

**PAGES**

**MISSING**

INDEX TO ADVERTISEMENTS

In the "Canadian Architect and Builder."

Architectural Sculptors..

Modellers  
Wood Carvers  
etc . . .

Dealers in  
Maw & Co.'s  
and Minton &  
Co.'s Artistic and  
Plain Tiles for Cabinet  
Hearths, Floors, Etc

**Holbrook & Mollins**

No. 298 King St. West  
**TORONTO**  
TELEPHONE MAIN 2499

Established 1880

GREATEST DURABILITY  
SMALLEST COST  
SUPERIOR EFFECT

**MUIRHEAD'S METAL WHITE**

This article, as its name implies, is a White Metallic Paint, ground in Pure Linseed Oil.  
IT DOES NOT injure the Linseed Oil as all grades of White Lead do.  
IT WILL NOT blacken in an impure atmosphere.  
IT HAS greater spreading capacity than White Lead.  
IT IS non-poisonous, being a perfect sanitary paint.  
IT IS more easily applied than White Lead.  
IT IS unrivalled for painting the inside and outside of houses farm implements, boats, greenhouses, or any thing requiring paint.  
BY ACTUAL TEST it has worn six times as long as pure White Lead on a floor—it is equally good for door steps and decks of vessels.  
IT MAY be tinted to any shade.  
IT IS the most important article introduced for painting in recent years.

MANUFACTURED BY  
**Andrew Muirhead**

Office, No. 22 Bay Street  
Warehouse, Blincing Lane  
Factory, St. Lawrence St. **TORONTO**

<b>Architects.</b>	<b>Contractors' Plans and Machinery</b>	<b>Lumber.</b>	<b>Roofers</b>
Ontario Directory... 111	Rice Lewis & Son... 14	Gilmour & Co... 111	Frink, I. P... 111
Quebec Directory... 111	<b>Cements.</b>	<b>Mantels, Grates, and Tiles.</b>	<b>Roofing Materials.</b>
<b>Architectural Sculptors and Carvers.</b>	Owen Sound Portland Cement Co... 111	Holbrook & Mollington... 1	Metcalf Roofing Co... 1
Holbrook & Mollins... 1	The Rathbun Co... 14	Rice Lewis & Son... 14	Phillip Carey Mfg. Co... 111
<b>Architectural Iron Work.</b>	<b>Crossed Metals.</b>	<b>Mail Chutes.</b>	Roofers Supply Co... 11
Canada Foundry Co... 112	Robert Samuel... 14	The Cutler Mfg. Co... 1	Zansibar Paint Co... 119
Hamilton Bridge Co... 1	Canada Paint Co... 14	<b>Mouldings.</b>	<b>Shank Cord.</b>
Geo. E. Meadows Co... 14	Zansibar Paint Co... 149	Roynton & Co... 1	Sanson Cordage Works... 14
<b>Architects' Supplies.</b>	<b>Miscellaneous.</b>	S. K. Kestel... 1	<b>Stained and Dressed Glass.</b>
Chas. Potter... 111	Parsons, John... 1	T. H. King Co... 14	Bloomfield & Son... 1
<b>Bridges.</b>	Otis Elevator Co... 1	<b>Mortar Colors and Staining Colors.</b>	Henry... 1
Canadian Bridge Company... 1	Malloch & Co... 1	Carbot, Samuel... 14	Horwood & Sons, H... 1
Domion on Bridge Co... 1	Turnbull & Rossell Col... 1	Muirhead, Andrew... 1	Leonard, B... 1
Hamilton Bridge Works Co... 14	Williams & W'Brien... 11	Zansibar Paint Co... 109	<b>Mackay Stained Glass Co.</b>
<b>Builders' Supplies.</b>	<b>Refrigerators.</b>	<b>Ornamental Iron Work.</b>	McKenzie's Stained Glass Works... 1
Alabama Co... 1	Can. Photo-Eng. Bureau... 11	Dennis Wreck Iron Co... 11	Pilkington Bros... 112
Luxfer Prism Co... 1	Canada Fire-Proof Door and Sutter Co... 1	Geo. B. Meadows Co... 14	St. Geo. & H. E... 112
Limited... 111	<b>Folding Partitions.</b>	<b>Painters.</b>	The Robert McCausland Stained Glass Co... 1
Montreal Directory... 14	Springer, O. T... 11	Montreal Directory... 14	<b>Sanitary Supplies.</b>
Ontario Lime Association... 11	<b>Grilles and Rattings.</b>	<b>Prisms.</b>	James Morrison Brass Co... 11
Robertson & Co... 1	Dennis Wire & Iron Co... 111	Luxfer Prism Co... 1	<b>Shingles and Siding.</b>
Rice Lewis & Son... 14	Geo. B. Meadows Co... 14	Pilkington Br... 14	Metallic Roofing Co... 1
Toronto Directory... 14	<b>Granite.</b>	<b>Paints &amp; Finishes.</b>	Ormsby & Co., A. B... 1
<b>Building Stone Dealers.</b>	Brunet, Jas... 11	Canada Paint Co... 109	Roofers Supply Co... 11
Ambrose Red Stone Quarry Co... 11	<b>Kearney.</b>	Hollywood Paint Co... 1	<b>Soft Pipe.</b>
Credit Park Stone Co... 11	Clare Bros. & Co... 1	Muirhead, Andrew... 1	Toronto Foundry Co... 11
Hood & Son... 11	Darling Bros... 111	Zansibar Paint Co... 1	<b>Tubing and Fittings.</b>
Kilme J. J... 11	Garvey, T. J... 11	<b>Parquet Floors.</b>	Richmond Conduit Co... 111
Horse Shoe Quarry... 11	Ives & Co... 11	Kilgilt & Son Co... 111	<b>Tiles.</b>
Kober & Co., D... 11	Jama Smart Mfg. Co... 14	<b>Plate Glass.</b>	American Enamelled Brick & Tile Co... 1
Silex Stone Quarries Co... 11	Ormsby & Co., A. B... 1	Pilkington Br... 14	Holbrook & Mollington... 1
Sacchi Le Free Stonework Co... 11	<b>Interior Decoration.</b>	The Consolidated Plate Glass Co... 11	<b>School and Church Furnitures.</b>
Samu'l & S. M. Thos... 11	A. Abasti & Co... 1	Toronto Plate Glass Co... 111	Globe Furniture Company... 1
<b>Builders' Hardware.</b>	Belmont & Son Co... 111	<b>Plumbers.</b>	Can. Office & School Furniture Co... 111
Wire Lewis & Son... 14	<b>Landscape Architects.</b>	Montreal Directory... 14	Jenkins Bros... 14
Vokes Hardware Co... 111	Frederick G. Todd... 111	Toronto Directory... 14	Robt. Mitchell Co... 14
<b>Bricks.</b>	<b>Lime.</b>	<b>Roofers.</b>	<b>Wall Plaster.</b>
American Enamelled Brick & Tile Co... 1	Ontario Lime Association... 14	Campbell & Gilday... 14	Alabastine Co... 1
Pearsonville Brick & Tile Co... 11	Robertson & Co... 11	Douglas B... 14	Albert Mfg. Co... 1
Terr. Co. Co... 11	<b>Legal.</b>	Forbes Roofing Co... 14	<b>Wire Lathing.</b>
Don Valley Brick Works... 111	Quinn & Morrison... 11	Nicholson & C... 14	The B. Greening Wire Company... 111
Toronto Pressed Brick & Terra Co. Co... 111	<b>Laundry Machinery.</b>	Rennie & Son, Robt... 14	Metallic Roofing Co... 14
Milton Brick Co... 1	Troy Laundry Machinery Co... 1	Ormsby & Co., A. B... 1	<b>Window Cord.</b>
<b>Slates.</b>		Rin ham, George... 14	Sanson Cordage Works... 14
Steinberger, Hendry Co... 111		Stewart & Co., W. T... 14	
		Williams & Co., H... 14	

**ENAMELED BRICK (Royal Victoria Hospital, Montreal)**

**ENAMELED Subway Tile (Patented)**

ENAMELED INTERLOCKING TILE (Substitute for Brick)

**American Enamelled Brick & Tile Co.,**

1 Madison Avenue, NEW YORK.

Send for Catalogue explaining Patents and their application; Color Sheets; Special Shapes; and extensive list of our past work (illustrated).

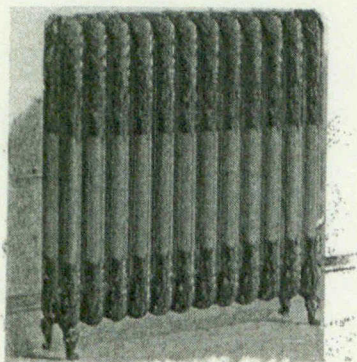
**HUGH CAMERON**  
Canada Life Building, Montreal Canadian Agent

Please Mention the CANADIAN ARCHITECT AND BUILDER when corresponding with Advertisers.

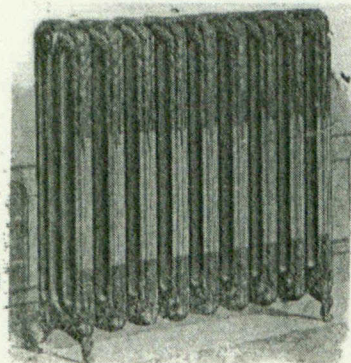
**WILLIAM MALLOCH & CO.**

Electric Hydraulic Elevators  
Hand Power  
Electric Dumb Waiters  
LONDON, ONT.

# Hamilton Radiators



★  
 For  
 Hot Water  
 and  
 Steam  
 ★



*Are the production of the best mechanical skill to be procured.*

*Unexcelled in QUALITY, DURABILITY, and EFFICIENCY.*

*Made with all iron to iron joints—no packing of any kind.*

*Used in hundreds of the best and most expensive buildings in Canada*

Manufactured by ...

Correspond with us before deciding on your method of heating.

**THE GURNEY, TILDEN COMPANY**  
 Hamilton, - Canada. LIMITED

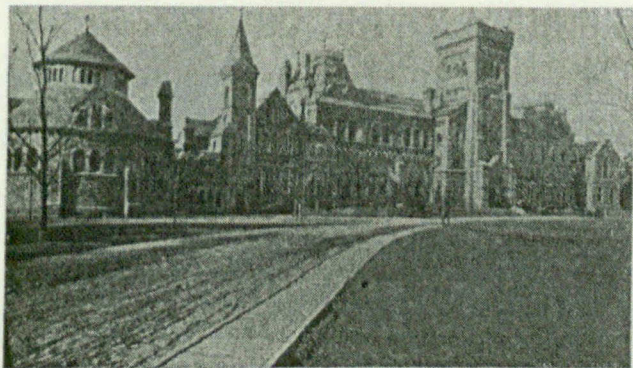
TORONTO OFFICE : 134 Bay Street.

EASTERN AGENTS : H. R. Ives, Montreal, Que., and The Star Iron Co., Montreal.

WESTERN AGENTS : The Gurney Stove & Range Co., Limited, Winnipeg, Man

CATALOGUE FOR THE ASKING

## DO YOU USE ENGRAVINGS?



The leading  
 Newspapers and  
 the leading  
 Advertisers in  
 Canada use those  
 made by

**THE ALEXANDER ENGRAVING CO.,**

*Successors to Moore & Alexander*

**Engravers, Designers and Commercial Photographers**

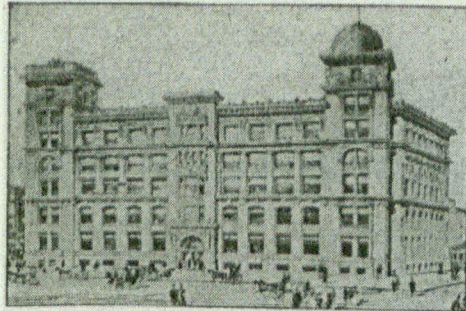
Write for Prices.....

16 Adelaide St. West, TORONTO.

THE RICHMONDT CONDUIT & MFG. CO., LIMITED  
 SOLE MANUFACTURERS OF  
**RICHMONDT ELECTRO-CALVANIZED CONDUIT TUBING AND FITTINGS**



Contractors use it because—It Saves Time and Money. Supply Dealers carry it because—It Sells Itself.  
 Architects specify it because—It fills the Underwriters' requirements.  
 FACTORY AND OFFICE: 15, 17 and 19 Jarvis Street, TORONTO, CANADA.



GRAND TRUNK OFFICE BUILDING.

The largest and most modern Office Buildings, Hotels and Factories are equipped with the

**Webster System.**  
**of Steam Circulation**

Our 1902 Illustrated Catalogue gives a full description of this System, and will be mailed on application.

**DARLING BROS.**

“Reliance Works,” Montreal.

Cable Address:  
 GILMOUR, TRENTON

MAIN OFFICES:  
 TRENTON, ONTARIO

CODES (A B C LUMBERMAN'S ZEBRA)

Established 1820

Established 1820

**GILMOUR & CO., LTD.**

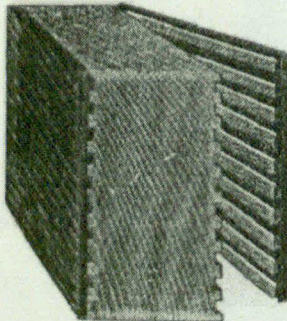


**TRENTON**  
 CANADA



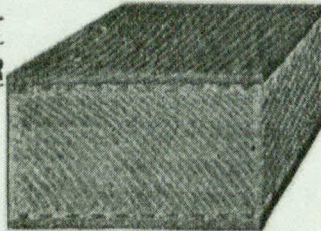
BRANCH OFFICES IN

- London, Eng.
- New York
- Chicago
- Glasgow
- Cape town, S. Africa
- Sydney, Australia

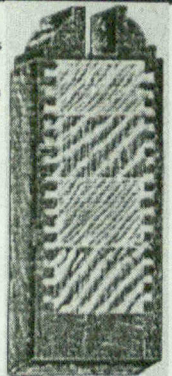


SECTION SHOWING PROCESS

**PATENT**  
**LUMBER**



SECTION PATENT LUMBER



GTILE SECTION

CAPACITY OF MILLS & FACTORIES  
**25,000,000 FEET PER YEAR**  
 OUTPUT;  
**300,000 DOORS PER YEAR**

**SAW MILLS, PATENT LUMBER, DOOR, SASH, BOX AND VENEER FACTORIES**

MANUFACTURERS OF  
 SASH, DOOR AND BOX FACTORY GOODS, LATH, SHINGLES, RAILROAD TIES, TELEGRAPH POLES AND POSTS, JOINERY, FINE INTERIOR FINISH, HARDWOOD FLOORING, ETC. EGG CASES, EGG FILLERS

WRITE OR WIRE FOR SAMPLES AND PRICE LISTS

Responsible Agents Wanted in  
 All Parts of the World

**Gilmour & Company, Limited**

ORDERS PROMPTLY FILLED

TRENTON, CANADA

# FINE GLASS BENDING

FOR  
Buildings, Show Cases  
Cabinets, &c., &c.



OUR GLASS BENDERS

We have the most modern and up-to-date method of Glass Bending known to the industry, enabling us to do the very finest of work.

**DELIVERIES AT FEW DAYS NOTICE**

**Toronto Plate Glass Importing Co.**

HILL AND RUTHERFORD

BENDING WORKS :  
209 to 213 Victoria Street

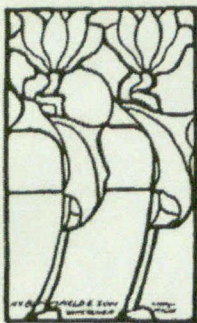
OFFICE AND WAREHOUSE :  
135 to 143 Victoria Street

TORONTO, ONT

Glass Painting...  
Memorial Windows  
**MCKENZIE'S STAINED GLASS WORKS**  
8 AND 10 MAIN STREET EAST  
Church and Domestic  
Ornamental Glass. Hamilton, Ont.  
Original Designs made to suit all classes of work.

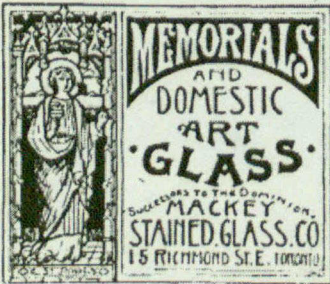
**ROBERT McCAUSLAND, LIMITED**  
86 Wellington St. W., TORONTO  
*Memorial Stained Glass*  
*Decorative Leaded Glass*  
*Superior Metallic Glazing*

**GLASS ART WORKS**  
ESTABLISHED 1876.  
Memorial Church Windows,  
Geometrical and Quarrie Windows,  
Art Glass for Residences, etc.  
Send for designs and prices to  
**H. HORWOOD & SONS** PRESCOTT, ONT.  
and Ogdensburg, N. Y.  
98 Bank Street, OTTAWA.

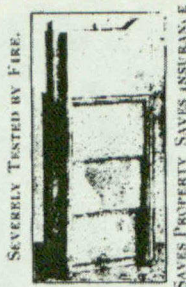


**HENRY BLOOMFIELD & SONS**  
ARTISTS IN  
STAINED  
and LEADED  
GLASS  
Mount Pleasant,  
Vancouver, B.C.  
SKETCHES AND  
PRICES ON APPLI-  
CATION.

**B. LEONARD**  
MANUFACTURER  
**STAINED GLASS**  
FOR  
*Churches, Private Houses, Etc.*  
53 ST. JOHN ST. - QUEBEC  
Estimates and Designs furnished on application.



Please mention this paper when correspond-  
ing with advertisers.



LATEST MODEL, CLOSED

**The Canadian Automatic Fire-  
Proof Door and Shutter Co.**

MANUFACTURERS OF  
Barber's Patents for Absolute Self-Acting Fire Proof  
Doors, Shutters, Vault Linings, Fittings, etc.,  
Safes, Document Boxes and Jewel Cases.  
Everything guaranteed.

For booklet and quotations, apply to  
**C. A. BARBER, MANAGER.**  
41 Bleury Street - - - MONTREAL Que.

**The Globe Furniture Co., Limited**  
MANUFACTURERS OF . . . .

**OFFICE FITTINGS**

Church and School Furniture

WALKERVILLE, ONTARIO

**E**nriched Ceilings, Cornices, Friezes,  
Box Fronts, Capitals, Columns,  
Trusses, Mouldings and Centre  
Flowers for Ceilings

Made in Fibrous Plaster - an J Carton Pierre

Drawings made and estimates given for every style of relief decoration  
for Theatres, Public Buildings, Private Houses, etc.

**Geo. Jackson & Sons,**  
49 Rathbone Place, LONDON W, ENGLAND

**NOW READY**

**Third Edition**  
**CANADIAN CONTRACTOR'S HAND-BOOK**  
and Estimator

The third edition of the Canadian Contractor's Hand-Book has been published and is now on sale. The book has been revised and enlarged to upwards of two hundred pages, and the title changed to the Canadian Contractor's Hand-Book and Estimator, considerable matter bearing on the cost of performing various kinds of work having been added.

The price of the third edition, mailed free, is \$1.00 to subscribers of the CANADIAN ARCHITECT AND BUILDER, and \$1.50 to non-subscribers. Order from the publishers,

**The C. H. Mortimer Publishing Co., of Toronto, Limited**  
Confederation Life Bldg., Toronto.

ESTABLISHED 1859

# H. R. IVES & CO.

Manufacturers and Founders  
MONTREAL, QUE.

## Architectural Iron Work



THE NEW KING EDWARD HOTEL, TORONTO

Artistic Wrought Iron Gates, Fences, Bank Railings, etc., etc.  
Hammered Leaf Work.

Grilles, Chandeliers, Electroliers, etc., etc.

Elevator Enclosures and Elevator Cars from the plainest to the most elaborate designs

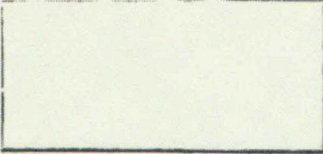
Electro Plating and Oxydizing in all Metals.

Duplex Exterior Copper Plating and Galvano Plastic Work.

## The Royal-Buffalo Hot Water Boiler

Contractors for the Architectural and Artistic Wrought and Cast Iron Work in New King Edward Hotel, Toronto ; New Grand Trunk General Office Building, Montreal ; New Royal Insurance Co.'s Building, Montreal ; New C. P. R. Telegraph Building, Montreal ; New Merchants Bank Building, Montreal, Etc., Etc.

DIRECTORY OF LEADING STONE AND GRANITE DEALERS



**LIGHT BROWN or RED STONE** *Sackville Freestone Co., Limited*  
 Sackville, New Brunswick.  
 — *LARGE BLOCK, DIMENSION, SHODDY.* —  
 State your requirements and ask for prices before contracting.  
 C. PICKARD, Managing Director.

**Amherst Red Stone Quarry Co.**  
 AMHERST, N.S.  
**Amherst Red Stone**  
*Samples Sent Free Hardens with Age*  
*Correspondence Requested*

**STONE.**  
 Contractors can be supplied with all kinds of stones—Rubble, Coursers, all thicknesses—Facing Stone, Flagging, Crushed Stone, and Grey Lime, at Horse Shoe Quarry, St. Marys, Ont., at reasonable prices, in quarry or l.o.b. cars at St. Marys, or destination. Also an analysis of their stone for retaining purposes or in Eas. Geo. D. LAWRENCE, ALB. DOUGLAS, PICS Sec. Treas.

**JOHN KLINE**  
 —DEALER IN—  
**ROUGH AND DRESSED GRANITE**  
 Heavy blocks a specialty. Street paving and curbing. Also granite for monumental and building purposes. Estimates and samples on application. JOHN KLINE, Granite Dealer, HALIFAX, N.S.

**GRANIGE**  
 Red and Rose Pink  
 Fine Rich Colours for . . . . .  
**BUILDING and MONUMENTAL PURPOSES**  
 and **GRANITE PAVING**  
 can be had at low figures from the  
**St. Phillippe d'Argentouil Quarries.**  
 Send for quotations and samples to  
**JOS. BRUNET**  
 Cote des Neiges, Montreal, Que.

**MOAT RED** - Sand Stone.  
**BLACK PASTURE** - Buff.  
**NOVA SCOTIA** - Blue Grey.  
**BATH** - Box Ground Grey.  
 Selling Agents for Canada—  
**Thos. Samuel & Son.**  
 A. G. MOONEY, Manager.  
 Telephone Main 2448. 15 Lemoine St., MONTREAL.

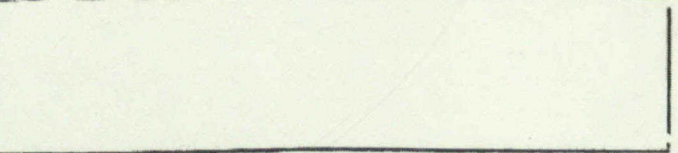
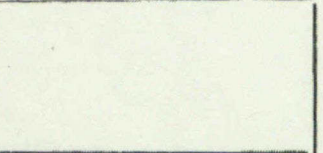
**JAMES BRODIE & CO.**  
 Quarries and Manufacturers of . . .  
*Canadian Quinsy, Ebony and Stanstead Granite*  
 Monumental Building, Curbing, Paving, etc. - *Tough Stock a Specialty*  
 Mount Johnston, Que.

**BROWN AND OLIVE**  
**FREE STONE**  
 Any dimensions and finest quality, for BUILDING PURPOSES, from our New Brunswick quarries.  
**Pulp Stones**  
 SAMPLES ON APPLICATION  
**WM. HOOD & SON**  
 10 Richmond Sq., MONTREAL

**D. ROBERTSON & CO.**  
 Credit Valley Quarries, Cataract, Ont.  
**BROWN AND GREY**  
**FREESTONE**  
 Sills, Heads, Coursing and Dimension Stone our Specialties. Lime Works at Milton, Ont.  
 Offices: Toronto, Cataract and Milton



**TO CONTRACTORS AND BUILDERS**  
 Cheapest and best stone on the market for footing, bridge work, dimension of all sizes, sawed blocks, slabs and kerbing  
**Silex Stone Quarries Co.**  
 SHRELBURNE, ONT.



For Prices of Unoccupied Spaces in above Directory, address the CANADIAN ARCHITECT AND BUILDER, Toronto.

**CREDIT FORKS STONE CO.**

84 Adelaide St. W. - TORONTO

**Brown Stone Quarries,**  
 ❖ ❖ ❖ **Credit Forks, Ont**

**BROWN STONE** IN . . . CANADA

**DIMENSION**      **COURSING**  
**RANDOM**          **SHODDY**  
**HEADS, SILLS**      **RUBBLE**



**OFFICE:**  
 84 Adelaide St. W.  
**TORONTO**  
 Telephone 208.



**PAGES**

**MISSING**

# The Canadian Architect and Builder

VOL. XV.—NO. 175.

JULY, 1902.

## ILLUSTRATIONS ON SHEETS.

Exterior and Interior Views of Residence of Mrs. Frank Fleming, Bernard Avenue, Toronto.—Bond & Smith, Architects.

## ILLUSTRATIONS IN TEXT.

Designs for Buildings for Louisiana Purchase Exhibition, St. Louis.

## ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Two Photogravure Plates—Residence of Mrs. T. M. Harris, St. George Street, Toronto.—Burke & Horwood, Architects.

(NOTE.—Please substitute for above in June number the following :—"Interior of St. George's Hall, Toronto.—Edwards & Webster, Architects. Residence Bloor Street West, Toronto—Langley & Langley, Architects."

## CONTENTS

Editorial	81-82	Building in Montreal	89
Notes of a Visit to the New Building of the New York Stock Exchange	83-84	The Slate Industry of Newfoundland	89
Relation of the Architects and Landscape Architects	85-86	By the Way	91
Art in the Public Schools	87	Building Conditions	92
		The Montreal Silicate Brick Company, Limited	ix.

## SPECIAL CONTRIBUTORS.

PROF. S. H. CAPPER, R.C.A., Department of Architecture, McGill University, Montreal  
 MR. W. A. LANGTON, Architect, Toronto.  
 ' EDMUND BURKE, " "  
 ' S. H. TOWNSEND, " "  
 " FREDERICK G. TODD, Landscape Architect, Montreal.  
 " W. H. ELLIOTT, Toronto.  
 " J. C. B. HORWOOD, Architect, Toronto.  
 " A. F. DUNLOP, R.C.A., Architect, Montreal.

**Toronto City Commissioner.**  
 The City Commissioner's office remains in statu quo for the present but must have a change, soon and the opportunity ought then to be taken to make its organization perfect. An offer has been made by the architects of Toronto to appoint an advisory committee to work with the committee of the City Council charged with the reorganization of this department. The offer was made when it was understood that reorganization was at the point of settlement. The matter was postponed but the offer remains and has been filed for reference. It only remains for some one to see that it is referred to. This is a good offer; one which will introduce into the reorganizing body the technical knowledge that is necessary; and help to make whatever appointment is made a serviceable appointment, settled upon its merits.

**The Stability of Walls in Case of Fire.**  
 THE death of five firemen in consequence of a falling wall, at the burning of the warehouse of P. McIntosh & Son, recently in Toronto, shows the need of a provision in the city building law to prevent the construction of walls which are too long for their height and thickness. Walls that depend for their stability upon the stay provided by the floor beams and trusses are a danger in fires. The wall of the old

street car shed, which was occupied by Messrs. McIntosh & Son, should never have been built of so great a length without cross walls. The ruins show a wall 40 feet high, running for 145 paces, or a' out 425 feet without cross walls. The proper thickness for such a wall would be a little over 3 feet; the actual thickness is 18 inches stiffened by a buttress of 4-inch projection, at intervals varying from 16 to 32 feet. Buttress and all the wall is little more than half thick enough. Such a wall could be safely built only because stayed at intervals by joists and loaded with roof trusses; and, when all these stays are taken away at once, with a shock, in the midst of the violent movements of air in a fire, its downfall is certain. It is not possible to tell from the outside how a long wall is braced; and, unless the chief of the fire brigade is to be familiar with the plans of all buildings, he can never be sure that a long wall is thick enough to stay up after the floors fall in. The by-laws ought to have a provision which will assure him on this point, by making all walls thick enough to stand unsupported.

**Are Architects a Commercial Necessity.**  
 A notable instance in Montreal recently of a contract to design and deliver a building for a fixed price, which, in the case in question, appeared to relieve a situation of some difficulty, raises the question whether this would

not be the most direct way for building owners to proceed in all cases; whether it would not be better to make the contractor the responsible person, not the architect. Both functions are necessary; but, if the contractor cannot design himself, he can employ an architect. Would the owner be any the worse for this change of relation between the architect and contractor? Would he not be the better by the disappearance of the uncertainty that now sometimes attends the ultimate price of a building? Why should not buildings be built to order, just as clothes are made to order, for a fixed price? A reputable tailor does not fail us in respect of either design, material or workmanship. It is understood that these qualities are to be assured to us at a fixed price, and the tailor's reputation depends upon the faithful fulfilment of the understanding. Why then cannot a reputable builder be trusted to provide us a building to order upon the same terms? A builder's reputation depends upon his work as much as a tailor's! That is true; but does he depend so much upon his reputation? A tailor's unit of production is small, and its period of duration is short however well it is made. A tailor has to make many many coats before he can make a fortune. Patient continuance in well doing is his only hope for this world as well as for the next. But the contractor!—One good contract scientifically scamped will easily yield a fortune, and the result need not show too soon. What is reputation to a man who can make a fortune before he is found out? Wealth—I speak as a man—is the best reputation. The case of the tailor is not an illustration in point. It is but an illustration of the danger of reasoning from analogy.

The architect is then a commercial necessity, to fix and keep up a good standard of work which, were he not the responsible arbiter, would speedily dwindle. Nor would the architect himself, in these conditions, have the stimulus an artist needs.

**The Toronto Plumbers' Strike.**

The plumbers of Toronto entered into a wage agreement in 1900, which, according to the conditions of the agreement, is "to stay in force until the first day of January, 1904. And should either party to this agreement wish to change, add to or amend the above, they shall give a least three months' notice in writing prior to the termination of this agreement." The men, after a year of the agreement, have struck for an increase of wages after giving three months notice, and say that this is their interpretation of the above clause. The implication that to express a desire for the termination of an agreement upon a certain date is the same thing as procuring its termination on that date is—considering that the consent of the other party to the agreement is necessary for such termination—a piece of presumption which may be warranted by previous occurrences of the kind; but the only sort of previous occurrence of any kind, that will avail to give this interpretation weight in law, is a judge's decision that the date of the termination of an agreement, which has been fixed by the consent of both parties to the agreement, can be altered at the dictation of one; and the most patient research is not likely to result in the discovery of such a decision in the records of English law. The men have no case, and must know it, because the organizer of their own

union has visited Toronto to tell them so. Their own common sense must tell them that the employers cannot possibly make a second agreement with them, in good faith, upon the basis of this broken agreement. The employers will feel justified, and will be considered by other people to be justified, in breaking the new agreement whenever they find it expedient to do so. In other words, the plumbers' action in this matter is an injury to the steady development of the condition of labor, and the best thing that their own party can do is to make common cause with the employers against them.

**Adding to Another Architect's Work.**

In France, among architects of the inner circle, not only is a designer's drawing his private property but even, so long as he is alive, his executed conception. If an owner wishes to add to his building with the help of a new architect he must expect a new design, for the new architect would think it an infringement of professional etiquette to repeat an idea developed in his predecessor's work. As an aid to establishing the permanent relation between architect and client that the profession upholds as the ideal, this practice is a good one. An owner will not be so likely to change his architect for trifling reasons. He will be at any rate most likely to put an addition into the hands of the original designer. But as to the question of a substitute architect evading the awkwardness of working with another man's design by diverging from it in the points which distinguish it, the fundamental value of this phase of etiquette is doubtful. Granted that the owner knows and accepts the consequence of a change of architects, and that his interest in the matter need not affect the question; as a matter only of etiquette—if all consideration is to be centred on the original architect, the proprietor of the design—would not his interest be best served by following out his ideas as much as possible in the new work? Variation is competition; and, if the original designer has any proprietary right in the executed design, it ought to be the right to demand its continuation. Etiquette comes in in the maintenance of good relations between the architects. The quarrel, if there is one, is not their quarrel. A superseding architect owes it to his own reputation as well as to the undefined interest which the original architect has in the design to communicate with the original architect, if they are neighbours, in the same town or association. If he does not feel at ease in his position enough to do this, and cannot explain his position, the presumption is that he is a deliberate supplanter; an offender against, not only the original architect of the building, but the whole profession. Of course these remarks do not apply to trifles but to buildings of a certain importance, such as that upon which these remarks are based, which is now being added to in Montreal.

**The Campanile of St. Mark's.**

As we go to press comes the news that "the detached bell tower of St. Mark's church of Venice which was founded in 888 has collapsed utterly". This can only mean a total fall in some manner and to those who are familiar with the importance of the campanile as a feature, not only in the piazza of St. Mark, but as an essential part of the group of buildings seen from the

lagoon, this piece of news is of far more enduring importance than that of the resignation of Lord Salisbury and the reconstruction of the British Cabinet. The failure of the campanile must be in the foundations which are the ancient part. The shaft and belfry stage are comparatively modern. Some restoration of the foundation was undertaken less than twenty years ago and a piece of one of the piles that was cut was given to a Toronto architect by one of the engineers in charge of the construction. The pile was of oak and the piece taken from it, though showing the structure of wood and the appearance of oak, is almost as hard as stone. The failure of the foundation cannot be due to the failure of the piles themselves, but to some cause of which we await an explanation with the greater anxiety from consideration of the proximity of St. Mark's and the recollection that its original foundation was earlier than that of the campanile.

#### The Construction of Grand Stands

THE investigation into the cause of the collapse of the Grand Stand during a football match at Glasgow has brought to the surface valuable information with regard to what are the essentials in planning and construction of such structures necessary to insure the safety of the persons who may use them. The problem has become a difficult one in view of the enormous crowds for whom accommodation must be provided. The Grand Stand in Glasgow was an enormous structure, capable of containing 80,000 persons. Unlike the great amphitheatres of ancient times, it was constructed not of solid masonry but principally of wood, steel and concrete. Following are the quantities of material used in its construction: 1,500 lineal yards of fencing, 1,000 tons of concrete for the bedding of the iron girders, twenty-eight miles of pitch pine treads, twelve miles of girders, nine miles of columns, two miles seating, 700 hundred tons of steel, 15,000 square yards tufting, and two miles drain pipes. Between the tiers of seats was a net work of supporting timbers on which the victims of the accident fell and were "broken" in their descent to the ground 40 feet below. The stand appears to have been a substantial affair as such structures go, and the plans were submitted to and approved of by the district surveyor and board. The result has shown, however, that sufficient provision was not made for the tremendous strains imposed by the swaying to and fro within a concentrated area of such an immense assemblage of people. On this point Mr. Edwin O. Sacks, the well-known theatre architect of London, says: "In respect to the terrible accident to the staging at Glasgow, the only thing I should like to observe is that the effect of the moving or live load, such as a crowd of people swaying their bodies but slightly, is enormous, while the effect becomes terribly dangerous when the swaying of the body is accompanied by a shifting of feet. In watching a game in an arena the eyes of every individual in the crowd naturally follow an interesting feature of the game, which may at one time be to the left and at another time to the right of his seat or perch. With the movement of the eyes there is generally a slight movement of the head and upper part of the figure, and at exciting moments the whole body is frequently strained in one or the other direction, and often accompanied by a change of posi-

tion in the feet. This is done rhythmically by thousands at a time, and the movement thus caused is accompanied by the gravest of risks." It may reasonably be expected that the Glasgow tragedy will lead to the exercise of more exact knowledge and greater care in the planning and building of structures of a similar character, not only in Great Britain but throughout the world.

#### NOTES OF A VISIT TO THE NEW BUILDING OF THE NEW YORK STOCK EXCHANGE.

Anyone looking at the plan of the New York Stock Exchange will see that it is a rectangle with lugs at diagonally opposite corners—N.W. and S.E. The rectangle runs from street to street in its long direction and the lugs are taken out of the lots to the North and South, which are otherwise completely built over.

The lugs are very useful for entrances, elevators, etc., so as to leave the main rectangle clear for the Stock Exchange; and it is this clear area that in considering either design or construction constitutes the building. Both in the foundation and in the upper floors these annexes have no share in the great problems of the building, and while we are considering these problems we may dismiss these annexes and look upon the building as for all practical purposes the great hall of the Stock Exchange which occupies the whole rectangle, 112 by 138 feet, inside measurement, and eighty feet high. The 138 feet run from street to street and the light comes from these ends, through the great portico on Broad Street, that we know from drawings, and a plain colonnade of equal dimensions on the New Street side. In addition to these windows there is a skylight in the ceiling. This is at the bottom of a light well for three or four storeys of administration rooms which, appearing as a blank attic above the Broad Street portico form internally and on the New Street side, well lighted offices. This then is the general scheme of the Stock Exchange; a chamber on the ground floor occupying the whole area; several tiers of offices above, which do not appear in the design; and sufficient basement.

It is the sufficiency of the basement that has required most from the engineer and was the principal object of interest in a visit to the works.

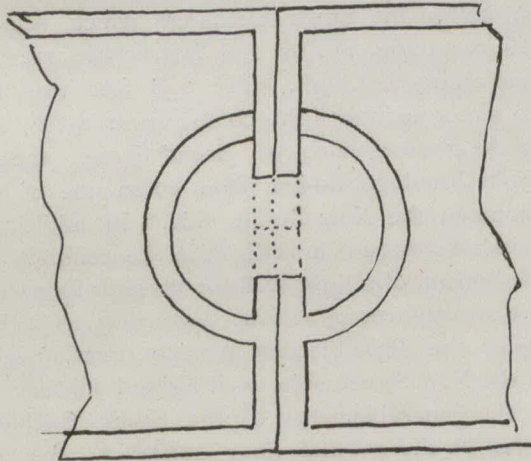
As we entered the building the water level was plainly visible, in a trench along the outside, standing at between 10 and 14 feet below the street level. When therefore we stepped on a wheelbarrow elevator and dropped through three storeys of steel beams, for a distance which we found was 42 feet below the ground line, it was evident that, while the building was classic architecture above the street, it must be something of the nature of naval architecture below. And this we found to be the case.

It has been customary of late in New York to carry the foundation down to the bed rock, either as a continuous wall or in the form of piers, excavating for this purpose, by means of pneumatic caissons, the quicksand that lies above the rock. But the excavation for the cellar has stopped short of the water level, which down town is not very far below the surface. At the site of the Stock Exchange the water level, as has been said, was about 15 feet down. A cellar this depth was not nearly sufficient for the elaborate mechanical ar-

rangements for heating, ventilation, the supply of power and other purposes which will occupy the basements of the Stock Exchange. It was therefore determined to excavate the whole mass of quicksand and gravel down to the bed rock, which Mr. Amory Coffin, Mr. Post's engineer, decided from borings would be found nearly level at about 50 feet down.

The case was therefore not the ordinary problem of sinking a wall to stand in the water. The wall might in this case be very easily sunk in parts, so as to be in effect continuous piers. Where there was water inside and water outside at the same level, an open joint between the portions of wall would be of no moment. But, when the space inside the walls was to be excavated for some 25 feet below the level of water standing outside, it became necessary to devise some means of locking the sections of wall together so as to make them water tight.

The ordinary pneumatic caisson was used  $8\frac{1}{2}$  feet wide (the thickness of the wall) and in 15 foot lengths. The working chamber had a domed steel roof, about 8 feet above the cutting edge, and the air shaft rose from the middle of this. The peculiarity of the caissons was that the ends which were square, the better to facilitate square and true sinking, were false ends. The true end was concave for the middle 4 feet, so that when two caissons were put together a cylindrical



SECTION OF CAISSON END.

space was left to be subsequently filled in with concrete. The square ends were planed and greased and sunk with great care so that the clearance was as little as possible—from  $\frac{1}{4}$  to 2 inches. Then the middle planks (shown by dotted lines), which had been tapered for the purpose, were removed from the square ends, and the joint between the remaining portion of ends which projected into the cylindrical well, caulked and drawn tightly together by means of bolts. This caulked and bolted joint on the outer side of the wall will be always immersed in water and may be relied upon to be permanent and to keep out water as effectually as the caulked joint between the planks of a ship.

Having made the joint between the sections of the wall watertight the next thing was to attend to the close connections of the footing and the rock, so that this junction might be watertight also. To accomplish this the rock bottom inside the caisson was cleaned and washed and a footing of 6 inch concrete upon this was set under air pressure. Then the working chamber was filled with concrete and a thin grout of Portland cement run in and forced everywhere by air pressure until the pressure held for ten minutes at 20 pounds. In this way also the shrinkage in the wall

above the working chamber was made good. Finally the cylinder of concrete connecting the caisson ends of the wall sections was thrown in and the air shaft filled up.

The result has been satisfactory. There is a certain amount of seepage, which is collected in a pit sunk below the cellar bottom and pumped up to the drain.

The deep cellar thus obtained has three storeys below the street level, and Mr. Coffin has made use of these floors as struts to brace his concrete wall against the heavy pressure from without. In order to do this effectually caissons for the 37 steel columns upon which the floor of the Stock Exchange and the three floors below are carried, were sunk down to the rock, and the columns were built in them, while the walls, which have been described above, were being sunk. Thus the walls and columns were both in place before the excavation was begun, and, as soon as the excavation got down to the level of a floor, the floor framing was inserted, and stayed the external walls in place of the stuff which had been removed. The central bays of the floor frame are well cross braced to form an immoveable abutment for the external bays to thrust against, and the ends of the external girders are fitted to a brace girdle of heavy I beams, set with the web horizontal.

The space thus procured under the ground floor is all wanted. The four floors are called respectively the basement, cellar and first and second sub-basements. In the sub-basements are the boilers and engines, the heating, cooling and ventilating plants. The cellar seemed to be chiefly valuable as a free place to run the innumerable wires and pneumatic tubes which are necessary for the elaborate contrivance for saving and expediting work in the Stock Exchange. There is also on this floor a large safe deposit vault, which was a problem by itself. The original vault was of stone. It was determined to leave this as it was, and the caisson sinking and excavation went on around and under it, leaving the vault and an enclosed passageway of approach undisturbed so that its business went on as usual all through the building operations. When it was finally decided to substitute for it a steel vault, the new vault was built alongside; and the move from one vault to another made between Saturday afternoon and Monday morning, so that the vault was not out of working order for an hour.

The cellar and sub-basements set free the basement, or storey on a level with the street, for the telegraph offices, locker and toilet rooms and other supplementary needs of the Stock Exchange, so that the main floor and entrance may be kept free for members. The two or three hundred employees will have a basement entrance of their own and basement passages to their elevators, so that the employees and members need never meet in coming and going and, as far as planning can bring it about, the Stock Exchange will go about its business in a dignified manner.

The great room of the Stock Exchange is chiefly remarkable, in point of constructional detail showing in its unfinished state, for the trusses of 112 feet span to carry the four storeys of offices on each side of the light wall. The trusses are therefore on each side of the skylight in pairs, each 15 feet deep and 4 feet wide on the flange. Being 80 feet high they do not look excessive.

The entire walls were being covered with marble when we were there. The entire space behind the columns of the portico is to be filled with plate glass. For this purpose steel mullions are inserted behind the columns. The mullions are supported from above and, as there is a large surface of wind pressure to resist, they are made of 18 inch I beams.

When the marble and the glass and the ceiling finish are in place one will have to go far to find one single room so large and fine as this.

## RELATION OF THE ARCHITECT AND THE LANDSCAPE ARCHITECT.\*

We have been considering the beginning and growth of landscape architecture. Let us now so far forget these facts, both historical and present, that we may conceive of the profession as having attained a recognized membership in the sisterhood of the arts. The reason for thus taxing your imagination is that I may discuss, in a general way, the probable or ideal relation of the architect and the landscape architect. It will be recalled that the last of the 17th century found the architect supreme over house and grounds, but that the beginning of the 18th century found the architect confined to the house, while the grounds fell to the independent charge of the landscape architect. On the one hand, the architect felt that his domain had been usurped by a people unsympathetic in their feelings and incapable in their lack of training to govern that field which he had been compelled to evacuate; while on the other hand, the usurpers no doubt felt, at least to a degree, the justice of this reproach and were therefore stimulated the more to differentiate their value, first by ridiculing the traditional style of designing grounds, and second, by creating a taste for a new style that in every way diverged from the traditional. Hence, there was little success in harmonizing the two interests which had heretofore been one, for the simple reason that there were two heads for the two distinct departments, working not only independently but even antagonistically. The extent to which this spirit of antagonism still lingers between the architect and the landscape architect is somewhat uncertain. Opinions will vary according to experiences. It is certainly less than it was, but more than it ought to be. It is a question which though easily solved theoretically, must in practice be worked out by the sum of individual experiences. This question has been mooted from the very inception of landscape architecture, and as long as it remains unsettled the related work of the architect and the landscape architect will be inharmonious. There can be no doubt as to the true cause for the continual inhospitality of the architects, for as a class, they represent a thoroughly trained capacity for design, while the landscape architects, as a class, represent quite the reverse. In other words, it is the friction which must inevitably arise when scientific training is pitted against knowledge which is purely empirical. This difficulty, however, is obviously the result of imperfect growth, and will be solved by the gradual specialization of a trained class of men.

But let us return to the main question of the relation between the architect and the landscape architect. Repton, the father of landscape architecture, fully realized the importance of this question. "Where buildings are introduced," he says, "art declares herself openly, and should, therefore, be very careful, lest she have cause to blush at her interference. It is this circumstance that renders it absolutely necessary for the landscape gardener to have a complete knowledge of architecture. This remark proceeds from the frequent instances I see continually of good houses built without any taste, and attempts to embellish scenery by ornamental buildings, that are totally incongruous to their respective situations." The vital

importance of selecting the best site and of fixing the grade of the first floor level is seldom appreciated. Upon it depends all consequent arrangement of details, such as the driveway approach, the house garden, forecourt and so on. And as these details in their turn affect and determine all the outlying arrangements of lawn grades, plantations and other units of the whole scheme, the importance of fixing the house grade and site is still more emphasized. Thus while all questions involving the immediate vicinity of the house should be settled in conference, yet such points as these should tend to subserve the interests of the whole arrangement of the grounds; hence Repton's position is, that while the landscape architect should have no official voice in the actual designing of the house, the style and general arrangement, location and disposition of the house and grounds should be officially determined by the necessities of the landscape architect's general plan; for as he says further, "to my profession belongs chiefly the external part of architecture, or a knowledge of the effect of buildings on the surrounding landscape."

A similar problem, or rather a part of the same problem, points to the logical ultimate of this question. The time was when the architect was also the engineer, the painter, the sculptor, and the landscape architect. But now the architect employs the expert engineer to determine upon the necessities of construction, and to a certain extent, co-operates with the painter and the sculptor—that is, in his building he allots the spaces and positions for the mural decorator and the sculptor, and even determines the spaces and positions for the pictures. In other words, the architect confines himself to the general lines and forms and externalities of the building, while the surface and details are filled in by the specialist. Having decided these questions so as to secure an harmonious division of his general scheme, the sculptor and the painter are independent of further limitations, save that of their own genius.

Now there can be no doubt as to the soundness of this position, of the generalship and supervision which the architect has over the building which he designs. It not only provides for a perfect and harmonious whole, but it secures expert skill for each division of the whole. It needs but the extension of this principle, now universally accepted, to recognize the logical answer of the question under discussion. Here there is the added problem of the grounds. When it is a matter of large tracts of land, such as Central Park, it is no longer a question as to who shall design it. It falls naturally to the landscape architect. In designing such tracts of land, the position and sites for public buildings, statuary, and other objects of allied arts are determined and regulated by the general design. It could not well be otherwise; and it is obvious that the position here indicated applies of necessity to much smaller tracts of ground. Therefore, the logical answer to the question seems to be solved thus: the landscape architect shall decide upon the design for the whole property. For example—the units of treatment both in large and small private grounds are generally the sites for the house, stable and out-houses, and sometimes for the sculptural work; the kitchen and flower gardens, the drives and walks, and the regulations for the grades and levels of the buildings, the planting and drainage systems, and such architectural features as

\*Abstract of a Paper by Mr. Geo. F. Pentecost, of New York, presented before the Architectural League of America, Toronto, May, 1902.

summer houses, pergolas and terraces. It is the business of the landscape architect to determine upon these questions, and to so regulate and adjust them that the whole will form an harmonious design. Apart from this, the architect, the artist and the sculptor are supreme in their respective departments.

There is still, however, one side of the problem which can only be solved by the mutual co-operation of the architect and the landscape architect, and that is, the character of the design for the house and grounds. It is not enough that the relative positions should be properly adjusted; the design for the house and the design for the grounds must harmonize by being based upon the same style or idea. It has been suggested that this difficulty, which is the cause of the criticism most frequently deserved when the house and the grounds have been designed by separate persons, will be solved by the specialist, who shall combine the qualities of the architect and the landscape architect. But this will not be the solution for two reasons: First, that the difficulty is more apparent than real, and can only rise under unfavorable conditions, as when one or both of the designers refuse to harmonize by compromising upon small points, or neglect to discuss the problem before settling upon the entire scheme; and second, it is directly diverse to the principle of specialization which is inevitable, and which has been the direct cause of the creation of specialists in this as in every other branch of work. The true solution of the problem rests with the progress and recognition of landscape architecture as a profession. The difficulties with which it has had to cope during its evolution are not a few. In the first place it lacks that constant stimulus and pressure which bear upon a profession based primarily on utility or necessity. Architecture is such a profession, poor or rich, a country must have its houses, both private and public, and consequently the first fruits of prosperity are drawn upon to clothe this utilitarian necessity in the garb of beauty. Therefore, the architects of a country are constantly under this high pressure which produces a high state of perfection. There is practically no fluctuation in the demand for their services, and there is a constant demand for recruits, who must be thoroughly trained in order to compete successfully. On the other hand, landscape architecture is based upon the aesthetic requirements of a class, and that a limited one; it is thus dependent upon the second or third fruits of prosperity, and is, therefore, seldom under high pressure. Its history is marked by a constant fluctuation, varying from positive extinction to comparative popularity. The result is that at the height of its prosperity, some one or two capable men appear who do nearly all the work of importance, while a multitude of small practitioners, entirely without qualifications, spring into a mushroom existence and manage to make a living upon the crumbs that fall from the rich man's table. Never has the demand been sufficiently great or of sufficiently long duration to require and to support a thoroughly trained class of men; hence the heterogeneity of its practitioners. There are so many fields with which it is closely allied, and with which it is, or rather has been, identified, that its actual nature is obscured, and for this reason it has, until recently, lacked a clear-cut and dignified position.

However, the time comes in the history of every art or craft, business or profession, when its growth,

heretofore heterogeneous, becomes homogeneous. Its form gradually becomes crystallized, and its position in social or artistic circles becomes fixed. Such a time has now come to landscape architecture. Its power for good or evil is recognized, it has become in name as well as in fact, a profession of good standing; it is recognized by individual property owners, by city, state and national government; it is recognized by the allied crafts and arts, and it has become conscious of the need of self-protection. That this is so needs but the recital of a few facts. About four years ago the Royal Institute of Architects in England elected Mr. E. Milner, Landscape Architect, as honorary member of its society. This was, I believe, the first step taken by any of the allied arts to formally recognize the profession as such. In the United States, Harvard University and Cornell and Columbia Colleges have lately introduced courses for supplying the profession with scientifically trained men. There is scarcely a city of importance, especially in the United States, which has not only its system of parks, but its official landscape architect. The fact that the United States government recently employed several landscape architects in conjunction with architects to beautify the capital of that country, speaks for itself. Again, it is the exception, rather than the rule, for private or corporate property owners to develop their land without the advice and supervision of a landscape architect. Still again, the fact that the body of architects represented by this meeting considers the subject of sufficient importance to have it represented is convincing proof that it is a subject of growing interest, and finally, within the last few years there has been formed the American Society of Landscape Architects. The formation of this society is an excellent thing; it will tend to consolidate and unify the interests of landscape architecture. It will make the profession tangible, while at the same time it will create a standard of proficiency and compel the necessary amount of specific training for its members. But in itself it is not enough. Landscape architecture is so much a part of or at least so closely allied with architecture, that whatever advances the interest of either must advance the interest of both. Until, therefore, there is not only a theoretical acceptance of this fact, but an active co-operation between the two arts, harmonious progression will be impossible. That this mutually beneficial progression is advisable is beyond dispute; that it does not exist, few will care to dispute. A spirit of antagonism has existed between the representatives of the two arts since the inception of landscape architecture, or what is the same thing, its separation from architecture as a distinct profession.

What progress landscape architecture has made during the last two hundred years, has been made in the face of considerable opposition. That this opposition has been more or less justified, is undoubted. The time has come, however, when the opposition ceases to be justified, and it is distinctly harmful to both professions. This fact is being recognized to-day and gives sufficient reason why landscape architecture is so live a subject among the architects. The fact of the matter is this. Landscape architecture has become a force in the artistic progress of modern life which cannot be ignored. And the question which arises is, inasmuch as the two professions are so closely allied, in fact, so inseparately involved; inasmuch as they, taken

together or separately, are practically responsible for the beautifying of both country and city life, is it not better that all animosities or rivalry between the two should be buried, and replaced by a broad minded endeavor to consolidate and harmonize the two interests? I need not apologize for speaking so frankly upon this point at this meeting, for presumably it is in the hope of consolidating the two allied arts that you have invited me here. I am the more anxious to speak upon this point for two reasons. First, because I recognize the fact that without the co-operation of the architects of the country, landscape architecture will lose the friendly aid of the most influential and dominating class of artists, not only of this country, but of all countries, for architecture is the life of all the arts, and without it all arts would cease. And second, because I recognize that the particular department of landscape architecture which elicits the interest of the architects is that class of work which landscape architecture has always slighted. I refer to the formal architectural gardens. It is my personal hope that the present revival of the formal garden will be a permanent feature in all future landscape architectural work. There is but one style of garden, namely, the formal garden, and no garden is perfect without its architectural setting. And so while I bespeak the influence of the architects of the country to advance the general interests of landscape architecture, I exceedingly rejoice in the fact that a side issue of that influence will tend to recall and make permanent in this country the undying beauty of the gardens of Italy.

#### ART IN THE PUBLIC SCHOOLS.

At the banquet tendered by the Toronto Architectural Eighteen Club to the Architectural League delegates last month, Mr. J. L. Hughes, Public School Inspector, had some interesting things to say about the teaching of art in the public schools of Toronto, as follows: "In our schools in Toronto, we are trying to qualify our children to understand, as well as every other department of art, literature and music. The great memorials of the past in the world of art are often the records preserved in buildings. In connection with our schools we have nineteen leagues of art, and above them we have an advisory board consisting of professional architects and artists, who give their professional advice free. So I think in that respect we are pretty well organized with the forces at our disposal. One of the things the Central Art League does is to own as many good pictures as we can and circulate them among the schools. About half the pictures we purchased this year represent great buildings of Egyptian, Greek, Roman, English, and American architecture; and last night I lectured in a school in which these pictures had been displayed during the past week. We like to find out what pictures interest the children, the teachers, and the parents. We find that the parents generally like some picture that has sentiment in it; but I was surprised last night to find that even little children in the primary school liked the front view of the Parthenon better than any other we have sent out this year; and we have sent out twenty-four pictures. You can make what you like out of that fact. This is an age of child study, and that was a revelation to me. We had pictures of sailors and soldiers, and among others a lifeboat scene to show the children what the Anglo-Saxon blood in their veins is capable of. It was a represen-

tation showing a lifeboat manned by eighteen men going into a storm that was so heavy that the boat was absolutely upended and the eighteen men fell into the waves and were drowned; but notwithstanding that another lifeboat was manned by men who had seen their comrades go down to death, and went out in the endeavor to save three men who were struggling in the shrouds of a ship. Yet that front view of the Parthenon was the picture the children liked better than any other. A majority of the teachers liked some of the cathedrals the best. I mention this simply to show that your department of art is a department that is intensely interesting. Our Supervisor of Art has for many years set the children of the schools to study the buildings of the city. This week they are to look at the porches and draw the one they personally like the best. Another week it may be a dwelling or tower. The idea is to get the little ones to look for the thing that is to them beautiful. We carry out the same idea in connection with trees and flowers. We like to encourage each child to have a tree which he loves better than any other. I think that every man should have one tree that speaks to him and stirs his soul as no other does. So we try to get the children to exercise the power of choice, and we do not tell them that what they have selected is not beautiful; for every child has a right to its own opinion, and we wish to know what is beautiful to that child this year, so that next year we shall be able to see how far it has gone in its development. We believe that true development must come from within, and not from without, in architecture as well as in every other branch of work."

Mr. Perkins, one of the delegates from the United States, said: "One of the great experiences I have had in these last three days—and they have been full of such from beginning to end—was one which Mr. Hughes gave to me yesterday morning. Besides taking me around the city, he took me to the commencement exhibit of a school of industrial design, where I saw the application of some of the principals of design we have been talking about. In the department where bonnets and dresses were made I saw sketches by young girls which we would have to hustle to keep up with. I was also very much inspired by the sight of a set of Japanese prints in that school, reproducing some of the most wonderful colors in nature, as found on the bark of trees, the slag of waste places, a bit of a mountain side, and other common objects. I saw some of the most beautiful colors reflected in a piece of bark just like what may be found in the Toronto wood. This result is achieved by the Japs because they work from the inside outward, and are allying themselves with nature, and are allowing the forces that are inherent in every one of us to find their legitimate expression."

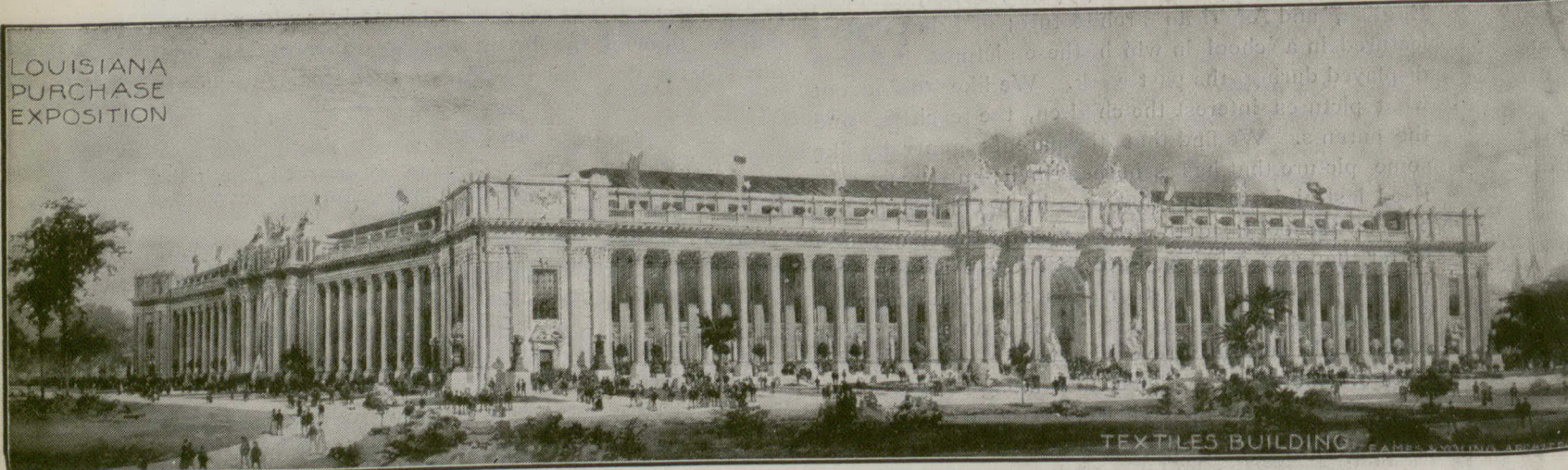
#### PERSONAL.

Mr. J. A. Harvey, architect, Toronto, was married June 18th at St. James Square Presbyterian Church, Toronto, to Mary, daughter of Mr. W. C. Pettigrew, of Palermo.

Congratulations are in order and are tendered to Mr. John Wilson, architect, of Collingwood, who was married a fortnight ago to Miss Ethel Rowe, eldest daughter of Capt. Rowe, of Collingwood.

An advertiser's space in a reliable medium is the means of introducing him to a large number of prospective purchasers. On what he says and how he says it, depends to a large extent whether or not he will profit by the introduction.





DESIGNS FOR BUILDINGS FOR THE LOUISIANA PURCHASE EXHIBITION, ST. LOUIS.

THE SLATE INDUSTRY OF NEWFOUNDLAND.

As the result of differences between the proprietors and workmen at the Penhoyn quarries in Wales, resulting in the closing of the quarries some two or three years ago, the attention of Welsh quarrymen has been directed to the slate deposits of Newfoundland. Several of these deposits have been purchased and development work commenced. A Newfoundland correspondent of the Montreal Gazette writes on the subject as follows: "It looks as if the export of slate were about to become an important industry amongst us. A Welsh gentleman, Mr. O. J. Owens, arrived here on Monday last from Wales to commence the work of development on a newly-discovered slate quarry at Bay of Islands. He has a life-long experience in the work and after examining the property gave it as his opinion that it was the largest and most valuable deposit in the world. The original owner of the claim was R. G. Reid, railway contractor. He disposed of it to Mr. Owens on very reasonable terms, influenced principally by a desire to bring about mineral development along the line of railway and induce a large number of immigrants to come from Wales and help to build up and people this part of the country. Mr. Owens, in order to help on the furtherance of these views, has published a book on the subject of Newfoundland's slate deposits in the Welsh language, and has circulated it widely among his countrymen. The slate quarry at Smith's Sound, Trinity Bay, is now a well-established industry, and is worked principally by Welshmen, who say there is a great future for slate in Newfoundland. Last year 2,000 tons, equal to 6,000 squares, valued at \$22,500, were exported. It was shipped to London and Newcastle, where a ready sale at remunerative prices was obtained. The shipping facilities are remarkably easy and vessels of any size can lay alongside within a stone's throw of the quarry, and in perfect safety. The quarry is of immense proportions and there is sufficient material in sight to last for generations".

BUILDING IN MONTREAL.

There is a revival of activity in building in Montreal this year. The increased cost of material and labor is estimated by the Building Inspector at about 15 per cent., but this apparently does not retard to any extent building enterprise, being presumably more than offset by prosperous commercial conditions. The record of new buildings since the first of the present year is given as follows: In January, permits were issued for buildings to the value of \$32,615, twenty-eight for dwellings, six for stores, two factories. In February, the value was

\$33,500, their being thirty-five dwellings, five stores and a warehouse. In March, the value was \$499,400, there being seventy-two dwellings, twenty-one stores, three churches, three warehouses and six factories. In April, there were two hundred dwellings, twenty-eight stores, three warehouses, eight factories, one office building and a church, value \$536,541; in May 160 dwellings, six stores, one factory and town office buildings, value \$262,240.

**BLACK PAINTS FOR HEATED SURFACES.**—Ordinary paints, when coated on any heated surfaces, as boiler chimneys, smoke boxes, cylinder ends, usually blister and fall from the work. The following preparation will be found very efficient for this class of work: Procure 3 lbs. lampblack, 3 lbs. black lead, 1 lb. black oxide of manganese, 1 pint japan gold size, ½ pint turpentine, and 1 pint boiled linseed oil. Powder the black lead and mix all the ingredients well together to a uniform consistency and apply two coats as ordinary paints. This preparation will be found very durable, and will not turn white or grey when exposed to excessive heat, the same as ordinary black paints. Procure 2 lbs. black oxide of manganese, 3 lbs. black lead, 9 lbs. terra alba. Mix well together and pass through a fine sieve, then mix to the required consistency with the following preparation: 10 parts silicate of soda (soluble glass), 1 part glucose, 4 parts water. This may be used in a similar manner to the above. It is invaluable to ship and locomotive painters.

**ART GLASS**

Of Every Description.

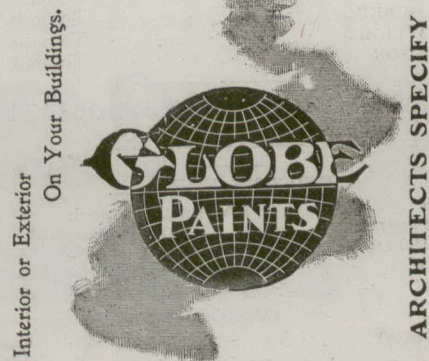
**Memorial Windows**

A Specialty.

H. E. ST. GEORGE,

280 Dundas Street

LONDON, ONT.



MANUFACTURED ONLY BY

**THE GLOBE PAINT CO.**

LIMITED

422-24 ADELAIDE ST. W., Toronto, Ont.

Correspondence Solicited.

**The ZANZIBAR PAINT CO., Limited**

TORONTO

**Zanzibar** as a preservative of  
**Shingle** - of service, strength  
**Stains** . . of color and beauty  
 of appearance

EX EL.

Correspondence  
 from  
 Architects  
 Desired.

**Zanzibar**  
**Anti Rust**  
**Paint** . . .

Elastic, Durable,  
 Rust Proof. For  
 Structural Iron  
 Work, Bridges,  
 Roofs, etc.  
 Made in six colors

—THE—  
CANADIAN ARCHITECT AND BUILDER

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The Canadian Contract Record).

PUBLISHED ON THE THIRD WEDNESDAY IN EACH MONTH IN THE INTEREST OF ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

The C. H. MORTIMER PUBLISHING CO. of Toronto, Limited.  
Publishers,  
Confederation Life Building, - TORONTO, CANADA.

Telephone Main, 2362.

Branch Office: IMPERIAL LIFE INSURANCE BUILDING, MONTREAL.  
Bell Telephone 2299.

SUBSCRIPTIONS.

THE CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States on the following terms: Architects' Edition, \$3.00 per year; Regular Edition, \$2.00 per year. The price to foreign subscribers is: Architects' Edition, 16 shillings; Regular Edition, 12 shillings. Subscriptions are payable in advance. The Journal will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, will be continued until instructions to discontinue are received and all arrears of subscription paid.

ADVERTISEMENTS.

Prices for advertisements sent promptly on application. Orders for advertisements should reach the office of publication not later than the 12th, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of value to the persons in whose interest this journal is published are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

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

ONTARIO ASSOCIATION OF ARCHITECTS.

OFFICERS FOR 1902.

PRESIDENT	W. A. LANGTON, Toronto.
1ST VICE-PRESIDENT	JOHN A. PEARSON, Toronto.
2ND VICE-PRESIDENT	GEORGE W. GOULINLOCK, Toronto.
TREASURER	W. L. SYMONS, Toronto.
REGISTRAR	W. R. GREGG, 94 King W., Toronto.

COUNCIL:

LAWRENCE MUNRO	Hamilton.
A. H. GREGG	Toronto.
EDMUND BURKE	Toronto.
C. H. C. WRIGHT	Toronto.
A. R. DENISON	Toronto.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

OFFICERS FOR 1902.

PRESIDENT	J. VENNE, Montreal.
1ST VICE-PRESIDENT	W. E. DORAN, Montreal.
2ND VICE-PRESIDENT	R. P. LEMAY, Quebec.
SECRETARY	PROF. S. H. CAPPER, Montreal.
TREASURER	J. S. ARCHIBALD, Montreal.

COUNCIL.

G. E. TANGUAY	Quebec.
A. RAZA	Montreal.
A. C. HUTCHISON	Montreal.
D. R. BROWN	Montreal.
A. A. COX	Montreal.
S. LESAGE	Montreal.

AUDITORS—C. DUFORT, Montreal; J. H. LEBRON, Quebec.

TORONTO BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

JAMES B. THOMSON, President.	JAS. CRANG.
JOSEPH RUSSELL, Vice-President.	JOHN R. LYON.
R. G. KIRBY, 2nd Vice-President.	WM. DAVIDGE.
JOHN L. PHILLIPS, Secretary.	JOHN M. GANDER.
DAVID WILLIAMS, Treasurer.	JAS. CRAIG.
THOS. CHRISTY.	JOHN VOKES.
WM. SMITHWOOD.	WM. PEARS.
A. WELER.	
JOHN H. IDGR.	

LONDON BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

D. C. SIMPSON, President.	WM. TYTLER.
JOHN NUTKINS, 1st Vice-President.	THOS. JONES.
JOHN WHITTAKER, 2nd Vice-President.	ED. MARTYN.
GEO. S. GOULD, Secretary-Treasurer.	GEO. YOUNG.
	S. STEVELY.

VANCOUVER BUILDERS' EXCHANGE.

BOARD OF DIRECTORS

E. COOK, President.	C. P. SHINDLER.
A. E. CARTER, Secretary.	K. M. FRASER.
H. A. BELL, Treasurer.	E. G. BAYNES.
T. BRADBURY.	D. SAUL.

WINNIPEG MASTER CARPENTERS' ASSOCIATION.

BOARD OF DIRECTORS

A. MacDONALD, President.	A. McCORMICK, Secretary.
A. G. AKIN, 1st Vice-President.	J. G. LATIMER, Treasurer.
A. SUTHERLAND, 2nd Vice-President.	

MASON BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

D. D. WOOD, President.	A. N. McCUTCHEON, 1st Vice-President.
W. F. LEE, 2nd Vice-President.	A. T. DAVIDSON, Secretary.
EDWARD CASS, Treasurer.	WILLIAM ALSIP.
D. T. JACKSON.	ANGUS BROWN.
J. MALCOM.	

MONTREAL BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

C. T. WILLIAMS, President.	H. R. IVES.
C. W. HUGHES, Vice-President.	JAMES PATON.
G. J. SHEPARD, Secretary-Treasurer.	N. T. GAGNON.
JOHN WIGHTON.	JOSEPH LAMARCHE.

CHAMBRE SYNDICALE DE LA CONSTRUCTION.  
(French Builders' Exchange.)

8, St. James Street, Montreal.

BOARD OF DIRECTORS.

J. B. GRATTON, President.	FELIX SAURAGEAN.
C. MENARD, 1st Vice-President.	L. Z. MATHIE.
T. CHARPENTIER, JR., 2nd Vice-President.	H. CONTANT.
ALCIDE CHAUSSE, Treasurer.	E. Z. COTE.
N. T. GAGNON, Secretary.	LOUIS PAVETTE.

VICTORIA BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

W. D. MCKILLICAN	Chairman
E. W. WHITTINGTON	Secretary
THOS. CATTERALL	Treasurer

Coring a chimney consists in clearing it of any projections left by the pargetting. "Notes on Building Construction" says: "While a chimney flue is being built it is advisable to keep within the chimney a bundle of rags or shavings, called a sweep, in order to prevent mortar from falling upon the sides of the chimney, and after the flue is finished a wire brush or core should be passed through the flue to clear away small irregularities and to discover any obstruction that may exist in the flue."

**GRANITINE FLOOR FINISH**

FOR NATURAL WOOD & PARQUETTE FLOORS, LINOLEUM, OIL CLOTH, BORK MATTINGS, ETC.

**IMPERIAL VARNISH AND COLOR CO. TORONTO, ONT. LIMITED**

Owing to its remarkable hardness, elasticity and durability, it rivals the best wax finish, but is free from its unpleasant slipperiness.

Moving furniture or boot heels do not leave white marks, nor does soap, mud, or water destroy its fine appearance.

It dries dust proof in about three hours.

Being very penetrating it closes the pores of the wood against disease germs, making it invaluable for hospitals, asylums, and similar institutions.

*Architects patronize home industry and specify Granitine Floor Finish.*

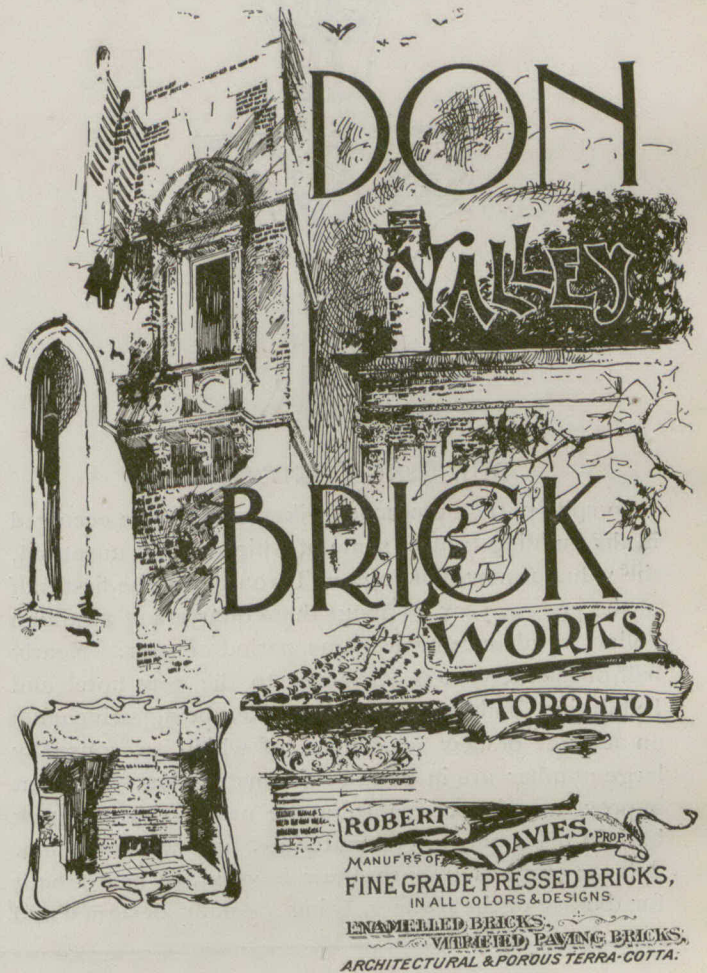
BY THE WAY.

The importance of careful reading of specifications by contractors when submitting tenders was emphasized in Toronto recently. A contractor tendered for certain painting and glazing work for one of the public schools, and was given the contract. He afterwards discovered that in looking over the specification he had read "class room" for "glass room," and in consequence was out more than one hundred dollars in his calculation of the amount of work to be done. He sued the Public School Board to recover the amount, but the Judge held that he was put out of court by the contract.

x x x

A Canadian gentleman who has lived fourteen years in Chicago, told me the other day some interesting facts regarding the municipal government of that city. He states that with the exception of the parks and the boulevards which form part of the park area, no means are adopted to clean the streets. The parks and boulevards are kept in perfect condition by the money and men provided by the county authorities and are much admired, while by contrast the streets opening into the boulevards are disgracefully dirty. In the face of these conditions healthfulness of the city is said to be maintained by the winds which constantly sweep across it, induced by differences in temperature between the low-lying sandy soil on one side and the water of Lake Michigan on the other. From this cause Chicago has been named the "Windy City." Heretofore the City Government has been largely in the hands of the saloon keepers and appearances would indicate that the revenue from taxes has found its way into other than legitimate channels. The action of several wealthy young men

in offering themselves for election to the City Council is an augury of improved conditions for the future.



**DON VALLEY BRICK WORKS**  
**TORONTO**

**ROBERT DAVIES PROP.**  
 MANUFACTURERS OF  
**FINE GRADE PRESSED BRICKS,**  
 IN ALL COLORS & DESIGNS.  
**ENAMELLED BRICKS,**  
**VITRIFIED, PAVING BRICKS,**  
**ARCHITECTURAL & POROUS TERRA-COTTA.**

# The Canadian Bridge Co., Limited

Walkerville, Ontario.

... MANUFACTURERS OF

## STEEL BUILDINGS, ROOF TRUSSES

Railway and Highway Bridges and Structural Steel and Iron Work of all descriptions  
 Estimates furnished upon application.

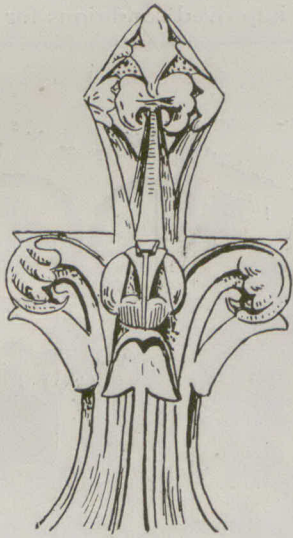
### The Noiseless Valve

Emptying the Tank in the "Morrison" Low Tank Closet Combination is a feature possessed by no other low tank. This feature in itself makes this closet the most desirable of any on the market. "Morrison" Low Tank Closets are handsome in appearance, require little space, are very positive in action and do not get out of order easily.

**THE JAS. MORRISON BRASS MFG. COMPANY LIMITED**  
**TORONTO, ONT.**



Fuller particulars sent on request.



### BUILDING CONDITIONS.

In spite of the numerous strikes which have occurred in the building trades, some of which are yet unsettled, the value of new buildings in Toronto for the first half of the present year is about three quarters of a million dollars in advance of the same period of 1901. Nearly half of the increase is attributed to the new hotel and Exhibition buildings, the remainder being principally on account of new residences, of which an unusually large number are in course of construction. A great improvement is noticeable in the new residence work both in point of design, materials, and workmanship. A large proportion of the new houses are being built for the use of the owners, being specially designed and

superintended by architects. A considerable amount of speculative building is being done in localities where land may be obtained at a moderate price, but even this work is designed by architects, and is not in the same class with the shoddy productions of speculative builders of ten years ago.

It is gratifying to learn that in Montreal, where building operations have been conducted on a somewhat restricted scale for two or three years past, a revival of enterprise in this direction has set in, while the cities and towns throughout the entire country are likewise witnessing improvements on a scale in keeping with the commercial prosperity now prevailing.

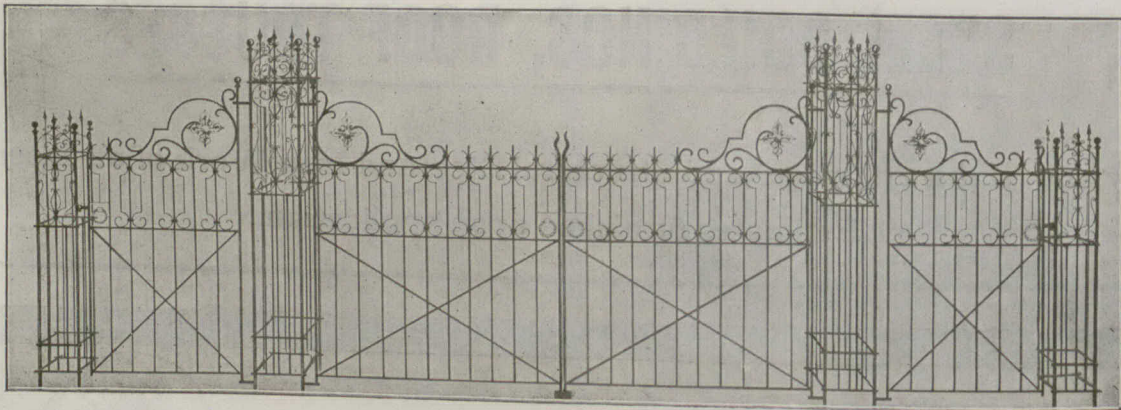
It is to be regretted that workmen and employers cannot unite in an endeavor to make the most of the present favorable conditions, which cannot be expected to continue indefinitely. The numerous strikes to which reference has been made will, if continued, prove the precursor of another period of commercial depression, tempting as they do to render capital timid. We are pleased to note the general condemnation of the Plumbers' Union of Toronto for having violated their agreement with the Master Plumbers. If there does not exist a sufficient sense of honor on the part of the Unions to live up to the terms of a definite agreement such as the one in question, there is small hope that satisfactory relations can in future be maintained between contractors and workmen in the building trades.

Any kind of an advertisement may be better than none at all—but a good one is many thousand times better and costs little more.—The Advisor.

# Canada Foundry Company, Limited

ORNAMENTAL IRON DEPARTMENT

Head Office and Works: TORONTO, ONT.



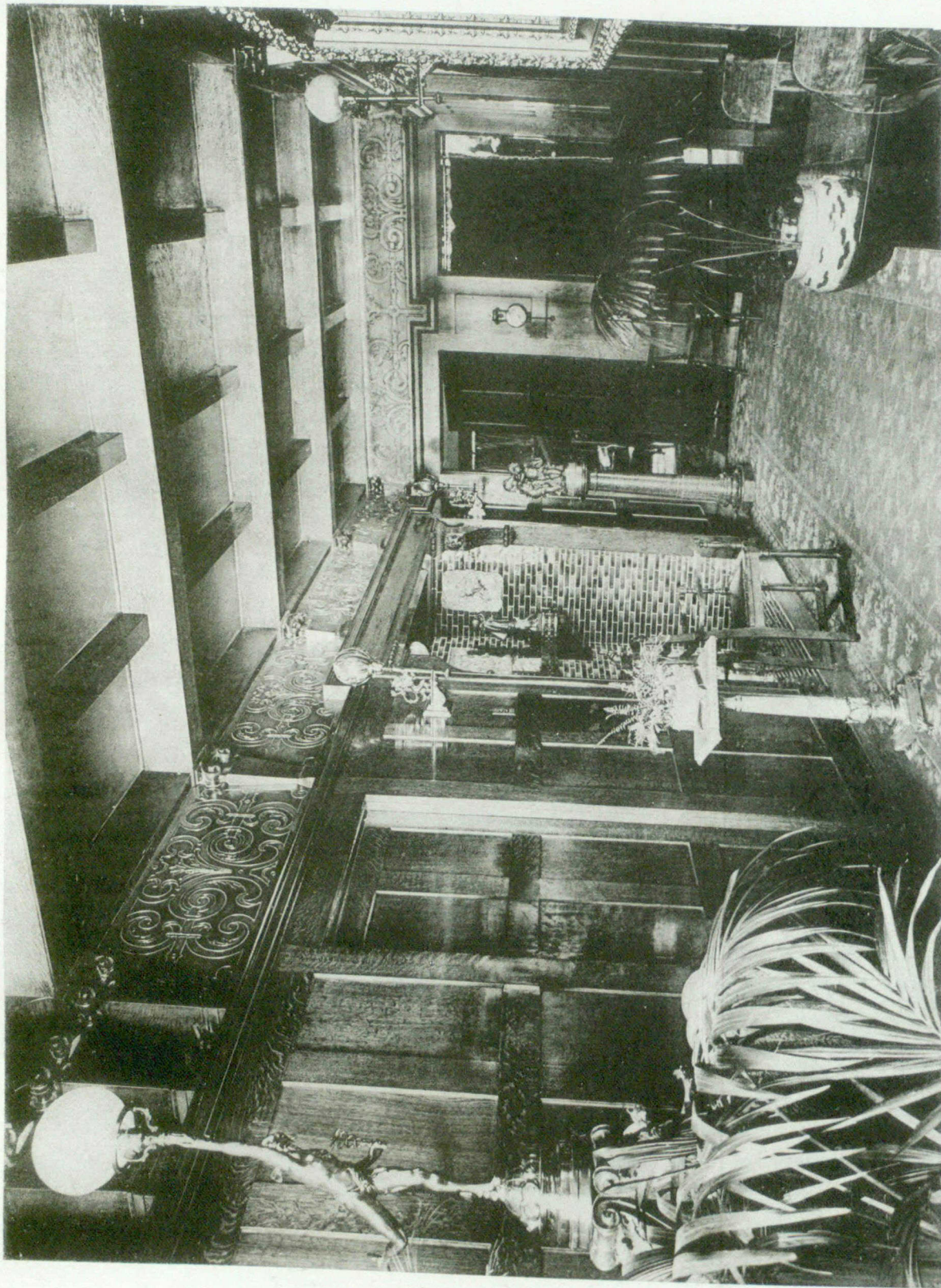
DESIGN NO. 23a.

## Ornamental Wrought Iron Fences

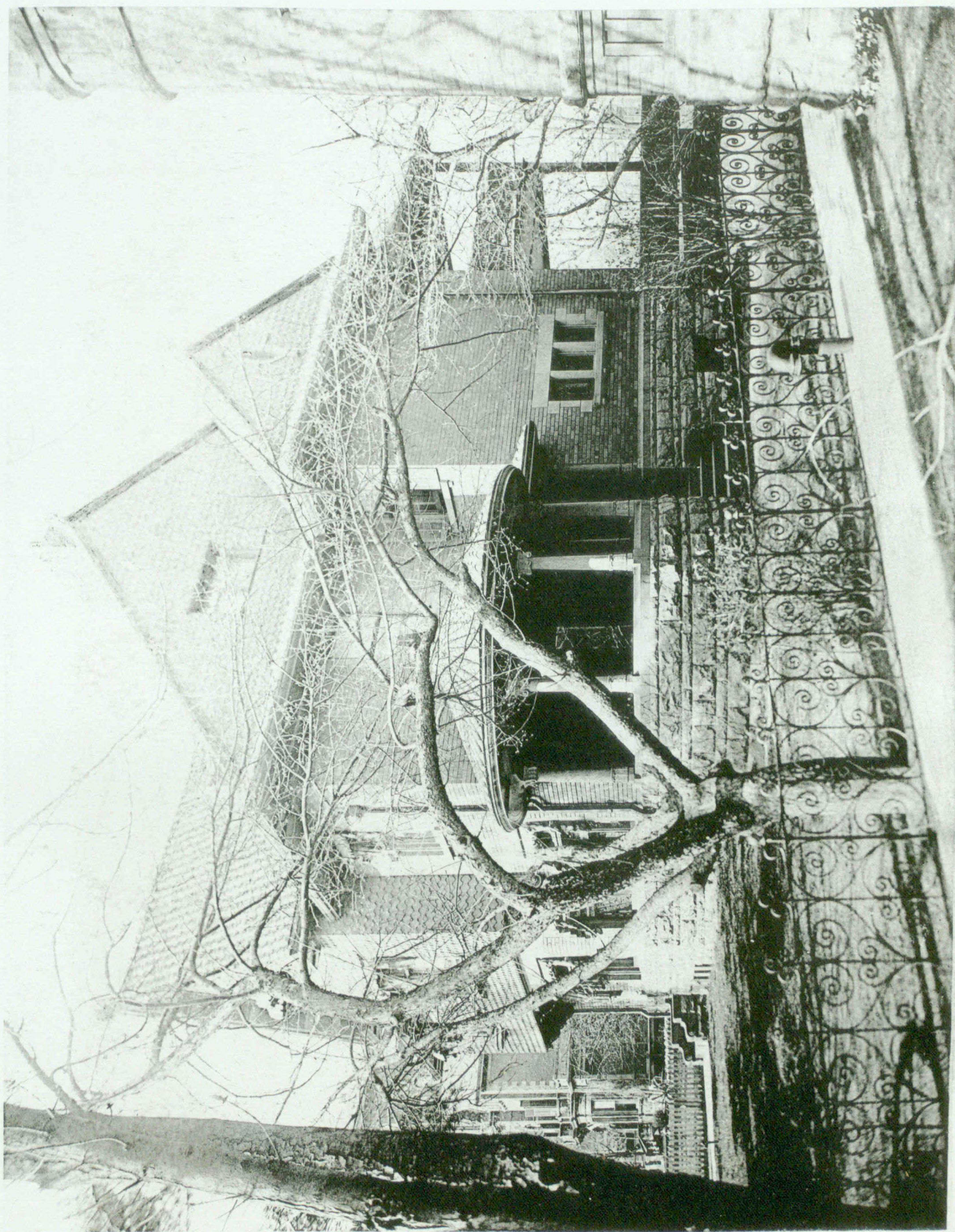
From New and Modern Designs.

Architectural Ironwork of Every Description  
Grilles, Railings, Elevator Cars and Enclosures,  
Staircases, Fire Escapes, Fire Dogs, Fenders, etc.

SEND US YOUR SPECIFICATIONS



VIEW IN HALL, RESIDENCE OF MRS. T. M. HARRIS, ST. GEORGE STREET, TORONTO.  
BURKE & HORWOOD, ARCHITECTS.



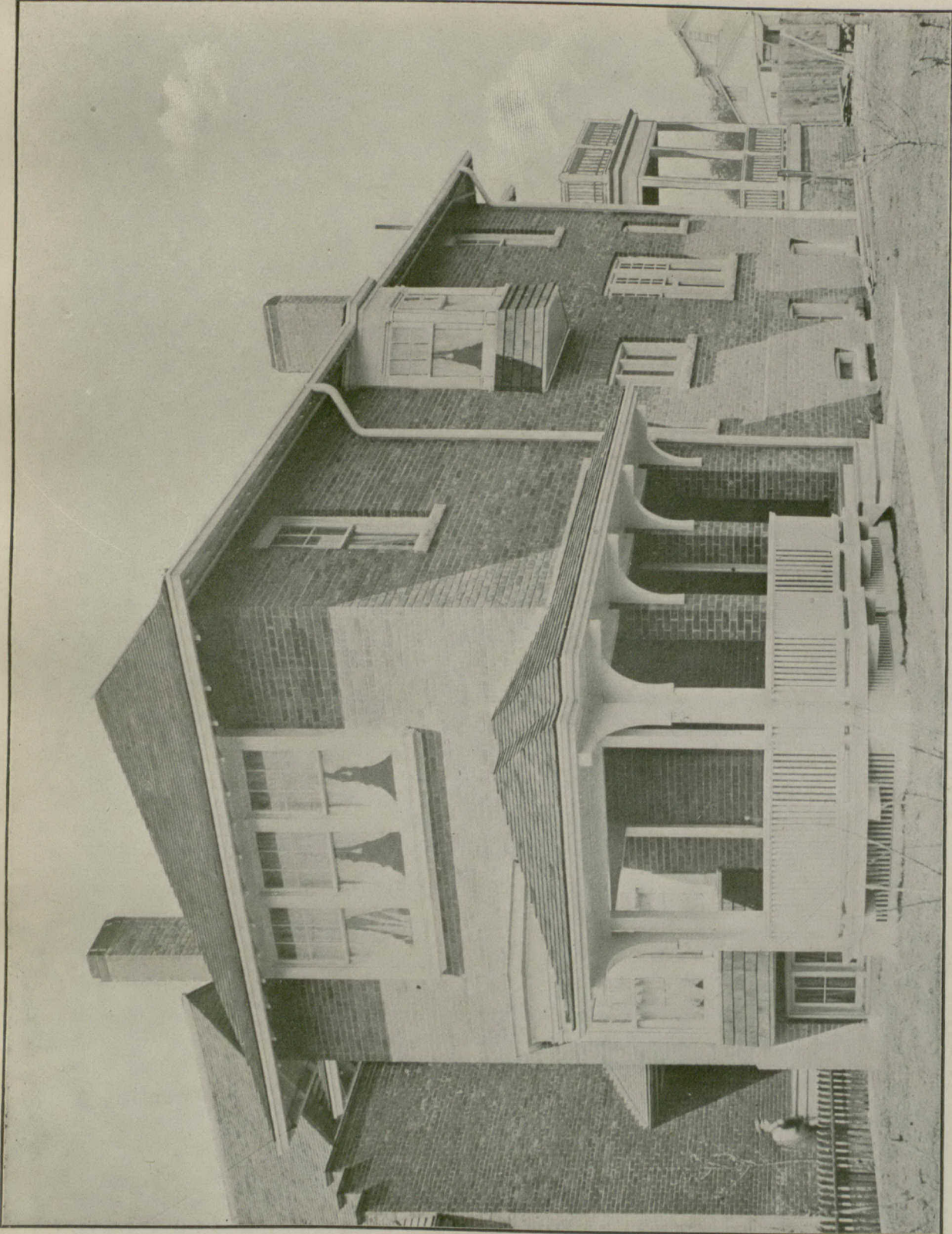
RESIDENCE OF MRS. T. M. HARRIS, ST. GEORGE STREET, TORONTO.

BURKE & HORWOOD, ARCHITECTS.

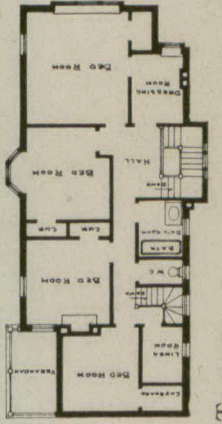


DEN INGLE IN RESIDENCE, BERNARD AVENUE, TORONTO.  
BOND & SMITH, ARCHITECTS.

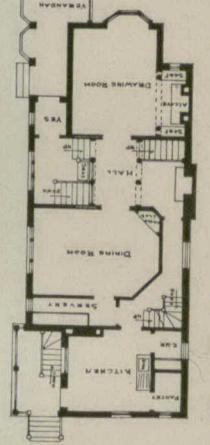




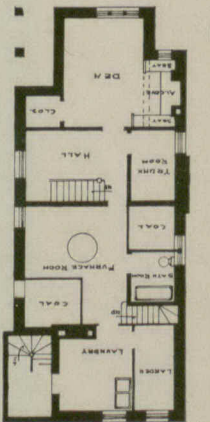
SECOND FLOOR PLAN



FIRST FLOOR PLAN

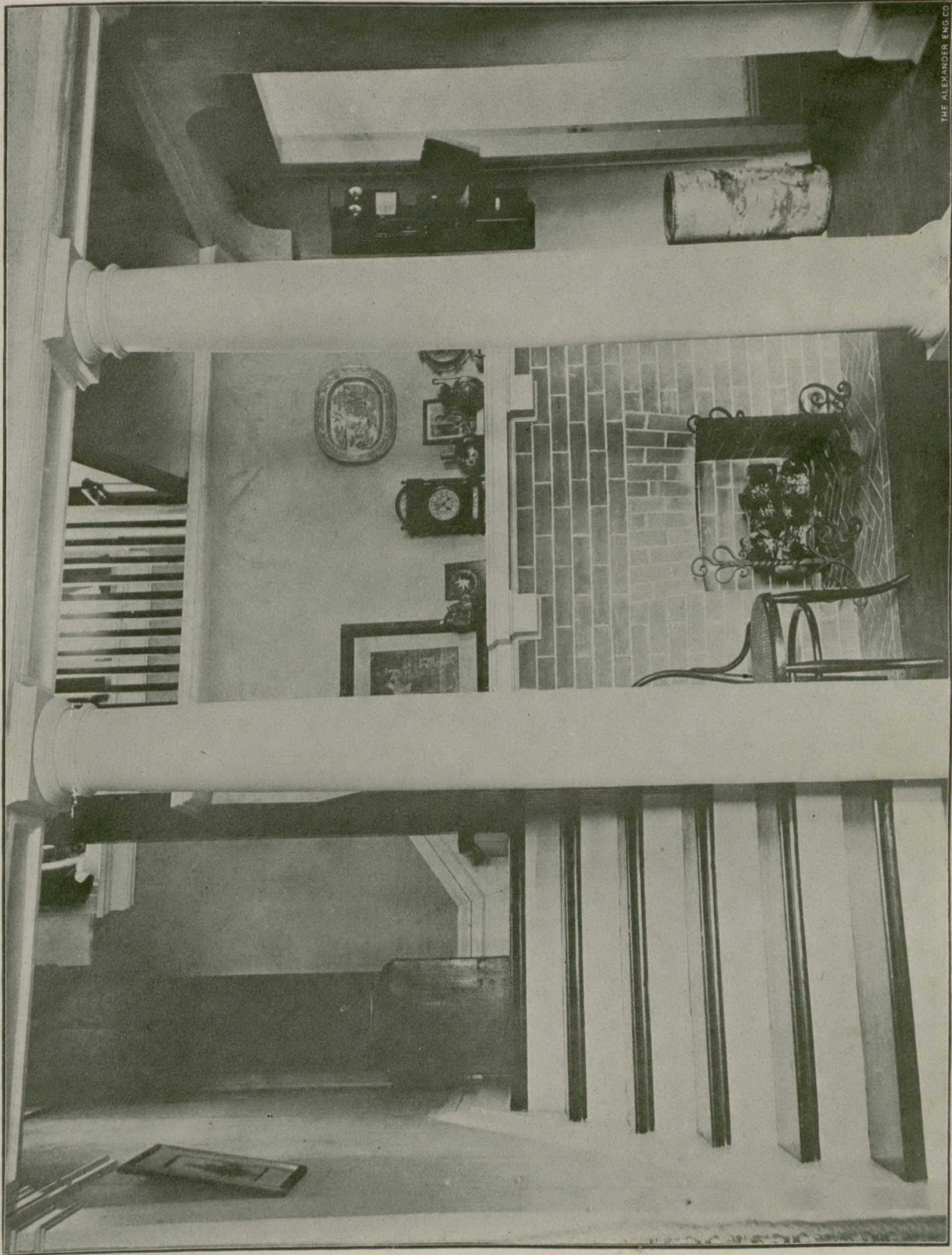


BASEMENT PLAN



RESIDENCE OF MRS. FRANK FLEMING, BERNARD AVENUE, TORONTO.

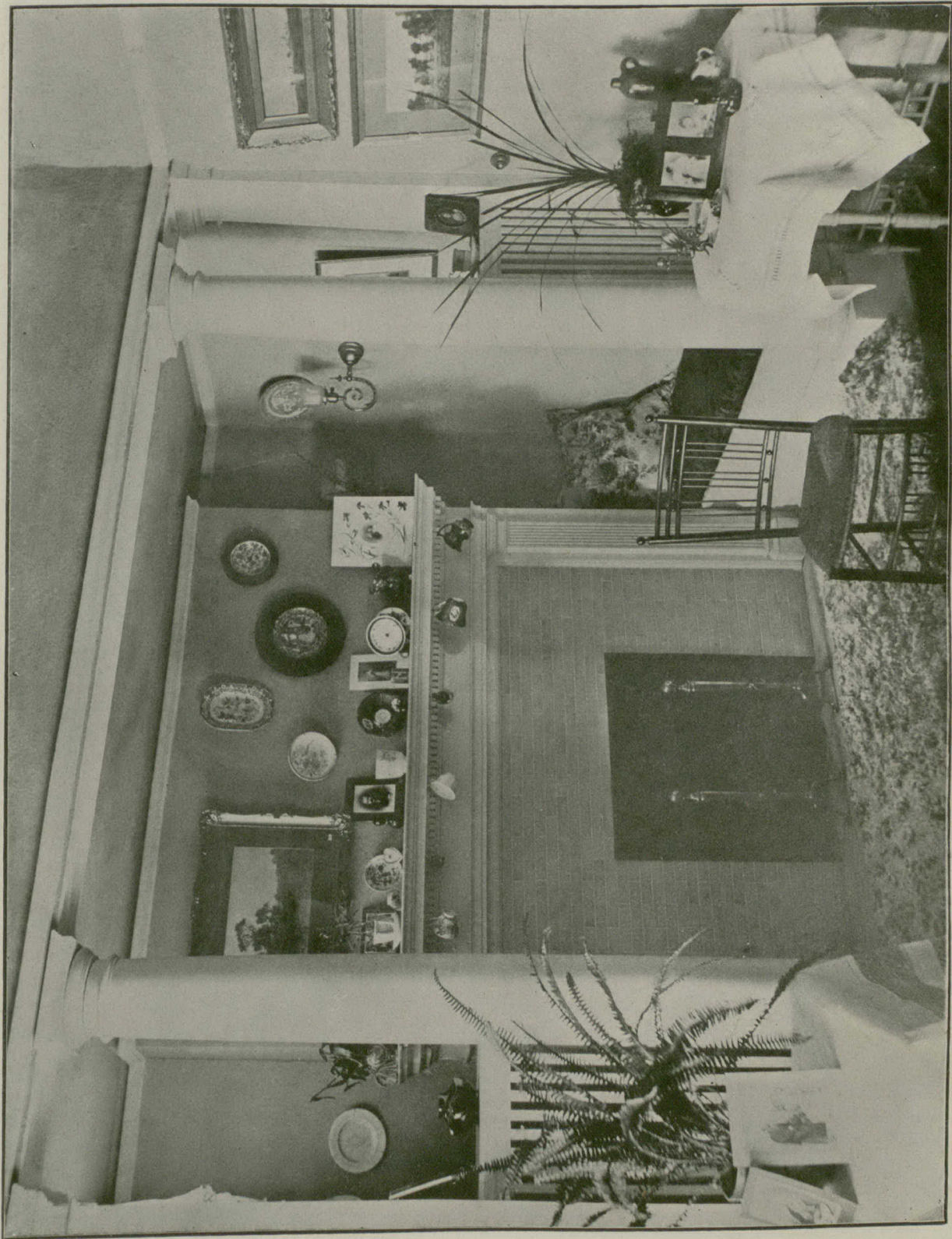
BOND & SMITH, ARCHITECTS.



THE ALEXANDER ENG. CO.

HALL IN RESIDENCE ON BERNARD AVENUE, TORONTO.  
BOND & SMITH, ARCHITECTS.

SUPPLEMENT TO  
CANADIAN ARCHITECT AND BUILDER  
JULY, 1902



DRAWING ROOM ALCOVE.—RESIDENCE OF MRS. FRANK FLEMING, BERNARD AVENUE, TORONTO.

BOND & SMITH, ARCHITECTS.

THE MONTREAL SILICATE BRICK COMPANY,  
LIMITED.

Under the Dominion Companies Act letters patent have been granted to the above company for the purpose of manufacturing building and paving brick and for other purposes more fully set forth. The Company purpose entering into the manufacture of brick by a process that is entirely new, to this country, although it has been introduced for about ten years, with great success, in Germany, Norway and Sweden, and has lately found a strong foot-hold in the United States, there being now four extensive plants there in full operation. As described by Mr. George J. Sheppard of the firm of Charles Sheppard & Sons the extensive brick manufacturers of Montreal, who have been known to the building community for the past 45 years, the process is a very simple one though very effective. The materials used are sand,—any clear sharp sand—and five per cent. of thoroughly slaked lime. The bricks are made on powerful presses similar to those used in the dry press process, but after they leave the press, comes the great difference. Instead of the expensive and tedious methods extending to a period of several weeks in drying and burning under which clay or shale brick have to be made, Silicate brick are wheeled on flat cars each holding 2,500 bricks into an immense steel cylinder 6' 6" in diameter and 40 ft. in length containing 10,000 brick. The cylinders are then hermetically closed and live steam introduced at 120 to 150 lbs.

to the square inch. The bricks are allowed to remain under this baking process for twelve hours and are then wheeled out to cool and when cooled are ready for use in any building. A part of the process includes the introduction of tanks under the cars of brick containing fresh lime. The chemical action arising from the steam and lime and the great pressure used hardens the bricks; when exposed to the air they continue to harden becoming virtually a solid mass of silica.

The process is fully protected by patents both in Canada and the United States. The Montreal Company have acquired rights to manufacture in the Province of Quebec and will erect a large factory in that city.

Highly satisfactory experiments have been conducted at the establishment of Messrs. Charles Sheppard & Sons since last September, and that firm is so thoroughly satisfied the new process is bound to revolutionize the brick industry, that they have taken a prominent part in the organization of the Company, and will conduct its future management, dividing the departments between Mr. George J. Sheppard and Mr. Edmund Sheppard.

At a meeting of the shareholders held on Wednesday June the 25th. the following officers were duly elected, to fill office for the ensuing year viz:—Messrs. David Robertson, President; George J. Sheppard, Vice-President & Managing Director; Hon. Senator Kirschhoffer, Brandon, Man., Alfred Joyce, John McLean and Charles W. Trenholme, Directors.

CABOT'S  
CREOSOTE SHINGLE STAINS

The Original and Standard Shingle Stains are made only by SAMUEL CABOT, of Boston, Mass. Every package bears his trade mark, and every gallon is guaranteed. Used and proved in every climate for nearly twenty years. Also

CABOT'S  
Sheathing and Deafening "Quilt"

the most perfect insulator of heat and deadener of sound on the market. Decay, moth and vermin-proof, and uninflamable.

Samples, Cat. Logue and full information upon application to the manufacturer.

## CANADIAN AGENTS:

ANDREW MUIRHEAD, 84 Bay St., Toronto.  
SEYMOUR & CO., Montreal.  
C. G. HENSHAW, Vancouver.  
F. H. BRIDGES, Winnipeg.  
W. H. THORNE & CO., St. John.  
E. D. ADAMS, Halifax.

Hayes Patent  
Steel Lathing

HAS POINTS IN ITS FAVOUR  
THAT YOU CAN'T AFFORD TO  
OVERLOOK.

In the first place it requires less mortar, and can be more quickly applied than others—most valuable advantages that have been proved by conclusive tests.

Then the sheets are not weakened by stretching in manufacture—they clinch and hold the mortar firmly, making the most rigid lathing you can find.

This gives a fire, water and vermin proof protection, that is really more economical in cost than other styles.

For covering pipe chases, hot air flues, etc., it is extensively used and proves invaluable.

Read it up in our catalogue and you'll fully understand its superiority.

## METALLIC ROOFING CO.,

Limited

TORONTO

MONTREAL

WINNIPEG

**TENDERS WANTED**

A Weekly Journal of advance information and public works.

The recognized medium for advertisements for Tenders.

**CANADIAN CONTRACT RECORD**  
TORONTO.

EXPANSION OF CONCRETE.

Recent experiments by Prof. W. D. Pence at Purdue University, go to disprove the hitherto accepted theory that the co-efficient of concrete is similar to that for the expansion of steel. It was established by the experiments that the co-efficient of expansion of gravel concrete is 0.00000 54 per degree Fahr., and of broken stone concrete 0.00000 55 per degree Fahr. The co-efficient of expansion of steel is generally taken as 0.00000 65 per degree Fahr. That means about 15 per cent. less for concrete than for steel. In the case where steel beams and concrete are combined, the difference must produce stress in both materials. Concrete of course cannot sustain tensile stresses equally with steel, but Professor Pence holds that the stress per degree during changes of temperature would not exceed a quarter of a pound per square inch, and if there was a very great change of temperature, say 100

degs., the stress would not be more than 25 lbs. per square inch. In Chicago provision is made for expansion in concrete in retaining walls by having a joint at every 50 or 60 feet. But in small walls it is advised that joints should be provided at every 30 feet or thereabouts. Professor Pence believes that temperature stresses cannot be serious for the following additional reasons:—(1) The chief range of temperature from that which prevailed at the time the concrete first adhered to the surface of the steel is downward, producing a compressional stress in the concrete section, since the steel contracts more rapidly than the concrete. (2) The changes of temperature in the structure will be gradual, owing to the fact that concrete is a poor conductor of heat. (3) Reinforced concrete beams will sustain on the tension side, without rupture, a proportionate distortion of from ten to twenty times that at which the simple concrete beam would fail. (4) Interior stresses are relieved more or less by the slipping of the metal bars in the concrete.

DR. ROBERTSON, PRESIDENT.

J. S. McCANNELL, MANAGING DIRECTOR.

# Milton

## ARCHITECTURAL TERRA COTTA

We make a Speciality of Ornamental Brick and Terra Cotta Mantels

High-Grade Pressed and Ornamental Bricks in red, buff, yellow, salmon, brown, and Special shades. : : :

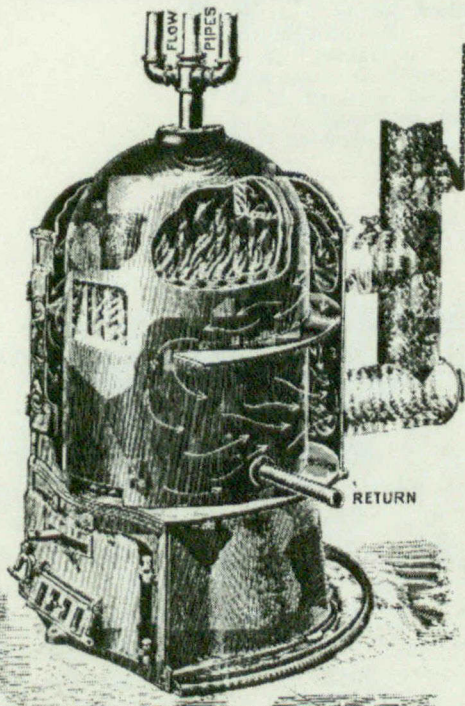
# Pressed

Our products have a wide reputation and are specified by leading architects

## THE MILTON PRESSED BRICK CO., LIMITED

Works and Head Office: MILTON, ONT.

# Bricks



### A HEATER WITHOUT A JOINT

Is What we Offer You in

## THE PRESTON HOT WATER BOILER

The advantages of this feature in its construction are self-evident. There can be no leaks on account of bad packing, nor is there any opportunity given for expansion or contraction to open up joints. The water chamber is made in ONE SOLID CASTING, and so designed as to give a VERTICAL CIRCULATION. By making use of this NATURAL LAW we greatly increase the efficiency of the heater.

A post card to us will bring our booklet with full description.

CLARE BROS. & CO.,  
Preston, Ont.

WORDS OF APPRECIATION.

Mr. A. J. Griffin, of Dauphin, Man., writes as follows: "I am pleased to see the improvement you are making each year in THE CANADIAN ARCHITECT AND BUILDER. The Journal is of great benefit to us away out in this Northwest country. Building in Dauphin is not as brisk as it has been, but what is done now is of a far better class than before."

"More School Houses" is the title of a new pamphlet issued by

Mr. Samuel Cabot, of Boston, showing over twenty new and important School buildings in which Cabot's Deafening Quilt has been employed. This has come to be regarded as the standard material for the purpose.

The report comes from St. Johns, Que., that the Macdonald potteries at that place which ceased operations several years ago, have been purchased by a United States Company. It is said to be the intention of the new owners to equip the works with modern machinery and manufacture porcelain goods, enamelled baths, etc. on a large scale.

THE  
**CANADA**  
**PAINT**  
**COMPANY**  
LIMITED

☞ The "ELEPHANT"  
Brand of White Lead  
has stood the test for  
forty years ☞

THE  
**CANADA**  
**PAINT**  
**COMPANY**  
LIMITED

\*Correspondence Invited.  
Montreal and Toronto.

The Best Ready Roofing on Earth.

TRINIDAD ASPHALT MFG. CO. —  
**Asphalt and Asbestine Gravelled Ready Roofing**  
WITH INTERLOCKING LAP.

Fire, water, acid or gas proof. Shipped with cement and nails for laying.  
ASPHALT, PAINT, CEMENT, COATING, ROOFING, DEADENING  
and SLATERS' FELT, BUILDING and INSULATING PAPER of all  
kinds. The trade supplied. Prices and samples from the

CANADA SUPPLY CO., Agents, - Windsor, Ontario

If you have anything to sell to Architects and Builders  
your advertisement should appear in these pages.

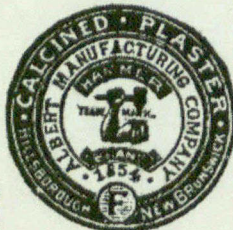
**Troy Laundry Machinery Co.,**  
LTD.  
OUR LINE IS THE LARGEST, BEST AND MOST COMPLETE  
WRITE US FOR CATALOGUE AND LAUNDRY GUIDE.  
Troy Chicago New York San Francisco

**ALBERT MANUFACTURING CO.**

MANUFACTURERS OF

PATENT

**ROCK WALL PLASTER**



MANUFACTURERS OF

"HAMMER BRAND"

**CALCINED PLASTER**

HILLSBOROUGH, N. B., CANADA

Trade **FAB-RI-KO-NA** Mark

**WOVEN WALL COVERINGS**

No Cracked Plaster No Marred Walls Beauty of Finish Strength and Durability

Lining Burlap  
Prepared Burlap  
Shel-Kona-Burlap  
Tapestry Burlaps  
Prepared Canvas  
Dyed Tapestry Burlaps

Lustra-Kona Burlaps  
Ko-Na-Mo-Burlaps  
Buckrams  
Printed Burlaps  
Burlap Borders  
Metallic Thread Effects

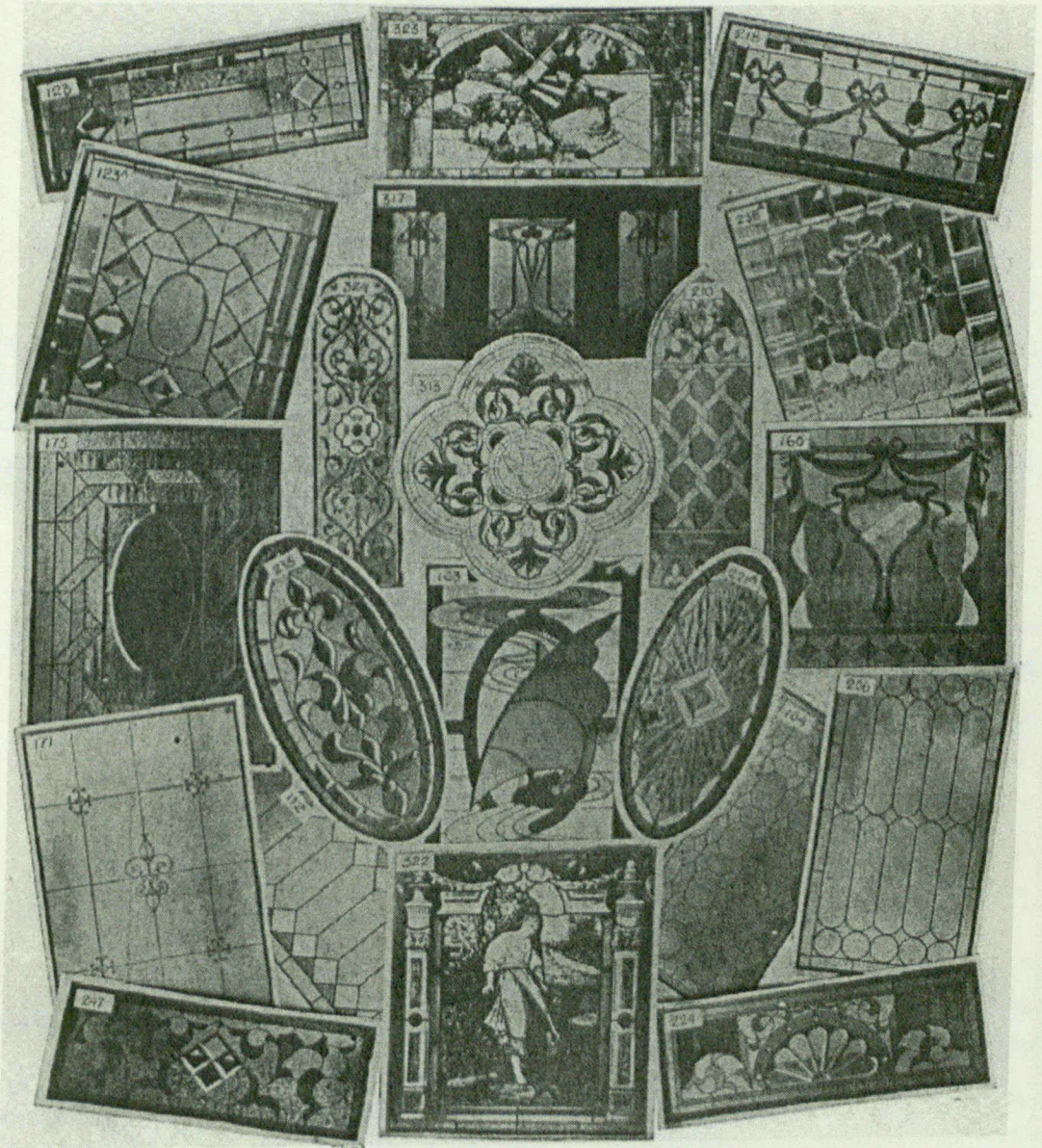
And other kinds and grades of goods for Painting, Staining, Papering and other modes of decorating before application to the wall. They take the place of the last coat of plaster and are stronger and more durable, being finished goods and needing no other treatment after hanging.

The latest and most artistic Wall Coverings. Write for information and samples to

THE THOS. FORRESTER CO., Montreal, Canada

or J. SPENCER TURNER CO., 71-73 Worth St., NEW YORK  
Jewin Crescent, London; 228 Fifth Ave., Chicago; 801-803 Lucas Ave., St. Louis

# Luxfer Decorative Glass



PRICE —(Per square foot)—1 75c 112 65c 123 \$1.50 123A \$1.60 150 \$1.60 165 \$1.75 171 \$1.00 175 \$1.50 206 \$1.00 210 65c 218 \$1.75 221A \$1.00  
 224 \$1.50 235 \$1.75 236A \$2.00 247 \$1.10 313 \$1.50 317 \$1.50 322 \$3.50 343 \$3.50 344 \$1.25.

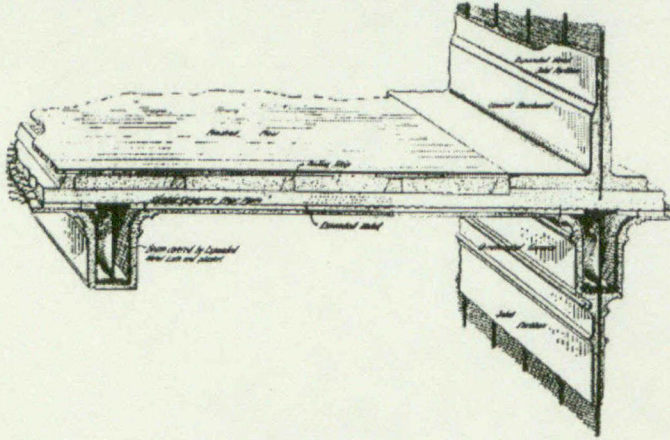
**Copper Electroglazed** in bright, antique or black finish.  
**LEADED WORK** of all kinds.

*Write for designs and prices.*

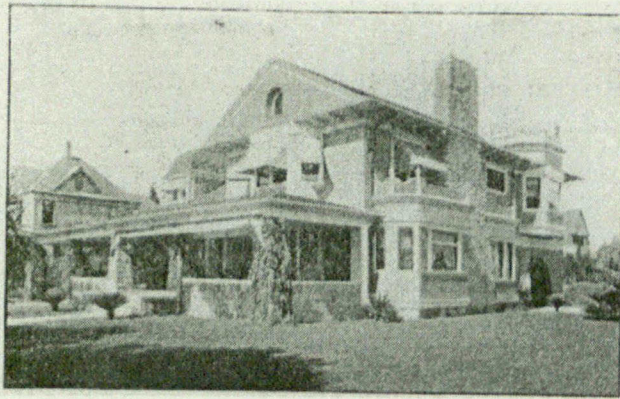
**Luxfer Prism Co., Limited**

98-100 KING STREET WEST, TORONTO

# EXPANDED METAL —AND— CEMENT CONSTRUCTION



Fireproof floors and partitions of the most modern type cost but little in excess of ordinary wood construction.



## Up-to-Date Cementine House

Why should architects and builders cling to the commonplace brick house. In Europe and in the United States, the Cementine type of building is rapidly becoming the vogue. It is cheaper than brick—and is adapted to a wide range of artistic effects.

Write for particulars.

**Expanded Metal & Fireproofing Co.,**  
100 King Street West, TORONTO, LIMITED.



**Samson Spot Cord**

Distinguished by our trade-mark the Colored Spot.

Warranted to be of pure Cotton, Smooth Finish and Perfect Braid. Samples Free.

SAMSON CORDAGE WORKS, Boston, Mass.

**THE CANADIAN PORTLAND CEMENT COMPANY, LIMITED,**

Manufacture "RATHBUN'S STAR"  
"BEAVER" "ENSIGN"

WORKS:

Strathcona, Ont.; Marlbank, Ont.

CAPACITY:

500,000 Barrels per Annum

—For Prices, write, wire 'phone or call on our Sales Agents:

THE RATHBUN COMPANY

310-12 Front Street West

Toronto Ont.

Telephone Main 179.

St. Lawrence Portland Cement Co.

1664 Notre Dame Street West

MONTREAL, QUE.

Telephone Main 3987.

**WIRE WORK**

Ornamental Iron Work



Fire Escapes



Wrought Iron Fencing

NEW CATALOGUE

THE GEO. B. MEADOWS Toronto Wire, Iron and Brass Works Company, Limited  
TORONTO, CANADA

**GLASS****GLASS****GLASS****Prismatic Rolled**

Polished Plate  
Window and

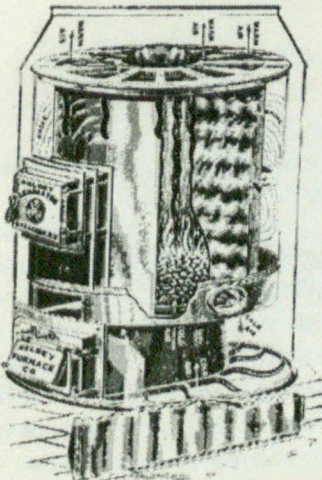
**Wire Rolled Glass**

Plain and Bevelled Mirror Plate, Etc., Etc.

**PILKINGTON BROS., Limited**

Works:  
St. Helens, ENGLAND  
Maubeuge, FRANCE

Canadian Depots:  
Busby Lane, MONTREAL  
Mercer Street, TORONTO

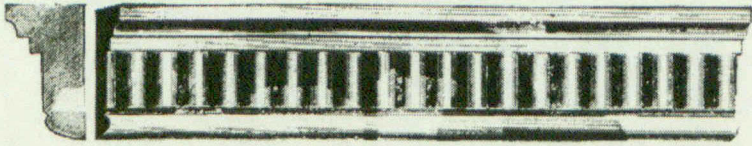
**The Kelsey Warm Air Generator**

heating apparatus with from nine to seventeen vertical corrugated cast iron flues or sections forming the fire cylinder and combustion chamber, and having 65 square feet of heating surface to each square foot of grate surface.

Warms thoroughly and to the proper temperature great volumes of air by passing it through the sections and conveys it to every part of the building. Provides heat and most perfect ventilation for Residences, Churches and School Buildings.

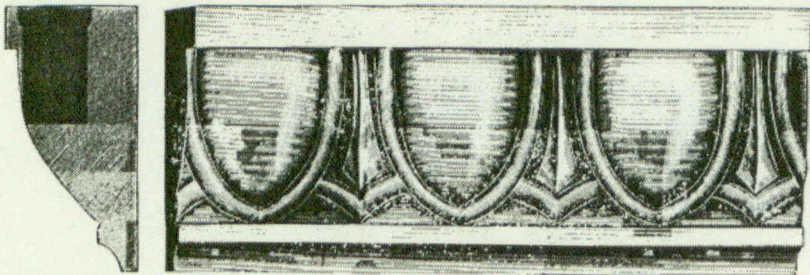
SEND FOR BOOK OF OPINIONS  
FROM SATISFIED PEOPLE

The **JAMES SMART MFG. CO., Limited**  
Brockville, Ont., and Winnipeg, Man.



# THE S. KNETCHEL WOOD TURNING and FURNITURE COMPANY, Limited

SOUTHAMPTON, ONT.



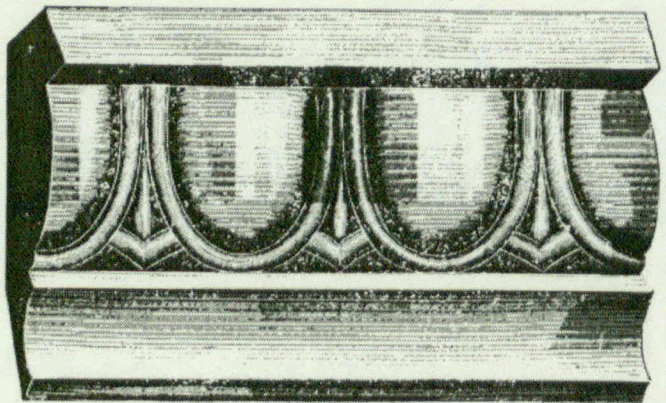
Manufacturers of

## Moorish Fret-Work

## Spindle Grilles

## Embossed Mouldings

Newels and  
Balusters  
Dowels, etc.  
Turned  
and Twisted  
Mouldings



The only factory in Canada making a specialty of  
this class of work.

Write for our new Catalogue, containing full particulars and  
illustrations of all the different lines of goods we manufacture.

**Classified Directory of Montreal Contractors and Dealers  
in Builders' Supplies**

**BUILDING MATERIALS**

**E. F. DARTNELL,**

Stone, Pressed and Common Bricks, Mineral Wool, etc.  
Telephone 2382. 180 St. James Street.

**T. A. MORRISON & CO.,**

Milton Pressed Bricks, Limestone and Sandstones, Contractors' Plant, Crushed Stone for Concrete, etc.  
204 St. James St., Montreal.

**GEO. A. COWAN,**  
Building Supplies,

Telephone 2463. Office, 59 Temple Building

**JAS. W. PYKE & CO.**

Importers Structural Material—Iron and Steel  
Telephone 312. Merchants Bank Bldg.

Subscribe for the ARCHITECT AND BUILDER.

**ROOFERS**

**D. NICHOLSON & CO.,** Roofers, 679 St. Paul Street, Montreal. Gravel Roofing a Specialty. Repairs of all kinds promptly attended to.—Bell Telephone 1665.

Advertise in the ARCHITECT AND BUILDER.

**Classified Directory of Toronto Contractors and Dealers in  
Builders' Supplies**

**BUILDING MATERIALS**

**GEORGE RATHBONE,** 2 Northcote Ave. Pine, Hemlock and Hardwood Lumber; Lath, Shingles and Color Posts; Saw Veneers. Re-sawing up to 30 inches wide a specialty.

**Ontario Lime Association**

Manufacturers and Dealers in  
Grey Lime, Guelph White Lime,  
Ontario Cement, Portland Cements  
Plaster Paris, Hair, Fire Brick,  
Fire Clay, Sewer Pipe, etc.

Telephone 020. 118 Esplanade St. E., Toronto

**BUILDERS and CONTRACTORS**

**FREDERIC HOLMES, Contractor**

Telephone North 663. 1111 Yonge St., Toronto.  
Estimates given for Cut Stone, Brickwork, Etc.

**JAMES ISAAC**

Cut Stone Contractor,

20 Dupont Street, Toronto.

**MANTELS, GRATES and TILES**

**Toronto Hardware Mfg. Co.**  
1100 Queen St. W.  
ALSO PLUMBE & SUPPLIES.

**ROOFERS**

**ROBT. RENNIE & SON,**

Terra cotta Tile.

**SLATE AND GRAVEL ROOFERS, & C.**

Every description of Roofing Slate always on hand. Galvanized Iron Ridges, Valleys and Flashings supplied. Telephone 2344. 378 Berkeley St., TORONTO.

**H. WILLIAMS & CO.,**

23 Toronto St. TORONTO.

**ROOFERS**

With Slate, Felt and Gravel; also Williams' Flat Slate Roof—the best. We lay ROCK ASPHALT on cellar bottoms, floors and walks—the best material for this work. Telephone No. 511.

**W. T. STEWART & CO.**

**Felt and Slate Roofers,**

Dealers in Felt, Pitch, Tar, Sheathing Paper, Carpet Paper, and all kinds of Building Paper. Office: Cor. Adelaide and Bay Sts., TORONTO. Estimates furnished. Telephone No. 698.

**G. DUTHIE & SONS,**

**Terra Cotta Tile, Slate and Felt Roofers,**

Cor. Widmer and Adelaide Sts., TORONTO.

GALVANIZED IRON FURNISHINGS SUPPLIED.

Telephone 1936.

**ESTABLISHED 1856**

Slate and Felt Roofing.  
FOREES ROOFING CO. 151 Bay St

**DOUGLAS BROS.**

**SLATE, TILE AND METAL ROOFERS.**

Sheet Metal Work, Metallic Ceilings, Skylights, etc.  
24 Adelaide Street West, TORONTO.

Telephone 310.

**PIONEER GALVANIZED IRON WORKS**

ESTABLISHED 1855.

**GEORGE RINGHAM**

23 and 25 Edward Street, TORONTO

Copper and Galvanized Iron Cornices,

Skylights, Etc., Metal Ceilings

Felt and Sl. Roofing, Phone 257.

**MOVERS**

**I. WARDELL & SON**

450 Spadina Avenue,

Move Frame and Brick Houses and Machinery.

Send for 3rd edition of the Canadian Contractors' Handbook. Price \$1.50 \$1.00 to subscribers of the Canadian Architect and Builder.

**SPECIFY HOLLYWOOD PAINT**

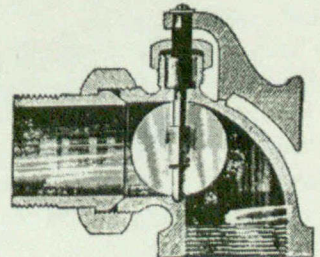
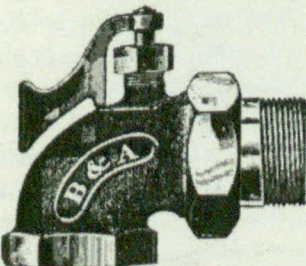
**Combination Union Valve Elbow**

Patented January 30, 1900

**For Hot Water**

Is more elegant in design than a Valve or an Elbow. It is quick opening (Qr. turn) and adjustable to either end of the radiator. It has a true curved, full sized water way which reduces friction. It is neatly and compactly made of valve metal and packed ready to use. It has rough body, with finished trimmings and is nickel plated all over.

Operated with the foot. Costs no more than a valve. Every one warranted.



**THE ROBERT MITCHELL CO., LIMITED**

Sold to the Trade Only.

Sole Licensees for the Dominion of Canada

**MONTREAL**

Send for Discounts.

Architects.

FRANK DARLING, J. A. PEARSON  
**DARLING & PEARSON**  
Architects,  
Members of the Ontario Association of Architects.  
Imperial Bank Building, Leader Lane TORONTO

**SYMONS & RAE,**  
**ARCHITECTS**  
25 Toronto St., TORONTO

Henry LANGLEY & HANGLEY, Char. E. Langley.  
**ARCHITECTS**  
Members of the Ontario Association of Architects.  
Canada Life Building, King St. W., TORONTO.

**EDMUND BURKE & J. C. B. HORWOOD**  
**ARCHITECTS**  
15 Toronto Street, TORONTO.

**W. H. STRICKLAND,**  
**ARCHITECT**  
35 Adelaide Street East, TORONTO.

**DAVID ROBERTS,**  
**ARCHITECT**  
Office, No 17 & 18 Union Block, } TORONTO.  
Cor. Toronto & Adelaide Sts.

**GEO. M. MILLER & CO.**  
**ARCHITECTS**  
Toronto General Trusts Building TORONTO

**J. C. FORSTER,**  
**ARCHITECT**  
Member Ontario Association of Architects.  
MEIRS BLOCK, OWEN SOUND.

**POWER & SON,**  
Architects and Building Surveyors,  
Members Royal Chambers,  
KINGSTON, ONTARIO.

**Frederick G. Todd**  
**LANDSCAPE ARCHITECT**  
Formerly with Messrs. Olmsted, Boston.  
Advice, Sketches, Designs, or full Working Plans for Parks, Cemeteries, Country Estates and Home Grounds. : :  
Bell Telephone Building, Montreal  
Telephone Main 4876.

PROVINCE OF QUEBEC ARCHITECTS.

A. T. Taylor, F.R.I.B.A., R.C.A.  
**TAYLOR & GORDON,**  
**ARCHITECTS**  
43 St. Francois Xavier St., MONTREAL  
Telephone Main 281.

**HUTCHISON & WOOL,**  
**Architects and Valuers,**  
181 St. James Street, MONTREAL.  
Telephone Main 858.

**H. STAVELY,**  
**ARCHITECT**  
Member Province of Quebec Association of Architects  
113 St. Peter Street, QUEBEC

WIRE LATH

The only perfect Lathing, for the reason that the Wire is completely embedded in Mortar and CANNOT RUST. It is the only Lathing that will stand the test of time.

**THE B. GREENING WIRE CO.,**  
(LIMITED)  
Hamilton, Ont. Montreal, Que.

THE GREAT CHURCH LIGHT

Is made to fit all conditions. All styles from the plainest to the most elaborate. All we know about church lighting is yours on request.  
**I. P. PRINK, 55 PEARL ST., NEW YORK**

Please mention this paper when corresponding with advertisers.



The Owen Sound Portland Cement Company, Limited

Works at SHALLOW LAKE, ONT.

MANUFACTURE

**SAMSON BRAND**      **MAGNET BRAND**



WRITE FOR PRICES AND TERMS.

THE OWEN SOUND PORTLAND CEMENT CO.

Head Office, OWEN SOUND, ONT.

**John Lucas,**

377 Spadina Ave., Sales Agent for Toronto, Ont. Phone 1113 Main

The Toronto Pressed Brick and Terra Cotta Works.

BRICKS

ROOFING AND FLOORING TILES, CRESTING, FINIALS AND CHIMNEY TOPS

Send for Samples and Prices. \* Special and prompt attention given to Architects' Terra Cotta Drawings.

Write: **Toronto Pressed Brick Works**

Montreal Agent: E. F. DARTNELL, 180 St. James Street,

Head Office: **MILTON, ONT.**

C. J. LEWIS, Proprietor.

**Bronze Builders' Hardware**    
**GRATES <sup>A</sup>ND <sup>D</sup>MANTELS**  
**TILING <sup>F</sup>OR <sup>R</sup>FLOORS <sup>A</sup>ND <sup>D</sup>WALLS**  
**RICE LEWIS & SON**  
 Limited TORONTO  
 Write for Prices 

The Turnbull Elevator Mfg. Co.

MANUFACTURERS OF  
 ELECTRIC, HYDRAULIC  
 HAND and POWER

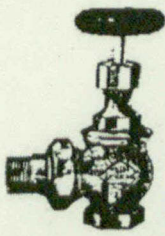
**ELEVATORS**

AND  
 DUMB WAITERS

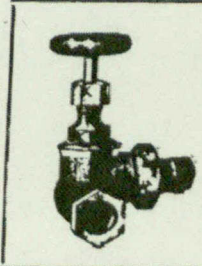
TURNBULL ELEVATOR WORKS  
 126 John Street

Toronto, Ont.

Jenkins Brothers'  Radiator Valves



Stand at the head, are specified by Architects and Engineers, and are always referred to by Steam Fitters when THE BEST is called for. Nothing but the purest and best Steam Metal is used, and the composition takes a Beautiful Color, making the finest finished work that can be produced. They contain the JENKINS DISC, making them perfectly Steam tight, and the Keyed Stuffing Box, which holds the packing securely, and prevents leakage around the stem. They are made in all styles and sizes. As there are many imitations, insist on having those bearing our Trade Mark, and you will get the Standard Guaranteed Valve.



**Jenkins Brothers, 17 Pearl St. Boston, Mass.**  
 New York Philadelphia Chicago London, E. C.

**BEAMS**  
**CHANNELS**  
**ANGLES**  
**PLATES, ETC.**



**2,000 TONS**

FOR SALE BY

**Hamilton Bridge Works Co.**  
 LIMITED  
 HAMILTON, CANADA

SEND FOR STOCK LIST

Long Distance Telephone 630.