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CONSTRUCTION

A · JOURNAL · FOR · THE · ARCHITECTURAL
ENGINEERING · AND · CONTRACTING
INTERESTS · OF · CANADA



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• TORONTO •
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Water-proof Compound

**Makes Concrete Impervious to Water
Prevents Discoloration and Efflorescence**

It is a dry powder, to be thoroughly mixed with dry cement before sand and water are added, thus becoming an inseparable part of the concrete.

**“MEDUSA” GIVES ABSOLUTELY
PERMANENT RESULTS, WILL NOT
EFFECT STRENGTH, SETTING OR
COLOR OF PORTLAND CEMENT.**

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Stinson-Reeb Builders' Supply Co., Limited

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WE WANT AGENTS IN EVERY CITY AND
TOWN TO HANDLE THIS MATERIAL

What's in
a Name...

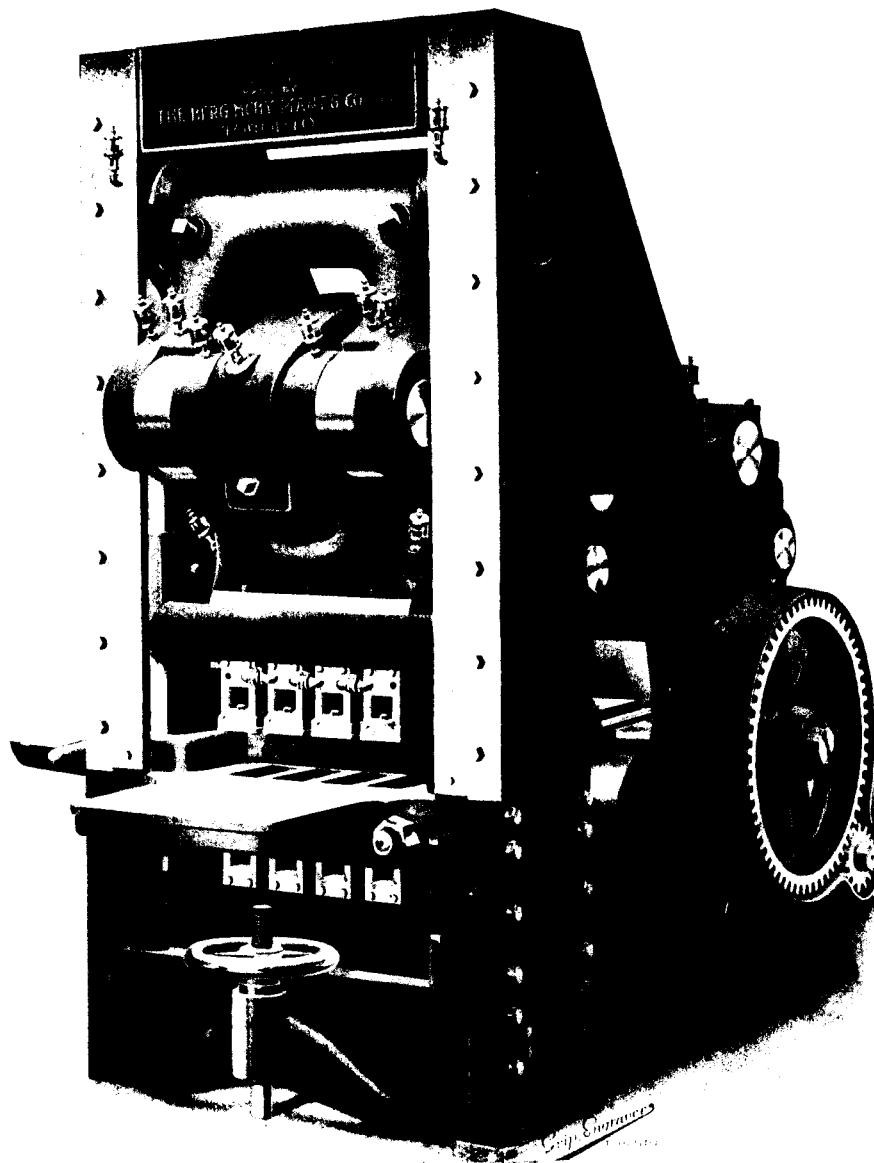
SIMPLICITY
STRENGTH
DURABILITY

ACCESS
TO ALL
PARTS

GREATEST
PRESSURE

BEST
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The "Berg Press" is the Highest Development in the Art of Brick-making Machinery, so Pronounced by the U. S. Government



IMPROVED BERG BRICK PRESS

THE BERG PRESS EXCELS

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Shale Pressed Brick
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Gives THREE Distinct PRESSURES

Result is :

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THE BERG PRESS

is fitted with "THE BERG PATENTED MOLD BOX", the DELIGHT of brickmakers, and which many others have tried to IMITATE

All Sizes and Shapes
Can be Made

Molds Can be Changed in a
Few Minutes
Owing to the
SIMPLE MECHANICAL
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Cut Gearing, and many other steps forward in Improvements, and built of the Highest Grade of Material and Workmanship. Fully Guaranteed as to its Success.

Manufactured by its inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick and Fire Brick

CORRESPONDENCE SOLICITED

The BERG MACHINERY MANUFACTURING CO., Limited

Office and Works: Bathurst and Niagara Sts., Toronto, Canada

THE 1910 IMPROVED HADSEL CONCRETE MIXER

MANUFACTURED IN CANADA



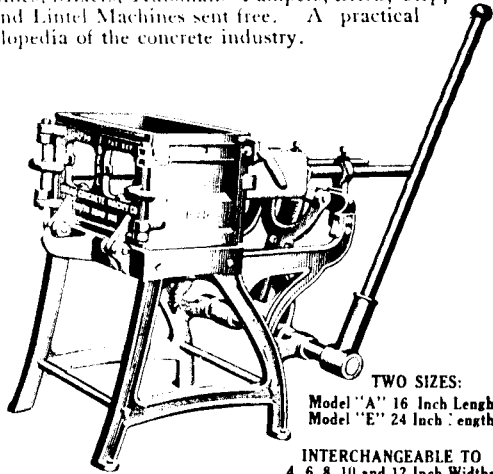
THE improved mixer is equipped with a loading hopper which contains 1-2 yard of unmixed material. This loading hopper is operated by the engineer by means of lever and gate. While one batch is being mixed the laborers are not standing idle, but are busy filling the hopper, and upon the batch being discharged the gate is pulled and the contents of the hopper delivered into the mixer, allowing reloading to proceed almost uninterruptedly. This new feature combines all the advantages of a continuous and a batch mixer.

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Valuable catalogue, showing full line of IDEAL Block Machines, Mixers, Automatic Tampers, Brick, Step, Sill and Lintel Machines sent free. A practical encyclopedia of the concrete industry.



TWO SIZES:
Model "A" 16 Inch Length
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INTERCHANGEABLE TO
4, 6, 8, 10 and 12 Inch Widths
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The
Ideal
Machine
Shown above
is the only
safe,
protected
Face Down
Horizontally
Movable
Core, type
of Concrete
Block
Machine

Concrete Machine Facts For The Inexperienced

If you are the sort of a fellow who is anxious to *start right* in the profitable business of making concrete blocks, with a desire to first educate yourself by frankly comparing the merits of all types of concrete machinery on the market, and with your eye fixed on a permanent business in the future—then you are the man we want to give some facts concerning

IDEAL Concrete Machinery

The Most Profitable Because the Most Perfect and the Most Rapid

A PERSONAL talk and careful examination of the Ideal in operation would be the quickest and most conclusive way to convince you of this. That's why we are anxious to have you visit our plant at London and inspect some of the buildings which have been constructed of Ideal Blocks.

IF this is impossible, it certainly will pay you to send for our elaborate Free Catalog. We tell you frankly that until you have seen this valuable cyclopedia of concrete machinery, you are not able to make a safe or profitable investment in this business.

MEANWHILE we gladly offer the following advice:—first of all, be sure that the machine you buy produces blocks of *quality*. A slight carelessness in casting or machining the working parts of a machine will destroy the *correctness* of the block it produces, and a slight variation in the individual block will work havoc with a building. The Ideal Machine alone produces character, individuality and mechanical correctness in each block. Beauty and sharp lines are seen in every design.

ANOTHER essential in Block Machinery is the speed of operation. Cores should never be inserted and withdrawn by hand nor should it be necessary to have a man

on each side as is the case with some clumsy machines. The machine which makes the standard size block (practically 98% of the blocks used in building are of the standard uniform size) in the most rapid and economical way is superior to any slow cumbersome machine which boasts of its wide range. When large pieces are to be made, it is most economical to purchase our Adjustable Sill and Cap Mold Machine for that special purpose at a very small outlay.

REGARDING the mixture, the best evidence that the Ideal Machine handles a mixture of the proper degree of wetness is the fact that more blocks are made daily with Ideal Machines than all other machines combined. Not only has a complaint never been made, but a sincere vote of appreciation of Ideal quality is the fact that there are more Ideal machines in use today than any other make.

FINALLY we would advise the purchaser to accept nothing but a *face down* machine, but to protect himself by avoiding all Face Down Horizontally Movable Core Machines which have been held to be infringements on the Ideal Machine by the High Court of Justice in Canada.

CAUTION!

Our patents covering the FACE DOWN HORIZONTALLY MOVABLE CORE type of Concrete Block Machine were upheld by the High Court of Justice for Canada, at London, before His Lordship, the Honorable Mr. Justice Clute, on Nov. 21, 1906. The infringing manufacturers were enjoined from making, selling or using such machines.

We regard machines of this type as infringements of our patent rights. We caution buyers to make careful investigation before purchasing such machines. This same type of Concrete Block Machine is protected also by our numerous foreign patents.

Best of all educate yourself on the subject by sending for our catalog, and help us to advise you intelligently by writing us what your plans are.

**Ideal Concrete Machinery
Co., Limited**

**221 King St., London, Ontario, Canada
and SOUTH BEND, IND., U.S.A.**

ONE OF OUR LATEST COMBINATIONS.



KINGSQUARE

A Specially Designed Closet Combination, where quality and beauty of design are factors in the installation.

Special design tank, piano polish, extra heavy copper lining, fitted with the latest improved side lever push, our patent elevated high-pressure ball cock, with valve, saddle seat piano polish, and with extra heavy post hinges.

UNCONDITIONALLY GUARANTEED.

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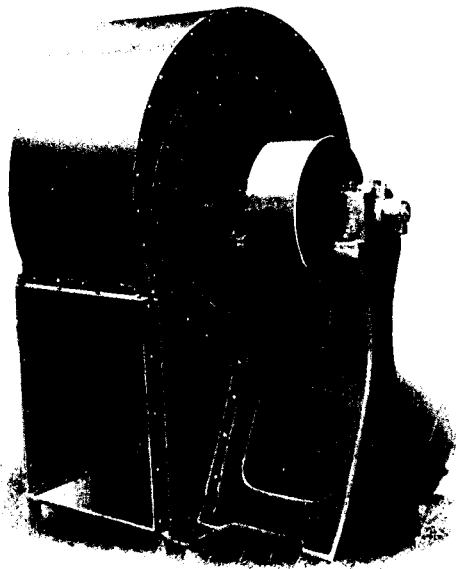
ST. JOHN, N.B.

WINNIPEG, MAN.

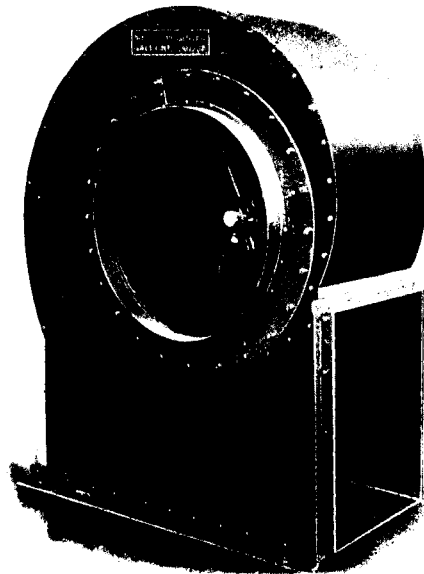
— THE —
ÆOLOS FAN

(Pronounced E-O-LOS)

The
 King
 of
 The
 Winds



ÆOLOS FAN, pulley side, bottom discharge.



ÆOLOS FAN, inlet side, bottom discharge.

Canadian
 Patent
 No. 122822

"ÆOLOS," the new Model Sheldon Patented Air Fan, represents absolutely the latest development in centrifugal fan construction. In designing this fan tests were made of almost every known type of fan wheel in order to secure a wheel which would offer the least resistance to the flow of air and at the same time deliver a maximum volume at a given pressure.

"THE ÆOLOS FAN WHEEL represents the result of these tests."

The ÆOLOS FAN WHEEL differs from all others in design and construction; the blades are set at an angle peculiar to these fans only; they are so set that they take advantage of the natural flow of the air in its passage through the fan and simply assist it on its way. These blades are not curved or buckled in any way, but being perfectly straight and flat on their surface, offer the least possible resistance.

Some idea of the mammoth capacity of ÆOLOS FAN WHEELS may be gained from the fact that

- 1st. An ÆOLOS WHEEL delivering the same volume of air as an old style of fan wheel would do so with a saving in horse power of 23 per cent.
- 2nd. An ÆOLOS WHEEL would require the same amount of power to operate it when delivering 25 per cent. more air than the old style of fan wheel.
- 3rd. An ÆOLOS WHEEL delivering the same volume of air as an old style of fan wheel would make a saving of 40 per cent. in the space occupied.

Specify ÆOLOS FANS

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Heating and Ventilating Engineers and Manufacturers

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HEAD OFFICE AND WORKS :

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Architectural and Decorative
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**Bronze,
Brass,
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Particular attention given
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Porte Cochère, an example of our Ornamental Iron Work.

**The Geo. B. Meadows Toronto Wire,
Iron and Brass Works Co., Limited.**

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HYGIENIC

“ROMAN” FLOORS

A Chemical Preparation

Can be laid in any color or combination of colors
and are guaranteed

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A LACQUER-ENAMEL OF QUITE UNIQUE PROPERTIES

Glossy or Flat (Dull), White and all Colours, for both Interior and Exterior Work.

For Painting Walls, Doors, Woodwork, Ceilings and Outsides of Houses, Hospitals and Institutions, Also for Railway Coaches, Locomotives, Tramcars, Steamers and Yachts.



The Advantages of PARIPAN

FOR HOUSES.

Applied with a brush in the usual way, Paripan forms the most artistic, durable and washable surface possible.

Over twenty years' practical use proves that Paripan will last in perfect condition for ten years and upwards and "the more you wash it, the better it looks" is literally true.

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Paripan, by reason of its durability, costs far less than ordinary paint.

Paripan Glossy gives a surface like glass, the Flat (dull), a delicate, dull silk-like effect—both perfectly washable.

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Paripan for walls and ceilings of wards, corridors and operating theatres furnishes a surface far superior to glazed tiles at a mere fraction of their cost.

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The Paripan method of painting produces a finer and more durable effect than the usual treatment, with a less number of coats.

It means a very large saving in maintenance charges and a great increase in efficiency.

Paripan stands all climatic conditions perfectly. After washing and leathering in the usual way, it always comes up fresh and new. No varnish is required.

Architects, Surveyors, Engineers, Railway Companies, and all interested in Paripan are cordially invited to send for our Illustrated Book with Color Chart, prices and "Opinions," mailed free by return. We will gladly answer any special queries and send samples for trial.



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What Our Cement Canadian

UNIFORMITY OF QUALITY,

QUALITY: A uniform quality in cement is necessary to obtain the most satisfactory results. You want to be assured that each shipment as it reaches your work will correspond in color, fineness, strength and setting with what you have been using. All of our cement is manufactured under the supervision of a General Superintendent and also a General Chemist, who require every batch of cement passing through any of the ten mills to meet Standard Specifications.

The Four Corner

PRICE: Our aim is to sell Cement at prices that guarantee a steady, healthy development of the industry. Cement is cheaper to-day on the Canadian market than in any previous year, with the exception of the 1909 rate war, when prices fell to a point that could not be maintained without an injury to the industry in the shape of a low grade Cement being placed on the market. Present conditions permit of a high grade material at a fair price. Cement cannot control its own price, as it is in competition with, and controlled by the market of, such materials as steel, wood, clay products and natural stone, and the very success of the industry depends upon a greatly increased consumption year after year. Therefore we would not if we could, and could not if we would, raise prices to unreasonable figures.

The Canada Cement

HEAD OFFICE - -

Manufacturers of **HIGH GRADE**

Mills at Montreal, Que.; Hull, Que.; Lakefield, Ont.; Marlbank, Ont.;

SALES OFFICES:

MONTREAL

TORONTO

**Means to the
Builder**

WEIGHT, PRICE and DELIVERY

WEIGHT : Every quotation on our cement is based on a standard barrel of 350 lbs (gross) shipped either in cloth, paper or the finest cooperage. This is the maximum cement barrel weight and you are advised to assure yourself that a quotation you may have does not mean a 300 or a 325 lb. barrel. We guarantee every package leaving our mills to contain full weight. Impress this well in your memory that every barrel of cement shipped by us is a full Three hundred and Fifty Pounds.

Stones of our Business

DELIVERY : You are assured of prompt delivery at a minimum freight rate when you buy our Cement. Our mills are distributed the length and breadth of Canada and are individually situated in their respective communities in the most advantageous manner so as to take full advantage of shipping facilities. When you order Cement for delivery on a certain date we assume that to be the precise time you desire it, and our entire organization and system stands at the back of every order to guarantee its prompt delivery. Our mills are situated at Calgary, Alta.; Port Colborne, Ont.; Shallow Lake, Ont.; Belleville, Ont.; Marlbank, Ont.; Lakefield, Ont.; Hull, Que., and Montreal, Que. These are the centres of the various Canadian building districts, and your order will be filled by the mill closest to you, which means you are not required to pay unnecessary freight charges.

Company, Limited

MONTREAL

PORTLAND CEMENT

Belleville, Ont. ; Shallow Lake, Ont. ; Port Colborne, Ont., and Calgary, Alta.

WINNIPEG

CALGARY



BLACK DIAMOND TARRED FELT

Insulate your new home with Black Diamond Tarred Felt. It means comfort and economy. An expenditure of a few dollars in this way will reduce your fuel bill by 30 per cent. This, in itself, is pretty well worth while, isn't it? Besides it makes your home beautifully cool and comfortable in summer.

Tarred Felt to the house is as oakum to the ship. However excellently the ship may be constructed, it is imperative that this last inexpensive step shall be taken to render it absolutely serviceable. So must the properly constructed house have its Tarred Felt lining. It prevents the little leaks that make the heating and ventilating system imperfect.

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Paper Mills: Joliette, Quebec

Port Credit Brick

Wire Cuts and Repressed Wire Cuts
and **PRESSED BRICK**

Our plant has recently been enlarged in such a manner as to enable us to supply these lines to the very best advantage.

WE HAVE NOW ONE OF THE FINEST PLANTS IN EVERY PARTICULAR IN AMERICA

"Brick," the leading clay journal of the United States, in its January number, says of our plant:

"When completed the plant will be one of the largest and best arranged plants in America, and anyone who desires to see a modern, well built and well designed plant in operation, a trip to the location would not be amiss."

**Dark Face Red Pressed Brick, Light Face Brick, Special Dark Face Veneer Brick,
Hard Builders for Cellar Work, Second-Class Brick for Inside Work**

PRICES FURNISHED ON APPLICATION

The Port Credit Brick Company, Limited

Office Phone, - M. 3167
Yards " Col 4853

HOME BANK BUILDING, 8 KING STREET W., TORONTO

WORKS: PORT CREDIT, ONT.

NONPAREIL CORK BOARD INSULATION

FOR

**Cold Storage Buildings, Packing Houses,
Abattoirs, Refrigerators, Etc.**

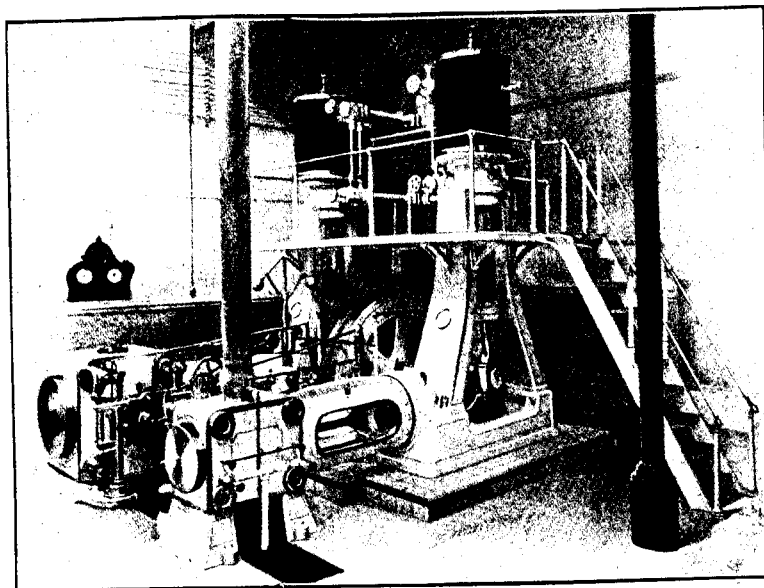
Installed in Hundreds of the Most Modern Cold Storage Plants, Packing Houses and Breweries in the United States, Canada and Mexico.

Nonpareil Cork Floor Tiling

Made of Pure Compressed Cork and is Unequaled for ease and comfort in walking or standing. Suitable for Banks, Hospitals, Halls, Bathrooms, etc. Further particulars and catalogues on request.

Ice Making and Refrigerating Machinery

Supplied and Installed on the York Manufacturing Company Systems for Ice-Making Plants, Cold Stores, Abattoirs, Packing Houses, Breweries, Dairies, Hotels, Apartment Houses, Etc.



Vertical Single Acting Compressor Driven by Compound Steam Engine.

SPECIAL MACHINES for SMALL PLANTS,

Suitable for Butchers, Dairies,
Fish and Game Dealers, etc.

HORIZONTAL and VERTICAL
COMPRESSION PLANTS

ABSORPTION PLANTS

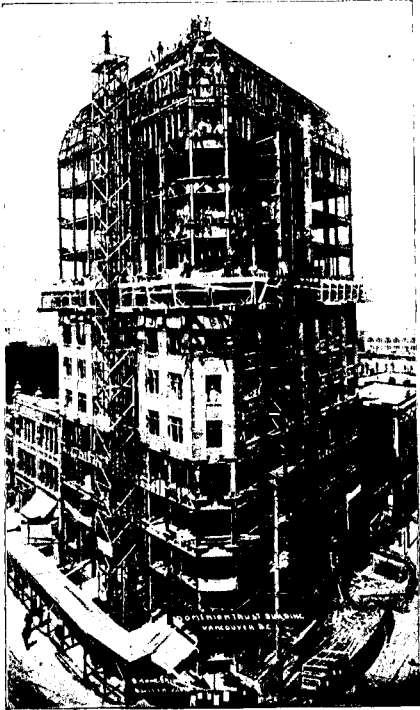
Ammonia Fittings and Supplies
Kept in Stock.

Catalogues sent on request.

THE KENT COMPANY, LIMITED

425-426 CORISTINE BUILDING, MONTREAL, P.Q.

"STEELCRETE" Expanded Metal Lath



was used in the construction of this building, The Dominion Trust Co.'s new offices in Vancouver, Mr. Jno. S. Helyer, Architect.

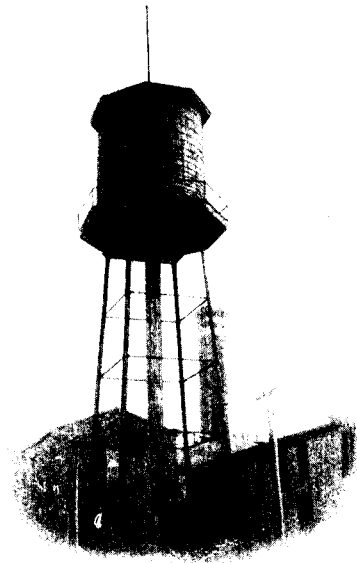
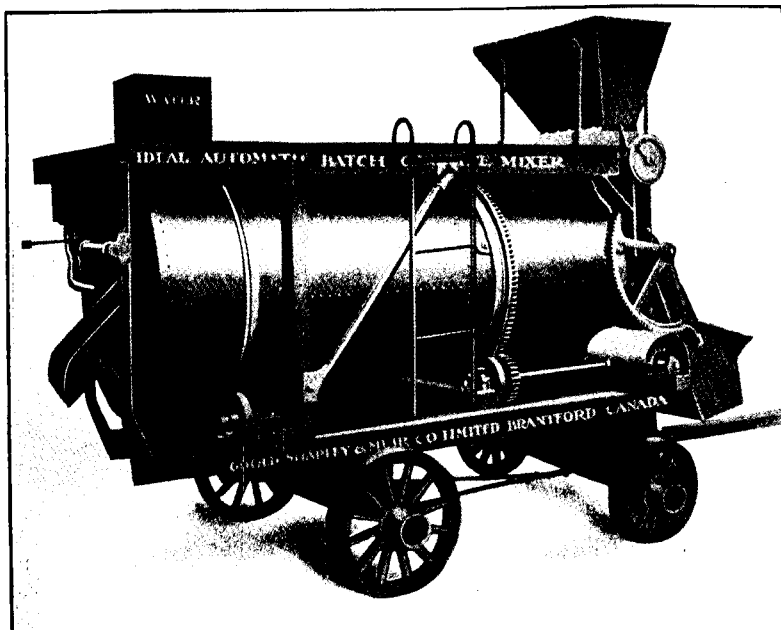
STEELCRETE LATH is in general use with the best informed Architects in Canada, and is used by them in their most important undertakings.

STEELCRETE LATH assures an absolutely satisfactory result. That's why it's popular. Send us a card and we'll give you full information contained in a highly illustrated catalogue.

EXPANDED METAL AND FIREPROOFING CO., Ltd., FRASER AVENUE
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"IDEAL" AUTOMATIC BATCH CONCRETE MIXERS

Will do more work with less help than any other.
We also Manufacture GAS and GASOLINE ENGINES,
TANKS, TOWERS, HOISTS, &c.
Write for Catalogues.



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SHAPLEY &
MUIR CO.,**
**BRANTFORD,
CANADA.**



Entrance of Second National Bank, Cincinnati, Ohio

Our
Specialty
is
Furnishing
Marble
for
Exterior
Construction
and
Interior
Decoration
of

Government and Municipal Buildings, Court Houses, Libraries, Office Buildings, Hotels, Clubs, Private Residences, Churches, Theatres and other high class structures, where marble is specified.

Missisquoi Marble

The demand for our material, not only in Canada, but in the United States as well, has grown so much faster than our most sanguine expectations permitted us to hope, that we are again obliged to make very large additions to our plant.

Contracts have been let for twelve additional gang saws, as well as larger engines, and increased boiler capacity. These additions should be complete by the middle of May, and we shall then be able to handle promptly a very much increased volume of business.

We appreciate the support we have had from a very large number of the leading Architectural offices, and we are using our utmost endeavors to merit it.

The Missisquoi Marble Co., Ltd.

PHILIPSBURG, QUEBEC

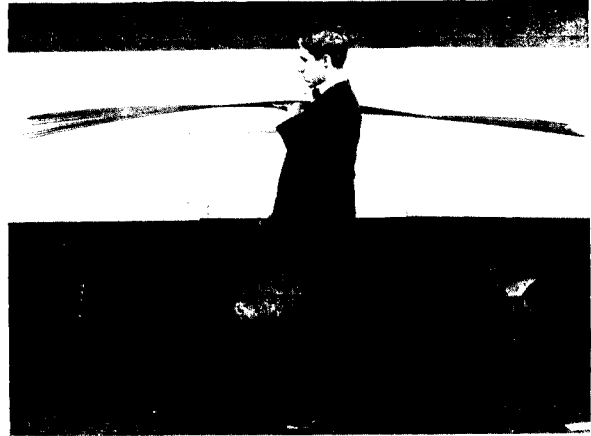
CORISTINE BLDG., MONTREAL

DISTRICT SALES AGENTS.

DAVID MCGILL, MONTREAL.
EADIE-DOUGLAS, LIMITED, TORONTO.
BOSSE & BANKS, QUEBEC.

C. N. BARCLAY, WINNIPEG.
WM. N. O'NEIL & CO., VANCOUVER.
GENERAL CONTRACTORS' SUPPLY CO., HALIFAX.
JAS. ROBERTSON & CO., LIMITED, ST. JOHN, N.B.

The Superior Stiffness of Herringbone Lath Puts it in a Class by Itself



THIS halftone is no imaginary sketch. It is reproduced from a PHOTOGRAPH. The lath sheet is twenty-seven gauge Herringbone taken from stock. EVERY sheet of Herringbone lath is as stiff as this. Did you ever try this balancing test on any ordinary grade of metal lath?

Owing to its stiffness the supports for Herringbone lath should be sixteen inches on centers instead of twelve or ten. It goes directly on standard joist or stud spacing and thus saves furring. The cost of furring strips is about 9c. per square yard.

The superior stiffness of Herringbone lath also assures absolute freedom from bagging. Your plasterer will appreciate this.

There are still a few architects who do not specify Herringbone lath. Even now a few men have never ridden on street cars. The latter group will soon include all the former.

CLARENCE W. NOBLE, = = 117 Home Life Building, Toronto

GENERAL SALES AGENT

METAL SHINGLE & SIDING CO., Manufacturers



Interior of Bank of Ottawa, King Edward Hotel.

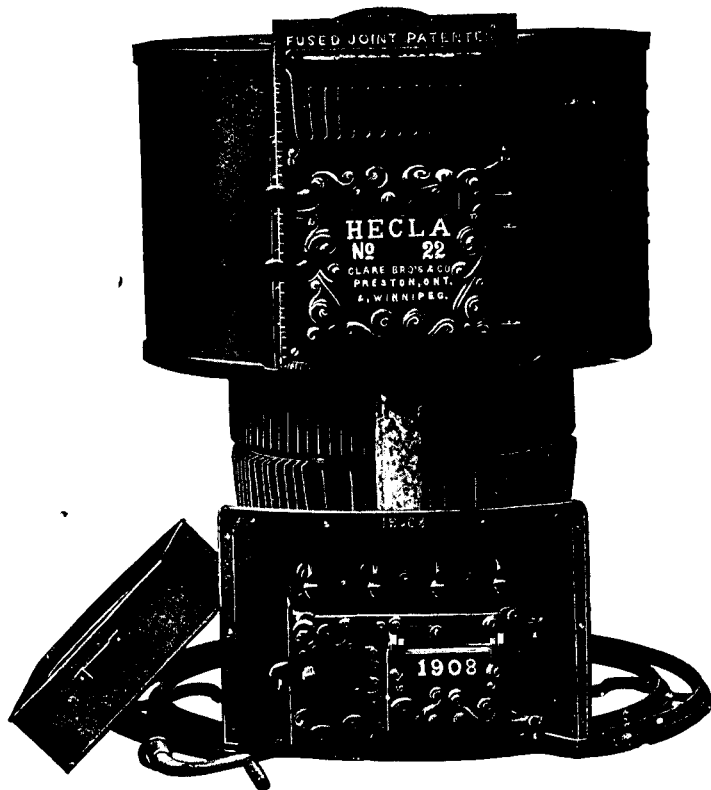
THE reason we are doing nearly all the Bank Interior Work in Canada is because already we have finished 1400 Bank Interiors, and this experience enables us to render the most efficient service

**CANADIAN OFFICE & SCHOOL
FURNITURE CO., LIMITED**

PRESTON, ONT.

"HECLA" WARM AIR FURNACE

FOR COAL OR WOOD



The requisite for a successful Warm-Air Heating System is a good furnace; one that will not only supply an abundant quantity of pure warm air; but will, in addition, be economical in the consumption of fuel, easy to operate, safe from dust and smoke, and that will give the greatest length of service. Some cheap furnaces fulfill one or more of these conditions, but the furnace you want must fulfill all. That is what the HECLA does.

"HECLA" FEATURES

- Automatic Gas Damper prevents gas puffs.
- Gravity Catch locks door every time you shut it.
- Double Feed Door for convenience when burning wood.
- Damper Regulator enables you to operate the dampers without going to the basement.
- Dust Flue carries all the dust up the chimney.
- Water Pan in the best position for effective service.
- Large Ash Pan with handle.
- Double Tin and Asbestos Lined Case to prevent the loss of heat in the cellar.

STEEL RIBBED FIRE POTS
INDIVIDUAL GRATE BARS

PATENT FUSED JOINTS
CAST IRON COMBUSTION CHAMBER

Clare Bros. & Co., Limited

PRESTON, ONTARIO

VANCOUVER

WINNIPEG

PORTLAND CEMENT

Shipments to any part of
Ontario or to the West

Write or phone for prices.

ALFRED ROGERS

Stair Building, TORONTO

Phone M. 4345

Art Stone

Is Concrete—nothing more—manufactured with extreme care and of the best materials, possessing all the desirable features of Concrete and all the beauty and finish of Natural Stone.

There's nothing new about the principles of the manufacture of Art Stone. It was manufactured by the ancients three thousand years ago, and the ornamental detail of Egyptian architecture, still clearly cut, spite the wear of the ages, bears witness to the worth of this material.

And here in this twentieth century we are manufacturing stone in every design equal in wearing quality to this ancient material.

Canada's Architects know this and are extensively using Art Stone. It is used in buildings of all characters.

A card will bring you valuable information.

The Canadian Art Stone Company

LIMITED

Price Street

Toronto

PEDLAR Corner Bead

Never a Crack, Never a Leak, where Universal Corner Bead is Used

SIMPLEST AND MOST ECONOMICAL TO ERECT and MAINTAIN

31 CENTS PER LINEAL FOOT, THAT IS THE COST



After you have read the rest of my advertisement I would draw your attention to this fact: Universal Corner Bead has only been on the Canadian Market a very short time, yet it was selected for the following important structures in Montreal City alone, designed by the architects named:--

McGill Medical
David R. Brown
Canadian Express Co. Building
Hutchuson & Wood
Mark Fisher & Sons Building
A. Piche
Linton Apartments
Finley & Spence
Light, Heat & Power Building
Kenneth Rae
Princess Theatre
Finley & Spence
Bennet's Theatre
Warren & Wetmore
Merchant's Bank
E. & W. S. Maxwell
E. Townships Bank
Cox & Amos
And hundreds of others.

If you are one of that great number of contractors and architects, who in the past have pinned their faith to Pedlar Products, I want to say that I unhesitatingly recommend you to use my Universal Corner Bead.

G. A. Pedlar

WE will gladly mail you a further list of names and our

FREE BOOKLET "FIRE-PROOF" No. 53

Will you write for them?

The names given only represent a few of the lengthy list of users, but they show the kind of indisputable evidence behind Universal Corner Bead.

Most contractors and architects know from experience that the only way to get a fire-proof and generally indestructible corner or window sill is to use Corner Bead. Wherever wood is used there is always fear of fire or broken corners and the fear is usually fulfilled.

Universal Corner Bead was designed to save window trim and make every outside angle proof against breaks. It can be erected any distance from the wall, and when erected is indestructible. If used on brick corners it will be found adaptable to any depth of ground preparing the corner for, and aiding in the gauging of, the plaster, and doing away with the need of using straight edges or plumb lines.

NO CHANCE FOR RUST

Universal Corner Bead never rusts because it is plated with a special heavy and fine coating of zinc which successfully withstands the action of acids in patent plasters and the carbonic acid of the atmosphere. This electro process, eliminating as it does, the slightest possibility of rust, is in bold contrast to the hot or cold galvanizing process used on some beads, and mostly found ineffective as an anti-rust.

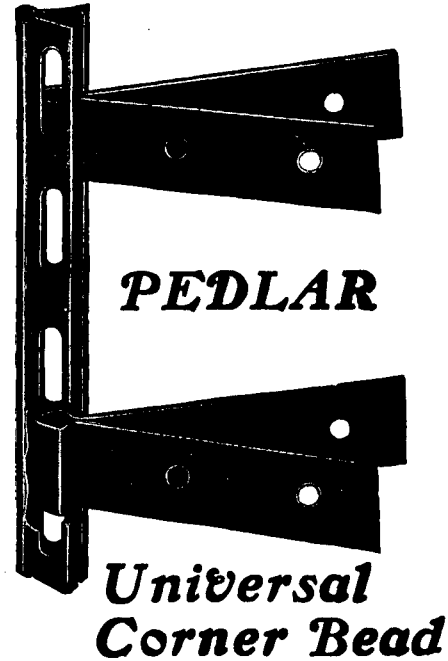
A true key is formed with Universal Corner Bead. Thus plaster and steel are tightly locked together, producing the greatest degree of uniformly-distributed solidarity.

CAN EASILY BE CURVED

When ovals, arches or circles are desired, the "Universal" readily adapts itself in just this way. The side holes are cut at base and the bead bent to fit the desired form. Universal Bead will always be found a true line to guide the plasterer, and any person with a pair of tinner's snips can do the cutting.

THE ADJUSTABLE CLIP SAVES TIME

No need to use pliers or tools when erecting Universal Bead. The adjustable clip makes it possible to secure a quick and easy attachment to the wall. These clips are placed twelve inches apart and the head of each one is made to fill the entire body of the bead in such a way that it can be slid along to



any desired spot, thereby meeting the seams between brick and fire-proofing. When spread to the angle of a corner the action of this clip is to bind and lock; therefore it makes for perfect alignment and greatest rigidity.

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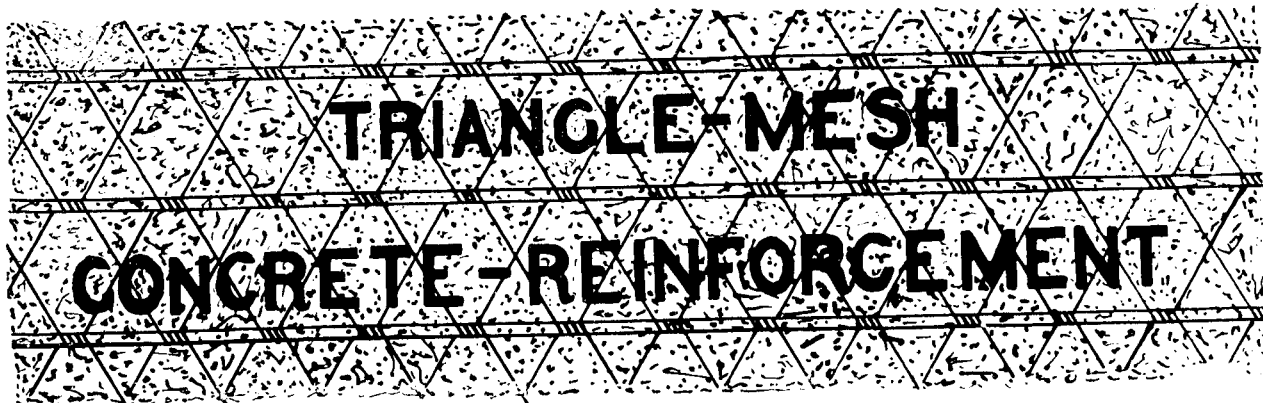
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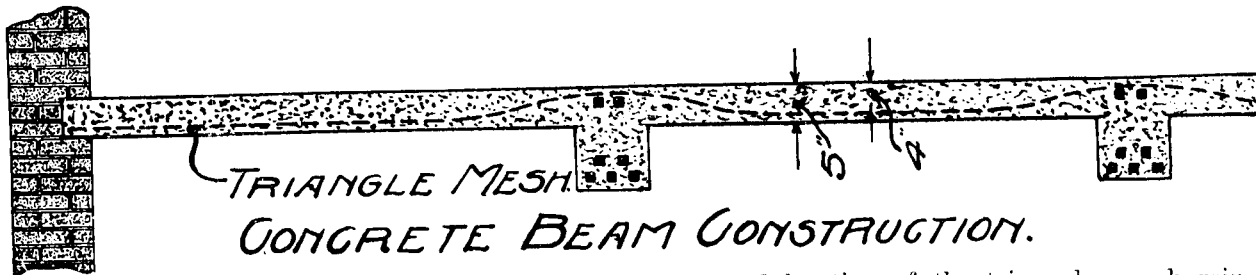
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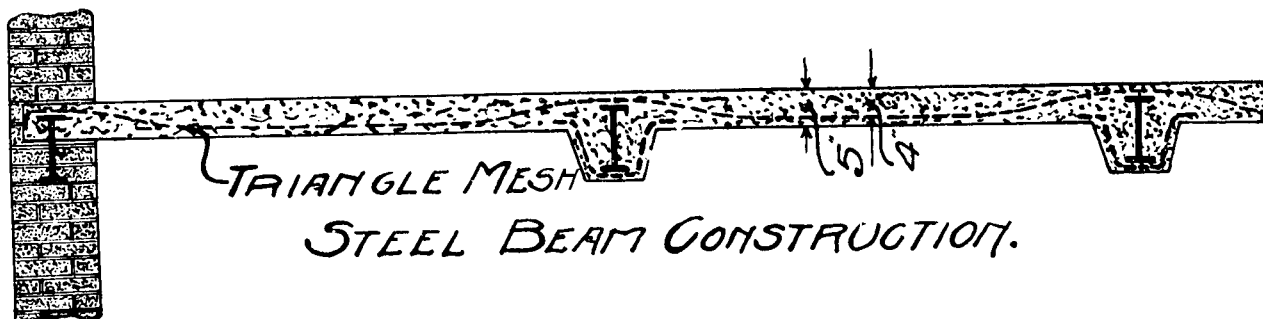
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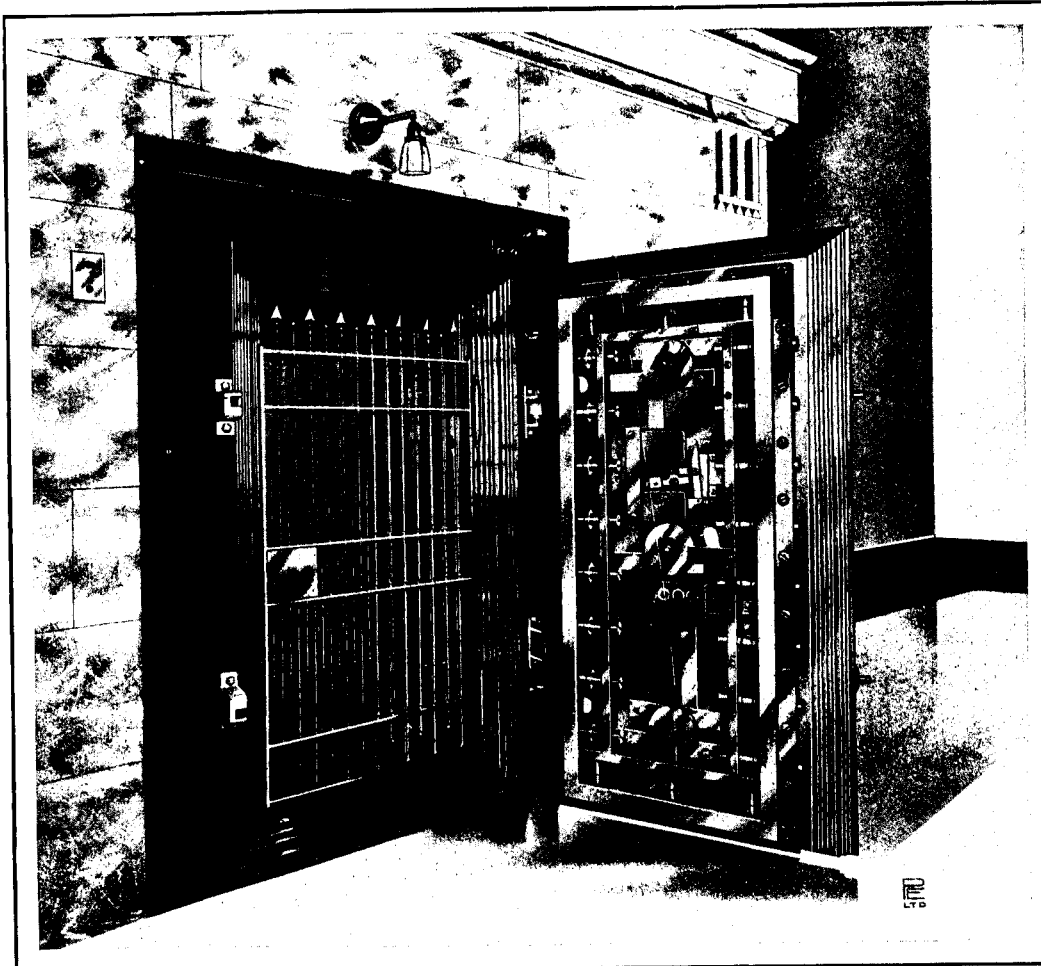


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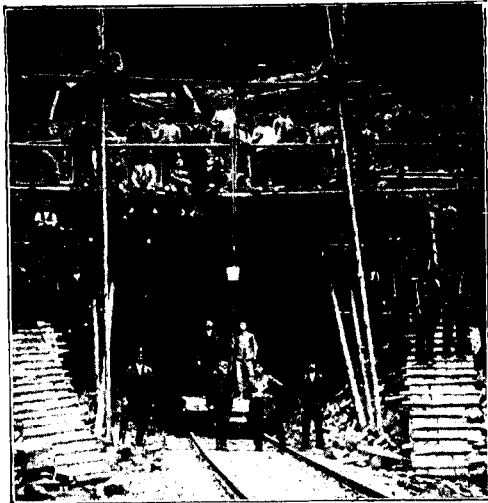
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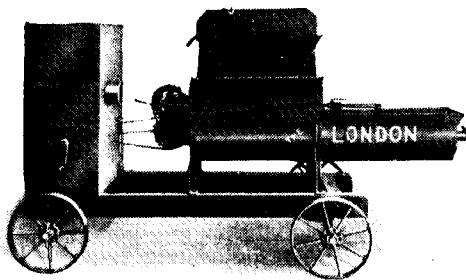
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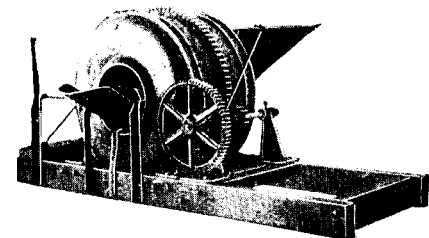
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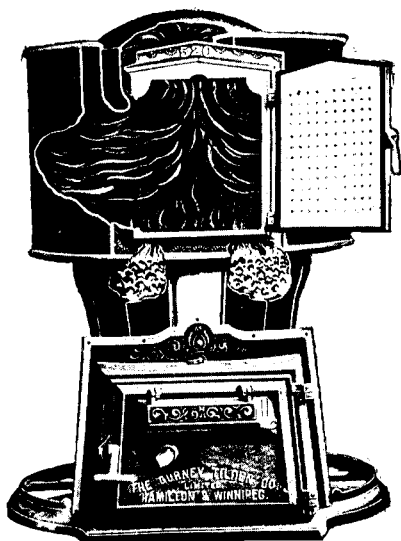


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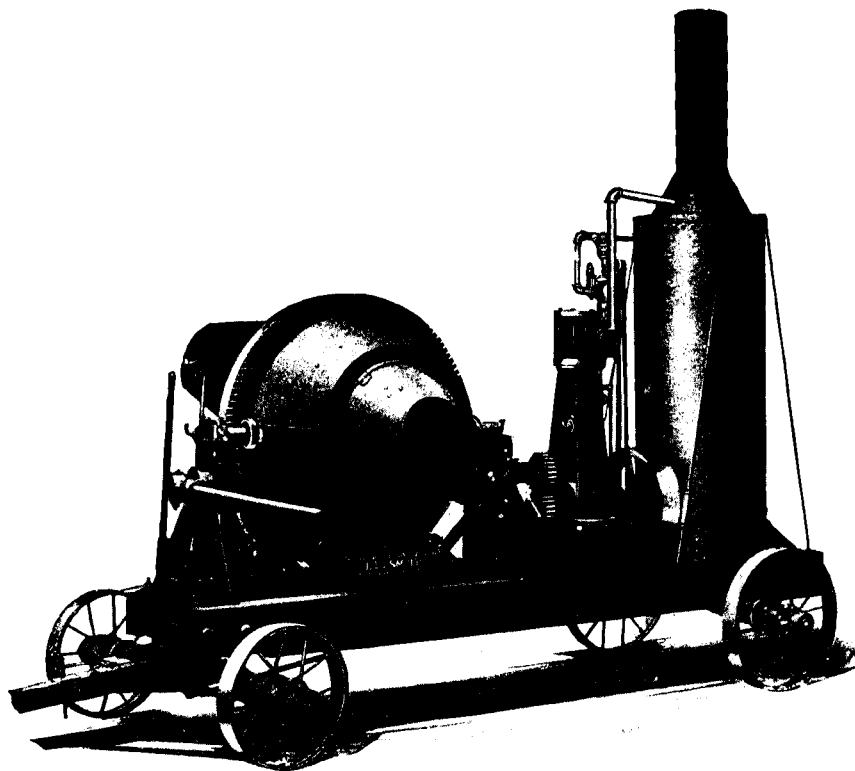
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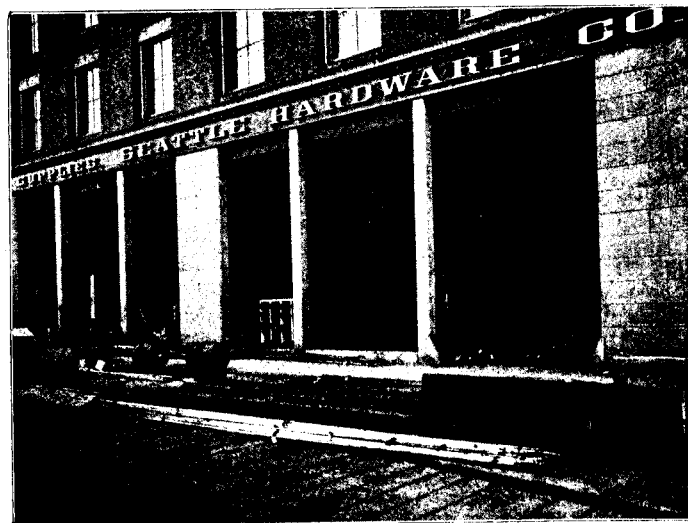
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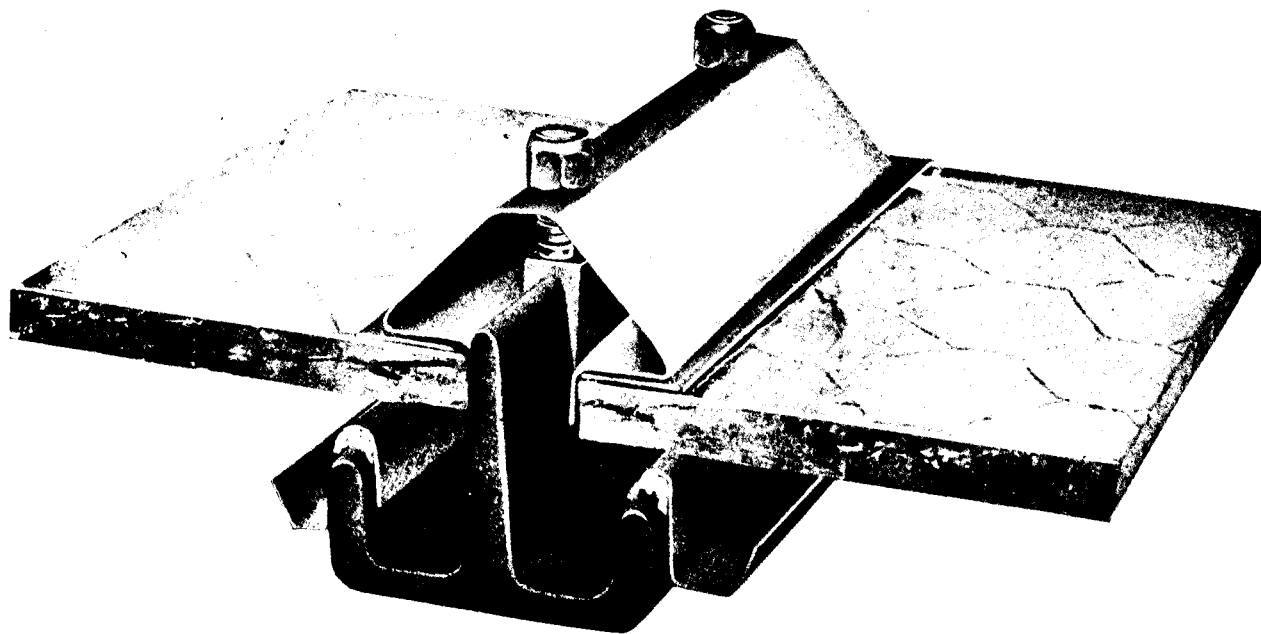
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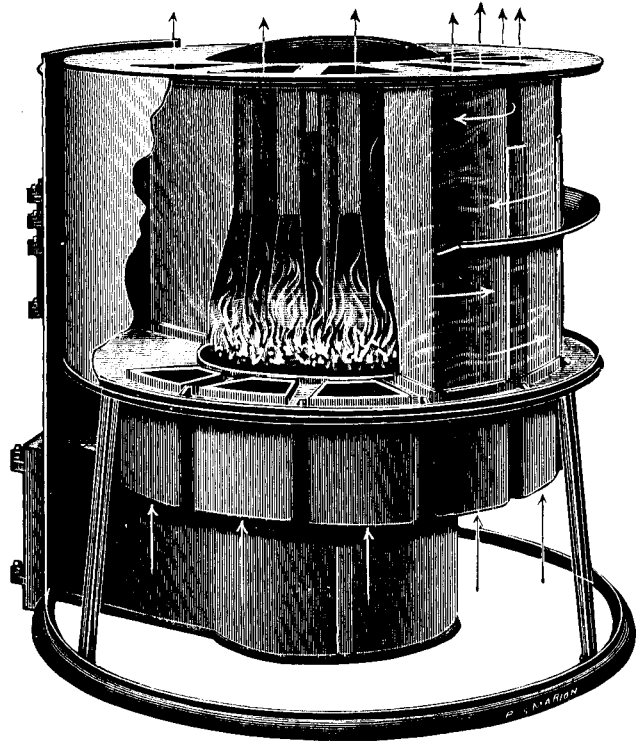
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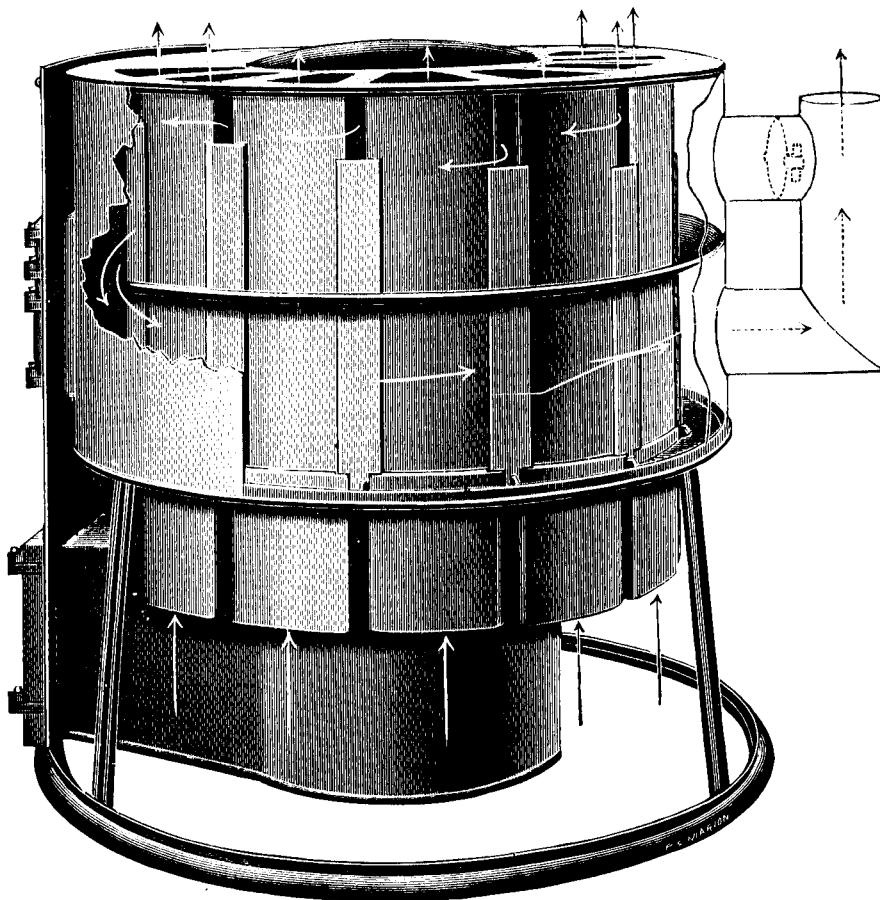
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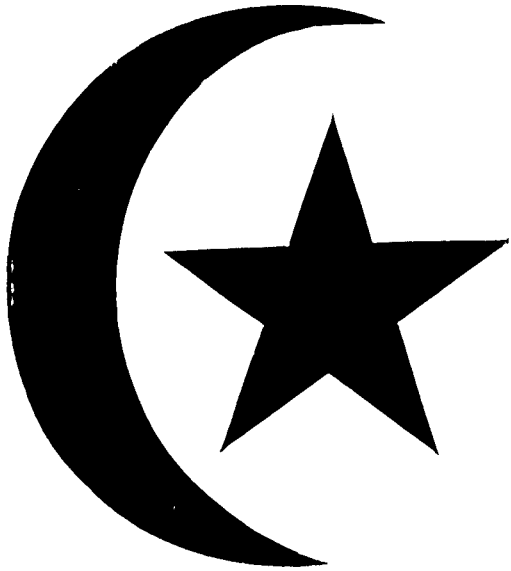
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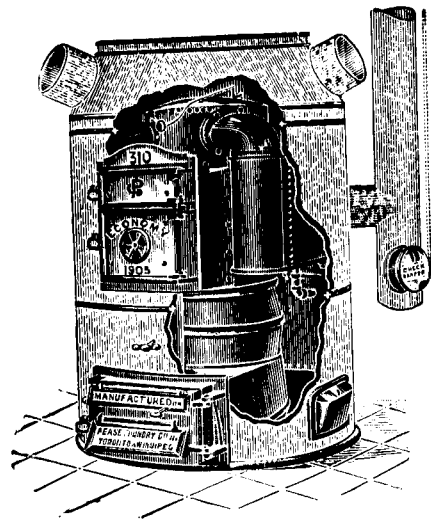
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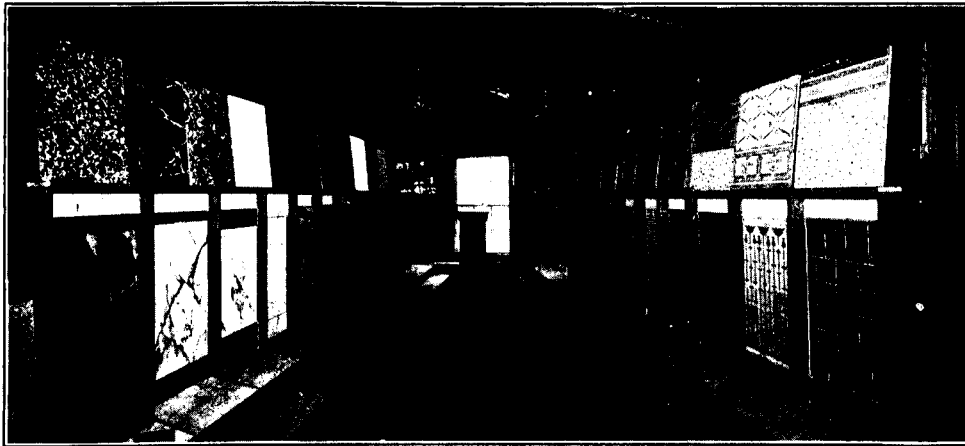
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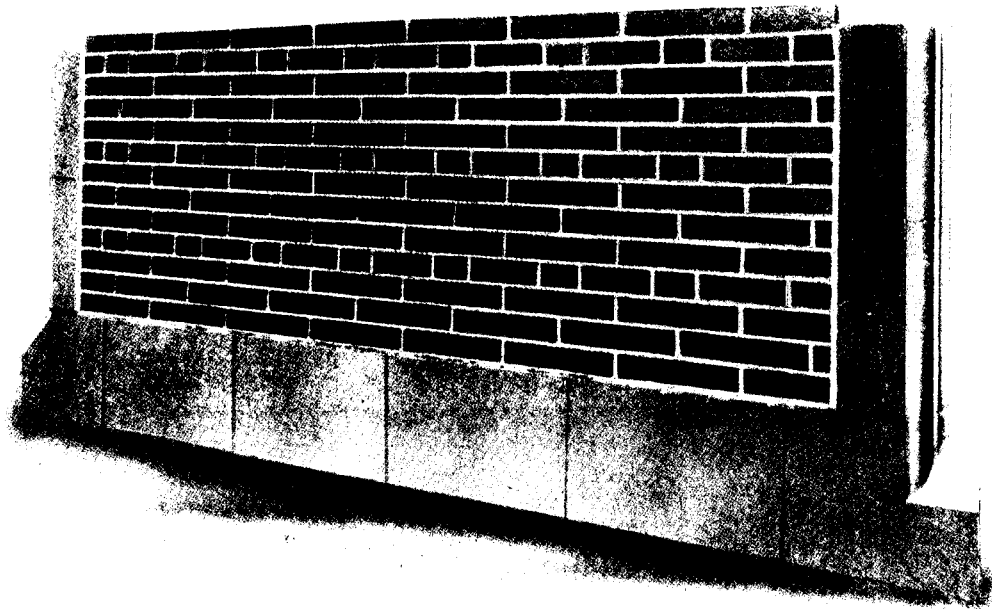
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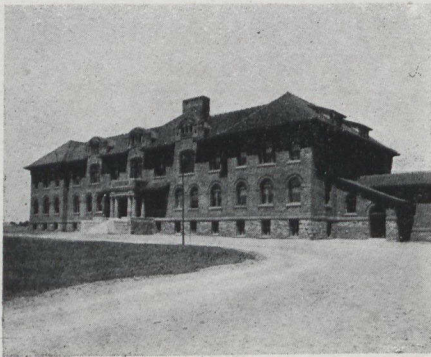
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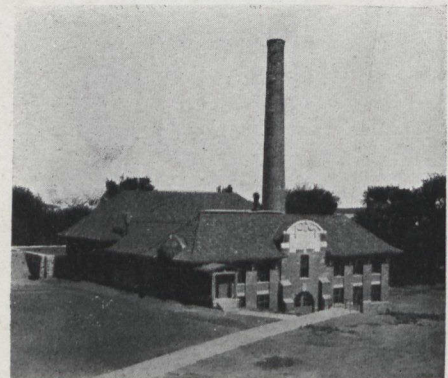
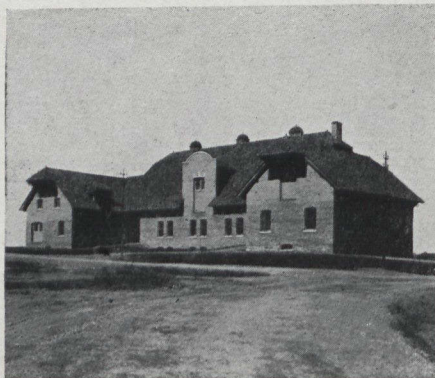
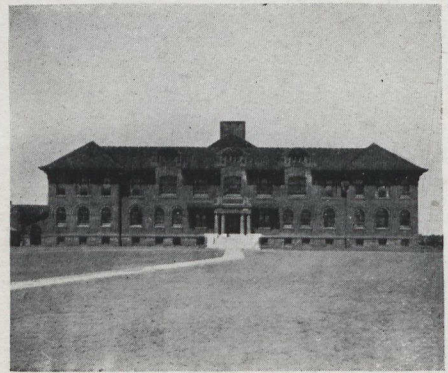
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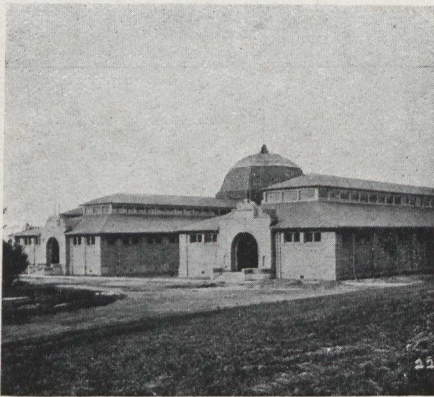
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New Horticultural Building, Canadian National Exhibition. George W. Gouinlock, Architect.

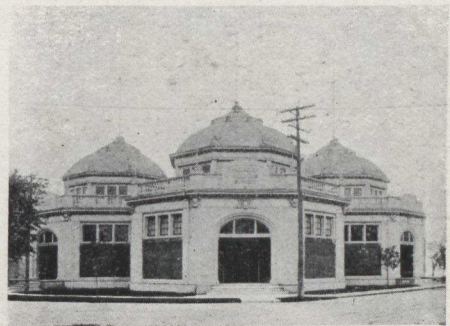


Process Building, Canadian National Exhibition. George W. Gouinlock, Architect.

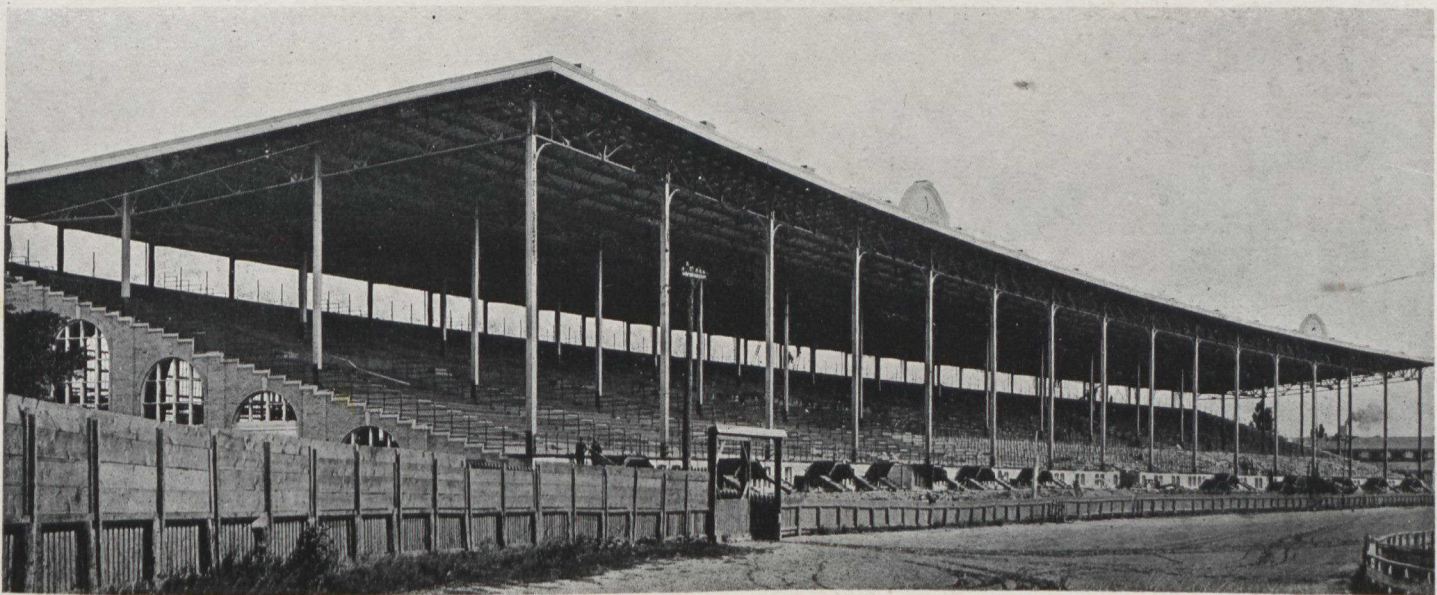
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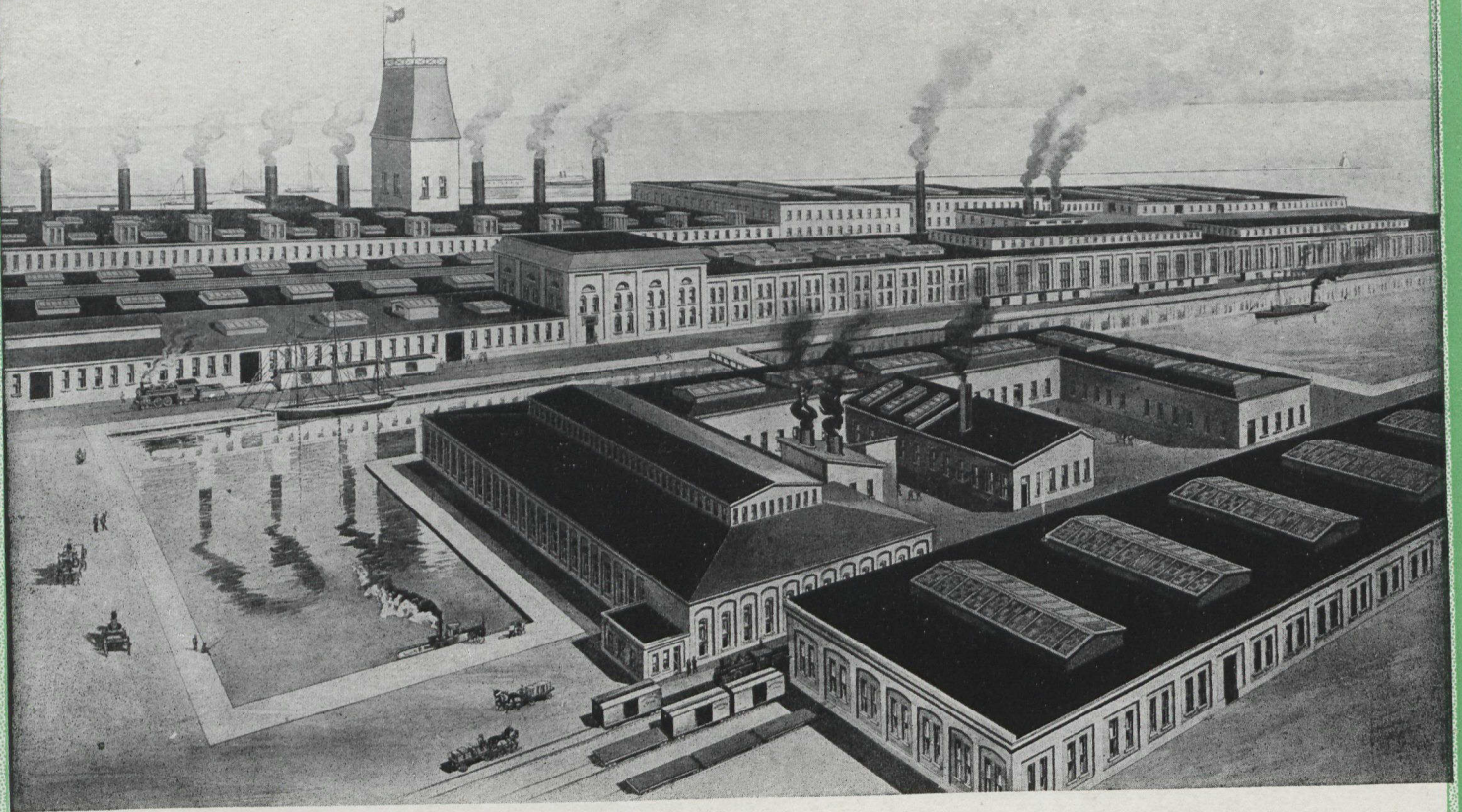


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CONSTRUCTION

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No. 6

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TERMS OF SUBSCRIPTION

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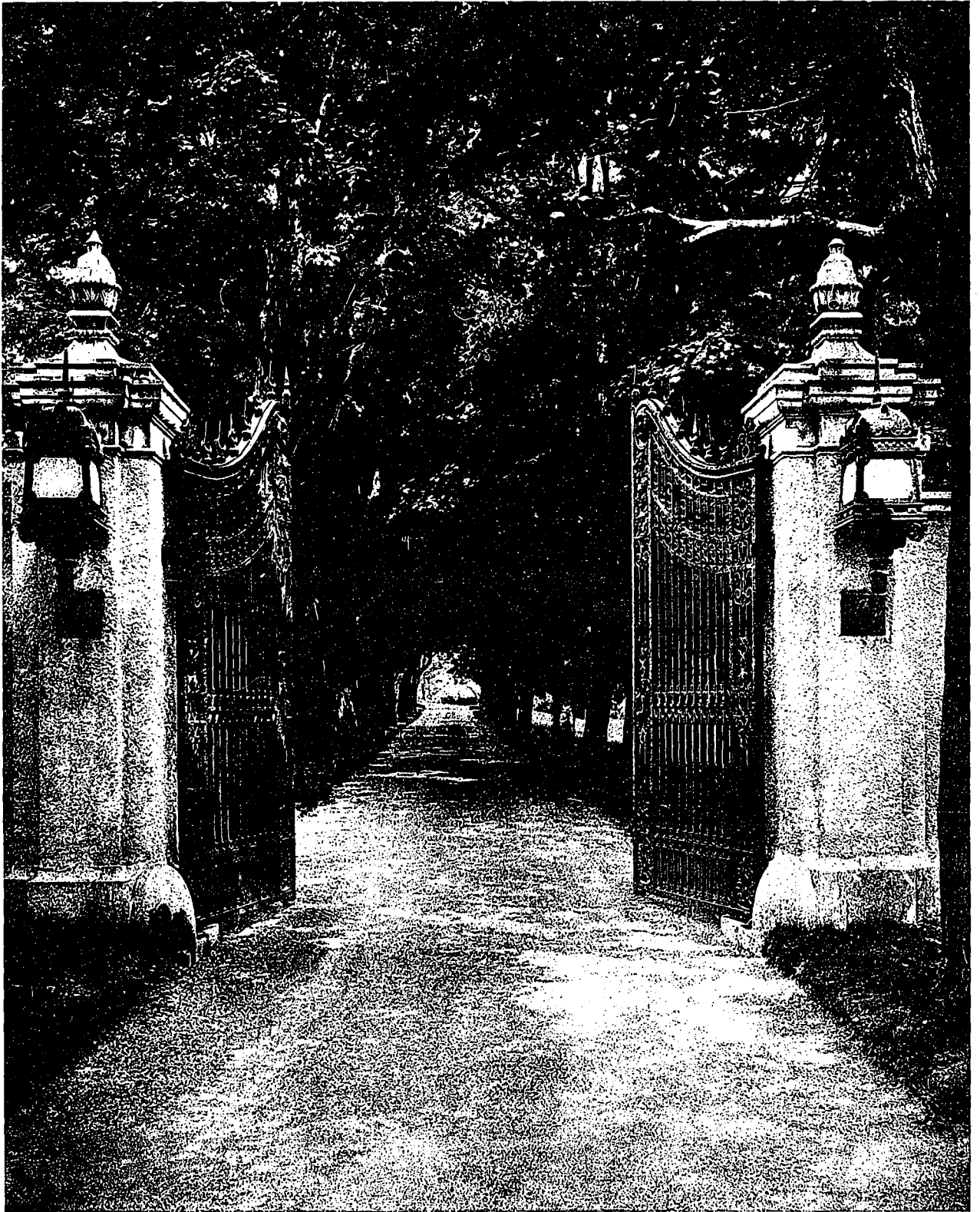
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Avenue of Approach, Residence of Wallace H. Rowe, Cobourg, Ont., showing detail of entrance gate to grounds. Rutan & Russell, Architects.

TERRA COTTA IN RESIDENTIAL WORK.— A New and Interesting Application of an Old and Well Tried Material.—Architectural and Constructive Possi- bilities in Fireproof Dwellings.

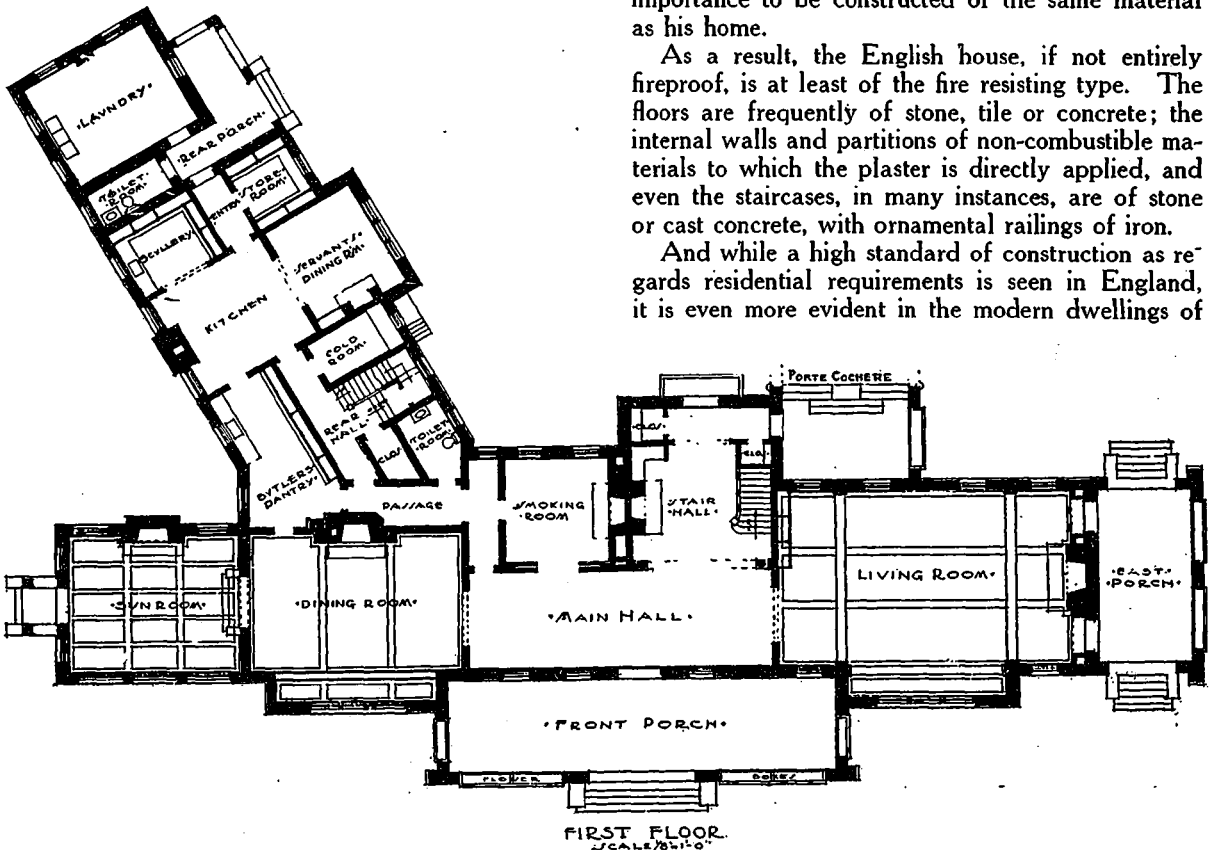
THE FIREPROOF or fire resisting residence, while not entirely unknown in Canada, is still as yet somewhat of a novelty. Homes of this type are in fact almost as scarce as the proverbial hen's teeth. As a country just awakening to its commercial and industrial possibilities, we have not been slow to recognize the value of fireproof structures to serve our business and governmental needs, and each succeeding year is witnessing a greater use of non-combustible materials in the erection of our office buildings, warehouses, factories, banks, hospitals and kindred institutions. Stricter building regulations and the economic foresight of a large number of prospective owners, have helped to make progress in this direction; but as regards residential structures, we still, as it were, "temporize" and do little or nothing to render our homes being other than a constant drain on the country's material resources.

As with the United States, where the fire loss amounts to a weekly average of over sixteen hundred residential buildings alone, we

squander needlessly each year, a sum that runs away up into the round figures. Each day the press brings its fresh list of fire destroyed and damaged dwelling structures. Permanency of material, both attributive and essential to the home, is something we too often fail to consider. At least, we do not consider the question of permanency and durability in this particular, as it is considered in England and European countries. Inconspicuous and modest as the English home may be, its walls, nevertheless, are built of brick or stone, or other equally substantial forms of masonry construction. The English house, again, when plastered, is plastered on the same permanent walls, and not over cheaply built wood frames, as is invariably the case in this country. Moreover, the roof is always of slate, tile or stone, and shingle for this purpose is never thought of for the moment. Wood, such as clapboards or shingles, is not employed on walls, in a dozen localities throughout the country, and then only for such structures as bath houses and sheds, and even these are generally considered by the owner, of sufficient importance to be constructed of the same material as his home.

As a result, the English house, if not entirely fireproof, is at least of the fire resisting type. The floors are frequently of stone, tile or concrete; the internal walls and partitions of non-combustible materials to which the plaster is directly applied, and even the staircases, in many instances, are of stone or cast concrete, with ornamental railings of iron.

And while a high standard of construction as regards residential requirements is seen in England, it is even more evident in the modern dwellings of



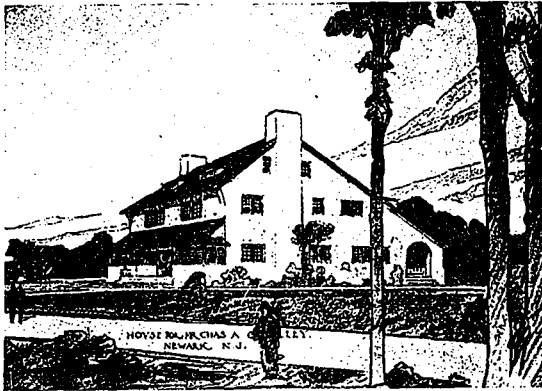
First floor plan, Residence of Wallace H. Rowe, Cobourg, Ont. Note the spacious dimensions and position of rooms. Rutan & Russell, Architects.



Residence of Wallace H. Rowe, Cobourg, Ont. This house is of fireproof construction throughout, the exterior and interior walls being of brick and tile, and the floors of combination hollow tile and reinforced concrete construction in long spans. The exterior is finished in concrete stucco with a pebble dash surface, cream white in color, and the roof is of tile. Rutan & Russell, Architects.

France, Germany and Italy. What is viewed as a serious fire in any of these countries, would be considered of infinitesimal proportions in Canada, so thoroughly indeed are the homes in Europe built. Germany, in particular, has made remarkable strides in the construction of economical, durable, fireproof dwellings, and the inexpensive, simple and sanitary class of workingmen's cottages produced in that country, like those of England, could be studied

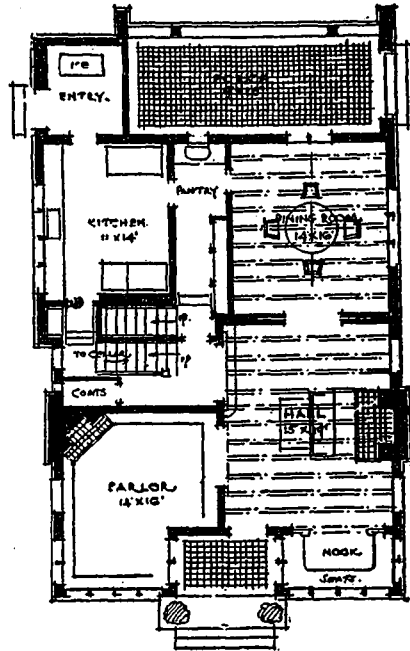
Another influence is the enactment of more rigid building by-laws and the extension of fire limits; and, although as yet these admit of a broad latitude for the use of wood in the construction of dwellings, wood itself has gradually increased in value until the cost has reached a figure which makes the



Residence of Charles A. O'Malley, Newark, New Jersey, showing an interesting architectural treatment in terra cotta construction. Squires and Wynkoop, Architects.

to advantage by any government engaged with the solution of a similar economic problem.

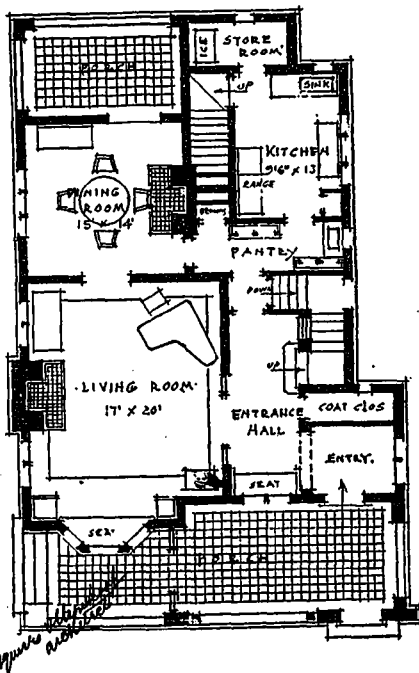
There are certain influences at work, however, that indicate an approach to a material betterment in the construction of domestic work in Canada. One of these is the interest the Government is manifesting to conserve the natural resources we possess,



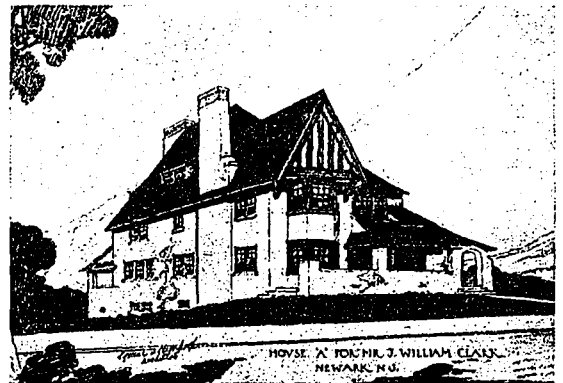
Ground floor plan of house owned by J. William Clark, Newark, N.J. Squires and Wynkoop, Architects.

substitution of a more enduring material advisable.

This has led, or is leading rather, to a greater use of non-combustible materials. The careful builder is beginning to consider the question of cost in relation to the permanency of his investment, instead of in the initial outlay only. Brick is more in demand than formerly, and substantial strides are



Ground floor plan, Residence of Charles A. O'Malley, Newark, N.J. Squires and Wynkoop, Architects.



Terra cotta construction as seen in house built at Newark, N.J., for J. William Clark. Squires and Wynkoop, Architects.

being made with concrete as a material; while another substance, quite new in this application, which is engaging the interest of a large number of architects and contractors, is terra cotta.

Although the use of this material for residential work on this continent antedates the present by but a couple of years, already a large number of terra cotta houses have been built in New York and

and the steps which are being taken to prevent the destruction of our forests, such as that which divested the United States of its great wealth in this respect.



Residence of Wallace H. Rowe, Cobourg, Ont. View showing porte cochere and garden front on north side of house. Rutan & Russell, Architects.

several of the more eastern States. When plans for the first dwelling of this kind in New York were filed with the Building Department, the authorities were somewhat at a loss to know as to whether the structure would meet the requirements of building

internal construction. But aside from its fireproofing qualities, another advantage of this form of construction—and by no means an unimportant one—is the fact that the blocks are so laid end to end that they form continuous air spaces. These air spaces render the walls impervious to heat and moisture, with the result that the house of this character is warmer than the average building in winter and cooler in summer. Hindrance in the transmission of sound is also likewise effected, and the danger of vermin is entirely precluded by the nature and density of the material itself.

The most common and economical floor of its



Home of H. J. Kelsner, Orange, N.J. A fireproof house with an attractive tile roof.

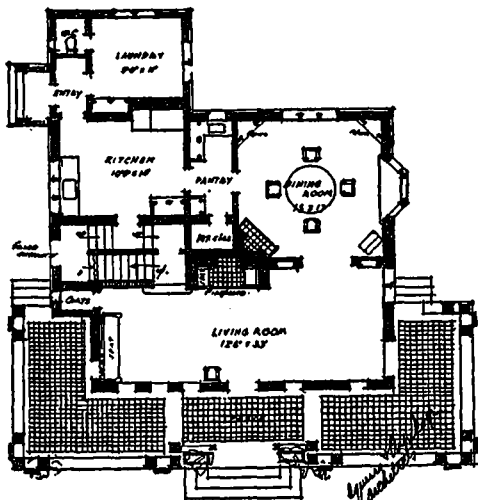
regulations or not. Upon investigation, however, the officials found that this clay material was perfectly safe. The owner of the proposed house was Amos Schaeffer, an engineer attached to the Public Service Commission, who has studied the unfamiliar style of construction thoroughly and found that terra cotta houses would serve all demands, both structurally and otherwise.

As it goes into the walls and floors, the terra cotta is in the form of hollow blocks, such as has

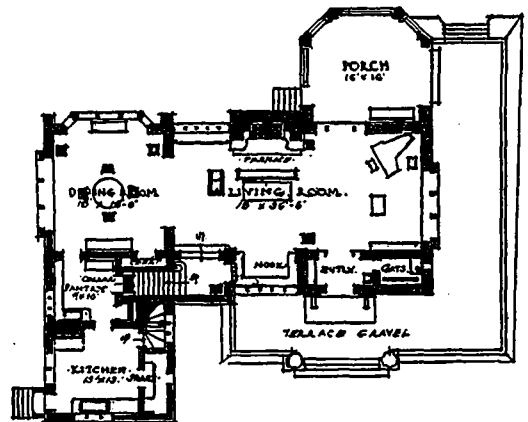


Residence of Kendall Banning, a house of terra cotta with unusually interesting roof lines and effective window grouping. Squires and Wynkoop, Architects.

kind, is one that contains both terra cotta and concrete in its construction, the concrete being used in place of beams. In carrying out the work a false floor of wood is set up with spaces between the planks at regular intervals. Over the open spaces are laid the terra cotta blocks in parallel lines in the position they are to occupy permanently, and the concrete is poured in between them. When the concrete has hardened the blocks are held immovable, and the floor is solid as any floor can be. Quite often the floor is reinforced in both directions, in



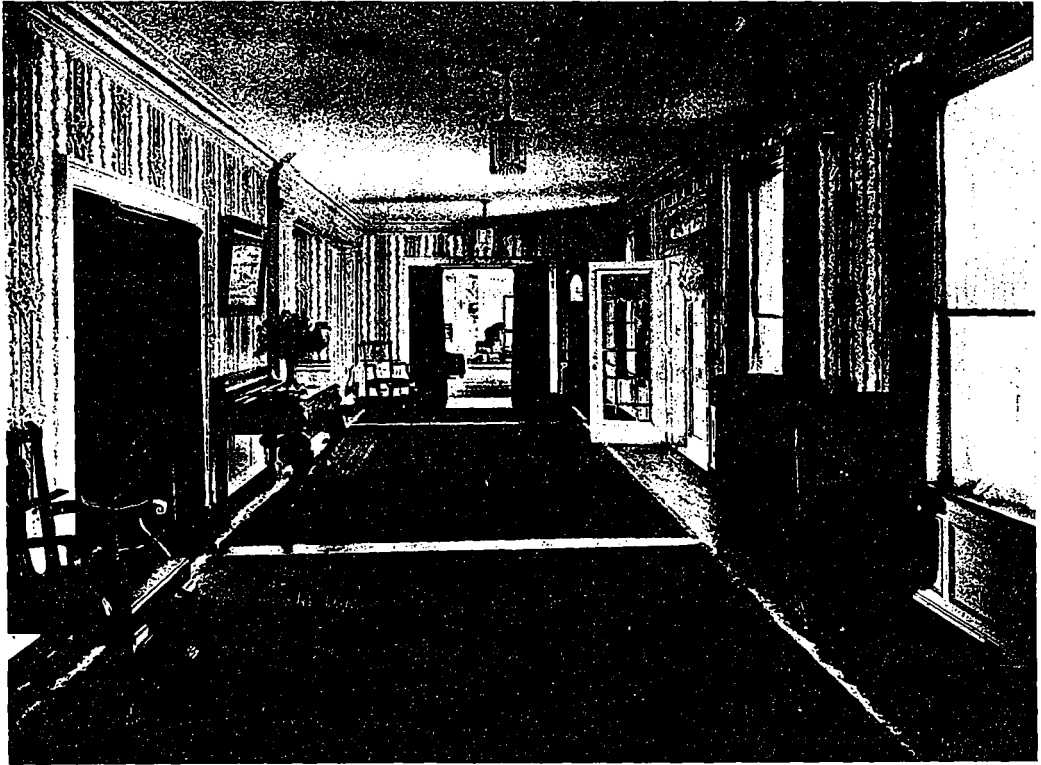
Ground floor plan, Residence of H. J. Kelsner, Orange, N.J.



Ground floor plan, Residence of Kendall Banning, showing the general scheme of rooms. Squires and Wynkoop, Architects.

been used for years in the fireproofing of large commercial structures. Only, in residential structures the heavy structural steel which forms a great item in the cost of large standard fireproof buildings is entirely eliminated. The only steel used in fact, is small tension members for reinforcing purposes. This effects a big reduction in cost, and makes it possible to build an enduring fireproof home, within the amount usually expended on brick and other masonry dwellings in which wood form the basis of

which case the transverse strain is taken up by a metal fabric running lengthwise of the arch, through which rods are interwoven at space four inches apart. A variation of this plan in the construction of the

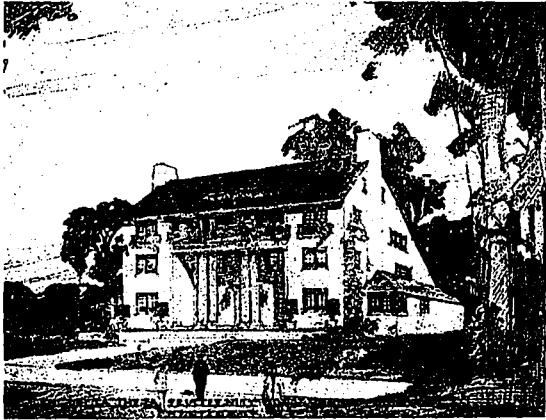


Main Hall, Residence of Wallace H. Rowe, Cobourg, Ont. A beautifully proportioned interior, with simple lines and a restful wall scheme. Note the absence of large or numerous wall hangings and the few well placed pieces of furniture. Rutan & Russell, Architects.



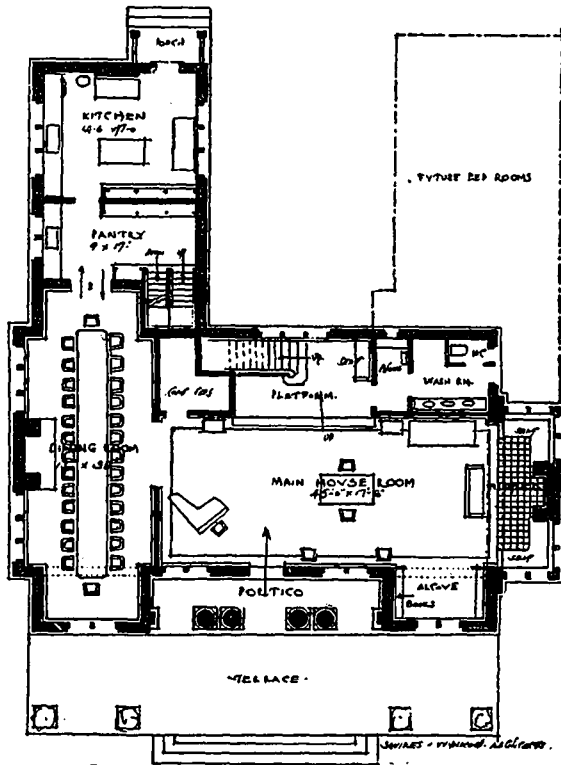
Dining Room, Residence of Wallace H. Rowe, Cobourg, Ont. A spacious room with good lines and simple decorations. Rutan & Russell, Architects.

upper floors is to extend the concrete, beams downward below the surface of the terra cotta. This creates the effect of a beam ceiling which can be treated with a coating of cement and tinted in any color desired. This method, of course, requires a



Terra Cotta House of the Phi Delta Theta Fraternity at Union College, Schenectady, N.Y. Squires and Wynkoop, Architects.

more complicated centering for the concrete than when the floor has both the upper and lower surface even. As regards the partitions, these are constructed in a similar manner to the exterior wall, only it is not required as a rule that they should be as great in thickness. A house carried out entirely in



Ground floor plan, Phi Delta Theta Fraternity House, Union College, Schenectady, N.Y. Squires and Wynkoop, Architects.

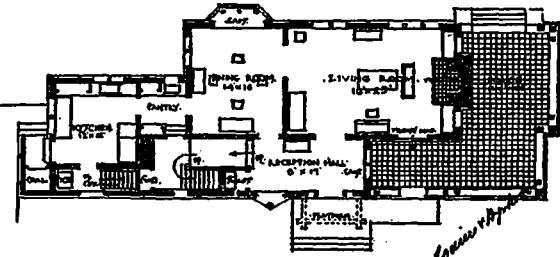
terra cotta is both fireproof from within and without; and in event of a fire starting on the interior it can be confined to the room in which it originated until extinguished.

Forming the illustrated features of this article are a number of interestingly designed houses in which terra cotta is the principal element of composition, in most instances the structure, with the exception of the roof, being wholly of this material. Notable among these is the fireproof residence of Mr. Wallace H. Rowe at Cobourg, Ont., designed by Messrs. Rutan and Russell. This is not a terra cotta house in its entirety, but one with exterior and interior walls of brick and tile, and floors of combination hollow tile and reinforced concrete in



Home of Edward D. Page, one of a little fireproof village on the outskirts of Orange, N.J. Squires and Wynkoop, Architects.

long spans. There is absolutely nothing in any part of the body of this structure to invite destruction by fire. The roof is of tile and the exterior is finished with concrete stucco, cream white in color and having a pebble dash surface. On the interior, where a most restful homelike effect has been obtained with large rooms having simple lines and harmonious color scheme, the house is finished principally in cream white painted woodwork, with mahogany base board and window sills. The scheme of design throughout, with two exceptions, is of a very simple form of old Colonial. These two exceptions are the sun room and den. The former has a beam ceiling of quaint design in Southern Georgia



Ground floor plan, Home of Edward D. Page, Orange, N.J. Squires and Wynkoop, Architects.

pine, and a large stone fireplace, both in keeping with the exterior character of the room. The den is carried out in a quaint treatment in Tyrolean design, with wainscotted walls and ceiling formed at angles, and marked with decorative carved beams and panels, while the surface of the woodwork has a rough hewn effect.

In the other houses, the exterior and interior walls and floors systems are wholly of terra cotta, with

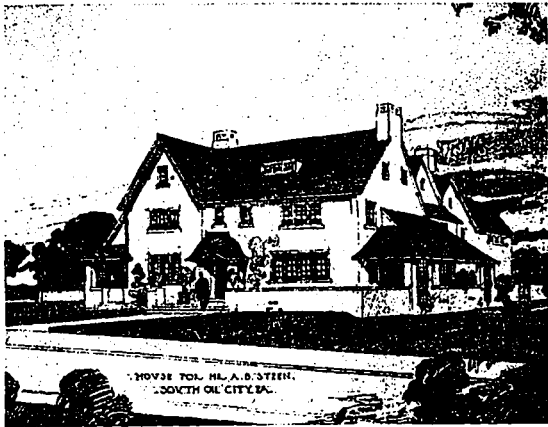


Residence of Wallace H. Rowe, Cobourg, Ont. View showing Sun Room projection and west grounds. Rutan & Russell, Architects.



Stable and Garage of Wallace H. Rowe, Cobourg, Ont. Like the residence, this structure is built throughout of incombustible materials. Rutan & Russell, Architects.

the exception of the residence of Professor James E. Lough, of the New York University, which was the first terra cotta house built within the confines of New York City. In this house the third floor has wood joist instead of fireproof beams, like those of the first and second floor. These illustrations



Residence of A. B. Steen, Oil City, Pa. Note the architectural possibilities of terra cotta, as shown in the general treatment of this exterior. Squires and Wynkoop, Architects.

serve to demonstrate the opportunity for architectural variation and adornment which this material offers. In this connection it may be mentioned that some of the handsomest country homes in the Eastern States are of this form of construction.

Of interesting design is the house of Mr. Edward D. Page, which is one of a little terra cotta village on the outskirts of Orange, New Jersey, built by the heirs to the Henry A. Page Estate. Each of these houses has from eight to ten rooms, and in one is a floor span of eighteen feet, the longest yet built in this type of construction. A similar undertaking has just been begun in Newark, New Jersey, on a



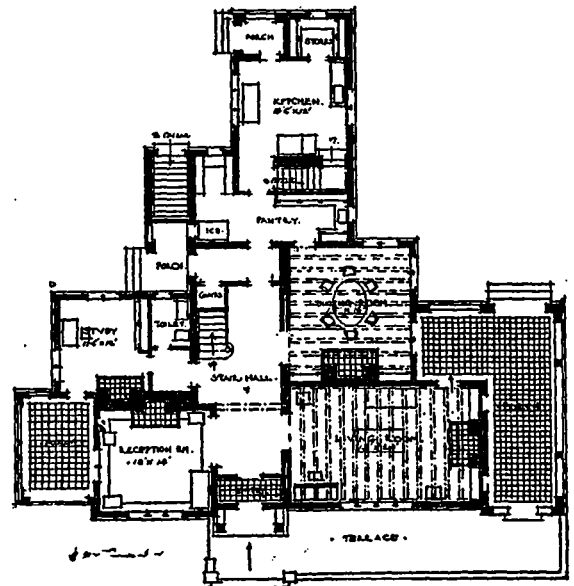
Home of Prof. James E. Lough, University Heights, New York, the first terra cotta house built within the corporate limits of that city. Squires and Wynkoop, Architects.

tract of land owned by J. William Clark, overlooking Brank Brook Park. One of the two houses already erected is shown in the illustrations. The floors, bearing walls and outside walls, are of eight-inch tiles, the non-bearing walls of three-inch tiles, the roofs are covered with slate and the interior finish and superfloors are of wood. The cost of the two houses is about nineteen thousand dollars.

The house designed for Mr. Banning is built on a concrete foundation, and is a long rambling struc-

ture, suggesting a modified farm house construction. The tiled roof is in four shades, running from orange to deep orange-brown near the eaves, and forms a very pretty contrast with the cement stucco wall surface. Equally as attractive is the house designed for Mr. Keiser, which is both picturesque and original in color and proportions. The long roofs are of convex tiles, dull red in color, and the walls are a rich cream. The house of Mr. A. B. Steen apparently has nothing about it structurally that can rot or depreciate; it is absolutely fireproof. This house demonstrates the freedom with which terra cotta adapts itself to design and plan.

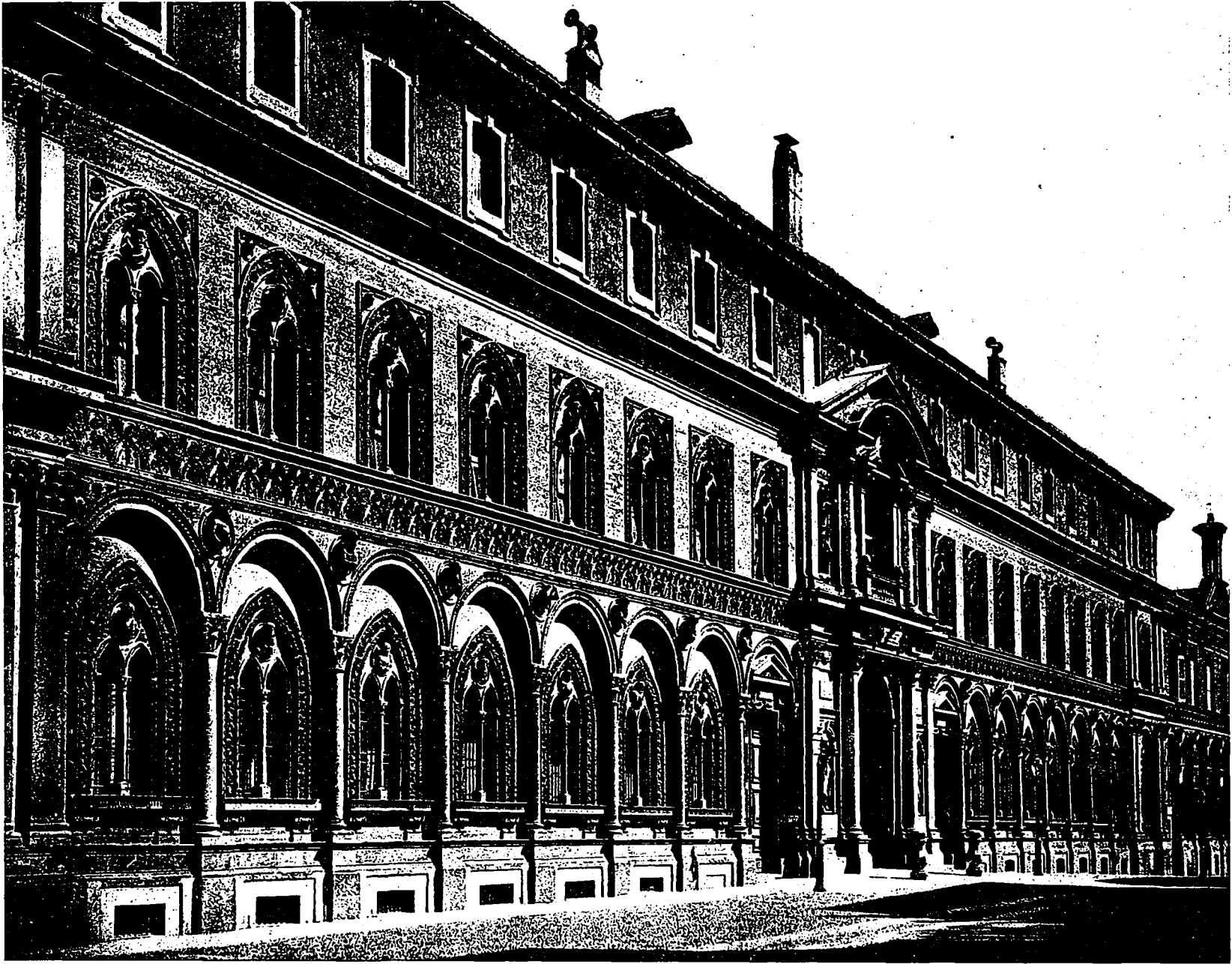
The other two structures shown also possess a strong element of interest, particularly the home of the Phi Delta Theta Fraternity at the Union College, Schenectady, N.Y. The exterior in both in-



Ground floor plan, Residence of A. B. Steen, Oil City, Pa. Squires and Wynkoop, Architects.

stances is finished with a cement stucco; although in this respect, it may be said, that several attractive houses have recently been erected in the United States where the terra cotta walls are left exposed.

As to the question of cost, the extension of the use of terra cotta to the field of domestic work establishes an exceptional opportunity for economic investment. A structure built, both within and without, entirely of this material, varies but little, if at all, in cost with that of any other type of masonry residence in which wood is specified for internal construction. Compared with frame construction alone, the cost is from 10 to 25 per cent. greater, but this difference is gradually being lessened by the constantly increasing cost of lumber and a broadening experience in the use of this more permanent substitute. Again, any disadvantage occasioned in the initial outlay is more than offset by certain definite economies which terra cotta make possible, such as a saving in painting and repair work, which the yearly deterioration of a frame house entails; also a saving in the cost of fuel, and last, but not least, the item of insurance, which is reduced to a minimum, and in most cases is required only for the furnishings and household effects.



Facade of the Maggiore Hospital, Milan, which accommodates more than 4,000 patients and was founded by Duke Francesco Sforza and his wife Bianca Marie in 1456, on the site of an old palace of Bernabo Visconti. It is one of the most magnificent examples of the brick and terra cotta work of the middle ages and was designed by Antonio Filarete.

CONSTRUCTION. MAY, 1910.

THE HOSPITAL MAGGIORE. MILAN.— Beautiful 15th Century Structure Which is Regarded as One of the Most Magnificent Examples of Brick and Terra Cotta Work Produced in the Middle Ages.

IN THE "OSPEDALE MAGGIORE" Milan not only rightfully lays claim to the largest hospital in the world but has, in this building, one of the most perfect examples of the elegant brick and terra cotta work of the middle ages. Italy was pre-eminently the home of brick construction between the Eleventh and Sixteenth centuries. The Lombard school solved the problem of combining it with details in marble and terra cotta as well as by inventing a wonderful variety of moulded bricks. Milan is one of the many cities in Northern Italy that are full of churches and town halls built in this style and the Great Hospital is Milan's largest and most beautiful example.

The Maggiore Hospital, which accommodates more than 4,000 patients was founded by Duke Francesco Sforza and his wife Bianca Maria in 1456 on the site of an old palace of Bernabo Visconti. It is a magnificent building of brick with terra cotta ornaments and is part Gothic and part Renaissance in style. The southern portion is the work of Antonio Filarete, the original architect. The rest was added in 1621.

In plan it is interesting and has served as a model for many other like buildings of an early date. The men are placed to one side in a central cloistered court which is 210 feet wide and 243 feet long in the clear, in a quadrangle 263 feet wide and 279 feet long, the cells being placed in the form of a cross of that size and 30 feet wide. In the intervals of the cross are four court yards on whose remaining sides are rooms for the assistants. On the opposite side of the cloistered court are placed the women. In the middle of the narrow side of the great cloister opposite the entrance is a church which serves for the whole establishment. The cloisters of the large court and main body of the building are in two stories so that they form galleries of communication. Possibly one of the features considered most noteworthy in this building by present-day designers is the series of pleasant promenades supplied by the corridors.

Lubke, in his "History of Sculpture," gives a very excellent description of the details of the exterior of this hospital. He says in part:—

"The immense facade owes its effect not merely to its unsurpassed wealth of ornament, but still more to its beautiful distribution and gradations; the brick style has never produced a more splendid and at the same time, a nobler creation. Briefly to recapitulate its principal features: Two rows of pointed windows, bisected by small columns. The common framework with its elegant decorations, above all with an arabesque of vine and grapes, interspersed with exquisite birds. In the upper arched compartment vigorously-treated half-length figures of male and female saints. The lower row of windows, enclosed by circular sham-arcades, resting on semi-columns. In the pendentives, half-length figures of saints, standing out in strong relief. Then the broad frieze, separating the two stories, decorated alternately with roses and branch work, eagles and angels' heads.

"Above, the windows of the lower storey are repeated with the same rich ornament, but in rectangular frames, and the compartments thus obtained are again adorned with heads in relief, so that four rows are presented of these heads and half-length figures. All this is executed with incomparable freshness and sharpness in the purest forms, and is a perfect wonder in clay sculpture. The twenty-nine arcades to the right of the principal portal are less richly executed than the seventeen of the left side. The heads in the upper windows are able and somewhat more realistic in style than those of the

upper parts, and here and there appear with a flowing and tolerably detailed beard. On the left side, the utmost abundance of ornament is displayed.

"Its terra cottas are perhaps the freest, most life-like and most important works which Upper Italy has produced in burnt clay. They bear the perfect stamp of the Sixteenth century. The male heads exhibit the utmost power; at the same time the treatment of the forms throughout is grand and bold. The female half-length figures are full and soft, beautiful, even voluptuous in the flow of the lines and in the mass of the falling hair; the Putti in the framework of the windows are full of life, freshness and grace. In addition to all this, there is the equally rich ornament of the large central court, executed a little later by Richini.

"In the upper and lower rows of columns, medallions fill the compartments above the arches, forming altogether no less than one hundred and fifty-two heads. The style here is feeble, and somewhat more conventional than even in the later parts of the facade, although a few very able works appear among them."

CONCRETE AND STUCCO IN MEXICO.— Recent Excavations Show Early Use of Materials.

THE USE OF CONCRETE AND STUCCO was common thousands of years ago, and recent excavations in Mexico have brought to light interesting instances of the utilization of concrete in houses and elaborate tombs. South-west, a few miles distant from the town of Oaxaca, is a range of hills on which are the remains of the great fortified city known as Monte Alban, which was probably the ancient capital of the Zapotecan empire. The entire region is filled with groups of mounds, showing it to have been a thickly-populated locality in former times. For centuries these mounds remained unexplored, until uncovered by the spade of Prof. Saville.

At Cullapa, seven miles south-east of Oaxaca, a series of large mounds and many stone graves were explored and excavated. The mounds varied in height from 10 to 75 feet, and some were 160 feet square. Some were in the form of a pyramid, others rectangular.

The rectangular mounds were found to be purely burial mounds and to contain the most important tombs, while the pyramidal ones were temple structures. Many had been ploughed over, which had destroyed their original shape, and trees were found growing over several of the tombs. In one instance a ploughed field under cultivation was above a tomb.

Excavations showed that nearly all the mounds contained tombs beneath. The front wall of each tomb was in the form of a frame of stone in which were found on several occasions, as many as five terra cotta funeral urns painted red and having a death's head mask made of stucco. The urns were fastened against the wall with cement.

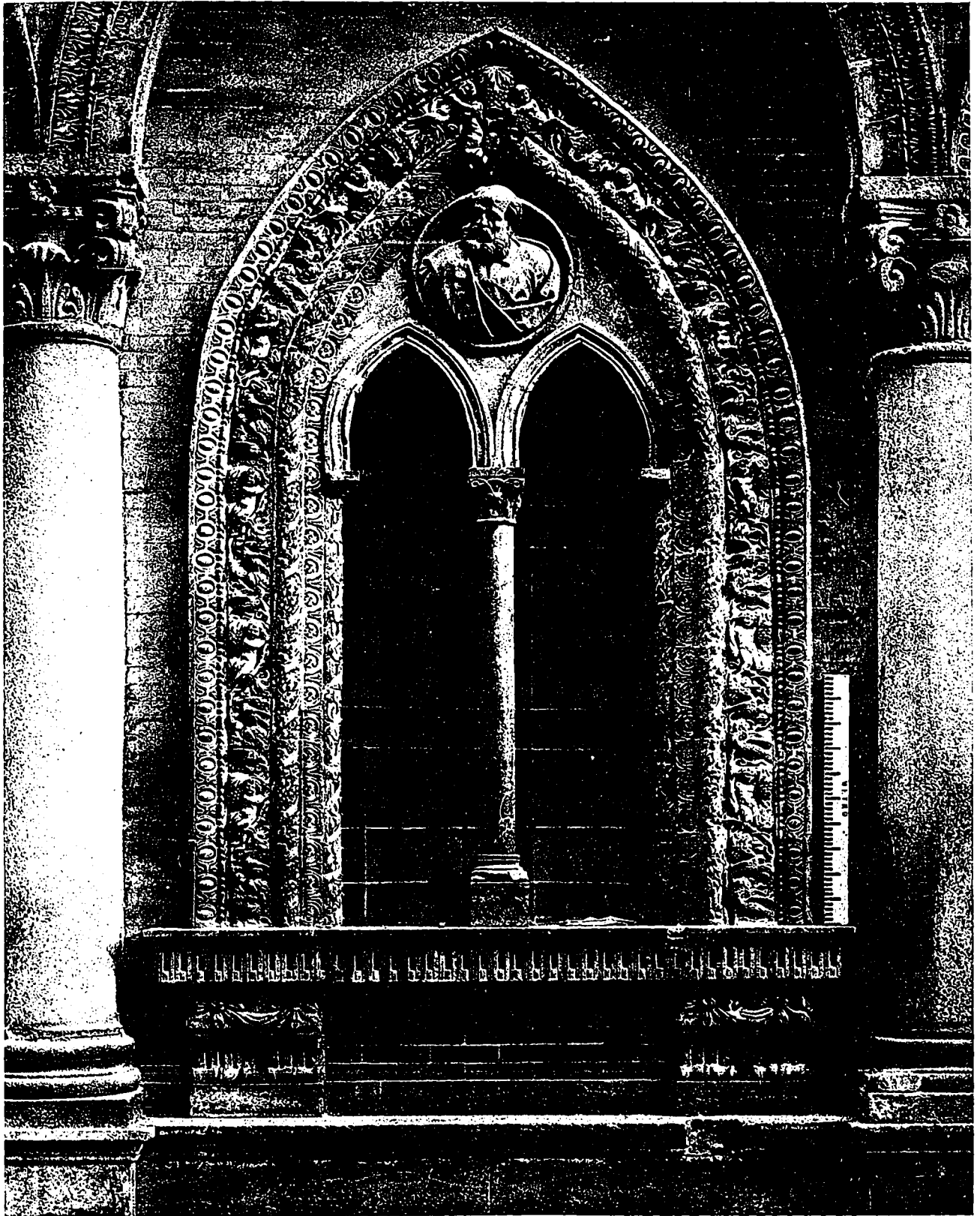
The tombs were built of huge masses of stone, nicely dressed and covered with cement and stucco, painted red. The lintel over the entrances consisted of a long block of stone painted red, and the doors of the tomb were sealed by large stone slabs.

A peculiar feature found in excavating was the cement floors, which were covered with votive offerings in the shape of food vessels, incense burners and the remains of human bones and skulls. These were painted red.

That these were the burial places of persons of rank and wealth was indicated by the mural paintings which once covered the entire walls, together with the great number of rich patite ornaments and other votive offerings. Other interesting objects in these great Zapotecan tombs were the series of strange funeral urns.



Detail of the Facade of the Maggiore Hospital, Milan, showing its unsurpassed wealth of terra cotta ornament which is a perfect wonder in clay sculpture. These decorations in terra cotta are declared by critics to be the freest and the most lifelike and important work which upper Italy has produced in burnt clay. In the entire facade there is no less than 152 heads.



Detail of one of the lower pointed windows of the Maggiore Hospital, Milan, showing bi-secting columns supporting the sham arches. The common frame work with its elegant decorations above all with the narrow space of fine leaves interspersed with exquisite birds. The head in the window shown here gives some idea of the freshness and sharpness of the work, which is most realistic in style, as is demonstrated in the flowing and detailed beard in the medallion.

THE SEVEN CHURCHES OF CLONMACNOIS.—Famous Ruins of Early Ecclesiastical Edifices in King County, Ireland.—Interesting Notes on the Various Structures, Together with Dates of Erection, and Names of Builders.

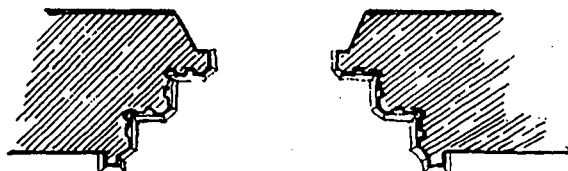
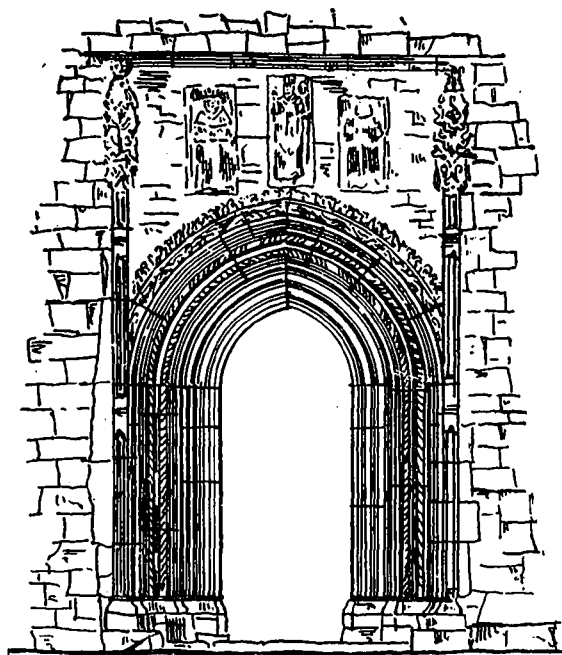
A RECENT ANNUAL REPORT of the Government Board of Works for Ireland, illustrates and throws much additional and interesting light on the famous "Seven Churches of Clonmacnois," the ruins of which are described as being situated on the Shannon, in King County, near the centre of Ireland. A monastery or religious city, says the report, was founded here A.D., 545-548, which rose to great importance though its foundation was also accidental and its founder gave it no fostering care. St. Kieran, "Mac an t Saor," "Son of the Carpenter," as he was named from his father's occupation, had settled as recluse on Inis Ainghin (or Hare Island in Lough Ree), and conceived the idea of founding a little wooden church and cell lower down the Shannon, at a lonely spot called Cluan Maccunios, Clonmacnois, Ard Tibra, or Drom Tipraid. While engaged on the work he was found by a fugitive, Prince Dermot, who aided him to set the first posts of the church, thereby earning his blessing and a prophesy of coming honor. Soon afterwards Dermot was elected King of Ireland, and endowed the establishment. The place grew in fame and learning, and many churches and villages of huts were crowded round Kieran's cell. It suffered often from plunderers and destroyers, both Norse and Irish, having been ravaged six times between 834 and 1012, and burned at least ten times between 719 and 1082 and twenty-six times from 814 to 1204. The Norse King, Turgesis, in his attempt to break up the Irish Church in 845, enthroned his wife, Ota, on the altar in the chief church at Clonmacnois, whence she gave her oracles. It was plundered by the subjects of Donough O'Brien in 1042, but he punished the culprits, and made amends to the monks. The Normans did violence to it several times about the year 1200.

Omitting mere sites and foundations, there remain two round towers, three crosses of large size and elaborate sculpture, eight churches, a castle, and two holy

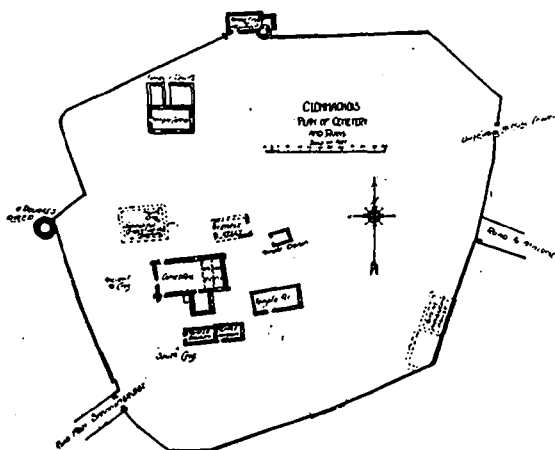
Bishop's Chapel." There was also (13) another church near the castle named after "Moreig O'Duffy."

The ruins, with the exception of the Nun's Church, are grouped together, the Castle lying near the river, the others included within the graveyard, in which so many princes, prelates, and sages lie buried.

To turn to the records of the buildings, the Aglish Beg or Temple Kieran was reputed to be on the site of that church founded by the patron about 545, and covered



Elevation and plan of North Doorway of Cathedral.



General plan of cemetery and ruins, Clonmacnois, King County, Ireland, showing the location of the various buildings.

his tomb. It is a very small early cell. In it were found the two beautiful bronze and silver Irish croziers now in the collection of the Royal Irish Academy. It was an oblong oratory, not rectangular, over twelve feet long and eight feet wide inside the walls, which are about two feet thick. It had an antæ at each corner, but the south-western one and part of the rude west door have been rebuilt.

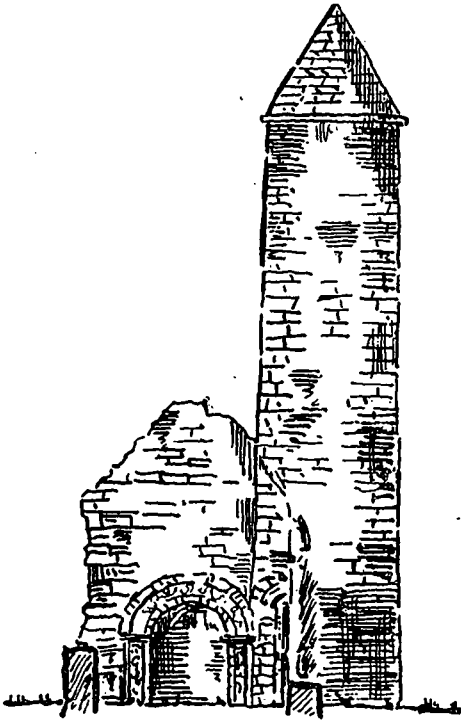
The great Church or Cathedral was restored about 910 by the Abbot Colman MacAillel and the High King Flan, son of Melachin. They also erected the High Cross near it, still inscribed with their names. This church was again restored by Cormac, son of Conn m bocht and Flaherty O'Lynch, between 1080 and 1104; by Tomaltagh MacDermot in 1330, and by the Dean Odo, whose name appears above the elaborate north door, about 1460. It was destroyed by the English in 1552 and again restored by the Vicar-General, Charles Coghlan, in 1647.

wells, and some 200 inscribed tombstones and fragments. The churches are:—(1) The Cathedral, (2) and (3) the conjoined churches of Temple Hurpain and Temple Doolin, (4) Temple Ri or Melaghlín's Church, (5) Aglishbeg or Temple Kieran, (6) Temple Conor, (7) Temple Finghin or Finian, and (8) the Nun's Church. The sites of former churches are (9) "Temple Killen," (10) "Temple Kelly," (11) "Temple Ganly," and (12) "The

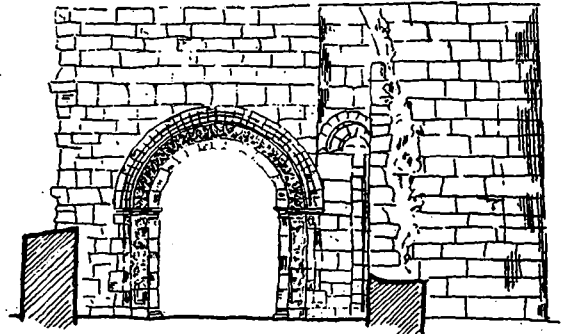
The Cathedral, also called Temple Dermot, Temple Coghlan, and in older times "Damhliag" or stone church, hardly retains any suggestion of its early date save in the projecting antæ. Here was buried Roderick, the last native King of Ireland (died 1198), and his father, King Turlough. It is an oblong structure, measuring 62 feet by 28 feet 8 inches inside. It had a curious arrangement in the chancel, which divided by pillars into three vaulted chapels. The attached piers and groinings at the sides alone remain. The other internal details are plain, but the west and north doors were elaborate on the outside; the northern is richly moulded with figures of St. Francis, St. Patrick, and St. Dominic, and a commemorative

has been modernized, and is still used as a Protestant place of worship.

Temple Killen, a levelled church barely traceable to the east of Temple Finghin, was built before 968. The causeway from it to the Nuns' Church was made at two



Elevation of Chancel Arch and Tower, St. Finlan's Church.



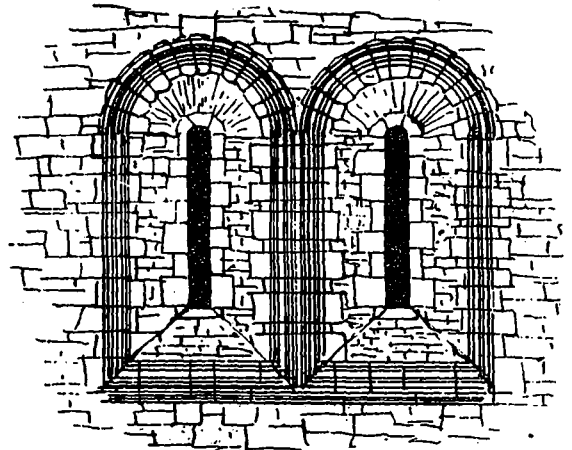
Detail of Chancel Arch, St. Finlan's Church.

periods—the first, the eastern portion, from the Nuns' Garden to the Cairn of the Three Crosses, in 1026; the second, westward "to Cros Chomgail at the entrance to the street," in 1070.

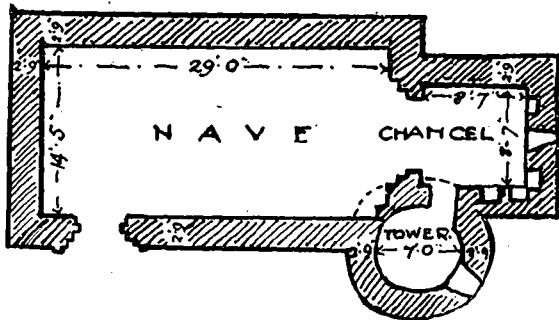
St. Finlan's or Finghin's Church, or Regees Finghin or Finian, is mentioned in 1015, when the great storm overthrew its oak tree, but the neighboring walk of Tober Finghin and a cell near it have records from 610 which probably refer to the church site.

This church embodies at the intersection of its nave and choir the unique and finely built Round Tower called "Clogas Beg" and "MacCarthy's Tower." The church consists of a nearly levelled nave and a well preserved early chancel, 8 feet square. The choir arch has three orders, two probably of the late eleventh century, the innermost much later. The tower has been deeply cut into in order to square the angle of the nave. It is a disputed question whether it is not earlier than the church in

inscription overhead to Dean Odo. There is some delicate carving on both doors, with foliage and small dragons. The east gable has fallen, and also most of the west gable, with the arch of its door. At the south is the vaulted sacristy, with an apartment over it having a curious octagonal chimney and window-like slits for the smoke.



Interior Elevation of Window in East End of Temple Ri.



Ground plan, St. Finlan's Church and Round Tower, Clonmacnois.

Temple Conor was probably built in 1010, when it was endowed with lands by Cathal O'Connor. The west door and south window, still existing, belong to that time. It measures 42 feet 8 inches by 26 feet 6 inches wide, and has a burial enclosure to the north. The church

which it is embedded. It is certainly not an afterthought, and seems (despite assertion to the contrary) to be contemporaneous.

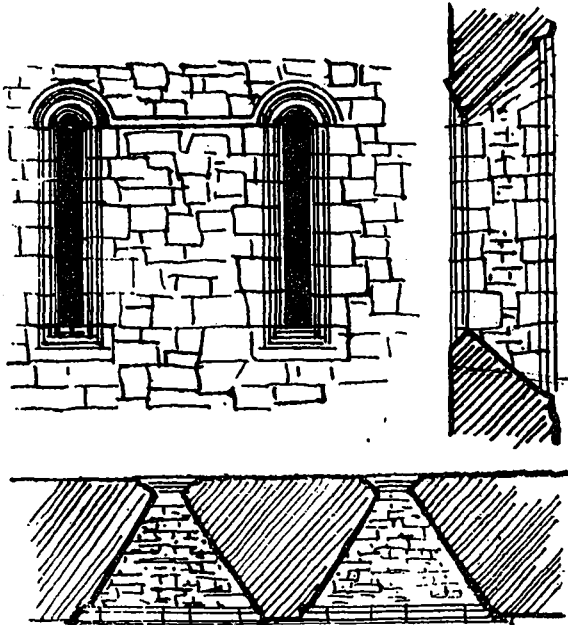
Temple Kelly, now also levelled, was probably the church built in 1167 by Conor NaCeallaigh, Chief of Hy Many, on the site of the older Hospital of Isill Kieran.

The Great Round Tower is attributed to Fergal O'Rourke, who was slain in 946. The Register of Clonmacnois says "he built a small steep castle or steeple called the Irish Claitheugh," at least he repaired it, and it was further restored after its partial destruction by lightning in 1134.

The Round Tower called "Clogasmore" and "the Steeple," is, for the most part, of finely fitted ashlar. It

is over 60 feet high and 58 feet 8 inches in girth; the roundheaded doorway is 11 feet above the ground. The upper storey has been rebuilt roughly; four of the older storeys remain, so probably three were destroyed. Its base is slightly out of plumb, and overhangs a few inches.

Temple Hurpain and Temple Doolin, or MacLaffy's Church, lie to the south, the latter having been attached



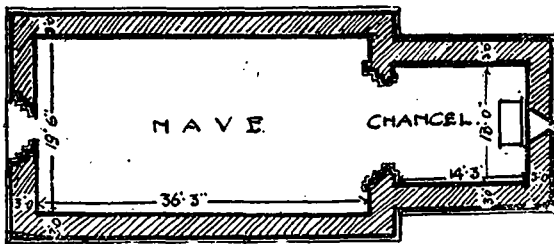
Exterior elevation, section and plan of window in east end of Temple Ri.

to the east end of the former. The older church measures 31½ feet by 16 feet inside; it retains the antæ side walls and simple round-headed east windows, with the gable of a very early Celtic oratory. A late pointed door was inserted in place of the original western entrance in 1689, about which time was built Temple Doolin, a plain building, measuring 22 feet 10 inches by 12 feet 9 inches inside; the whole is 57 feet 3 inches long.

Temple Melaghlin, or Temple Ri, lies to the north-east of the last, and south-east from the Cathedral. It is a plain oblong 12th century building, 41 feet by 17 feet 8 inches inside, the walls being about 3 feet thick. The double east window has round heads with shallow mouldings round the arches and piers, and wide splays.

The church has a gallery at the west end; the south window is pointed.

To the west of this group of churches stand two high crosses. "The Cross of the Scriptures," as appears by a



Ground plan of the Nun's Church.

defaced inscription, was put up by Flann, son of Melachlin, and King of Ireland, and the Abbot Colman, about 908. It has the unusual feature of the ring being an entire circle on each face, and shown as held by two plaques. The faces and sides are decorated with carvings of the Crucifixion, the Last Judgment, and scenes

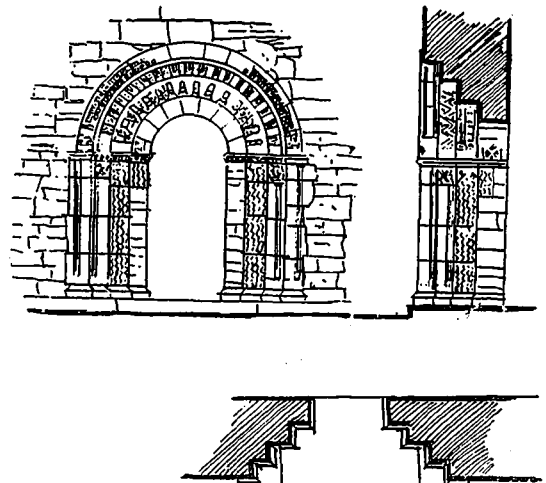
from the Passion. One panel probably represents St. Kieran and King Dermot setting the first post of the church. A procession of chariots appears on the base. The second High Cross, near Temple Hurpain, is mainly covered with interlacings and other decorations. It has also a carving of the Crucifixion. A worn shaft of a third cross stands to the north of the Cathedral.

The Normans in 1212 built a castle at Clonmacnois, probably the site of an earthwork called Lis-an-Abbaid, the residence of the Abbot, which had been burned on Easter Day 1135. The King ordered compensation to be paid to the Bishop in 1216 for damage done to his lands and gardens by the construction of the fortress. The castle stands to the west of the cemetery in a square entrenchment. It consists of a rudely built keep, courtyard, and gateway. One of the turrets has fallen against the main building, evidently from the result of an explosion.

The ancient causeway leading to the Nuns' Church is still fairly complete. Near it was discovered evident trace of the "Cairn of the Three Crosses," in which was found a slab inscribed, "Oriot, an Thurcain las andernad in Chrossa," a prayer for Thurcan who made this cross.

The nuns' Church stood before 1026, and was repaired by the ill-starred Dervorgilla, wife of Tierman O'Rourke. After 1170 she retired to it a penitent, and there died and was buried. The architecture, however, seems to belong to the period about 1100.

The Nuns' Church consists of a nave and chancel— nave 36 feet 3 inches by 19 feet 6 inches, and chancel 14



Elevation, section and plan of West Doorway in Nun's Church.

feet 3 inches by 13 feet 3 inches. It retains its richly carved west door and chancel arch, dating from about 1100, with chevrons and beading, enclosing fantastic heads and a small sheelanagig or lock-bringing grotesque. The chancel arch was on the point of falling in 1738; it afterwards fell, and was restored by the Kilkenny Archæological Society (now Royal Society of Antiquaries) in 1866.

The final blow fell on Clonmacnois (after a long period of obscurity as a Bishop's See and Abbey) in 1552, when the English blundered and dismantled the churches and carried off the bells out of the Cloitheach.

Slight attempts to repair the Cathedral and Temple Hurpain were made respectively in 1647 and 1689, and some of the most judicious restoration was carried out by Reverend James Greaves, Hon. Secretary of the Kilkenny Archæological Society (now the Royal Society of Antiquaries of Ireland), in 1865.

Clonmacnois was vested in the Board of Works in 1880, since when several small works of conservation have been carried out.

CONSTRUCTION

A · JOURNAL · FOR · THE · ARCHITECTURAL
ENGINEERING · AND · CONTRACTING
INTERESTS · OF · CANADA



Ivan S. Macdonald, Editor and Manager

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CONTRIBUTIONS—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and duly returned.

Vol. 3 Toronto, May, 1910 No. 6

Building Statistics for March.

THE AVALANCHE of building work prophesied for 1910 is giving strong signs of materialization. Returns for March indicate that the country in general is in the swirl of increasing activities, and that operations in all sections are being carried out on a stupendous scale, both in point of investment and in the volume of work undertaken. Permits issued in twenty representative cities reporting to CONSTRUCTION total \$8,887,787, as against \$4,730,710 in the corresponding period of last year. This is an advance over the preceding month of \$5,812,260, and an average gain over the month of March, 1909, of 87 per cent. By far the outstanding feature of the situation is the decided "upturn" in evidence on every hand, and the unusually high totals attained in almost every instance. Only three cities in the list, in fact, met with reversals, viz., Toronto, Windsor and Halifax, the loss in each case being 5 per cent., 32 per cent., and 59 per cent. respectively.

Again the honors for the month fell to the West, where the strides taken in every particular were most gratifying indeed. Calgary, with a gain of 887 per cent., registers the biggest increase noted; Saskatoon, the second highest increase (751 per cent.); while Winnipeg over-reached the field both far and wide as regards the volume of work undertaken, having issued permits aggregating in value \$2,526,350, as against \$861,200 for the corresponding month of last year. This remarkable total is not only the highest amount recorded in the Dominion, but practically double that noted for the month in any other city, and it is extremely doubtful if any place on the Continent of similar size has ever displayed more marked activity.

Extraordinary advances were also made in all other centres. Vancouver netted a gain of 126 per cent., representing over a million dollars more in new buildings than was undertaken in the same month of last year. Regina piled up an increase of 353 per cent.; Edmonton gained 47 per cent.; Victoria advanced 101 per cent.; and Lethbridge topped her figures for the corresponding month to the extent of 46 per cent.

In Ontario, aside from the two setbacks previously noted, the uptrend movement was both widespread and substantial. London made a most excellent showing, registering a gain of 69 per cent., as did also Hamilton, where the total was 67 per cent. in excess of that recorded last year. Again, Fort William came to the front with an increase of 63 per cent., while Berlin, whose figures were received too late to be included in the following table, reports building operations amounting to approximately \$90,000. Other gains noted are those of Peterboro and Port Arthur, which registered increases of 81 per cent. and 346 per cent. respectively, although the amounts in both cases are considerably less than those noted in the other part of the province.

Operations were also decidedly brisk farther east, as is indicated in Montreal's increase of 79 per cent., and the gains of 426 per cent. and 406 per cent. made in the case of St. John and Sydney, respectively. Montreal's total of \$676,804 exceeds the amount recorded in March, 1909, by \$300,529; while St. John's splendid advance gives that city the third highest increase registered for the month.

In the case of Toronto, it might be mentioned that the loss noted is not due to a less favorable condition than obtained a year ago, but rather to the fact that a large amount of work scheduled has been a trifle slow in materializing. Within the next few weeks this city will see things veritably humming and any deficit of the past month or two will be offset many times over. Equally as much can also be said in the case of Windsor, which will witness a number of important developments in the near future; while as regards Halifax, both the importance of its geographical location and the prevailing activities in the Maritime Provinces is possibly the best assurance that operations there will shortly assume far more substantial proportions.

| | Permits for March, 1910. | Permits for March, 1909. | Increase, per cent. | Decrease, per cent. |
|-----------------------|-----------------------------|-----------------------------|------------------------|------------------------|
| Calgary, Alta. | \$415,800 | \$42,100 | 887.64 | ..... |
| Edmonton, Alta. ... | 264,435 | 179,395 | 47.40 | ..... |
| Fort William, Ont.. | 91,575 | 56,000 | 63.52 | ..... |
| Halifax, N.S. | 43,800 | 109,490 | ..... | 59.99 |
| Hamilton, Ont. | 289,390 | 172,350 | 67.90 | ..... |
| Lethbridge, Alta. ... | 113,220 | 77,035 | 46.97 | ..... |
| London, Ont. | 139,700 | 69,095 | 102.18 | ..... |
| Montreal, P.Q. | 676,804 | 376,275 | 79.86 | ..... |
| Peterboro', Ont. ... | 10,327 | 5,695 | 81.33 | ..... |
| Port Arthur, Ont. ... | 5,360 | 1,200 | 346.66 | ..... |
| Regina, Sask. | 329,650 | 72,730 | 353.24 | ..... |
| St. John, N.B. | 49,250 | 9,350 | 426.73 | ..... |
| Saskatoon, Sask. ... | 250,275 | 29,400 | 751.27 | ..... |
| Sydney, N.S. | 17,935 | 3,540 | 406.63 | ..... |
| Toronto, Ont. | 1,583,165 | 1,703,840 | ..... | 7.08 |
| Vancouver, B.C. ... | 1,808,766 | 800,250 | 126.02 | ..... |
| Victoria, B.C. | 244,760 | 121,640 | 101.21 | ..... |
| Windsor, Ont. | 27,225 | 40,125 | ..... | 32.14 |
| Winnipeg, Man. | 2,526,350 | 861,200 | 193.35 | ..... |
| | \$8,887,787 | \$4,730,710 | 87.87 | ..... |

A Canadian Architecture ?

RUSKIN SAYS: "Architecture is the art which so disposes and adorns the edifices raised by man, for whatever uses, that the sight of them may contribute to his mental health, power and pleasure."

It is needless to say that Ruskin had a very much stronger feeling for the true worth of architectural design, than we have in Canada. It seems that Canadians—we will not say generally, but in some conspicuous instances—have regarded, or seem to regard, architecture

rather as a necessary evil, than a component part of our national development.

The Bank of Montreal has an American architect to design their two and a half million dollar bank building in Winnipeg. The Bank of Toronto has commissioned Messrs. Carrere & Hastings, of New York, to design their architectural masterpiece in Toronto. On the other hand, a \$500,000 technical school is to be designed and erected under the supervision of a carpenter in Toronto, and, worst of all, a five or six million dollar Government building is to be erected at our official home in Ottawa, after the designs of a man who has declared before the courts of our country, that he is not an architect, and knows little or nothing about architecture. It almost seems that architecture in Canada—if we are ever to have one—is at the present time (a time when we are undergoing a development that has never been equalled by any country in the world) experiencing a most retrograde movement. We know that every nation's social, commercial and religious development has been marked and been stamped on the country by its architecture; yet are we to have none; are our greatest works to be designed by men who neither know our country or our people. On the other hand, are our greatest works to be designed by men who neither have studied nor have shown an appreciation for architectural design; men, in other words, who may be called builders, not architects.

In this issue of CONSTRUCTION we publish a letter from two of the representative architectural bodies in the Province of Ontario, deprecating the employment of foreign architects on Canadian work. Their reasons are plain; they not only speak for themselves, but for our business and social interests as well. American architects do not pretend to know Canadian materials, and we, as Canadians, are not supposed to know or to appreciate and admire as ours, American architectural design.

We also publish a set of illustrations; one showing the design of a trained architect for one of the most important Government buildings Canada has erected since Confederation; another the design of a man assisted in his department by underpaid draftsmen, but the design that has evidently been accepted by our cultured and esteemed Minister of the Department of Public Works, Mr. Pugsley.

It occurs to us that there is something distinctly wrong with the people of Canada in their knowledge or conception of the importance of architectural design. In order to have an architecture we might be proud of, that we should have reason to lay claim to, the designers of our buildings must be men who know our country, who know our history, who know our people; men who know our religious, social and business proclivities. Therefore, Canadians must design our buildings, and it is only fair to ourselves to believe that those Canadians that must design our structures—structures that are to stand to the credit of our good taste as a people, structures that are to live longer than we shall, and structures that shall be Canadian—must be men who know us, men who live with us, men who are Canadians. More than this, the designers of our buildings must be trained men; they must be men who are in full sympathy with the importance of architectural design, as well as utility in plan and construction. They must be well trained, and while the facilities that the Dominion and Provincial Governments have offered in the shape of architectural education have been far inferior, in comparison with the importance of this branch of education, to that provided in other countries of the world, we still have architects who, through their own ability, their own inclinations and determinations, have excelled. They have excelled in their training through the fact that they have taken advantage of the educational facilities offered by other countries which have done that for architectural design that Canada has failed to do, and through their knowledge and apprecia-

tion of things that are Canadian, and it is these men who are best qualified to design our buildings.

A Timely Step.

MUCH HAS BEEN SAID in these columns with regard to the employment of American architects on Canadian buildings. A list is being compiled by the Joint Committee of the Ontario Association of Architects and the Toronto Society of Architects, of the buildings designed by American architects in the various cities and towns in Canada, showing as well the cost of these structures together with the names and addresses of the successful contractors. The information gathered thus far shows most conclusively that the evil of having our buildings designed by foreign architects is considerably greater than most Canadians would suppose. As has been said in these columns, very often the commissioning of a foreign architect for the designing of a building in Canada, does not only operate against the welfare of the architectural profession in Canada and the establishment of a Canadian architecture, but it takes from the country large sums of money that should be spent in the promotion of Canadian enterprise and in the development of Canadian industry.

In other words, the employment of an American architect who does not know Canadian contractors—an architect who does not know Canadian materials—implies in itself that the proposed structure will be erected by contractors, and of materials, best known to the foreign architect.

To sum up, the employment of a foreign architect means, in nine cases out of ten, the employment of foreign contractors, the use of imported materials, and consequently the loss of 90 per cent. of the money expended in the erection of the building to Canada.

For a time Canadian architects have been loath to employ methods necessary to relieve this unfortunate situation or to make plain to Canadian business men the real consequence of this unwholesome practice on the part of many of our large corporations and business institutions; but the situation has developed to such an extent that they feel it their duty to the Canadian public and to the Canadian business man, as well as the architectural profession in Canada, to bring about a movement that will serve to discourage this injurious condition. As a result, CONSTRUCTION has been asked to get together figures and data showing the number of buildings that have been designed in Canada within the last four years by American architects, together with a statement of the names and business addresses of the contractors who erected the buildings, with an approximate value of Canadian materials that were specified or used in these structures. In this manner it is our purpose to show conclusively what it means in a business way to have Canadian buildings designed by foreign architects.

The following letter to CONSTRUCTION from the Joint Committee of the Ontario Association and the Toronto Society of Architects, states specifically just what it is proposed to do.

April 26th, 1910.

Editor, CONSTRUCTION.

Dear Sir,—

A joint committee of local architects, composed of members of the Ontario Association of Architects and the Toronto Society of Architects, has been formed to deal with the question of American architects practising in Canada.

In the opinion of this Committee the situation existing at present is a most serious one, and if immediate steps are not taken to counteract the influence of this "American invasion," the resulting condition of things will be-

come intolerable. The only successful way to combat this influence is to arouse public opinion, both through the press; through the co-operation of the Builders' Exchanges, the Manufacturers' Associations, and through the Dominion and local Houses of Parliament, to the great hurt that is being done both to architecture in Canada, to the architects, and to the contractors and general business of the community.

This Committee would be grateful if CONSTRUCTION would publish a special notice, asking the architects throughout the country, from Halifax to Vancouver, to co-operate in this movement. The first step will be to acquire accurate data of the buildings that have been erected throughout Canada by American architects. The cost of these buildings, the name of the contractor, and if the said contractor or contractors were Americans.

The Committee is of the opinion that the apathy of the architects themselves is largely the cause for existing conditions. Let us suppose for a minute that conditions were reversed and that all the big jobs in United States were being done by Canadians, and that the American architects were only getting the "pickings." What would the American architects do? Suppose that in France all the big work was being done by English architects, or again, suppose that all the big work in England was being done by German architects; the comparisons may seem ridiculous, but the fact remains that to-day in Canada we have exactly this condition existing.

We cannot suppose that those outside of our profession are going to fight our battles, if we ourselves are not keen enough for the fray. We are certainly unworthy of our race if we sit idly by and let all the plums be gobbled up by our neighbors.

Our big commercial buildings—such as our large banking buildings, our stations and hotels—are all being designed by American architects. Are the architects of Canada going to be content to sit idly by and see their patrimony dissipated without making a fight for it? We trust not.

Contrast the attitude of the Canadian Government towards their own architects and that of the American Government towards the American architects. One of the most important competitions that has been lately held was that for the new Government buildings for the Province of Saskatchewan. Six architects altogether were invited for this competition. Among the six was an English firm and an American firm—the latter being Cass Gilbert, of New York. What about the other Canadian architects, who would have been quite competent to enter this competition? There would have been, in addition to the Canadian architects invited, probably five or six other men quite able to give the Province of Saskatchewan a building worthy of their needs. These architects did not even have an opportunity to submit drawings. It was a source of great gratification to the Canadian architects that the above mentioned competition was won by a Canadian firm.

In all Government work in the United States it is a fixed requirement that the architect sending in plans must be a citizen and resident of the United States.

In discussing this question with the average layman, the argument is often brought forward that the American having had more practice in these larger building operations is more proficient. Even granting such is the case—which, however, we do not admit—it surely stands to reason that if the Canadian architects are never given an opportunity to solve the more important problems, we are not going to develop Canadian architecture nor Canadian art. It is surely time to call a halt.

Again, consider the question of the American architect in Canada. He is naturally familiar with American building practice and with American materials. It is impossible for him to be aware of local conditions, and it is quite natural that he should specify American materials; it is also quite natural that he should bring in American contractors to do his work. It can readily

be seen that this condition of affairs means a direct loss in money to the community.

Your Committee have been acquiring some data in this regard, and the facts are simply staggering—the figures run up in the millions.

The railroads—such as the Canadian Pacific, the Grand Trunk, and the Canadian Northern, who have their bonds guaranteed by the different provinces, and who are directly supported by the community; our banks, such as the Bank of Toronto, Bank of Montreal, the Royal Bank, Traders Bank, Canadian Bank of Commerce, are employing American architects and American contractors to do their work. These banks get their business in Canada and from Canadians, and get their charters through the will of the Canadian people. We feel that if conditions were reversed, and that if the bank directors were in the place of the local architects, they certainly would not feel kindly towards any of the powerful American banking institutions coming into this country to do business. In fact, they would not tolerate it for a minute.

While this country is of great extent, the population is comparatively small, and the large moneyed interests are practically in the hands of a very few men, and controlled largely from Montreal and Toronto. Once the American architects get a footing with these large corporations, it will be almost impossible to shake them off.

This Committee hopes, therefore, that the architects throughout Canada will respond to the above mentioned appeal, and send all available data in, care of Mr. I. S. Macdonald, editor, CONSTRUCTION, Saturday Night Building, Toronto.

THE ONTARIO ASSOCIATION OF ARCHITECTS.
THE TORONTO SOCIETY OF ARCHITECTS.

What is the Reason?

THE POSITION of the Minister of Public Works in assuming the responsibility of rejecting the plans selected and approved of by a competent body of assessors appointed and selected by the Government, for plans prepared by a man who is neither an architect nor one who has a competent staff of draughtsmen, is one that seems inexplicable.

It is true that Mr. Pugsley may be one of our best authorities in Canada on the *arts and crafts* of political economy. It is true that Mr. Pugsley may know how to award contracts in the interests of the Government. It is also true that he may know where docks are required or how much a barge is worth, or many other like things, that according to press reports have come under his attention recently. It is also true that the Hon. Mr. Pugsley may know and be in a position to appreciate all the advantages of Nepean Stone which it appears the Government Architect has a very peculiar, and we might say, inexplicable weakness for.

Mr. Pugsley, we are free to say, knows absolutely nothing about architectural design. He should not assume the position of being a judge in such matters, and yet, he has declared himself in favor of building a six million dollar Government building under conditions that no other civilized country, with officials that are either cultured or sane in charge of their affairs, would tolerate.

In casting about for Mr. Pugsley's reason for this unpardonable attitude, many suggestions arise in the mind of a man who is familiar with the political news of newspapers representing both the Government and the Opposition. Can it be that expert architectural advice from outside, would not permit the Department of Public Works to follow its usual course in awarding contracts or superintending work? Is it that the probability, that any architect of repute with the least taste for the æsthetic in architectural design would find it impossible to use in a structure of such great proportions Nepean Stone? Is it in protection of Nepean Stone that the Department of Public Works finds it expedient to have this building

designed by their own architectural staff? If these can be any reasons, we would pray our Honorable Minister, if necessary, to build more docks on the St. Lawrence River, let some contracts for dredging, buy some new barges or dredges, alter the bookkeeping methods of his Department or do anything to satisfy political conditions, that may arise, wherein money must be expended with the Government's friends, but for the sake of common decency save our Official Home at Ottawa. Don't let such unfortunate conditions be engraved upon our Government Buildings. The museums and our post offices are bad enough, the former design would be complete if it had a draw-bridge in front of the main tower. It may stand up long enough to be an everlasting disgrace to our country and yet it may not. It might, for all we know, some day be so thoroughly ashamed of its face that it would shake and tremble to the extent that it would effect its own destruction. The postoffices designed by this Department for the past twenty years give evidence of being the products of a plan factory.

We contend that there is no reason for such a procedure as is proposed by the Honorable Mr. Pugsley. The London County Council (Eng.) wanted to erect a County building, they called for competitive plans and the work was awarded to a young designer of twenty-eight years of age and he will build the building. John Knox Taylor is looked upon in the United States, and in fact, in the Dominion, as being one of the brightest designers on this continent and one of the shrewdest superintendants at work. He has in his employ many draughtsmen who get salaries much larger than that paid to our own Government architect and yet Carrere & Hastings designed the recent Government buildings erected at Washington and Cass Gilbert designed the new Customs House in New York. In fact John Knox Taylor has never assumed the responsibility either on his own behalf or on behalf of his department, of planning an important structure, and from the standpoint of ability there is no more comparison between the architectural staff of John Knox Taylor and that of the Department of Public Works at Ottawa, than there is between a competent and prominent architect and a village carpenter.

We hope, however, that some influence from some portion of the Government will be brought to bear upon Mr. Pugsley to dissuade him from his proposed procedure. If not, and if we must be direct, we would say to the Honorable Mr. Pugsley that he is a servant of the people and is not running the Department of Public Works at Ottawa for his own gratification, his own profit, or according to his own pleasure. The architectural profession of Canada, the only body of men in this country who may be termed authorities on the matter of architectural design, demands that this unheard of, this most extraordinary procedure proposed, cannot and will not be imposed upon the Canadian people. Every man in Canada who has any respect for decency, or for the æsthetic, or for square dealing cannot but be opposed to the Department on this particular matter. We cannot understand how a cultured, refined and educated man like Sir Wilfrid Laurier, as Prime Minister of Canada, can endorse the procedure of this, one of his Ministers.

CURRENT TOPICS

A BRICK 3,000 YEARS OLD was recently received by the museum of the Dutch Reformed Theological Seminary at New Brunswick, N.J. It is a sun-baked brick about 11 inches square and was excavated in Nippur by the Babylonian expedition of the University of Pennsylvania. It was presented to Dr. Thomas of the Arabian Mission of the Reformed Church by Dr. H. V. Hilprecht, and its age is estimated at 3,000 years. It contains ten lines of inscription in cuneiform writing of Sumerian origin. The brick formed part of the Temple of Bel on the eastern side of the Strait-en-Nil, the biblical Chebar of Ezekiel. Nippur was a suburb of Babylon.

A GROUP OF NAVAL COTTAGES on the Royal Military College grounds at Kingston were recently auctioned off by the Public Works Department for \$110. The terms of the sale provides that the structures are to be demolished by June 1st. The cottages have a historical significance, having been built in 1822 as residential quarters for British naval officers.

* * *

A BILL HAS BEEN INTRODUCED in the Quebec Legislature asking that the town of Three Rivers be authorized to borrow an additional sum of \$20,000 without the provincial guarantee as to interest. The money is to be used to complete the work of restoration which has been so vigorously carried on since the task of rebuilding the burnt district was undertaken. It is estimated that this amount, together with the sums which are being expended in a private way, will be sufficient to bring about a complete rehabilitation. The increasing values in realty, it is said, will enable the town to take care of this extra liability without any difficulty.

* * *

LONDON'S (ENG.) NEW POSTOFFICE, now in course of construction on Newgate street, will be the most perfectly appointed institution of its kind in the world. It will house departments employing more than 3,000 men, including clerks, sorters, porters, etc., and will be so equipped as to make possible the handling of mail in the most simple and expeditious manner. One of the interesting features in this connection will be a series of endless bands or conveyors, that will transport the bags and packages to the points where the mail is to be delivered, sorted and distributed, thus reducing the work to almost an automatic principle. These conveyors, it is said, are a great improvement over any similar device now in use in any other country. The building will be officially opened the first of August.

* * *

WORK HAS BEEN STARTED on extensive improvements to be carried out on the large iron pier at Port Wade, Nova Scotia, which the Canada Iron Corporation and other interests are enlarging to facilitate the handling of iron ore from the mines now being developed in that region. The pier is to be widened, a wing added, a tower 50 feet high to hold 300 tons of ore erected on the outer end of the pier, and at its head loading pockets with a capacity of 2,000 tons, these to be connected with the tower by endless chain carrying buckets. Excavations have been made for the installation of heavy machinery at the head of the wharf, which will be capable of loading 1,000 tons of ore per hour. Protective walls are also being built, and an elevated track will be constructed to enable cars of ore to reach a position above the loading pockets and discharge ore rapidly.

* * *

THE DOMINION DRY-DOCK COMPANY, LTD., is the name of a new million dollar concern, which, it is stated, will establish large graving docks at Levis, Que., and St. John, N. B. This company is expected to materially advance the ship building interests of Canada, at least the list of incorporators would justify such an assumption. The personnel of the company is as follows: Sir Thomas Shaughnessy, K. C. V. O., representing the Canadian Pacific Railway and Hugh Andrew Allan, ship owner, both of Montreal; George Duncan Davie, ship repairer, and William Molson Dobell, merchant, both of Quebec; Walter Edward Foster, of St. John, N. B., merchant; the Right Hon. William James, Baron Pirrie, of Belfast, Ireland, representing the British shipbuilding firm of Harland & Wolff; Sir Robert William Perks, baronet, and Arthur Morten Grenfell, capitalists, both of London, England.

HARBOR IMPROVEMENT to cost six million dollars is provided for in a resolution of which Hon. Mr. Fielding has given notice. The money is to be used mainly for terminal facilities, docks and sheds. While not so stated, this appropriation is regarded as the initial outlay towards an expenditure involving \$18,000,000 contemplated in the elaborate report and plan for improvements at this port, prepared by the commission of engineers, and submitted last summer.

* * *

IT NOW APPEARS that Mr. Edison is not the only one who has been engaged with the problem of producing poured concrete houses. In a recent report, United States Consul L. J. Keene, of Chihuahua, writes that an architect of that Mexican city has also patented "a method for making cement houses all in one piece, cheaply, durably, and with ease of construction." The inventor, the report says, has ordered apparatus from Germany, with which he will make a practical demonstration.

* * *

A NEW METHOD OF TREATING WOOD, known as the "Powell process," has been invented and tried with much success in Australia. The essential part of the treatment consists in boiling the wood and allowing it to cool and absorb a saccharine solution, after which it is dried, rendering the wood thoroughly seasoned within a few days after cutting, increasing its strength, and stopping all warping and shrinking. The sap in the wood is driven out and replaced by an antiseptic, owing to the saccharine solution boiling at a higher temperature than water, thus making the wood impervious to dry rot and to the attacks of white ants and other parasites which prey on ordinary lumber.

* * *

ELECTRICITY FOR ILLUMINATING PURPOSES, heretofore regarded as a luxury, is now brought within reach of the English laboring class, as a result of a new and inexpensive system of wiring recently perfected. A six-room cottage, according to Trade Commissioner Mac-Namara, Manchester, has been fitted up at Rotherhite by the Fixed Price Light Company, in connection with Messrs. Siemen Brothers, the inventors of the new system. The charge will be a fixed weekly rental of 2½d. per light from April to September 30, and 3½d. per light from October 1 to March 31. Thus for a three-roomed workman's dwelling the charge would amount to 7d. or 10½d. a week, or decidedly less than that generally paid for gas on the slot system. This charge includes the fitting up and wiring and the first lamp. New lamps must be paid for by the consumer, but the payment can be made by instalments.

* * *

A SKYSCRAPED CHURCH is New York's latest architectural exploitation. Such a structure has been designed to replace the present Fifth avenue Baptist church or "Rockefeller church," as it is generally known, which occupies a site, 100 feet square, on the south side of Forty-sixth street, west of Fifth avenue. The auditorium, which will take up practically all of the ground space available, will be seventy-five feet in height. Above this will be three floors, while the roof will be utilized as a summer garden and playgrounds. Rooms for Sunday school and Bible class work will occupy the first two upper floors, and modern offices and assembly rooms that of the top story. Notwithstanding the unusual plan of the building the design will be ecclesiastical. The Forty-sixth street front will be carried out in a light stone with two shades of marble. The feature of the facade will be a large gable with rows of arches resting on a series of slender columns. Three large arched windows will light the main auditorium. The slender columns carry the eye from base to the decorations at the upper roof line and deceive one as to the actual height of the building. The structure will cost \$500,000.

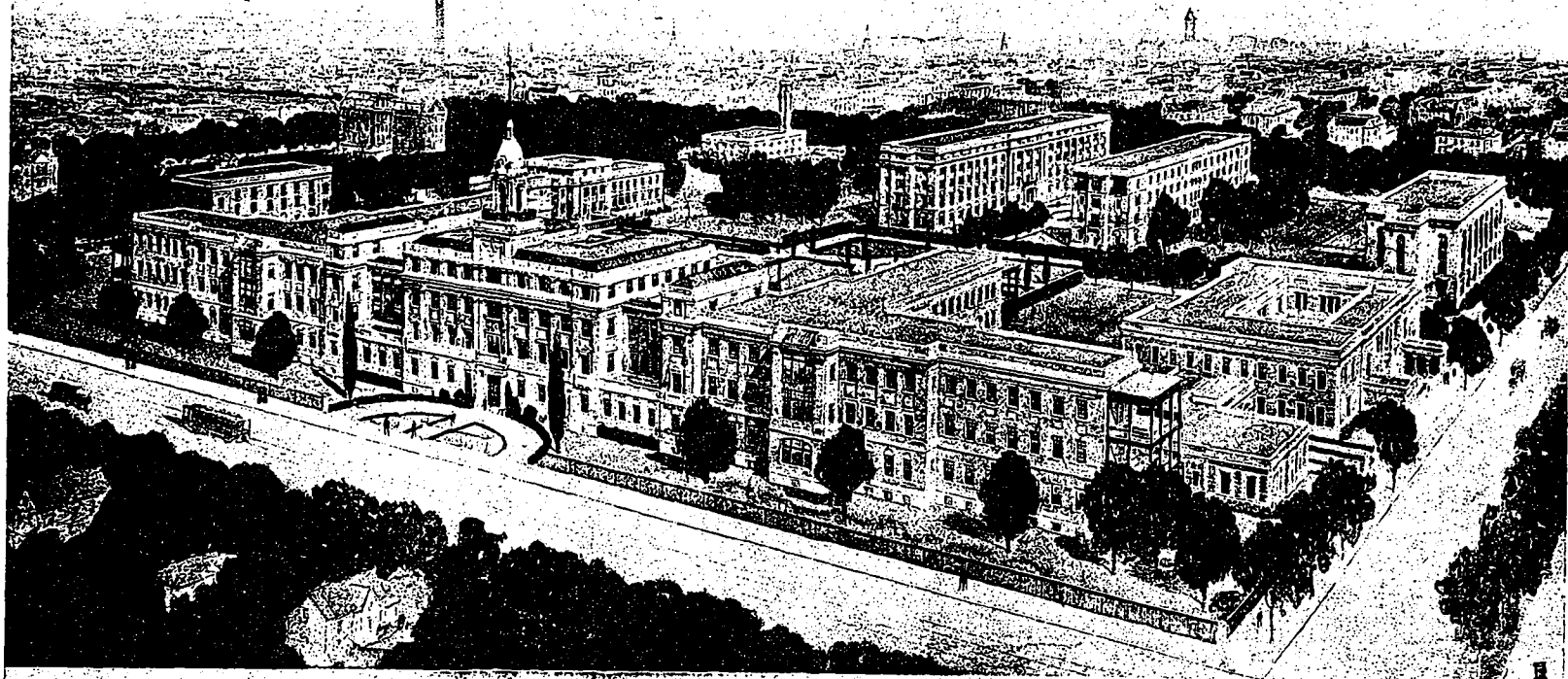
BOTH ELEVATED AND UNDERGROUND railways to all external appearances, are public service possibilities which the citizens of Montreal may shortly realize. At least, a company with a capitalization of \$20,000,000, known as the Montreal Elevated and Underground Railway Company has been organized with this object in view. Those behind the scheme are said to be well known Canadian and American capitalists, although as yet no names have been disclosed. It is understood that the new company is in no way identified with the traction interests operating in the city at the present time.

* * *

THERE IS MUCH TALK of a great Thames dam, and it appears that this project is really on the point of accomplishment. Its purpose is to put a stop to the decadence of London as a seaport, due to the fact that in its upper part, even in the neighborhood of the London docks, its depth is not sufficient for the needs of modern navigation with its huge ships. Essentially the project consists in the establishment of a great transverse dam at Gravesend, which will raise the water of the river permanently to the level that it attains at present only at high tide. Evidently raising the water-level will have the same result as deepening the channel, and it will be much easier than the dredging on a high scale recommended by the Port-of-London commission in 1902. Besides, in actually lowering the river bed, many precautions would have to be taken to avoid undermining the walls of the piers. The dam would be provided with locks; six of these are planned, large enough to admit the largest ships capable of ascending the river to London. They will operate independently of the state of the tide, and traffic will be continuous at all hours of day and night. It is estimated that the execution of this project will involve an expense of more than \$25,000,000. This does not take into consideration the dredging, etc., necessitated by the work.

* * *

A VERY LIGHT, TOUGH BRICK of peculiar fire resisting properties is now made in Denmark from what is locally called "moler," a foliated diatomaceous deposit found in Jutland. Until recently no use had been found for the material, but Prof. Joseph W. Richards in writing in the Electrochemical and Metallurgical Industry states that after a series of experiments the Clay Laboratory of the Danish States Testing Laboratory has been successful in producing bricks from mixtures of clay and moler in various proportions, and from moler alone, with very interesting results, particularly as concerns the properties of these bricks. In the first ten tests, moler was mixed with 25, 50 and 75 per cent. of marl, and with 25 and 50 per cent. of red clay; afterwards bricks were burned from moler alone. Contrary to expectations, moler alone burned to a fine red brick, very firm and light, and of such toughness that a nail could be driven through without cracking it. The specific gravity of these bricks was about 1, and their strength about that of common bricks. The particular properties claimed for this character of brick are their great strength in proportion to their lightness and the heat insulating quality. They are suitable for partitions, floor constructions, arches of every form, although they are not adapted for outside use, because of their porosity and absorption of water. Much is promised for this material, however, as a refractory, as the porosity of the brick makes their heat conductivity very low. Assuming the reliability of statements made as regards tests made in this respect, says the writer, such bricks form an excellent material for intermediate use, as a heat insulator, in the walls of furnaces, as courses between the refractory lining brick and the ordinary outside brick. The low heat conductivity should reduce greatly the heat losses through such composite walls. Its use for electric furnaces, outside of the carbon or magnesite lining, and inside the iron shell, should be highly advantageous.



THE TORONTO GENERAL HOSPITAL

DARLING & PEARSON
ARCHITECTS

TORONTO GENERAL HOSPITAL.—Noteworthy Group of Buildings to be Erected at a Cost of \$2,500,000.—General Scheme Far Exceeds in Magnitude Any Similar Project Ever Undertaken in Canada.—Structures to be Built of Brick and Stone. . . .

ONE of the most laudable undertakings of the Queen City during the past decade is the building of the new General Hospital, which will comprise seven or eight large buildings on a magnificently-located site in the centre of one of Toronto's finest residential districts. It is something more than a year since the officials started to raze this property and the architects, Darling & Pearson now have their working plans ready and indications point to the buildings being figured by contractors at a very early date.

It is estimated that the several buildings that will comprise this the largest institution of its kind in Canada, will cost something over \$2,500,000. The City of Toronto, the Province of Ontario, and private individuals have all contributed liberally towards the funds necessary for the carrying out of the project.

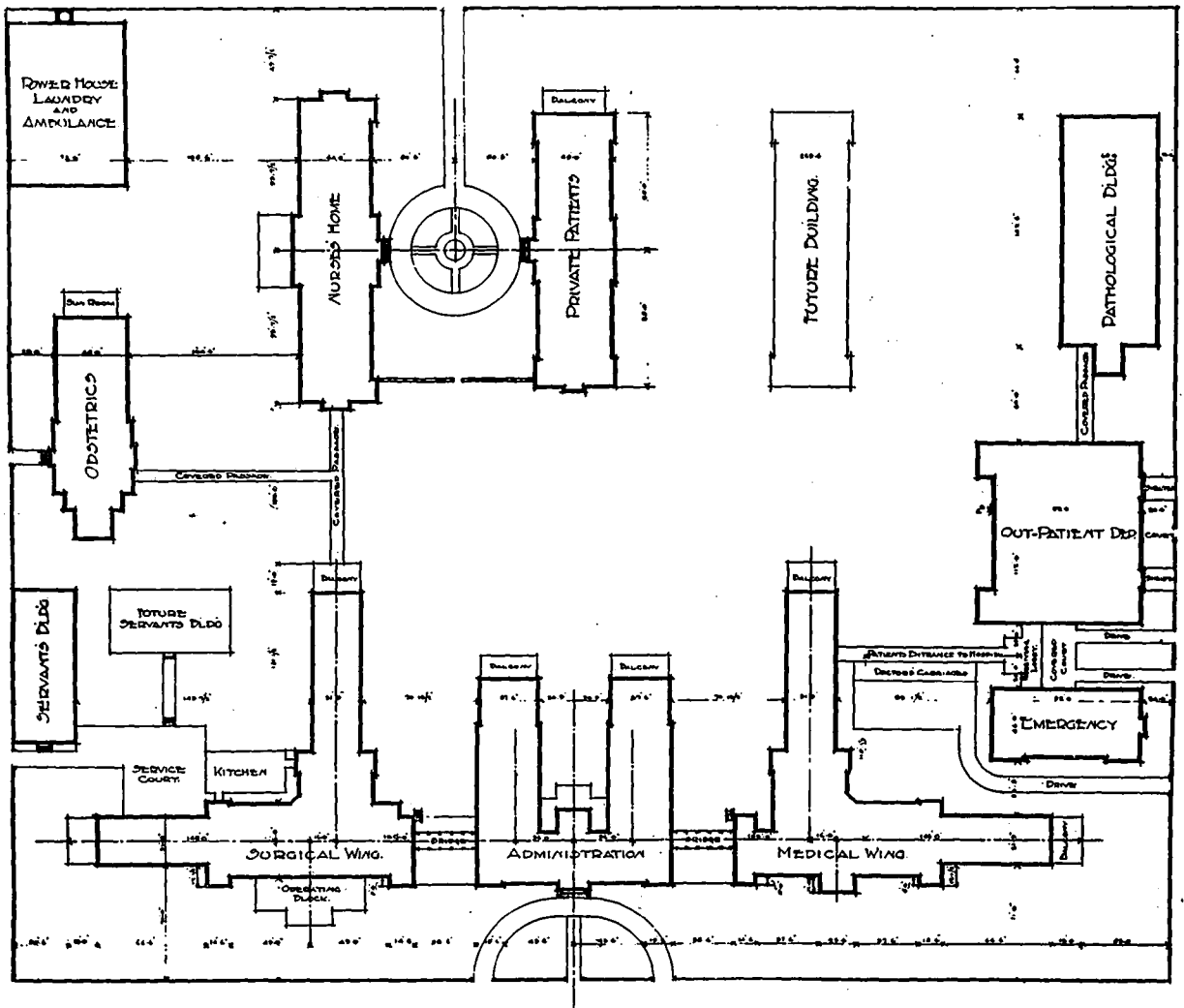
The Toronto General Hospital will be primarily and principally a public institution in which the chief object of the promoters has been to provide first-class accommodation in the public wards.

While the exact details of construction have not yet been decided upon, it will be the object of the designers

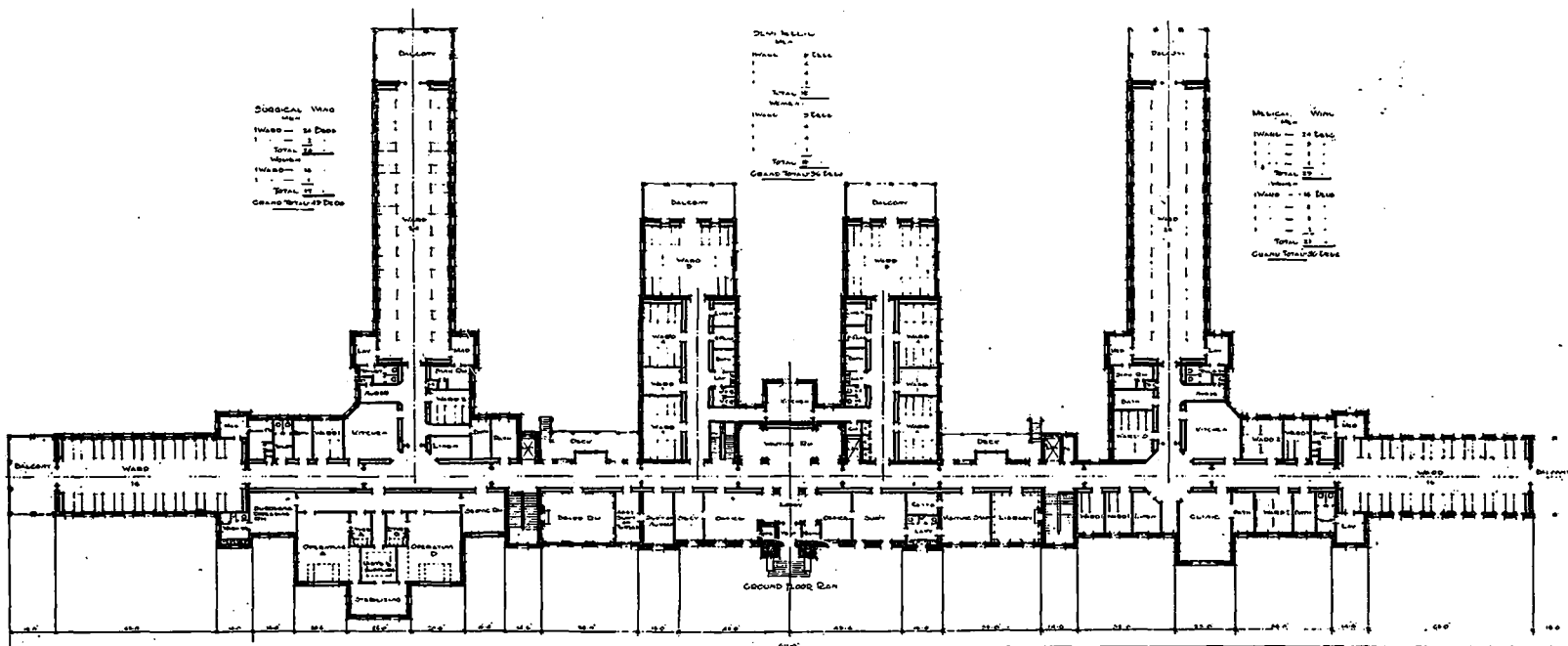
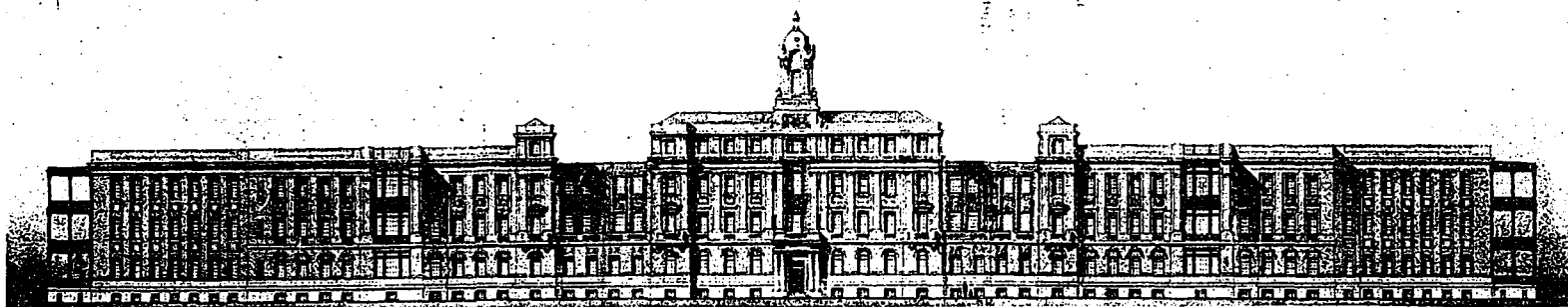
to employ solid masonry construction to the greatest possible extent. It is at present their idea, we understand, to have the walls of solid brick or stone construction, thus not only lending a character of permanency to the buildings, but to give them the appearance of stability and dignity.

The planning of such an institution, in order to provide for all the modern conveniences and equipments, has been by no means a small task, and the accompanying plans and elevations will give our readers some idea of the manner in which the problem has been handled by the architects, Messrs. Darling & Pearson.

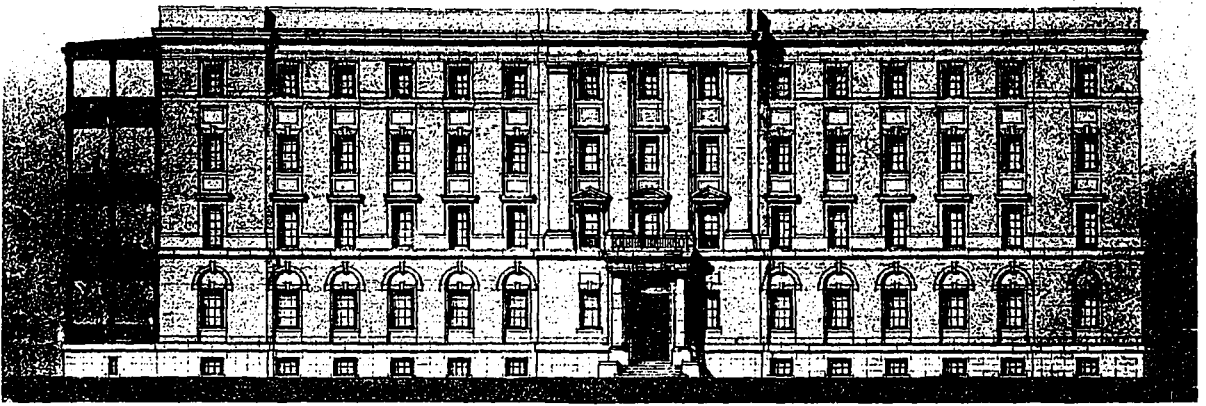
The site for the new Hospital, which is 600 by 700 feet in dimensions, is located at the corner of College street and University Avenue. The general scheme, as shown in the block plan, consists of an Administration building, with entrance on College street, flanked on one side by the surgical wing, and on the other by the medical wing. The out patient department and emergency Building are approached from University ave., and between them is the ambulance entrance into a covered court, providing for the delivery of patients without



Block plan, proposed Toronto General Hospital, showing the location of the various buildings. Darling and Pearson, Architects.



Surgical Wing. Administration Building. Medical Wing.
 College Street elevation and ground floor plan, Central Block, proposed Toronto General Hospital. Darling and Pearson, Architects.



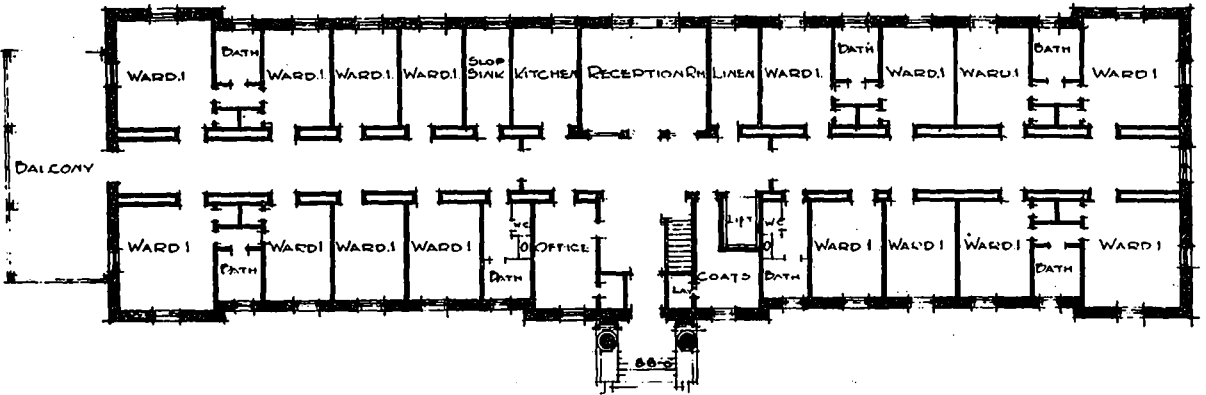
Building for Private Patients, proposed Toronto General Hospital. Darling and Pearson, Architects.

being seen from the street. To the south of the out patient department is the pathological or university building. At the south of the property along Christopher street, are the nurses' home and private patients' building, and to the east, on Elizabeth street are the obstetrics' and servants' buildings. The power plant and laundry are located at the southeast corner of the property. The ambulance house will also be placed at this point.

The administration building is four stories in height,

internes'; provision being made for 22 resident doctors, with their common room, dining-room, etc.

The surgical wing, (three floors and basement), is to the east of the administrative building, and is connected with same by bridges. There is accommodation for 145 beds, for both sexes. On each floor are two large wards and several smaller wards for special cases, together with ward kitchen, linen room, sink room, pathological room, and ample provision for toilets and baths. At the end of each ward is a large balcony. The operating block



Ground floor plan, Private Patients' Building, proposed Toronto General Hospital. Darling and Pearson, Architects.

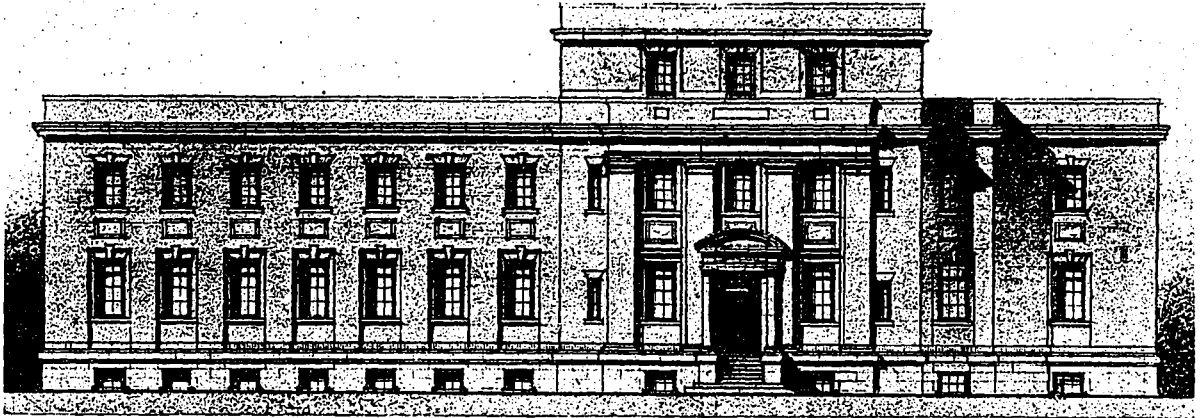
and forms the main entrance to the hospital. On the ground floor are the administrative offices facing College street, and accommodation for 36 semi-public patients to the south of the main corridor. The first floor is given up to the eye and ear, nose and throat departments, has 34 beds in small wards with the usual ward dependencies, and an operating suite. The gynecological department is located on the second floor, and has 39 beds with ward kitchen, both, toilets, etc., and an operating suite and clinic room. On the third floor are the quarters for the

is situated on the ground floor and consists of two large operating rooms, a smaller septic room, anaesthetizing rooms, sterilizing and instrument rooms, and dressing rooms for the surgeons and nurses. In the basement of this wing are the kitchen dependencies and store rooms, as well as the servants' dining rooms. The kitchen itself is located outside the building on the basement level. All the public wards and nurses' home are served from this kitchen.

The medical wing, (three floors and basement), is to



Emergency and Out-Patient Buildings, proposed Toronto General Hospital. Darling and Pearson, Architects.

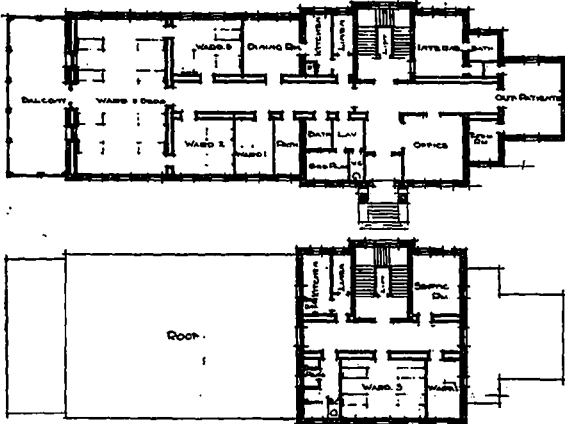


Obstetrics Building, proposed Toronto General Hospital. Darling and Pearson, Architects.

the right of the administration building, and is similar in plan to the surgical wing; there is provision for 150 beds for both sexes, and a clinic room on each floor. In the basement are the receiving department and deten-

the usual dependencies, preparation rooms, and an operating suite.

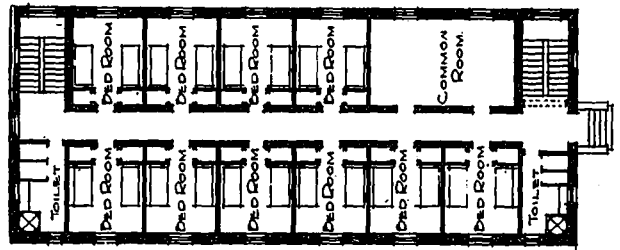
The out-patient department, (two floors and basement), facing University Ave., is for the daily treatment of poor patients, in medicine, surgery, gynecology, and the eye, ear, nose and throat departments. It consists of a large central waiting-room, lighted from the top, with the consulting and examining rooms grouped



Ground and second floor plans, Obstetrics Building, proposed Toronto General Hospital. Darling and Pearson, Architects.

tion wards, also the electrical department and X-ray and hydro-therapeutic rooms.

The emergency building, (one floor), for the reception of accident cases, includes wards for 9 beds, with



Ground floor plan, Servants' Building, proposed Toronto General Hospital. Darling and Pearson, Architects.

around it. There is an operating suite for minor operations. The department will have a capacity of some 350 patients per day.

The pathological building, three floors and basement, is for the use of the medical school of Toronto University, and consisted mainly of laboratories for students and special research work. The pathological



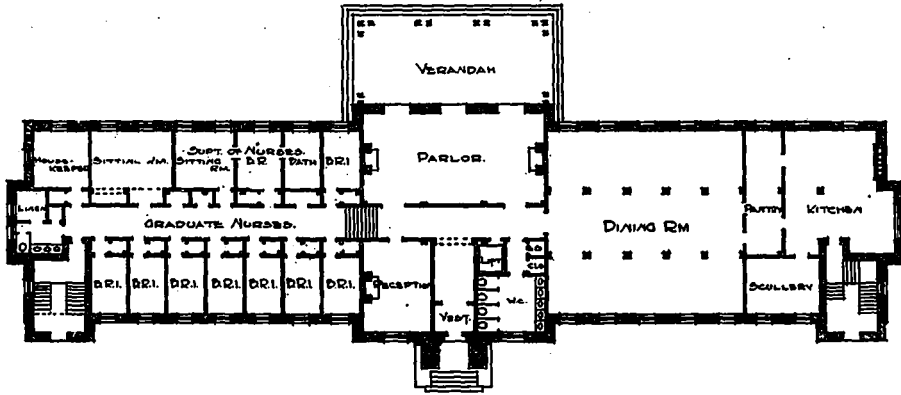
Nurses' Home, proposed Toronto General Hospital. Darling and Pearson, Architects.

work of the hospital will be done here. The autopsical room and morgue are located in the basement.

The private patients building, (four floors and basement,) has accomodation for 98 private patients, in single rooms and rooms of two, three, four and five beds. Each floor has a small kitchen, linen room, sink room and the usual toilet arrangements. There are ten rooms with private baths. On the top floor is an operating suite of two operating rooms, ether room, sterilizing room, etc.

ROAD MAKING IN GERMANY.

THE CONSTRUCTION AND MAINTENANCE of streets and roads is a matter of great public interest in Germany. From every standpoint—military, agricultural, commercial, hygienic, economic—the question of good roads is deemed of the utmost importance. One of the matters now receiving the special attention of German scientists, highway authorities, and engineers is the treat-



Ground floor plan, Nurses' Home, proposed Toronto General Hospital. Darling and Pearson, Architects.

The building is served by a private kitchen, of its own, in the basement.

The nurses home (five floors and basement), provides accommodation for about 170 nurses. On the ground floor is a large parlor, a small reception room, dining and service rooms, and rooms for the superintendent of nurses, her assistants, and for the graduating nurses. The library is on the first floor, and on each floor is a good-sized sitting room and a sitting alcove at each end of the hall. In the basement is the gymnasium, lecture rooms, etc. In the rear of the building will be the nurses' garden, with tennis courts and other arrangements for recreation.

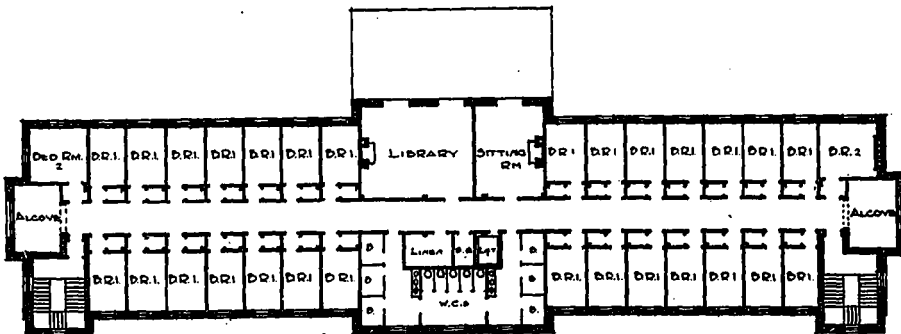
The obstetrics' building, (two and a half floors and basement), provides for the reception of 36 public lying-in cases in small wards with the necessary dependencies, and labor room and nursery. On the ground floor is an out-patients' department for daily consultation and treatment. Sun parlors are provided on each floor at the south end of the building, overlooking the nurses' garden.

In the servants' building are rooms for about 70 men servants, with baths, toilet rooms, and a large common room on the ground floor.

ment of streets and roads for the purpose of obviating dust and mud.

In the past, various combinations of oil and salt have been used for this purpose, but as the effect was only transitory, this method was not considered a solution of the problem of maintaining hard, clean, and sanitary highways. Experiments have also been made with coal tar, and some of these preparations applied to the surface of roads have kept the dust settled for longer periods of time than by former methods. Although recognized as an improvement, the expense connected with the employment of these preparations has stood as an objection to their general use and experiments were continued for the purpose of producing a more ideal and cheaper composition for treating roads.

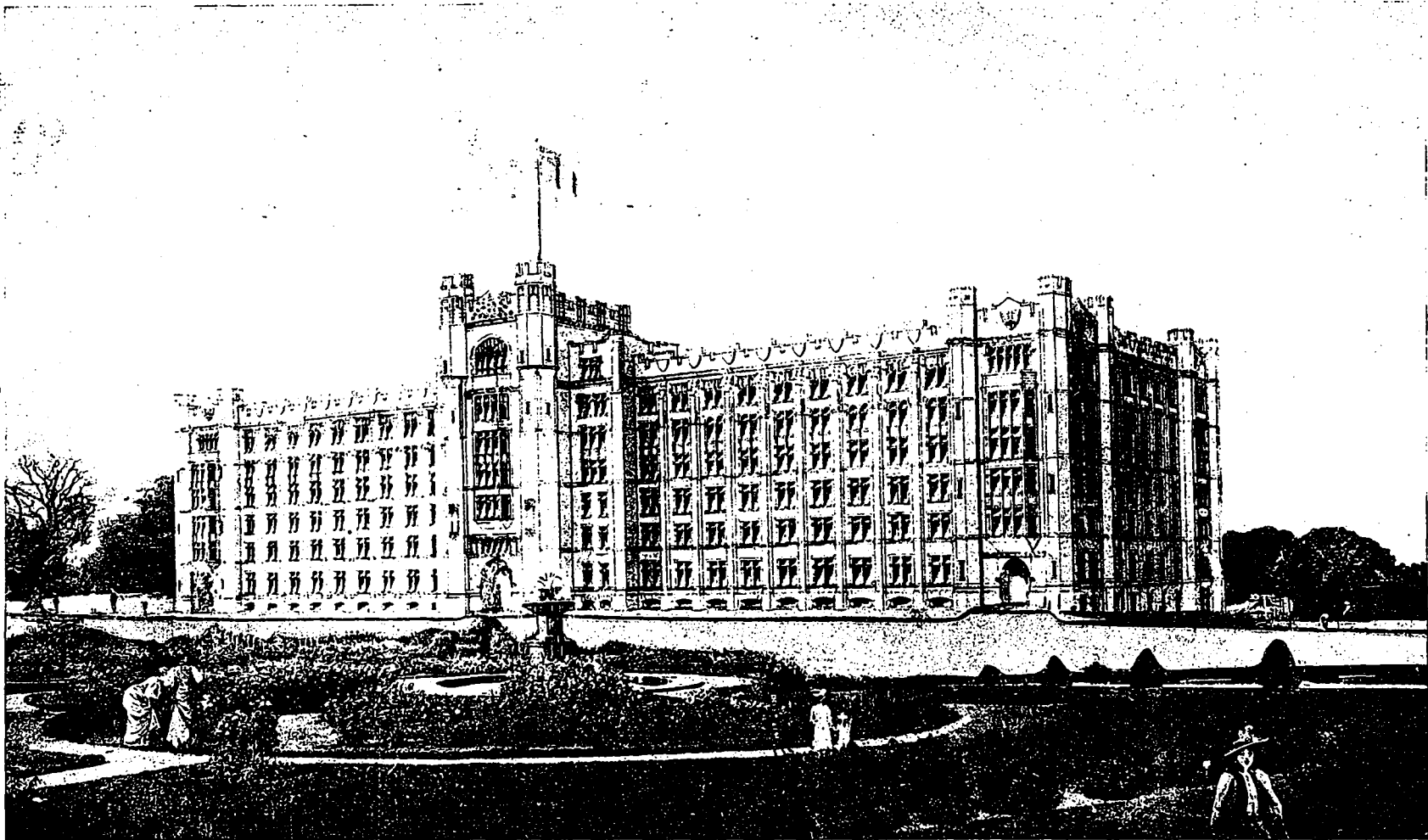
One of the results of these recent experiments is the preparation of the substance called "apokonin," which has been pronounced by some technical observers as the best and most lasting road covering yet brought out. The merits of this process were discussed at the recent Convention of Scientists and Physicians held in Salzburg, Germany. The process is secret, but it is known that coal-tar oils are the main ingredients. The heavy, pene-



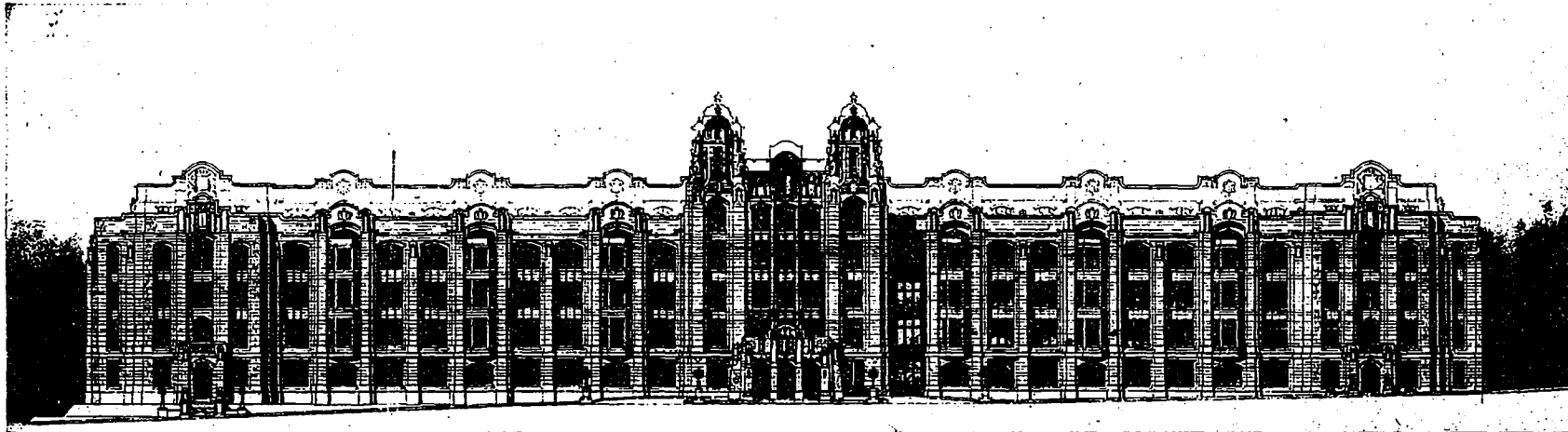
First floor plan, Nurses' Home, proposed Toronto General Hospital. Darling and Pearson, Architects.

The power house will provide light, heat and power for the whole group of buildings, delivering the steam and electric current through tunnels. The laundry is placed over the power house, and will be equipped with the latest laundry machinery.

trating qualities of the oils give great binding power to the composition. This, together with the pressure applied, produces a formation iron-like in its consistency, making the surface of the road, it is claimed, so smooth and hard that snow and rain water can not penetrate.



Perspective of the design executed by the architectural staff of the Department of Public Works and the one which the Honorable Mr. Pugsley has declared it is the intention of the Government to carry out. The utter lack of character in this design has brought down upon it a storm of severe criticism in Canada and was criticized by a prominent member of the profession as "looking like a cross between a fancy jail and a chocolate factory with a dash of high school thrown in."



Street and Park elevations of the prize design of Messrs. E. & W. S. Maxwell, Montreal, for the proposed Departmental building to be erected by the Canadian Government at Ottawa. This design has been commented upon favorably by the most eminent critics on this continent. It is an excellent adaptation of Gothic to modern conditions and would provide a structure that would harmonize well with the dignified old piles on Parliament Hill. It has, however, been set aside by the Department of Public Works and declared by the Honorable Mr. Pugsley to be unsuitable.

PROPOSED DEPARTMENT BUILDING, OTTAWA.—A Gross Breach of Faith with Architectural Profession.—A Beautifully Symmetrical and Monumental Modern Adaptation of Gothic Set Aside for a Design Characterized by Critic as a “Glorified Packing Box.” . .

IT NOW APPEARS that Mr. Pugsley, Minister of Public Works, has decided to carry out his determination to set aside the prize design of Messrs. E. & W. S. Maxwell, of Montreal, for the proposed Departmental Building at Ottawa and erecting this, one of Canada's largest Government buildings, after plans prepared by Chief Architect, David Ewart, of the Department of Public Works, and his staff.

A large delegation of architects recently waited upon the Government protesting strongly against such a procedure, pointing out that the design of so important a structure was essentially work for the best architectural talent in Canada, and that the competition conducted more than two years ago by the Department was at that time calculated to give the country the benefit of the best architectural services obtainable in Canada. The petitioners further pointed out that the conditions of the competition implied that the successful competitor should be asked to prepare the final drawings and superintend the construction of the building. They pointed out that the adoption of plans prepared by the Government's chief architect would not only constitute a breach of faith with the architectural profession in Canada but would give the country a structure far inferior to that which might be obtained through following out their original programme.

The publication in the daily press of Mr. Ewart's design justifies every contention made by the architects. Mr. Pugsley's statement as recently made on the floor of the House that not one of the prize designs was considered suitable, does, by no means, justify the stand taken by the Government. Several designs were prepared in accordance with a definite programme laid down by the Government, and the assessors that awarded the prizes were among the most competent architectural critics in Canada, one of whom was the Government's chief architect, Mr. Ewart. In all architectural competitions, it is invariably the case that the successful design has to be changed in some few minor particulars before a working plan can be decided upon. This would be also true with regard to the design of Messrs. E & W. S. Maxwell. This design was prepared in strict accordance with the programme as laid down by the Government, and the general conception was considered good. The fact that it possibly is not suitable in every minor detail, does not justify its being thrown out by the Government, and substituted by an essentially inferior design prepared by an over-worked department.

We publish herewith Mr. Ewart's design, together with the prize design of Messrs. E. & W. S. Maxwell. A glance at them is sufficient to enable even the untrained eye to perceive the utter lack of character in the former as compared with the beautiful symmetrical lines of the latter. The designs of Messrs. Maxwell, when first published, some two years ago, received favorable comment from critics all over the continent. It is a beautiful adaptation of Modern Gothic and would harmonize well with the old dignified Gothic piles on Parliament Hill. The utter lack of character in Mr. Ewart's design, on the other hand, renders practically impossible a detailed criticism. The criticism of a prominent Toronto architect of this latter design is fairly representative of just how the trained eye looks upon this unfortunate design. To CONSTRUCTION he said:

“I have had the pleasure—or I might rather term it the pain—of examining critically the perspective drawing

showing the proposed new Departmental Building to be erected at Ottawa by the Dominion Government.

“At first sight, one is struck with the utter lack of character—A Departmental Building for the Dominion Government.—It looks more like a cross between a fancy jail and a chocolate factory, with a dash of “high school thrown in. No consideration has been given to the study of the building in mass; the central motive is too wide in proportion to the connecting wings, nor is this central motive properly tied to the connecting wings or to the end pavillions. The fenestration of the connecting wings is monotonous and uninteresting in the extreme. No attempt has been made to relieve by grouping, or by the handling of the piers the studied monotony of row after row of windows.

“The building is too high for its length. The treatment of the basement gives an appearance of weakness to the whole structure—it looks like a sham building, and such it really is. It pretends to be Gothic—but heaven deliver us from such a bastard Gothic.

“The old buildings, while open to criticism, are, on the whole, a picturesque and interesting group—at least the work of a scholar; but what shall we say of this “glorified packing box?” It has really nothing to commend it. It is bad in character, bad in mass, bad in detail, commonplace in conception.

“If the proposed new Government Buildings at Ottawa are to be Gothic in design, and this is a sample of Government Gothic, then I am sure all intelligent men will join with us in saying, ‘God forbid!’”

If we were to make any comment upon this criticism we would say that it is not sufficiently severe.

Letter to the Prime Minister from Mr. Baker.

The following letter was addressed to Sir Wilfrid Laurier by Mr. F. S. Baker, President of the R. A. I. C., and it quite fairly represents the views of the architectural profession, together with those of intelligent Canadians generally upon the proposed procedure of Mr. Pugsley:

April 15th, 1910.

My Dear Sir Wilfrid:

In January of this year a very representative deputation of the architects of the whole Dominion, numbering about fifteen, visited Ottawa and saw the Minister of Public Works by appointment. The object of this visit was to present a petition from all of the official provincial architectural bodies, and also from the Royal Architectural Institute of Canada, the representative Canadian body, requesting the Government to adopt the principle, long since adopted in the principal countries of the world, of employing eminent architects in private practice to design and supervise the erection of the more important public buildings to be undertaken by the Government, including those for which a competition amongst the architects of Canada had already been held, namely the \$5,000,000 Departmental Building in Major's Hill Park, Ottawa. By holding that competition the Dominion Government had in fact adopted the principle in question and the Public was led to believe that the same principle would be followed in future.

At the interview above referred to with the Hon. Dr. Pugsley, the usual assurance of consideration was given

by the Minister, to whom the matter was made as clear as possible by the architects, in the time available.

My attention has now been called, to page 6325 of Hansard, dated April 4th, 1910, in which the Honourable Minister has stated, in answer to questions, that the planning and carrying out of the work is now to be done by the "architectural staff of the Department of Public Works."

An illustration has also appeared in the Ottawa and Toronto papers indicating the design which the Department proposes to carry out.

Now, sir, on behalf of the architects of Canada and taking the broadest possible view of the matter, not being embarrassed by any question of friendship or politics, I feel it my duty to draw your attention to the very serious effect which this policy may have upon the future of Canada, regarding the welfare of which we are, of course, all fully equally concerned.

The Honourable Minister has stated that "not one of the designs submitted was considered suitable." In this he refers to the designs submitted in the competition for these buildings instituted and conducted by the Government some time ago. I take issue with this statement as the Board of Assessors appointed by the Government, which included its Chief Architect who acted as its agent, selected one design as complying with the conditions of the competition, and thus suitable for the requirements of the various departments. It must be obvious to every one that the object of a competition is to ascertain which design is the most suitable and while in this case the planning of these buildings was the test, the plan might reasonably require some alterations in different parts, as happens in the case of almost every building that is erected for public or private purposes.

The design produced by the architectural staff of the Department of Public Works has now been published, and I submit that for its purpose it is a travesty on good architecture. If it were intended for a "Salvation Army Barrack," or a "Tobacco Factory," this criticism might not be reasonable, but for a building to house the official departments of the Government of an advanced country, I submit the design is absolutely unsuitable and calculated to increase in the minds of cultured persons the inferiority of Canada in Art.

The question is, are we in Canada to be continually made a laughing stock for the people of all civilized countries, by expending vast sums of money upon buildings of puerile design and questionable construction?

A commission passed upon the collapse of the West Block Tower, and I ask if its findings were creditable to this department? If a Royal Commission was appointed to investigate the conditions existing to-day in the new Museum, what would its findings be? Has there been a large number of failures costing large sums of money to rectify in buildings designed and erected by this same department? Our Government is elected to execute the will of the country, and I do not think there can be found one Canadian who will agree that a retrograde step is a wise one.

Canada wants progress, her money spent wisely, her Government to benefit by mistakes of other countries and avoid them, a future Canada which will be a joy to the visitor, a country whose objects of Art and Architecture may be heralded abroad as sound and good. May I be permitted to say that these hopes and expectations will be completely defeated if the policy of having an overworked department attempt the erection of the large public buildings of Canada, is continued. I am,

Yours very truly,

F. S. Baker
President R.A.I.C.

Rt. Hon. Sir Wilfrid Laurier,
Prime Minister,
Ottawa, Ont.

It is our sincere hope that some influence prompted by a slight regard for the architecture of our National

Buildings in Ottawa may be brought to bear upon Mr. Pugsley, to dissuade him from following out his present proposed course and thus prevent the erection of a structure that for all time would be a blot on the good taste of the Canadian people.

ARCHITECTURAL REGISTRATION AND THE CONTRACTOR.

THE CHAIRMAN of the National Federation of Building Trade Employers in South Africa (Mr. M. C. A. Meischke), in speaking before the Select Committee on the Architects' Bill last June, gave evidence to the effect that builders were in favor of Registration of architects in that they were more assured that they would get fair treatment from the architects. Mr. Reid had mentioned the question of the final certificates being withheld sometimes by unscrupulous architects, either with the object of pressing the builder when he was wanting money to get money out of him, or for some other purpose. When the Bill passed as he hoped it would, it would mean that the Council of Architects had a hold upon its members, and when there was any unprofessional conduct they could bring it before the Institute, as provided for under Clause 13 and strike them from the roll. Sometimes architects would do anything in order to get work, and would offer their services at a very low rate. Of course, they had to make up their loss in some way by getting money from the builder. There were also unscrupulous builders who lent themselves to that, giving architects an extra commission which would come out of the work, for which, as in the case of the Dutch Reformed Church, the proprietors had to pay, because the architect gave certificates for extra work which had not been done, or if they could not increase the bill they decreased the amount of work. Without Registration they could not do anything, because the architects were powerless, but if the Bill passed, a case like that could be brought to the notice of the Council and they could take steps. They considered that through the passing of this Bill, builders and the public were more protected as a class. Another point was that if it were secured that architects acted fairly there was less risk for the builders, so that they could take work at a cheaper rate than he had to do sometimes at present. Architects at present were always allowed a margin, especially where it was a question of lump sums provided for in the contract. If an architect was unscrupulous he spent the money and shared it with the builder or proprietor or otherwise. That was an abuse which would be done away with when the Bill passed.

The issue of certificates was one of the greatest things they had to protect. Even the builder suffered as well as the proprietor. The architect, being the agent of the proprietor, dealt with his client's money. If there was any collusion between the two the proprietor suffered; if not, the builder suffered. When the Bill passes, the Council of Architects will be enabled to see that the members of the profession run straight and the builders will have redress by going to the Council and reporting dishonest practices. Therefore, they were in favor of the Bill. As Mr. Tindall had said, it was also in the public interest to get architects of standing to put up decent buildings, with architectural features. It was for the benefit of the country. Then, of course, they would have in future a stricter supervision of the work. Today, builders worked in the interests of their trade; but under the Act, architects and builders would work together and the public at large will benefit by it. Mr. Jacobsz had said something about builders and architects. Of course, in the country districts a builder can design and plan a building. But he is not an architect; he could only style himself a builder. He does not come under the Act because he is not an architect; he is a builder.—THE JOURNAL OF THE SOCIETY OF ARCHITECTS, LONDON.

THE NECESSITY OF FIREPROOF CONSTRUCTION.—Enormous Destruction of Property in Canada Demands the Adoption of Safe and Economical Methods of Construction.—By Prof. Peter Gillespie, President C.C.C.A.

THE CANADIAN CEMENT and Concrete Association has completed the second year of its history with an outlook for usefulness which is undoubtedly brighter than it was a year ago. Its membership is larger; its name and aims are more widely known; its financial status is more comfortable, and in a few particulars it has learned wisdom through mistakes of the past. As anticipated in my opening remarks to you last March, a permanent secretary has been appointed, to whom has been delegated the clerical work connected with the association. The new regime is proving very satisfactory, and I think that this will be a means to extending its influence and work. A committee on standard specifications has been at work, and will report to you during the week on the results of its labors. It is felt that by issuing standard specifications which are up to date, but also sufficiently conservative to meet the approval of moderate people, the association will be doing something to endorse safe and economical construction in concrete.

Regarding the attitude of the Canadian Cement and Concrete Association toward other building materials, I have only a word to say. While it stands for the dissemination of authentic information regarding the uses of a comparatively new material—for the encouragement of whatever in cement construction is safe, economical and artistic, and for the elimination of whatever is unsafe, wasteful and unsightly—it does not decry nor condemn any other legitimate building material. It recognizes that others have claims and advantages of their own, and does not advocate cement construction where another material is manifestly superior for the special situation under consideration. It recognizes also that steel and concrete and clay products and wood make, on occasions, most excellent structural combinations, and feels no enmity nor jealousy towards any of them.

It has been pointed out that human progress from pioneer conditions always divides itself into three noteworthy stages. These are, first, the period of individual enterprise involving the conquest of the wilderness and making for the benefit of the man; second, the period of collective enterprise making for the benefit of communities, or of the individuals constituting them; third, the period of co-operative enterprise, largely altruistic, for the advantage of the nation, and for succeeding generations as well as those of the present. This last is the era upon which we are now entering, an era when an endeavor to use wisely, to avoid unnecessary waste and to look to the requirements of the future is being made. As a sign of the times, we have commissions on the Conservation of Natural Resources. It is to a recognition by the present generation of its responsibility to posterity, that these important commissions of inquiry in the United States and Canada owe their beginning. "The duty of man to man, on which the integrity of nations must rest, is no higher than the duty of each generation to the next; and the obligation of the nation to each actual citizen is no more sacred than the obligation to the citizen to be, who, in turn, must bear the nation's duties and responsibilities." It is only of recent years that the attention of people in the New World has been drawn to the fact that the natural resources of this continent are not inexhaustible, and that if the duty of the present to succeeding generations is to be faithfully discharged, some methods of conserving these assets must be devised. The most reprehensible of all waste is destruction, and the

most destructive of all agencies is fire, and to the extent of its ravages in this country at the present time, to a comparison of our own country's fire loss with that of other lands, and to means for minimizing this appalling waste, I invite your attention for a few minutes to-day.

A report of the United States Geological Survey, recently to hand, affirms that during the year 1907, the per capita loss in the United States due to the destruction of buildings and their contents by fire was \$2.51, while the average corresponding per capita loss in Austria, Denmark, France, Germany, Italy and Switzerland during various periods from 1898 to 1904 was only 33c., an amount only one-eighth that quoted for the United States of America. It must also be remembered that to the actual per capita loss as given above, viz., \$2.51, must be added a number of items indirectly, if not directly, chargeable to the fire fiend. Premiums are paid to fire insurance companies obviously very much in excess of the compensation for fire losses returned to the insured; fire fighting equipment and a water distributing system must be installed and maintained at an expense very much in excess of what would be required for purely industrial and domestic necessities. These the statistician has estimated as follows: Excess of premiums paid over amount of losses returned, per capita, \$1.71; maintenance of waterworks, chargeable to fire service, exclusively, per capita, 33c.; maintenance of public fire departments, per capita, 57c.; maintenance of private fire protection, per capita, 21c.. This makes a total annual per capita tax of \$5.33, and represents an aggregate cost to the public of the United States of 456 millions of dollars, an amount the magnitude of which it is exceedingly difficult to comprehend. If through any cause, it were possible to reduce the actual fire loss in the United States to a figure comparable with what prevails in the countries of continental Europe, there would be a proportionate reduction in related and accessory items as well, which, it is estimated, would reduce the aggregate loss through fire to ninety millions of dollars, which would mean a saving to the republic of 366 millions. In consequence, it would appear that the United States is paying annually a preventable tax sufficient to construct a Panama Canal. For the year 1907, the total value of buildings erected in the Republic was conservatively estimated at \$1,000,000,000, and from what has been said above, it is seen that a loss by fire equal to practically half the value of the buildings constructed, was suffered by the American people. This is a loss that no system of account keeping or no method of clever logic can conceal. Destruction by fire is absolute and irreparable, and insurance when paid to the owner, serves only to distribute the loss among the whole body of the insured. This state of affairs is truly appalling, and it is a striking wonder that economists have given so little attention to the evil and its remedy.

The ~~Monthly Times of January 6, 1910~~ reports the aggregate loss in Canada due to fire during the year 1909 as \$18,905,000, with a total loss of life of 219. The daily press report of a fire was first accepted by this journal, and then inquiries were addressed personally to the owner and occupant of the property destroyed. In this way fairly authentic information regarding the magnitude of the loss was obtained. An actual fire loss of one and three-quarters millions of dollars per month in Canada must give us pause. This is equivalent to a per capita loss of \$2.70, seven per cent. greater than that reported by the United States, twenty-three times as large as that reported for Italy, six times as large as that reported for Germany, and nine times as large as that reported for France. Assuming that for Canada, the accessory and related losses due to insurance, fire protection, etc., are of the same order as in the neighbor reporting, Canada's sacrifice to the fire monster, directly and indirectly will approximate the enormous total of \$40,000,000 per year. This amount is four times the yearly interest on Canada's national debt, is nearly equal

*Paper read before the second annual Convention of the Canadian Cement and Concrete Association at London, Canada.

to the total annual revenue from duties on imports into Canada, is seven times as large as the entire annual expenditure for postal facilities in this country, is twice as great as the entire expenditure by the people of the country for the maintenance of churches and clergy of all denominations, and is sufficient to construct four Dreadnoughts annually. In addition to this, there were sacrificed last year, four lives per week for every week of the year, a number almost large enough to place a victim's skull on every milepost between Buffalo and Detroit. On this side of the water we view with alarm the manner in which the European Powers are breaking the backs of their taxpayers in order to render their armaments on land and sea more and more formidable, and we are, sometimes, in consequence, lead to doubt the real progress of civilization, not thinking perhaps that our own prodigality in the matter of destruction by fire must arouse them in a feeling of wonderment at the folly of the so-called progressive American people.

The cause of such destruction is not far to seek. Our buildings, many of them, are constructed of most inflammable materials, and although they may be protected by the most perfect fire-fighting appliances that ingenuity can devise, conflagrations are inevitable. The disastrous Toronto and Baltimore fires of 1904, the San Francisco calamity of 1906, and the Collinwood School House tragedy and the conflagration in Chelsea, Mass., in 1908, are still fresh in the people's minds, and it is safe to say that had fire-proof construction as to-day understood prevailed generally, these unfortunate disasters would either have never occurred or the evils attending them would have been very much less than they actually were. The alarming feature of the entire situation is that similar calamities may occur any day in any city of Canada or the United States.

In America combustible building materials are employed to an extent that would not be tolerated in Europe. Older in the world's history than America, these nations have developed a wisdom in construction, in comparison with which America suffers greatly. In many European cities the erection of wooden buildings is prohibited, and the use of inflammable material in construction is so rigidly regulated and overseen that fires are practically confined in every instance to the building in which they originated. It is manifest from the results that the consequences of European paternal government are not at all disadvantageous.

A report from a branch of the Government service at Washington, D. C., has this to say: "The timber supply of the United States is rapidly approaching exhaustion, and unless means are taken to limit the waste (a great deal of it through fires) and replenish the supply through reforestation, the timber resources of the country will be exhausted within the next quarter of a century. The known supplies of high-grade iron in this country, estimated at more than 4,788,000,000 tons cannot be expected to last beyond the middle of this century unless the present increasing rate of consumption is curtailed. There are in addition about 75,000,000,000 tons of low-grade iron ore, which will undoubtedly be used to some extent as the price of iron advances. The supplies of stone, sand, gravel, clay, cement, lime and slate are practically inexhaustible, and as the supplies of timber and iron are depleted and the prices of these are increased, it is evident that the United States must turn to concrete-making materials, clay products, and building stone as substitutes for wood and iron." Continuing, the same report asserts that "the mineral materials available for structural purposes may be divided into two classes: (1) iron, steel, copper, nickel, and their manufacture, the supplies of which are limited and which are themselves subject to destruction through weathering, fire and other causes; (2) stone, clay products, and cement and concrete manufactures, which are less subject to destructive

agencies and the supplies of which are practically inexhaustible.

"In building and construction work the substitution of the materials of the second group for the more commonly used wood and metal manufactures should be encouraged as having an important influence on the preservation of the supplies of the more perishable and scarcer materials. The use of building stone and clay and cement products in this country had been restricted by competition with the much cheaper wood products and the more easily fabricated and more available metal products. Improved methods of preparing the raw materials for use in building construction are, however, rapidly diminishing the difference in cost, and careful investigation as to their structural qualities and the more suitable structural forms would have an important influence in further reducing this difference in cost and in enlarging the use of the more permanent materials." It is manifest from the above that those materials which occur in almost inexhaustible quantities and which, when fabricated into structural forms, are least susceptible to destructive agencies, must be looked to to save the situation. They constitute the really fireproof building materials as has been attested by numerous severe trials. Building regulations on this continent, however, have been very much to blame in their failure to compel, or at least encourage their use. They have permitted the erection of structures either of inflammable materials or of combustible materials in such a way that when a fire occurs in the contents of a building it is not usually confined to that building. Our fire protection appliances are probably as modern on this continent as elsewhere, so that it seems conclusive that to insist on the use of fireproof building materials in the first place, and in the second to scrutinize carefully the method of using them so that fires when they do occur will be properly confined, will be the remedy. It is exceedingly poor economy to sacrifice tomorrow the accumulated wealth of years of labor for the immediate convenience and needs of to-day.

THE USE OF CEMENT IN ARCHITECTURE.—By F. S. Baker, President R.A.I.C.

IRISE TO SPEAK on the subject "The Use of Cement in Architecture" with considerable diffidence as I see before me so many people who are much better informed on this subject than I am. Will you allow me, sir, to congratulate you and your association upon the splendid exhibition which you have arranged and upon the excellent attendance, which indicates the great progress which your association is making. I want also to say to this gathering of Canadians, mostly no doubt interested in the manufacture of cement, on behalf of the architects of Canada, how very much the successful efforts of those engaged in the manufacture of cement have been appreciated, and to express their pleasure that cement, particularly "Portland," made of Canadian material by Canadian workmen, is now obtainable in satisfactory quantities, of a quality equal if not superior to any made in any country in the world.

I easily recall the days when the only Portland cement came from England in very small quantities and at a prohibitive price. The production of the Canadian article saw the emancipation of the architects from the anxieties of masonry work in lime mortar, and to-day I doubt if there is a building material which the architects regard with more affection than Portland cement.

With your kind permission I will speak on this subject from the architect's as distinguished from the engineer's point of view. Your excellent programme in-

(Concluded on page 80.)



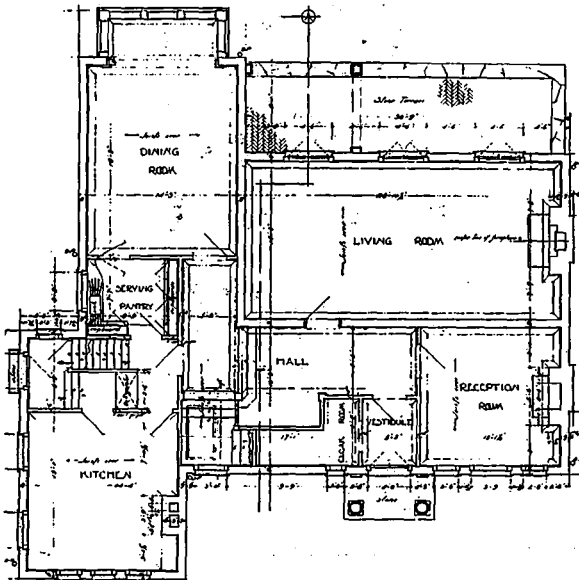
Residence of E. R. Rolph, of the firm of Sproat & Rolph, Architects, on Jackes avenue, Toronto. An interesting Georgian house with walls of ordinary red brick laid in a double stretcher bond, so jointed with false vertical joints of the same colors as to take on the appearance of Roman brick.



Rear view of residence of Architect E. R. Rolph, Jackes avenue, Toronto, showing the casement windows, which open on to the pergola-like porch facing the direct south. Preparatory work on the garden fountain, which, together with the proposed landscape features, will make this portion of the lot an ideal one, is seen in the basin and tiles in the foreground.

RESIDENCE OF MR. E. R. ROLPH, TORONTO.—Splendidly Situated Georgian Home in Which Beauty of Design and Plan is Achieved by Simple Lines and Good Proportions.—Floor Depression in Hall and Living Room Feature of an Unusually Interesting Scheme.

THERE IS POSSIBLY NO STYLE of architectural treatment, which admits of more latitude for practical and consistent house-planning than that of the Georgian Period, and yet it may be said in the same breath that there is perhaps no style with narrower or more restrictive limitations. To glance about at various



Ground floor plan, Residence of Mr. E. R. Rolph, of the firm of Sproatt and Rolph, Architects, on Jackes avenue, Toronto.

examples both good and bad, and commonplace and attractive, is to be fully convinced of the truth of this contradiction. This latitude, it may be said, lies in the flexibility of the design itself, and the limitations in the failure to discern the possibilities in this respect. Thus one finds Georgian houses which slavishly ape one another, and again others in which the lines of compositions have been beautifully moulded to produce a distinct feeling of frank simplicity without destroying or belaboring the characteristic features of the design.

One of the more successful residences of this type is the recently erected home of Mr. E. R. Rolph, of the firm of Sproatt & Rolph, architects, Toronto. This home stands well back on spacious grounds on the south side of Jackes ave., in one of the most delightful sections of the Rosedale district. Originally the site formed a part of a large apple orchard, and at the front of the lot is a beautiful old apple tree spreading its robust boughs in a most paternal manner. Other trees of this variety are interspersed along the sides, while at the juncture of the street line are two stalwart young maples which further add to make the environments ideal as regards natural advantages.

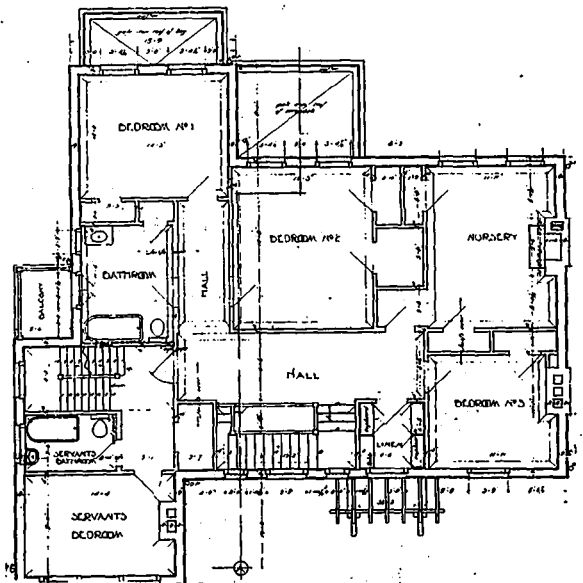
The approach is by a vitrified brick walk to an interesting small entrance porch placed slightly to the right of the centre, and having a delightfully private yet inviting feeling, which is further accentuated by the projection from the service portion at the northeast corner. The walls are of ordinary red brick with $1\frac{1}{4}$ inch white mortar joints, and double stretchers so laid and merged with false vertical joints of the same color, as to take on the appearance of Roman brick. This results in a most pleasing composition, and with the white woodwork and

green painted shutters of the upper storey forms an unusually simple yet attractive exterior.

As the exterior suggests, the interior of the house is extremely homelike in its appointments, and the entrance hall, which is transversely situated, reveals a general plan which departs from the usual arrangement found in residences of this style. Here the floor is tiled with red English quarries and the walls are covered with a green velvet paper, while adding effectively to this combination is the woodwork, which is painted white, with the exception of the doors and hand rail and newels of the staircase, which are a rich mahogany. By accident, and by the result of no forethought, the scheme of decorations is worked out in Oriental style, with Chinese lanterns, furniture, and wall pieces, but these happily are quite in sympathy with their surroundings.

The living room is done in a soft green velvet paper, similar to that in the hall, and has casement windows opening onto a pergola-like porch, overlooking a south garden. The curtains are of old green silk rep hung from gilded cornices, the mantel of Indian limestone, and the floor of polished oak covered with rich, soft rugs. In order to allow additional height for the cove ceiling, without raising the level of the entire upper floor, the floor of this room, together with that of the main hall and reception room, is depressed twenty-one inches. This is worked out in the staircase, to have it continuous, by an arrangement of three short steps to a landing on a floor level with the service portion of the house.

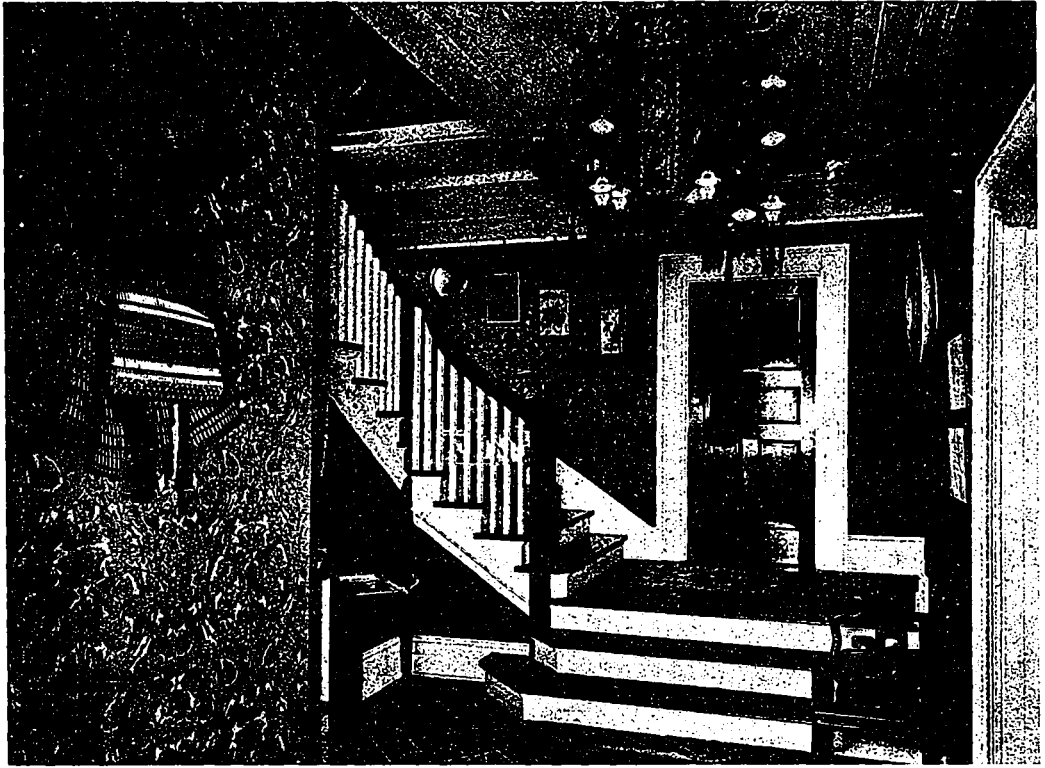
Off this landing is a short passage to the dining-room, which has a south-facing bay, affording the same delightful view as is obtained from the living room. In this room the furniture is of mahogany, the carpet a soft green, and the wall paper of a russet brown design on a deep blue background. Passage to and from the kitchen



Second floor plan, Residence of Mr. E. R. Rolph, of the firm of Sproatt and Rolph, Architects, on Jackes avenue, Toronto.

is by a small serving pantry, which is also adjoined by a service staircase giving access to the basement and upper floors.

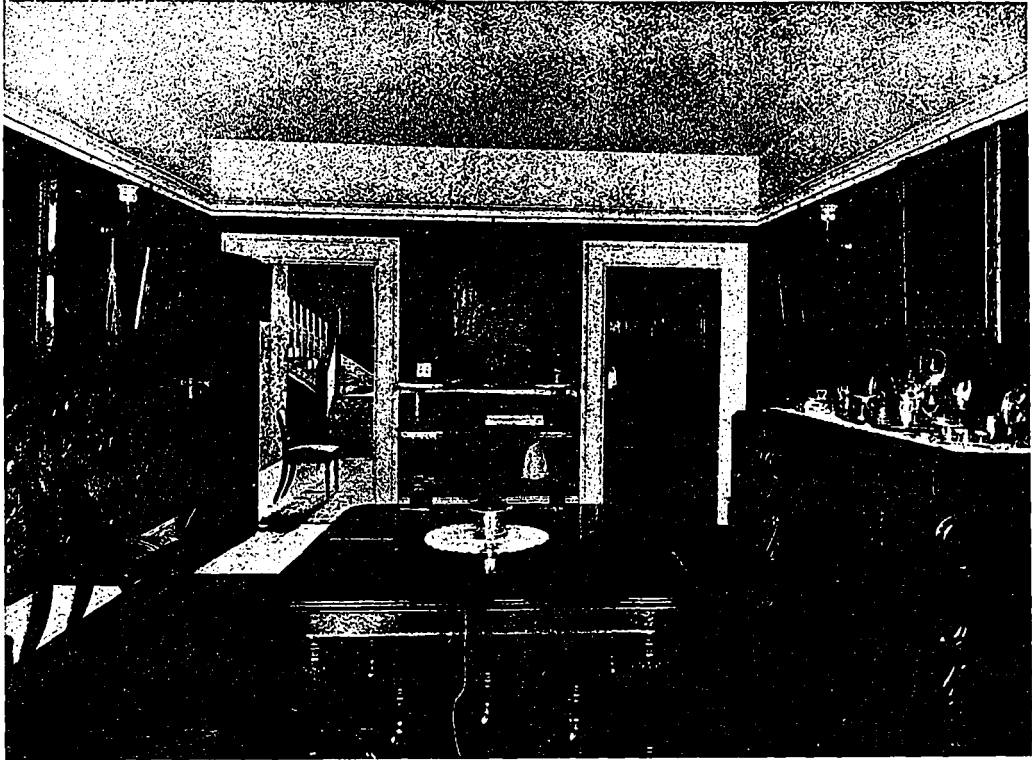
In the upper floor the woodwork throughout, as on the first floor, is finished in white enamel, and the wall



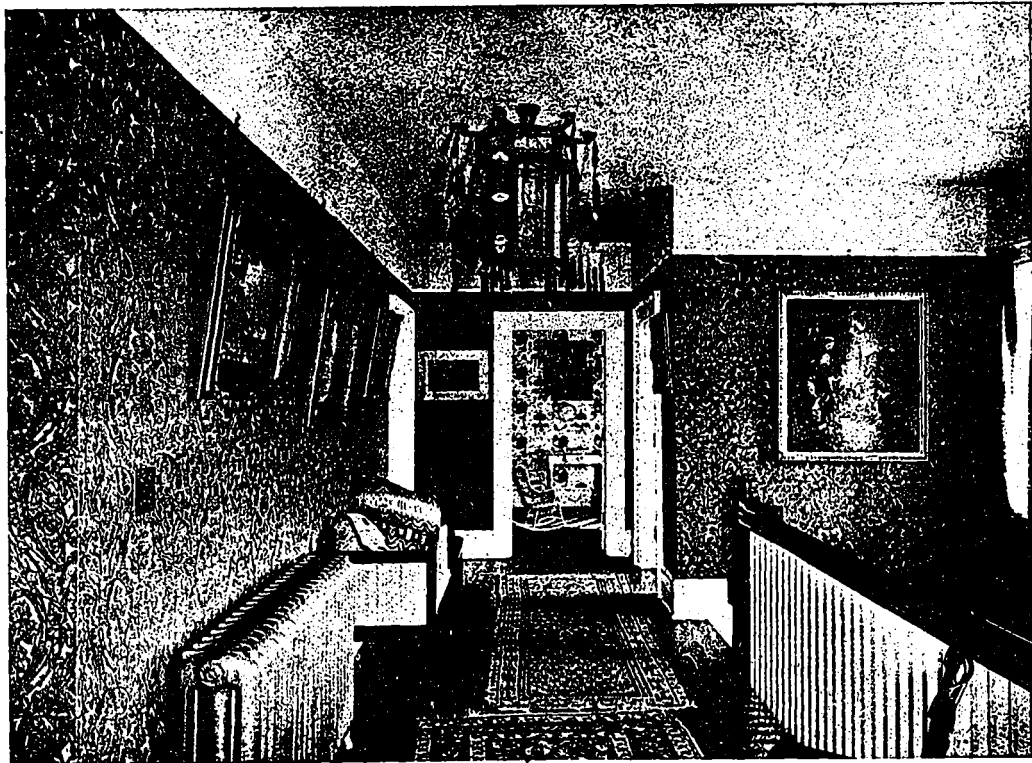
Entrance Hall and Main Staircase, residence of Architect E. R. Rolph, Jackes avenue, Toronto. Note the floor of red English tile quarries, and the delightful harmony between the Oriental decorations and general wall scheme.



Living Room, residence of Architect E. R. Rolph, Jackes avenue, Toronto, showing the cove ceiling and Indiana limestone mantel.



Dining Room, residence of Architect E. R. Rolph, Jackes Avenue, Toronto, as it appears looking from the bay window towards the hallway. On the right is seen the doorway connecting with the servery and kitchen.



Upper Hallway, residence of Architect E. R. Rolph, Jacke - avenue, Toronto, in which the wall treatment and woodwork of the lower hall scheme is repeated.

scheme and decorations of the hallway is similar to the hall below. There are three bedrooms, a nursery and a large tiled bathroom, exclusive of the servants' bedroom and accommodations, which are situated above the kitchen.

THE USE OF CEMENT IN ARCHITECTURE.

—Continued from Page 75.

dictates that the engineer's view will be well taken care of.

It is very gratifying to know that no matter how enormous the quantity of Portland cement required in the operations incidental to the development of this vast country of ours, the raw material is available to insure the use of the Canadian product and protect us against the necessity of importing foreign material.

I think that so delicate a material as Portland cement should be shipped in better packages than jute sacks, and claiming an architect's prerogative, I would ask your consideration of the possibility of improvement in this direction.

There is a source of considerable anxiety and annoyance to the architects which I think your chemical experts might overcome with great benefit to every one concerned. I refer to that ingredient in Portland cement, and all seem to be alike in this respect, which so badly stains any limestone or sandstone with which it comes in contact.

Owing to the kindness of the management of the International Cement Company at Hull, Que., I was given an opportunity with several other architects to visit their works and see the whole process of manufacture from the quarry from which the shale was mixed to the jute sacks already referred to.

Part of the process was, of course, this crushed shale and clay in the large cylinders at a very high temperature, and it occurred to me that the qualities which caused the stainings of the stone might be some form of carbon which might be eliminated by a furtive burning or by some chemical process which would not injure the usefulness of the product. Of course we use various methods of overcoming this staining, such as painting the back of the stone and using some non-staining cement in making the mortar used next to the stone, etc., but even with these precautions the stains sometimes get through. I have in my mind a very fine public building now being erected of Bedford stone and large areas of the external walls of the building are ruined by this staining.

The subject of concrete will be well covered by various speakers at this meeting, but there is one feature which occurs to me, I refer to the injury which concrete in course of setting receives from any sudden jar. To obviate this where concrete is used for floors in steel frame buildings, I think the architect should provide additional steel sufficient to insure a stiffness in the frames, which would prevent injury to the concrete by the vibration incidental to the erection of any steel frame building. I have observed that concrete placed in moderate freezing weather, say twenty degrees and above, which is allowed to set fully without any vibration, seems to be as good as that set in non-freezing weather.

Portland cement has proved very useful in forming surfaces to resist water or tanks to contain fluid, such as cisterns, swimming baths, egg tanks, etc., but the success of this depends largely on the mixture. In a case like egg tanks it is exceedingly important that the walls should be absolutely tight as the slightest subsidence of the fluid causes the eggs at the bottom of the tank to be crushed.

For this reason concrete seems to be the ideal thing for floors which lie upon the earth, such as basement floors or veranda floors, or sidewalks. As a finished floor for a building, however, I do not think a cement and sand or marble dust composition is satisfactory, and the same applies to staircases. I refer, of course, to places

where there is heavy traffic, as the floors or treads at once begin to wear, and the consequent deposit is carried into adjoining rooms.

Portland cement shows its greatest usefulness to the architect in the mortar which is now almost universally used in the laying up of brick walls. I mean cement mortar, one to three. A brick wall laid in such mortar and grouted with liquid with cement grout in a very few courses becomes as hard as solid stone, and as compared with concrete the builder has the assurance of strength, from his knowledge of the soundness of the bricks and of their resistance to crushing. I have watched men cutting an opening through such a brick wall, and the hard bricks generally yield before the mortar. Such masonry is a great comfort to the architect. In it there is no danger of a weak spot, such as might occur in a concrete wall through the carelessness of the workmen. No matter what precautions he takes, the architect of a reinforced concrete building must have some anxiety on this score until the building has been thoroughly tested, and while I say this I am a great admirer of the wonderful feats which have been performed in the erection of immense reinforced concrete structures, and I am satisfied that it is a practical building process. The use of cement mortar in the building of rubble stone walls is also a great boon to the architect. No rubble stone work should be attempted in anything but cement mortar, where cement is obtainable. The failure which I have seen in rubble stone work would in every case have been avoided if cement mortar had been used.

While the concrete block is a desirable article for a certain class of building, I have not yet seen any which would be satisfactorily used in a building which was to stand as an architectural effort in a conspicuous place. In saying this I do not include so-called artificial stone which is a very admirable building material, and thanks to cement in its construction, is now obtainable of the highest quality, in any quantity. And you get it without delay. In this material anything which the architect can design of a masonry character can be rapidly constructed and reproduced to an endless number. He is hypercritical who condemns this material because it is an imitation. I contend that it is a sound building material, which can be quite properly used where it is obviously artificial stone.

Of the several kinds of artificial stone, I prefer that which is formed of the same material all through, and not formed in the main of one kind of concrete and faced with another. There is apt to be a difference in the expansion and contraction of two materials and a difference in the retention of moisture, which might reduce the strength of the latter article, as compared with that which is formed of the same material all through. It is clear, however, that an architect must be drawn into the reproduction of a feature so easily obtained in artificial stone in an effort to economize. On the whole I like artificial stone very much and wish it every success.

A delightful material for use on the interior wall surfaces of buildings has developed recently, in plaster formed of white cement mixed with ground stones of different colors.

Of these the most used is perhaps that which is known as Caen stone cement. This is now used to finish the interior of the public parts of hotels, hospitals, theatres, banks, stores, and even churches. It is applied much as plaster would be and is laid of tects in courses jointed horizontally and vertically, just as real stone work would be. The result is almost a perfect imitation of real Caen stone work and is, as I said before, a delightful interior finish. On account of its plastic nature the most difficult ornamental work can easily be produced cast from a carved model, which, of course, can be reproduced as often as desired. The color obtained is splendid, and while it is undoubtedly an imitation and more to be condemned on that score than artificial stone, an architect

obtains in its use a most satisfactory result for his client. All the large cities in Canada, and I think I may safely say all the large cities in the United States have prominent examples of the use of this material for interior finish. In most of these cases all of the interior trimmings, including the mouldings and ornaments, are also formed in the Caen stone cement.

The use of cement has also made possible many embellishments for the exterior of the building which could otherwise only be obtained at great expense. A whole wall surface may now be safely covered with cement plaster, either on masonry work or metal lath, and the craftsman feels assured that it will stay in position, while at the same time it may be enriched with scrafito ornament by the skillful carver. On the other hand friezes protected by roofs or other protections can be modelled in relief on the building, quite as successfully (and at much less expense) as a frieze carved in stone.

I cannot stop without urging upon this association of influential men the desirability of doing everything possible to encourage good architecture throughout the Dominion of Canada. You have done in the manufacture of Portland cement more than any other body of men has done in what makes for sound construction in building, and if you will as a body take a firm stand in favor of the employment by the public of architects, known to be skilled in their profession, you will be able to do much to improve Canadian architecture.

GEORGIAN BAY CANAL.—Project Now Reported a Certainty.—Noted British Engineer Acting in Concert with Dominion Government.—Monumental Engineering Feat to Cost \$150,000,000.

WITH the arrival of Sir Robert W. Perks, the noted British engineer in Canada, comes the first tangible move toward the actual construction of the Georgian Bay Ship Canal, that monumental engineering work of the British Empire which has been projected with a view to providing the shortest and cheapest grain carriage route from far Western Canada to the parts for ocean going steamers on the St. Lawrence. Sir Robert, whose engineering skill has been written from the Manchester Ship Canal down to the Rio Janeiro quays and the construction of the Argentine and Chito Transandine Railway, will assume constructive supervision of this proposed new monster among inland waterways.

The Georgian Bay Canal, which may revolutionize traffic conditions with regard to the great grain reaches of Western Canada as well as of the Northwest of the United States, will entail an estimated expenditure of between \$100,000,000 and \$150,000,000.

Though, as now planned, this money will be furnished in the first instance by an English syndicate, the cost of the undertaking probably will be guaranteed by the Canadian government, as steps are to be taken soon for the passage of a bill through the Dominion Parliament authorizing the construction of the canal as a government undertaking.

Government Ready to Aid.

Held to be rendered necessary by the fact that the St. Lawrence is not navigable for its entire length, the idea of constructing an all Canadian shipping waterway connecting the Ottawa River by way of Lake Nipissing and so with the St. Lawrence at Montreal was first proposed thirty years ago by Mr. McLeod Stuart, of Toronto, who inherited the scheme from his father. Many memorials on the project have been addressed to the Dominion Parliament, but up to the present nothing has been done toward formal governmental sanction of the plan. Sir Robert's arrival, his preparations prior to his leaving England, having been marked by his withdrawal from many activities with which he has been associated, so that his stay may be extensive, was determined upon

only, so it is authoritatively affirmed, after assurances had been received in London that the present Canadian government would lend every effort to expedite the passing of a measure making the project a government undertaking.

According to the latest designs, as learned from authoritative sources, the proposed 440 miles of canal between Georgian Bay and Montreal will be twenty-two feet deep and will link up the deep and navigable stretches of intervening lakes and rivers by means of thirty-three locks. The summit level, at about six thousand feet, will occur on the section between Lake Nipissing and the Ottawa River. The projectors count upon plenty of water not only for the canal, but for an electric plant of large dimensions, the latter idea being supported by the large watershed draining into the canal zone. It is estimated that the undertaking will require five years for completion.

Strategic Advantage.

Though the English press lays stress on the commercial aspects of the canal, another object that will be attained is the strategic advantage that the waterway will provide for the British Empire. There is no doubt that in the minds of the patriotic projectors of the undertaking the importance of this feature is not underestimated. The question of imperial defence, in fact, coordinates with that of commercial advantage. A glance at the Canadian map makes this assertion self-evident. For, surveying the map from the imperial standpoint, it is contended by Englishmen that the 3,260 miles of frontier dividing Canada from the United States is from a military standpoint a big item in the list of future contingencies.

A waterway which will enable the ships of the royal navy to draw up to the wharves of the upper lake ports, as they now draw up to the wharves of Montreal and Quebec, it is contended, will mean that the eastern portion of the Dominion's boundary will depend for its defence on naval, instead of military, power. Also, from a political point of view, the Georgian Bay Canal promises to place a trump card in the hands of a fully developed Canada.

As to the commercial possibilities of the undertaking, a London newspaper said:—

"These are infinite. Duluth, Chicago and Port Arthur are the grain centres of half the area of North America, Manitoba and the Northwest, in Canada, and, in the Republic, the States of Dakota, Minnesota, Missouri, Michigan, Illinois, Indiana, Colorado, Kansas and Nebraska. The trade in wheat, agricultural products generally and raw materials is enormous, for it must be remembered that the region is nearly as large as Europe. Some idea as to its magnitude may be gained from the fact that the freight received and shipped from Buffalo, the eastern terminus of deep water navigation, exceeds 70,000,000 tons. On the upper lakes the aggregate tonnage is at least half as much, the traffic of the canals at Sault Ste. Marie in a season of 230 days about twice the traffic of the Suez Canal in one year, while the traffic which passes up and down the Detroit River is said to exceed the foreign and coastwise traffic of London and Liverpool combined."

Route for Grain.

Boats bringing grain from the interior that at present pass eastward through Lake Superior or Lake Michigan and turn southward through Lake Huron, proceeding round the southern boundary of the Province of Ontario by the canal route, would continue eastward across Lake Huron into Georgian Bay, whence they enter the French River, and, continuing eastward, pass upward through Lake Nipissing to the highest point in the route, after which they descend the Ottawa River to Montreal.

It is proposed to construct the canal on the "dam and lock system," with slack water reaches between the structures. The locks along the route will be constructed of concrete and will have a length of 650 feet, a width of

65 feet, and a depth of 22 feet. It will permit the passage of ships of six hundred feet in length, sixty feet in beam and with a twenty foot draught. Of the 440 miles distance between Montreal and French River Village, on Georgian Bay, all save some twenty or thirty miles follow the course of some river or lake. Consequently the actual canal cutting that will be necessary to complete the undertaking will vary from twenty-eight to thirty-four miles. In addition about sixty miles of submerged channels will have to be removed at shoals, sharp bends and at other difficult points in order to form wider channels. This would leave about 332 miles of natural waterway that would not require any improvement save the raising of the water surface.

THE ARTISTIC SIDE OF CONCRETE CONSTRUCTION IN THE COUNTRY.—By Ernest Willby, Architect.

JUST NOW ALL KINDS of movements are on foot for the beautifying of our cities. I should like to see a similar movement for the beautifying of our rural districts; the first is a work of great difficulty, the latter, with the aid of concrete, becomes, I believe, very simple.

Usually in obtaining an artistic result, as for example in cement houses, that result depends on the quality of the design; the designer must be an artist, that is to say, an architect with artistic knowledge and training.

In the field for cement work to which I shall direct your attention, the architect is not essential, a slight knowledge of what constitutes good design would help, but even an entire lack of this knowledge would not destroy though it might lessen, the beauty of the finished work. Given certain requirements met in the simplest and most practical way by use of concrete, a good result would be obtained as naturally and almost as inevitably as night follows day.

Canada and the United States, being newly settled countries, have had to meet the problem of opening up the land for occupation by rough and ready methods; little thought had been given to so immaterial a thing as beauty. This is especially noticeable in our bridge work; first came the wooden bridge, not altogether without merit, and then in the search for something more durable, that triumph of ingenuity, the modern steel trussed bridge, a tall attenuated arrangement of struts and wires beautifully scientific, but not by any means scientifically beautiful.

Now, I have no quarrel with the steel bridge for railway work and spans of magnitude, for it is often the only solution, but on our highways for crossing small rivers and streams it is but a poor substitute for the beauty of the arch bridge, and the pity of it is, that it is usually placed in a spot where nature with green foliage, sloping banks and running water has prepared the setting for a charming picture.

The small steel bridge is an eyesore, and endurable only so long as we cannot replace it with some other form of construction more beautiful, while being practicable and inexpensive; concrete seems to offer us these three advantages.

It is not my purpose, however, to dilate on the practical and economical advantages of concrete construction for bridge work but on the artistic results which follow its use; concrete as a material is in harmony with almost any natural setting as soon as it is in place, large surfaces of cement are never monotonous, the texture of the surface gives endless play of light and shade, it also forms a satisfactory background for trees and shrubs, the solidity of the material gives a satisfying appearance of permanence and stability, the absence of which is fatal to all beauty in the steel or wooden bridge.

Ever since the arch was discovered some 2,000 odd years ago, no other form of bridge construction has been invented which, in beauty of form and durability, can compete with it; to appreciate fully how much we lose by not having adopted, hitherto, this form of bridge construction, we have only to visit England, France, Germany, Italy or Spain. In each of these countries we find the arch bridge of every size and kind used since time immemorial, each one beautiful, a harmonious note in the landscape.

Now, at least three parts of this beauty is not the result of design, it comes from using the arch form; the arch is in itself so beautiful that other things matter little. The bridge may be of hewn stone or the most rustic of masonry, may be designed by some talented architect, or by some country mason; it may be embellished with sculptured work, mouldings, every kind of enrichment, or it may be severely plain, but in no case is it ugly.

We cannot hope to reproduce these bridges in stone, the expense makes that impracticable. In most localities concrete offers the one and only other material. It is a good substitute if used frankly for what it is and not in imitation of stone. While the arch form is applicable to concrete construction, I regard it as essential that the use and shape of the arch be such that no steel reinforcement be needed to give it stability, it must not only be strong, but it must look strong. For this reason the elliptical arch is not to be commended; the arch needs only to be semi-circular or segmental, in some cases it may be pointed. Any of these forms will look well.

It would be preferable to use monolithic construction throughout the bridge. Cement blocks could, however, be used for the arch, when they would be more practicable, provided the rock-faced variety were not used. In country districts a high finish is not necessary, a degree of rusticity being more harmonious with the natural surroundings. In this case there would be no objection to simplicity, which is a safe path to follow; any attempt at decoration is dangerous unless done by a trained designer.

A word about steel reinforcement. There would be no objection to its use for the purpose of giving strength and homogeneity, provided no attempt be made to alter the structural line of the arch. As I said before, the beauty of the bridge depends on the line of the arch, which should be similar to a masonry arch, so that it will have the appearance of being self-supporting and of having ample strength to support the weight resting upon it. In a number of cases when the arch has been used in the United States the mistake has been made of giving an excessive rise to the crown of the bridge; a few inches of rise sufficient to overcome the optical effect of sagging is desirable, but should be so slight as to be barely perceptible.

To sum up results, we find that the arch bridge is beautiful, that this beauty is not the result of skill in design, but comes from the use of the arch. Consequently the road engineer can, without any special knowledge of design, construct a bridge possessing artistic merit. Concrete is the only material at present which can be used for an arch bridge without prohibitive cost. It is satisfactory in texture and color, is easily obtained, gives the required stability of appearance, is permanent, and, provided a capable engineer or superintendent is in charge, local labor can be used in carrying out the work.

That other blot on our landscape, those flimsy, restless constructions of wood we call farm buildings, are much in need of a more permanent and slightly building material. Stone is again out of the question on account of cost, brick also is expensive, and unless a good quality is used, properly laid in cement mortar, and resting on good foundations, it is not permanent; it is also difficult to handle in an artistic way by any but a trained

architect, and the usual farmer is not likely to employ it.

Occasionally the ambitious farmer, with good intentions but mistaken zeal, has transplanted to the country that type of brick house beloved of our cheap builders, found in the suburbs of all our large cities, a conglomerate of brick, scroll sawn-wood ornaments, so-called art glass, with a few fussy verandas thrown in for good measure; in the city it is bad enough, but in the country its innate ugliness is made even more apparent by its surroundings.

Now, a farm house and the adjoining buildings should not only serve the purpose for which they are built, but should look the part, should belong to the country, be as much a part of it as the trees, a growth of the soil, not merely resting upon it but a part of it. To accomplish this a solid building material is essential, the structures must have stability, be permanent and look so; added to this the material must harmonize in color and texture with its environment. Concrete will do all this if used with a little judgment.

It is not likely that the artistic value of concrete construction will appeal to the farmer. If he uses it, it will be on account of the low cost, permanence and ease of handling. However, if he be persuaded to use it for its practical advantages and not be led astray by a mistaken desire to imitate stone or to reproduce the features of a town house; if he will only use concrete for what it is, build simply, without any effort to add architectural details, in all likelihood the result will be good.

Farm buildings, from their shape and size, fall naturally into good lines; generally they are long and low, with much unbroken wall and roof surface. The windows, doors, and other openings are few in number. If to these conditions we add stability, a pleasing wall and roof texture, we then have all the essentials of a good building. This, again, is more than proved by what we find across the ocean. There the farm buildings are good to look at, adding a human touch to the landscape without marring in any way its beauty. This is not because they are elaborate, for they are simple in the extreme, nor is it due to intention or design, for their builders had no thought beyond meeting their practical needs; but these buildings have a dignity which comes from honest workmanship and the use of permanent materials. It is to be noted that this material, usually stone, was always a natural product of the vicinity, and hence harmonizes perfectly with the face of nature in that district in which it was placed.

One valuable characteristic of concrete is its neutral color which, in the majority of cases, blends perfectly with nature's color scheme. In concrete for farm buildings I believe the best effect will be obtained by using monolithic construction, not cement blocks, for while the latter is much better than wood, and capable of rendering good service, the necessary joints destroy the repose of surface so desirable from an artistic point of view.

All the buildings should be simple in the extreme; let the walls and roof be continuous, and, as long as possible, avoiding all unnecessary breaks, keeping all openings some distance from the corners of the building in order to preserve the appearance of stability; the roof-eaves should project some distance, as this not only sheds the rain, protects the walls from dampness, but gives a shadow of great value in an artistic sense.

If these simple rules are followed, and concrete is used for the walls, and the usual wood shingles for roofs, the combination would result in buildings which fit naturally into the landscape. A few trees would add greatly to the effect; creepers also could be allowed to grow without fear of injury to the walls, thus adding additional beauty.

You will note that the basis of this desirable result is the concrete wall, possessing as it does, the vital characteristics of stability, texture and color. Possibly one point is open to question, that of color. In most locali-

ties the natural color of cement will be sufficiently pleasing; when this is not the case, an increased interest and effect may be obtained by coloring the walls. Whitewash is not costly and, if made from a good formula, will last a considerable time; when weather-worn it can easily be renewed. It is also possible by additions of the earth colors, to obtain the most delicate tints of pink, greys and yellows. Whitewash on wood is cheap and nasty; on cement it is economical and good; its soft, velvety color is pleasing in itself and harmonizes perfectly with trees and shrubbery. Abroad it is held in great esteem.

In concluding my paper, I can only add that to all people who love the beauty of the country-side, the advent of concrete promises much for the future. If, with its aid, our bridges and farm houses are made beautiful, then something well worth while will have been accomplished. It is for you manufacturers and users of cement to advocate the use of cement not alone for the economical and practical advantages, but also for its artistic value as a building material in the country, and if you can persuade your road engineers to adopt the arch form for bridge construction, and the farmer to use concrete for his buildings, you will have done a good work, for, in addition to the practical, useful results achieved by the use of cement, you will also have added a note of beauty to our landscape, a thing devoutly to be wished for by all lovers of nature.

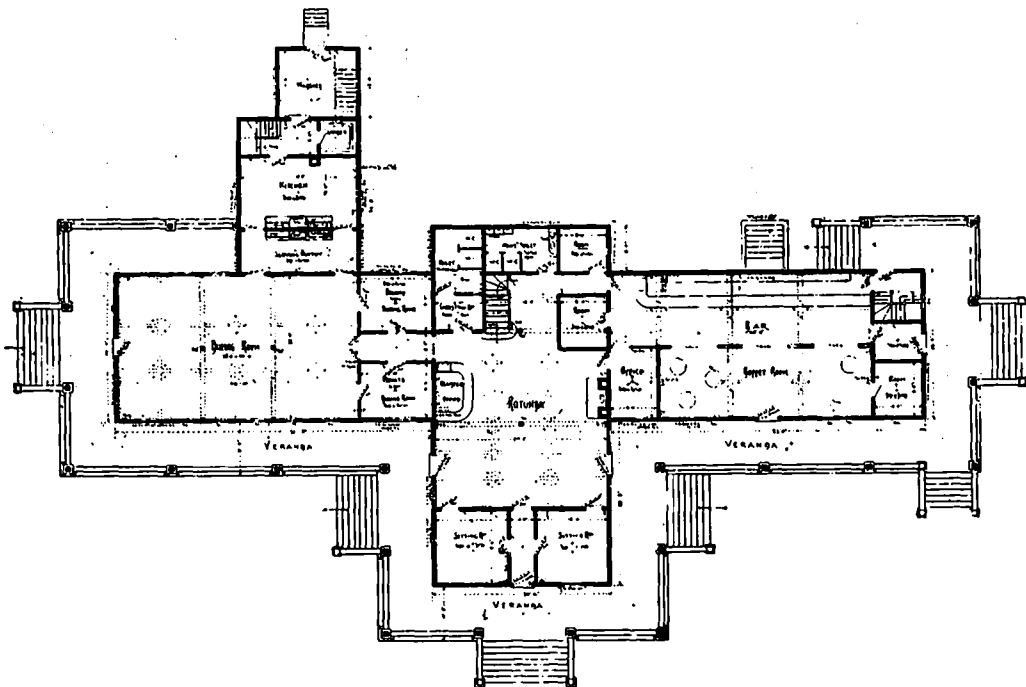
BUILDING MATERIALS IN CHINA.

IN ANSWER TO AN INQUIRY Charge d'Affaires Henry P. Fletcher, of Peking, furnishes the following information concerning the letting of contracts and the furnishing of supplies to contractors for the Chinese government, which applies fully to North China, and, to a great degree, to building construction throughout the empire:

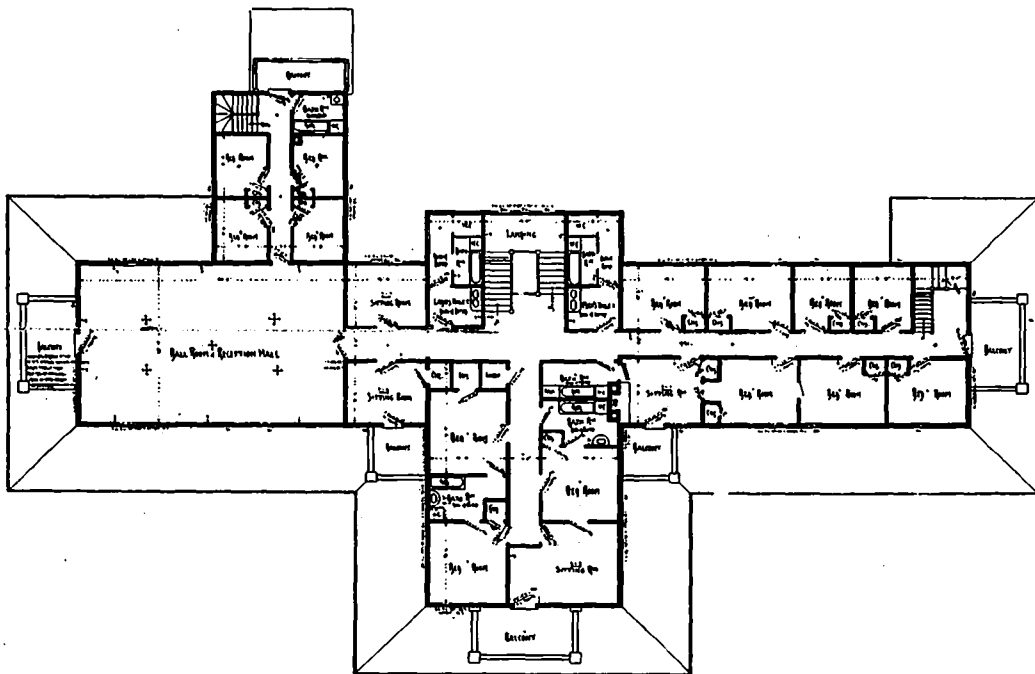
The Chinese government has no rules, printed or otherwise, for letting contracts or buying materials. The man on the spot with the lowest price and the quickest delivery gets the work. Ninety per cent. of all the building done in China is done by Chinese contractors. When foreign material is specified, such as heating plants, plumbing, electric light plants, light fixtures, structural steel, etc., tenders for these materials, either delivered on the ground, or put in place, are asked for from the many foreign firms in Tientsin or Shanghai. These firms hold agencies for the materials required and all arrangements are made with them.

Neither the native engineer nor the foreign contractor deal directly with the home houses, as it saves much trouble to deal with large houses well established in China. Their prices include freight, duties, and the numberless other small items, and a price is quoted which lands the goods where wanted, and, if desired, puts them in place. The contractor has nothing to do beyond paying the foreign firm in China and making sure that he gets what he ordered.

Unless connections are made with a well-established firm or a permanent agency for a special line of goods created, there is no chance of introducing foreign goods into China. As all the large firms have their own expert engineers, the contractor can have fair prices quoted at short notice on anything. All these firms make it their business to be very much in touch with all proposed work, both government and private. The terms usually offered by the government are one-third on arrival of papers of shipment, one-third on delivery, and one-third on acceptance. These government terms varied considerably during the last year; in order to help the foreign firms, as money was tight, and exchange bad, the government paid on several occasions one-half on signature of contract and one-half on completion of work.



Second floor plan, "Deer Lodge" Hotel, at Silver Heights, Winnipeg. Pratt & Ross, Architects.



Ground floor plan, "Deer Lodge" Hotel, at Silver Heights, Winnipeg, Pratt & Ross, Architects.

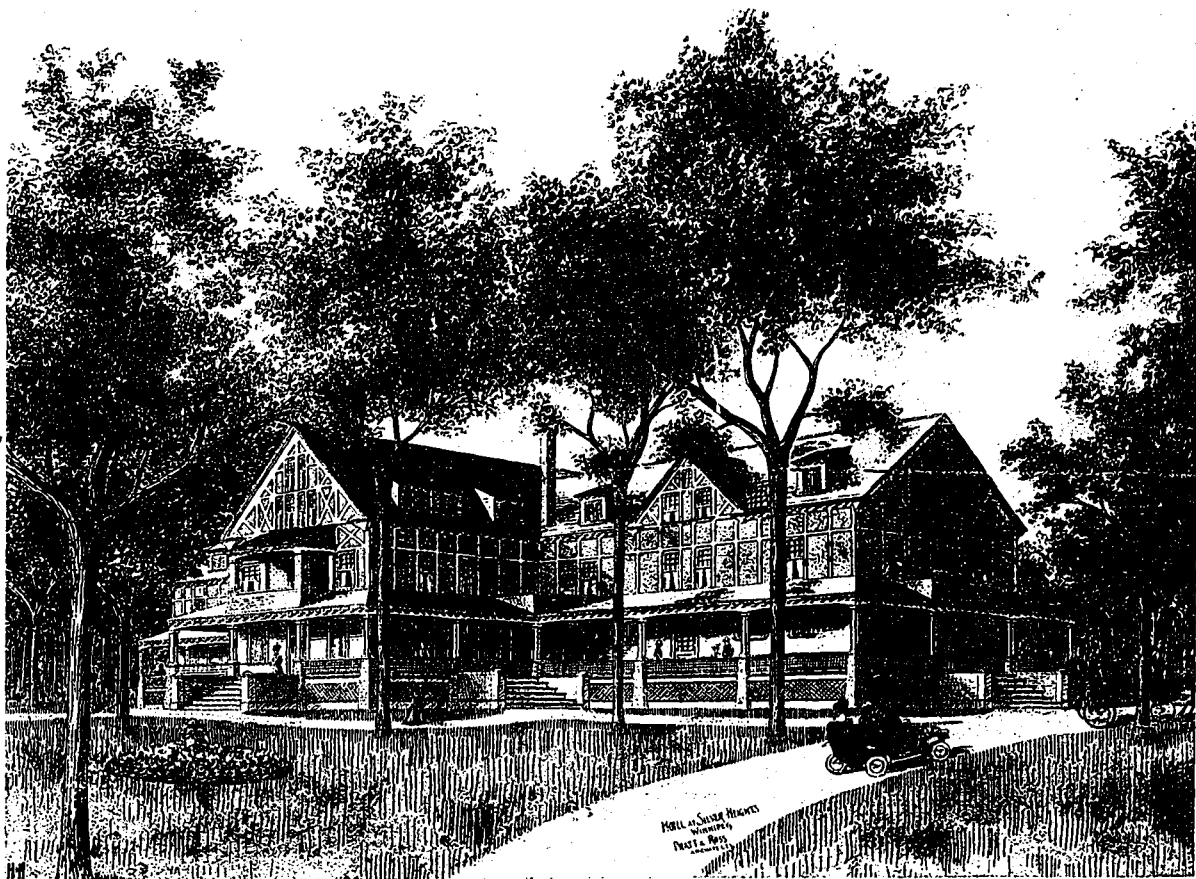
NEW HOTELS IN THE CANADIAN WEST.—English Domestic and Modern Design as Seen in Two Recently Erected Hostelries Which Provide Comfortable Accommodations for Tourist and Traveller in a New and Rapidly Growing Country. . . .

WITH THE TRAVELLER and with those who by preference or force of circumstances spend a large portion of their lives in hotels, the extent of a country's civilization is measured to a large degree by the accommodations which are offered for their convenience and comfort. It matters not what a community may offer in the way of commercial inducements or natural surroundings, the wayfarer or sojourner is more or less influenced by the character and advantages of his *pic d a terre*. In the mining camp or the embryonic town in the industrial or agricultural zone, one looks for nothing more than the hastily fashioned abode with its primitive and somewhat meagre accommodations, but as these places attain more substantial proportions, greater advantages in the way of domestic comfort and hygiene are expected than those originally provided. Good hotels—not necessarily luxurious, but in keeping with the size and importance of a community—are essential to the welfare of any town or city of progressive tendencies, just as much as is a transient class itself necessary to give an added stir to the town or city's commercial, industrial and social activities.

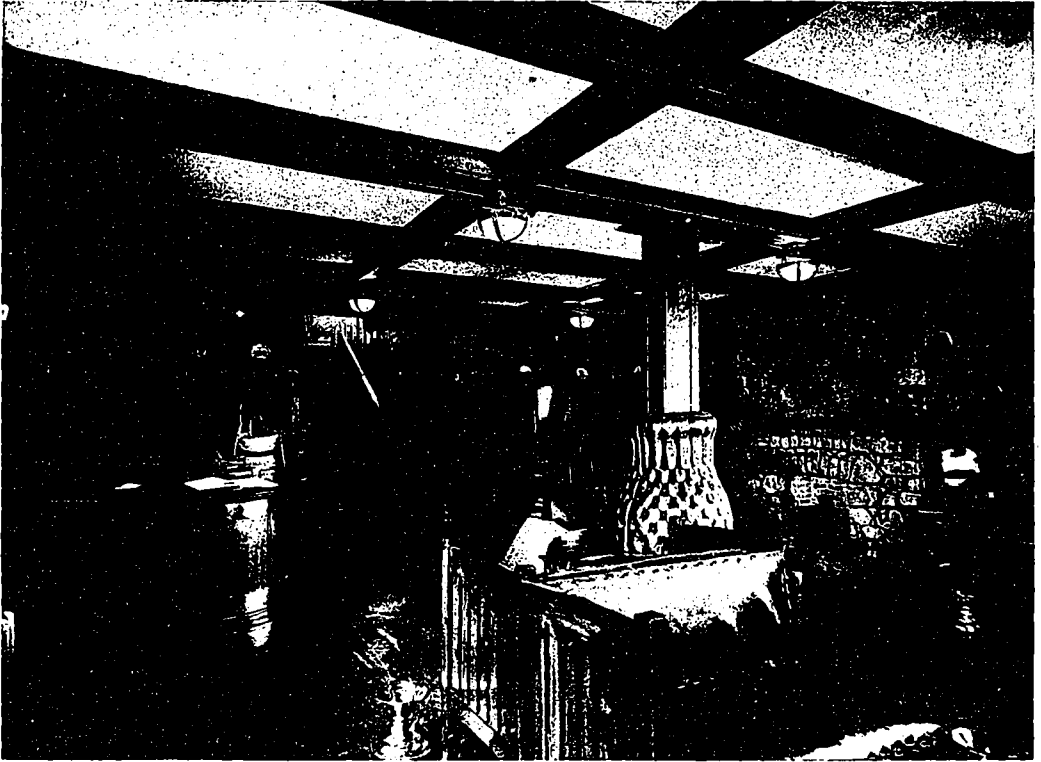
As a country still in the adolescent state, the Canadian West has been decidedly wide awake to the necessity of providing adequate and comfortable hotel accommodations, and its strides in this respect have been com-

patible with its marked expansion in other directions. Two of its more recent structures in this particular, which while not possible as pretentious in size or appointments as some of the larger Western hostelries, nevertheless possess an element of interest, are the new hotel at Silver Heights, a suburb of Winnipeg, and the Flanagan Hotel at Saskatoon. The former structure, which was designed by Messrs. Pratt and Ross, is situated on the outskirts of the Western Metropolis, contiguous to a beautiful stretch of natural country. It was built to replace the historic hostelry at Deer Lodge, as the section in which it is located is known, and with its half-timbered walls, gabled roof, and deep covered verandahs, presents a more domestic aspect than is usually found in buildings of this type. In plan the building assumes the shape of a rambling "T," with the central projection towards the front and the end wings of similar size and design. The accompanying illustration shows the structure, which has a frontage of 160 feet, from a south-east view-point on its spacious grounds extending along Portage avenue.

The main entrance to the hotel is through the central projection where a vestibule with reception rooms on either side, leads into a spacious rotunda finished in early English oak with panelled walls and beamed ceiling. This interior is 30 by 40 feet in dimensions. The furniture is



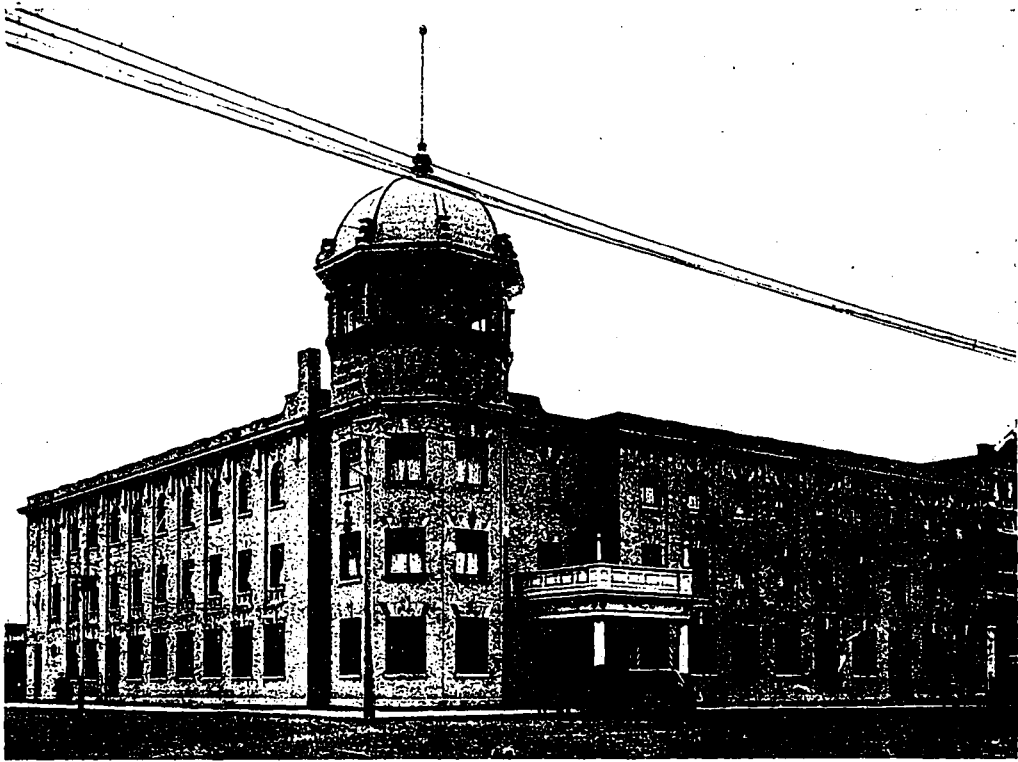
"Deer Lodge"—a recent Western hotel in English domestic design, which is situated on the outskirts of Winnipeg. Pratt and Ross, Architects.



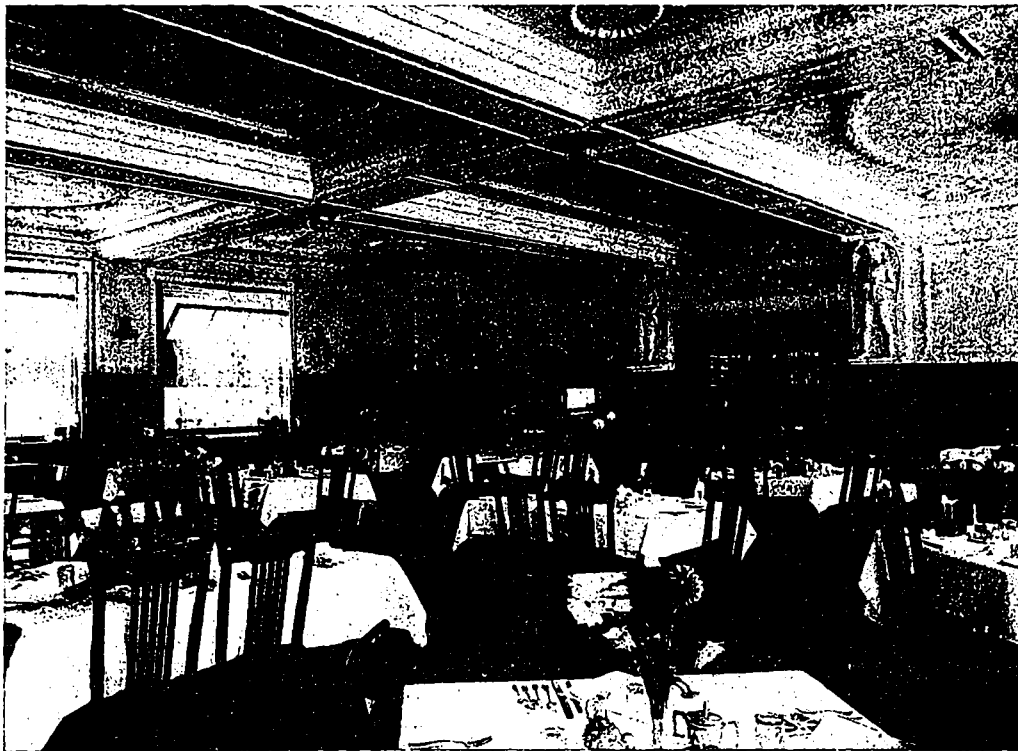
Office and Rotunda, Hotel at Silver Heights, Winnipeg. Note the large rustic fireplace and the simple yet comfortable character of the furnishings. Pratt & Ross, Architects.



Dining Room, Hotel at Silver Heights, Winnipeg, showing the beamed ceiling and the pleasing scheme of decorations in general. Pratt & Ross, Architects.



Flanagan Hotel, Saskatoon, a recent completed hostelry, which offers the advantages of modern appointments to travellers in the Prairie West. W. W. LaChance, Architect.



Dining Room, Flanagan Hotel, Saskatoon, showing the high panelled wainscoting and decorative detail of plastic relief work. W. W. LaChance, Architect.

of heavy post construction, simple in design and luxuriously upholstered in leather. Opposite the hotel office, which is located on the left, is a massive rustic fireplace in perfect harmony with the homelike simplicity of its surroundings. At the rear is the main staircase, together with a commodious ladies' cloak room and modern tiled lavatories. To the left of the rotunda is the entrance to the dining room, and to the right a corridor leading into the bar. This latter room, together with the buffet, occupies the ground floor of the east wing, and is finished in tavern oak in a style somewhat similar to the rotunda, and like it, has a mosaic floor. The buffet is equipped with a sideboard and small tables in keeping with the decorative scheme of the walls, and is separated from the bar room by three large archways.

The main dining room, capable of seating seventy-five guests is situated in the west wing, and is adjoined by two small dining rooms for private parties. All of these rooms repeat, in a measure, the wall and ceiling treatment and finish of the rotunda. The kitchen pantries and cold storage compartment are in a wing adjoining the dining room on the north, thus keeping the service department well together.

The entire space above the dining room is taken up by a large assembly hall to be used for music and dancing or receptions as the occasion demands, and the remainder of the building is laid out in good sized bedrooms, both single and *en suite*, with ample bath room accommodations. Special attention has been given to the general sanitary arrangements, and the bathrooms, toilets the lavatories are finished in tile and equipped with approved means of ventilation. The hotel has its own private water supply and sewerage systems, both of which have been installed under the supervision of competent engineers in work of this character. The water is drawn from an artesian well by an automatic electric pump which is capable of serving the hotel, fountain and stables and also the needs for fire protection. The structure throughout is lighted by electricity and no detail has been overlooked that would contribute to the comfort and convenience of the guests.

The Flannigan Hotel at Saskatoon departs somewhat in design from the building just described, and follows a more conventional style and plan. It is a three story and basement structure, designed by Architect W. W. La Chance of that place, and enclosed with walls of a light colored cream brick. The central feature is an octagonal tower at the intersection of the two facades, which terminates in a dome capped observatory that rises an additional storey above the balance of the structure. The main access is through an entrance sheltered by a projecting balcony which is supported by two huge corner pillars at the outer extreme. On the interior everything is so arranged as to facilitate the service and provide every reasonable means for the comfort and convenience of the guests. Aside from a spacious rotunda and office, there is a number of sample rooms, together with reception rooms, buffet, barber shop, etc., all of which are placed according to their degree of accommodation, and relative importance to each other. The dining room which is seen in the accompanying illustration reflects the care that has been taken in the selection of the decorations and furnishings throughout. The two upper floors are taken up principally by guest rooms and bathing and toilet accommodations. The building is lighted by electricity, heated by steam, and the sanitary appointments in general leave nothing to be desired. The contract for the various work connected with the erection of the structure was carried out by local contractors, with the exception of the plastic relief work in the dining room which was done by W. J. Hynes, of Toronto.

Among the new buildings of this kind which are at the present time projected in the West, is a fourteen storey fireproof structure to be erected adjoining the Walker Theatre at Winnipeg, by a company, capitalized

at \$1,250,000, which has recently been formed for this purpose. A large addition, it is also understood, will be built in connection with the Empress Hotel at Victoria, while, in all probability, the Carlton-Ritz Hotel Syndicate, which contemplates establishing a system of hostleries in Canada and the United States, will within a reasonable time undertake the erection of several hotels at various points between Winnipeg and the coast.

ARTIFICIAL STONE.—Its Use on Public Buildings as Specified by the State of New York.

IN VIEW of the great extent to which cast or manufactured stones has come to be employed in this country, we herewith publish the section of the New York State Building Code, dealing with this particular product, believing that as specifications for artificial stone as used on public buildings, it will prove to be of considerable interest to our readers. The section referred to is as follows:

The contractor shall furnish and set all cut stone shown by the drawings or herein specified. He is to submit a price based on buff Indiana limestone, also on cast concrete stone, the cast concrete stone to match Indiana limestone in color and texture, and is to have the same finish.

All cast stone shall be made of Portland cement of uniform color and texture, and free from iron or other foreign material liable to discoloration.

Aggregates shall be of crushed granite or marble.

The cement and aggregates shall be thoroughly mixed in the proportion of one part of cement to not over six, or less than four parts of aggregate, all measured by weight. The aggregate shall be made by crushing selected pieces of stone to insure uniformity of color and texture, and shall be screened into three sizes, the largest of which shall not exceed that which passes a ring of $\frac{1}{4}$ in. in diameter, and the various sizes shall be proportioned for maximum density. There shall be at least 50 per cent. of such a size of aggregate that will pass a $\frac{1}{4}$ in. ring and will not pass a 1-16 in. ring.

The concrete for making the cast stone shall be mixed with not less than 15 per cent. of water by weight and shall be mixed by a machine, preferably of the rotary type. If cast in semi-liquid condition, it shall be continually agitated up to the time it is deposited in the mold.

All casts shall be properly seasoned by being kept moist and away from the sun's rays and draughts for at least ten (10) days after being made.

After having been seasoned for at least ten (10) days, all exposed plain surfaces of the stone shall be tooled with a drove finish or tubbed as herein specified for Indiana limestone. This tooling shall preferably be done by grinding the grooves by the use of an abrasive material so that the larger aggregate will not be disturbed or in any way shattered.

All surfaces of cast stone, to be true, no hollows, and all to conform to specifications for Indiana limestone.

Capitals to be cast true to model, sufficient over-pieces shall be furnished. Surfaces of all stone, including caps, to be retooled as necessary to leave perfect.

All cast stone shall be of such quality that it will pass a test at the age of twenty-eight (28) days of at least 1,200 pounds compression per square inch, and shall not have an absorption to exceed five per cent. when thoroughly dried and immersed in water for forty-eight (48) hours.

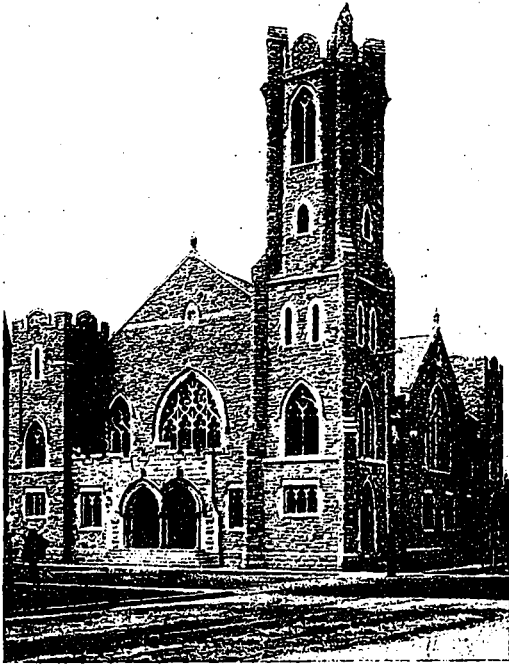
All lintels, bearing stones and others subject to cross bending shall be reinforced by means of steel rods placed about two inches from their tension surface, and the total sectional area of the steel shall be equal to one-half of one

(Continued on next page.)

ST. ANDREW'S CHURCH, FORT WILLIAM.

—Brief Description of Its Design and Construction

GOTHIC IN SPIRIT, though modified to meet the modern requirements of a Non-conformist place of worship, bearing all the details of the style in pointed window and arch, characteristic label, battlement, and geometrical tracery, St. Andrew's church well



St. Andrew's Presbyterian Church, Fort William, Ont. Hood and Scott, Architects.

presents the quasi-Gothic which is becoming the predominant style of ecclesiastical architecture in Canada.

The church is located on a corner lot and has a frontage of 80 feet on Brodie street and 100 feet on Donald street.

The most striking external feature of the building is the massive tower which rises to a height of 100 feet, culminating gracefully in a fashion that reminds one of many historic towers in Scotland, and is a suggestion of the fact that the church has a history behind her, stretching back to Reformation times, and beyond them to the far off antiquity of the land of Wallace and Bruce as well as of Melville and Knox.

The entrances are five in number, the principal one being approached by a broad flight of steps from Brodie street, leads through right and left vestibules into the auditorium. The other four entrances give access to vestibules in the angle towers which contain stairways leading to a semi-circular gallery, and are also connected with the auditorium.

The exterior of the building is of stone. The rock faced work being of local Simpson Island white sandstone and the tooled work of No. 1 Bedford limestone. The roof is supported by special reinforced steel work and covered with black slates.

The whole of the interior woodwork is of quartered oak with dark Old English finish.

The semi-barrel ceiling, which has been adopted, is elaborately panelled in keeping with the general design, and this work is all carried out in white plaster and Keene's cement, and left plain for future mural decoration.

The organ, with its 180 polished zinc pipes, rears majestically above the dark oak tracery of the choir screen, giving the whole church that appearance of solemn religious grandeur so seldom seen in the modern Non-conformist place of worship.

The building, which has a seating capacity of 1,200, was designed by and carried out under the supervision of Messrs. Hood & Scott, architects, Fort William.

ARTIFICIAL STONE.—Continued from Page 88

per cent. of the area of cross section of the concrete in the member reinforced. When any casts exceed in any dimension twelve times its least dimension, it shall be reinforced to insure safety in handling.

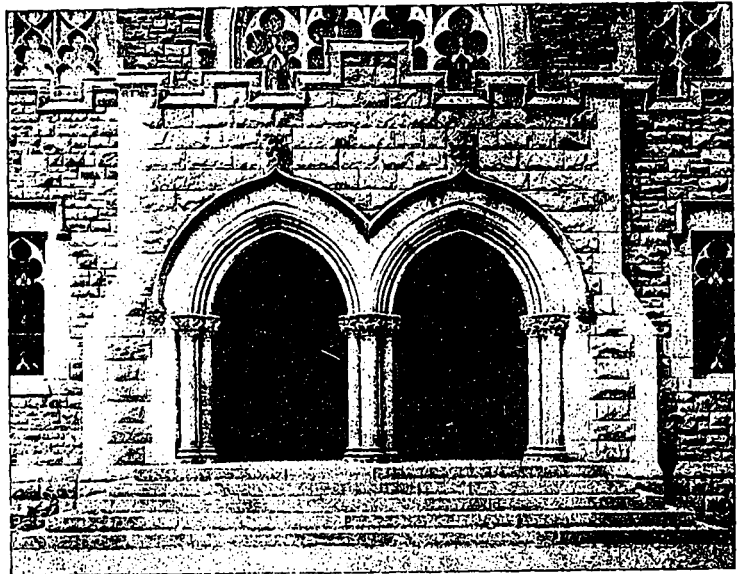
Samples of cast stone on which bids are based shall be submitted for approval, said samples to be retained by the architects.

Preference shall be given to stone cast in an established factory, and contractor must be able to show work of similar character that he has executed, and same must meet the approval of architects.

All casts shall be provided with steel bonds for the purpose of tying into the backing and with hooks for handling and lifting which shall be placed in the stone while being cast.

Cast stone need not be plastered on back with La Fage cement, nor need it be painted as specified for Indian limestone.

A NEW COMPANY IN THE WEST is the Western Clays, Limited, which has been formed to manufacture brick and sewer tile. The company has secured an 18-acre tract of excellent building and pottery clay at Strathcona, where a modernly equipped plant will be established. Connected with the enterprise are a number of prominent Edmonton men, including John A. McDougal, D. H. Smith, of the Western Realty Company; H. H. Richards, of the Northern Bank, and A. Driscoll and R. H. Knight, of the firm of Driscoll and Knight.



Detail of Main Entrance, St. Andrew's Presbyterian Church, Fort William, Ont. Hood and Scott, Architects.

“PARIPAN.”

WE DESIRE to bring to the notice of our readers, and especially to the attention of the architects, decorators and builders, the advertisement in this issue of Randall Bros., London, Eng., one of the largest and best known paint houses in the British Empire. This firm manufactures and makes a specialty of “Paripan,” a lacquer-enamel of unusually high merit, which is being broadly specified and used by architects and decorators in England and the Colonies, for every conceivable kind of painting—both inside and out—especially where superior finish, durability and merit of investment are essential requisites.

This preparation is about to be introduced in Canada, and in view of the splendid endorsement which it has received abroad, it is quite likely that it will not be long in universally establishing itself with those in this country who are interested in architectural decorations and finishes.

“Paripan” lays claim to a number of advantages over all other enamels and paints, in that it is made with the same base as the famous and almost imperishable Japanese lacquer, and is, therefore, possessed of great elasticity, brilliancy, covering capacity, and ability to resist climatic and other detrimental influences. It is supplied either for gloss or flat (dull) finishes, and can be used equally as advantageously for surfacing walls and ceilings, as it can for woodwork and other purposes. Possibly in this connection it might be well to mention that Messrs. Randall Bros. have prepared a very attractive booklet in which photographic plates appear showing several English residential interiors of stately dimensions, in which the entire wall scheme, woodwork and ceiling, are carried out entirely in Paripan. These views serve to convey a more adequate idea of the beauty of effect, and richness of texture to be produced by this material, than mere words can describe.

However, the use of “Paripan” is not by any means confined to high class residential work. In fact its application is practically illimitable. It is used for every conceivable purpose for which painting is required—from the lowly cottage to the palatial home, the commercial building to the large public or private institutions, and even for radiators, railway coaches, locomotives, tram cars, steamers and yachts.

One of the great advantages claimed for “Paripan,” is that owing to its durability, it costs far less than ordinary paint. Surfaces of this enamel are still in perfect condition after weathering the elements for eight or ten years. Another particular feature is that either “Paripan Glossy,” which gives a surface like glass, or “Paripan Flat,” which produces a delicate dull silklike effect, is perfectly washable, and can be readily cleaned with soap and water, without in any way injuring the richness of the texture or the lustre of the surface. Because of this reason, and also because of the fact that it produces a hard impervious surface, “Paripan” possesses a sanitary virtue which has led to its adoption in a large number of public and private hospitals and sanitariums; and the manufacturers have numerous testimonials from eminent doctors and bacteriologists regarding its splendid advantages in this respect.

As regards color, “Paripan” can be obtained in white, cream, ivory, and in almost any color or shade imaginable. The “glossy,” and the “flat” preparations can also be mixed to obtain different tonal effects, or either one

or the other may be tinted by the addition of artist tube colors, if special shades are desired.

“British made and British owned,” and “the more it is washed the better it looks,” are phrases which have become inseparably connected with “Paripan” in England, and other countries where it is used, and in view of the high manner in which it is spoken of, it seems to us from knowledge to hand that, altogether “Paripan” is a preparation which “once tried, cannot be denied.”

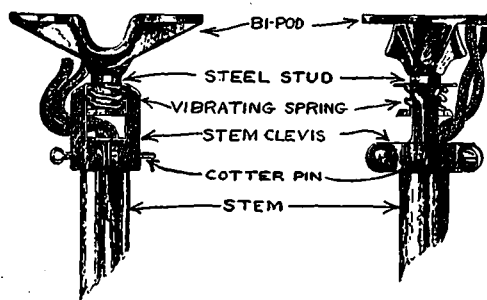
Among some of the important structures in England and elsewhere, in which “Paripan” is used, are the following: Windsor Castle, Royal Apartments; Government House, Calcutta; The Imperial Palace, Constantinople; Belvoir Castle; Wheathampstead House; King Edward’s School, Witley; The L. C. C. Model Dwellings; London and County Bank; North British Insurance Company; Capital and Counties Bank; Mill Hill Barracks; Royal Naval Barracks, Portsmouth; Senior United Service Club; Victoria Barracks, Belfast; Bankers’ Clearing House; St. Bee’s School Laboratories; Gaiety Restaurant; St. Stephen’s Club; Constitutional Club; King Edward VII.’s Sanatorium, Midhurst; Brompton Hospital; St. Bartholomew’s Hospital; Westminster Hospital; Middlesex Hospital.

“Paripan” is also used in many general and military hospitals, sanatoria, asylums, workhouses, infirmaries, etc., as well as by H. M. Navy municipal authorities, and railway, shipping, and industrial companies, both in the British Isles and abroad.

Messrs. Randall Bros. have prepared an attractive, illustrated book with color chart, which, together with prices and testimonials, will be sent to architects, decorators, surveyors, engineers, railway companies, or other interested parties, upon request. The address of this firm is Palmerston House, Old Broad St., London E.C.

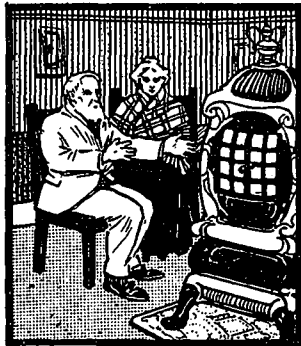
ARTIFICIAL ILLUMINATION.

ARTIFICIAL ILLUMINATION is quite as much within the sphere of the architect’s activity as is the designing and arrangement of windows for the admission of outside light itself. In this age of spacious buildings, together with the increasing night work in



Figures Nos. 1 and 2, showing the anti-vibratory device on all stem type Folding Tungstrollers and the method of fastening them to ceilings. This construction permits the Tungstrollers to plumb themselves.

commercial and industrial institutions, and again the fact that quite often adjacent structures greatly lessen the advantages that the day provides in the way of natural light—the problem of artificial illumination is one that demands a broad and most careful consideration. Within



The Heating System That Heats in the Modern Way

There is no more important feature of a building than its heating apparatus.

It's a question that architects are paying special attention to nowadays.

In a climate such as ours, where six to eight months of the year our buildings require artificial heat, the comfort of the home depends to a large extent on its heating system.

If you would be certain that the houses you design are to give the utmost satisfaction to builder and occupant, get acquainted with the special merits of

Daisy ^{Hot}Water Boiler & King Radiators

We want you to make a careful, critical examination of the Daisy Hot Water Boiler. We want you to go into every detail of its construction and get full information about its exclusive features and the tests it has stood.

We know, that, when you have the facts before you, you will realize why seventy per cent. of the boilers in use in Canada, to-day, for hot water heating systems, are Daisy Boilers.

Daisy Hot Water Boilers are made in the largest and most modernly equipped plant in the country. The very highest grade of materials and expert workmanship are employed.

But the strongest feature of the Daisy Boiler is its design. It is so constructed that it makes use of all the heat generated in the fire chamber—none of the heat is wasted up the chimney or radiated into the cellar. It is under perfect control, so that every part of the house is evenly warmed and held at any desired temperature. It gives plenty of heat for the coldest days in winter and comfortable warmth without overheating during the chilly nights of early summer.

We are ready to give you every opportunity to thoroughly investigate the merits of the Daisy Hot Water Boiler.

King Radiators are designed to give a perfectly free circulation to the water from the boiler and offer the largest radiating surface.

King Radiators are cast from a special selection of iron that insures perfectly smooth castings and will stand our extremely high pressure test.

Though no radiator in operation is subjected to a higher pressure than ten pounds, we test each separate section and each assembled King Radiator to a pressure of one hundred pounds. The slightest imperfection or sign of weakness sends the radiator to the scrap heap. This test is most rigidly adhered to.

The design of the King Radiator is compact and neat in appearance, lending itself readily to any scheme of decoration.

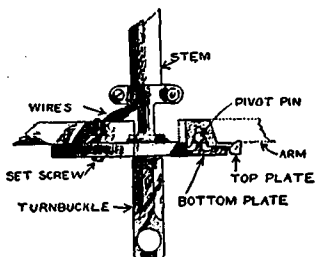
The highest standard of efficiency in house or store heating is found in the combination of Daisy Hot Water Boilers and King Radiators. Write for our booklet "Comfortable Homes." It tells a story of interest to anyone with a house or building to heat. We'll gladly send the Booklet free.

THE KING RADIATOR CO., Limited

St. Helen's Avenue, near Bloor St., Toronto

Salesrooms and Sales Office: 21-27 Lombard St., Toronto

the past few years, electricity, without question the safest, most efficient and hygienic form of lighting—has been brought within easy reach of the general public by the invention of the Tungsten Lamp, which not only increases the degree of luminosity, but reduces the cost for current by over one-half of the charges usually made. A great many architects, however, have condemned the Tungsten Lamp owing to the frailness of the filament, but this, investigation has proved, is not the cause of any dissatisfaction, as where properly installed, this lamp is giving better satisfaction than any other illuminate upon the



Figl No. 3, Illustrating the method of fastening arms in both stem and close ceiling types, by the use of two iron plates which clamp the arms in such a manner that they cannot possibly turn or sag.

market to-day. Where the trouble lies is in the fact that the installation has been made without due consideration being given as regards proper protection for the lamp to offset any vibratory movement. When the Welsbach burner was put on the market, the first step of the manufacturer of this ingenious light, was to instruct the general public that a jar or vibratory action was injurious to the mantle, and that any heavy movement would be disastrous to such a light. The Tungsten Lamp is in a measure likewise affected, although it is not to be inferred from this that it is as frail as the Welsbach Burner in this respect. It is maintained, however, that if the Tungsten Lamp is properly protected from vibration and jar, the results will be far better than where they are simply used at an angle or in a rigid fixture. Realizing this, certain manufacturers have made a thorough study of Tungsten (Madza) method of lighting, and have designed special anti-vibratory features to be used with lamps of this especial character. The accompanying cuts demonstrating the principle and illustrating the parts of an ingenious fixture designed for this purpose, will give architects an excellent idea of what constitutes a proper installation where the Tungsten Lamp is considered. These illustrations are reproduced from Bulletin No. 20, of the

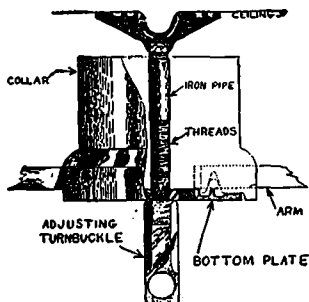


Fig. No. 4, showing the close ceiling type adjustment. After connection is made it is only necessary to turn adjusting turnbuckle and the Tungstolier adjusts itself into position against the ceiling.

Tungstolier Company, of Canada, Limited, Toronto, and they reflect in no little measure, the accomplishment of this firm in reducing this effective system of lighting to a most substantial and economical basis.

It is not claimed, nor is it to be understood, that the Tungsten Lamp will not burn on an angle or in a rigid fixture, but it is quite plain that such a lamp when pro-

tected from jar and vibration, will last much longer, give better service and hence reduce cost of renewal to the consumer, than one which has not been properly considered in this respect. The Tungsten Company is pre-

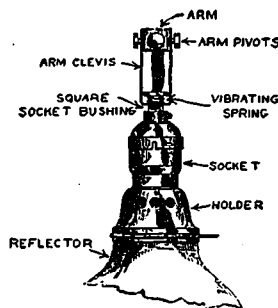


Fig. No. 5, Illustrating the method of providing an anti-vibratory device in close ceiling types, protecting each lamp individually.

pared to co-operate with the architects in the solving of their lighting problems, and Bulletin No. 20, together with other valuable data on this subject, which this firm publishes, will be sent to any interested party upon request.

TO BUILD NEW PLANT.

ARRANGEMENTS ARE NOW being made by the London Concrete Machinery Company, Ltd., London, Ont., for the erection of a new plant to be about eight times the size of their present one. The business of this firm has been marked by a steady expansion, and every year since its organization the company has found it necessary to build additions to its premises in order to meet the growing demand for their products. Within the past year several heavy lines of concrete machinery, such as mixers, crushers, etc., have been added to extensive line of equipment and supplies which they manufacture, and business, it is said, has increased four-fold over the preceding year, which was one of the best in this concern's history. Owing to the fact that within the past few months, the volume of trade has grown to such an extent that the company has found it necessary to have a large portion of their work done in other shops by contract, the directors have decided to secure about a two-acre site and immediately proceed with the erection of a new plant. Their present building, although new and quite large and commodious, will no doubt be used for other manufacturing purposes.

VERY EXTENSIVE HARBOR WORKS, says the ILLUSTRATED CARPENTER AND BUILDER, London, are about to be carried out at Glasgow. A scheme for the construction of the largest graving dock in the world is now before the Clyde Navigation Trustees. The dock will have an inside length of 1,020 feet, an entrance width of 100 feet, and a depth on the sill at average high water of spring tides of 36 feet. It will be (according to the sketch plans) in two divisions—one of 420 feet in the inner end and one of 600 feet nearest the entrance. It will be parallel to the river and will be entered from a large canting basin adjacent to the harbor workshops. The basin will have a wharf 1,150 feet in length, running at right angles to the river, available for ordinary harbor traffic purposes. Such a dock should meet all naval and mercantile requirements for many years to come. It is also proposed that powers should be obtained for the construction of a commercial tidal dock or docks. The construction of the graving dock will extend over five or six years, while the tidal basin will be gradually formed according to the requirements of the port.

SANITARY AND HYGIENIC PRINCIPLES IN BUILDING CONSTRUCTION.

IT IS VERY IMPORTANT, in order to have a building erected upon proper sanitary and hygienic principles, that the arrangements in connection with the plumber's work be extended in a thorough and efficient manner. The cost entailed necessarily enters into the consideration of what kind of material should be adopted, but if a satisfactory job has to be done there should be no scruple in the amount of expense requisite for the proper execution of the work. This department cannot afford to be done in a slipshod and inefficient manner, as the results otherwise may be either very injurious to the health of the occupants, or ultimately disastrous to the durability of the building. In the first place we would consider the outside plumbing work. This consists of the roof work and conductors leading therefrom, and waste pipes from closets, bathrooms and sinks. The ridges, hip rafters, valley gutters, and platform roofs are frequently laid with zinc or galvanized iron, but a more substantial job can be done with lead, although it is more costly. It is necessary that care be exercised in making proper junctions at the overlaps of either zinc, iron or lead, for upon this depends the prevention of water getting into the roof sarking, and causing its ultimate decay. Frequently certain parts of the roof are greatly exposed to the stormy winds, and are liable to be stripped by their violence. For this reason, straps about 12 inches long are fixed to the lead, iron or zinc ridges and hip rafters with galvanized iron nails. Or if solder joints are required to be done at the overlaps of the lead, care must be taken that they are finished smoothly and thoroughly watertight.

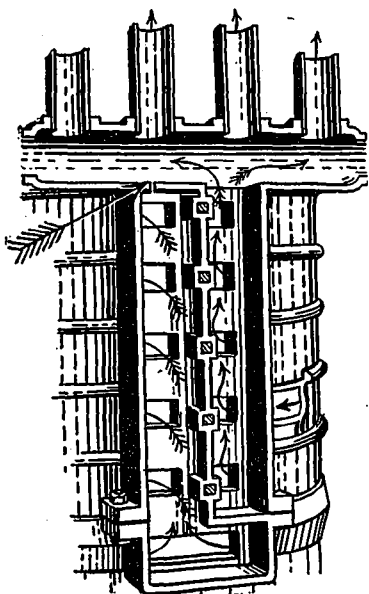
The eave gutters and down pipes, made of cast iron, should have the requisite "slips" at the joints, and be properly secured and supported. It is preferable from a sanitary point of view, that all soil and waste pipes be erected outside the walls of the building. The water closets may be so arranged that they be next the back wall, or either of the side walls of the house, and the branch soil pipe carried through the thickness of the wall and inserted into a "branch horn" cast on the upright soil pipe, and jointed thoroughly with red lead and rope yarn. The lower part of the soil pipe should be of "heavy" material below the junction at the branch, while the upper part of the soil pipe may be of "light" material, and carried up about 2 feet above the level of the eave, for ventilation. On the top of this pipe a "rose" grating may be fixed, which prevents anything from entering that would prove an obstruction to ventilation, while at the bottom there may be a bend or heel rest at the drain. The iron conductors and waste pipes outside of the walls should be secured by iron holdfasts batted into the walls.

The internal arrangement of the plumber work is also of the utmost importance, for upon them depends the healthy and comfortable condition of the building. The bathroom and water-closet should be so placed apart from any bedroom or sitting room, not only for a sanitary reason, but also because it is being less objectionable in other respects. The pipes to and from the bathroom fittings, when exposed, should be of gun metal, electroplated or galvanized metal, for the sake of appearance. This makes a clean, though somewhat more costly job, but if the common lead or iron pipes are exposed, they should be painted. It is necessary to observe that all lead pipes laid under the flooring be properly jointed, and that they be notched down into the joints slightly below the level of the flooring, care being taken when nailing that no nails be driven into the pipes, otherwise the results may be disastrous. It is a good thing to have thin narrow boards laid along between the joists upon which the "supply" or "feed" pipes may rest.

It is also preferable that these pipes above the flooring be exposed, and not covered or boxed in, for the reasons that any leakage may be discerned at once, or the place of exit discovered from which may proceed any obnoxious gas or injurious element. The collars at junction of all soil and air pipes should be made thoroughly tight, and the couplings at all pipes properly adjusted. Upon the lead or iron bends of soil or waste pipes there should be "cleansing screws" attached, so that examination may be made when any congestion takes place that hinders the proper discharge. The arrangements of the plumber's pipes for the purposes intended should have them so placed in certain positions that will be most conducive to the proper fulfilment of their several requirements. And it is very essential that the law of gravitation, and those laws of chemical and mechanical action be studied and observed, in order to have the efficiency that is so desirable in this department of building operations. This is very necessary when we come to consider the adoption of a hot water system throughout a house. The position of the hot water tank, the various pipes in connection therewith, and the leading of the latter to the several fittings in the bathrooms and other places, all call for the most recent scientific information on these points, in order to obtain the most satisfactory results. The exigencies of the present time demand the most serious consideration of each several detail in connection with the department of plumber's work, and it is by strict building by-laws being framed, based upon scientific and practical experience, that an efficient system can be adopted in our large cities and towns, which would not only prove of great value to the general populace, but also be a guide to the proper discharge of all the arrangements connected with this kind of work in the erection of flat dwellings.—
W. M. BROWN, C.E., IN BUILDING MANAGEMENT.

TAPERING CONCRETE CHIMNEYS.

THE MAJORITY of the numerous reinforced concrete chimneys that have been built are cylindrical in shape, due to limitation in the design of the forms, and where a variation in diameter is made this has been effected by an offset. Recently, however, says *Engineering News*, some special designs of form construction have been devised which permit the building of tapering stacks without excessive cost for this feature of the work. The forms, which are 5 feet high, consist of sets of rings, steel plate forming the surfaces, and long bolts by means of which the adjustments of diameter and wall thickness are made. The rings are of sufficient diameter to enclose the base of the chimney, and are made of heavy angles bent to varying radii and spliced into complete circles. The radial bolts must be long enough to permit of their extending into the chimney surface when the diameter is smallest (at the top of the chimney). The diameter of the rings remains constant, standard sets of form rings being carried in stock for various sizes of chimneys. The steel sheets are of standard size, and are filled out with split sheets, made interchangeable. The sheets are secured by flat-head stove bolts to vertical stiffeners on the outer surfaces of the forms, except at one rib, where the adjustment is taken up. The varying diameter is obtained by means of the long radial bolts which turn through small angles attached to the steel rings, and end in malleable clips which grip steel bands on the outside of kerfed wood strips which press the sheets in to the desired radius. Permanent centres are kept at the base of the chimney and on the scaffold above, and each section of the chimney is plumbed. Thus perfect alignment is secured throughout the construction.

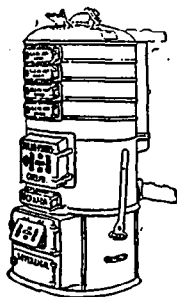


The "SOVEREIGN"

Bolted on Water Post with Interior Air Circuit

The AIR CIRCUIT is a simple provision made in the "Sovereign" to allow of the ready escape of air from any of the compartments of the boiler into the Expansion Tank, or into the Radiators, where it may be released through the Air Valves. It is a small channel, drilled through the heavy wall of the Water Post, making a direct connection with the Flow Pipe. It establishes a short circuit for the air.

In all other boilers the air that remains in a boiler after it is first filled, or re-filled, has to follow the circulation of the water and pass through the Boiler Sections before finding an outlet. The tendency of these air bubbles is to cling to the surface of the metal, particularly to the upper flat sides of the Sections, so that its presence is liable to hamper the operation of such a boiler for weeks after installation. Not the slightest delay ever occurs in getting a "Sovereign" into perfect working order.



The Sovereign
short circuit
air channel will
be copied in
the future—but
this season it is
an improvement
exclusive with
the "Sovereign"

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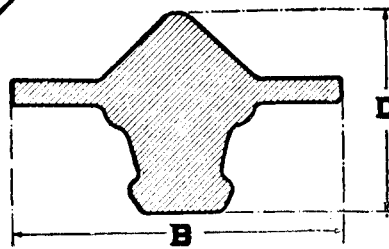
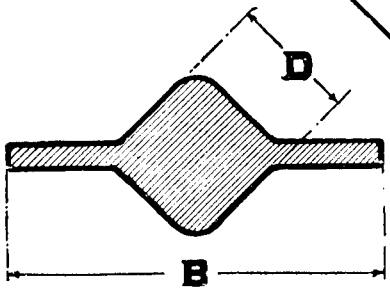
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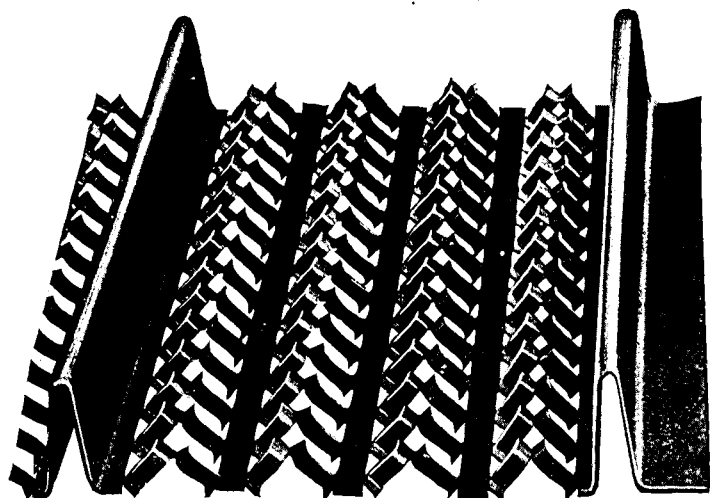


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| D. & B. | Weight per lineal foot | AREA | Length of Diagonals |
|-------------------|------------------------|--------------|---------------------|
| 1 1/2 x 2 1/2 in. | 4.8 lbs | 1.41 sq. in. | 24, 18, 30, 36 inch |
| 1 3/4 x 3 1/4 in. | 6.8 lbs | 2.00 sq. in. | 24, 18, 30, 36 inch |
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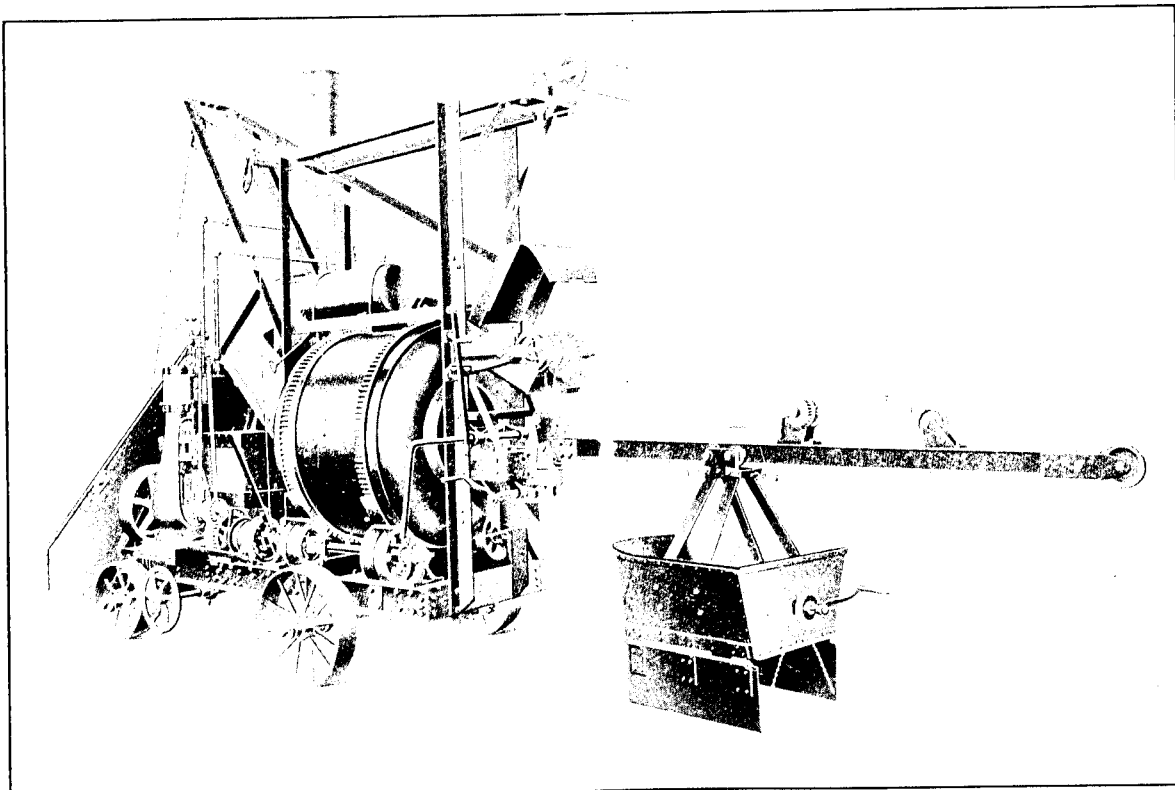
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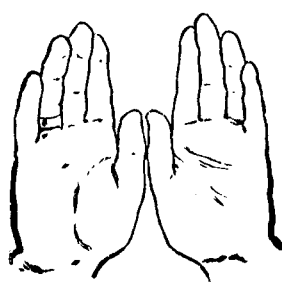


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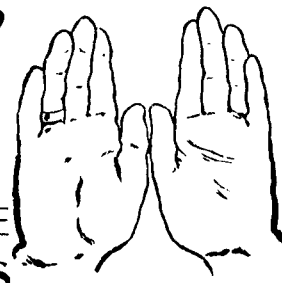
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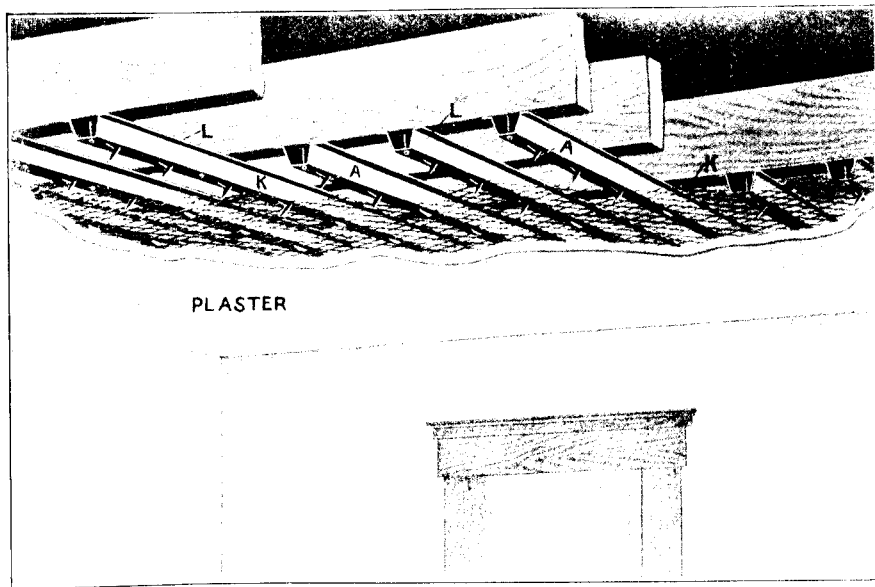
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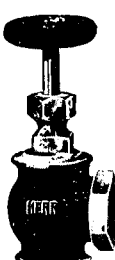
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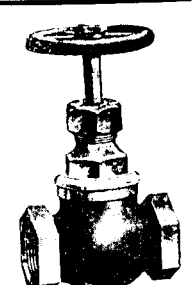
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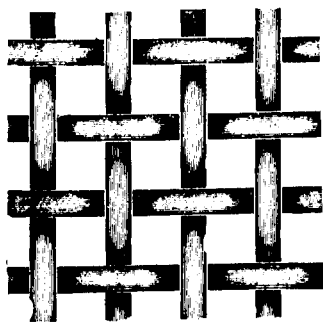
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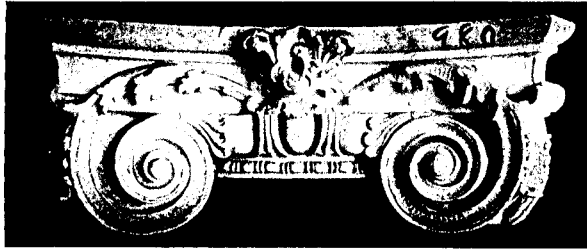
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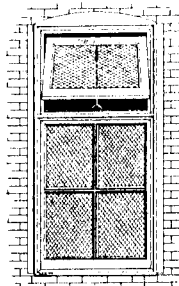
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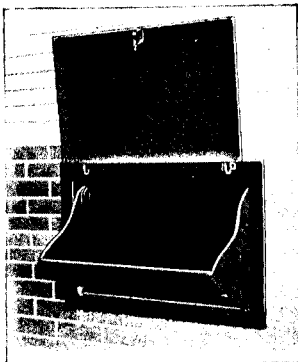
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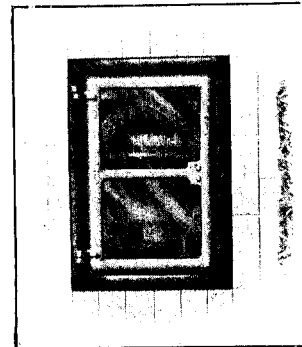
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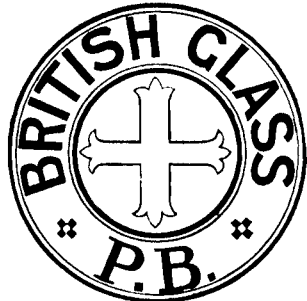
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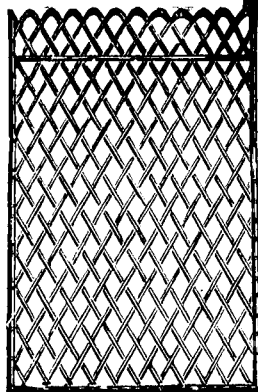
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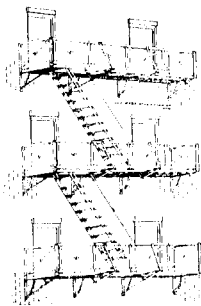


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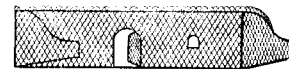
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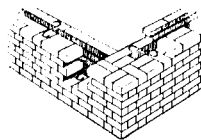
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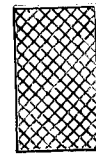
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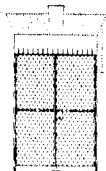
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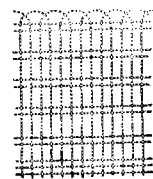
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