

ISLINGTON, ONT.—The trustees of S. S. No. 10 will issue \$1,000 of debentures for the purpose of rebuilding the school.

BLIND RIVER, ONT.—The government has been petitioned to build a new dock here. A bridge across the river is also required.

NORLAND, ONT.—J. A. Wakelin is preparing to build a new residence.—A cheese factory will likely be built here this spring.

ERINSVILLE, ONT.—A Kingston architect is preparing plans for a residence to be built here for the Roman Catholic priest.

CHESTERTVILLE, ONT.—Among the new buildings to be built this season will be a residence for W. B. Lawson and a Presbyterian manse.

SAULT STE. MARIE, ONT.—The Dominion and Ontario governments will be asked to grant aid towards the erection of an isolation hospital here.

PERTH, ONT.—The Glen Tay Power Co. has been organized, with Hon. J. G. Haggart, of this place, as one of the directors; capital \$50,000.

COLLINGWOOD, ONT.—T. C. Brown wants tenders by noon of March 7th for erection of brick cased residence. Plans at office of Brown Bros.

CAMPBELLTON, N. B.—The council have decided to take steps to construct a sewerage system. The ratepayers will vote on the question on March 15th.

AURORA, ONT.—The by-law granting a bonus of \$10,000 to Underhill & Sisman to establish a boot and shoe factory here has been carried by the ratepayers.

GLACE BAY, N. S.—McCarroll Bros. will enlarge their premises.—A number of stores will be built this year, also Roman Catholic, Baptist and Episcopal churches.

FENELON FALLS, ONT.—The Rathburn Co., of Deseronto, are said to have decided to build a saw mill here, on the property belonging to the late Mr. Arthur Estate.

IROQUOIS, ONT.—On March 23rd the ratepayers will vote on a by-law to raise \$20,000 by debentures for the purchase, extension and improvement of the water-works system.

SOURIS, MAN.—Plans are now being prepared by W. H. Shillinglaw, architect, Brandon, for brick residence for Wm. Herriott, to cost \$4,000; hot air heating, hardwood finish.

ALEXANDRIA, ONT.—The Dominion government has been requested by a local deputation to expend \$5,000 in clearing the channels of the Beaudette river, in Glengarry county.

BRUCE MINES, ONT.—The new buildings to be built this spring include residences for R. L. Miller, A. R. Cadej and Frank Van Norman, and a block for Cullis & Kettles.

ST. CATHARINES, ONT.—The railway committee of the privy council will be asked to decide how the cost of the proposed railway bridge on Queenston street shall be divided.

OWEN SOUND, ONT.—On March 26th the ratepayers of the township of Sarawak will vote on a by-law to grant \$5,000 to W. A. D. Graham to assist him in establishing a canning factory.

HAMILTON, ONT.—Local capitalists have organized a stock company to build centrifugal railways at the Pan-American Exposition at Buffalo. Adam Zimmerman and O. G. Carscallen are interested.

HUNTSVILLE, ONT.—A deputation from this town, including Mayor Hart and Alderman Paget, has asked the Ontario government to grant \$10,000 for building a bridge over the Muskoka river.

MOOSE JAW, N.W.T.—Plans are now being prepared by W. H. Shillinglaw, architect, of Brandon, for brick church for Presbyterian congregation, to cost \$10,000; leaded glass, hot air heating, etc.

OSHAWA, ONT.—A deputation from South Ontario has asked the Dominion government to improve the harbor here.—Tenders will shortly be invited for construction of waterworks system for this town.

FREDERICTON, N.B.—The provincial government wants tenders by 11th inst. for repairing McLean's bridge, Chipman, Queen's county, and for rebuilding South-West Otnabog bridge, parish of Hampstead, Queen's county.

WHITBY, ONT.—The council intends to construct cement sidewalks on the east and west sides of Brock street, cost \$758.—The time for receiving tenders for erection of Presbyterian manse has been extended to 12th inst.

WINDSOR, ONT.—Webb, Pierce & Bostwick, of Ypsilanti, Mich., promoters of the proposed electric road to connect Windsor, Chatham and Leamington; have opened an office in the Chamber of Commerce Building, Detroit.

FORT COULONGE, QUE.—An interprovincial bridge between this place and Gower Point is being advocated. The Dominion government will be asked to grant \$40,000 and the Ontario and Quebec governments \$20,000 each.

SHERBROOKE, QUE.—At a recent meeting of the ratepayers of Megantic county it was decided to urge the C.P.R. to build a railway from some point near Scottstown to the new Quebec bridge and down one of the valleys through Leeds.

WESTMOUNT, QUE.—A new R. C. parish has been formed here which will be in charge of Rev. Mr. Perron. A church to cost \$30,000 and a presbytery to cost \$20,000 will be erected on the corner of Sherbrooke street and Argyle avenue.

QUEBEC, QUE.—The question of repairing Bickell's bridge was considered at last council meeting. Ald. Drolet favored the construction of an iron bridge and a dam to protect Victoria park, but it was pointed out that these would cost \$40,000.

CHATHAM, ONT.—Steps are being taken to pave Sandwich street and Ouellette avenue with vitrified brick or

asphalt.—J. L. Wilson & Son, architects, are preparing plans for residence for William Malone, of Baldoon, cost \$2,500.

VICTORIA, B. C.—W. S. Gore, Deputy Commissioner of Lands and Works, invited tenders up to 13th inst. for construction of bridge across the Somas river, near Alberni. Cheque for \$500 to accompany tender.—The council will request the Dominion government to place a tower with clock therein on the new post office building.

FERNIE, B. C.—At the annual meeting of the Crow's Nest Pass Coal Company held last week, the president stated that it was intended to proceed at once with construction and development work involving an expenditure of \$835,000. It is proposed to build 720 coke ovens and to spend \$250,000 on mine improvements, offices, and miners' dwellings.

VANCOUVER, B. C.—The time for reception of tenders for supply of road roller and rock crusher for the city has been extended to March 7th.—A. McDonald & Co., wholesale grocers, of Winnipeg, are arranging to build in this city a three storey warehouse. Particulars from their local representative, P. Chapman.—F. M. Rattenbury, architect, is preparing plans and will shortly invite tenders for the large addition to be made to the Hotel Vancouver.

OTTAWA, ONT.—George E. Wilson, architect, is asking for tenders for a residence for A. C. Mitchell, of the Free Press newspaper.—It is understood that the Government recognizes the necessity of erecting another departmental block at an early date.—It has been rumored that the Government are considering the extension of the Intercolonial Railway westward from Montreal.—The incorporation of the Ottawa & Hull Power & Manufacturing Co. has been asked for.

KINGSTON, ONT.—Arthur Ellis, architect, has been instructed to prepare plans for alterations and improvements to the Methodist church at Bath.—H. P. Smith, architect, has just taken tenders for masonry and carpenter work required in building basement walls for new building for the Clarified Milk Co.—Plans have been submitted to local contractors for lighting the armouries. The plans provide for 187 incandescent and 8 arc lights.—According to the plans submitted by Symons & Rae, of Toronto, the new arts building for Queen's University will be built of limestone.

SYDNEY, N. S.—The county purposes erecting a two storey court house, brick and stone, on Charlotte street.—Among the buildings to be built this year are the following: Residence for J. A. Gillies, K. C.; brick and stone church for the Jubilee Methodist congregation; brick and stone academy building on Great George street; brick opera house adjoining the Rosslyn; residence for Wm. Nicholson, of the Dominion Iron & Steel Co.; store building corner Bentick and Pitt streets. New Episcopal and Catholic churches are also talked of.

LONDON, ONT.—The finance committee of the city council has decided to give \$17,300 for building two kindergarten schools and improving other school buildings.—Herbert Matthews, architect, is preparing plans for a \$5,000 residence for D. B. Colbeck, of Woodstock, and for a \$4,000 Methodist church at Brownsville.—H. C. McBride, architect, has invited tenders for a residence on Dufferin avenue for S. N. Sterling.—D. C. Wilson has taken out a building permit for a brick residence on Beaconsfield avenue to cost \$1,700.—The city council will be asked to grant \$4,450 for the purchase of a chemical fire engine.

HALIFAX, N. S.—The Dominion Leather Co. is seeking incorporation, W. B. Beardmore, of Toronto, being interested. It is proposed to erect a tannery

on Ingraham river.—The Halifax Tramway Co. proposes to build new piers and a 500 ton coal pocket, with an automatic tramway to power house.—The corporation will likely borrow \$60,000 for the purpose of extending the water works to the north end of the city.—The Dominion government is asking for tenders up to March 12th for construction of wharf at Kempt Head, Victoria county. Plans at office of C. E. W. Dodwell, this city.

ST. JOHN, N. B.—Henry Akerley proposes building a residence on Victoria street.—David Coy has purchased the Lorne hotel and purposes remodelling it.—The city is asking for tenders for supply of 2,000 feet of curbing.—William Lewis & Son purpose building a warehouse on the Sydney Market block.—The D. F. Brown Paper Co. have taken tenders for erection of a three storey brick residence and factory on Canterbury street.—The council are considering the installation of an electric plant to light the suburb of Carleton.—Plans have been received by the council for improvements to jail.—The management of the Bank of Nova Scotia will build a brick addition to their premises on Prince William street.

WINNIPEG, MAN.—The construction of a sewer on Salter street, from Elora to Stella avenues, and on Stella avenue, from Salter to Atkins streets, has been recommended; estimated cost, \$2,340.—It is stated that the Government will this year build a new land titles office on the site of the present building, cost \$60,000, and a new library building.—It is said that plans are being prepared by a Montreal architect for a large apartment building to be built by Lord Strathcona on the north-west corner of Main street and Broadway, in this city. The building will be 260 x 180 feet, four stories, of brick and stone, cost \$150,000.—Contracts will be let this week for addition to Albert school.—The contract for the bridge to be built over the red river by Mackenzie & Mann has not yet been awarded.—The owners of the property on the east side of Main street, south of Portage avenue, are having plans prepared for a building to be erected this year.—It is rumored that a Minnesota lumber firm have selected a site in this city on which to build a saw mill.

MONTREAL, QUE.—The Board of Trade have endorsed the proposal of the Minister of Public Works to provide elevating and storage facilities in the harbor, and to widen and deepen the channel from Montreal to the Gulf. The Board also points out that the government should build a dry dock here.—Montreal capitalists have obtained a charter for the construction of an electric tramway in the city of Port of Spain, Trinidad. Sir William Van Horne and F. Wanklyn are said to be interested.—F. A. Hibbard, C. E., of Ottawa, has been engaged to prepare plans for and superintend the erection of the Bout de l'Île bridge to be built by the Chateaugay & Northern Railway Co. It is understood that tenders will shortly be asked for.—The management of the Theatre National Francais Co. is said to have decided to build an addition to the theatre at the corner of St. Catherine and Beaudry streets.—The Catholic School Commissioners are calling for tenders for a school, corner La-Prairie and Manufacturers streets. Plans at the office of W. E. Doran, architect, 180 St. James street.—The railway Y. M. C. A. building has been found too small, and it is understood to be the intention of the railway management to secure the Lomas house, just opposite, and make necessary alterations thereto.—Building permits have been issued as follows: James Prendergost, two 2 storey houses, 771 Cadieux street, cost \$3000; Alp. Sanfacon, two storey house, Brebeuf street, cost \$2500; Mrs. M. Falardeau, two storey house, Seaton street,

cost \$1200; Sisters of Hotel Dieu, alterations to a four and one-half storey building, 12 Desbrosses street, cost \$1500; Geo. Gausreau, alterations to store, 1440 St. Catharine street, cost \$4000; Chanteloup Mfg. Co., alterations to two storey factory, 10 and 12 Cote street, cost \$2000.

TORONTO, ONT.—The Canada Company's building at the north-east corner of King and Frederick streets is being torn down, and a new building to be used as a harness factory will be erected on the site.—The Canada Foundry Co. is said to have purchased property on Davenport road, at the junction of the C. P. R. and G. T. R., on which to build extensive foundry and machine shops.—Hon. Dr. Borden, Minister of Militia, has stated that the erection of an addition to the armories in this city is contemplated.—Gordon & Helliwell, architects, will take tenders up to 12th inst. for alterations and additions to Bonar Presbyterian church, corner College and Lansdowne avenues.—The property committee of the public school board has decided that the question of building three additional rooms to the Huron street school, and of purchasing a new school site corner Callender and Queen streets, shall be deferred for six months.—It is expected that the property committee of the city council will recommend extensive improvements to the cattle market.—The city engineer has recommended that all garbage and street sweepings be removed by street cars to Ashbridge's bay. He states that it would be necessary to construct ramps, etc., and a new bridge across Keating's cut, and asks for an appropriation of \$45,000 for the purpose.—The chairman of the fire committee has recommended that a new hose and chemical wagon be provided for the Rose avenue fire hall, and that furnaces or other modern systems of heating be placed in the fire halls where stoves are now used.—In his fortnightly report, the city engineer recommends the construction of the following works: Asphalt pavements—Queen street, Don bridge to G. T. R. tracks, cost \$26,700; York street, King to Queen, cost \$14,990; Simcoe street, King to Front. Macadam roadways—Avenue place, Avenue road to Hazleton avenue, cost \$1,590; Howland avenue, Barton avenue to north city limits, cost \$11,600; Elizabeth street, College to Grenville, cost \$1,215. Concrete sidewalks—King street, north side, Bathurst to Niagara, cost \$1,441; Avenue place, north side, Avenue road to Hazleton avenue, cost \$319; Albert street, south side, Yonge street to 165 feet west, cost \$495; Front street, south side, George to Jarvis, cost \$764; Front street, south side, Frederick to George, cost \$803; Queen street, south side, Lewis street to G. T. R. tracks, cost \$1,761.—Building permits have been granted as follows: John C. Palmer, one-story addition and alterations to Palmer House, cost \$15,000; Toronto Plate Glass Co., one-story glass bending factory, rear 209 Victoria street, cost \$1,200; City of Toronto, Swiss cottage isolation hospital, near Winchester street bridge, cost \$5,000.—The Bell Organ & Piano Co., of Guelph, is considering the question of building a factory in this city.—It is the intention of the authorities of Upper Canada College to build a primary school, at a cost of \$50,000.—Beaumont Jarvis, architect, has submitted to the Board of Control plans for alterations to the northern part of St. Lawrence market, instead of pulling it down and rebuilding, as proposed in the original plan.—The council has given notice of its intention to construct the following works: Asphalt pavements on Lowther avenue, Walmer road to Brunswick avenue, cost \$2,930; Bedford road, Bloor street to Lowther avenue, cost \$6,415; Bloor street, from Yonge street to avenue road, cost \$18,985; brick pavements on Wellington

street, York to Simcoe, cost \$8,260; Lombard street, Church to Jarvis, cost \$7,755; granite set pavement on Church street, Front to Esplanade, cost \$8,240; cedar block pavement on Dovercourt road, from Churchill avenue to College street, cost \$2,080; macadam roadway on Parliament street, King to Mill, cost \$8,740; also a number of cement concrete sidewalks.

FIRES.

Pork packing establishment of the Lawry & Son Co., at Hamilton, Ont., damaged to extent of \$9,000; covered by insurance.—Implement building on Pitt street, Windsor, Ont., owned by J. R. Toranjeau, partially destroyed.—Butcher shop of J. Dundas at Indian Head, N.W.T.—Agricultural implement factory of Jeffrey Bros. at Petite Cote, near Montreal; loss, \$25,000.—Post office building at Harrowsmith, Ont., owned by J. A. Shibley, and dwelling of John Deline, completely destroyed.—Residence of Robert Bull at Downsview, Ont.—Residence of James Elliott, 292 Slater street, Ottawa, damaged to extent of \$2,000.

CONTRACTS AWARDED.

NORTH TORONTO, ONT.—Waterworks well: R. E. Pearce, successful tenderer; price \$478.

MONTAGUE, P. E. I.—Residence for Miss K. McLeod: Dewar & McKenzie, contracts.

VANCOUVER, B. C.—Supply of hardware for the city: Thomas Dunn & Co., successful tenderers.

LONDON, ONT.—Addition to store on Dundas street east: Herbert Matthews, architect; Martin & Hammett, brickwork; John Matthews & Son, carpenter work.

BRANTFORD, ONT.—The tender of the Waterous Engine Co. for a steam road roller has been accepted by the city.

NIAGARA FALLS, ONT.—Rebuilding Anderson, Logan & Hewson blocks: Waugh & Robertson, contractors.

DIGBY, N.S.—New alms house: H. T. Warne and Alden Marshall, successful tenders; price, exclusive of heating, \$6,925.

WINGHAM, ONT.—Bridge on boundary between Howick and Wallace townships: Concrete abutments, Frank Guttridge, of Seaforth; superstructure, Stratford Bridge Co.

ST. THOMAS, ONT.—The contract for building the armoury here has been let to J. M. Green & Co., at \$29,793, exclusive of heating and furniture. Credit valley brown stone will be used.

QUEBEC, QUE.—The following tenders were received by the city for construction of iron bridge at St. John's Gate: American Bridge Co., 10 feet wide, \$2,056, 15 feet, \$2,561, 20 feet, \$2,822; Dominion Bridge Co., Montreal, \$1,940, \$2,070 and \$2,460 respectively. It is understood that the tender of the latter company has been accepted.

ADDRESS BEFORE THE ENGINEER'S CLUB.

Upon his recent election as president of the Engineers' Club of Toronto, Mr. A. L. Hertzberg delivered a brief but interesting address. After expressing his appreciation of the honor conferred upon him, he pointed out that the rapid growth of the club proved that such a society was needed in Toronto. Enough had been accomplished to justify the most hopeful outlook for the future, the present membership being about seventy. Mr. Hertzberg offered suggestions looking to the advancement of the club, one of which was that instead of having a special evening meeting between the regular monthly meetings, a lunch meeting should be held once or twice each month, at which a short discussion might form part of the programme.

Referring more particularly to engineering questions Mr. Hertzberg said:

"It is gratifying to observe that this new century has opened with a very bright out-



ML. A. L. HERTZBERG, President Engineer's Club of Toronto.

look for engineers in all the branches of the profession. Times are good, as we say; capitalists seem to have sufficient confidence to invest and Canada is a good field for investment. Our mineral resources, our water power, our forest, our coal mines, our peat bogs and marl deposits are now being rapidly developed and will no doubt afford a vast field for the engineer.

One branch of engineering, namely, railway construction, which in the past has been such a big field for the engineer, will hardly in the near future at least be carried on to any very great extent compared with former years, although a con-

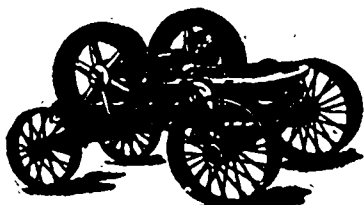
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siderable amount of work will no doubt be done, not only construction of new lines and extension of existing ones, but also double tracking in order to handle the ever growing traffic, and improving the gradient and alignment of our trunk lines will, I think, be necessary in order to bring down the cost of hauling freight to the lowest possible figure.

The tendency is to increase the weight and power of the locomotive in order to haul as heavy trains as practical, and also to increase the capacity of the freight car, so that we have now for ordinary road service locomotives weighing 150,000 lbs. on the drivers, hauling 60 to 70 cars weighing as much as 2,000 tons.

With regard to the passenger traffic the demand is for better riding track and higher speed.

Now let us see what this means to the railway engineer. In means to the engineer in charge of maintenance of the way, that he must strengthen the track and bridges, replace the rails with heavier ones, increase the number of ties, so that to-day the rail employed weighs from 73 lbs. to 100 lbs. per yard; he must improve his switches and signals, and apply interlocking plant at all grade crossings so that trains may not lose time by having to stop. The crossing tracks must be lengthened, and additional ones must be put in between stations.

To the construction engineer it means

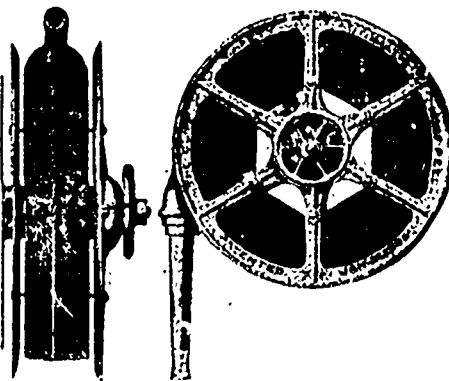
improving both alignment and gradient, which in many cases involves rebuilding of the line on an entire new location for miles.

This goes to show that even if the con-

struction of new lines were to stop entirely, there would still be work for the railway engineer. I have dwelt somewhat lengthily on railways, as railway engineering has

(Continued on page 6.)

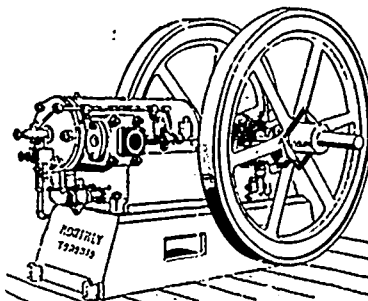
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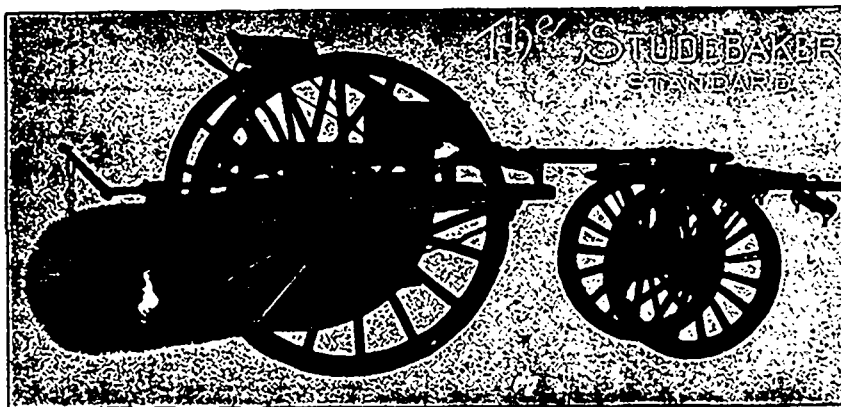
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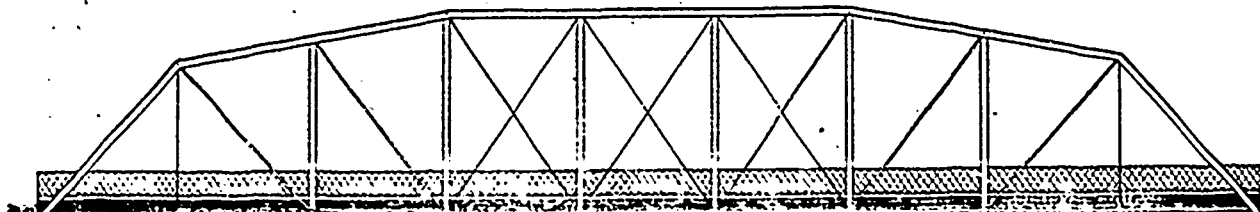
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Correspondence invited.

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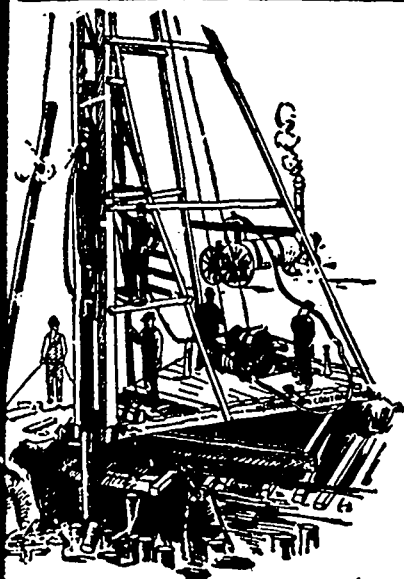
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MONTREAL

been my life occupation and because the railroads have played such an important part in the building up of our country. The following statistics may be of interest (from the Statistical Year book.) At the end of 1875 there were in operation in Canada 4856 miles of steam railways, and at the end of 1899 17,250 miles.

The number of passengers carried by these railways in 1875 were 5,190,416, and in 1899 19,133,365. In 1875 the freight amounted to 5,760,836 tons, and in 1899 31,211,753. The gross earnings, \$19,470,539, 1875; \$62,243,784, 1899. Proportion of expenses to the receipts was in 1875 81.02%, and in 1899 65.40%, which goes to show how we are improving in our work.

The average capital cost per complete mile of railroad in Canada has been up to 1899 \$55,577, which is lower than in Europe and the U.S.A., but higher than in most of the Australian colonies.

The first railway in Canada was opened on 23rd July, 1836.

Electric railways have come into prominence within the few past years, and made great progress, having taken the place of the old horse railways in all our cities and towns and extending out into the country in all directions, competing to a great extent for suburban and other local traffic with the steam roads, and in many cases making good feeders for these.

It is possible that electricity will take the place of steam power on parts of our railways, particularly through districts where water power is at hand and can be economically developed.

I regret that time will not allow me to touch on all branches of engineering, as I do not consider my address to be complete without it, and I must therefore ask you to accept it as it is.

BLASTING.

Double primers, that is, two primers in one charge of high explosives, are advocated by some, when firing by electricity. In this case the first primer is placed at the bottom of the charge, and the subsequent cartridges carefully compressed upon it. This practice is not to be recommended except when carried out by men of the best experience.

MIS-FIRES.

A constant source of danger arises from holes which have missed fire. Never be in a hurry to examine such a hole under any circumstances. When the firing is done by electricity, a half hour should be allowed; when with fuse, wait several hours. It is best then to loosen up the fuse if possible, retreat quickly, and wait again a few minutes. If no explosion occurs, then proceed to withdraw the tamping with a copper or wooden spoon. Never use iron or steel for this purpose. In the case of high explosives, or of black powder which had been primed with a cap or detonator, remove the tamping to within about 3 inches of the charge, and no closer. Then recharge above this with a large charge of dynamite, and detonate in the ordinary way. If black powder and fuse had been used, withdraw all the tamping, recharge above the old charge, and fire. If dynamite is available, except in quarrying blocks, where this procedure might entail losses of valuable stone, it is safer to explode such a missed hole of black powder with a dynamite primer, which must not be compressed before firing. In general the use of two kinds of explosive in the same hole

is a practice to be most strenuously condemned.

ADAPTATION OF EXPLOSIVES.

Adaptation of explosives to the kind of work to be done is of the utmost importance. Dynamites are not suitable for quarrying except where rubble is being obtained. Only the lowest power (40 per cent.) should then be used. Black powder is the best material for quarrying, although it is claimed that the lower power of joveite develops its explosive effect with sufficient slowness to be adapted to such uses. Also for certain ores, which contain galena and other minerals which may be too highly pulverized by high explosives, a slow acting powder is essential. High explosives pulverize and shatter; black powder fractures. The higher the power of the dynamite the larger is the sphere of pulverization. For railroad work, and for "dead work" in mines, such as shaft sinking and tunnel driving, it is advantageous to use the higher grades of powders, such as 60 per cent. and 75 per cent. dynamites, and their equivalents in other forms of high explosives.

CHAMBERING.

The bore-holes we have been considering are round and slightly tapering toward the bottom. These are suited to blasting

Lyons Electric Co. - Brantford, Ont.

Contractors, Specialists, General Supplies.
Close Figures on High Class Work

in homogeneous rock. In tough material, such as highly kaolinized felsic (the rocks, or in clay banks, and in rocks which are extensively cross-fissured (e.g., many felsites), in which latter the gas pressure from the explosion is partly relieved by merely expanding the seams or fissures, it is necessary to employ larger concentrated charges instead of the "extended charge" of an ordinary bore-hole. The commonest method of chambering, or making an enlarged cavity, is to detonate in the end of the hole a small charge of 60 per cent. or 75 per cent. dynamite, using a treble-force detonator, and no tamping. Into the chamber thus produced the charge is filled in the regular way. In the case of short fissured rocks this method often fails. It is then necessary to enlarge the cavity with a special tool, called an expanding bit, made for this purpose.

BANK BLASTING.

Bank blasting is practised in breaking up large masses of more or less firmly cemented gravel in hydraulic mining, so as to admit of washing it out with a monitor.

(To be continued next week.)

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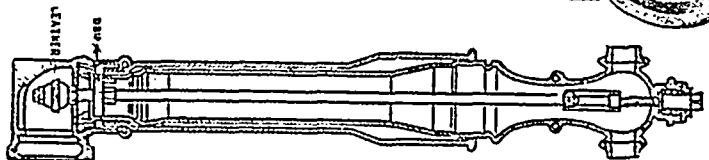
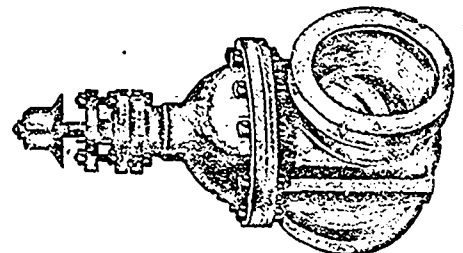
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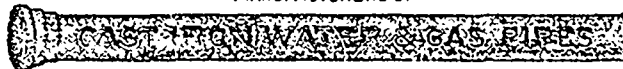
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Table listing prices for various types of Beamsville bricks and terra cotta products, including Peerless Facing, Buff Peerless, and Moulded and Ornamental Brick.

COMMON BRICK, Per M.

Table listing prices for common bricks, including Common Walling, Good Facing, and Sewer bricks.

STONE.

Table listing prices for various types of stone, including rubble, granite, and sandstone, with prices per ton or per cubic foot.

INDEX TO ADVERTISEMENTS

In the "Canadian Architect and Builder."

Large index table listing various categories of advertisements such as Architects, Contractors, Lime, Roofers, etc., with corresponding page numbers.

CREDIT VALLEY STONE.

Table listing prices for Credit Valley stone products, including rubble, brown coursing, and slate.

CEMENT, LIME, etc.

Table listing prices for various types of cement and lime, including Portland Cements and Keene's Superfine Whites.

HARDWARE.

The following are the quotations to builders for nails at Toronto and Montreal: Cut nails, 50d & 60d, per keg

Toronto, Montreal CUT NAILS, FENCE AND CUT SPIKES.

Table listing prices for cut nails, fence, and cut spikes, with prices per 100 lbs or per keg.

Lead Pipe:

Table listing prices for lead pipe, including waste pipe and galvanized iron.

Galvanized Iron:

Table listing prices for various types of galvanized iron, including Adam's-Mar's Best and Gordon Crown.

ARCHITECTURAL VARNISHES.

Table listing prices for architectural varnishes, including exterior weathering body, exterior rubbing, and ivory enamel.