

**INDEX TO ADVERTISEMENTS**

**ADAMANT WALL PLASTER.** Page vi  
 Adamant Mfg. Co. vi

**ARCHITECTS.** III  
 Directory III

**ARCHITECTURAL IRON WORK.** I  
 Barnum Wire & Iron Works. vii  
 B. Greening Wire Co. vii  
 Dominion Chain Works. vii

**ARCHITECTURAL SCULPTORS.** III  
 Carnovsky, B. H. III  
 Gullet, F. B. III  
 Hicks, W. Stevens. III  
 Holbrook & Mollington. III  
 Turner Frederic. III  
 Young & Collins. III

**ART FURNITURE.** II  
 Tait & Co. II  
 Wright & Co. II

**BRASS WORKS.** IV  
 Mitchell & Co., Robt. IV

**BRICK MACHINERY.** VIII  
 Gurney Co., E. & C. VIII  
 Laidlaw Mfg. Co. III

**BRICKS (PRESSED).** VI  
 Hynes Terra Cotta & Brick Co. VI  
 Savage, R. D. II  
 Toronto Pressed Brick & Terra Cotta Co. III  
 The Ontario Terra Cotta, Brick & Sewer Pipe Co. XI

**BUILDERS SUPPLIES.** VI  
 Adamant Mfg. Co. VI  
 Hall & Son. I  
 McNally & Co. II  
 Rathbun Co. VI  
 Vokes, M. & J. L. XI

**BUILDING STONE DEALERS.** VII  
 Briund & Co. VII  
 Gillespie & Brooks. VII  
 Lyall, Peter. II  
 Rathbun Co. VI  
 Savage, R. D. II  
 Vokes Makoolo Stone Co. VII

**BUILDERS' HARDWARE.** V  
 Albenhead & Crombie. V  
 Ryan Mfg. Co. IV  
 Rice Lewis & Son. IV  
 Vokes, M. & J. L. XI

**CEMENTS.** VI  
 Adamant Mfg. Co. VI  
 McNally & Co., Wm. II  
 McRae & Co. IV  
 Rathbun Co. VI  
 Savage, R. D. II  
 Terry, Edward. IV  
 Wright & Sons, C. B. II

**CONTRACTORS AND BUILDERS.** VII  
 Davidson & Kelly. VII  
 Davis, H. VII  
 Hopel & Co., H. VII  
 Grim & Goddard. VII  
 Humphrey, T. R. VII  
 Lyall, Peter. II  
 Marshall, John. VII

Mortimore, Geo. T. VII  
 Redmond, Joseph. VII  
 Simpson, Wm. VII  
 Stevens, Chas. H. VII  
 Webb, John E. VII

**CREOSOTE STAINS.** III  
 Cabot, Samuel. III

**CUT STONE CONTRACTORS.** VII  
 Hibbard, H. & T. VII  
 Isaac Brothers. VII  
 Oakley, Geo. VII

**ELECTRIC BELLS.** II  
 Galvanic Battery Works. II

**ELEVATORS.** VI  
 Craig Elevator Works. VI  
 Leach & Turnbull. I  
 Miller Bros. & Toms. II

**ENGRAVERS.** XI  
 Armstrong Photo-Eng. Co. XI  
 Canadian Photo-Eng. Bureau. XI  
 Laidlaw, R. VII  
 Toronto Engraving Co. XI

**GALVANIZED IRON WORKS.** VII  
 Baird Bros. VII  
 Hedges & Laidlaw. VII  
 Ormsby, A. B. VII  
 Tucker & Dillon. VI

**GRANULITHIC.** III  
 Forsyth, Robert. III  
 Whittard, T. XII

**HEATING.** IV  
 Barrow Stewart & Milne. IV  
 Clare Bros. & Co. VIII  
 Howard Furnace Co. VII  
 King & Son, Warden. XII  
 McDougall & Co., R. XII  
 Toronto Radiator Mfg Co. X  
 Williams, J. M. & Co. IV  
 Watrous Engine Works. VII

**LEAD PIPE.** IV  
 Thos. Robertson & Co. IV

**LEGAL.** VII  
 Denton & Dods. VII

**MANTELS AND OVERMANTELS.** III  
 Tait & Co. III  
 Wright & Co. III

**METALLIC LATH.** VI  
 B. Greening Wire Co. VI

**MINERAL WOOL.** II  
 Gas & Acheson. II  
 Savage, R. D. II

**ORNAMENTAL PLASTERERS.** VII  
 Baker, J. D. VII  
 Palmer, Phillip. VII  
 Hynes Terra Cotta & Brick Co. VI  
 Whetter, Henry R. VII  
 Wright, Jas. VII

**PAINTERS.** VI  
 Dunham, H. VI  
 Taylor, W. J. VII

**PAINTS, VARNISHES, &C.** XII  
 Andrew Muirhead. XII

**PIANOS.** IX  
 Mason & Risch. IX

**PLASTERERS.** VII  
 Dayton, William H. VII  
 Hynes, W. J. VII

**PLATE GLASS.** IX  
 Laidlaw & Son. IX  
 McCausland & Son. IX  
 Toronto Plate Glass Importing Co. IX

**PLUMBIERS.** VII  
 Bennett & Wright. VII

**PLUMBING SUPPLIES.** III  
 Booth & Son. III  
 Higman, O. III  
 Keith & Fitzsimons. III  
 Malcolm, W. B. III  
 Mitchell & Co., Robert. IV  
 Robertson & Co., Thos. IV

**ROOFING MATERIALS.** I  
 Can. Gutterming & Steel Roofing Co. I  
 Merchant & Co. IX  
 Metallic Roofing Co. IX

**ROOFERS.** VII  
 Baird Bros. VII  
 Duthie & Sons, G. VII  
 Forbes, Duncan. VII  
 Hutton, W. D. VII  
 Rennie & Son, R. VII  
 Scutler & Wm. VII  
 Stewart, W. T. VII  
 The Parvakee Roofing & Paving Co. VII

**SAFES.** III  
 Kimball, S. III

**SANITARY APPLIANCES.** III  
 Booth & Son. III  
 Higman, O. V  
 Malcolm, W. B. I  
 Robertson & Son, Thos. IV

**SEWER PIPE.** IV  
 Hamilton and Toronto Sewer Pipe Co. IV  
 McNally & Co., W. II  
 McKee & Wm. IX  
 Terry, Edward. IV  
 The Ontario Terra Cotta Pressed Brick & Sewer Pipe Co. XI

**SINGLE STAINS.** III  
 Cabot, Samuel. III

**SLIDING BLINDS.** XI  
 Clatworthy, Geo. XI

**STABLE FITTINGS.** X  
 Tisdale Co., B. G. X

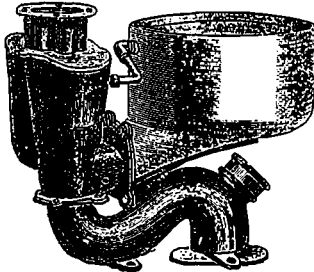
**STAINED AND DECORATIVE GLASS.** IX  
 Castle & Son. II  
 Dominion Stained Glass Co. IV  
 Longhurst & Co., H. IX  
 Lyon, N. T. III  
 McCausland & Son. IX  
 Spence & Son, J. C. IX  
 The Bell Art Stained Glass Works. IX

**TERRA COTTA.** III  
 The Hynes Terra Cotta & Brick Co. VII  
 Toronto Pressed Brick & Terra Cotta Co. III  
 The Ontario Terra Cotta, Brick & Sewer Pipe Co. XI

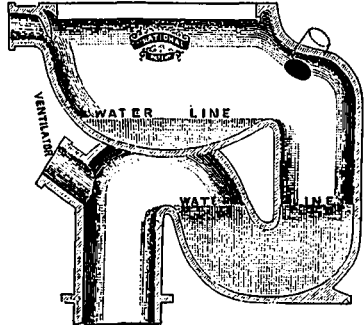
**TERRA COTTA LUMBER.** VI  
 Rathbun Co. VI

**WALL PAPER AND CEILING DECORATIONS.** I  
 Staunton & Co., M. I

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Great Reduction in  
**Sanitary**  
**Earthenware**



A Complete Assortment of Plumbers' Supplies always on hand.

FOR PRICES AND TERMS APPLY TO

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89 and 91 Church Street,

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**STAINED GLASS**



Memorials  
—) AND (—  
Church Decorations

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40 Bleury Street, Montreal,  
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**CHARLES EVANS & CO.,**  
(London, Eng.)

AGENTS FOR Stained Glass, Brass Tablets, Cer-  
amic and Venetian Glass,  
Mosaics, Painted Tiles

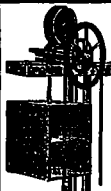
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ESTABLISHED 1837.

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PROPRIETORS,  
**HULL, P. Q.**


Manufacturers, Importers and Dealers in  
Portland and Foreign Cements,  
Hull Cement or Water Lime,  
Scotch Fire Brick and Clay,  
Common and Pressed Building Brick,  
Plaster of Paris,  
Drain Pipes,  
Tiles,  
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SUCCESSORS TO MILLER BROS & MITCHELL  
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MILLWRIGHTS, &  
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MANUFACTURERS OF  
**SAFETY HOISTING APPARATUS OF EVERY KIND.**



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**Passenger Elevators**  
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PUBLIC BUILDINGS, &c.

**FREIGHT HOISTS**  
FOR WAREHOUSES, Etc.  
HAND POWER, STEAM,  
AND HYDRAULIC.


**Safety Dumb Waiters**  
NEW DESIGN.

**HOISTING ENGINES**  
FOR MINES, QUARRIES,  
Etc. SIMPLE, COMPACT,  
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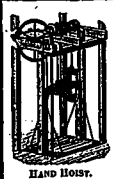
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1, 2, 3, 4, & 6 TONS.  
FOR QUARRIES, & FOR  
BUILDERS' USE.



PASSENGER CAR.



GOODS PLATFORM.



HAND HOIST.

**GENERAL MACHINE WORK.**

OFFICE, 122 KING STREET.  
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**MINERAL WOOL STEAM PIPE AND BOILER COVERING**  
(Lamkin's Patent)



**MINERAL WOOL**

*The Great Non-Conductor.*

**Architects and Builders,** Make your building perfect by dead-  
ening the floors and lining the sides  
and roofs with **MINERAL WOOL.** Keeps out the cold in winter and the heat in sum-  
mer, and makes them sound, fire, frost and vermin proof.

For sale in any quantity by  
**GAST & ATCHISON,**

30 Adelaide Street West,

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"CORSEHILL" RED SANDSTONE,  
(Dumfriesshire, Scotland.)

IRON GIRDERS,

CORRUGATED WIRE LATHING.

**BUILDING MATERIAL**

OF EVERY DESCRIPTION.

PHILADELPHIA PRESSED BRICK,  
(Peerless Co.)

ENAMELLED BRICK,

MORTAR COLOURS.

**Robinson's Fire-Proof Cement**

THREE QUALITIES, VIZ. :-

- I. For finishing coat on walls or ceilings, pure white, and capable of being polished to a beautiful surface, whitewashing mouldings and castings, tile setting, &c.
- II. For first coat of plastering, with varying proportions of sand, according to requirements.
- III. For concreting, with three to four parts of sand to one of any suitable aggregate. Equal to Keene's, at a trifle over half the cost. No article ever introduced to the trade has given greater satisfaction.

**Cabot's** Brick Preservative, Shingle Stains, Interior  
Wood Stain, Anti Pyre, &c.

MARBLE AND CERAMIC MOSAIC FLOORING

MINERAL WOOL.

List is too long to enumerate every line.

**CORRESPONDENCE SOLICITED.**

# CABOT'S CREOSOTE SHINGLE STAINS



OUR STAINS HAVE STOOD THE TEST OF TIME, TEN YEARS.  
 THEY DO NOT GROW CHALKY, TURN BLACK, OR WASH OFF.  
 THEY ARE NOT CHEAPENED WITH KEROSENE, BUT CONTAIN A LARGE PERCENTAGE OF CREOSOTE WHICH IS THE BEST WOOD PRESERVATIVE KNOWN.  
 THEY HOLD THEIR SOFT VELVETY EFFECT INDEFINITELY.  
 SAMPLES OF WOOD, TOGETHER WITH ILLUSTRATED CATALOGUE OF CREOSOTED HOUSES, SENT ON APPLICATION.

**SAMUEL CABOT,** 70 Kilby St., BOSTON.  
*Agent for Ontario, A. MUIRHEAD,* 82 Bay Street, Toronto.

## STEWART'S Patent Granolithic

FOR SIDEWALKS, FLOORS, STEPS, LANDINGS, CORRIDORS, AREAS AND STABLES.  
 No building perfect without Granolithic Footpaths. It has stood the test of years and climates.

### IMPERIAL STONEWARE LAUNDRY TUBS

Are without parallel the finest and most complete Tubs in the market. Guaranteed perfect. Building Granite, Granite Facing Blocks, Polished Granite of every kind, Monumental Work. Marble for Interiors, Plumbers' Furniture, Sconce-work, or any purpose, and of all kinds of Marble in the market.

Send for Estimates. **ROBERT FORSYTH,**  
**MONTREAL: 130 Bleury St. TORONTO: 14 Toronto Avenue.**

Please mention the CANADIAN ARCHITECT AND BUILDER when corresponding with advertisers.

TO ARCHITECTS AND BUILDERS.

### TAIT & CO.,

MANUFACTURERS OF AND DEALERS IN

## Wood Mantels

— AND —

## Overmantels

GRATES, TILES, Etc.

Are now prepared to fill all orders for these lines of Goods promptly and in a satisfactory manner.

Estimates given for Office and Store Fittings.

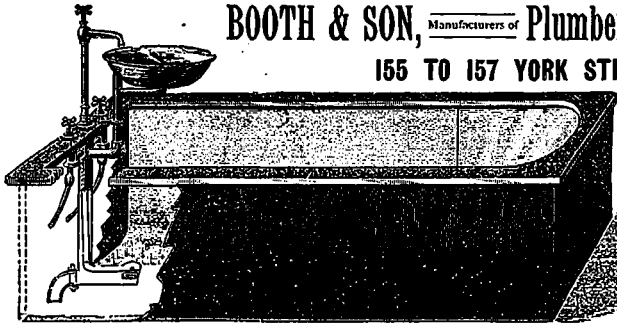
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267 Queen Street West,  
 - TORONTO.

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## BOOTH & SON, Manufacturers of Plumbers' Copper & Brass Work,

155 TO 157 YORK STREET, TORONTO.



Booth's Patent Combined Bath and Wash Basin.

In many houses, for want of space in bath room, a wash basin cannot be used. By our improvements this desideratum is supplied, fitted with hot and cold water, waste and overflow.

Some of our Specialties:  
 COPPER BATH BOILERS.  
 GALVANIZED IRON BOILERS.  
 PLANISHED COPPER BATH TUBS.  
 EARTHENWARE PLUMBERS' BRASS WORK.  
 SANITARY EARTHENWARE.

SEND FOR PRICES.

# TORONTO PRESSED BRICK & TERRA COTTA CO.

MANUFACTURERS OF

## PLAIN AND ORNAMENTAL

# FINE PRESSED BRICK

== FOR BUILDING FRONTS. ==

MANTELS, ETC.

Ornamental Designs in great variety.

BRICKS SHIPPED TO ALL PARTS OF THE WORLD.

Large stock always on hand.

OFFICE:

No. 5 Quebec Bank Chambers,  
**TORONTO**

ALL KINDS  
 OF  
 ROOF TILE

WORKS AT MILTON, ONT.

Send for Catalogue if interested.

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Managing-Director.

**EDWARD TERRY**

DEALER IN

**Portland and Queenston Cements.**

PLASTER PARIS, GREY AND WHITE LIME,

Fire Brick and Clay, Sewer Pipe, Hair, American and Canadian Lime, Plaster, Salt.

23 and 25 GEORGE ST.,

Telephone 164.

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**PORTLAND CEMENT, FIRE BRICKS,**

**FIRE CLAY, SEWER PIPES, SEWER INVERTS.**

LOWEST PRICES.

**McRAE & CO.,**

98 Esplanade St.,

TORONTO.

OTTAWA OFFICE: 16 METCALFE ST.

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**THE HAMILTON AND TORONTO SEWER PIPE CO. (LIMITED)**

HAMILTON, CANADA,

Successors to THE CAMPBELL SEWER PIPE CO. and the HAMILTON SEWER PIPE CO.

— MANUFACTURERS OF —

Steam Pressed, Salt-Glazed, Vitrified

**SEWER PIPE**

Flue Pipes, Chimney Tops and Smoke Preventives.

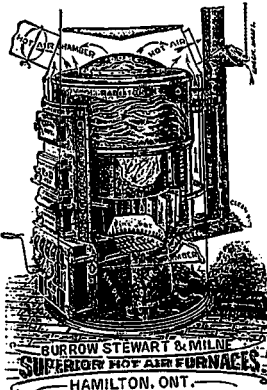
ESTABLISHED 1860.

**"SUPERIOR JEWEL" HOT AIR FURNACE**

THE FINEST

**STEEL**

FURNACE EVER MADE.



Uses Less Fuel

— THAN —

Any other Furnace

Has given satisfaction in every case; Not a single failure; Every person using them will give highest recommendation.

Write for Circulars with List of References.

**BURROWS, STEWART & MILNE, Manufacturers, HAMILTON.**

**Prices of Building Materials.**

**LUMBER.**

CAR OR CARGO LOTS.

1 1/2" and thicker clear picks, Am. ins.	\$30 00	32 00
1 1/2" and thicker, three uppers, Am. ins.		37 00
1 1/2" and thicker, pickings, Am. ins.		27 00
1 x 12 and 12 dressing and better	18 00	12 00
1 x 10 and 12 mill run	13 00	14 00
1 x 10 and 12 dressing	14 00	16 00
1 x 10 and 12 common	12 00	13 00
1 x 10 and 12 spruce cut	10 00	11 00
1 x 10 and 12 maple culls		9 00
1 inch clear and picks	28 00	30 00
1 inch dressing and better	18 00	20 00
1 inch siding, mill run	14 00	15 00
1 inch siding, common	11 00	12 00
1 inch siding, ship culls	10 00	11 00
1 inch siding, mill culls	8 00	9 00
Cull scantling	8 00	9 00
1 1/2" and thicker cutting up plank	22 00	25 00
1 inch strips, 3 in. to 5 in. mill run	14 00	15 00
1 inch strips, common	11 00	12 00
1 1/2" inch flooring	14 00	15 00
1 1/2" inch flooring	14 00	16 00
XXX shingles, sawn	2 30	@ 35
XXX shingles, sawn	1 20	@ 35
Eastlake galvanized steel shingles, 24 V. G., per square		6 00
Eastlake galvanized steel shingles, 26 V. G., per square		5 50
Eastlake painted steel shingles, per sq.		4 00
Round pointed galvanized steel shingles, per sq.		6 00
Round pointed painted steel shingles		4 25
Round pointed, unpainted, Terne tin shingles		4 00
Manitola galvanized steel siding, per square		5 00
Manitola painted steel siding, per sq.		3 50
Painted sheet steel pressed brick		3 50
Painted crimped sheeting		3 40
Price of Copper shingles according to weight.		

**YARD QUOTATIONS.**

Mill cull boards and scantling	10 00
Shipping cull boards, promiscuous	13 00
Shipping cull boards, stocks	14 00
Hemlock cantiling and joist up to 16 ft.	11 00 12 00
" " " " " " " "	18 12 13 00
" " " " " " " "	20 " 14 00
Scantling and joist, up to 16 ft.	14 00
" " " " " " " "	15 00
" " " " " " " "	16 00
" " " " " " " "	18 00
" " " " " " " "	20 00
" " " " " " " "	22 00
" " " " " " " "	24 00
" " " " " " " "	26 00
" " " " " " " "	28 00
" " " " " " " "	30 00
" " " " " " " "	32 00
" " " " " " " "	34 00
" " " " " " " "	36 00
" " " " " " " "	38 00
" " " " " " " "	40 to 44 ft.
Cutting up planks, 1 1/2" and thicker, dry board	35 00 18 00
Cedar for block paving, per cord	5 00
Cedar for Kerbing, 4 x 14, per M.	14 00
1 1/2" inch flooring, dressed, F. M.	28 00 35 00
1 1/2" inch flooring rough, F. M.	18 00 22 00
1 1/2" " " " " " " " "	25 00 28 00
" " " " " " " "	18 00 19 00
" " " " " " " "	18 00 22 00
" " " " " " " "	18 00 15 00
Beaded sheeting, dressed	22 00 35 00
Clapboard, dressed	12 00
XXX saw shingles, per M, 16 in.	2 65 2 75
Sawn lath	2 00 2 20
Red oak	30 00 40 00
White pine	25 00 30 00
Basswood, No. 1 and 2	18 00 20 00
Cherry, No. 1 and 2	70 00 70 00
White ash, No. 1 and 2	25 00 25 00
Black mly, No. 1 and 2	30 00 30 00
Dressing stocks	16 00 22 00
Picks, American inspection	40 00
Three uppers, American inspection	50 00

**BRICK—D M**

Common Walling	\$ 7 50
Good Facing	9 25
Sewer	9 25

**Pressed Brick:**

Plain brick, f. o. b. at Milton, per M.	\$18 00
2nd quality, per M.	15 00
Ornamental brick, at Milton, per 100.	\$3 to 10 00

**Stone:**

Common Rubble, Per Toise, delivered	14 00
Large flat	18 00
Foundation Blocks, " Cubic Foot.	35

**Slate: Roofing (per square).**

" red	16 00
" purple	9 00
unfading green	9 00
black slate	7 50
Terza Cotta Tile, per sq.	25 00
Ornamental Black Slate Roofing	8 00

**Sand:**

Per Load of 1/2 Cubic Yards.	1 25
------------------------------	------

**PAINTS. (In oil, 1/2 M.)**

White lead, Can	6 25	6 50
" zinc, Can	6 1/2	7 50
Red lead, Eng.	1 60	6 75
" venetian	1 30	1 75
" vermilion	1 00	1 00
" Indian, Eng.	10	12
Yellow ochre	5	12
Yellow chrome	15	25
Green, chrome	7	12
" Paris	25	40
Black, lamp	11	25
Blue, ultramarine	11	25

Oil, linseed, raw (1 Imp. gallon).....	65	6
"    "    boiled, "                    "	60	73
"    "    refined, "                   "	70	2 3/4
Putty.....	2 3/4	1 00
Whiting, dry.....	75	3 25
Paris white, Eng., dry.....	90	20
"    "    "    "    "    "    "    "    "	6 1/2	8
Lime, Am.....	15	3 1/2
Sienna, burnt.....	15	40
Umber.....	15	12

**HARDWARE.**

<b>Cut Nails:</b>		
American Pattern, 1/2 inch, per keg.....	4 40	
"    "    1 1/2 to 1 3/4 inch, per keg.....	3 05	
Canadian Pattern, 1 1/4 inch, per keg.....	3 90	
"    "    1 1/2 to 1 3/4 inch, per keg.....	2 30	
"    "    2 1/2 to 3 1/2 inch, "                  "	3 40	
"    "    3 inch and larger.....	3 15	
"    "    Steel nails toe, per keg extra.....	2 50	
Finishing nails, 1 inch, per keg.....	5 90	
"    "    1 1/2 inch, "                    "	5 20	
"    "    2 inch, "                        "	4 05	
"    "    1 3/4 "    and larger.....	4 20	

**MONTREAL PRICES.**

<b>Lumber, Etc.</b>		
Ash, 1 to 4 in., ft.....	\$13 00	68 00
Birch, 1 to 4 inch, M.....	15 00	25 00
Basswood.....	12 00	20 00
Walnut, per M.....	50 00	100 00
Huttonut, per M.....	25 00	40 00
Cedar, flat.....	20 00	30 00
Cherry, per M.....	60 00	80 00
Elm, Soft, 1st.....	15 00	17 00
Elm, Rock.....	25 00	30 00
Maple, hard, M.....	40 00	45 00
Maple, Soft.....	16 00	18 00
Oak, M.....	40 00	95 00
Pine, select, M.....	35 00	40 00
Pine, and quality.....	20 00	25 00
Shipping Culls.....	13 00	16 00
Mill Culls.....	8 00	10 00
Lath, M.....	1 50	1 37
Spruce, 1 to 4 inch M.....	10 00	12 00
Spruce Culls.....	4 50	6 00
Shingles, 1st quality.....	2 00	3 00
"    "    "    "    "    "    "    "    "    "	1 25	1 50

<b>Cement, etc.</b>		
Portland Cement, per barrel.....	\$ 2 70	3 00
Roman "                                  "	2 70	3 00
Fire Bricks, per M.....	20 00	30 00

<b>Hot-cut Am. or Can. pattern, 3 inch and above.....</b>	2 75	\$2 85
Hot-cut Am. or Can. pattern, 2 1/2 inch and above.....	3 00	3 25
Hot-Cut Am. or Can. pattern, 2 1/2 and 2 inch.....	3 25	4 30
Am. pattern, 1 1/2 and 1 3/4 inch hot-cut 1 1/2 inch.....	3 50	5 60
Can. Pattern, cold-cut, 1 1/2 and 1 3/4 inch and 1 1/2 inch.....	4 25	4 45
"    "    "    "    "    "    "    "    "    "	3 75	5 05
Finishing Nails, per 100 lb. keg, 1 1/2 to 1 3/4 inch.....	75	cents
Finishing Nails, per 100 lb. keg, 2 inch and 1 1/2 inch.....	75	cents
Finishing Nails, per 100 lb. keg, 2 inch and up.....	75	cents

<b>Paints, etc.</b>		
White Lead, pure, 25 to 100 lb. kegs.....	6 50	7 00
"    "    No. 2.....	5 25	5 50
"    "    No. 3.....	4 50	5 00
"    "    No. 4.....	4 00	4 50
"    "    dry.....	5 25	5 75
Venetian Red, English.....	1 50	1 75
Yellow Ochre, French.....	1 25	3 00
Whiting, London, washed.....	0 50	0 65
"    "    Paris.....	1 15	1 25

<b>Oils:</b>		
Linseed, raw.....	0 3	0 55
"    "    boiled.....	0 65	0 95
Olive, pure.....	1 10	1 15
"    "    machinery.....	2 25	1 75
"    "    extra, oil, per case.....	3 00	3 25
"    "    "    "    "    "    "    "    "	2 50	2 60
"    "    "    "    "    "    "    "    "	2 25	3 10
Spirits turpentine.....	0 57	0 70

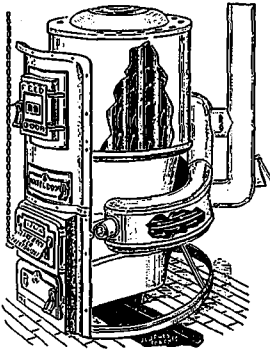
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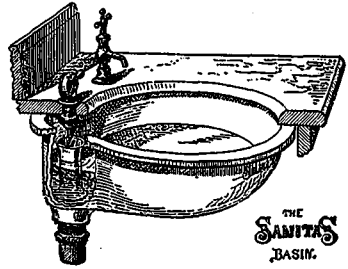
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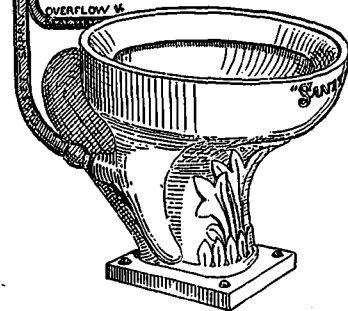
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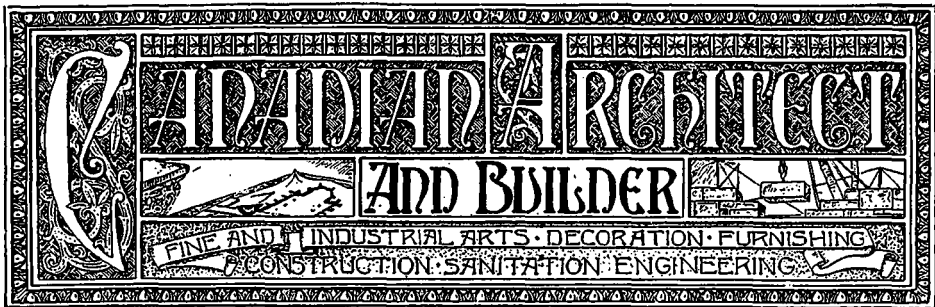
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VOL. III.—No. III.

TORONTO, CANADA, MARCH, 1890.

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*A Monthly Journal of Modern Constructive Methods,*

(With an Weekly Intermediary Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF  
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The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for \$2.00 per year. The price to subscribers in foreign countries, is \$2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages are paid.

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**EDITORS' ANNOUNCEMENTS.**

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

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

The publisher of the "The Canadian Architect and Builder" desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

THE Quebec Legislature has very properly refused to grant the extensive powers asked for by the Montreal Subway Co., commented on in a previous issue. The measure was only defeated, however, by the casting vote of the Chairman of the Railway Committee.

THE destruction of the University is said to have induced the thought in the minds of the aldermen that it would probably be following the dictates of wisdom and economy to expend an additional \$200,000 in fire-proofing the new Toronto municipal buildings. The architect is understood to be favorable to the proposal, which could be carried out, if decided upon at once, without either change of plans or delay.

THE cost of maintaining Rideau Hall, the residence of the Governor-General, was recently the subject of Parliamentary enquiry. One of the persons called to give evidence created considerable amusement by reading a list of the heating apparatus required to heat the 265 rooms and corridors of the establishment. This included eight hot air furnaces, four beehive furnaces, two coal furnaces, fifteen base-burning stoves, fifteen box stoves, twenty-three open grate stoves, thirty-eight fire-places, three cooking ranges, two bake ovens—altogether 121 heating apparatuses for the main building, Secretary's cottage, stable and greenhouse. In reply to the enquiry "Do you manage to keep warm?" the witness replied, "Not very."

IT is satisfactory to observe that Mr. Jennings, the new City Engineer of Toronto, is to be clothed with larger powers than those accorded to his predecessor. It is only by conferring upon him full authority to manage his department in the way that seems to him best calculated to produce satisfactory results, that he can be held accountable for the efficiency of the work performed. There is evidence of indisposition on the part of some of the aldermen to surrender the reins of authority entirely into his hands, but he very properly says, in the light of the experience of the past, that unless this is done, he will have no other alternative than to step down and out. Under these circumstances the authority asked for will be granted, and the results may be expected to show a very distinct improvement over the system which has hitherto prevailed.

THE destruction of the University of Toronto, is felt to be a national calamity. Canadian architecture has lost one of its brightest ornaments, and Canadian architects an object of delight and inspiration. The structure was Norman in outline, but Roman in detail, and was erected in 1860 from designs prepared by Messrs. Cumberland & Storm. It was universally acknowledged to be one of the finest specimens of architecture on this continent. Fortunately the main tower and facade escaped destruction, and thus in rebuilding, the former outlines will to a large extent be preserved. Changes will, however, be made in the plan to better adapt it to the requirements, and increased accommodation will also be provided. The Legislature, the city of Toronto and the graduates, will give liberal assistance towards the immediate re-building of the structure. It is a subject of much regret that many treasures belonging to the library and the museum can never be replaced. We cannot but feel that the carelessness or penuriousness by which the University Senate was led to neglect to make proper provision for the protection of the noble building and its priceless contents is deserving of the severest censure.

WORKMEN in the building trades in Montreal and other cities are demanding shorter hours of labor. An intimation accompanies the demand that no reduction must be made in the rate of wages—in short, that a long day's pay shall accompany a short day's work. The Montreal master builders are asked to meet a deputation of workmen and hear reasons for the demand. It will be interesting to learn whether any reason exists other than the desire to do the least amount of service for the greatest amount of money. The profits of the master builders are not so great that they can afford to do with six hours less work per week by every man in their employ while maintaining the present rate of wages. As stated elsewhere, the demand must lead to the adoption of the system of payment by the hour. This course, we observe, has just been decided upon by the Ottawa builders. The only alternative would be to add the amount which would be lost by lessening the hours of labor, to the tenders, thus throwing the burden upon the shoulders of persons who should build. In view of the keenness of competition which exists among contractors, there is little hope that this can be done.

It has frequently been remarked that "corporations have no souls." Unless it desires to be classified in this category, the Court House Committee of the Toronto City Council should at once recede from the position it has taken with regard to the appointment of a clerk of the works for the new city buildings, and the source from whence should come his remuneration. Out of fees amounting to but 3½ per cent. on the cost of the building, the committee contend that the architect should himself pay for the services of a clerk of the works. This the architect very properly refuses to do, and would be justified in refusing to do, even though he were to receive the full commission of 5 per cent. usually paid to the profession. It would be contrary to all precedent that he should do so. There is a vast amount of ignorance even on the part of intelligent people regarding the position and duties of the architect, and the treatment which should be accorded him. We trust that the Incorporation Bill now before the Legislature, when it becomes law and goes into operation, will serve to project light upon this subject.

THE Building Inspector in England, or rather the "Building Surveyor" as he is called there, is a more important functionary than our local inspectors; he has to pass a special examination to prove his qualifications for the post, and is usually by profession an architect. But it sometimes happens that with all the care taken, the wrong man gets the post, and an amusing story comes to us from England in this connection. A newly appointed surveyor, anxious to show that he was thoroughly alert and up to his duties, reported that a stone pier had been erected in a shop front to support the upper part of the house, and that it was 3 inches out of the perpendicular. Now 3 inches in about 12 feet would be a considerable slope. It was discovered, however, that he had "sighted the stone pier by a scaffold pole." Prodding about with his stick he came to the conclusion that the pier had not a solid foundation, when as a matter of fact it stood upon the basement wall. Says he to the contractor: "Something wrong here, I'm afraid." "Oh!" says the contractor, "would you like to know where you put your stick? Well, that's where the coal hole plate will come, and you won't find a bottom at 8 feet there."

OCASIONALLY the architect comes in contact with a contractor who for "ways that are dark and tricks that are vain," resembles the "heathen Chinee." It is related that a well-known member of the old school of Toronto architects once proved himself more than a match for a contractor of the class to which we have referred. The contractor was engaged in the erection of a large building under the architect's supervision. The latter, while paying a visit of inspection one morning observed a pile of soft bricks, and having called the contractor's attention to them, told him that they must not be allowed to go into the building. The contractor professed surprise that such inferior material should have been delivered to him, and declared that he would have the manufacturer cart them back to the yard again. The architect said no more, but went and stationed himself at the upper window of an empty warehouse near by, from which he could command a view of the operations of the contractor and his employees. He saw the pile of soft bricks gradually disappear and take its place in the construction of an inner wall. The operation occupied a large portion of the day, but he remained patiently at his post until it was finished. Then he went to the contractor and told him in somewhat forcible language what he had seen, and ordered him to set to work and undo what he had done and build the wall of proper material.

It is with pleasure that we direct attention to the work of the Toronto Architectural Sketch Club, for we feel that in no way can we more surely advance the interests of the profession than by exciting a desire for organization amongst its members, and we hope that before long reports may be sent us of the formation and operation of similar societies in other cities throughout the Dominion. Enthusiasm is one of the elements of success in every trade, business and profession, and is an absolute essential in a successful architect's life. Nothing but

enthusiasm will prompt him to spend long nights over dusty tomes and troublesome problems, and all the studies so necessary to his education. Nothing else will lead him to spend years in perfecting himself in draughtsmanship and in art-knowledge, and again his enthusiasm is unquestionable when the great longing of his life is gratified, and he roams at will amid the great and beautiful buildings of the world—when he gathers his sketches and collects his precious photographs—causing his mind to become fired with an ambition to emulate, if not to excel, those old builders whose works have been the inspiration of all future generations. To an architect who loves his profession, should anything be more delightful than association with kindred spirits for the discussion in friendly and social ways of the questions which harass and trouble him in his daily life? The routine draughtsman, whose occupation is so often uncongenial and distasteful, will find in like afflicted ones his true genius showing itself, and his mourning will be turned into gladness as this pleasant and instructive way is opened to him for self improvement. It has frequently been said that all really good draughtsmen on this continent gravitate to the great American centres. Truly those who have become familiar to us through their published work, are generally to be found in the larger cities, for many of them are but professional picture makers, and these naturally seek central location. But we believe that of ordinary office draughtsmen, Canadian cities can show as good examples as any of the cities across the line. In proof of the assertion we would like to place the initiatory work of the Toronto Architectural Sketch Club beside that of any similar club on the continent. We must confess to the surprise we felt on viewing the competitive drawings submitted in the early stages of the club's existence. Compared with the work we have seen published of similar organizations, they certainly take high rank.

THE recent conference between the Esplanade Committee of the city of Toronto and the managers of the Grand Trunk and Canadian Pacific railroads on the subject of the improvement of the water front, and the removal of the danger to life caused by the existence of level crossings, was not of a satisfactory character to those who feel the importance of having these improvements effected. The railroad authorities showed themselves to be averse to a disturbance of the existing state of things. The erection of a viaduct they declared to be entirely out of the question, alleging in support of this contention that the structure would cost from five to ten million dollars. Sir Joseph Hickson also managed to figure out to his own satisfaction at least, that his corporation would be entitled to compensation from the city to the extent of a quarter of a million dollars yearly for losses occasioned by operating inconveniences under the new system.

If the statements of the railroad managers regarding the cost of the proposed viaduct are entitled to be regarded as facts, then the entire scheme certainly falls to the ground, as it would be suicidal for the city of Toronto to enter upon so expensive an undertaking. It is, however, a singular circumstance that in the opinion of such eminent engineers as Messrs. Wellington, Gzowski and Shauly, the cost of the structure would be less than three million dollars. Since the estimates of the railroad managers were given to the public, Mr. Wellington, by request of the Board of Trade, has further considered the question, and presented a supplementary report thereon. He finds no cause to modify the opinion expressed in his first report that a cash investment of considerably less than \$3,000,000 would suffice to construct a four track viaduct. That this estimate is based upon a careful consideration of all the circumstances involved, is evident from Mr. Wellington's offer to enter into bonds for the completion of the work at the above mentioned figure. This estimate, it will be remembered, is for a four-track structure. Mr. Wellington furnishes conclusive evidence, however, that a two-track viaduct, properly equipped with interlocking signals, would be amply sufficient to accommodate the traffic for many years to come. To show that such is the case, and that most liberal allowance is made for future development, the fact is



cited that at Philadelphia *fourteen times* as many passenger trains as at present constitute the traffic at Toronto are handled over two tracks for a nearly equal distance. On the question of operative inconveniences and Sir Joseph Hickson's claim for compensation, Mr. Wellington says: "In my judgment it would prove impossible for the Grand Trunk to establish the fact that it would suffer that or any loss whatever from operating inconvenience. It will involve certain inconveniences, in themselves disadvantageous, like most of such settlements; but the balance of advantage will be largely in favor of the Grand Trunk Railway, and they could therefore well afford, in my judgment, to pay a good rental for the use of the viaduct."

To the impartial mind it must certainly appear that at the present stage of proceedings the weight of evidence concerning the cost of carrying out the viaduct scheme is decidedly against the contention of the railroads. In view of the widely divergent views on the subject, the City Council is recommended to appoint expert valuers before whom Mr. Wellington's scheme will be laid, and who will be asked to estimate the value of land to be expropriated, and the damages that will be sustained by the construction of the viaduct and station. As we understand it, this formed part of the duties of the expert engineers who have already reported, and their conclusions on the subject are perhaps as valuable as will be those of the valuers whom it is proposed to appoint, and whose services will cost the city a considerable extra amount, not to speak of the further delay which must ensue. On the whole, we think the suggestion of Mr. Wellington a good one that at the present stage the citizens should be asked to declare whether they are willing that a sum not to exceed \$3,000,000 should be expended in the construction of a viaduct. Should a favorable decision be received from them, the Council would be justified in incurring further expense for the purpose of arriving at the exact cost of the work. It is of the greatest importance that a permanent solution of this problem should be reached at the present time, as every passing year serves to render it more complicated and difficult.

**A**PERUSAL of the proceedings of the fourth annual convention of the National Association of Builders of the United States, held in the city of St. Paul, Minn., on January 27th, 28th and 29th, is most interesting and instructive. It clearly indicates that this Association is performing a work of the highest importance to the building interests. The advantages of organization are thus referred to by President Scribner in his address: "The question is frequently asked by some member of a local exchange, some doubting Thomas, 'What has been accomplished through our organization? Of what value is it to us as a fraternity?' To such I would say that, while our National Association is a purely legislative body, while we have no power to enforce the adoption of our ideas and suggestions by the various affiliating bodies, while we are only permitted to recommend to them the fruits of our councils and deliberations, we have, nevertheless, accomplished much in the elevation and improvement of standards of thought and action among builders. We have grown. We have become and are becoming, not contractors and manual workmen only, but thinking men, who, in ascertaining our own power, in learning to respect ourselves, are earning and securing the respect and esteem of all the better classes, the right thinking men of all professions and callings in the various localities in which we reside. The work heretofore accomplished by this body, having been, as stated, advisory and in the form of recommendation rather than mandatory, the general principles thereby included must have time in which to accomplish the work desired. Let us not be too impatient for more apparent results. I think, however, that no observing member of a local exchange affiliating with this body, himself actively engaged in a branch of the building trades and coming in frequent contact with capitalists and their architects, can fail to have noted a re moulding of sentiment, a growing respect for the art of building and its faithful representatives. A more distinct recognition of the value of the builder in all that tends to promote the comfort, the happiness and welfare of the citizens of this great country. I think he must have noted that

not only are we as builders, coming to have greater faith in, and respect for ourselves, but that our brother builder, the architect, is learning to respect and have faith in us and our honesty of purpose not only, but in our ability as well, that in the preparation of plans and specifications for the use and guidance of the builder, in the rules and methods under which such builder is asked to estimate on the cost and value of construction proposed, in the general use and adoption of our "Standard Contract," we see ample evidence already, that the suggestions made by this body are being favorably received and acted upon, by the best exponents of the Science of Architecture in the country, and the fact is being recognized as never before our organization, that to the attainment of the best results in building, it is necessary that the designer and the artisan should work together, feeling that they are mutually dependent, the one upon the other. But for this organization and the earnest discussion by its membership of the apprenticeship question and the needs of American youth in this direction, the seed planted by Col. Auchmuty in New York, would not so early have borne such rich fruits, its influence to spread and widen, thence in the hands of earnest practical builders, till every city in which has been planted an exchange affiliating with this body shall have its well-fitted trade school as well, from whose portals shall graduate, not lawyers or doctors, but young men proud of the right to bear and honor the name of mechanic. But for this organization literally nothing would have been done to concentrate and give definite expression to the views of those engaged in the various branches of the building trade as to their rights, no steps would have been taken to enter the wedge of reform in any direction."

The Secretary, in his report intimates that the past work of the Association has consisted in bringing into existence a standard form of contract, dealing with the apprenticeship question, the lien law, the code of practice for estimation, etc. The objects to which its future efforts should be directed, are stated to be: "To correct the Lien Laws or to secure their final abolition; to establish thoroughly and permanently an intelligent system of training boys and young men to become skillful workmen; to obtain a reasonable and safe solution of the labor question, so that organizations of employers and organizations of workmen may work harmoniously for their mutual benefit, instead of being in constant antagonism; to secure the general adoption of a standard form of contract, so that the system of agreements for building work may be uniform everywhere, and the contractor be assured thereby of protection in this most important part of his business relations with the owner; to thoroughly establish a fair and equitable code of practice in the matter of estimating, in place of the indefinite no-system, which at present prevails, to the constant injury and loss to the contractor. The report further says: "The reforms which we as business men particularly need to secure and the conditions which we particularly desire should prevail, will not be obtained or maintained for us by any of the existing machinery or methods of government, either municipal, state or national. We have a domain of our own, entirely distinct and apart, in which we must establish a domestic economy of our own, and sustain it by ourselves and for ourselves, for the reason that no one else will do it for us, and sustain it continuously for the reason that no forms of government or direction, however perfect in their conception and complete in their parts, can be left to run themselves."

The delegates in a highly intelligent and business like way entered into a full discussion and consideration of such important questions as "The Formation of a Builders' Surety Company," "Industrial Education," "Shall the National Association Recommend the Adoption of the Eight Hour Day?" "The Lien Laws," "Sub-Contracting," "Manual Training." The report of the delegates representative of the territory extending from New York on the east to Duluth in the west, and Louisville, Ky., in the south, showed that only in a few cities and in some branches of the building trades is the eight hour movement recognized. In the majority of cities nine and ten hours consti-

tute the day. In the opinion of many of the delegates, however, the eight hour day is coming, and contractors must be prepared to meet it. The situation will not warrant them in paying the same wages for eight hours work as for ten, therefore the system of payment by the hour will have to be universally resorted to. The merits of the lien laws vary greatly in different States. While good grounds exist for the demand for the abolition of the laws in some States, the feeling of the convention appeared to be that some protection such as these laws were designed to afford is a necessity to the contractor. The necessity that provision should be made to impart technical instruction to American youths is fully recognized, and the efforts of the Association will be directed to this object. The Association manifests appreciation of the fact that changes have taken place in the industrial world during the last few years, and that steps should be taken to meet the changed or changing conditions. Is there no need that the builders and contractors of Canada should take united and intelligent action upon some of the many important questions which are occupying so much of the attention of their brethren across the line?

### QUEBEC CITY HALL COMPETITION.

QUEBEC, March 3, 1890.

EDITOR CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Your February number contains several very pertinent articles which I would like to see reproduced in all the leading journals of the Dominion. I allude to your remarks on the "Montreal Subway Co.," "Dangerous Buildings," "Dangerous Scaffolding."

As to the Quebec City Hall competition, you are probably right in stating that the cost of such a building will be closer on half a million dollars than \$200,000. Either the building committee considered it beneath their dignity to consult the undersigned in the premises, or it may be, that knowing from experience that public buildings the world over generally cost about twice as much as the original estimates, they thought by limiting architects to \$200,000, the eventual cost might not materially exceed double that amount. With regard to employing the architect whose design shall win the first prize, to superintend the construction of the building, the advertisement does not set forth or imply that he shall not be the party employed, but merely that the corporation reserves the right of not entrusting him with the carrying out of his design; as it is possible that the premiated plan may be from an architect not thoroughly conversant with all the requirements of solidity of construction, not thoroughly possessed of all the qualifications necessary to carry out the work, or whose terms might be incompatible with the means at the disposal of the committee. You will have noticed a similar proviso in the "Instructions to Architects" for the Laval University competitive designs for Montreal in 1886, wherein it is set forth that "The seminary of Quebec does not bind itself to the execution of any of the plans submitted, and that it will confide the execution of the work to the architect who has won the first prize, only in so far as said architect shall afford all necessary guarantees and possess all required qualifications and shall have an understanding with the proprietors as to the fees, salary or percentage to be paid him."

You will also notice that, as stated in the *Engineering and Building Record* of the 15th Feb., while the plans for the Congressional Library building at Washington have been prepared by architect Paul J. Pely, the work is being carried out, not by him, but under the superintendence of Gen. F. Q. Casey, chief of engineers U. S. A., and Bernard B. Green.

Nor does the "London Tower Competition" set forth or even imply that the author of the premiated design shall be called on to superintend its construction.

Again, with regard to the justice or advisability or the contrary of imposing on competing architects the additional cost and trouble of submitting specifications, bills of quantities and estimates of probable cost, the "London Tower Co.," though the structure must cost fully a million of dollars, and the premiums offered are but £500 and £250 respectively, make it a condition that detailed quantities and estimates shall accompany the designs sent in, and the Laval University competition of Mont-

real, already alluded to, has it that "Each series of plans shall be accompanied by specifications descriptive of the work and detailed quantitative estimates of the cost thereof." And yet in this case, where the building is estimated to cost more than half a million dollars, the premiums offered were but \$700, \$500, and \$300, respectively; while it was only after considerable pleading on my part that the Quebec City Hall Committee could be brought to consent to what they consider such high figures as \$1,500, \$1,000, and \$500.

As it is, some 56 architects or more from Toronto, Montreal, Ottawa, and Quebec, from Washington, Philadelphia, Baltimore, New York, Boston, Buffalo, Chicago, etc., etc., have entered the field, that is, they have applied for the "Instructions," though possibly as you say, many of them on seeing the conditions may decline to compete where the amount of work to be performed is so considerable in proportion to the premiums offered.

Still, as you remark, and I altogether agree with you in saying so, it does seem unjust to require all competitors to send in detailed drawings, specifications, bills of quantities and estimates of the cost of carrying out a design, until there is at least some probability that the plan will be adopted; and, on the other hand, it does seem necessary that each design be accompanied by at least some general specification or description of the works, or by a bill of quantities descriptive to the extent at least of affording some idea of the materials to be employed, as of the probable cost, to enable the judges or experts to see which of the designs come nearest to an embodiment of the conditions laid down.

I shall look with much interest to any further remarks it may please you to publish on the subject of competitions in general, and to articles on the same subject from your numerous correspondents, with a view to the formation of some code of conditions by which myself and others may be guided in the future.

CHAS. BAILLAIRGE,

Architect and City Engineer.

### TORONTO ARCHITECTURAL SKETCH CLUB.

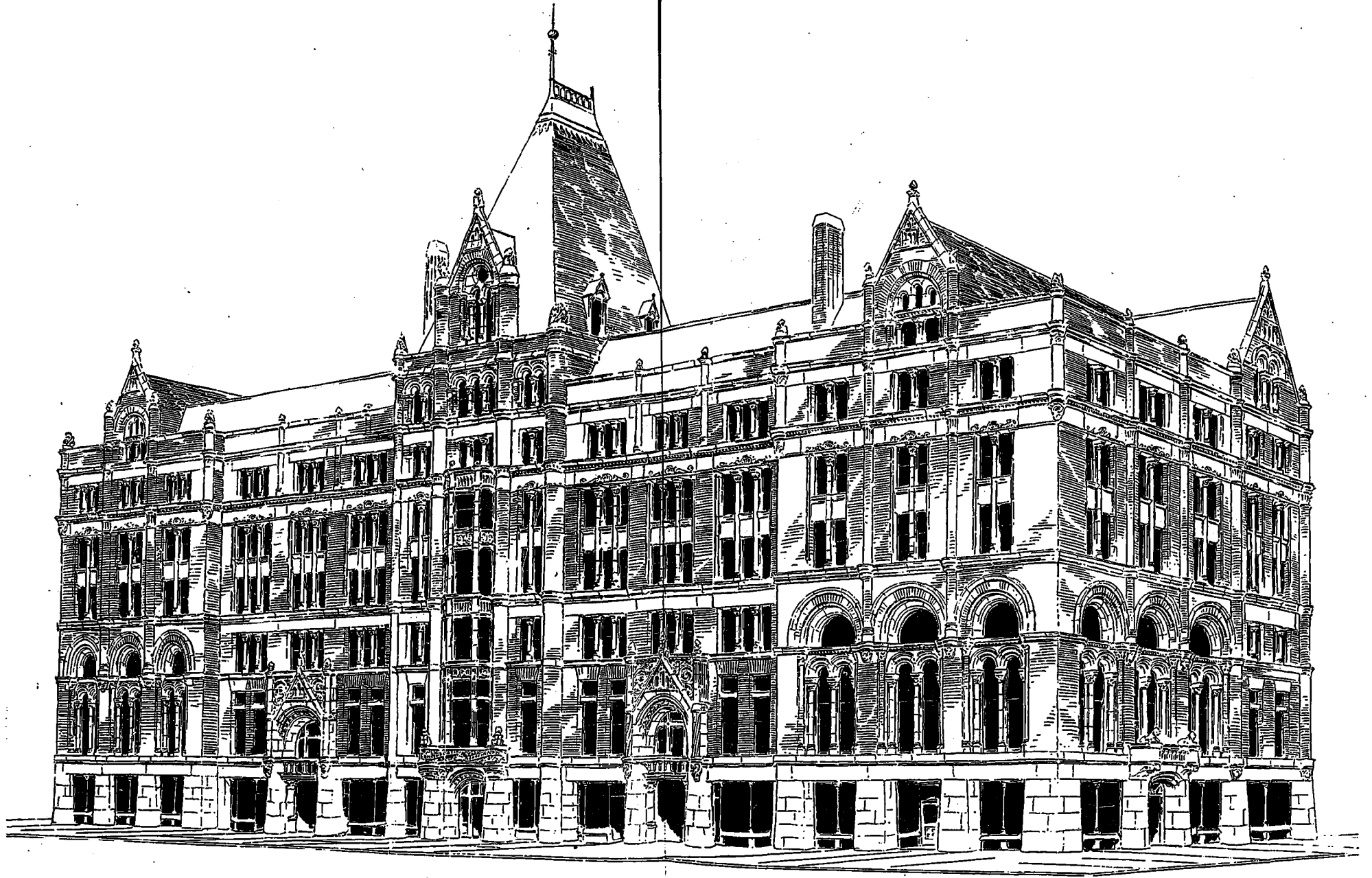
ON Tuesday evening, 25th February, Mr. J. W. L. Forster gave the club a talk on "Drawing from the Antique." He emphasized the necessity of students having a clearly defined purpose in their minds in undertaking any such study, as aimless fussing over forms and lines was neither helpful to interest nor profitable in result.

Facility with pencil and pen were first requisites in draughtsmanship. A deep knowledge of beautiful forms was very essential. Mr. Forster spoke at some length on the constituent elements of beauty. Every animated being in creation was harmonious in its parts; even the cur we kick is every inch a cur—agreeing perfectly in every feature with his character. In studying the form of a cripple, all the parts will be in agreement with the deformity, so making the eye content to look upon him. But the higher we ascend the scale of physical perfection, the nearer we approach those mental and moral perfections, which again have a strong, commanding influence over the corporeal form. He referred to the employment of the human form in decorative work, and its utility in the adornment of architectural facades, pointing out to the students the third great aim in study, namely, to create.

A hearty vote of thanks was tendered Mr. Forster for his practical address, which it was hoped would stimulate those present to pursue that most important of all art studies—the study of the antique.

The attention of the meeting was then turned to the drawings, which had been submitted in the second club competition, "A Country Railway Station." These were hung around the walls of the room, and proved most interesting and instructive, the improvement in the club work in the short space of a month being generally commented upon. The students' section should receive special notice, the four who exhibited this month showing very promising work.

The vote of the members on the order of merit resulted as follows: First place, Ernest Wilby; second place, A. H. Gregg; third place, G. T. Goldstone. Junior section—First place, T.



CONFEDERATION LIFE ASSOCIATION — NEW OFFICE BUILDING — TORONTO — DESIGN BY "BUSINESS"

SECOND PREMIAED DESIGN—JAMES & JAMES, ARCHITECTS, NEW YORK.

B. Johnston and H. C. Eddis (equal); second place, Wm. Rae. It goes without saying that the criticism of Mr. Darling was most helpful, both to the competitors themselves and all present. Before concluding his remarks, Mr. Darling gave some general notes and criticisms on the subject of the American style of draughtsmanship.

On the evening of Tuesday, March 11th, a special effort was made to provide an entertainment of interest to the general public, and a number of invitations, lithographed in a very artistic manner, were sent out. The lecturer of the evening was Mr. J. A. Radford, and his subject "An Architect's Trip through France and Sunny Italy." This was illustrated by some sixty very fine stereopticon views, thrown on a large canvas by Mr. Ernest Wilby's stereopticon. These views had been prepared especially for the occasion. The constantly changing scenes of beautiful buildings and beautiful lands, together with the graphic description and the humorous incidents of the lecturer's own trip, stirred up a longing in every one present to see for themselves these countries.

On account of the large number of outsiders present, a little innovation was made in the ordinary business of the Club by calling on some of the local talent to entertain the audience during intermission. Mr. J. H. Fawell's song with guitar accompaniment was well received. Mr. H. Simpson's exhibition of ventriloquism elicited the wonder of all present. His imitation of saw cutting had an architectural character about it which "brought down the house."

The hope was generally expressed that at some future time the Club might have the pleasure of again listening to the talented speaker of the evening, and a hearty vote of thanks was awarded him for the trouble he had taken to provide the entertainment. Mr. C. J. Gibson, who has taken charge of the class work of the Club, reports good progress in the water color class, under the tuition of Mr. C. M. Manly, the members showing marked improvement in their work at each lesson. He has completed arrangements with the same teacher to start a pen and ink class, and hopes that a large number will send their names to him to be enrolled as members. The fees will be three dollars for the course of six lessons, and work will commence immediately.

**OUR ILLUSTRATIONS.**

CONFEDERATION LIFE ASSOCIATION COMPETITION—SECOND PREMIATED DESIGN.—MESSRS. JAMES & JAMES, ARCHITECTS, NEW YORK.

SCULPTURE DETAILS, HON. G. A. DRUMMOND'S RESIDENCE, MONTREAL.

TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR "THE ENTRANCE TO A RESIDENCE."—DESIGN AWARDED FIRST POSITION, BY "DULCE DOMUM," (MR. ERNEST WILBY).

**"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.**

THE committee's report on the drawings submitted in the competition for details for small house, had not reached us at the hour of going to press. Consequently its publication is unavoidably deferred until our April issue.

**A FIRST PRINCIPLE OF BRIDGE-BUILDING.**

IF one plank would hold up one hundred pounds on the centre, then two planks placed side by side would hold up two hundred pounds; while, placing the planks one on top of the other, and nailing them firmly together, they would hold up four hundred pounds. In this way we see that, in order to increase the strength of the bridge or beam faster than we increase the amount of material, the increased amount of material should go into the depth of a beam and not into the width of it. This is one of the first principles in the resistance of material, that the strength of a beam varies directly as the width—that is, if we make it twice as wide, it will hold twice as much; and that the strength varies as the square of the depth—that is, if we make

it twice as deep, it will hold four times as much. If we make it three times as deep, it will hold up nine times as much of a load. So that it can be readily understood that, in order to increase the strength of the bridge or beam without increasing the material in the same proportion, the increased amount of material should be put into the depth and not into the width.

**"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.**

THE following is a list of competitions in Architectural subjects which we have decided to hold during the winter.

1st.—Design with details for four manils, two of wood, one of brick and one of stone. Designs to be sent in on or before 1st April, 1890. First prize, \$5; second, one year's subscription (C. A. & B).

2nd.—Three designs with details, for front fence. Designs to be sent in on or before 1st May, 1890. First prize, \$5; second, one year's subscription (C. A. & B).

3rd.—Essay on Heating and Ventilation. Essays to be sent in on or before 1st May, 1890. First prize \$10; second, one year's subscription to C. A. & B.

The Architectural Guild of Toronto have very kindly appointed a committee from their number to judge the above competitions. We shall publish each report as sent to us by the committee. Draughtsmanship, neatness and clearness of arrangement of drawings will be taken into consideration in awarding positions.

Drawings must be made on sheets of heavy white paper or bristol board 14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in firm, strong lines, with pen and black ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

We reserve the right to publish any design sent in.

Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

**METHODS OF MENTAL COMPUTATION.**

QUINCE, March 8th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

Sir,—One of your correspondents gives a short and easy mode of mentally computing board measure, or of reducing scantling and plank to board measure. It may not be uninteresting to the profession to know how mental calculation can be applied to compute the weight of bar iron of any size, without the use of the ordinary tables when not at hand, or even when they are, to save the time of searching for the page and item required.

A cubic foot of wrought iron weighs 480 lbs., therefore 1 ft. square by 1 inch thick, weighs 40 lbs. Now this is the only figure necessary to be remembered, and is immediately divisible mentally by 2, 4, 8, etc. Thus a square foot iron  $\frac{3}{4}$ " thick weighs 30 lbs.,  $\frac{3}{8}$ " = 10 lbs.,  $\frac{1}{2}$ " = 5 lbs.,  $1-6$ " = 2  $\frac{1}{2}$  lbs.,  $1-32$ " = 1  $\frac{1}{2}$  lbs.,  $1-64$ " =  $\frac{3}{4}$  lbs.

Now suppose we wish to compute the weight of a bar of iron of any length and of  $\frac{3}{4}$ " x  $\frac{3}{4}$ ". Since  $\frac{3}{4}$  gives 5 lbs. to the square foot,  $\frac{3}{4}$  gives 3 times that or 15 lbs., and as the bar is only  $\frac{3}{4}$ " wide or  $\frac{1}{2}$  of a foot, its weight will be  $\frac{1}{2}$  of 15 lbs., of which the half is 7  $\frac{1}{2}$  lbs. and the half of this 3  $\frac{3}{4}$  lbs., which into the number of feet in length of bar gives the required result and all this is done in much less than half the time I have taken to write or read the process.

If the bar is  $\frac{3}{4}$ " x  $\frac{3}{8}$ ", the process in this case is simplified by spreading it out mentally into a sheet  $\frac{1}{2}$ " thick. Now  $7 \times 7 = 49-8$  and  $49-8 = 6\frac{1}{4}$  inches. Again  $6$ " of  $\frac{3}{8}$ " thick equal  $\frac{1}{2}$  of 5 lbs. or 2  $\frac{1}{2}$  lbs., and the remaining  $\frac{1}{4}$ " inch or  $1-8$  may be either neglected or added; thus  $2\frac{1}{2}$  lbs. =  $2\frac{1}{2}$  times 16 oz. = 40 oz. which gives 31 1 oz., or more correctly 41 5 oz an ounce, together 2  $\frac{1}{2}$  lbs. 4-1-5 oz. or 2 lbs. 9 oz. nearly.

If the bar is  $1\frac{1}{2}$ " inch square: spread it out mentally into a sheet  $\frac{1}{2}$ " thick. Now  $5\frac{1}{2}$  inch x 5 inches = 25-6 or  $6\frac{1}{2}$  = 6 inch of  $\frac{1}{2}$ " inch iron = 5 lbs. and the  $\frac{1}{2}$ " inch = 1-2 of 6 inches or say 1-25 and 1-25 of 5 lbs. = 1-5 lbs., then the bar = 5-1-5 lbs. to the foot lin.; or the  $\frac{3}{4}$ " inch bar of the first example if preferred may be spread out into a sheet  $\frac{3}{4}$ " inch thick and if 2  $\frac{1}{2}$  inches wide, will give 7  $\frac{1}{2}$  inches broad if  $\frac{3}{4}$ " inch iron, and 6 inches if it is equal 2  $\frac{1}{2}$  lbs., and the remaining  $1\frac{1}{2}$ " inch =  $\frac{1}{2}$  of 12 inches or  $\frac{1}{2}$  of 5 lbs. or  $\frac{3}{4}$  of a lb. together 3  $\frac{3}{4}$  lbs. for a lineal foot of the given size.

For round iron: compute as if square and then multiply by decimal .7854 or take say  $\frac{7}{8}$  per cent. of the weight of the square bar, but as this is difficult to compute mentally, let us call it 80% or 4-5; or from computed weight for square deduct 1-5 for round, which leaves you on the safe side and helps to make up for odds and ends which may escape your attention.

With regard to cast-iron, its weight is but 450 lbs. to the foot cube, or 1-16 lbs. less than wrought iron, therefore, compute as for wrought iron to avoid fractions, and deduct 1-16 if necessary, though to allow for extra thickness and to be on the safe side I seldom make the deduction.

C. BAHLBAIRGE.

OBJECTIONS TO TECHNICAL EDUCATION CONSIDERED.

TORONTO, March 4, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—One of the chief objections raised to technical instruction by means of trades classes has been, that it would increase so largely the competition in the different trades taught, as to prove an injury rather than a benefit to those engaged in them. I do not see it in that light, for as soon as bricklayers, plasterers, carpenters, etc., had got to work, there would be established classes for plumbers, printers, etc. The boy who would seek to learn the trade of printing would not attend the class for plasterers and bother his mind with trying to learn how to run segmental, elliptical and gothic arches.

I would like to ask the opponents of trades classes, how an apprentice is to lay out works such as his employers never contract for? For instance, there are men in Toronto who have served their apprenticeship, but have not the least idea of how to lay out or run an arch of any kind. I am now speaking of the plastering trade.

This matter of technical instruction should be taken up by somebody, but there is small encouragement for anybody to take it up, when we find as its opponents the very people it would most benefit, viz., the tradesmen. We can hardly expect doctors, lawyers, or professional men of any kind to interest themselves so long as this condition of things exists. Professional men have their "trade classes" (under another name). Fancy an architect opposing the teaching of architectural drawings, and giving as a practical reason that it would make too many architects!

Yours truly,  
ONE INTERESTED IN THE APPRENTICES.

EMPLOYMENT OF A QUANTITY SURVEYOR.

QUEBEC, Feb. 26, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Your remarks re the advisability of architects employing "quantity surveyors" in the preparation of bills of quantities for contractors to tender by, are altogether to the point, as my 40 years experience enables me to testify; and there is among others one very potent reason why this practice should be adhered to, to wit: when quantities are supplied direct from the architect whose design is to be carried out, he is, in case of any omission, error or deficiency in the quantities looked to by the contractor to recommend extra pay on account of the additional work thus entailed, and which he has made no allowance for, though binding on him to execute under the requirements of the specification and contract.

This puts the architect in a false position towards his employers, by saddling him with a responsibility of which he should be clear, and is, when the quantities are had from a third party, whom the contractor can hold liable for errors or satisfy himself of the correctness thereof, thus in either case disengaging the architect's responsibility and securing his absolute impartiality of action in the premises.

CHAS. BAILLAIRGE,  
Architect and City Engineer.

PERSONALS.

Mr. J. E. Ellis, architect, has opened an office at West Toronto Junction.  
Mr. Fred Henry has succeeded to the architectural practice of the late Geo. F. Durand, London, Ont.

The officers of the recently organized Toronto branch of the Canadian Society Civil Engineers are: President, Mr. Alan Macdougall, Secretary and Treasurer, Mr. W. R. Pellsworth.

The death is announced of Mr. W. J. McAlphine, the noted American civil engineer who some few years ago was engaged to examine into and report upon the water supply of the city of Toronto.

Mr. Haskins, City Engineer of Hamilton, finds the work of his department growing to such an extent that he will ask for the help of an assistant. He is said to have nominated Mr. T. H. Barrow for the position.

The many friends of Mr. F. J. Rustrick, Hamilton, Ont., will regret to learn that his residence was damaged by fire to the extent of \$1,000 a few days ago. Mr. Rustrick is in poor health, and the shock to his nervous system by this unfortunate occurrence will no doubt tend to further retard his recovery.

QUERIES AND ANSWERS.

MONTREAL, March 5th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Could you inform us of the address of a manufacturer of Canadian portable houses. We believe these were made in Upper Canada the time of the opening up of the North West. We have an inquiry from a friend in London, who would probably take about a dozen.

Yours truly,  
CASTLE & SON.

[We shall feel obliged to any of our readers who will furnish the required information.—Ed. C. A. & B.]

TRENTON, Feb. 19th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Under the head of "Queries and Answers" "Enquirer" is advised to line his chimney with glazed drain pipes, as it would be an absolute remedy against dampness, complained of. I believe it would; but it is possible that he might get into another difficulty that would be no less annoying.

I was once employed on a chimney where the contractor supplied glazed pipes 15 inches diameter, and thought he was using the best material, but on inspection the glazed pipes were ordered to be removed and their places supplied with unglazed pipes, as the soot was said to collect and adhere to the glazed pipes so that it could not be swept off, and the flue would eventually be stopped up.

I would like to hear from some one who has had practical experience on this point.

Yours respectfully,  
A SEARCHER FOR FACTS.

VAULT CONSTRUCTION.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—In your January number a correspondent asks for opinions as to the relative value of "two 8 inch walls with 2 inch air space between, or 12 inch wall outside, and 2 inch air space with 4 inch wall inside, bonded say every 5 feet super. to outside wall."

While I am of opinion that no vault, intended to be fireproof, should have its outer wall less than 12" in thickness nor its inner wall less than 8", I agree with you that two walls 8" thick, entirely dis-connected to springing line, with 2" air space between, affords greater protection against fire than the other plan suggested by your correspondent; for I consider that a 12" outer wall would, in case of a severe fire, absorb more heat than the 4" lining could safely resist.

Again, the method of bonding the walls together with a header brick every 5 feet super. is objectionable; for each header would become a conductor of heat, and thus the benefit of an air space would be lost, and the fundamental principle of vault construction would be completely ignored.

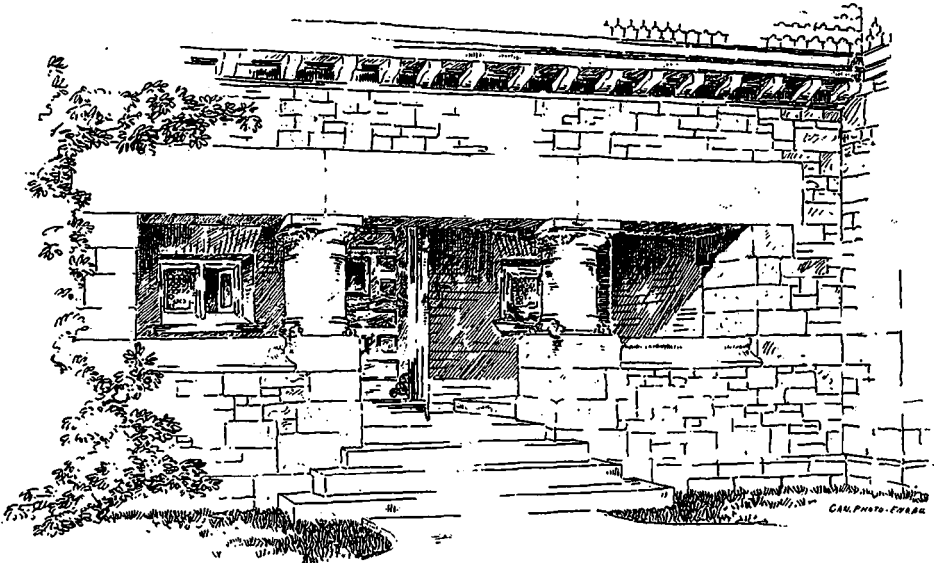
Yours truly,  
MARCH 4th, 1890.  
FIVE PER CENT.

QUEBEC.

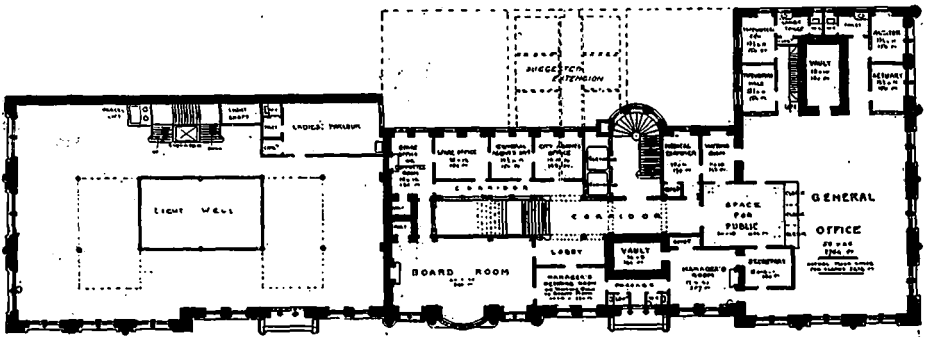
(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

A MEETING of architects practising in this city was recently held in the office of Mr. Berlinguet, when a committee was named to take the necessary preliminary steps to organize an Association of Architects for the city of Quebec, with the view, later on, of extending its operation over the Province of Quebec, by requesting Montreal architects to join in the movement. At a late meeting of the committee it was decided to defer any further action until it was seen how the Bill to incorporate the Ontario Association of Architects fared, particularly as it was impossible to get a Bill through the Quebec Legislature this session owing to the proposed early adjournment of the House.

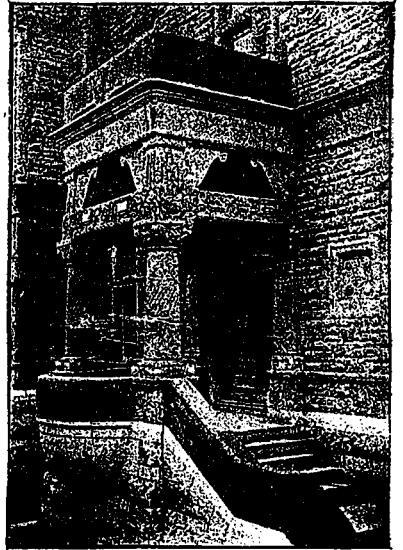
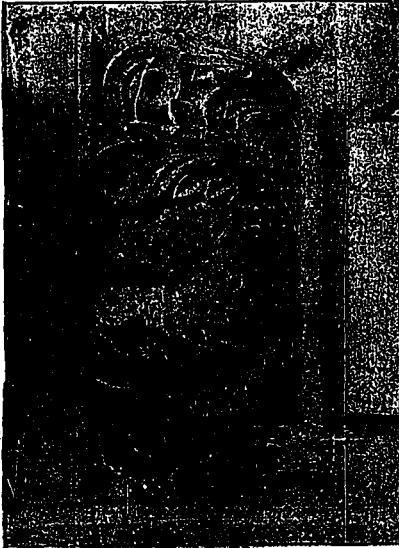
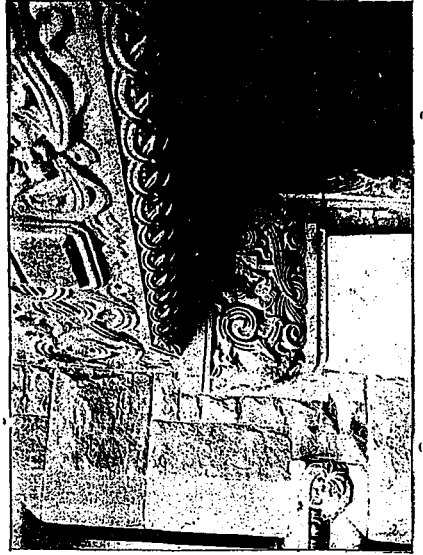
Referring to the City Hall competition, one architect speaks of the "Instructions to Architects" as reading more like a description of a design already prepared, than as a basis of designs yet to be elaborated, while another considers it unfair that the document referred to should have been printed in English only, a reasonable objection, when it is remembered that with one exception all the local architects are French, as well as a



TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR "THE ENTRANCE TO A RESIDENCE."  
DESIGN AWARDED FIRST POSITION, BY "DULCE DOMUM," (MR. ERNEST WILBY).



PLAN ACCOMPANYING COMPETITIVE DESIGN FOR CONFEDERATION LIFE ASSOCIATION BUILDINGS.



SCULPTURE DETAILS—HON. G. A. DRUMMOND'S RESIDENCE, MONTREAL.

large number of Montreal architects. It is quite possible that the prospects for the erection of the proposed building may be changed as a result of the municipal elections held yesterday, no less than seventeen of the old council having either resigned or been defeated, many of whom it is believed were in favor of erecting the costly structure. Seeing the people generally are strongly opposed to increased taxation, as shown by yesterday's election, it is difficult to imagine how it can possibly be done, as it is certain if \$300,000, or just as likely \$400,000, were spent in this direction, increased taxation must follow.

Two additional buildings to those already noted have been contracted for on the newly widened St. John Street, and active operations began.

Mr. Duquet, the well-known Jeweller, is putting up a handsome stone building from plans made by Mr. Peachy; the contracts amount to about \$15,000 and are in the hands of Messrs. De Varannes and Perron. The heirs Andrews are also erecting on the adjoining lot a three story stone store and dwelling, from plans furnished by Mr. Sively, at a cost of about \$6,500, Messrs. W. J. Peters and W. Sharp being the contractors.

#### MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)  
PLASTERERS' STRIKE.

THE journeymen plasterers and master plasterers have at last come to an understanding, and work has again been resumed by the men. The terms agreed upon are that the men shall receive \$2.75 per day, and the bosses shall have the right to employ a third apprentice when the second apprentice is in his last year. This is a sort of compromise between the men and masters. The men asked \$3.00 per day and were offered \$2.50. This agreement has, I understand, to hold good for twelve months from the first of May next; no strike is to take place during that time, and either party wishing to change this agreement must give at least four months notice.

The effect of the recent strike will not be felt so much by the men now as later on, as all work is behindhand, and consequently every one is using every endeavor to make up for lost time, but there is no doubt that the strike has caused many buildings to be delayed that would otherwise have been started this spring.

#### PAINTERS' AND CARPENTERS' DEMANDS.

The rumor regarding the painters' and carpenters' proposed strikes I do not think will amount to anything, as the town is full of carpenters and painters. A good mechanic can always find fair remuneration for his services, and most of our best builders are willing to treat their men fairly.

#### LAST YEAR'S BUILDINGS.

During the year 1889, 1,032 buildings were erected in Montreal, the total value of which amounts to \$3,668,300. The buildings of greatest value were erected in St. Antoine and St. Lawrence Wards, St. Antoine alone being \$1,234,150, and St. Lawrence Ward \$581,650.

#### REAL ESTATE.

The real estate market during the past month was a little brighter than that of the previous month. No doubt holidays, bad weather and "grippe" accounted for January's dullness. Several large transactions have taken place during the past month, and rumor has it that Toronto capitalists are seeking investment in real estate, not only in the city, but in our suburbs, one or two farms having been purchased by Toronto syndicates at Montreal Junction.

#### CANADIAN SOCIETY OF CIVIL ENGINEERS.

An ordinary meeting of this society was held at McGill College on the 23rd instant, when a paper was read and discussed on the manufacture of Canadian cements, a subject on which very little is yet known. It was the general opinion of all present that if a thoroughly reliable Canadian cement could be manufactured, the engineers would only be glad to encourage its use, and thereby encourage home manufacture.

#### FLOOD PROTECTION.

I learn that nothing has yet been decided upon with regard to the protection of the city from floods. It appears that the Government have not yet approved of plan No. 6, a question having arisen regarding its effect on the south shore of the St. Lawrence. Sir Hector Langevin is reported as having said that no scheme which will affect the natural flow of the St. Lawrence will be approved of.

#### PRIVATE BILLS.

The Local Government at the request of the city of Montreal, assisted by Hon. James McShane, have thrown out the people's gas bill and subway bill. The city is to be congratulated on their success in these matters. While I am not in sympathy with the present gas monopoly in our city, yet I do not approve of granting charters to any company whose only object would be to sell them to the best advantage. The position we take in all these matters is that the incorporation should be genuine, and no charter should be granted which could be sold, bartered, traded or given away to any existing company, but it should be clearly understood when a charter is given that the parties receiving it mean business and should deposit with the city some security for the faithful execution of their charter.

Mr. W. W. Cowan's bridge building works at Strtford, which have been under temporary suspension, have resumed business. It is understood that Mr. Thos. Holiday has been admitted to a partnership with Mr. Cowan.



#### RECENT DEVELOPMENTS IN DECORATION.

A WELL-KNOWN writer says: Art moves in cycles of styles. At one time a separate style in blended form is resurrected; at other times we witness blended styles. New combinations of old styles may create a novelty, with nothing new in principle, new only in arrangement and with no great variety in details. We have few decorative forms that do not retain some element of a preceding period. To this we can not dissent. Those of us who have given any attention to the origin and composition of style in decorative art will readily agree that in the present era there is little or no purity; although we may be compelled to call such by, or adopt, some classical name for our purpose, the intent is not to deceive, but the designer merely wishes to convey the idea that the scheme was not to faithfully decorate in exact reproduction of some period or era of time, but simply to avail himself of the advantages of that particular style, with such adaptations, in form and color, discarding here, appending there, modifying this, strengthening that, and reserving the right to make such changes as will best accord with the surroundings, improvements, temperament and culture of to-day.

We endeavor to be as classical as our knowledge and resources of material will permit. We all know to consistently decorate in say the "Louis XV" or "Japanese" style if we at all succeed in obtaining the genuine article, we do so at a great outlay, and then we may venture the opinion that our stained glass, mantel and fire-place will be very modern, and the exterior architecture will be composite "Romanesque."

Although we are utilizing all styles in our present decorations, the predominating ones have been adapted from the French period of the "Rococo" the different kings, Louis XIV, XV, XVI, and the Empire. The revival of these styles has chiefly been confined to interiors, while the "Cinq Cents," "Italian Renaissance," "Romanesques," "Early English" and "Elizabethan" in composite form with "Celtic" and "Byzantine," as well as the "Adams," are extensively employed both for interiors and exteriors. Modern inventiveness joins hands with ancient picturesqueness and produces varying and unique results. This we see constantly exemplified in the interior as well as on the exterior of our buildings. Our own, and only style, the "Colonial," has found amazing power with our people, and no wonder; what prettier, more uniform, or chaste style have we? If simplicity is beauty, our "Colonial" style will be a joy forever. Although light and not sufficiently ornate for all purposes, we will surely find and develop some other one for our more substantial work, and the present indications point strongly to the adoption of the "Romanesque."

A gratifying change is being made by our architects. Formerly, when the dwelling was constructed by the builders, they considered their work done, and their interest ceased upon its completion.

To-day a large number have added decorative departments to their offices and designs for the interior decorations. And who better qualified than they to enter the field with us? Equipped with their knowledge of leading styles, and of home building, their drawing and designing abilities, who better prepared to take hold of this, their new field, the supervision of the interior decoration? Their ideas and hints cannot fail to be valuable to us.

The painter will naturally be brought in closer relationship with the owners, for the architect will not hold further communion with the contractor or cabinet maker when engaged on his scheme of decoration, for they are valueless to him then, but will confer directly with and impart his views to the decorator; the man whose technical knowledge and experience so perfectly fit him to be the architect's able coadjutor, to aid him to harmoniously color and execute in detail his sketches, thus avoiding

\* Paper read by Mr. Johannmeyer before the New York State Convention of Master Painters and Decorators.



the misunderstandings when imparted through an intermediate, and the saving of at least one profit to his clients. This result can but be beneficial to our craft. Emancipated from the contractors, we will be distinct and receive that independent recognition, for which we are so bravely striving.

The coloring used in decorating a modern dwelling is always, consciously or unconsciously, controlled and dictated by the prevailing fashion. To gratify its whims, new shades and tints must constantly be created. These colors will appear in the latest textile fabric, and necessarily are introduced in the surroundings. The painter must become acquainted with these and introduce them in his scheme of coloring. In the selection and arrangement of his colors, his degree of taste, refinement and art will be seen. He may possess all necessary scientific and technical knowledge of his calling, his treatment with the brush be skillful, his judgment of design and proportion of same be perfect, but the entire effect may be destroyed, or, at least, marred, if the coloring does not receive the proper attention.

The successfully decorated room receives its maximum amount of work, not in labor or material, but in thought and study. A certain shade in one place will appear entirely different when exposed and contrasted to different lights and surroundings, "Seeing is believing;" this trite saying aptly applies to a decorator studying a color effect.

It is true we have certainly improved our taste for colors. The abandonment of those grubby and incongruous colors, seldom resulting in harmony, to the fewer, chaste and subtle tones of color used to-day is convincing proof of this. In choosing our colors, attention should be given to the character of the apartment; whether gay or grave; dignified or mirthful. Its occupants or frequenters, whether old or young; masculine or feminine; we study carefully and choose such a plan as would best adapt itself to our purpose, so we select one color for our scheme and use that in its varying shades, or introduce into our scheme its proper complimentary tones, studying to create a perfect harmony and to obtain the most beautiful results in the simplest manner.

To endeavor to name the prevailing tones of color would be too exhaustive, and would convey but a faint idea of their manifold number. Our intimacy with the names used in dress goods will be of assistance here. It is impossible to have a name for all our colors. The best tones for decorating are those half tones that border on or hover between several colors without being either; those indefinite subdued tones, whose beauties must be felt to be properly appreciated as they cannot be described, viz., "russets," "sage green," "cadet blue," etc. Take "terra cotta," for instance, what name more indefinite and vague, you can draw any conclusion from the color from a soda biscuit to a Pompeian red and you will not be in error; so with olive and other tones. As a rule, artists do not spend much time in learning the name of a color, but in producing and developing the same, which is most important to their purpose.

Gold and bronze will be constantly employed in decorations: The latter not extensively as formerly. Its very cheapness, the profusion in which it was used, its perishable nature, all have caused a great reaction to set in. This ought to be a welcome change, as the demand for pure gold leaf will insure a higher grade of work throughout. Gold or bronze should never be used *en masse*, or in profusion, but should be used sparingly and with judgment, or it will suggest ostentation. It ought never to be used on back-grounds, unless in very small patterns or mottled effects, or when closely covered with ornament, but rather introduced to heighten an already rich piece of coloring. Drawings should be of a minute and graceful character, lines should be finely drawn and only the high parts of relief work be illuminated with gold. To treat otherwise would be barbarous and vulgar. As gold naturally suggests riches and as the height of culture and refinement inclines to modesty and reservedness, it would certainly be inconsistent to obtrusively display too much gold.

In the past few years a new method of treating our decoration has sprung up, and consists of the manner of preparing our back grounds with gold size and covering with metal or composition leaf, either gold, silver or copper, and then applying with transparent colors, a glazing or lacquering of any desired hue over

the same. This softens and robs the metal of its tinsel appearance. These backgrounds are used, as well for artistic, as fruit, game, etc., as for conventional ornamentation. Some very curious and beautiful results have been produced in this way, but great care must be exercised or the decorator will find that the results of his attempt will have a cheap varnishy effect.

The covering of walls with silk, tapstery and cretonne, is on the increase for finer wall hangings. As a rule the effects are very beautiful, the good coloring and softer nature of the material, easily accorded them with their surroundings, but its perishability, the ravishes of moth and dust, the fading of the aniline dyes, will prevent the adoption of this material for permanent decoration.

The demand for canvas or muslin covered backgrounds is steadily growing for our more permanent mural decoration. This is certainly a step in the right direction and is cheapest in the end. Hasten the day when it becomes more in vogue, for one of the severest difficulties the decorator must contend with and resume responsibility for, is the poorly finished plastering of a modern house. After overcoming this difficulty and successfully decorating the room, he is apt to see his best efforts muddled at by the blistering and cracking of the plastering.

Relief decorations have been tested and found successful, and the decorator will find steady employment for it. Whether in a classical, unique or modern style, modeled by form or hand or stamped by machine. The inventions of material and method of applying this plastic or solid relief have been numberless from pressed papers to the heavy stucco work, all comes under the heading of relief or raised work. The advantage of relief is the large variety of treatment of which it admits, and where the decorator has his opportunity to display his talent to obtain the most beautiful results. In this latter respect there has been a gradual improvement, the demand for the so-called roughing or combing has grown steadily less. It has seen its day, but the higher grade of artistic free hand relief work, which requires the services of a modeller, is in increased demand.

A new material for relief ceilings has made its appearance, and is composed of either sheet iron or steel, corrugated or pressed in ornamental forms and then put up in panels, after which it is painted and decorated, and it is difficult to distinguish it from plaster relief. The uses of these ceilings have been confined to stores, however. We have also seen these ceilings put up already decorated in a burnt and glazed imitation of lacquered metal, but a very cheap and tinsel effect is the result.

Paper hangings continue to be extensively used if not quite as much as formerly, still sufficiently to keep our coadjutor, the manufacturer, on the *qui vive* in inventing new designs, colors, materials, etc., for the laws of health must be consulted by the decorator, and we are giving the hygienic and sanitary condition of our dwellings close attention for these reasons; washable and sanitary papers find most favor, while metallics, velours, etc., are left on the shelves.

There seems to be a disposition to return to painted walls for our sleeping apartments, not in the old-fashioned treatment, but in blended damask effects, and a variety of other pretty ways; the decorator has sufficient scope here, and may be as broad in his treatment as he chooses. By the way, a large number of decorators are only putting friezes on parlor and music room walls, and then they must be an exact match in design and color with wall hangings. The difficulty of exact width, design and color, unless when painted for the upper rooms, has led to their abandonment.

Our employees, who are in reality our assistants, are also giving constant evidence of their improvement in taste and judgment. A few years ago, when the paints were mixed in the shop, a workman rarely had opportunity to develop his taste for colors, for taste can be developed and cultivated; but to-day, when all parts of a room must be in sympathy and in harmony with the general tone of coloring, his thinking faculties, as well as his dexterity as a brushman, are brought into use with most beneficial results, which promises brightly for our calling. Our workmen feel the impulse of our efforts to elevate the standard of our craft, and nobly responded when called upon for assis-

tance. Our artists are studying for a high ideal. Never before in the history of decorative art in this country were there better skies, flowers, figures or allegorical paintings executed; coloring more harmonious; drawings more perfect, and technical treatment more varied and finished. Doubtless the change intended for permanent decoration of painting the canvas in oil in the studio, where undisturbed they can ply their art, has been the cause of inciting and spurring them on to their highest idealizations, as well as the recognition and appreciation accorded by a liberal public. There is plenty of work for them to do, landscapes and marine views, figure groups, all that pleases the eye on canvas can appropriately be used in decoration.

Art is said to be that which appeals to our emotions and impulses, whether it be music, sculpture, acting or painting, and stimulates or depresses them through the different senses. If so, then our calling is indeed an art. An harmoniously tinted room—without being poetic, and speaking of symphonies and dreams in color—does that not instantly welcome and comfort and make us feel at ease? How often have you entered a room, and immediately there was a drop of twenty degrees in the temperature, and you received such a chill? Some coloring is so offensive, it instantly arouses a feeling of indignation or combativeness in you. You feel as if your calling were trifled with; and again you step into the adjoining room, and your outraged senses will be instantly soothed and quieted, so suggestively reposeful has the work been done. Some natures are so blunted that they are not affected in this manner. The more impulsive the spirit, sensitive the nature and higher the culture, the more readily affected we will be.

Truly there is a soul in our art, or at least a finer feeling, not gifted to all, which must be disciplined and cultivated, for to be able to discern those subtler tones, to appreciate those minute differences in tints and shades, to feel the effect of warm and cool, or to distinguish between chaste and vulgar colors, there is something more than the technique of a craft required to be thus affected.

The more we are surrounded by beautiful forms and harmonious, the more exacting becomes our natures, the greater our requirements, the higher our ideal. It is our education, our intelligence; our culture, that creates this natural demand for a higher art. We know there is no finality in art, but we must endeavor, on all occasions, in return for our labors, to attain the greatest amount of permanent beauty, and to strive, constantly strive, to reach the highest excellence, the position occupied by our old masters of the 15th and 16th centuries.

#### DECORATIVE ELECTRIC LIGHTING IN ENGLAND.

ONE of the finest effects possible to be attained by electric lighting, says the *American Mechanist*, will be when the light is completely concealed—when, in other words, the light is diffused, as in day time, coming from nowhere in particular. Attempts have been made to produce this effect by throwing the concealed light upon the ceilings, but they have not been very successful. On the grounds of a certain out of London residence, there is a large fountain 70 feet across, which, by a touch of a switch in the drawing-room window, can be illuminated in the twinkling of an eye, by glow lamps below the surface of the water. Similarly beautiful effects are familiar to the visitors of the big exhibitions, which now appear to have become permanent institutions in London. For producing effects of this sort, gas is of course useless; it requires oxygen, whereas the electric filament glows in vacuo. The simple fact that the electric light shines anywhere and sets nothing on fire suggests boundless possibilities in an entirely new field of domestic—and, when the civic sense is fully developed, public—decoration. There is one firm of electric fitters and designers which has the lighting of 22 large private mansions on hand at the present time. We know of another English firm—not of fitters and designers, but of engineers, whose business it is to put down the "mains"—which has had the supplying of some 300 country mansions. All this says something for the prospects of what electricians are already calling the fine art of lighting.



#### CANADIAN ARCHITECT AND BUILDER COMPETITION ESSAY ON PLUMBING.

BY "T. SQUARE."

NO subject which relates to the construction of dwellings is more worthy of careful study and consideration by the architect, builder and householder, than the sanitary plumbing of our houses, inasmuch as nothing conduces so materially to the health and comfort of the occupants of a building, as a well considered and carefully carried out system of plumbing, as applied to drainage and water supply. Much has been done within the past few years calculated to disseminate knowledge on this important branch of learning by articles in our building and sanitary journals, letters, and discussions in the daily papers, all of which have helped to scatter broadcast the germ of enquiry; in consequence of this, a considerable impulse has been given to the consideration of sanitary matters, and now commonly amongst the first questions asked by a proposing tenant are—where does the water come from? Is the drainage perfect? Were the plumbing works superintended by a competent authority? Are the pipes properly ventilated and trapped? and the like. In most of the large cities of this continent there exists a sanitary code and system of inspection, which have done much to improve the plumbing of our buildings, and it would be well were such laws and inspection extended to towns of smaller pretensions. Recently in a town of no considerable size, the writer had occasion to enquire if there were building regulations or by-laws with regard to plumbing existing in the municipality, but was informed that as this was a free country, all could do as they pleased in these matters; it need scarcely be remarked that such a state of things should not be allowed to continue. It is not proposed in this paper to enter into a discussion regarding the different kinds of fixtures, or the capacity and strength of the various pipes, but rather to treat the subject in a general and comprehensive way, endeavoring to show what are the principal questions to be considered in arriving at a good and desirable system for the piping of any dwelling, large or small. As a general principle, the piping should be arranged in as simple and direct a way as possible, so as to avoid all unnecessary complication, all internal pipes should be exposed in full view, run in grooves in walls, or boxed so that they can easily be got at. In no case should they be allowed to run inside partitions, and long runs of pipes under floors should be guarded against as undesirable.

Water closets, fixtures, wash basins and the like, should, as far as possible, be placed in rooms over each other to save piping. In small houses it will be found convenient to place the bath-room over the kitchen. Till recently it has been the general practice to box round with wood panelling the water closet apparatus, the bath and the wash bowl, etc., and to place underneath these fixtures a lead safe and waste pipe attached. In the greater number of buildings it is even now done; far better in every respect would it be if such boxing, where possible, were entirely abolished and the fixtures left open to the view. The flooring of such rooms could be made water tight with tiles, etc., so that any leakage that might occur would not penetrate the ceiling below. Such an arrangement allows for the cleansing of the fixtures and the flooring around them, and facilitates any repairs that may become necessary from time to time. Outside drains should be of glazed vitrified stoneware pipes laid to an even grade, junctions to a line of piping being made with Y branches, and bends with special pipes of easy curve, and in good ground a sound joint should be made with tar cord and cement, whilst in loose ground tar cord and clay puddle should be used in the joints. In loose soils, to secure an even bed, sand or fine gravel might be laid with advantage, and great care should be taken that when the earth is returned, the pipes are not disturbed.

In some cases it may be found necessary to drain the ground of cellars. This will be best effected by the use of small size

land drains unjointed except with collars of muslin to prevent earth or vermin entering pipes. The piping should be placed about two feet below the ground, and discharge into a larger pipe which should be trapped before connecting with the outside or main drain. As it is imperative that this trap should always remain sealed, it will have to be kept so by some automatic means. It is recommended, however, that instead of such drainage, the cellar be secured from damp by a flooring of concrete or such material as may be considered expedient.

Where leader pipes carrying rain water are to connect with the outside drain, they will require to be trapped with a deep seal trap to secure against evaporation, but should the heads of these pipes be remote from, and above windows and other openings to the building, then, it is considered, the traps may be dispensed with. A leader pipe should not be used to carry away any foul or other wastes from the building.

Soil pipes should be of iron, or glazed earthenware socketed pipes jointed with tar cord or cement. They should be carried five feet beyond the outside wall of the building, and there connect with the outside stoneware drain, which will discharge itself into the main drain or cesspool. In the event of the soil pipe running near a well from which drinking water be obtained, it would be desirable to continue the iron or glazed stoneware pipe well beyond it, and in the case of stoneware pipe, surround it with two feet of clay puddle, so that there may be less chance of leakage and consequent fouling of water. The soil pipe should be carried in as direct a line as possible, its full size, up through the roof a sufficient height and left open. If thought expedient, it may be protected from the weather with a cap placed some little distance above it. Should the main sewer be of large capacity and well ventilated, it will not be imperatively necessary to trap the soil pipe, but if such should not be the case, or the house drain discharge into a cesspool, then a half S trap should be introduced into the soil pipe at a point near where it leaves the building, the same being provided with a proper inspection and clean out hole and cap. If possible it will be better to keep the soil pipe above the cellar floor, and support same on thick piers or with iron hangers. In the event of a trap being used, then there should be a fresh air inlet provided on the inside of the trap, and the mouth of such air supply pipe should be placed in such a position that it may not be choked with snow or rubbish. Four inches will be large enough for most soil pipes, but they should not be above six inches.

Water closets should be placed as far as possible in well ventilated rooms with window's opening to the outer air, and not in darkened and out of the way positions where sufficient light and ventilation cannot be obtained. A ventilation pipe should be carried from or near to the ceiling above the roof, and in order to secure a constant vacuum in the room, so that foul air may be prevented from escaping to passages or adjoining apartments, a ventilating cowl should be attached to its head. Each fixture should be provided with a seal retaining trap with proper means for cleansing, and if a ventilation pipe be necessary from same, then it should be carried as directly as possible up to and well above the roof, and should be enlarged to at least four inches before passing through roof, and be left open at top. Drip pipes from lead safes under fixtures should not be connected with any soil or waste pipe, but should be made to discharge either over, say, the kitchen sink or in some place in full view, so that leakage may be at once noticed and repaired. Each fixture should be provided with a flushing tank, as nearly over it as possible, to secure a sufficient and constant supply of water.

Waste pipes from bath tubs, wash basins and sinks, should never be trapped immediately below the outlet of the fixture, and the pipe carried to the soil or main waste pipe. Should there be a separate waste pipe system, then the main waste pipe should be ventilated by carrying it well up above the roof, and the same should be enlarged to say four inches before passing through the roof and be left open at the top. Overflow pipes from these fixtures should be connected with the waste pipe above and never below the trap. The traps should be provided with proper clean out attachments. Waste pipes from ice boxes and drinking fountains should not be carried directly into any soil, branch or main waste pipe, but should discharge

into a safe or sink, which should itself be trapped and waste pipe carried as above described.

Water pipes should be so laid that in the event of needed repairs or otherwise, they can be readily emptied, a draw off trap should be provided in the main supply pipe at the lowest point, and a stop cock immediately inside the building and on such branches from the main pipe as may be considered necessary or desirable. Water pipes in buildings should be fixed in positions least exposed to frost, as in the event of pipe bursting from want of such precaution, considerable damage may be done before the water can be drawn off and the repairs made. It is recommended that there be as few fixtures placed in a building as possible, consistent with convenience, especially water closets, as unless these are kept in constant use and the traps full by daily flushing, there must always be a liability of unhealthy vapors arising from them. It would be as well to keep them out of sleeping apartments and dressing rooms, and to place them only in special apartments devoted solely to their use.

It is desirable that urinals should not be placed in private dwellings, and where it is essential that they be provided, they should be fixed in some well ventilated and isolated spot. The efficiency of plumbing may be said, in a general way, to consist in sound piping of proper size and material, sound jointing and efficient trapping; with regard to the first, all pipes should be tested as to their strength and soundness before being placed in the building, and after they are fixed, the junctions made, and all supposed to be complete, they should be again tested by one or more of the various methods now adopted, to ascertain if the whole system be secure against the emission of liquid or sewer gas. The material for piping has not so far been touched upon but the writer considers that iron or vitrified stoneware for soil, and iron for waste and supply pipes will be the best to use. Short branch wastes or water pipes may be conveniently of lead. In glancing over the foregoing, the writer fears that some of his remarks may be considered somewhat dogmatic, but he hopes that his readers will excuse him on the score that it is his belief that if the few suggestions offered be carried out in an intelligent manner, due consideration being given to the arrangement of piping in each particular case, that a satisfactory system of plumbing will be the outcome.

### INSPECTION OF PLUMBING IN TORONTO.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—Now that the city has a new engineer, and the re-organizing of the works department is in progress, it is hoped the plumbing department will not be overlooked. The complaints of the master plumbers and the public who have business there are very numerous. The amount of time wasted in obtaining the necessary permits and inspection of works is a serious matter, and demands the immediate attention of the city officials. As matters are now conducted, the time between giving notice for inspection and the appearance of the inspectors is any where from three days to three weeks, just as it suits the convenience of the inspectors, and often workmen have to be kept waiting for days because the inspectors has not been around to pass the job. If these men really have so much work that they cannot be more prompt, the master plumbers should demand and the city should appoint more men. In my opinion a great deal of valuable time is wasted every day by the inspectors in the office. They are supposed to be at the city hall at one p. m. every day to report, receive instructions, &c., and by the time they have examined plans and specifications and done considerable gossiping, it is often three or half past before they leave to commence their afternoon calls, and as they (being city officials) do not work after four or five o'clock, very little is done. It seems to me that this could be in a great measure remedied if some competent person who understands plans, &c., was placed in the office to give advice on matters of drainage and plumbing work, so that when the inspectors come in, they would not have to parley with about a dozen vexed and dissatisfied citizens, but take their orders from the clerk or chief inspector, and go about their work.

Persons presenting a plan and specification are told that

nothing can be done until the inspector has examined it and given in his report, and so no matter how urgent the case may be, he has to wait perhaps one or two days. It is hoped something will be done to remedy this evil, and a competent plumber placed at the head of the office. As matters are now, the inspectors have everything their own way and have a go-as-you-please air about them, and at the best of times are not over courteous.

Another matter which should be looked into, is the granting of certificates on completion of a job of plumbing. The plumber places his work in position, it is duly tested by the city inspector and found all right and passed, but some other contractor has put in the drains, which are found to be not correct. The plumber is refused a certificate because of defective drains which he has had nothing to do with, and is not in any sense responsible for. Certainly the plumber should not be held responsible for work he never performed and over which he has no control. Then on what grounds is he refused a certificate? Perhaps these overworked inspectors can give light on this matter, and much oblige,

A SUFFERER.

#### CHANGES DESIRED IN THE PLUMBING BY-LAW.

THE Toronto Master Plumbers' Association at their last meeting appointed Messrs. W. J. Burroughes, J. Ritchie and A. Fiddes a committee to wait on the City Engineer to urge some changes in the Plumbing By-law. One of the chief amendments asked for will be the location of the fresh air inlets. It is understood that many of the plumbers have found that this pipe, as it is generally located, is a nuisance and an eyesore, that it should be located not less than ten feet from a window or any opening in a building, and where houses or other buildings are so located that this cannot be accomplished, the pipe should be carried up above the roof of the house on the inside. It is claimed this can be easily accomplished by placing the pipe inside of a partition in the building or set in a recess in the wall left in the brick work for that purpose.

The Medical Health Officer for the city of Toronto has issued instructions to all master plumbers that every charcoal heater in use by them must be connected with a chimney, as the gas given off is injurious to the health of the workmen.

#### SANDY FOUNDATIONS.

A PROCESS of preparing foundations has been patented by F. Neukirch, of Bremen. Its object is to make loose sand firm and resisting as solid rock. At present the universal method of doing this work, if under water, is to remove all loose material and then make a box or other similar sub-structure. The process under consideration, which is only of use where the materials are fairly clean siliceous or calcareous sand, aims at consolidating the grains by covering them with a film of cement, which is forced into the spaces between the particles by compressed air, steam, or water under pressure. Sheet piles are employed to prevent the spreading of the cement over more ground than is necessary. The system has been largely used in the harbor of Bremen, and is to be tried in preparing dry foundations.

#### THE LIMITING PRESSURE UPON FOUNDATIONS.

VERY little data is available as to the limiting pressure to which foundations may be subjected, says the *Mechanical World*. Since the safe load will vary considerably with the nature of the soil, the only satisfactory method of determining this important factor is by direct experiment.

In the erection of the weighty and lofty structures on the Champ de Mars, in Paris, in connection with the exhibition, experiments were conducted with this object in view, for the purpose of determining the size of foundations.

The method adopted was to level a large surface of ground, and place four rectangular blocks of cast iron, one foot eight inches square, so disposed as to form corners of a square, the distance apart being 11 feet 8 inches from centre to centre. These blocks were bridged by girders of T iron, and these were then loaded with the same until a total weight of 14,923 pounds was reached, when a settlement occurred. The pressure on the ground was 7.31 tons per square foot.

During the night the settlement increased about three-quarters of an inch. The load was increased next day to 209,776 lbs., when some of the corner blocks had sunk out of sight, leaving the girders on the surface of the soil. It was found by these experiments that the soil was capable of resisting a load equivalent to 5.43 tons per square foot.

When the load reached 7.31 tons, settlement took place, and the ground was incapable of supporting a load of 8.14 tons per square foot.

## MANUFACTURES AND MATERIALS

### THE QUALITY OF ROOFING PLATES.

PHILADELPHIA, March 6th, 1890.

EDITOR CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In bringing out our roofing plates stamped with the brand and thickness, and doing away with the waster sheets of same, it was the object of this house to put upon the market, not only an article which the architect could specify with security, but also one that would enable the property owner to receive what he was willing to pay for. There is to-day a difference of almost 100 per cent. in price between the poorest and the best roofing plate in the market. Nearly every brand is imported of two different qualities; that is, good plates and bad—or wasters. It is absolutely necessary in these days of competition that specifications should be drawn as to hold each roofer up to his contract. Even the soldering of a roof is such an important matter that the roofer who uses soldering irons weighing but four pounds to the pair cannot possibly apply the amount of solder to the square that should be used; consequently heavy soldering irons should be used so as to allow the solder to soak well into the seams where a first-class job is wanted. The very best material if not properly put on would make the roof a failure. Our object is to assist the architect all in our power, and with this idea in view we have drawn up specifications for both a flat and standing seam roof, of the two sizes of plate which we think will be an aid to every architect who desires to use tin for roofing.

The specifications that we have drawn up are simply intended as a reference for the architects, and while we have inserted our brand of "Merchant's Roofing" in same, yet any brand which the architect may choose to use can of course be written therein. This formula has not been written by us with any intention of dictating to the architect, but rather to assist him in specifying for a roof that will last, as it should, for years, whilst the majority of tin roofs put on to-day will not last five years before repairs commence.

Again the present competition amongst roofers is such that a roofer who desires to make a first-class job and use good material stands but very little chance of obtaining the contract unless he is better protected by the architect in his specifications.

Yours very truly,

MERCHANT & Co.

The Drury Cove Lime Co., at Drury Cove, N. B., expects to manufacture about 75,000 barrels of lime per year.

There is an unconfirmed rumor to the effect that the Melbourne, Que., slate quarry has been sold in England for \$20,000, and that the new proprietors will work it.

The question is often asked whether crocoate preserves the color as well as the wood when used in an exterior stain. There seems to be no doubt that it does so. Probably the reason is that the low forms of organism and fungi, which are so fruitful in causing the blackening in oil paints and stains are prevented by the addition of crocoate, which is a strong germicide.

An Ottawa despatch says: The application made by Mr. Skinner, M. P., to the Government in regard to decreasing the duty on lime has, it is understood, been favorably entertained. It has been decided therefore to decrease the duty on the article from 20 cents per barrel to 10 cents per barrel, thereby making the duty the same as the American. The lime industry in the maritime provinces has largely increased of late years, New Brunswick alone manufacturing over 300,000 barrels per annum.

A company is being established at Kingston, Ont., to manufacture Portland cement. The present capital required is \$50,000. The profit on an establishment, making fifty barrels per day, is estimated at 14 per cent., making due allowance for amortisation. The importation of Portland cement into the Dominion is about 100,000 barrels a year, on which the duty is forty cents a barrel. The enterprise may, under favorable circumstances, take up the manufacture of firebrick. There are said to be within a few miles of Kingston, sandstone equal to any from which gannister brick is made, dolomite, from which magnesian brick is made, plumbeo, for lining furnaces and making crucibles, in fact, all kinds of refractory materials, except fire clay proper.

Despatches from McKeesport, Pa., announce that the brick manufacturers of that city and Pittsburgh are becoming interested in a patent chemical process for making brick without the usual burning which has always proved necessary. The process is that of a western man, and it is claimed that the brick can be made and hardened in two days at a cost of two dollars per thousand, or at one half of the average price per thousand that stock brick are made in yards where brick is burned. Another feature is, that the process will permit the brick to be made in all colors, and that the hard article for street improvement can also be made. A number of McKeesport capitalists are interested in it, and should it prove what it is claimed, they will locate a large plant to manufacture by this process.

The Barmm Wire and Iron Co., of Walkerville, informs us that they have in press and will publish about the first of April, a very complete and handsome catalogue.

# CONTRACTS

## CONTRACTS OPEN.

**ALMONTE, ONT.**—Bennett Rosmond will build a \$20,000 residence here.

**DESERONTO, ONT.**—The post office here is to be enlarged and improved.

**ST. VINCENT, ONT.**—Tenders are asked for the erection of a brick church at Snider's corner.

**WELLAND, ONT.**—The Council has petitioned the Government to build a post-office and custom house here.

**FOREST, ONT.**—The High School Board will ask the town council for \$7,000 to buy a site and erect a high school building.

**SCARBURY, ONT.**—Messrs. H. H. Vivian & Co., limited, of London, Swansea, and Birmingham, Eng., are about to erect blast furnaces here.

**MONTREAL, QUE.**—A committee of the Board of Trade are prospecting for a suitable site for a new building. Nothing has yet been decided upon.

**BARRIE, ONT.**—Tenders are asked by the chairman of the water-works committee for the franchise and construction of a system of water works in this town.

**HOWMANVILLE, ONT.**—A by-law has passed the council to be submitted to the freeholders of this town on March 31, authorizing a loan of \$8,500 for the erection of a new high school.

**WEST TORONTO JUNCTION, ONT.**—The Disciples congregation are having plans prepared for a new church to be erected on the corner of Keele and Annette streets, at an estimated cost of \$3,000.

**LONDON, ONT.**—The Ontario Government has agreed to contribute \$10,000 towards the cost of constructing a six-foot sewer on the bed of Carling's Creek. It is expected that the C. P. R. will also pay half the cost of a sewer through their freight yard, a distance of 1,600 feet.

**HAMILTON, ONT.**—Hannah street Methodist church is to be enlarged and improved by the addition of a transept at the south end, and a Sunday school on the west side, at a cost of about \$8,000.—The Sewers Committee contemplate spending this year \$10,000 on the east and sewer, \$10,000 on the west end sewer, and \$10,000 in general repairs.

**KINGSTON, ONT.**—It is proposed to improve the fire alarm system at the cost of \$4,000.—A deputation of aldermen will inspect the engine houses in western cities for the purpose of obtaining information for use in planning the new engine building here.—The Board of Trustees of the general hospital has granted a site on its grounds for the proposed Women's Medical College building.—Tenders will be asked in a few days for the erection of a new wing to the general hospital.

**TORONTO, ONT.**—A sub-committee has reported in favor of re-building St. Patrick's Market, and the Council will be asked to vote \$20,000 for the purpose.—The Water Works Superintendent recommends that the four million gallon pumping engine be replaced by an eight million gallon engine of the latest improved pattern.—The Parks and Gardens Committee of the city

council has determined to advertise for tenders for the construction of Island wharves pending an arrangement being arrived at with the Dominion Government.—A project is on foot to erect an Industrial Institute for Girls. West Toronto Junction and Pickering have been suggested as suitable locations. The city council has been asked to contribute \$12,000 to the building fund. The Provincial Government will also be asked to assist. Mr. Beverley Jones can give information. The following building permits have been issued: Elmer Henderson, pr. 2 story and attic bk. dwells, n. s. St. Joseph St., w. Yonge, cost \$7,000; C. N. Smith, alterations to 11 D'Arcy St., cost \$1,000.—Sewers are recommended on Wilton crescent, from Pembroke street to George street, cost \$1,068; on Marguerite street, from Bloor street, northerly, cost \$2,332, and on Markham street, from London street to Johnston avenue, cost \$2,500; living and Franklin avenues; Kensington avenue and the Davenport road.—Cedar block pavements on the local improvement plan are recommended for Callendar street, from Queen street northerly, cost \$2,450; for Euclid avenue, from Bloor street to Johnston avenue, cost \$5,775, and on Palmerston ave. n., from Bloor street north to the trunks, at a cost of \$11,557.—The Committee on Works will ask for tenders for scoria and asphalt pavements on Ontario street. Asphalt pavements will also be laid on Ontario street, from Carlton to Howard streets, and on Jordan street.

## CONTRACTS AWARDED.

**ST. HYACINTHE, QUE.**—Messrs. Piquette & Gauthier, of this town, have been awarded the contract for the wood-work and decorations for the annex to the Church of Notre Dame, at the price of \$10,000.

**KINGSTON, ONT.**—Contracts have been awarded for water works supplies as follows: Lead pipe, W. C. White, Montreal; stop cocks and fifteen valves at \$16.50 each, Stevens and Burns, London; fifteen hydrants, Kingston Foundry, at \$31 each.

## BIDS.

**TORONTO, ONT.**—The following were the lowest tenders received for the erection of a fire hall on Ossington Ave.: Brick work and masonry, Wicket Bros., \$5,223; carpenter work, Brady & Bell, \$3,310; plumbing and heating, Purdy & Co., \$1,830; painting, Taylor & Wheeler, \$394; slating, W. D. Hutson, \$434; galvanized iron work, Thomas Plunkett, \$159; iron work, Aikenhead & Crombie, \$2,733.52. No tender for plastering was received, but \$400 is estimated for this work, and when this has been added, along with \$750 for architects' fees, a total of \$15,234.52 is reached. To meet this there is an appropriation of \$10,000 and the proceeds of the sale of a lot on Rolyat street, estimated at \$3,600, so that an additional appropriation of \$2,000 will be required to complete the building.

# TENDERS

Will be received by the undersigned until FRIDAY, THE 21ST INST., for the PULLING DOWN AND REMOVAL of a

**Brick Building in rear of No. 28 Colborne Street.**

GORDON & HELLIWELL, Architects,  
24 King St. East, TORONTO.



## NOTICE TO CONTRACTORS.

Tenders will be received by registered post, addressed to the City Engineer, up to 12 o'clock noon of the 27TH DAY OF MARCH, 1890, for the construction of the following works, viz.:

### BLOCK PAVEMENTS.

Dundas Street widening, from Queen Street to Arthur Street; Crawford Street, from Queen St. to Defoe Street; McMaster Avenue, from Rathbally Avenue to Avenue Road; McPherson Ave., from Avenue Road to Rathbally Avenue; Rathbally Avenue, from Rathbally Crescent to McPherson Avenue west; Salisbury Avenue, from western limit of present pavement to 190 feet westerly; Dundas Street, from Saratun Avenue to Bloor Street.

### SCORIA BLOCK PAVEMENT.

Sherbourne Street, from King St. to Queen Street. Plans can be seen, quantities and forms of tender obtained on and after Tuesday, 18th inst., at the City Engineer's office.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. on the value of the work tendered for under \$1,000, and 2 1/2 per cent. over that amount, must accompany each and every tender, otherwise it will not be entertained. All tenders must bear the bona fide signatures of the contractor and his sureties (see specifications) or they will be ruled out as informal.

The Committee do not bind themselves to accept the lowest or any tender.

JOHN SHAW,

Chairman Committee on Works.

Committee Rooms, Toronto, March 12th, 1890.

**BENNETT & WRIGHT,**  
Steam and Hot Water Heating,  
Sanitary Plumbing, Gas Fixtures.  
72 Queen St. East TORONTO.  
Telephone No. 42.

## TENDERS

Will be received from all trades for the erection of an Office Building on Yonge street; House on Ontario Street; 2 houses in Parkdale.  
Tenders close March 26th, 1889.  
GEO. M. MILLER, Architect,  
Cor. Queen and Yonge Sts.

## TO IRON FOUNDERS AND BLACKSMITHS.

TENDERS will be received until the 24th inst. for the whole of the Wrought and Cast Iron Work, including Wrought Iron Beams, Cast Iron Columns, Iron Staircases, Vault Doors, &c., necessary in connection with the erection of

**Head Office Building for the Freehold Loan & Savings Co.,**

on the north-west corner of Adelaide and Victoria Sts., Toronto.

Plans, specifications and details can be seen at the offices of the architect.

E. J. LENNOX, Architect,  
71 Yonge St., Toronto



## TENDERS FOR WHARF AT ISLAND PARK.

Tenders addressed to the City Engineer will be received through registered post up to noon on TUESDAY, THE 30TH INST., for the construction of a Wharf, including all the necessary filling, dredging, filling, etc., in connection therewith, at the Island Park. Plans and specifications may be seen and forms of

tender obtained at the office of the City Engineer, City Hall.

Each tender must be accompanied by a marked cheque, made payable to the order of the City Treasurer, or a cash deposit equal to at least 2 1/2 per cent. of the amount thereof, which deposit will be forfeited to the city in the event of the party whose tender is accepted failing to execute the necessary contract and bond. The lowest or any tender will not necessarily be accepted.

J. C. SWAIT,  
Chairman Parks and Gardens Committee,  
City Hall, Toronto, March 11th, 1890.

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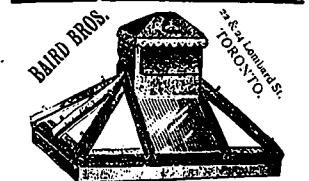
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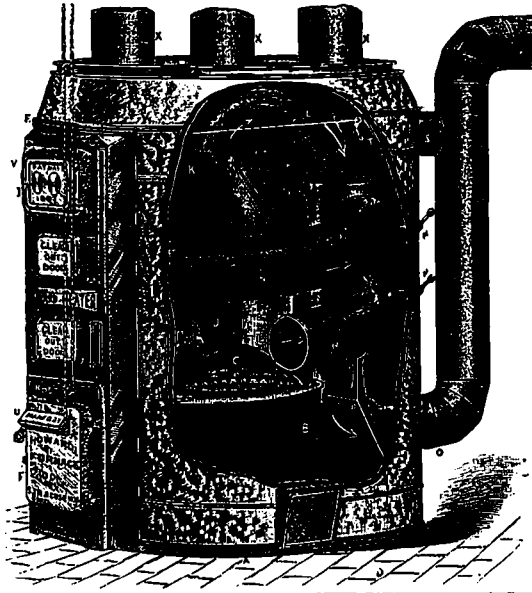
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**TO CONTRACTORS.**

SEALED TENDERS will be received by the undersigned until 12 o'clock noon of **SATURDAY, THE 29TH INST.**, for the Mason, Bricklayer, Carpenter, Roofer, Plasterer, Painter and Glazier, and Iron Work of the Administrative Block of the Royal Victoria Hospital to be erected on University Street.  
 The plans and specifications prepared by Messrs. H. Saxon Snell, F. R. I. B. A., & Son, London, England, to be seen and all necessary information to be had at my office.  
 The contractors are to submit the names of two sufficient sureties for the due performance of the work, and the consent in writing of such sureties.  
 JAMES R. RHIND,  
 Assistant Architect.  
 Room 11, Temple Buildings, St. James St., Montreal, 1st March, 1890.

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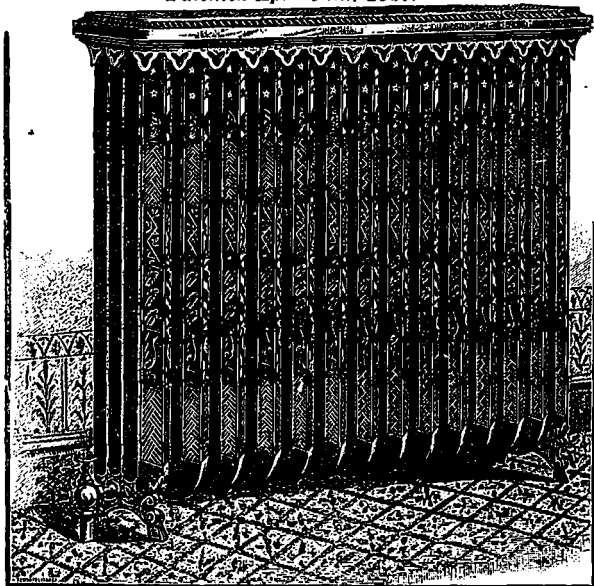


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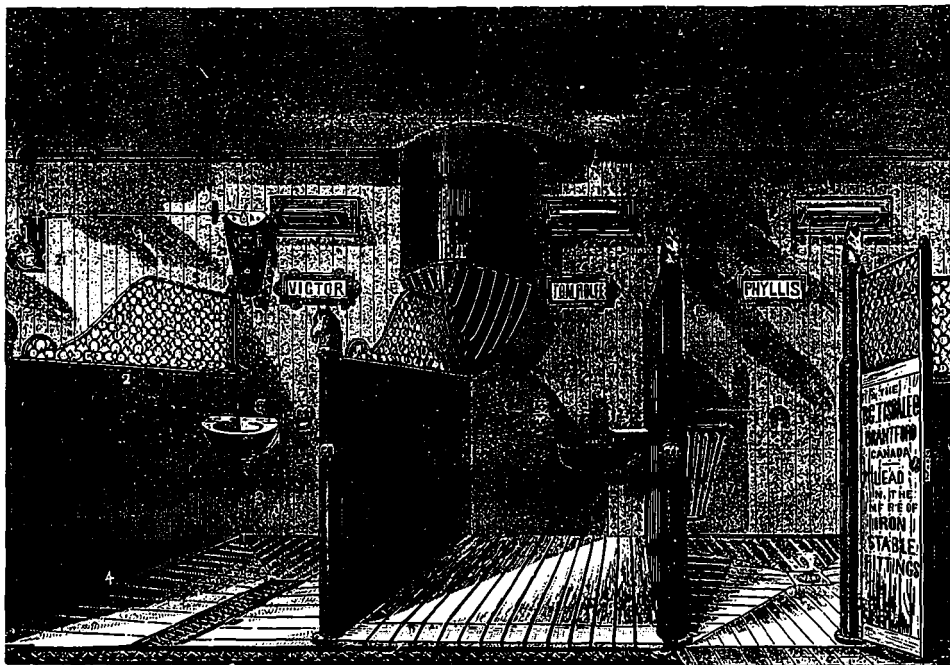
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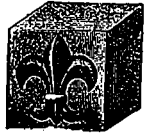
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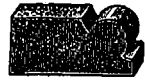
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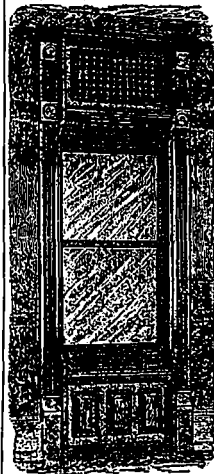
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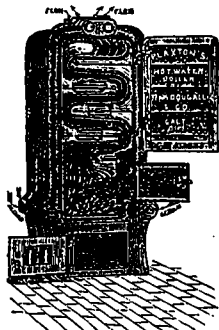


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EXTRACT FROM TESTIMONIAL:

April 9th, 1888.

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Yours respectfully,

KENNEDY & HOLLAND, Architects-Toronto and Barrie.

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Competition Plans

FOR A

CITY HALL.

THE City of Quebec having decided on erecting a City Hall on Jesuit Barracks Square, opposite the Basilica, now invites competition designs for such a building. A prize of \$1,500 will be paid for the best plan, \$500 for the second best, and \$300 for the third in value.

The City does not bind itself to the execution of any of the designs submitted, nor does it bind itself to confine the direction of the work to the architect to whom the first prize may be awarded.

The plans to be for a building capable of accommodating all the municipal departments, not only as they now exist, but with the development hereafter required by the increase in the size of the City. The building must in addition contain the Recorder's Court and offices, the offices of the Police and Fire Departments, those of the Fire Alarm Telegraph, a Central Police Station and Central Fire Station, with lodgings for guardians and others; the competitors to supply ground plans, sections and elevations of facades, and the details of the principal apartments, such as the Council Chamber and Recorder's Court. They shall moreover supply specifications, bills of quantities and estimates of cost of the several works and materials. The total cost of the building, inclusive of heating apparatus, water and gas service, shall not exceed \$200,000.

The plans and specifications endorsed "Plans for City Hall" shall be addressed to the undersigned before the FIRST DAY OF MAY NEXT. Each design shall bear a distinctive motto and contain nothing capable of designating the author, but shall be accompanied by a sealed letter bearing the same motto giving his name and address.

The judges of the plans shall be chosen by the Mayor, the Chairman of the Road Committee, and the City Engineer, and their decision shall be without appeal.

From the undersigned may be obtained all necessary information as to the configuration of the ground, the number and size of the principal apartments, and the area required by each department.

CHAS. BAILLAIRGE, City Engineer, Quebec.

City Hall, Jan. 10, 1890.

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