Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute had copy available for may be bibliograph of the images in significantly characteristics.	or filming. Fea aphically unique the reproduction	atures of th ie, which n ion, or whi	nis copy w nay alter a ich may	hich iny			lui a é exem _l biblio reprod	ité pos plaire graph duite, a mét	ssible (qui so ique, (ou qu	de se ont pe qui pe ii peu	procu ut-êtr uvent vent e	irer. Lo e uniqu t modif exiger u	es déta ues du fier une une mo	laire quils de c point de point de image adificat indiqué	et le vue ion
Coloured Couvertu	covers/ re de couleur					į			red pa de coi	_					
Covers da Couvertu	maged/ re endommagée	:					1/1	_	damag endon	_	ées				
	stored and/or la re restaurée et/o		ée				1/1	•				aminat pellicul			
1 1	Cover title missing/ Le titre de couverture manque					Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées									
1 1	Coloured maps/ Cartes géographiques en couleur					Pages detached/ Pages détachées									
Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)						Showthrough/ Transparence									
Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur					Quality of print varies/ Qualité inégale de l'impression										
11/	th other materi d'autres docur						- 1		nuous tion c			/			
along inte	ding may cause rior margin/ serrée peut cau						- 1		es ind rend u	-	• •	ex			
distorsion le long de la marge intérieure Blank leaves added during restoration may appear					Title on header taken from:/ Le titre de l'en-tête provient:										
within the	e text. Wheneve ted from filmin	er possible, ng/	, these hav	re				-	age of e titre			ison			
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont					Caption of issue/ Titre de départ de la livraison										
pas été filmées.					Masthead/ Générique (périodiques) de la livraison										
	l comments:/ aires supplémer	ntaires:													
This item is film Ce document es					sous.										
XOI	14X		18X		T	22X	<u></u>			26X		· · · · · · · · · · · · · · · · · · ·	3	×ω×	
123		16~			~~ <u>~</u>			2433							
123	•	16X		4	20X			24X				28X			32×

THIS PAPER REACHES EVERY WEEK THE TOWN AND CITY CLERKS, TOWN AND CITY ENGINEERS, COUNTY CLERKS AND COUNTY ENGINEERS THROUGHOUT CANADA.

AND MUNICIPAL · PROGRESS

ADVANCE · INFORMATION ·

Vol. 4.

AUGUST 24, 1893

No. 27

THE CANADIAN CONTRACT RECORD,

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

Subscription price of "Canadian Architect and Builder" sincluding "Canadian Contract Record"], \$2 per annum, payable in advance.

C. H. MORTIMER, Publisher,

CONFEDERATION LIFE BUILDING, TORONTO. Telephone 2362.

64 Temple Building Montreal. Bell Telephone 2200.

Information solicited from any part of the Dominion regarding contracts open to tender.

ADVERTISING RATES ON APPLICATION

At its Convention held in Toronto. Nov. At its Convention near in Advance, Act. 90 and 91, 1889, the Ontario Association of Architects-significal-its-approval of the CANADIAN CONTRACT RECORD, and pledged its members to use this journal as their medium of communication with contractors with respect to advertisement, for Tenders.

The following resolution was unanimous ly adopted at the First Annual Meeting of the Province of Quebec Association of Arch itens, held in Montreal, Oct. 10th and 11th, 1890: "Moved by M. Perrault, seconded by A. F. Dunlop, that we the Architects of the Province of Quebec now assembled in Convention being satisfied that the CANADIAN CONTRACT RECORD affords us a direct communication with the Contractors,-Resolved, that we pledge our support to it by using its columns when calling for Ten-ders."

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

Notice to Contractors

CANADIAN CONTRACTORS'

HAND-BOOK.

A new and thoroughly revised edition of the Ganadian Contractors' Hand-Book, consisting of 150 pages of the most carefully selected material, 15 now ready, and will be sent post-paid to any address in Canada on receipt of price. This book should be in the hands of every architect, builder and contractor who desires to have readily accessible and properly authenticated information on a wide variety of subjects adapted to his daily requirements.

Price, \$1.50; to subscribers of the Canadian Architect and Builder, \$1.00. Address

C. H. MORTIMER, Publisher, Confederation Life Building, TORONTO.

Montreal Office: 64 Temple Building.

DISSOLUTION OF PARTHERSHIP.

7

EVERY

Notice is hereby given that Benjamin F. Baldwin has severed his connection from the Dominion Stained Glass Company, of 49 Temperance

Staned Glass Company,
Street, Toronto.

Business will continue to be carried on at the same place, and all orders will be promptly attended to by the remaining members of the firm.

S. J. DUNTON, Manager. S. A. BRADLEY. A. A. MACKEY.



Sealed tenders, addressed to the undersigned, and endorsed "Tender for Hot Water Heating Apparatus, Drill Hall, Toronto, Ont.," will be received until MONDAY, 287H AUGUST, for the construction of a Hot Water Heating Apparatus at the Drill Hall, Toronto, Ont.

Plans and specifications can be seen and form of tender and all necessary information obtained at this Department and at the office of R. C Windeyer, Esq., Architect, Toronto, Ont., after Monday, 14th inst.

Persons tendering are notified that tenders will not be considered unless made on the printed form supplied, and signed with their actual signatures.

natures.

Each tender must be accompanied by an accepted bank cheque, made payable to the order of the Honourable the Minister of Public Works, equal to j per cent. of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted, this cheque will be re-

turned.
The Department does not bind itself to accept

By order, E. F. E. ROY.

Secretary.

Department of Public Works, Ottawa, August 11th, 1893.



NOTICE TO CONTRACTORS.

Tenders will be received by registered post, addressed to the City Engineer, Toronto, up to 11 o'clock a.m. on Friday, the 25th August, 1893, for the construction of the following pavements on track allowances, viz. .

Parhament street, Carlton to Gerrard street, asphalt with toothing on concrete.
College st., McCaul to Bathurst st., asphalt with toothing on concrete.
College st., Bathurst to Dufferin st., vitrified brick on concrete.
Dundas st., Arthur st. to Jamieson ave., vitrified brick on concrete.

Specifications may be seen and forms of tender obtained on and after Saturday. August 19th, 1893, at the office of the City Engineer.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 2½ per cent. of the value of the work tendered for, must accompany each and every tender, otherwise it will not be entertained.

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

DANIEL LAMB,

Chairman Committee on Works.

Committee Room, Toronto, August 15, 1802.

Committee Room, Toronto, August 15, 1893.

TENDERS WANTED

Tenders will be received until August 30th for the vanous works required in the erection of an Addition to the Reinhardt Brewery. Plans and specifications at Brewery on Mark

street. No tender necessarily accepted.

TENDERS

will be received up to noon on

SATURDAY, 26TH AUGUST, 1893,

for work to be done and materials to be used in r. Slating, etc., on roof of Observatory Build-

ing.

2. Excavating for and building brick cellar under a portion of the Meteorological Offices.

Plans and specifications may be seen and information received on application at the Meteorological Office between the hours of 6 a.m. and 4 p.m., Saturdays excepted.

The lowest or any tender not necessarily accepted.

CHARLES CARPMAEL, Director.

TENDERS.

Sealed tenders will be received by the undersigned up to

Monday, the 4th day of September, 1893,

for the lighting of the streets of the town of New-market by electricity. For particulars apply to the undersigned. For particulars apoly to

August 23rd, 1893.

DAVID LLOYD. Town Clerk.

CONTRACTS OPEN.

MITCHELL, ONT.—Improvements will be made to the school buildings this year, at a cost of

\$4,000.
PETROLEA, ONT —The Fire and water Committee has recommended the purchase of 100 feet

ST. CUNEGONDE, QUE.—A movement has been commenced towards securing new muncipal buildings.

PERTH. ONT.—Mr. C. H. Keefer, C E., has completed his survey of the town for a system of

sewerage.
EDMONTON, N. W. T.—Citizens are agitating the erection of an iron bridge over the Saskatche-

wan river.

WAWANESA, MAN,—Plans are being prepared for a new post-office and a church to be erected in this town.

HOLMEDALE, ONT.—Improvements are to be made in the waterworks system, at a probable cost of \$20,000.

BAYFIELD, ONT.—!t is said that some Detroit capitalists will creet a number of summer cottages

here next season.

MEAFORD, ONT.—The Council has had plans prepared for a new bridge over Big Head river at Trowbridge street.

HALIFAN, N. S. - The Council has decided to borrow a further sum of \$37,000 for the construction of the new pipe line.

MORDEN, MAN.—I he contract for the erection of a new public school to cost \$10,000 has been awarded to Mr. James McGinnis.

NORTH TORONTO, ONT.—The Council has decided to lay 1,000 feet of pipe on Kensington ave., in view of enlarging the well.

Margarita E. ONT.—Messer, Margarit & News.

KINGSVILLE, ONT.-Messrs, Maycock & Newman, of Windsor, are preparing plans for a system of waterworks for this town.

KINGSTON, ONT .- The Dominion Government

will expend the sum of \$16,000 is construct it, is sewerage system for Rockwood asylum.

ST, JOHN, N. B.—W. H. Thorne & Co proposite to build a warehouse four stories high and 70×80 feet in size, estimated cost \$2,000.

LONDON, ONT.—Mr. Adam Beck will erect a new three-story brick factory on Albert street. The erection of an addition to the London Foundry Co's building is about to be commenced.

QUEBEC, QUE.—Hon. Mr. Quimet, Minister of Public Works, has purchased a site at River du Loup and will erect a summer residence thereon.

WINDSOR, ONT.—Messrs. Cooney & Son, of Sarnia, have leased the Crawford House in this town and will make improvements to the extent of \$6,000.

Si. Thomas, Ont.—M. C. R. engineers, after an examination of the London and Port Stanley railway, report that it will cost \$27,000 to rebuild the bridges of that road.

TORONTO JUNCTION, ONT -Mr A. H. Clemmer, Town Treasurer, invites tenders until the 4th of September for the purchase of about \$82,000 worth of delentures

ALLANBURG, ONT.—Mr. C. H. Vanderburgh, Secretary of Committee, will receive tenders unti-Saturday next, the 26th inst., for beating the Methodist church with hot air.

BROWNSVILLE, ONT. - Mr. Geo. Lash, Man-cipal Clerk, invites tenders until the first of Sep-tember for repairing South Branch Clear t reck drain and for cleaning out the Spilter drain.

BROCKVILLE, ONT.—G. A. Allan, architect, is preparing plans for a stone residence to be built on Keeler street for Mr. M. Sherwood also for a frame residence at Riverchiffe for A. Behrens.

SOREL, QUE.—A bonus of \$50,000 has been voted by the council for the establishment of a cotton mill. Mr. Wm, Hobbs, of Montreal, is endeavoring to form a company to erect the fac

VANCOUVER, B. C.—Mr. Barlow, chief engineer of the Burrard Inlet and Fraser Valley Ratways, says the finances of the company have been arranged so as to allow the work to proceed at

once.

BRIGHT, ONT.—J. Henderson, Reeve, invites tenders until the 30th inst, for the construction of the North branch of the 1 ront (reek drain in the township of Blandford. Plans may be seen at the Clerk's office.

WALKERTON, ONT.—A system of sewerage is to be constructed for this town. The Provincial Board of Health has recommended a system of sewerage by filtration similar to that at the Agricultural College, Guelph

cultural College, Guelph

OTTAWA, ONT.—The City Council has given notice that debentures will be issued to cover the cost of constructing the following works an artificial stone sidewalk on Sparks, Metcalfe and Elgin sts., cost \$1,812, an artificial stone sidewalk on Maclaren st., cost \$576; an artificial stone sidewalk on Melson st., cost \$226, an artificial stone sidewalk on Nelson st., cost \$73, an artificial stone sidewalk on Bolton st., cost \$2,115; a sanitary sewer on Alice and Peter sts., cost \$50; a sanitary sewer on Wilbrod st., cost \$7,025; a sanitary sewer on Murray st., cost \$7,025; a sanitary sewer on Water st., cost \$2,402,51, a sanitary sewer on Water st., cost \$750, sundry wooden sidewalks, cost \$1,711.68.

STRATFORD, ONT.—The late Mrs. Catherine

\$750. sundry wooden sidewalks, cost \$1,711.68.

STRATFORD, ONT.—The late Mrs. Catherine knein bequeathed the sum of \$1,000 towards the erection of the proposed House of Retuge.—David to Baxter, architect, is preparing plans for the following work residence in Guelph, cost \$5,200. additions to residence in Berlin, cost \$5,200. additions to residence in Guelph for Mr. R. Forbes; cost \$2,400. three story pressed brick block in same place, and three hospitals, two in Cold Water, Mich., and one in Buffalo. N. Y., cost about \$35,000.—The North American Mill Building Co., are asking for exemption from taxatical and free water for ten years in consideration of their rebuilding in this city.—Plans are being prepared for a sewerage system for this city.

TORONTO, ON 1.—Tenders are invited until the 26th linst, for the brick and stone work of a building for the Parkdale Society of the new church. Plans may be seen and particulars obtained at 26 Tyndall avenue.—Mr. J. Francis Brown, architect, Board of Inide building, wants tenders for creeting the Chester Baptist mission building,—Tenders are wanted at 181 McCaul st, for the erection of a stone front on private dwelling,—It is expected that the old wooden conduit from Hanlan's crib to the south side of the Island will have to be replaced by a new steel pipe, costing about \$10,000—Building permits have been granted as follows. G. T. Ry Co., 7 story bk, and stone union depot bet. York and Suncoe Sis., s of Front st., cost \$170,000; Liederkranz Society, 3 story bk, society building, 257 Ruhmond st. w., cost 516,000.

HAMILTON, ONT.—The Sewers Commutee will urge upon the council that the Crooks street sewer be constructed this year.—Mr. J. J. Mooreljouse has stated that the only building operations to be done in connection with the sinelling works this year would be the excavation for the foundation.—Building permits have been granted as follows: Wood, Vallance & Co., alterations to them warehouse on King street, cost \$1,000; Koman Cathone Corporation, new brick church at the corner of Locke

atterations to their warehouse on King street, cost \$4,000; Roman Cathone Corporation, new brick church at the corner of Locke and Herkinner streets, cost \$10,000; to William Hendrie & Co., brick stable on Napier street, between Bay and Caroline streets, additions to a stable on Caroline street, between Bay and Market streets, cost \$1,370. Win, Russell, two-story brick dwelling on Locke street, between Peter and Napier streets cost \$1,100. Williams corner of John and Young streets, cost \$5,000, Joseph Powell, four two-story brick dwellings on Young street, corner Lerguson avenue, cost \$8,000 avenue, cost \$8,000

ductings on Young street, corner Terguson avenue, cost \$8,000

MONTREAL, QUE, —Mr. Ernest Marcean will receive tenders at the Lachine Canal office until the 26th inst. for supplying timber, lumber, coal, hardware, etc., required on the Beauharnois, Lachine, Chambly, St. Ours, Carillon, Grenville, and St. Anne canals during the next fiscal year.—Tenders will be asked for at once for the construction of the proposed incinerators.—The Royal Electric Company has offered to establish works in the municipality of Coteau St. Louis, in consideration of a bonus of \$30.000.—Ald Prefontaine is about to construct a summer villa at St. Jerome.—Plans have been prepared for the six new stations for the patrol waggons. They will be built of brick having stone foundations.—It is reported that the Grand Trunk Railway Company has decided to build a new bridge across the St. Lawrence river. It will be built on the oid piers, which will be extended, and will be two nides in length.—Messrs. Taylor & Gordon, architects, have prepared plans for extensive alterations to the Montreal General Hospital, which will consist of the remodelling of the whole interior of the old building and a new system of heating and ventilation, and wring throughout. The cost will be about \$40,000.—Messrs. Mignault & Belanger, Civil Engineers, have received instructions from the Corporation of Roch de L'Achigan to prepare plans and specifications for the construction of a highway bridge of 140 feet span.

FIRES.

FIRES.

Messrs. Leger & Co's furniture factory, a three story building situated at the corner of St. James street and Marin avenue, St. Henri, Que., was totally consumed by fire last week. Loss, \$15,000; insurance \$5,000.—Mr. Walter Hall's carriage and blacksmith shop at Merlin, Ont., has been destroyed by fire, loss, \$3,000—Dean's block on Main street, Dundaik, Ont., was burned on the 15th inst. It was occupied by Dean's drug store, Gardner's stove and hardware stores, and G. H. Dean's fruit and confectionery store, the upper flat being used as a dwelling. Mr. Dunnean's dwelling adjoining was also destroyed. Loss on buildings, \$6,000; insurance, \$4,575.—The roller flour mill at Duart, Ont., owned by A. J. O'Brien & Co., was consumed by fire recently. Loss, \$6,000.—The woollen factory at Williamsford, Ont., was burned down recently. It was owned by A. S. Elhott, of Chesley, and was rented by Mr. Charles Kennedy.—A block of eight dwellings at Newmarket, Ont., was destroyed by fire on the 19th inst. The houses were owned by Mr. Thomas Flanagan, and were insured for \$1,500.—The Oxford roller flour mills at Norwich, Ont., were totally consumed by fire recently. The mills were owned by Walker, Harper & Co. and were valued at \$40,000 insurance \$22,000.—The Royal botel and Mrs. Brown's residence at Lucan, Ont., were burned on Monday last. Loss on hotel \$2,000.—Messrs. Stairs, Son & Morrow's brick and stone building on Lower Water street, Halifax, N. S., was completely destroyed by fire on the 21st inst. It was valued at \$25,000, and was insured.

CONTRACTS AWARDED.

SELBY, ONT.—Mr. J. R. Booth has secured the contract for the mason work of the new Methodist pursonage, to be built on the Gunyou

BROCKVILLE, ONT.—The contract for the crection of the cold storage warehouse and factory for Mr. John L. Uphan has been let to Mr. F. H. Fitzgibbon.

WINNIPEG, MAN .-- The contract for artificial

WINNIPEG, MAN.—The contract for artificial stone pavement has been awarded to the Winnipeg Excelsior Pavement Co., at the price of \$3.15 per square yard; curbing, \$1.15 per lineal foot.

FALLS VIEW, ONT.—Messrs, Waugh & Robinson, of Niagara Falls, Ont., have been awarded the contract for the excavation and stone work for the foundations and cellar walls of the proposed Carmelite Hospice building.

FREDERICTON, N. B.—The City Council has accepted the tender of the Brush-Swan Company to light the city with 50 are lights, each of 12,000 candle power, for \$2,000 a year. The work of putting in the plant will be commenced at once.

PORFAGE LA PRAIRIE, MAN—The contract for the Imperial Bank building has been awarded to Messrs Head & Bossons. The building is to be two stories in height with stone foundation and brick superstructure, and will cost about \$10,000, Mr. George Brown, of Winnipeg, is the architect. \$10,000. Mr the architect.

the architect.

MONTREAL, QUE.—The contract for the extension of No 11 fire station in accordance with plans prepared by Messis. Perrault & Lesage, has been awarded to Mr. L. Beaudry.—R. Indlay, architect, has let contracts as follows for a residence for Mr. Goo Wan Carpentry, Land, Paton & Son, brokwork, M. Lynch, plumbing and heating, R. Mitchell & Co.; rooting, Geo. W. Reid; plastering, John McLean, painting, Geo. S. Kumber; architectural iron work, H. R. Ives & Co.

LORONTO, ON L .- The Dominion Budge Company, of Montreal, have been awarded the contract for supplying the trusses, iron columns and beams for the new Massey music hall now being erected on Victoria street in this city.—Mr. G. F. erected on Victoria street in this city.—Mr. G. F. Bostwick, of this city, has been given the Contracts for metallic woult fittings for John Macdonaid & Co., Gooderham & Worts, McCarthy Osler & Co., and new Registry office. Toronto, and the new Court House at Woodstock, also for mosaic flooring, furniture, and metal screens for the Canada Central Loan Co., Toronto.

THE STRENGTHS OF MATERIALS.

BY TEANK J. ROTH.

The science of the strength of material gives us the information of the resistance of solid bodies against forces acting upon them. The herewith used expressions of such a science have the following meaning.

1st. Surface pressure. The pressure upon the unit of surface, square inch or square foot.

2d. Strain. The pressure of the unit of surface returned stresses of the molecular fibers; in general: Force against the unit of surface.

3rd. Strain modulus. The strain, equivalent to the elastic limit. The tensile and compression strength is equal to the tension and compression modul.

4th. Breaking coefficient or break mod-us. The stresses by which the molecu-

lar fibers release the collesion.

5th. Elasticity modulus, the measure of the elastic yielding of a material, the stresses by which a prismatic body in its length is being stretched or compressed, without changing its form after the release of the stresses.

6th. Theoretical strength is the strength in which the material or body may be subjected to tensile, compression, torsional or transverse stress in the highest strained fibers equals a stress of the strain modul, hence, the strength of the body being exposed to its elastic limit.

7th. Practical strength of the material.

We call such, when such stresses are only for safety brought to bear upon such material to a fractional part of its elastic

8th. Factor of safety. This is the proportion between the theoretical strength and the practical load or strain, or between the breaking strain and the stresses applied.

9th. Breaking strain. This is the strain which pulls apart, crushes, shears, twists or breaks transversely.

CEMENT FOR STEAM PIPES.

Another cement of specially valuable properties for steam pipes in filling up small leaks, such as blow holes in a casting without the necessity of removing the injured pipes, has been compounded. The cement in question is composed of 5 lbs. Paris white, 5 pounds yellow ocher, 10 lbs. litharge, 5 pounds red lead and 4 pounds black oxide manganese, these various materials being mixed with great thoroughness, a small quantity of asbestos and boiled oil being afterwards added. The

composition as thus prepared will set hard in from two to five hours, and possess the advantage of not being subjected to expansion and contraction to such an extent as to cause leakage afterwards, and its efficiency in places difficult of access is of special importance.

E. Benoit & Co., contractors, Montreal, have assigned, with liabilities of \$12,000.

J. B. Malhoit & Fils, contracting plasterers, Montreal, have assigned, with liabilities estimated at \$6,577.

MUNIGIPAL DEPARTMENT.

SEWER VENTILATION.

That great differences of opinion exist in regard to sewer contilation is well known, but the question is so important that the least light thrown upon it is valuable. Of late years we have run bacilli-and germ mad. Almost every disease is said to be traceable to a special bacillus. In laboratories these bacilli are propagated and displayed under glass cases. At-tempts are made to kill them, and these attempts are always more or less successful in the laboratory. What the professors and doctors have not yet told us is the precise condition of things in the human fame which admits of the bacilli obtaining a lodging therein. So far as we can see, half-a-dozen healthy bodies pass through the same atmosphere—an atmosphere, if you like, laden with bacill, but only one of these bodies sickens. The bacilli are harmless with the other five—why? It has ever been held that prevention is better than cure, and it would be well if professors paid more attention to the prevention rather than to cure. We may be allowed to digress a little as to this prevention, and say that in a measure the use of disinfectants is a means to that end. Most of the disinfectants sold are put forward as deadly encines to bacili, and we believe this is so. Not long since we had forwarded for examination a few samples of Messis. Jeyes' disinfectants. These have been carefully used and examined, and so far certainly seem to be preferred against carbolic. The latter is dangerous, and always must be so; while the former may be used without fear. So far as personal infection is concerned, we think that all authorities ought to use Jeye's fluid or something equivalent in compulsory baths. Bacilli in contact with skin would thereby be destroyed, and the propagation of certain diseases rendered more difficult. There is nothing unpleasant in such use. We would go further even, and suggest a few drops of the fluid put into all our Such a course could do no harm. and might prevent evils we see not. But to return to sewer ventilation. It is admitted that decomposing sewage matter is dangerous, and thereby several ques-tion arise. In the first place, can sewage, and how, be rendered absolutely harmless? Nature does in the course of time render it harmless, but our artificial methods of the do not permit as to adopt Nature's plan. Briefly, Nature's plan seems to be to dilute sufficiently by means of air, so that the oxygen of the air may combine with the deleterious gases, germs, or food of the bacilli and render them harmless. Following this view, it seems but natural that all who had to do with sewers would say, Plenty of air, no stagnation. Mr. Brown in his report says:

"From time to time the public mind gets very much disturbed in connection with the question of sewer ventilation, and this is not to be wandered at since so many appear to know so much about the subject while they really know so little. The best informed is not in a position to dogmatise as yet. There are, however, certain principles well known, and if acted more relief is obtained—viz. the sewers upon relief is obtained -viz., the sewers should be constructed with the best impervious materials, the workmanship should be of the best style, the sewers should be so designed as to be self-cleaning, regular

flushing should be practised and a sufficient number of ventilators at the streetlevel combined with an equal number of upcast pipes to maintain a regular move-ment of the air in the sewers. If the above be well attended to the evils com-plained of will be largely removed; I say largely removed, because it seems impossible to wholly do so, since manufacturer and others continually permitfacturers and others continually permit heated water, steam, chemicals and other matter to pass into the sewers instead of dealing with them on their own premises. The more heated a sewer becomes, either through chemical change or by the introduction of heated water or steam, the more rapidly is the foul air evolved. We have made many experiments during the year with the anemometer, and while we do not always find an outward flow from the upcast pipes when there is no observable movement in the atmosphere, we do always find a capid flow during a slight breeze, and have recorded as much as 15 ubic feet per minute from a 4in. pipe 3 feet high."

The admission that the evil is not fully

moved, makes it necessary to do more. We may say that flushing with disinfectants is too costly, and flushing with air is not satisfactory, because air steam wills not always go in the direction required. No ventilators in the street, and a current of flushing air obtained passing through a furnace has been tried, but does not seem to have found great fav au. The method is probably effective in getting rid of noxous germs. We have not heard of any trial of a modified plan of Webster's. He treats the sewage electrically. Why not ventilate the sewers themselves by means of electrolytically-obtained oxygen? It might be found fairly cheap and effective. Contract lournal.

DEPENTURES WANTED.

Municipalities issuing debentures, no matter for irrose, will find a ready purchaser by applying to Q. A. STIMSON, 9 Toronto Street, Toronto. N.B .- Money to loan at lowest rates on first mortgage.

GRAND TRUNK RAILWAY, CANADIAN PACIFIC RAILWAY, CREDIT VALLEY RAILWAY, ONTARIO AND OUEBEC RAILWAY. WELLAND RAILWAY, GREAT WESTERN RAILWAY, NORTHERN PACIFIC JUNCTION RAILWAY, NIAGARA FALLS AND QUEENSTON ELECTRIC RAILWAY,

All Used Thorold. Cement

in construction.

MANUFACTURED BY

ESTATE OF JOHN BATTLE, Thorold, Ontario.

Municipal officers, contractors and others, are requested to mention the CONTRACT RECORD when corresponding with advertisers.

Fire Bricks and Cement

DRAIN AND WATER PIPES SANITARY EARTHENWARE LONDON PORTLAND CEMENT

Paving and Scoria Bricks for Stables, Sidewalks, Yards, etc. Large quantities on hand and to arrive. We handle only the best quality. Prices lower than ever.

F. HYDE & CO. 31 Wellington Street, - MONTREAL,
S.Je Agents for
THE "GRAHTRYX" SMOKE TEST AND

DISINFECTING MACHINE.

MUNICIPAL ENGINEERS, CONTRACTORS, AND MATERIALS.

ISAAC USHER & SON, THOROLD, ONT.

Manufacturers of

QUEENSTON CEMENT

Proved by Government tests to be the best Cana dian natural cement. Write for prices, &c.

WILLIS CHIPMAN, B. A. Sc., Can Soc. C.E., M. Am. S M. Am. W. W. Assin

CIVIL AND SANITARY ENGINEER Sewayo Disposat tog BAY STREET

J. McDOUGALL, Ç. E., ENGINEER COUNTY OF YOR

Consulting Engineer for Municipal Work. Electric Railways and Bridges.

COURT HOUSE, - TORONTO.

Municipal officers, contractors and others are requested to mention the CONTRACT RECORD when corresponding with advertisers

JOHN GALT MEM. CAN, SOC. C. E.,

GONSULTING ENGINEER AND EXPERT

WATERWORKS, SEWERAGE, ETC.

Twenty-five years' practical experience in Great Britain, United States and Canada.

Office: Rooms 69 and 100. CANADA LIFE BUILDING. - TORONTO.

TAR FOR SALE.

A quantity of coal tar made from the best bituminous coal.

THE STRATFORD GAS CO.
John Read, Manager.

To Corporations and Contractors

THE CELEBRATED



Double Stuffing BOX.

Compound Wedae.

Double Disk.

made withermost modern princi-ples and of the best material.

MALLHEWS LUDLOW

Hydrants, Valve and Service Boxes

oherty Mfg. Co.

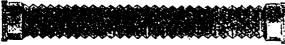
SARNIA, ONT.

L LOIGNON,

Bridge and Structural Iron Work. Steel Beams kept in stock.

WORKS: ST. COLUMBAN ST. AND CANAL SIDE, MONTREAL. OFFICE: 7 PLACE D'ARMES, Telephone 9277.

CORRUGATED SOIL PIPE AND FITTINGS (PATENTED)



lumbing inspectors master p sociations, and others. Conce: more economical to use costs no

H. R. Ives & Co.

Montreal.

UNICIPAL **OFFICIALS**

should see to it that in the erection of town and city PUBLIC BUILD-INGS, the installation of water works plant, etc., the advantages of . . .



are made use of for deadening sound in floors and partitions, insulation of heat and cold, fireproofing, etc., also SECTIONAL MINERAL WOOL COVERING for steam pipes, boilers, exposed water

CANADIAN MINERAL WOOL CO., Limited, 122 Bay Street, Toronto.

Montreal Agent: GEO. A. COWAN, Koom 23, 204 St. James St.

GEO. R. THOMPSON & CO., Agents, Winnipeg, Man.



To Municipal Corporations and Contractors:

... WE MANUFACTURE ...

Hydrants, Valves, Valve Boxes

and Water Works Supplies generally,

INCLUDING

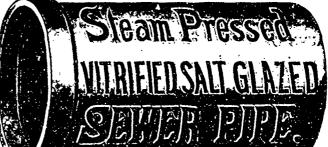
Touls for tappir 1 mains under pressure and Service Brass Work of all descriptions.

PORTLAND GEMENT

23,353 Barrels of Burham Brand were sold in Toronto in 1892, amounting to two-thirds of our total sales.

25 George St., Toronto. Nichols, Smythe & Co., CEMENT CONTRACTORS TO THE CITY OF TORONTO. Telephone 1948 or call and see us.

HAMILTON AND TORONTO SEWER PIPE CO.



CULVERTS.

AND WATER PIPES.

Pire Brick Sewers

HEAD OFFICE AND FACTORY, HAMILTON, CANADA.

Drummond McCall Pipe Foundry Company, MONTREAL

LK AND GAS PIPES

Works: Lachine, Que.

PRICES ON APPLICATION.

Water Meter Co., Ltd.

Meter Supports, Dial Extensions, Fixture Locks, Water Cart Registers, Strainers, Coupling Seals and Reservoir Indicators.

Send for Price Lists and Testimonials. Our ineters are adopted and in use in over 500 cities and towns in Canada and the United States. Highly endorsed by leading Engineers. A guarantee for five years given with all Meters. All information furnished on application to

A. C. WINTON, Secretary-Treas.

Office: No. 23 Toronto Street, Toronto, Ont.

ANADA PIPE AND FOUNDRY CO.

MANUFACTURERS OF

Cast Iron Pipes and Special Castings

Works: MONTREAL AND ST. HENRI, QUE. CORRESPONDENCE SOLICITED.

OF ST. JOHNS, P. Q., (LIM.)



Manufacturers of

Salt-Glazed, Vitrified

SEWER

Double Strength Railway Culvert Pines. Inverts, Vents,

ALL KINDS OF FIRE CLAY GOODS.

THE G. & J. BROWN MFG.

Railway and Contractors' Plant.

BELLEVILLE, ONT.

Can.Mineral Wool Co vii

Building Stone Dealers.

Builders' Hard-

Rice Lewis & Son.... IV Vokes, M. & J. L....xvi

Creosoto Stains Cabos, Samuel... II

CENTRAL BRIDGE AND - -- - ENGINEERING COMPANY. (LIMITED)

Peterborough, Ont.

WM. H. LAW, Manager and Engineer. MANUPACTURER OF

RAILWAY AND HIGHWAY BRIDGES

Viaducts, Piers, Roofs, Turntables and Girders in Steel and Iron.

Tension members forged without welds. Riveting done by hydraulic or compressed air machines. Specialties; Good workmanship and strict adherence to specifications and drawings.

CAPACITY: 2,000 TONS PER ANNUM.

OUR SALES OF

Portland Cement ..

for the past 8 months have been

25,499 GASKS.

"Burham" Brand outranks all others. Try it and be convinced.

Sole Consignees for Canada:

MCRAE & CO., OTTAWA

Canada Pipe Foundry,

HAMILTON, ONTARIO.

ALEX. GARTSHORE, - Proprietor.

Manufacturer of

CAST IRON WATER, GAS AND SEWER PIPES.

- ALSO -

Special Castings of every description.

CAPACITY: 50 TONS PER DAY.

In use from Vancouver to Sydney, Cape Breton. Correspondence solicited.

Prices of Building Materials.

LUMBER.

	D.D.14		
CAR OR CA	RGO LOTS.		
•	Toronto.	Mont	fonw
	TATATION.	MANI	roar.
	\$ \$	S	\$
11/2 to 2 clear picks. Am ins	.74 00@:6 00	4000	م د م
1 to 2 three uppers, Am in	37 0		
1 to 2, pickings, Amins	. 270		
3 inch clear			
z x zo and ze dressing an	ä	52 50	60 %
		0	
better			50 O
1 X 10 and 12 min run	13 00 14 0		19 ∞
1 x 10 and 12 dressing	15∞ 160		18 O
1 x 10 and 12 common	12∞ 130		100
1 x 10 and 12 spruce culls			1100
t x 10 and 12 maple cults			90
z inch clear and picks	. 28 ∞ 300	0 33 00	350
zinch dressing and better	18 00 200	o 18 ∞	20.0
zinch siding, mill ran	1400 160	0 14 00	160
t inch siding, common	.1300 130		- 14,0
z inch siding, ship culls	.1200 120		110
t inch kiding, mill culls	.800 go		900
Call scantling			90
11 and thicker cutting u	n		yu
plank			
z inch strips, 4 in. to 8 in. mi	11 2 2 23 4	22 00	32 O
tun	.14 00 15 00		150
inch strips, common	.1100 1200		120
11 inch flooring	•25 00 26 00		1500
11/2 inch flooring	.2500 2600	14∞	16 oc
XXX shingles, sawn, per 3	ni .		
76 in	• 250 2£6		2 70
XX shingles, sawn	. 150 160	160	170
YARD QUO	TATIONS.		-
Mill cull boards and scantlin		_	
Citation and bearing	E 1000	•	100
Shipping cull boards, pro	-		
miscuous widths	. 1300		1300
Shipping cull boards, stock)	10 O
Hemlock scantling and jois	ŧ		
ap to 16 ft	.11 00 12 00	•	100
Hemlock scantling and jois	t		
up to 18 ft	.1200 1300	1200	1300
Hemlock scantling and jois	t		
up to 20 ft	.1300 1400	1300	14 OC
Scantling and joist, up to 16			1400
11 11 18			15 OC
11 11 20			
11 11 22			10 ∞
11 11 24			17 ℃
11 11 26			19 C
			21 O
			33 ∝
11 11 30			25 ∞
10 11 32			27 €

	Toron	to M	ontre	ol
Cutting up planks, 136	and			
thicker, dry	and18 00	22 00	18∞	22 00
Cedar for block paving cord	, per	5 00		5 ∞
per mi		14 00		14 00
1 % in flooring, dressed, 1 % inch flooring, tough,	F M.28 00 B M.18 00	31 00 22 00	28 00 18 00	
t is inch flooring, tough, the dressed, the undressed, the dressed, the dressed,	F M.27 00 B M.18 00	30 €0	27 ∞ 18 ∞	30 00 19 00
dressed dressed undressed Beaded sheeting, dressed	12 00	22 00 15 00 35 ∞	13 00 19 00	22 03 15 ∞ 35 ∞
undressed Beaded sheeting, dressed Clapboarding, dressed XXX sawn shingles, p	er M	13 00		12 00
Sawn lath	250	2 60	3 20	3 (o 2 6o
Cedar Red oak White		2 90 40 00 45 00	30 00 35 00	2 90 40 00 45 00
White	70 00	20 00 70 00	35 ∞ 18 ∞ 70 ∞	20 00 80 00
Black ash, No. 1 and 2 Drawing stocks	18 00	30 00	30 00 18 00 16 00	35 ôo 30 ∞
Dressing stocks	on	22 00 40 00 50 00	2000	22 00 40 00 50 00
Common Walling	<i>ОК</i> С—19 М	7 50		6∞
Good Facing Sewer	****	900	8 50	9 00 8 50
Pressed Brick, Pe		16 τρ		
Plain brick, f. o. b. at M	••••	14 00 8 00		
Hard Building	, per	4 50		
Roof Tiles Diamond locking tile		10 00 74 00 16 00		
First quality Co.S. at Ca	mn.	18 00		
bellville. and quality, f.o.b	····	14 00		25 00 20 00 17 00
Tiles	300	10 00 24 90	3 ∞	10 00 26 00
Plain brick, "A" fob, Dor	Valley	18 00 16 00		25 00 22 00
		13 00 24 00		18 00 30 00 60 00
Ornamental, per 100 Plain brick, f.o.b. Port C	redit	1800	3∞.	60 ∞
" 2nd quality. " 3rd " Hard Building	• • • • •	13 00 10 00 8 00		
Ornamental, per 100	3∞ 1ND.	10 0		
Per Load of 11 Cubic Y		1 25		1 32
Common Rubble, per to delivered Large flat Rubble, per to	ise,	14 00		14 00
delivered		18 00 18 00		28 00 50
Moncton, N. B., per	res Cu			-
ft., f.o.b	o.b.	100		
Ballochmyle New York Blue Stone Granite (Stanstead) Ashla	60	95 90	65	75 1 05
in. to 12 in., rise 91n., pe Moat Freestone Thomson's Gatelawbridge Credit Valley Bubble	τft.		70	25 80
Orcore validy available	PCI .		75	80
toise, delivered	urs- d 250			2 90
sion, per cubic foot	ien.	90		90
sion, per cubic foot Credit Valley Grey Coursi per superficial yard Credit Valley Grey Din	150 len-	.200	,	2 15
MadocRabble delivered	ner	75		80
Madoc dimension floating o. b, Toronto, per cubi Ohio Freestone, No. 1 E Promiscous f.o.b	14 ∞ ζ. f.	14 50	14 ∞	14 50
Ohio Freestene, No. 1 I	llue	32 60		
No. 1 Blue Dimension No. 1 Buff Promiscuous. No. 1 Buff Dimension	•••	65 80		
The above prices me freight and duty paid.	ans	85		
2 in sawed flagging person	j.ft	11 13½ 16½		
25 11 11 11 11 11 35 11 11 11 11 11 45 11 11 11 11 11 55 11 11 11 11		10/3 22 27/3		
Duty to be added to th	rse	33		•
Quebec and Vermont ro- granite for building p	igh			
poses, per c.ft. f.o.b. qua For ornamental work, cu. Granite paving blocks, 8 in	ny 33 ft. 35	1 50 20		
1210.X010.X4% 10., per	M	50 ∞		
Granite curbing stone, 6 i 20 in., per lineal foot	ATE.	70		
Rocfing (% square).	•••	16 CO		20 00
unlading gr	cen	9 00 8 50		10 (0 6 00
Ornamental Black Slate R	oof-	\$3 00 8 00		7 50
ing	•••	8 ∞ ¥ ¼.		
White lead, Can., per 100 " rinc, Can., " Red lead, Eng " venetian, per 100 lbs. " vermillion	1bs. 6 25 6 50	6 50 7 50	6 ∞ 7 50	6 25 6 00
venetian, per 100 lbs.	5½ 1 60	634 2 75 2 00	2 60 90	6 175 100
Yellow ochre	5	10	10	6
Yellow chrome Green, chrome Paris		20 12	25 7	13 50
	3	40	20	=0

	8 1, 173					
Toronto. Montroal.	- Toronto. Montreai.					
Dide, ultrainarine 16 go 12 18	3d to 5d cold cut, not polished or blued, per 100 lbs 90					
Uil, linseed, raw, 1/2 /11/2, 4:41. 65 68 63 65	•					
	### ##################################					
	30' bet 100 pg					
Putty 23/4 23/4 23/4 23/4 Whiting, dry, per 100 lbs 75 1 00 60 75	CASING AND BOX, PLOORING, SHOOK AND TOBACCO BOX					
Paris white, Eng., dry 90 1 25 99 1 10	NAILS.					
Litharge, Am 634 8 634 8	12d to 30d, per 100 lbs 50 60					
Sienna, burnt	10d, "", 60 (5					
Umber, " 836 12 12 15	ou and gu,					
CEMENT, LIME, etc.	ou kiiu 70, 90 90					
Cement, Portland, per bbl 250	4d tQ 5d, "" 110 115					
" English " 275 Belgium " 325						
	PINISHING NAILS.					
" Queenston, " 223	3 inch, per 100 lbs 85 85					
ii Napanee, ii 150						
" Hull, " 1 50	2 to 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
" German " 265 285	13/2 " " 1 75 1 76					
17 245 290	1 " " 225 225					
D-1-1 41	SLATING WAILS.					
C-1111	5d, per 200 lbs					
11 Caradian 225 230	40,					
Parian " 440 475	3d, " " 1 25 1 2d, " " 1 75 1 5					
Superfine " 6 so 2 00						
Keene's Coarse "Whites" 4 50 4 75	I inch, per too ibs I so I so					
Calcined plaster, per barrel 1 55 1 70	74 " " 275 75					
Fire Bricks, Newcastle, per M 20 60 24 00 30 00 35 00	7, " " " 175 . 75 3, " " " 225 . 223					
Lime, Per Barrel, Grey 40	CLINCK NAILS.					
_ " " White, 55	3 inch, per 100 lbs. 85 86					
Plaster, Calcined, N. B 200	2½ and 2½ '' '' too too					
" " N. S 200	2 and 2)(" " 15 115					
Hair, Plasterers', per bag 80 1 00	175 4010 174					
HARDWARE.	17 1 2 W 2 W					
Cut nails, 5cd & 6cd, per keg 240 225 Steel II II II II 250						
Steel II II II 250 235 CUT NAILS, PENCE AND CUT SPIKES.	SHARP AND PLAT PRESSED NAILS. 3 inch, per 100 lbs. 1 35 1 35					
and has an exercise the	3 inch, per 100 lbs. 135 135 2½ and 3½ " " 150 150					
30d, 11 " 11 10 TO	2 and 21/ " " 16 26					
20d, 16d and 12d, hot cut, per	11/2 and 11/4 " " 1 85 185					
100 lbs	234 " " " 250 250					
10d, hot cut, per 100 lbs 20 20	300 3(0					
23, 33, 11, 11, 11, 11, 11, 12, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13	Structural Iron:					
60, 7d, 40 40 4d to 5d, 60 60	Stee. beams, per 100 lbs 2 75 2 50					
	" channels, " 285 250 " angles, " 250 230					
2d, " " " 100 100	** ** *** *** *** *** *** *** *** ***					
4d to 5d cold cut, not polished	" plates, " 255 235					
or blued, per ico lbs 50 50	Sheared steel bridge plate 2 25 2 35					
INDEX TO ADT	TEDETCENTENTEC					
INDEX TO ADV	VERTISEMENTS					
in the "Canadian Architect and Builder."						

INDE	$A I \cup A D $
ir	the "Canadian A
Architects.	Church and School
	Furniture.
Ontario DirectoryIII Quebec Directoryvi	
	Can. Office & School
Architectural Sculp- lors and Carvers.	Bostwick, Geo. F xv Can. Office & School Furniture Co v Office Specialty Co v
Carnovsky, B. H IV	_
Hicks, W. StivensIII Holbrook & Molling-	Cements. Adamant Mfg. Coviii
ton i	Bremner, Alex iv
ton	Currie&Co, W.&FP xvi
Architectural Iron- Work.	Bremner, Alex. iv Currie&Co,W.&FPxvi Estate of John Battle iv McNally & Co., Wm. iv Maguire Bres. i Morrie E. D.
	Morris, E. Dviii
Bostwick, Geo. F xv B. Greening Wire Co.III	
Dennis, R	Rathbun Coviii Usher & Son, Isaac iv
Dominion Bridge Co. 1	Webster Bros. & Parkes i
Lea, Josephxvi Mezdows, Geo.BII	Contractors and
Whitfield, John II	Builders.
, Jonato 11	Davidson & Kelly 11
Architects' Supplies	Turner & Co., G. W vi
Hearn & Harrison vi	Contractors' Plant
Art Woodwork.	and Machinery
Carnovsky, B. H IV	Copland & Co II
Knechtel, Sxvi	Rice Lewis & Son IV
Camovsky, B. H IV Knechtel, Sxvi Ransom & Co., C. Sxvi Wagner, Zeidler & Co., xii	Rowe, Geo II
	Cut Stone Con-
Bricks (Pressed).	tractors.
Beamsville Pressed	Curtis & Rowe II
Brick Co ii Don Valley Pressed	Isaac Bros II
Brick Works ix	Oakley & Holmes II
Brick Works ix Morris, E. Dviii	Chimney Topping.
TOTORIO FTESSEG DITCK	Bremner, Alex iv
& Ferra Cotta Co iii .	Currie&Co.,W &F.P. xvi
Builders' Supplies.	Drain Pipe
Adamant Mfg Coviii	Bremner, Alex iv Currie & Co., W&F.P.xvi
Bremner, Alex iv Copland & Co II	Hamilton and Toronto
Curne & Co. W & F P.xvi	Sewer Pipe Co xii
Maguire Brosi Morris, E. D. viii McNally & Coiv	Sewer Pipe Co xii McNally & Co., W iv
Morris, E. D	Maguire Bros i
Rathbun Coviii	Maguire Bros i The Colman - Hamilton Co
Rice Lewis & Son IV	Webster Bros. & Parkes
Rowe, Geo II Vokes, M. & J. L xvi	
Vokes, M. & J. L xvi	Dumb Walters
Webster Bros. & Parkes i	King & Son, Warden xv
Boiler Covering.	Elevators

Fensom, John..... 11
Miller Bros. & Toms., vii
Otis Brothers & Co. I
Leitch & Turnbull... I Elevator Motors
Ball Electric Co.....IV Engravers. Fire Brick and Clay

Galvanized Iron Workers. Tucker & Dillon..... II

Grates and Tiles.
Bostwick, G. F..... xv
Holbrook&Mollington i
Webster Bros. & Parkes i
Rice Lewis & Son... IV

Iron Pipe. King & Son, Warden.. xv Legal. Denton & Dods..... IV

Mantels Bostwick, Geo. F. . xv Webster Bros. & Parkes 1

Mortar Colors and
Shingle Stains.
Cabot Samuel, Il
Maguire Bros. I I
Murihead, Andrew iv
Toronto Pressed Brick
Co. iii

Ornamental Plasterers.
Alluisi & Son, D... vi
Baker, J. D... II
Hynes, W J..... I Paints & Varnishes. Muirhead, Andrew... iv

Painters. Delage, Theo.... vi Gilmor & Casey... II Tourville, Chas.... vi

Paving.
The Guelich Silica
Barytic Stone Co.... vii Plasterers Hynes, W. J..... 1 Plate Glass
Hobbs Mfg. Co....
McCausland & Son...
Pilkington Brothers...

Plumbers
McCrae & Watson... vi Parquetry Floors
Elliott & Son..... I
Johnson, S. C.....

Pipe Covering
Can Mineral Wool Co vii Can Mineral Wool to vn
Plumbing **xpplies
Malcoln, W. B. ... u
Sanitas Mfg. Co. ... xi
St. Johns Stone Chinaware Co. ... iii
Toronto Stee! Clad Bath
& Metal Co. ... !!!

Roofing Materials
Merchant & Co..... 11
Metallic Roofing Co.. ix

Metallic Roohing Co. ix

Roofers

Douglas Bros. 11

Duthie & Sons. G. 11

Hutson, W.D. 11

Metallic Roofing Co. ix

Rennie & Son, R. 11

Villiams & Co. H. 11

Valliams & Co. H. 11

Shingle Stains Cabot, Samuel...... 11 Sliding Blinds Lea & Seaman..... xvi Stained and Decora tive Glass

Castle & Son...
Dominion Glass Co
Elliott & Son...
Faircloth Bros.
Faircloth Bros.
Gilson Bros. Stained
Glass Works
Grimson, G. & J. E...
Hobbs Mfg. Co...
Horwood & Sons, H..
Longherst & Co., H.
McCausland & Son.
Quesnel, Sharpe & Co.
Ramsay & Son, A.
Spence & Son, J. C...
Terra Cotta

Terra Cotta
Toronto Pressed Brick
& Terra Cotta Co... iii
The Raritan Hollow &
Porous Brick Co....vin

Terra Cotta Fire-proofing
Rathbun Co.....viit
The Ranitan Hollow &
Porous Brick Co....viii

Wall Plaster Adamant Mfg. Co. of America..... viii Nowell & Co., B.L.. xii