

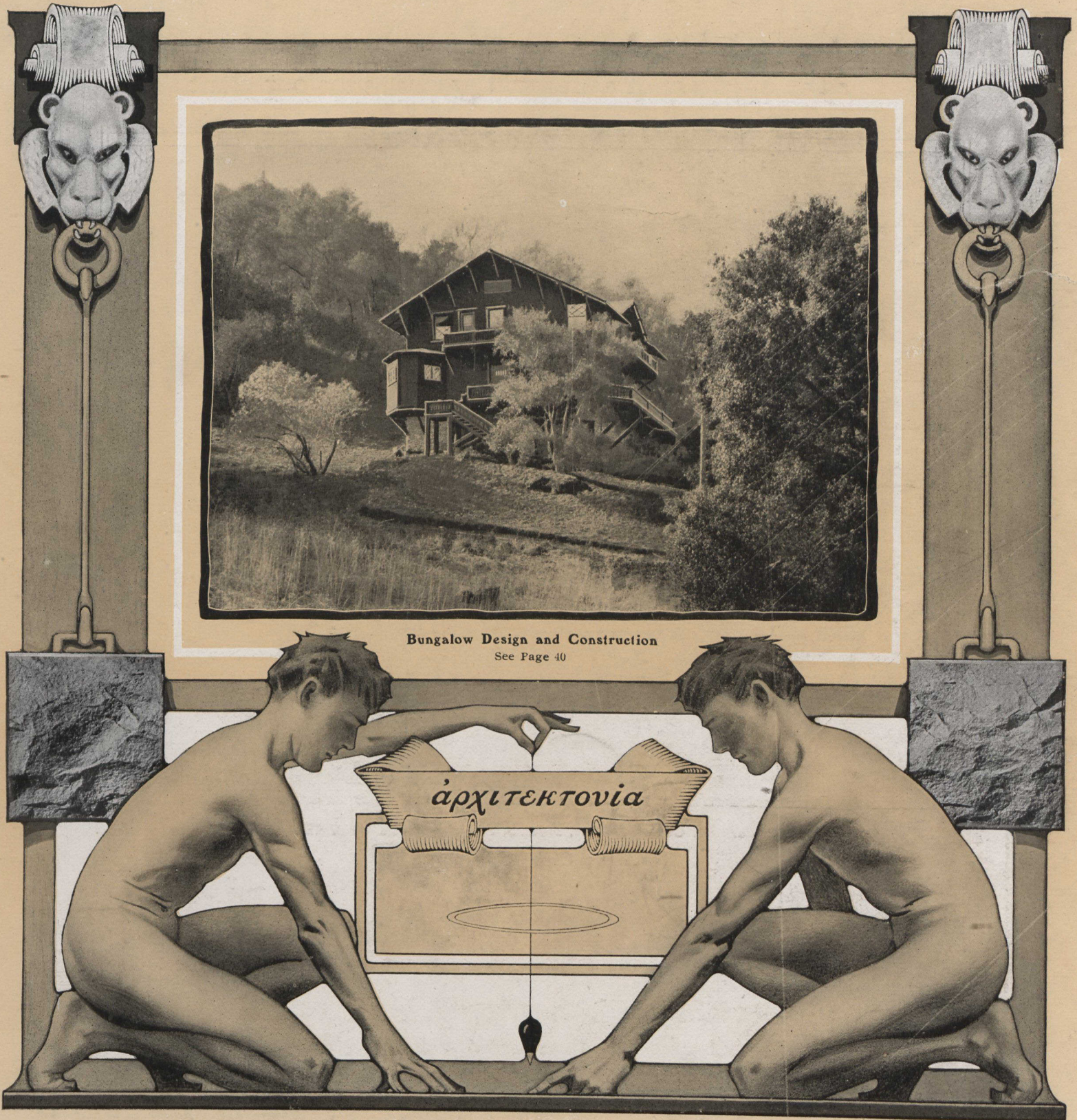
CONSTRUCTION

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

Vol. I, No. 10.

AUGUST, 1908

\$2.00 PER YEAR
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- MONTREAL -
BOARD OF TRADE BUILDING

- HEAD OFFICE -
'SATURDAY NIGHT' BUILDING,
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- LONDON, ENG. -
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Our Facilities

For Executing High-class Marble Work have been greatly

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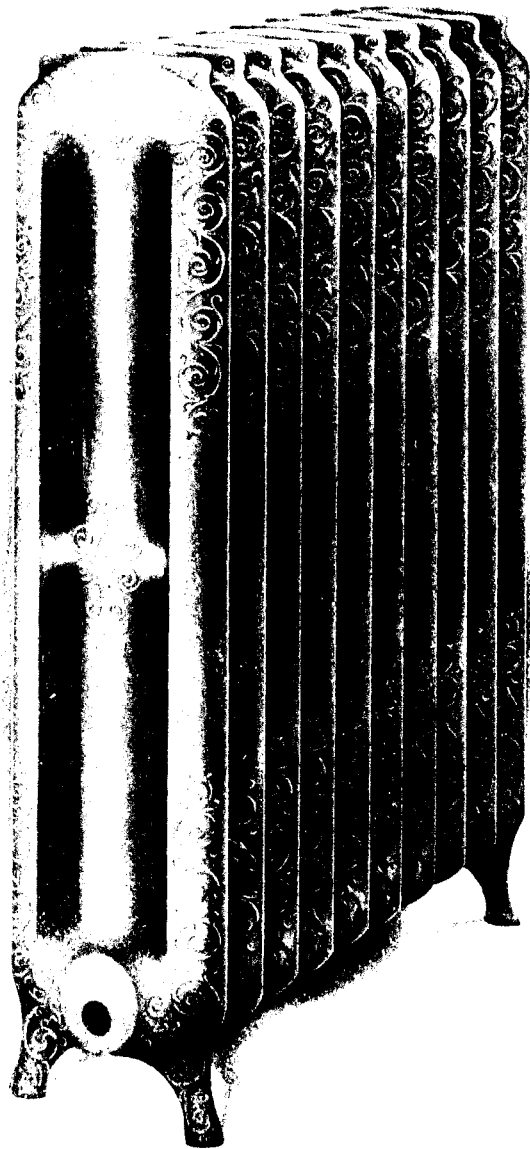
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Scientifically, Practically and Mechanically
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and is, without question, the most perfect Steam and Hot water Radiator
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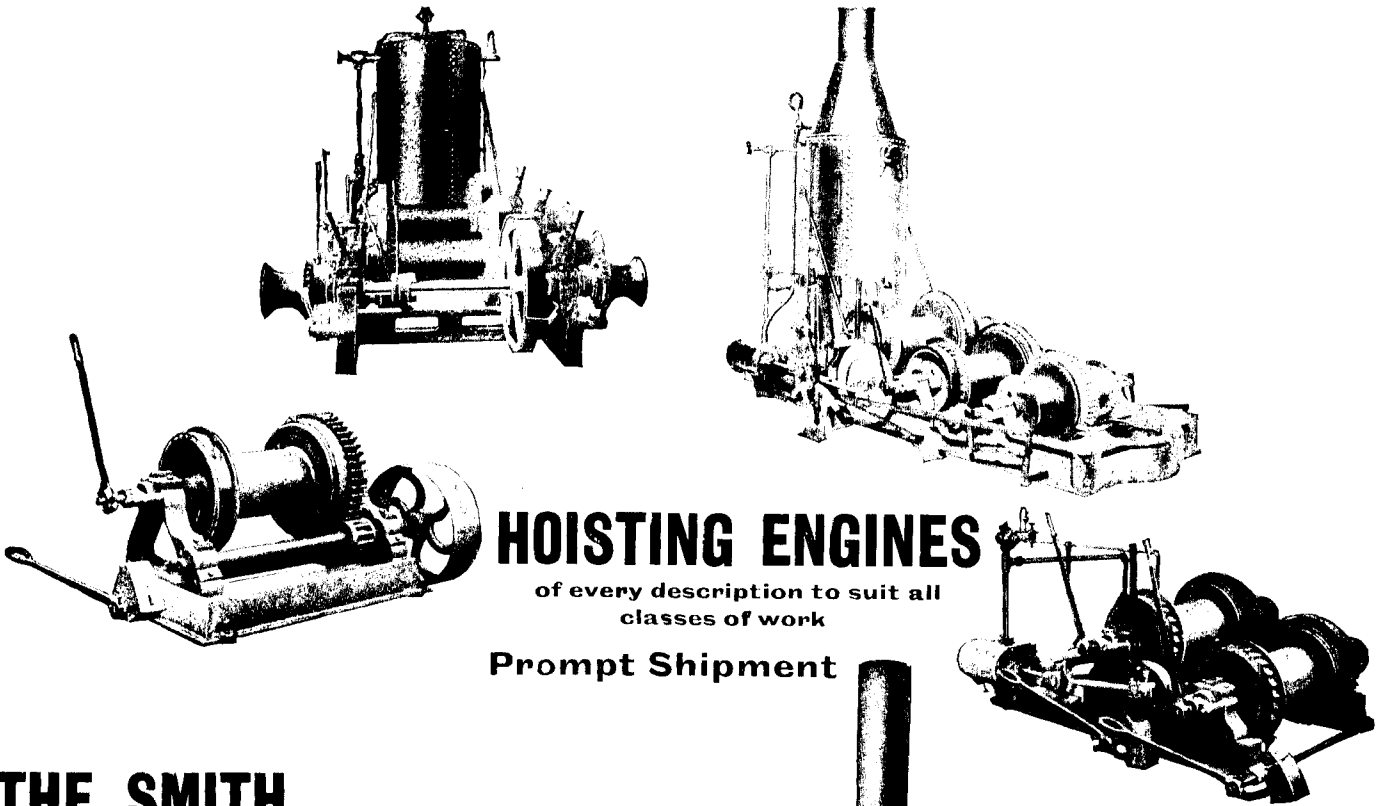
King Radiators are graceful and artistic in design, are honestly built and UNEXCELLED
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of every description to suit all classes of work

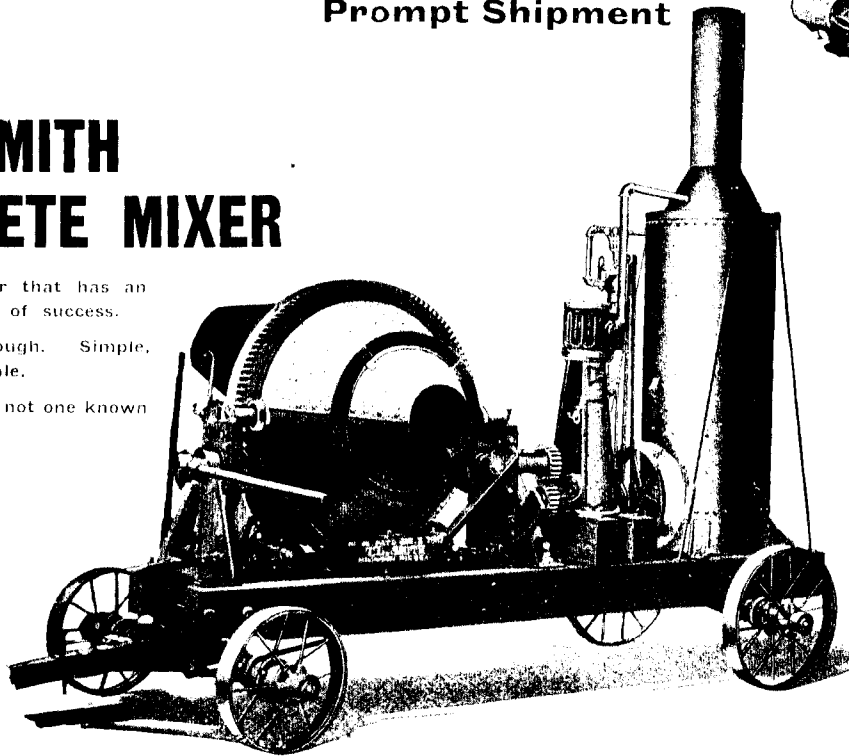
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THE SMITH CONCRETE MIXER

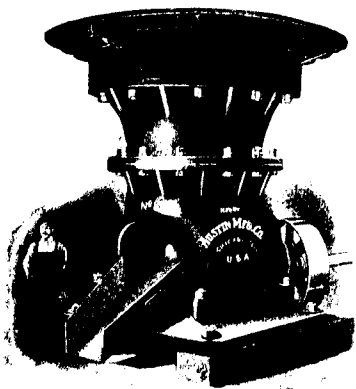
The only Mixer that has an unbroken record of success.

Fast and thorough. Simple, strong and durable.

3,000 in use and not one known to fail.



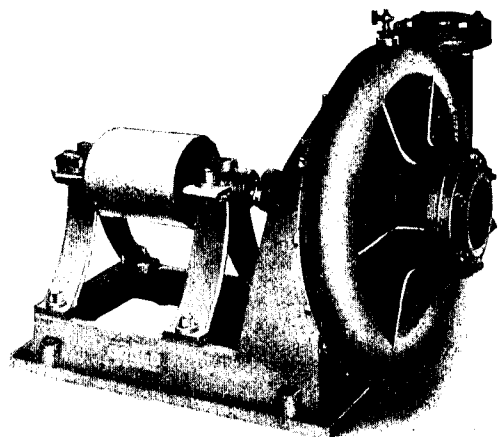
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We design, supply and erect complete Rock Crushing Plants, including Elevators, Screens, Conveyors, Dump Cars, etc., etc.



Ideal Concrete Block Machines. Complete outfits for making all sizes, shapes and patterns of hollow concrete blocks. The original face-down horizontal core principle.



PUMPS OF ALL KINDS. Centrifugal Pumps, belt-driven or direct connected; Pulsometer Pumps, Diaphragm Pumps.

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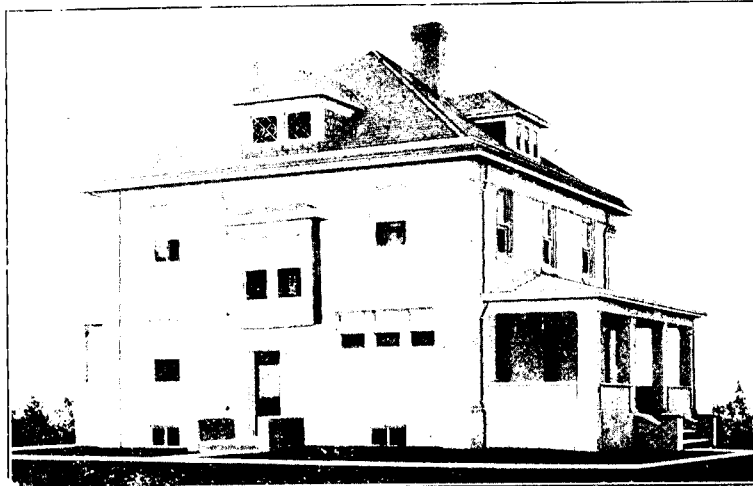
299 St. James St.,
MONTREAL

73 Victoria St.,
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259-261 Stanley St.,
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353 Water St.
VANCOUVER

Residence
constructed of
IDEAL Concrete
Blocks
with stucco finish
Fire-proof
throughout



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Architect,
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Fire-Proof Stucco Construction With "IDEAL" Blocks

Perfect stucco building construction is only possible by the use of IDEAL Concrete Building Blocks.

The usual interior, or *real* structure over which the stucco is applied, is of wood - flimsy, inflammable, perishable, and comparatively expensive. IDEAL Concrete Blocks provide a base for stucco work that is low in cost, as substantial and durable as if hewn from stone, and best of all, is absolutely fire-proof, and practically cold-proof.

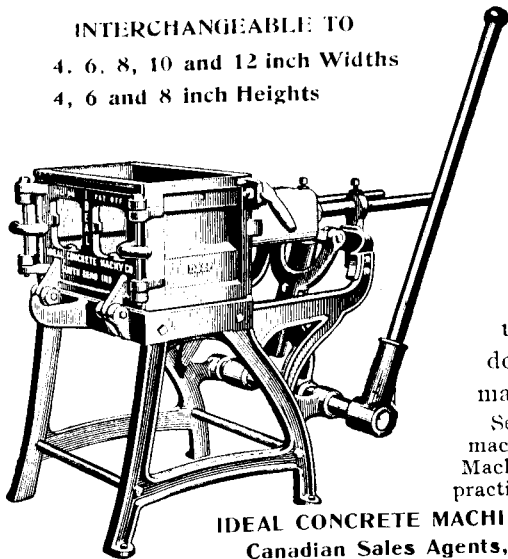
Special face plates can be provided for the IDEAL Machine for making blocks specially for stucco work. These blocks may be made of very coarse materials, and produced at surprisingly little cost. Furthermore, these special blocks save the expense of metal, or other lathing as a base for stucco.

IDEAL

Face-Down Interchangeable

Concrete Machines

TWO SIZES :
Model "A" 16 inch Length
Model "E" 24 inch Length
INTERCHANGEABLE TO
4, 6, 8, 10 and 12 inch Widths
4, 6 and 8 inch Heights

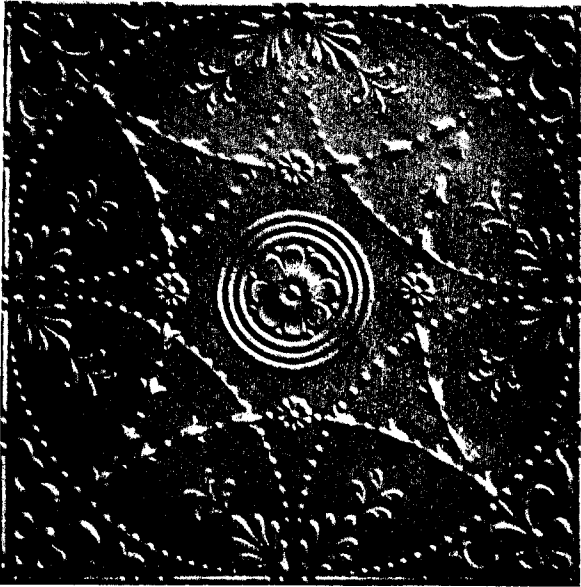


also produce blocks in many different styles of ornamental face design, and in varying forms of natural stone effect. By the use of different face plates in combination, the most pleasing architectural effects can be secured.

The "IDEAL" machine is interchangeable to produce blocks of any angle, varying widths and any length within capacity. It is simple, rapid and economical in operation. Absolutely unbreakable in use. It is the only machine legally built on the face-down principle, permitting the use of a rich facing material with coarser material at back of block.

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IDEAL CONCRETE MACHINERY CO., Ltd., Factory, 221 King St., London, Ontario, Canada
Canadian Sales Agents, MUSSENS LIMITED, Montreal, Toronto, Winnipeg, Vancouver



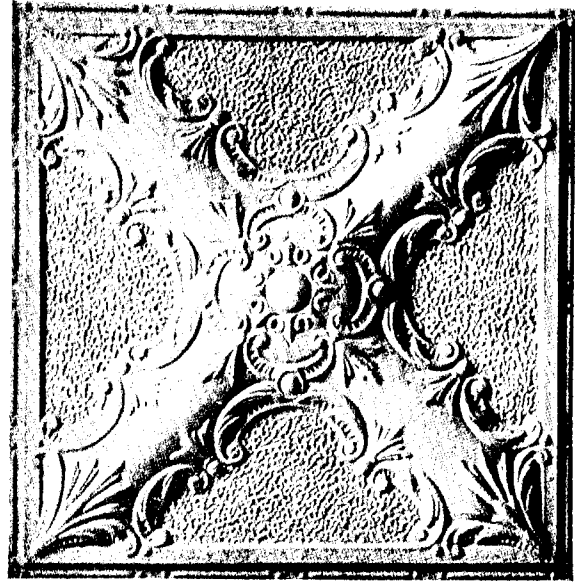
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are *fire* and *moisture proof*—therefore *sanitary* and very *durable*. Cannot crack, sag or fall down.

Mechanically perfect Plates, Cornices, Mouldings, etc., assure *tight* and *invisible* joints.

And yet—in comparison with wood or plaster finish—**Galt "Classik" Ceilings** are *very economical*.

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Galvanized Steel Shingles, Sidings, Cornices, Fire-proof Windows and Skylights, Expanded Metal Lath, etc.

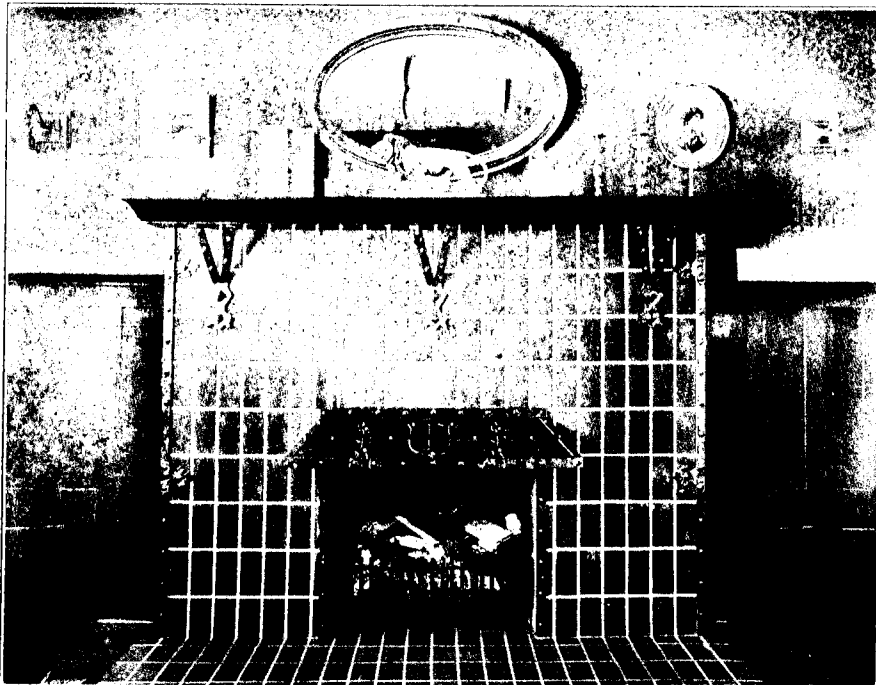
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OUR EXHIBIT AT MONTREAL BUILDERS' EXHIBITION, DEMONSTRATING METHOD OF USING OUR SHEATHING AND ROOFING PAPERS IN RESIDENCE CONSTRUCTION.

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"GOOD LUCK" and "SHIELD BRAND" Sheathing paper keeps the house cool in summer and warm in winter, and saves the owner from 40 to 60 per cent. on his winters' fuel.

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Now-a-days Architects' Specifications are so exacting that only first-class materials meet them. This is due to the demand for high-class construction, and a desire on the part of Architects to render the best service possible. A first-class material cannot be made to sell at a cheap price—it is contrary to the law of value—but a first-class material can be made and sold at "good value." DON VALLEY PRODUCTS are not cheap—but are the best value on the Canadian market. The best service is rendered when

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Mr. J. Francis Brown speaks highly of Don Valley Products. Mr. Brown has some of the Dominion's handsomest structures standing to bear witness to his Architectural ability, and has a thorough knowledge of the excellence of our materials.

J. Francis Brown

Telephone Main 1209

Architect

Board of Trade Building

Toronto, August 12, 1908.

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Truly yours,

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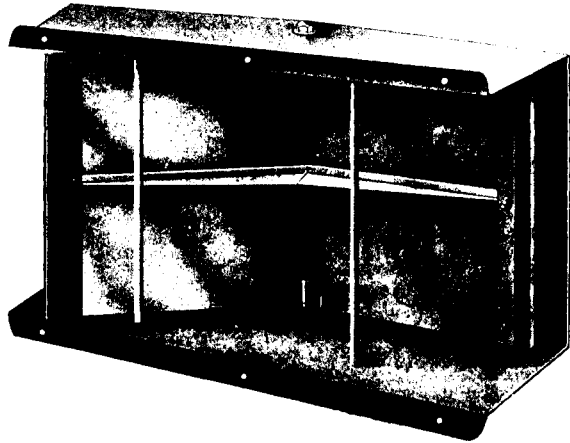
We will gladly furnish you with any further information you may desire.

The Don Valley Brick Works

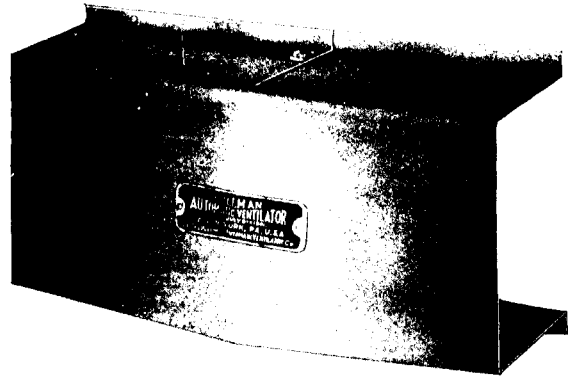
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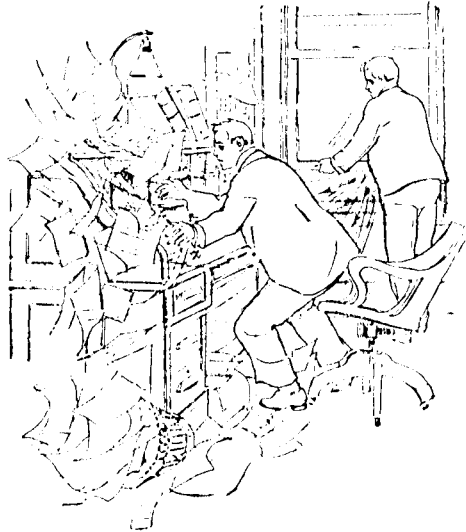
THE PULLMAN AUTOMATIC VENTILATOR



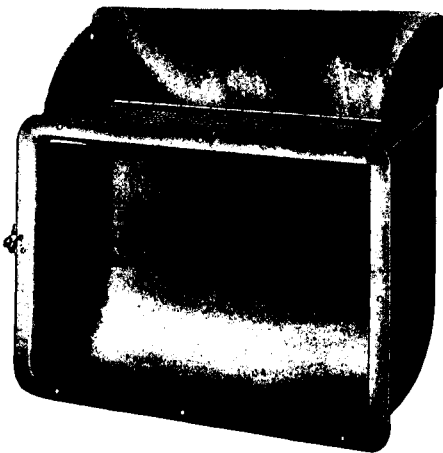
Interior of Hood, Showing Valve



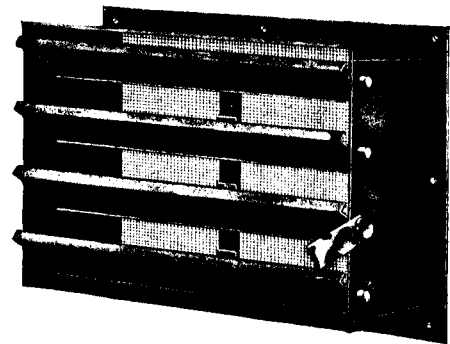
Exterior of Hood



**This Style
of
Ventilation
is a
Nuisance**



Interior of Diffusion Box



Interior of Exhaust Box

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Canadian Selling Agents

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— FOR —

Building, Decorative and Monumental Purposes

COMPACT—UNIFORM COLOR AND TEXTURE—WILL NOT CORRODE
OUR SHIPPING FACILITIES ARE THE VERY BEST



MAIN WORK SHOP AT QUARRIES AT STANSTEAD, P.Q., SHOWING CUTTERS WORKING ON THE 13-TON DRUMS FOR THE COLUMNS OF THE BANK OF COMMERCE, MONTREAL.

AMONG OUR RECENT CONTRACTS ARE :

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Eastern Townships Bank	-		Montreal
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STANSTEAD JUNCTION, BEEBE PLAIN, QUEBEC

HAMILTON BRIDGE WORKS

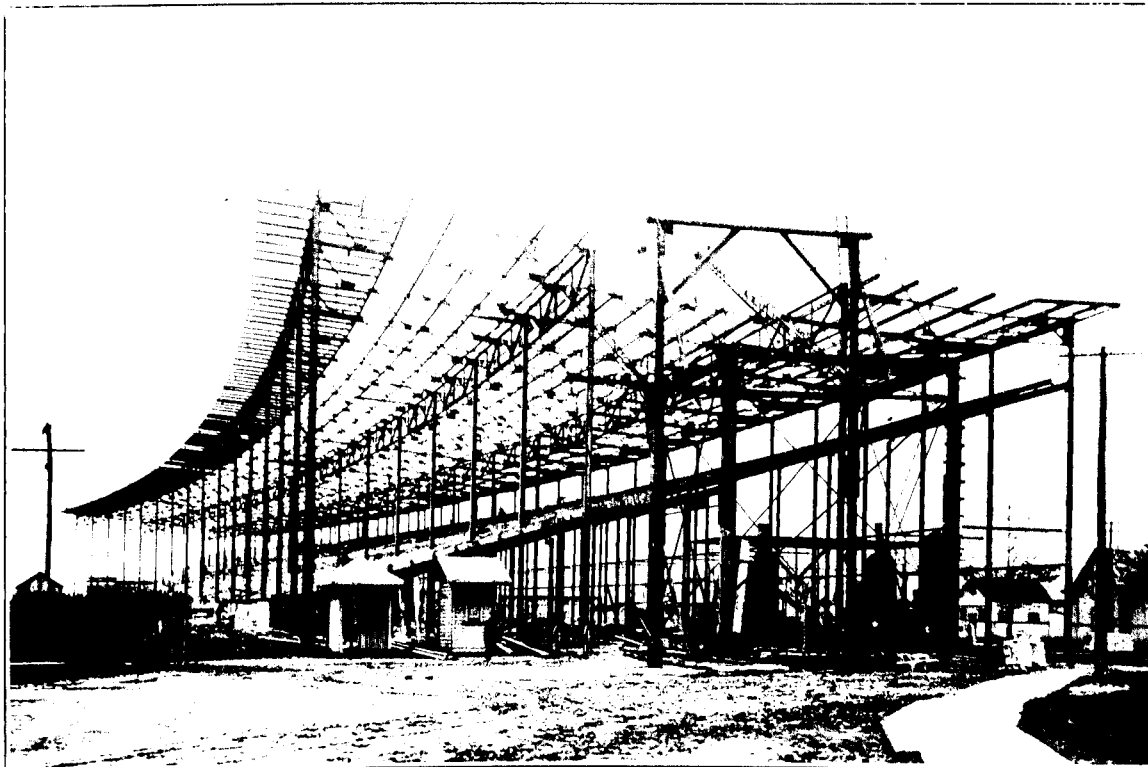
CO., LIMITED

HAMILTON

CANADA

Will be Glad to Furnish Estimates and Plans for

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STEEL GRAND STAND, CANADIAN NATIONAL EXHIBITION, TORONTO.

ENGINEERS AND
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STRUCTURAL STEEL WORK

5,000 Tons of Steel in Stock
Annual Capacity 15,000 Tons

BEAMS, ANGLES, CHANNELS, PLATES, ETC.

Any Size from 1 1/2 Inch to 24 Inches, and any Length up to 70 Feet

NOTE:—We advise that enquiries for any work in our line be sent at the earliest possible time in order to arrange for reasonable delivery.

"MONARCH"



PORTLAND CEMENT

Mills at Montreal, Que., and Lakefield, Ont.

ANNUAL CAPACITY ONE MILLION BARRELS

Unexcelled for Strength, Fineness, Color and Uniformity

Highest Quality--Fulfilling requirements of all standard specifications.

Sales and General Offices:

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THE LAKEFIELD PORTLAND CEMENT CO.

"SAMSON"

CANADA'S OLDEST AND MOST RELIABLE BRAND

THE OWEN SOUND PORTLAND CEMENT CO.
LIMITED

OUTPUT 1,500 BARRELS
PER DAY



SPECIAL FACILITIES FOR
HANDLING LARGE ORDERS

Write for Quotations and Pamphlet, etc.

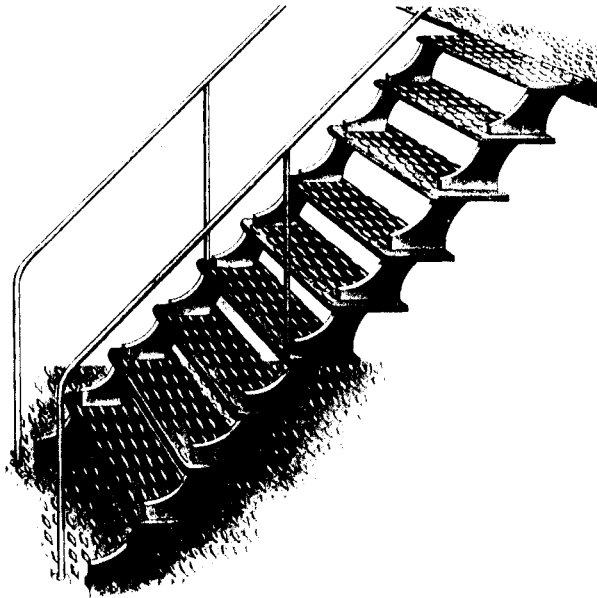
"CEMENT, HOW TO USE IT, WHERE TO BUY IT."

GENERAL SALES AND HEAD OFFICE, OWEN SOUND, ONTARIO

American Pressed Steel FLOOR PLATES

WILL NOT CRACK OR BREAK.

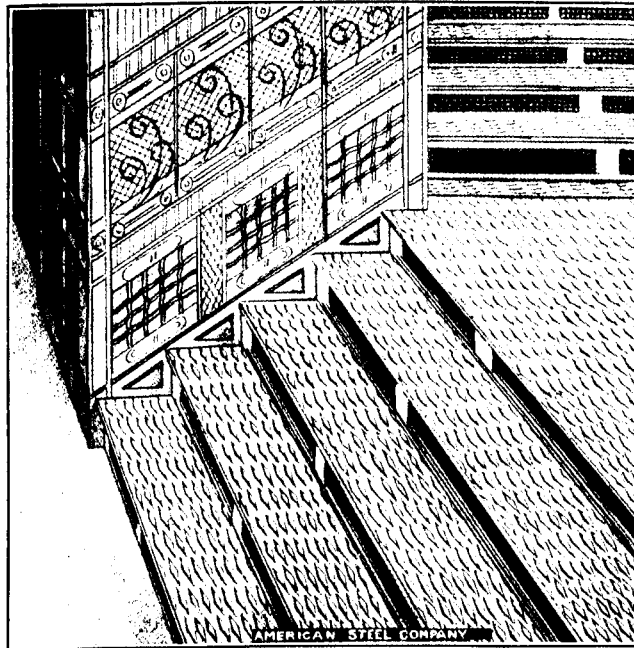
50 per cent.
Stronger
Than
Cast Iron



30 per cent.
Cheaper
Than
Cast Iron

RIBBED OR DIAMOND PATTERN

Conduit and
Gas Flue
Covers,
etc., etc.



Stairways,
Cellar Doors,
etc., etc.

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Montreal and Toronto

Fine Pressed Brick

CANADIAN. In Red, Buff, and Brown, Standard, and Roman Sizes.

AMERICAN. In all colors. Standard, Roman and Norman Sizes.

PORCELAIN FACED BRICK. For interior and exterior work.

ENAMELLED BRICK.

FIRE BRICK. PAVING BRICK.

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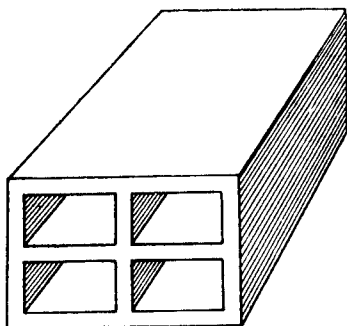
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CANADIAN. Red, Blue (or Grey), Brown and Olive Green Sandstones.

AMERICAN. Bedford (Indiana) Limestone, Ohio, Buff, Blue and Grey Canyon Sandstones.

BRITISH. Locharbriggs Red Sandstone, and a variety of other Building Stone.

FRENCH. Limestone in variety, including the White Limestone used in the Altman Building, New York City.



**Terra Cotta
Fireproofing and
Partition Blocks.**

(HIGH GRADE)

Ornamental Terra Cotta.

**Plasterers' Steel Corner
Bead.**

"Duresco"

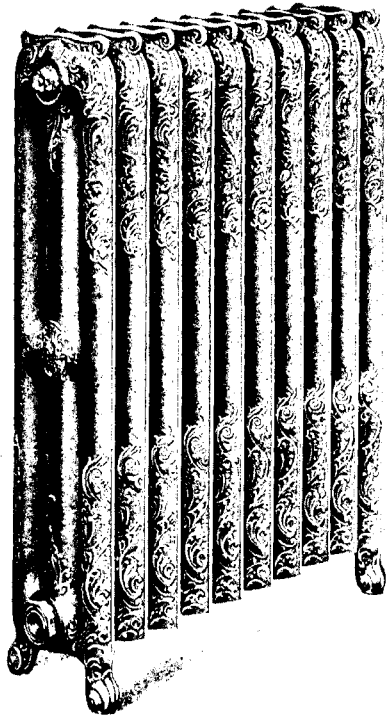
**A Cold-Water, Washable, Fire-Resisting
Paint for Interior and Exterior Use.
All Colors.**

R. I. W. DAMP RESISTING PAINTS—For Iron and Steel Work, etc. Also for use on Brick Walls (inside) to damp-proof them before plastering. Can be plastered on without furring or lathing.

CEMENT FILLER—Largely used in Power Houses, Hospitals, etc., making cement floors waterproof and dustless.

CEMENT FLOOR PAINT—Second coat for above, any color.

E. J. Dartnell Building Supplies **Montreal**
Etc.



The New Rocooco Pattern Safford
" Trident "

" Just a Word to the Architect "

Not only are we still in the lead with the largest assortment of new patterns and designs, but we are maintaining that standard of mechanical and artistic perfection in our product which has made the "**Safford**" a safe radiator to specify. It costs us money, but it means dollars to you and your clients.

Safford Hot Water Boilers

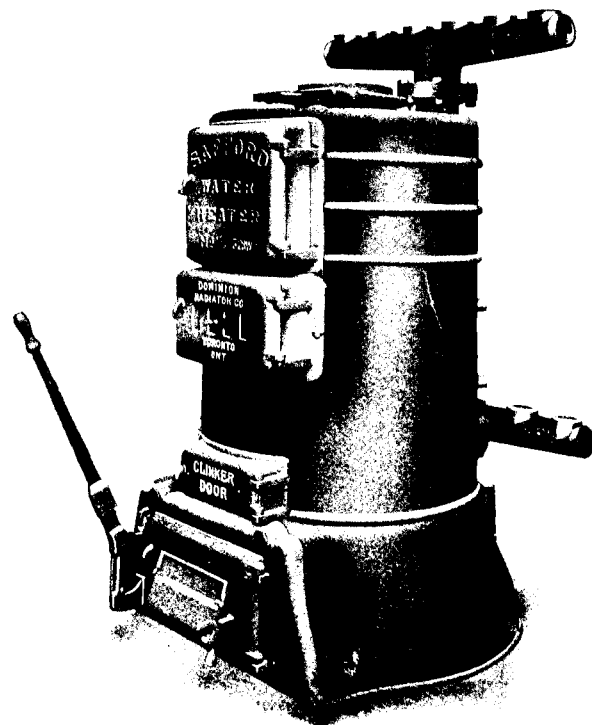
Safford Hot Water and Steam Radiators

We have gone into this boiler business in the same spirit.

We felt that there was an immense amount of unnecessary energy expended in firing the old type Boiler, hence the "**Safford.**"

Write us for catalogue to-day.

We can now furnish High Base Boilers in sizes up to No. 4.



DOMINION RADIATOR CO., Limited

TORONTO

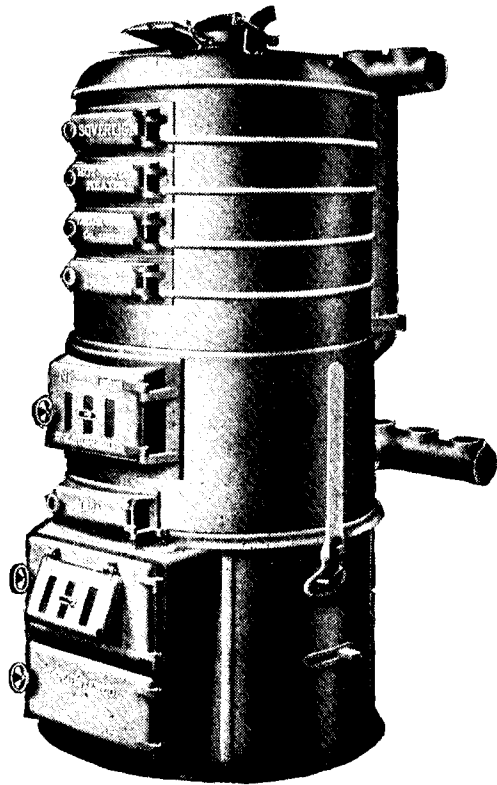
MONTREAL

WINNIPEG

ST. JOHN, N. B.

Hot Water Heating with Coal Bills Made Smaller

THE "SOVEREIGN"



The Hot Water Boiler with
the Larger First Section

¶ The hot air furnace does not heat the whole house and the registers emit gas and dust. Yet whatever the hot air furnace lacks in efficient and sanitary heating it is popularly supposed to be the most suitable for small houses (six to twelve rooms) because of the belief that it is economical in coal consumption.

¶ The popular opinion in this matter is upset by the performance of the "Sovereign" the hot water boiler that has NEVER TAKEN MORE COAL TO HEAT A HOUSE THAN A HOT AIR FURNACE has required, and in the average instance has taken A THIRD LESS COAL.

¶ While the "Sovereign" is built along the accepted and standard lines of construction for hot water boilers, it is different in the most vital part—the larger first section.

¶ It is this larger section that makes the "Sovereign" responsive to every pound of coal burned and accelerates the flow of hot water through the pipes as freely as warm air circulates through the conduit pipes of a hot air furnace.

¶ The "Sovereign" is built in a variety of styles and sizes. The high cellar type has a sifting grate and five boiler sections. The low cellar type has a low base and four boiler sections. Every design has individual clean-out doors, clinker door, interior air vent (to insure uniformity of circulation), patent top damper and a larger first section.

TAYLOR-FORBES COMPANY, GUELPH, Canada
LIMITED,

"SOVEREIGN"

Hot Water Boilers and Radiators, General Hardware

Write for our Booklet:—"HEATING SYSTEMS FOR DWELLINGS"

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Decreasing Fireproofing Cost

Are you familiar with
the new methods of using

Terra Cotta Hollow Tile

in connection with re-enforced concrete structural members?

Are you familiar with the economy, efficiency and strength of long span Hollow Tile Floors (re-enforced) used in spans up to 25 feet?

Are you aware of the greatly decreased cost of fireproof construction under these methods?

How can you be sure of the best fire-proof construction, or the lowest cost, or either, unless you figure with the largest fireproofing organization in the world?

Send us your plans to figure.
Estimates cheerfully made.

National Fire Proofing Company

Manufacturers of

Terra Cotta Hollow Tile

Contractors for Construction of Fireproof Buildings

The largest firm in the world devoted exclusively to the business of fireproof construction.
Capital Twelve and one-half Million Dollars.

PITTSBURG, Fulton Building	CHICAGO, Commercial National Bank Bldg.
PHILADELPHIA, Land Title Building	NEW YORK, Flatiron Building
WASHINGTON, D. C., Colorado Building.	MINNEAPOLIS, MINN., Lumber Ex.
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Twenty-six factories throughout the United States

TORONTO
TRADERS BANK BLDG.



IN a previous advertisement in “Construction” we went into the question of low-cost construction in NIAGARA SYSTEM of Reinforced Concrete. In this number we wish to give particular attention to the SIMPLICITY, and what we call the “ELASTICITY OF APPLICATION” of the NIAGARA BAR to the problems of construction in concrete.

Q Under the “Niagara System” the shear members may be attached to any form of plain or deformed tension bar now on the market—with only slight variation in the shape and size of the clip—such as “Ransome,” “Johnson,” “Thacher,” “Twisted Lug,” or “Kahn Cup,” bars, making the simplest method of attaching stirrups which it is possible to devise, and increasing the efficiency of any one of these bars.

Q We have a preference for COMMERCIAL PLAIN BARS under ordinary condition, usually in squares and flats, and have found that the results are satisfactory in actual practice. Beyond this broad nature and simplicity of attachment of shear members to many types of tension bars is the important point of the varying length of the shear members, which at all times may be sufficiently long to enable homogeneous action in the stem and tee of a T beam.

Q The T beam is the type most important and most used in concrete, and the reinforcement against shear should in all cases extend up into the floor slab. In our design of the Niagara Bar we use three quarters of an inch as the standard dimension in width, thereby making it possible, at all times to design in economical sizes of beams. Increase of steel area is made by increasing in depth of bar, in accordance with the logical development of a beam for heavy loading.

Q We have the most ECONOMICAL reinforcing bar on the market. The NIAGARA BAR is of the HIGHEST EFFICIENCY. Our EXPERIENCE and SERVICE is at your command.

PITTT & ROBINSON

Architects and Engineers

IMPERIAL BANK CHAMBERS

NIAGARA FALLS, = = CANADA.

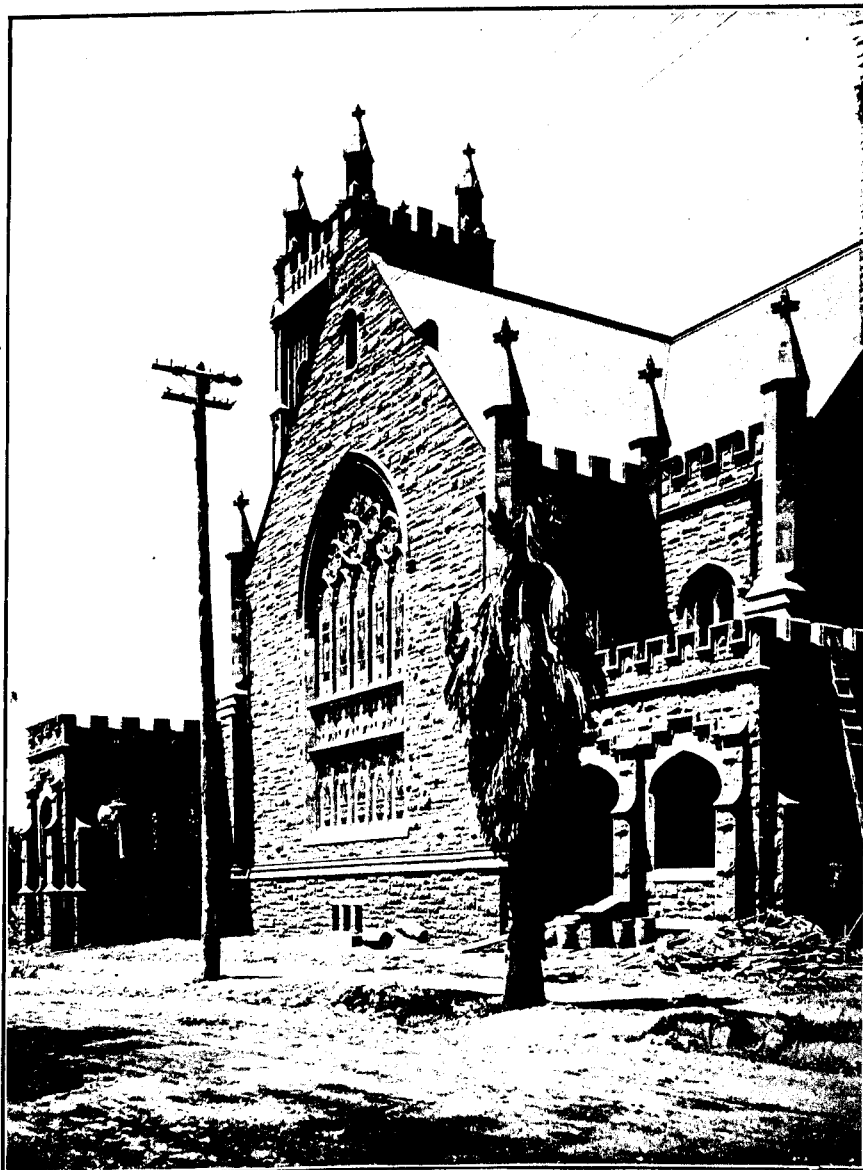
THE CALIFORNIA SYSTEM OF MANUFACTURING HIGH-CLASS CEMENT STONE

is the *cheapest*, the most *effective*, the most *satisfying* to yourself and your customers.
We can make good. Don't take our word for it. *Investigate* and see for yourself.

REAL RANDOM
ASHLAR

STONE ANY FRACTIONAL
SIZE CALLED
FOR, TO MEET
ARCHITECTS' DESIGNS
WITHOUT
CHANGE

ANY SPECIFIED DESIGN,
REGARDLESS
OF DRAFT OR DEPTH
OF UNDERCUTS



PRE-BYTERIAN CHURCH, PASADENA, CALIFORNIA. (Partial view.)

ORNAMENTAL
WORK
OF ALL KINDS
FRIESE, OR BELT
COURSES
BALUSTERS
COLUMNS
CAPITALS
BRACKETS
CROCKETS
GARGOYLES
FINIALS
ENRICHMENTS
LANDSCAPE DECORATION
FOR PARKS
AND ESTATES

This building is where we have *made good*. We can do as much for you, and you can do the same for your customers. *Broken Ashlar* laid up in block and snack, no blind or false joints, but the *goods* at practically no greater cost to you than the ordinary *mud pie* and *gingerbread* blocks.

We install the California System anywhere under the positive guarantee that it will give all the results that we claim for it.

We erect large buildings any place where our system has not been installed.

We supply moulds according to designs submitted for any work that you have in hand.

OUR MOTTO—Each and every piece of work different, made practical by the low cost of operating by the California System.

WRITE US FOR PARTICULARS

CANADIAN CONCRETE MACHINERY COMPANY, Limited

Office: 510 Board of Trade Building, TORONTO, ONT.

TERRANO FLOORING

Is Laid in Art Gallery of Toronto Exposition
775 Square Yards

SOME OTHER IMPORTANT CONTRACTS ARE:—

Chateau Frontenac, (new addition) Quebec,	84	Bath Rooms
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'CONSTRUCTION'

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

Vol. 1

August, 1908

No. 10

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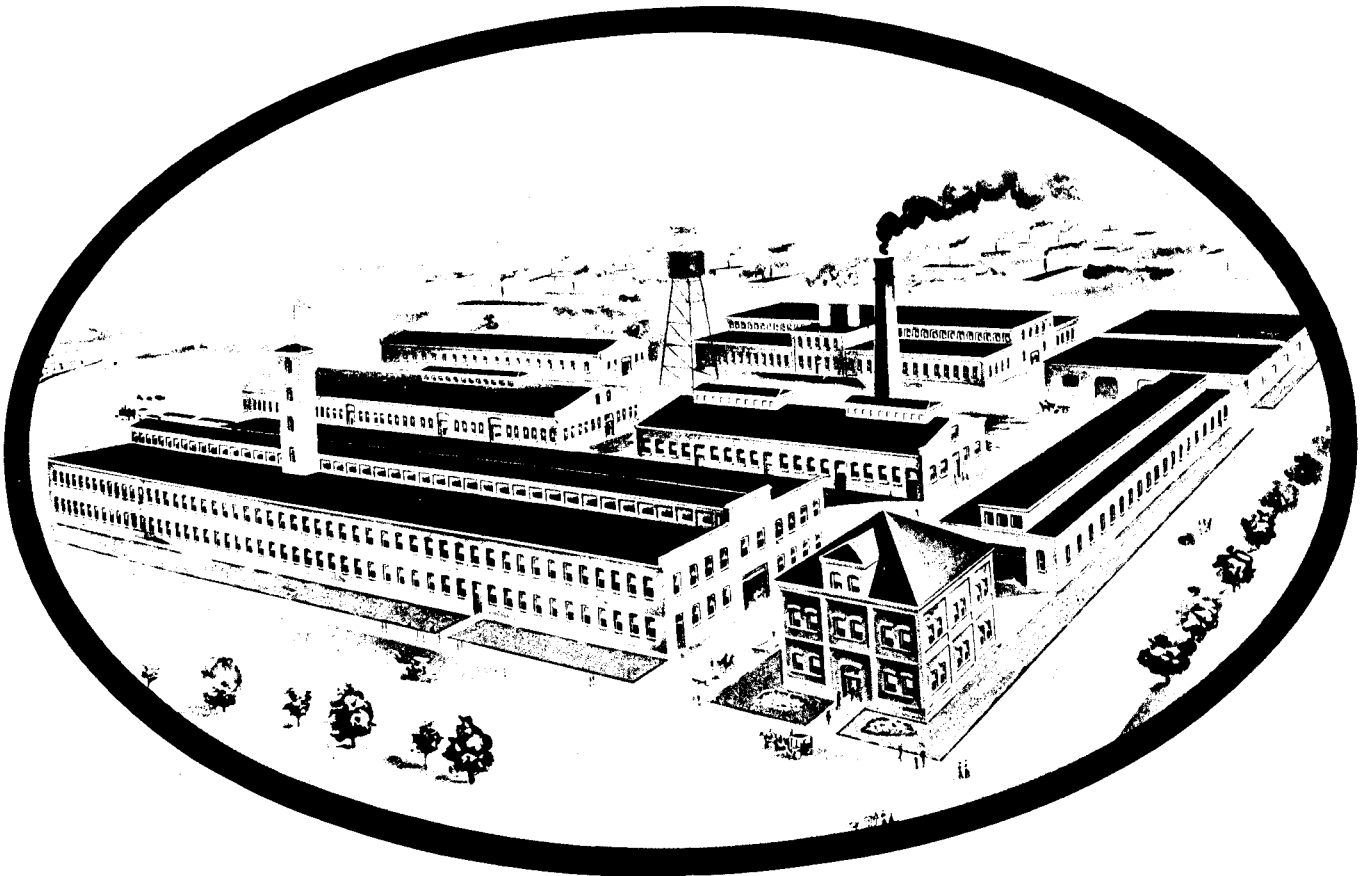
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NON-PAYMENT OF DUTY ON FOREIGN PLANS—CANADIAN ARCHITECTS MAKE EVASION OF TARIFF POSSIBLE—A PERNICIOUS PRACTICE. - - - - -

CANADIAN ARCHITECTS are in many cases to blame for the employment of American designers by Canadian builders. There is a law in Canada that places a tariff, upon foreign building plans, of one per cent. of the cost of the completed structure, and if this law were properly enforced, the Canadian architect would be given a material advantage over the foreign designer, but it is questionable if there is another instance in which our tariff law is so poorly enforced as upon imported building plans and blue prints.

With the co-operation of a resident architect in Canada, many schemes present themselves whereby this law may be evaded. One of the most prevalent of these is the employment of a Canadian architect at a stipulated sum, to act as consultant. The foreign architect gets the job, the plans are prepared in his own office, and, when completed, or nearly so, are brought across the border to the office of the consultant, where such minor changes and additions, as are suggested by the owner, are made. The Canadian architect stands sponsor for the plans, and the building is erected, in many cases, after plans really prepared out of the country, while the resident consultant is credited with the actual work, upon which, the law might demand duty. In this manner the paying of the tariff is very often avoided, and the Canadian architect is not given the protection contemplated in the tariff law.

A most glaring instance of this nature was brought to our notice a short time ago. A structure to be erected in one of our Canadian cities was designed and planned in New York. All the detailed plans, specifications and blue prints were completed in the United States. The name of the architect was not made public and a Canadian architect was employed, at a stipulated sum, to superintend the construction of the building and to lend his name as the designer of the structure. Through this method the owners avoided the payment of duty on the plans and blue prints and the building stands to-day, designed by an American architect, and constructed by an American contracting company, with not one cent of duty having been paid upon the plans. The blue prints were carried in an overcoat across the border and, inasmuch as a Canadian architect's name was connected with the plans as the designer, no suspicion was aroused in Canada and the conspiracy to avoid the payment of duty was successful and complete.

This condition was rendered possible only by the co-operation of a Canadian architect, who, in this case, by the way, is well known in architectural circles in Canada and stands high in the esteem of the members of the profession.

It appears to us that of all the craftsmen in the building trades who should be expected to stand aloof from being a party to a conspiracy to defeat the object of our

protective laws, the architect should be the most conspicuous. If our own architects will stoop to selling the inherent rights of their profession for a paltry mercenary consideration, how can they expect their cause to receive the sympathy of the building public.

The lay public is asked to consider architecture as a profession, and not as a business. Legislators have been asked to enact laws for the protection of the profession and the raising of the standard of architecture. The layman hears much talk about the dignity of the architectural profession, and it can hardly be hoped that such highly unprofessional duplicity on the part of an architect, in playing traitor to the cause of his own profession, would be very conducive to the esteem in which the architectural profession is held by the lay public.

The Canadian architect should be most careful as to how he uses his name and position, and think twice before he "sells his birthright for a mess of pottage."

QUEBEC BRIDGE BUNGLER WITHOUT PRECEDENT—GOVERNMENT METHODS SOLELY RESPONSIBLE—THE GHOST THAT HAUNTED THE TRICENTENARY. - - - - -

CANADIANS ARE prone to point to the United States as the home of graft and the Americans as past masters in the art of "working the rake-off." We boast out and boast "Oh, Lord, I thank thee that I am not as other men are," and with this self-satisfied feeling of righteousness we look with horror through the magnifying glass of our egotism upon the corruption rampant in the neighboring republic. Ostrich like we bury our heads in the sand of party slavery, while our tail feathers are plucked in the eyes of the laughing multitude by saintly faced, sober eyed politicians.

With the studied knowledge of these our weaknesses, it is not to be wondered at, that our Dominion legislators have found it expedient to govern their public actions accordingly. It is not to be wondered that so many "irregularities" have crept into the administration of that portion of the country's affairs in which vast amounts of the people's moneys are "handled." It is not at all extraordinary that the most perfectly organized system of suppression of such evidences of corruption as may slip out from under the lid has been established. Nor is it all surprising that glib tongued "Dr. Jaekels," with half the press of the country subsidized, should have any trouble in justifying their position, whatever it may be, with a party ridden people.

But while the Dominion Government has shown no scruples against party favoritism and unbusinesslike, if not dishonest, tactics in the transaction of public business, of little interest to those outside the confines of our own country, it was only reasonable to believe, that in an undertaking watched with the most profound interest by the entire engineering world, they would have displayed sufficient tact and good judgment, if not national pride, to have made at least one exception to the rule

and for the moment eliminated party politics and political pull from one great national work. How well this has been done can best be told by the fishes that play "hide and seek" around and through the tangled mass of twisted arms, chords, verticals, and diagonals of the "was to have been" Quebec Bridge, now at the bottom of St. Lawrence river.

A brief retrospect of the circumstances that led up to the tragic collapse of this great monument, the unveiling of which was to have been one of the chief features of the spectacular opening event of the Liberal campaign of 1908, known as the "Tercentenary," reveals a chain of the most extraordinary transactions ever recorded in the history of government engineering.

The development of this great Dominion of ours required the construction of another transcontinental railroad, and in determining the route of this great road, which was to tap our new Northlands, it was found expedient to cross a big river known as the St. Lawrence. It rested with the Government to provide the means for crossing this river, and in due course it was decided to construct the longest single span cantilever bridge in the world. The designing and construction of this bridge was to be the most wonderful engineering task yet encountered by bridge engineers. There was no precedent known in engineering practice upon which calculations for this great work could be based.

To carry this stupendous engineering undertaking to a successful completion was the work of the world's greatest engineers. But the Government did not think so. The contract for the designing and completion was awarded, not to a company of engineers who had their experience in work of such magnitude to recommend them, but to a company composed mostly of politicians whose names were acceptable to the "patronage committee" and whose chief asset was their political pull and their experience as lobbyists. Now it would appear that even though the Quebec Bridge Company was an inefficient organization, and that if it had undertaken a task it was not equal to, it, and not the Government, would be the loser. Further, as long as the contracting company was financially equal to the undertaking, it was not the Government's business to ask whether they knew their business or not. These things would have been perfectly true in any surely conducted transaction of this nature, but in this instance we find that the contracting company had neither money nor experience. The subsidies from the Dominion, Province of Quebec and city of Quebec Governments, with a small sum promised by the stockholders themselves, constituted the working capital of the Quebec Bridge Company.

The design for the bridge was completed, submitted to the Government and approved. An eminent engineer was employed to look after the Government's interests at the munificent salary of \$7,000 per year, which after had to be reduced owing to the financial limitations of the contracting company. This engineer, who was given the entire and complete control of the greatest piece of bridge engineering of modern times, we learn, was eventually asked to give his services for \$5,000 per year.

Then we hear of irregularities in the asking for tenders and finally the awarding of the contract to the Phoenix Bridge Company for the construction of the bridge.

But the bonds of the Quebec Bridge Company could not be floated and the Government here again came to the rescue and guaranteed the bonds of the company which was under contract with them to complete a piece of work, so that this company might be enabled to finance its work and complete the contract. What contractor would think of asking an owner to guarantee his bonds so that he might be able to get some money to pay his men? In good practice we know that the contractor invariably has to bond himself to the owner for the capable and honest execution of his contract. We do

not believe there is a precedent in history for such an unheard of procedure in either private or government work.

But even after the Government had financed the company and guaranteed its bonds, there was still insufficient money "to build the best possible bridge," so Mr. Cooper stated in his evidence, and a paring-down process was instituted which "produced stresses that carried the whole design out of the benefit of past experience in engineering practice," and a most natural result followed. A compression member buckled and 17,000 tons of securely riveted steel swayed and fell, a tangled mass, into the river below, taking with it some 70 human lives.

If the Prince upon his late visit to Quebec had stolen away from the gay throng that made merry in the dress of 300 years ago, quietly travelled along the same road out of the ancient city that would have been the scene of the great triumphal march to the opening of the great Quebec Bridge (the greatest cantilever in the world), had nature but reversed the order of things and bade gravitation cease, he would have noted at a distance a great cold grey column towering above the river. There was no unveiling scheduled in the great Tercentenary program for this monument. There was no gathering of notables at its base. There were no wreaths of flowers to adorn its brazen presence. It stands as a lone sentinel guarding its uncanny charge. It is a headstone marking the failure of Canada's great engineering boast. It is a tombstone over a sepulchre of twisted steel. It is a monument to the triumph of political favoritism over honesty in public service.

CANADA AN OBJECT OF RIDICULE—UNIQUE JUGGLING OF FIGURES—QUEBEC BRIDGE A TOTAL LOSS.

BUT THIS is not all. It is not sufficient that the Government should tangle the country up into a miserably managed public work that has resulted in a costly fatal disaster; that it should make Canada the laughing stock of the entire engineering world because of its methods of investigation, tainted with politics in its every phrase; that it should recompense those guilty of incompetence and negligence in connection with the work, instead of punishing them; that it should treat with sympathy and compassion the enemies of the people; that it should deprive the bereaved widows and children of the victims of the wreck, of the moneys they are entitled to for the loss of their providers, through lack of the directness of its investigations; but it must hold the country up to the ridicule of the engineering profession of every country in the world, through the thoroughly biased report of the special committee of the Commons appointed to investigate the financial relations of the Government with the Quebec Bridge Company.

This investigation brought to light the fact that only about 80 per cent. of the amount of the bonds guaranteed by the Government, ever really went into the construction of the bridge and showed that the members of the Quebec Bridge Company did some "tall juggling" with the finances, that at the best could be termed nothing short of very unbusinesslike.

The evidence given during the investigation verified the fact that the Government is financially responsible for the obligations of the Quebec Bridge Company, and that the people's moneys will have to pay for every ton of steel that lays at the bottom of St. Lawrence river.

But the majority (Government) report states that while the Government has still to pay the Bank of Montreal the sum of \$3,773,233, of the amount of the entire bond issue of \$6,678,000, it will fall heir to the approaches, the substructures and some delivered material on the ground which it values at \$3,000,000, and by this careful, diplomatic, juggling of the figures it aims to tell us that with the payment of \$3,773,233 the Government will get in return \$3,000,000 worth of old steel and stone. It is surprising that the committee did not endeavor to

prove by a carefully devised method of calculation that the country would realize a profit from the fall of the bridge. It would not have been more unreasonable than the attempt to show that the Government realized an asset in the old approaches and abutments of the fallen structure.

This last insult to the intelligence of the citizens of the country caps the climax. It adds the finishing touches to what has been the most remarkable continuous series of blunders, inaccuracies and misrepresentations ever recorded in the history of government engineering of modern times.

The facts of the case are that the approaches and substructures as they stand represent a liability rather than an asset, for their removal will cost a sum of money far beyond the expectations of the most sanguine, and to say that either the approaches or the substructures could be used in the erection of a new bridge would be utter folly.

It has been fairly well determined that there was something wrong with the design of the Quebec bridge and it would be worse than unreasonable to believe that a bridge engineer would so design his structure and calculate his stresses that it would fit into a portion of another design, which failed because it was wrong.

The engineering problem involved in designing a great structure like the Quebec Bridge is so complicated that an engineer must be absolutely free to create and carry out his design without being hampered by trying to make a bridge that will utilize approaches and piers already constructed. There is not an eminent bridge engineer, who is competent to design such a structure, that would undertake the work with the understanding that he must use the old approaches and abutments of the former design.

Then we would ask who is to pay for dynamiting the solid mass of 17,000 tons of twisted steel out of the channel of the river? The cost of this work will be enormous and will have to be stood by the Government.

Thus it may be seen how utterly absurd is the report of the Committee, and we wonder how much more of this kind of "stuff" the Government is going to ask us to swallow and how much longer it will insist upon holding us up to the ridicule of the world?

RESPONSIBILITY OF QUEBEC BRIDGE DISASTER STILL UNFIXED—GOVERNMENT'S ATTITUDE PUNISHES THE INNOCENT AND REWARDS THE GUILTY.

AFTER THE Quebec Bridge failed, it was but reasonable to believe that, despite the utter disregard shown by the Government for public opinion, it would make some attempt to clear its skirts officially of the irregularities in connection with the execution of this public work, that failed, by placing the blame where it belonged and of punishing those guilty of neglect or dishonest performance of duty.

Even though we had reason to believe that the Government had little to fear from public opinion in Canada, it would appear that some attempt would be made to clear up the matter in the eyes of the world which looked to Canada to conduct an investigation that would eliminate all doubt as to the reason for the failure of so great an engineering undertaking; an undertaking which all the world looked upon with studied interest.

This, however, has been denied us. A year has elapsed since the catastrophe and although thousands of dollars has been expended in, a so called, investigation by a Royal Commission, the direct responsibility for the failure has not been officially determined and beyond a poorly connected, complicated and misleading treatise of the history of the project, and the engineering prob-

lems involved, we have not been given the direct conditions or circumstances that caused chord 9L to fail under the load of the partially finished structure.

No individual or organization has been, officially, declared responsible for the deaths of some seventy workmen who went down with the ill-fated structure and the widows and orphans created by this miserable engineering bungle are unable to proceed, to collect the damages the law entitles them to, as a meagre recompense for the loss of their providers, owing to the elusive policy of the Government, in avoiding a direct, unbiased investigation that would declare, unqualifiedly, upon whom the responsibility rested. It looks as though the Government would eventually have to pay for this great loss of life with the rest of the liabilities of the Quebec Bridge Company it has had to stand sponsor for. The punishment meted out to the members of the Quebec Bridge Company for its mismanagement of affairs is well described in a Liberal newspaper, which says:

"With all the facts before them, that the company put no money of their own into the bridge, that its members mismanaged everything, resulting in the collapse and sacrifice of life, what does the Government do? Punish the directors of the company? Make them share in the loss they have brought on the country? Not at all. Instead of punishment, or even censure, Sir Wilfrid Laurier orders that his friends be paid the amounts of stock that stood in their names, with 5 per cent. interest and a premium on the stock of 10 per cent., and that the Government relieve them of all the debts they incurred on account of the bridge. Is this just? Is it fair, that a little group of gentlemen, who, though they knew nothing about engineering, undertook to build the highest long bridge in the world, who muddled away six million dollars of public money, taking care to pay themselves for their services should actually be rewarded, as if they had done something meritorious, made a present of more of the taxpayers' money, and relieved of all accountability? How long are the people going to tolerate such acts?"

MEETING OF A.I.C. COUNCIL—ELECT OFFICERS, FIX DATE OF ANNUAL CONVENTION, FORMULATE CODE OF ETHIC, ETC., AND TRANSACT OTHER IMPORTANT BUSINESS.

ACCORDING TO CLAUSE 6, paragraph 2, of the Act incorporating the Architectural Institute of Canada, a meeting of the council was held at Montreal, in the Engineers' Club, on Monday, July 27th, for the purpose of organization, the making of by-laws, the election of officers and the transaction of other necessary business.

The meeting was presided by Mr. A. F. Dunlop, R.C.A., Mr. Alcide Chausse acting as secretary. Among those present were: Messrs. J. W. H. Watts, R.C.A., S. Frank Peters, Maurice Perrault and R. P. LeMay. It was decided to postpone the date of the annual convention from September 21st-24th next, to September 28th-October 1st.

The election of officers was as follows: President, A. F. Dunlop, R.C.A.; Vice-Presidents, Edmund Burke, Maurice Perrault and S. Frank Peters; Secretary, Alcide Chausse; Treasurer, J. W. H. Watts, R.C.A.

Projects of by-laws, schedule of charges and a code of ethics were prepared, to be submitted at the annual convention for approval. A committee of arrangements for the convention, consisting of Messrs. Alcide Chausse, Montreal; J. W. H. Watts and E. L. Horwood, Ottawa, was appointed. One hundred and thirty-nine applicants were admitted to membership. It is proposed to create two classes of membership, viz.: Associates and Fellows. This, of course, will be decided at the convention. There will be also honorary and corresponding memberships.



Remarkable Similarity in Plans

THE UPPER ILLUSTRATION SHOWS THE ORIGINAL DESIGN FOR THE CHATEAU LAURIER AS EXECUTED IN A PLASTER MODEL IN ACCORDANCE WITH THE DESIGN BY BRADFORD LEE GILBERT. THE LOWER CUT IS A PERSPECTIVE OF THE DESIGN SUBMITTED LATER BY MESSRS. ROSS AND MACFARLANE AND FINALLY ACCEPTED BY THE G. T. P. IN LIEU OF MR. GILBERT'S PLANS.

REMARKABLE SIMILARITY IN PLANS.—A Communication from C. P. Meredith in Which He Maintains That Many Features in Bradford Lee Gilbert's Original Conception for the Proposed Chateau Laurier and Ottawa Terminals Have Been Appropriated and Incorporated in "Alleged" New Plans.

There has been considerable discussion relative to the action of the G. T. P. in taking the preparation of plans for the proposed Chateau Laurier and Ottawa Terminal Station, out of the hands of Bradford Lee Gilbert, and giving the work to Messrs. Ross & Macfarlane, and in view of the fact that CONSTRUCTION has published elevations in previous numbers of both Mr. Gilbert's and Messrs. Ross & Macfarlane's designs, we believe that the publication of the floor plans of both designs will give the profession generally, a better understanding of Mr. Gilbert's original conception and also as to just what extent Messrs. Ross & Macfarlane found it necessary or convenient to appropriate and incorporate in the plans submitted by them the ideas embodied in Mr. Gilbert's design.

In the opinion of CONSTRUCTION there is no reason why work of this nature should go to foreign architects. We maintain that, originally, this work should have gone to some Canadian designer, of whom we have many that are quite capable of working out an entirely original conception suited to every condition affecting the plan, design and construction of these proposed structures. It is, however, not quite clear to us that the religious adherence to the policy of giving preference to Canadian architects should blind us to any infraction of the basic principles of professional ethics.

Mr. Gilbert was called upon to design a Canadian building, and we have every reason to believe that he was conscientious in the performance of his duties. We know of no instance in which he transgressed the laws of professional ethics, and as an architect, be he Yankee, or Hindu, he is entitled to treatment compatible with professional decency. The dignity of the architectural profession in Canada demands it.—EDITOR.

IN THE JUNE issue of CONSTRUCTION you give prominence to certain alleged new plans for the proposed new Terminals Hotel and Station at Ottawa, and note with pleasure that Canadian architects have been given the work. If you would compare your May and June numbers you will see that Messrs. Ross & Macfarlane cannot be given the credit for having originated these designs, and to support my statement I am sending you photographs of both original accepted plans prepared by Mr. Bradford Lee Gilbert, and also those that were presented by Messrs. Ross & Macfarlane. The former were the ones published in your May number.

In justice to Mr. Gilbert I will ask you to publish these photographs in your next issue, so that the profession may be in a position to judge for themselves whether, under the circumstances, Messrs. Ross & Macfarlane are to be commended for their action.

The similarity between Mr. Gilbert's plans and those presented by Ross & Macfarlane are as follows:

1.—General plot plan showing location of Chateau Laurier at s.w. corner of Major's Hill Park, following exact outline and boundary of site requested by Mr. Gilbert and sanctioned for this purpose, and upon which deed from the Government to the G. T. R. is based. Also showing connecting entrance Plaza on Rideau St. level; and service entrance underneath at roadway to Canal; and promenade over tracks adjoining Canal, together with connecting sub-way under plaza to station. The station being located as set back from Rideau St. at corner of Sapper's bridge with main entrance at Rideau St., and separate lunch and waiting rooms for men and women. Lavatories, ticket offices, lunch room, etc., at track level, connection with concourse, train shed, new plaza at intersection of Besserer St. and adjoining baggage annex, etc., all of which are shown alike on the original, and those claimed to have been prepared by Ross & Macfarlane.

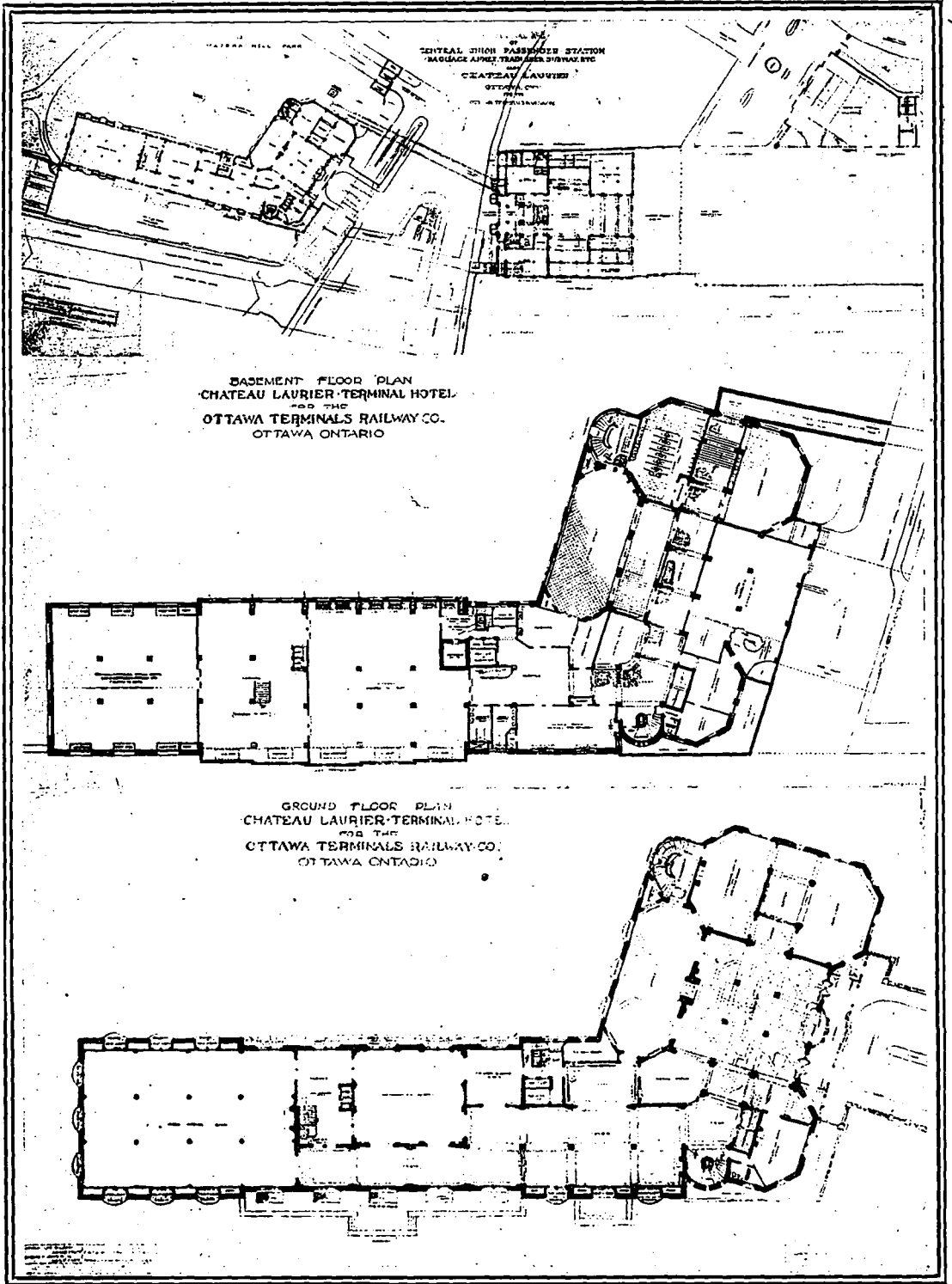
2.—The general ground plan of Union Passenger Station showing its cruciform shape, forming general waiting room, with seats in each wing, ticket offices, lunch room, separate waiting room for men and women, and lavatories in the four corners of the square. Direct connection to centre made with train shed, and concourse on one side, and with Rideau St. containing main stairway on the opposite side.

3.—The exterior design in classic detail, being similar to that originally suggested and approved for the Union Station when it was proposed to originally locate the same at the new plaza on Besserer St. at the intersection of Little Sussex St. with train-shed, concourse and baggage annex.

4.—The general ground plan of Chateau Laurier indicates in detail the general arrangement of the principal rooms, hallways, stairways, lavatories, offices, dining rooms, plaza entrance, terrace, etc., as shown on original plans, which features are retained intact on the alleged new plans.

5.—The same applies to second floor plan, showing unique location of the ballroom and its connection with conservatory with lounge below; also banquet hall and special recess fire escape at each end of building, service rooms, etc. The same applies to the kitchen or basement floors, with its special entrances from the service roadway under the entrance plaza, and its connection with Union Station with subway at end, connecting with main corridor and stairways, to main hotel floor, also grill, barber shop, lavatories, kitchen and service rooms, etc., as shown on the original plans and retained practically without change on the alleged new plans. The principal change in connection with the typical floors (which in the original plans show all of the bathrooms opening directly into outside air and ventilation) is that the alleged new plans show these bathrooms placed inside next corridors without direct light or ventilation, opening into bedrooms.

6.—The elevation of the Chateau Laurier as shown by perspective is identical with photographs of the models



Remarkable Similarity in Plans

THE ORIGINAL BLOCK PLAN FOR THE CHATEAU LAURIER AND OTTAWA TERMINAL STATION, ALSO THE BASEMENT AND GROUND FLOOR PLANS OF CHATEAU LAURIER AS DESIGNED BY BRADFORD LEE GILBERT.

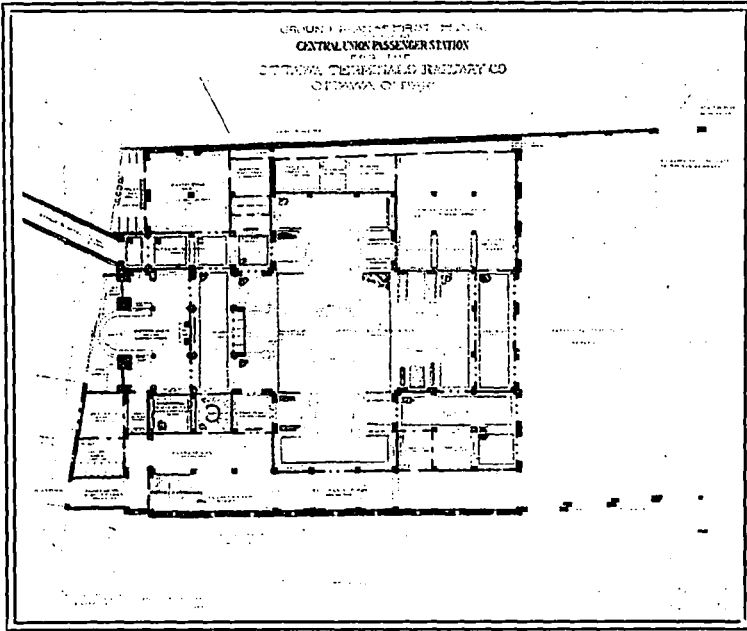
exhibited in Ottawa excepting only that certain special features of detail have been cheapened and thus the general appearance is made commonplace.

After having read the foregoing, and examined the cuts and photographs to which reference is made, you and your readers will have no doubt that Mr. Gilbert's original conception, layout and design have been incorporated by Messrs. Ross & Macfarlane. This conduct on their part is all the more inexplicable when it is known that in a letter from Mr. C. M. Hayes, vice-president and general manager of the G.T.R., which was read at a public meeting of the Ottawa city council, on May 15th last, in the presence of Ross & Macfarlane, Mr. Hayes, in referring to Ross & Macfarlane's plans then first presented, stated that "the hotel was substantially

in accordance with Mr. Gilbert's plans and model," and made no reference to the station plans being changed, but spoke merely of the "design and appearance."

(Signed) C. P. MERIDITH.

Ottawa, July 25, 1908.



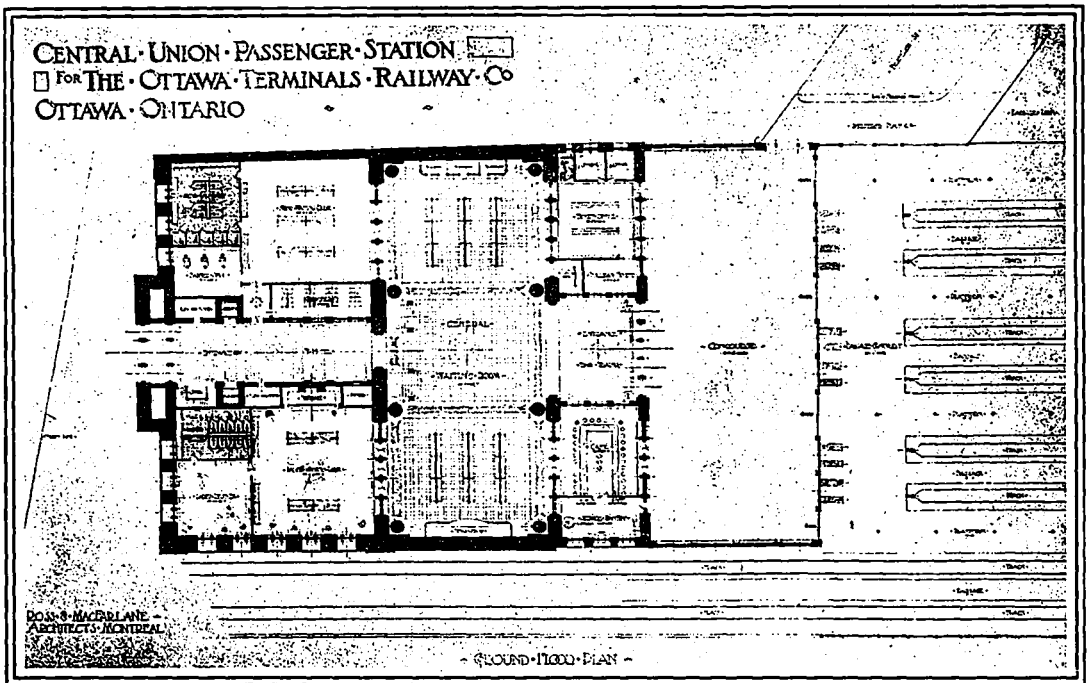
GROUND FLOOR PLAN OF OTTAWA TERMINAL STATION AS DESIGNED BY BRADFORD LEE GILBERT.

the exception of the top one, which is 18 feet wide. Five thousand barrels of cement were used in its construction.

LARGEST CEMENT STAIRS

What is said to be the largest cement stairway in the world was recently completed as the approach to the Mormon Temple located at Mantai, a short distance from Salt Lake City. It is 20 feet wide, having retaining walls on either side with square pillars at each of the nine landings.

In all there are 125 steps of 12-in. tread and 6-in. rise. Each of the landings is 6 ft. x 20 ft. with



GROUND FLOOR PLAN FOR OTTAWA TERMINAL STATION AS SUBMITTED BY MESSRS. ROSS & MACFARLANE AND FINALLY ACCEPTED BY THE G. T. P. IN LIEU OF MR. GILBERT'S PLAN.



A JOURNAL FOR THE BUILDING AND ENGINEERING INTERESTS OF CANADA

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CORRESPONDENCE.—The Editor will be pleased to receive communications upon subjects of interest to the readers of this journal.

Vol. 1 August, 1908 No. 10

Current Topics

THE ANNUAL MEETING of the recently incorporated Architectural Institute of Canada will be held in Ottawa from September 28th to October 1st, inclusive.

* * *

BUILDING OPERATIONS in Fort William this year promise to eclipse all previous records. The value of building for which permits were granted up to the latter part of July, amounted to \$1,076,345, an increase of more than a quarter of a million dollars over last year.

* * *

AMONG THE NEW COMPANIES which have been recently incorporated are the Hamilton Brick Company, Hamilton, Ont., capitalized at \$40,000, and the Burndale Brick, Pipe and Enamelling Co., International Timber Co., and the Standard Supply Co., all of Calgary. Alta.

* * *

TORONTO PLASTERERS have returned to work as the result of the master plasterers having signed an agreement with the union on the basis of last year's scale of fifty cents an hour. The strike, or lockout, as the men insisted on calling it, lasted three weeks, affecting 350 men and 350 helpers.

* * *

THE GEORGIAN BAY SURVEY REPORT, recently presented to Parliament, places the amount it would cost to build the canal at about \$100,000,000. Two routes based on a project for a waterway of at least 22 feet in depth are reported on: Route A from Montreal via Lake St. Louis and Ste. Anne de Bellevue is estimated at a cost of \$99,689,000; Route B, via Riviere des Prairies, north of Montreal Island, the estimated cost of which is given as \$93,890,000. The time required to do the work would be about ten years.

RAILWAY CONSTRUCTION IN THE WEST is progressing at a rapid rate. West of Saskatoon the track laying force of the Grand Trunk Pacific recently set a new record in putting down thirty miles of track in six days' time.

* * *

TEN-FOOT VENTURI METERS with a 3 to 1 throat ratio have been installed in the Divi irrigation pumping plant, Madras Presidency, India, according to "The Engineer," London. The throat sections and pressure chambers are of wrought iron and the remainder of reinforced concrete.

* * *

PRESSED SHEET METAL RADIATORS having double-lock seams at the edges of the sections, by which they are rendered tight under hydraulic pressures as high as 80 lbs., even before galvanizing, have been recently manufactured. The double galvanizing, both inside and out, adds strength as well as freedom from corrosion in the seams.

* * *

CONCRETE PILES ARE BEING USED quite extensively in Canada at the present time in carrying out construction work. At Lethbridge, piling of this kind, covering a mile in extent, has recently been completed for the Canadian Pacific Railway bridge, while 1,800 of these piles have just been put down in Winnipeg, preparatory to laying the foundations for the new Union Station.

* * *

A VACUUM CESSPOOL EXHAUSTER in which the vacuum is created by a steam-ejector has been placed in service by the Epsom, England, Rural District Council. The vacuum tank, which has a capacity of 750 gal., is made of galvanized steel and is fitted with vacuum and level gauges. After the vacuum has been created the inlet pipe is put down into the cesspool and the valve opened, allowing the sewage to be drawn into the tank. The tank is mounted on a self-propelled truck containing a quick-steaming boiler. The traction gearing allows of speeds of one to five miles an hour.

* * *

SOUTH AFRICA OFFERS A GOOD MARKET for several kinds of lumber, especially pine, spruce, ash and poplar, says Trade Commissioner John A. Chesley, in a communication to the Department of Trade and Commerce. There is also a good opening for the introduction of planed, tongued and grooved flooring and sheathing, manufactured from birch, maple and pine. It is the opinion of Mr. Chesley that Canadian manufacturers and exporters of lumber should make an effort to market more wood in South Africa than they have in the past, particularly so in view of the advantage they have in coming under the preferential tariff.

* * *

BUILDING INSPECTOR JARRETT, of Vancouver, is keeping a close watch on the character of materials that are being used in the erection of new buildings, with a view of seeing that the standard of the new by-law is being properly complied with. Of late, he has frequently gathered in samples of materials unloaded in front of the sites of new structures, and subjected them to the test of the city's hydraulic machine recently installed. On one occasion three samples of bricks that were required to withstand a crushing strain of sixteen tons, fractured under a pressure of from five to seven tons. The lot was at once condemned. In every case the test is made in the presence of the representative of the manufacturer and others who may be interested. A vigilance of this kind is well worthy of emulation in other cities. It means a better and safer class of structures.

A HYDRO-ELECTRIC PLANT with a capacity between 20,000 and 30,000 horse-power is being developed on Loch Leven, Scotland, by the British Aluminum Co., one of the first British companies to use electro-metallurgical processes extensively.

* * *

IN IRELAND there is some talk of establishing cement mills at Belfast, Limerick, Durrrow, Queenstown, Arklow and other places. At the present time the demand for a native product is greatly in excess of the supply. The Department of Agriculture is said to be interested.

* * *

IMITATING STONE IN CONCRETE was recently deplored at a recent meeting of the Glasgow Institute of Architects, by Mr. James Shannon, F.R.I.B.A., who declared it is an utter mistake, and that not only are these imitations unsuccessful but that they are attempted with the same guilty feeling which caused people to make the early radiators look like umbrella stands or dressing tables, the early electroliers like gas fittings, motor cars like wagonettes, etc. "Things should express their purpose, and if their purpose is one to be ashamed of they should not exist."

* * *

THERE IS A SENTIMENT among the members of the commission appointed to revise the building code of New York City, that the height of buildings should be fixed. As to whether a limit will be established is still a matter of conjecture. However, considerable discussion has been indulged in regarding the suggestion of a prominent architect that for tall buildings of the future, each successive storey above a reasonable height, be built further and further back from the street, in order to give, among other things, more light and air. A great many conflicting opinions on the height of buildings have been presented for consideration.

* * *

BUFFALO EVIDENTLY DOES NOT INTEND that her school buildings shall prove to be the funeral pyre of the children who attend them. She places a higher value on both life and property than to delay indefinitely, in appropriating sufficient funds to render these buildings as safe as possible. At a recent meeting of the city council it was decided not only to equip all school buildings with fire escapes, but to install sprinkler systems, in them as well. Even the two new high schools and several recently erected grammar schools, whose walls are of fireproof construction, are to be provided with these appliances. Buffalo has set an excellent example for some of our Canadian cities, who have been decidedly dilatory in the matter of providing proper means of protection in their school buildings.

* * *

A ROLLING LIFT-BRIDGE, now being built for the Salt Lake Railroad over the old channel of the San Gabriel River at Long Beach, Southern California, will have the longest single arm span of any structure of its kind in the world. One hundred and eighty feet will be the length of span, poised upon a pier of reinforced concrete imbedded forty feet in the earth and rising twenty feet above the mean tide, the topmost portion of the bridge. When lifted to permit the passage of a vessel into Long Beach harbor it will be 200 feet above the water. In the counterweight box there will be 900 tons of concrete, which will perfectly balance the hundreds of tons of steel and make light work for the two ninety-horse power motors, by which the bridge will be operated. Each of the two segmental girders contains seventy-five tons of steel, while each of the track girders, which will span the 180 feet of water will weigh sixty-five tons.

THE WORK OF IMPROVING the Manchester Ship Canal, which was undertaken in 1904, has been completed, and the channel will now accommodate vessels of 28 ft. draft, permitting them to tie up to the largest docks at that place.

* * *

STEEL TIES for street railway tracks have been introduced in Cleveland, O., in connection with the extensive re-construction of a roadbed on an avenue where wooden ties imbedded in concrete were in many cases found to have rotted. In carrying out the work the former foundations were utilized, the wooden ties being replaced with steel T-beams, to which the rails are fastened by bolted clips. Fresh concrete was tamped between the ties and the line surfaced.

* * *

THERE IS A WALL OF CEMENT in Los Angeles which shores up one side of a building lot that has an artistic value never intended by the builder. A number of bags of cement had been moved on to the ground to be ready for work when the contractor was called away on some other job for a day or two. In the meantime one of the very infrequent rains came on, and each sack turned into stone under the action of the water, the fabric of the sacks themselves being absorbed into the cement so that it was impossible to remove it. Consequently each sack was wrought into the wall as if it had been a boulder on the line of an old stone wall. They were then chinked and bound together with worked cement, and after a time the weather disposed of the gunny sacking, but left the blocks marked with the impress of the weave. The result is a highly ornamental cement wall, resembling at a little distance a wall of some woven material.

* * *

A NOVEL USE FOR CEMENT has been put into effect in Johannesburg, South Africa. At one of the pumping stations on the Rand, the engine is equipped with two cement flywheels. Each of these weigh about 8,000 pounds and measure 14 feet in diameter with a reinforced concrete rim. A cast-iron boss is secured to the shaft, and into this 16 arms, each made of four-inch pipe, are screwed. Near the outer ends of the arms a ring of one-quarter-inch iron plate is secured with lock nuts, and around the extreme ends of the arms is fixed a second sheet iron ring, which forms the periphery of the wheel. The space between the two rings is filled with cement. The concrete rim is reinforced with four quarter-inch rods. The rim alone weighs about 6,000 pounds. As the wheel makes only 20 revolutions per minute their use involves no risk of serious accident, and they are reported to have proved very satisfactory.

* * *

REED LATHS IN SWEDEN have almost supplanted wood laths, which, on account of their cost, are now little used. Although that country has unusually extensive forests, in proportion to its size, and is, therefore, better able than many other countries to stand a strain on its wood products, it is found that certain reeds form a much cheaper material than wood laths in the plastering of ceiling and wooden walls of buildings. These reeds are of the common kind, known to botanists as Phragmites Communis. They grow wild in large quantities almost everywhere in central and southern Sweden, on the borders of lakes, ponds, rivers, small water courses, and in marshy places. The reeds are used in both the raw state and in forms of woven matting, according to the customs and preferences of the builders. This kind of lathing is said to be in every way just as durable as that of wood. In the demolition of houses, which have stood for at least seventy-five years, reeds nailed to the wall were found just as sound as when they were put there at the time the houses were built.

CORRUGATED GALVANIZED IRON ROOFING has a good demand in the Santiago, District of Cuba. This is due to the activity which has taken place in building operations, and the fact that this class of roofing is supplanting, to a considerable extent the native tile roof. Canadian manufacturers in this line might do well by investigating this market.

* * *

THE NEW LIGHTHOUSE recently completed on the Fastnet Rock, a small pinnacle off the south-east corner of Ireland, is not only the latest example of lighthouse construction on a wave-washed rock, but the most expensive tower ever erected for the purpose, having cost no less than £84,000. It displaces an old cast-iron tower, ninety-one feet high, which was not stable enough to withstand the severe buffeting of the waves to which the rock is subjected. The new tower is 147 feet high, is built of stones numbering 2,974, and weighing from one and three-quarters to three tons apiece and representing a total weight of 4,300 tons. The entrance door is 57 feet above high-water mark. The tower took four years to build and the lantern when its rays are intensified by lenses has a candle power of 75,000.

* * *

UPON THE HOLDERNESS COAST, of Yorkshire, England, the North Sea is devouring 1,904,194 tons of cliff every year, and the shore line at some points scarcely remains the same for two consecutive days. Along the English coasts and coasts of Holland millions of dollars are spent every year in grappling with nature's destructive aggressions. In fact, as much money is annually spent along these coasts to keep the water out as is being annually spent on the Panama canal to get the water in. In the past few years concrete has become the chief factor in the fight against the inroads of the sea. The system used in Holland has brought out the great possibilities of concrete for sea defence construction, and the British engineers are rapidly adopting it. By this system the protected area comprises a series of concrete slabs independent of one another, and held in place by reinforced concrete frames. Between each slab iron armor is inserted and then a channel is dug to a depth of 18 in. beneath the edges of the slabs and filled with concrete.

* * *

FADS AND FANCIES in the building line seemingly manifest themselves at regular intervals. The newest thing in domestic design is a revolving house to be built at Little Neck Bay, Long Island, as a summer home for William Rieman, a New York jeweler. Clarence True, an architect of that city, who has been studying out the problem for some time, expects shortly to begin drawing the plans. The prospective owners not only regard such a building as being feasible, but as being entirely practicable as well. The object desired is to be able to change the view from any side of the house by simply swinging the building around, and to shift the living rooms, in the hot month to the point of the compass from which the breeze is blowing at the time. The architect does not expect to encounter any unsurmountable difficulties in the working out of the plan. The house will be of wood, but whether it will be round or octagonal has not yet been decided. The principle on which it will be operated is to be similar to that of a railroad turntable. The motive power will be electricity, and as the house will be mounted on ball bearings, the idea is to have it swing about with almost no noise or jar. In the case of the plumbing, it is expected that the problem will be solved by valve joint connections between the pipes and the mains in the cellar. The cost of the house, complete, exclusive of land, it is estimated, will be about \$35,000.

VANISHING PARTITIONS is another novelty in residential design that has made its appearance. George T. Smith, of the McKnight Realty Company, New York City, is building a house whose first floor partitions, with the exception of those forming the kitchen, shall be made to disappear according to the amount of space required for certain occasions, such as receptions or other social functions. The power will be electric and the partitions, by means of grooves, will be lowered to the floor level, giving an unobstructed space of 80 x 120 if so desired.

* * *

A PENNSYLVANIA ARCHITECT has prepared plans for what he claims is an entirely new style of dwelling. The plans call for a steel frame securely bolted together. On this will be placed wood floor joists and wood rafters, the window frames to be supported by steel angle bars securely bolted to the balance of the steel frame, and the entire frame will then be imbedded in concrete. This wall will be plastered on the outside, and finished in any style desired. The inside will be furrowed, lathed and plastered, forming a dead air space in the outside wall, making a warm house in the winter and a cool one in the summer. It also ensures a dry house at all times. The roof will be covered with a composition roofing made of asbestos and Portland cement.

* * *

A NEW SYSTEM OF METAL FORMS for building a monolithic concrete hollow wall, which has been successfully employed in the construction of several buildings and which bids fair to come into general use, has been devised by William D. Ham, of Youngstown, Ohio. By the use of this method two separate concrete walls, erected simultaneously are tied together every fifteen inches both vertically and horizontally with iron or copper ties. The forms are made of galvanized steel, thus insuring the necessary smooth surface, and are made in various lengths up to sixty inches and about 1-8-inch in thickness. The forms are held accurately in position during the pouring of the concrete by a saddle spacer, and there is no possibility of the wall being irregular if care is used in placing the molds. On the removal of the forms the concrete is smooth, with the exception of slight points of pinhead size and a light mark at the joints of the forms. This is easily and quickly removed by a light rubbing with carborundum blocks or a steel brush.

* * *

NEW YORK'S LATEST PROJECT in the way of skyscraper construction is an office building sixty-two storeys high, to be erected for the Equitable Life Assurance Company on the site of its present structure at the corner of Broadway and Nassau streets. With its tower the new building will reach 909 feet above the curb, or 209 feet higher than the Metropolitan Building, with which its fifty-two storeys now enjoys the distinction of being the tallest building in the world. This will be exclusive of the flag pole, which will run up 150 feet higher. Plans filed with the New York Building Department comprise fifty-eight huge drawings. These provide for a building to be carried up in three sections, the upper two sections recessing at the thirty-fourth and forty-ninth storeys, thus giving the structure a first and secondary tower consisting of twenty-eight storeys, the latter being capped with a cupola. The roof of the main structure will be finished with cupolas, set around the base of the tower. In architectural treatment, the building will be a Renaissance, the facades being of brick and granite with great pilasters of Corinthian and Gothic design. Eight of the thirty-eight elevators to be installed will run to the top of the tower structure, the sixty-second floor, the other thirty stopping at the thirty-fourth floor. The building will cost \$15,000,000.



DESIGN NO. 1.—SWISS CHALET OF MRS. WILLIAM MARVIN OF SOUTH PASADINA, CALIFORNIA. F. G. BROWN, ARCHITECT. IN DESIGN, PLAN AND SETTING THIS IS AN IDEAL OF THIS POPULAR MODIFICATION OF THE PRIMARY BUNGALOW THAT HAS GAINED GREAT FAVOR IN BRITISH COLUMBIA, AND IN THE SUMMER RESORTS OF EASTERN CANADA. ITS BROAD OVERHANGING ROOF, CRUDE PORCHES AND RUSTIC HUE TEND TO MAKE THE BUILDING A VERY PART OF ITS PICTURESQUE SURROUNDINGS. THIS STYLE OF BUILDING IS BEST SUITED TO A SITE ON THE SIDE OF A HILL WHERE IT CAN BE MADE TO HARMONIZE MORE EFFECTIVELY WITH ITS SURROUNDINGS THAN ALMOST ANY OTHER FORM OF BUILDING.

BUNGALOW DESIGN AND CONSTRUCTION.---A Highly Popular Artistic and Inexpensive Creation in Domestic Architecture, that Lends Itself Freely to Individuality in Design and Cozy Arrangement.---Its History and Development. Illustrated with Designs by F. G. Brown*

CANADA'S RAPIDLY growing cosmopolitan population has brought with it influences that are commencing to show their effect upon the architecture of our homes and, although at this time the Dominion cannot boast of an architecture of its own, Canadian architects and builders are drawing upon the older countries of the world for ideas. The best of these ideas are being adopted and are being developed and added to, to suit Canadian conditions such as climate, customs and materials at hand.

This cosmopolitan influence has tended to give birth to many new effects that are worked out to advantage in the modern Canadian dwelling. In the early days, when we lived more within ourselves, our residence architecture was less attractive and each community seemed to have a style peculiar to local conditions and influences.

In Montreal we find the old world influences prevalent, due largely to the sombre mediaeval "old world" style adopted in the large number of massive structures built and owned by the Roman church. Here detached, semi-detached and terraced dwellings were built with heavy massive stone fronts. The structures owned by the church exerted a dominating influence in the architecture of this community. The first effect of modern influences is to be found in the peculiarly fragile appearing wood porches and balconies that it has in recent

years been the custom to build upon these stone-faced dwellings.

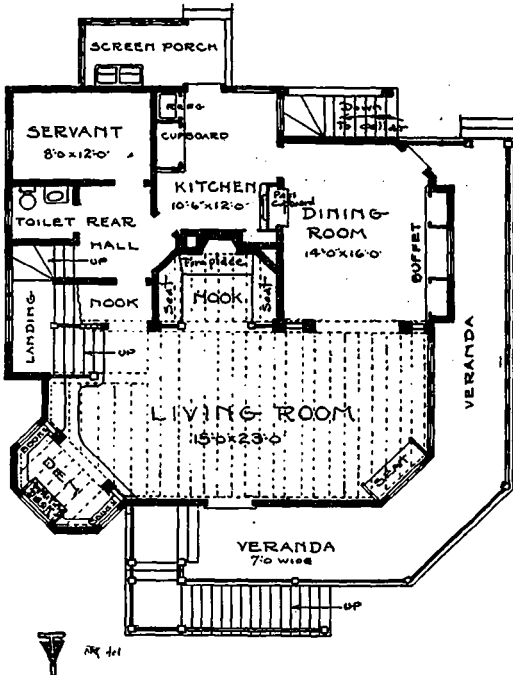
The early styles prevalent in Toronto are the very reverse of those in Montreal, due partially to the fact, that most of the early settlers of the Queen City came from a country in which brick played a most important part in domestic architecture, and also, due to the fact that brick was the least expensive and most convenient material at hand. Toronto's residences of even as late as ten years ago, show a slight influence of English domestic, unstudied and uncultured in its adoption. The evident conception of architectural decoration by these earlier builders was the extravagant use of the products of the jig saw and lathe.

But in recent years our country has become sufficiently enriched to be able to spend some time and money upon art in domestic architecture and our people are not so greatly engrossed in the sheer matter of providing themselves with a place to call home, that they have not had time to study plan and design. This tendency toward art in home building has served to develop architects who are making a study of the domestic architecture of the

*Mr. F. G. Brown, whose designs illustrate this article, is one of the pioneers in Bungalow construction in California and when, after many requests from our readers, we took up the question of bungalows it was deemed advisable to illustrate the designs of some eminent specialist in this line, for the benefit of the Canadian architect who wishes to make a study of this interesting type of domestic architecture.—Editor.

whole world and of the earlier periods that developed characteristics in design that may be advantageously adapted in our modern Canadian dwelling.

The results we see in the adaptation of the home-like English domestic with its half timbered effect, small win-



GROUND FLOOR PLAN OF DESIGN NO. 1 SHOWING THE IDEAL ARRANGEMENT PROVIDING FOR EVERY REQUISITE OF THE MODERN BUNGALOW.—THE LARGE LIVING ROOM, WITH FIRE PLACE NOOK, AND DEN WITH BUILT-IN BOOK CASES AND WRITING DESK.—THE COSY STAIR-CASE WITH NOOK, BUILT-IN BUFFET, CUPBOARDS AND REFRIGERATOR, THE ISOLATED SERVANTS ROOM AND THE SCREEN PORCH.—F. G. BROWN, ARCHITECT.

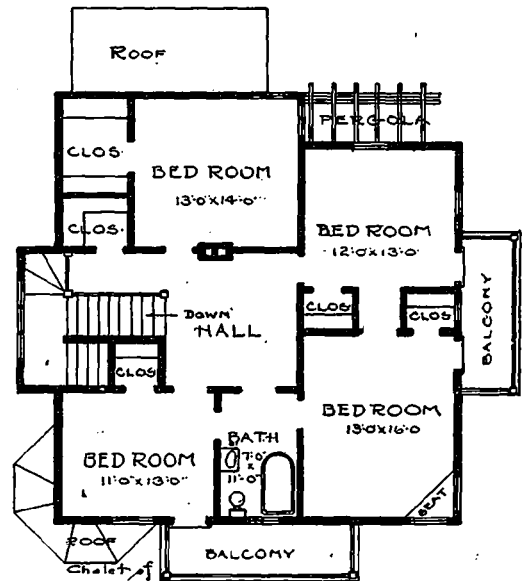
dows and great chimneys; in the revival of the architecture of the Georgian period with its great white porch columns, heavy white cornice and white wood trimmings against the background of dark red brick; in the artistic adaptations of the Moorish forms; in the revival of the most ornate French architecture and in the rapidly increasing popularity of the American "Mission" construction that originated in the days of the Spanish conquerors of South America. Working under these varied influences of architectural inspiration and through the many modern mediums for exchange of ideas and suggestions, also partially as a result of the fact that modern builders construct of wood, brick, stone and concrete, our architects are rapidly overcoming the stubborn, antiquated influences that local conditions developed upon our earlier domestic architecture.

While the work of our designers is influenced by styles prevalent in other countries, it is not to be assumed that their work lacks that which would designate it as being thoroughly Canadian. It is true that the fact of our being such close neighbors of the United States has resulted in the adoption of many American ideas, but these adoptions have been toned to a very appreciable extent by English and French influences. On the other hand, the characteristic Canadian home is essentially of the detached type in contrast with the house in a row which predominates so markedly in most of the countries of the old world.

It is true that in some of Canada's larger cities, the land is so valuable that the terraced dwellings in some districts become a necessity, but in every case the detached or semi-detached houses are almost universal. In all the smaller cities, towns and villages in Canada, nothing but individual houses, standing along in the centre of a fairly spacious lot, with a lawn in front and a garden in the rear, are to be found, while in England and continental countries will be found many towns where homes are set more closely together than in the most congested districts of our larger cities. The explanation in such cases would be a characteristic custom rather than the limitations of space or the high prices of sites.

This same desire to live apart, as it were, in a detached house is also prevalent in the United States, where this preference is manifest in a constantly increasing degree, even in the larger cities where financial reasons forbid that any but the very wealthy shall enjoy such domiciles.

This tendency is shown by the tremendous growth in suburban life in several large cities of the United States, where the terraced dwellings are to be found within a short distance of the congested portion of the city. Almost all classes of artisans, professional men—citizens earning all the way from \$1,000 to \$12,000 or even more, per year, are showing a willingness to spend from thirty minutes to two hours per day in travel by rail or boat, in order to enjoy the boon of a detached house set down in a plot ranging in size from 40x100 ft., to several acres. In most American cities this quest for a detached house, combined with the natural increase in realty values, in the more congested communities, is to give the central portion of many of the large cities, two classes of residential structures.



UPPER FLOOR PLAN OF DESIGN NO. 1, COMMENDABLE FEATURES OF WHICH ARE THE LARGE STAIR HALL, SPACIOUS CLOSETS, THE TWO BALCONYS AND THE PERGOLA. THE LATTER IS BECOMING HIGHLY POPULAR WITH THE BUNGALOW DESIGNER.—F. G. BROWN, ARCHITECT.

On the one hand, many of the family hotels, large apartment buildings and tenement houses, which have been multiplying like weeds in many of the larger cities in the United States, and on the other hand, there are the mansions—preferable in detached form—of the wealthy.

thy. The American citizen of moderate means has to make his choice between a suite of rooms, or maybe an entire floor in a flat or apartment building, and an individual house, more or less remote from the business centre of the community, and it is quite evident, from the large proportion of persons who have decided in favor of the detached house, however isolated, that this tendency is attributable to some degree, to the fact that a large portion of the citizens of the larger cities of the United States, were born and reared in country districts or in towns or villages, where the instinctive liking for open "all out-doors," on all sides, has been so deeply instilled that it has never been forgotten.

In Canada, where we have not as many large cities as may be found in the United States, and where the business districts, or in fact the districts within the city limits, are not so much congested, as will be found in Am-

buildings or terraced dwellings, find it necessary to move to the suburbs. The municipal officials of the bigger cities of the Dominion are realizing this fact, and of late have been earnestly taking up the question of providing better suburban railway service, although we have already a street car service in most cities that has had a tendency to develop the suburban home idea.

It is these suburban homes that are characterized by far greater individuality of design and construction than the terraced dwellings, and it may be added that the detached houses, those within the cost limit of say \$10,000, are usually fraught with greater originality than the extravagant homes of the very wealthy. This latter class of mansions, which are very numerous in the suburbs of American cities, are in too many instances little more than replicas of Italian villas, French palaces, or other European creations, with minor modifications in



VIEW OF CORNER OF LARGE BEAMED CEILING LIVING ROOM OF DESIGN NO. 1, LOOKING TOWARD UNIQUE STAIRCASE, WITH NOOK, AND SHOWING ONE CORNER OF CLINKER BRICK FIRE-PLACE, WITH SEATS. THESE COSY CORNERS ARE BUT A PART OF A GENERAL SCHEME THAT LENDS ITSELF ADMIRABLY TO THE ARTS AND CRAFTS FURNITURE, DECORATION, "TRINKETS" AND SOUVENIRS THAT ARE OF NECESSITY A PART OF THE BUNGALOW IDEA.

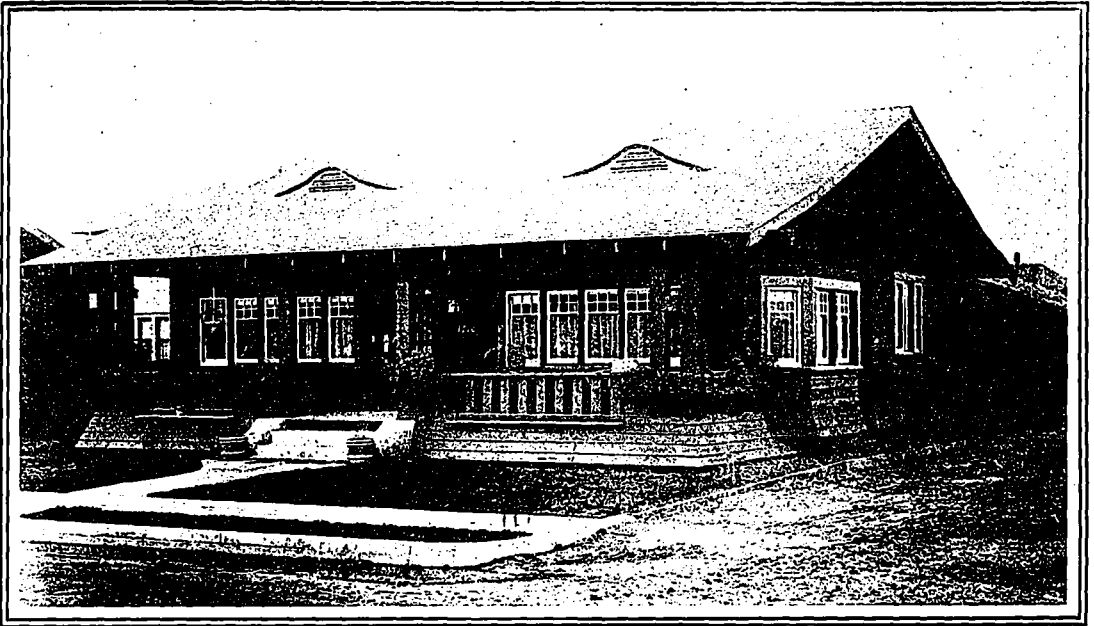
erican cities, there is still a strong tendency toward suburban life. While the detached and semi-detached dwellings may be rented within the city limits of our larger Canadian cities at a fairly reasonable rental, the sites occupied by these dwellings do not offer an opportunity for the large spacious lawns and the little garden that is so dearly prized by most Canadian families. There has not been a tendency in Canada toward the adoption of living quarters in large apartment buildings, that seems to have met with considerable popular favor with a certain class in larger cities in the United States.

The people of the poorer and middle classes seem to manage by some means or other to own their own homes, or rent detached or semi-detached structures.

It is still, nevertheless, a fact that realty values in most Canadian cities are increasing so rapidly that those of moderate means, who would not live in apartment

design to suit American tastes, whereas the more moderate-priced residences to be found in the suburbs of both Canadian and American cities, designed by local architects and constructed by local builders, as a rule show innovations well worthy of study and emulation.

One of the most popular detached houses of the suburbs of American cities during recent years is the bungalow, and from all indications, this type of inexpensive, yet artistic residence has not as yet reached the climax of its vogue. There is no doubt that the modest cost of bungalows—the range is from \$350 to \$7,000—has been one of the most potent factors in their tremendous success, but, on the other hand, their quaint and picturesque attributes, in contrast with the formal outlines of the frame house of the stereotype design, have commended them to countless persons to whom low cost is no particular object. This would seem to augur for the



DESIGN NO. 2.—A 4-ROOM CLAPBOARDED CALIFORNIAN BUNGALOW BY F. G. BROWN. THE LARGE PORCH IS MADE A VERY PART OF THE WHOLE DESIGN WHICH IS RENDERED TRULY ARTISTIC BY ITS SIMPLE STRAIGHT LINES. EVEN THE TASTILY ARRANGED FLOWER BOXES BECOME A PART OF THE GENERAL SCHEME. THE DAYS MADE NECESSARY BY THE SEATS AND BUILT-IN FURNITURE ARE CAREFULLY PROVIDED FOR IN THE EXTERIOR DESIGN, AND THE SLANTING OUTWARD OF THE BASE OF THE WALLS ADDS MATERIALLY TO THE GENERAL EFFECT. COST OF CONSTRUCTION FOR PERMANENT OCCUPANCY, \$1,700. FOR SUMMER COTTAGE, \$850.

permanency of the sentiment that some builders have been wont to look upon as a fad.

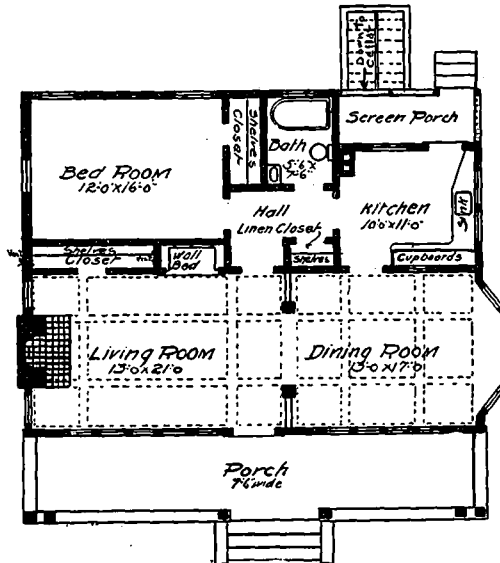
This is one of the types of dwellings that Canada has seen fit to adopt from the United States, and, although the bungalow has not as yet been adopted generally for Canadian suburban residences in the East, it has found great favor with builders in British Columbia and its popularity is rapidly growing eastward.

Canadian architects are now being constantly called upon to design structures of this type to be erected in Muskoka, and other districts in Eastern Canada where those who can afford it, build homes to be occupied during the summer months, and it is quite evident that the great popularity of this type of construction, with a few changes to suit the Canadian winter climate and the materials we have at hand, will increase in popular favor for the suburban home, as it has in the neighboring republic.

The word bungalow is an Anglo-Indian term, meaning in India a species of rural villa or house of light construction, usually of unbaked bricks with a thatched roof. The bungalows which are the residences of Europeans in India are of all sizes and styles, according to the taste

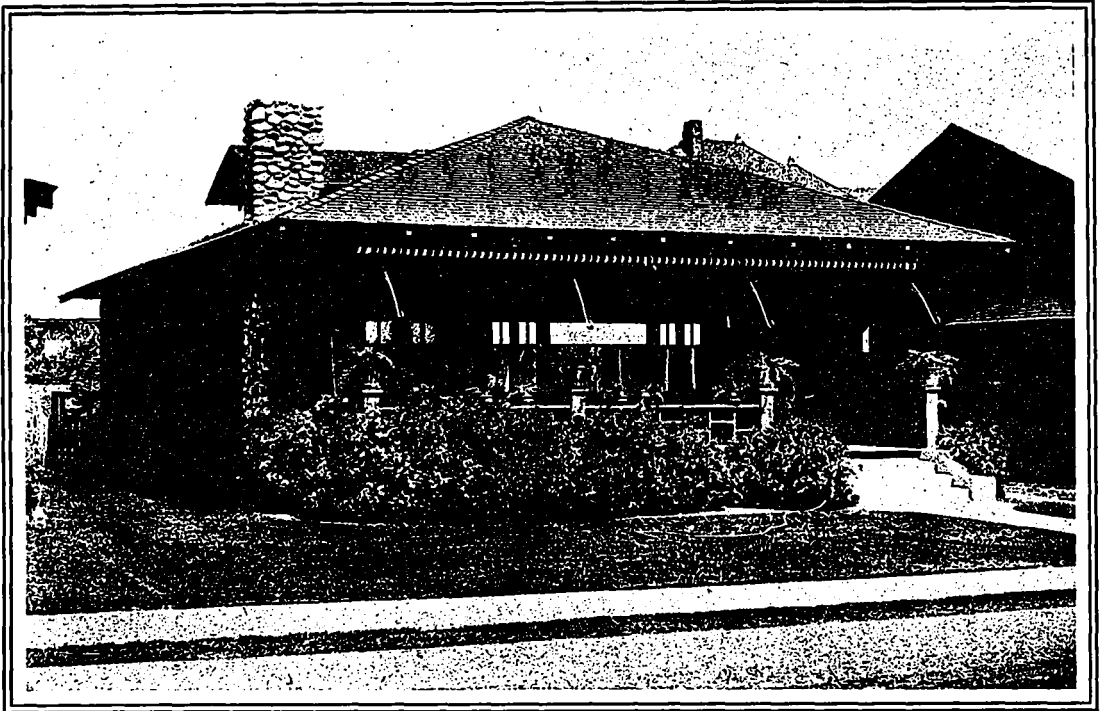
and wealth of the owner. In its earlier use by white men, the word bungalow was taken to denote a lightly constructed temporary habitation, not exceeding one storey in height, and presumably designed for temporary occupation, but during the past few years, bungalows have been designed in both Canada and the United States as

all year residences, and are constructed with every regard for permanency. Many of them are provided with heating systems, or at least open fire-places, although the old time significance of the word contemplated an unplastered building with no facilities for heating, since it was presumably to be designed for summer occupancy or tropical habitation. Finally the word is even applied now-a-days, to country and suburban houses that have rooms upstairs. Indeed, almost the only traditional features of the American bungalow of to-day is that to the effect that bungalows shall be provided with a broad verandah on one or more sides.



FLOOR SPACE OF DESIGN NO. 2, A FEATURE OF WHICH IS THE LARGE LIVING ROOM WITH DIRECT CONNECTION TO THE DINING ROOM THROUGH A LARGE ARCH. IT WILL BE NOTICED THAT ECONOMY OF SPACE HAS BEEN MOST CAREFULLY WORKED OUT. GROUND DIMENSIONS 40 FT. BY 40 FT.

The bungalow idea first took root in America in Southern California, where the mild and equable climate is particularly well adapted to the bungalow in its elementary form. Here it has undergone its most extensive development, although other



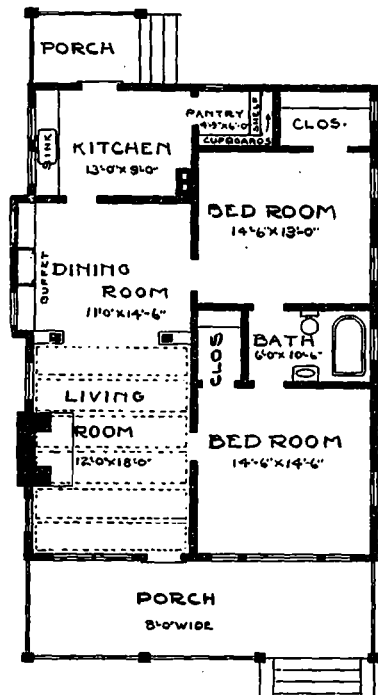
DESIGN NO. 3.—A 5-ROOM BUNGALOW WITH COTTAGE ROOF. THIS DESIGN IS A VERY MUCH MODERNIZED MODIFICATION OF THE ORIGINAL BUNGALOW IDEA. THE MASSIVE EXPOSED COBBLESTONE CHIMNEY STANDING OUT SO PROMINENTLY AT THE LEFT FRONT OF BUILDING IS ONE OF THE CONSPICUOUS FEATURES OF THE BUNGALOW, AND THE RUSTIC EFFECT OBTAINED WITH THIS MATERIAL HARMONIZES MOST BEAUTIFULLY WITH THE GENERAL RESULT DESIGNERS STRIVE FOR. COST OF CONSTRUCTION FOR PERMANENT OCCUPANCY, \$1,700, AND FOR A SUMMER COTTAGE, \$850.—F. G. BROWN, ARCHITECT.



DESIGN NO. 4.—A 4-ROOM SHINGLED BUNGALOW.—IT IS A MISTAKEN IDEA THAT THE BUNGALOW TYPE OF DWELLING IS ADAPTED ONLY TO A LARGE RUSTIC SITE. MANY ARTISTIC DESIGNS ARE EXECUTED THAT ARE BEAUTIFULLY ADAPTED TO THE COMPARATIVELY SMALL CITY OR SUBURBAN LOT, AS IS SHOWN BY THIS AND SEVERAL OTHER DESIGNS ILLUSTRATING THIS ARTICLE. COST OF CONSTRUCTION FOR PERMANENT OCCUPANCY, \$1,500. SUMMER COTTAGE. \$750.—F. G. BROWN, ARCHITECT.

C O N S T R U C T I O N

sections of the United States are now crowding the favorite region on the Pacific Coast in this respect. It is a question whether even to this day the best examples of bungalow construction are not to be found on the Pacific



FLOOR PLAN OF DESIGN NO. 3.—A FEATURE OF THE IDEAL BUNGALOW INTERIOR ARRANGEMENT IS THE PROVISION FOR FRONT AND BACK PORCH, LARGE CLOSET ACCOMODATIONS AND PLENTY OF BUILT IN FURNITURE, CUPBOARDS AND SHELVES. GROUND DIMENSIONS 31 FT. WIDE BY 55 FT. DEEP.

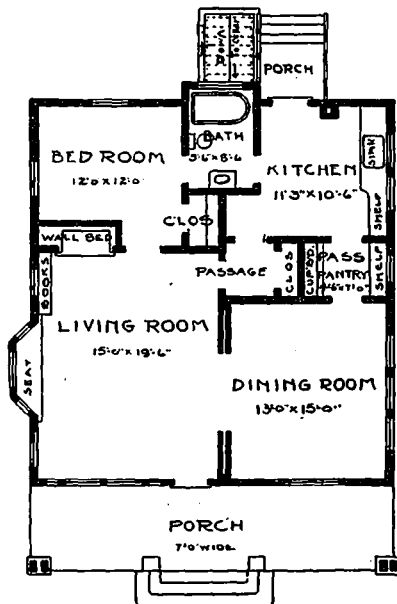
Coast, and it may be said in all candor that any builder of frame houses will do well to study carefully these unique examples, regardless of whether or not he be engaged in building bungalows, for this class of structures have many unusual attributes which can be embodied to advantage in other classes of houses.

It might naturally be supposed by the uninitiated that bungalows being in most instances only one storey or a storey and a half in height would be prone to show a similarity of outline bordering on the monotonous, but strangely enough, exactly the contrary is true. Individuality seems to be more readily attained than in the general run of country and suburban houses, and certainly we do not find in the California "bungalow belt" any such duplication as is to be met with in the rural districts of Canadian cities and other thickly populated sections as Muskoka where the brightly painted frame houses of ordinary construction prevail.

Where a builder has to act as a missionary and create business, the bungalow type of residence is an excellent vehicle to employ. The prospective customer who has not fully made up his mind that he wants to build must, in many instances, be reached by an argument that affects the pocketbook, and here the bungalow suggestion has everything in its favor, inasmuch as a house of this class can, of course, be erected at less cost than any other structure of like dimensions. Other, but equally potent, considerations commend the bungalow to the women of a household, and as the average builder knows from experience, the gentler sex often cast the deciding vote in a residential proposition.

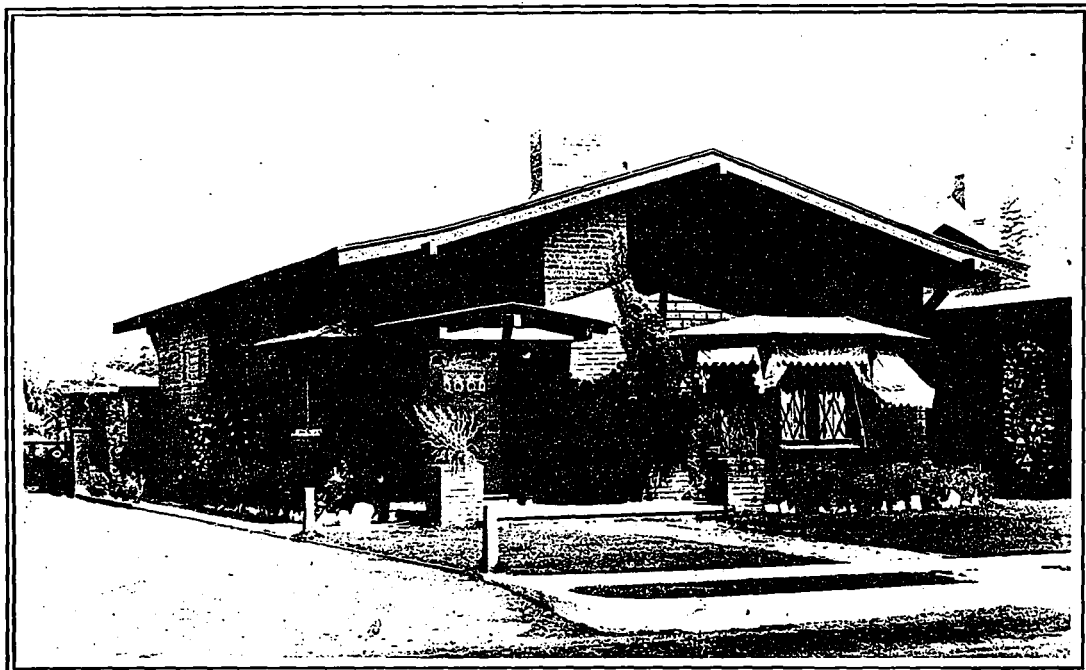
First of all, the bungalow, if at all artistic, is the very embodiment of cosiness, an attribute that appeals forcefully to the average woman. Even more highly esteemed in the eyes of the thinking housewife is the fact that all or nearly all the rooms being on one floor, house-keeping arrangements are simplified to the last degree. There have been instances where builders have won their cases by pointing out that a bungalow supplies the best solution for the servant problem since with conveniently arranged rooms, all on one floor, it is possible for a woman to perform unaided and without disagreeable fatigue the household work that would necessitate the employment of a servant (or at least occasional aid by a day worker) in an ordinary two-storey or three storey house.

Many builders who, wishing to enter the field of bungalow construction, have looked to the designers of Southern California for information and inspiration, have been surprised at the seemingly high prices set down as the cost quotations of representative bungalows. This, it should be explained, is due solely to the fact that lumber is very expensive in Southern California, the most of the material being of necessity transported from Oregon. In most sections of Canada where lumber is much less expensive any California bungalow could be duplicated at far less cost than the outlay made for the original. This has been the case in British Columbia where highly creditable designs have been carried out at a cost far below that for ordinary dwelling construction.



FLOOR PLAN OF DESIGN NO. 4.—IN ADDITION TO BUILT-IN BOOK CASES, CUPBOARDS, REFRIGERATOR AND WINDOW SEATS THE SPECIALISTS IN BUNGALOW CONSTRUCTION HAVE INTRODUCED IN THE DINING AND LIVING ROOMS THE "WALL-BED" IN THEIR DESIRE TO FURTHER ECONOMIZE SPACE. IT WILL BE NOTED THAT THIS PROVISION HAS BEEN MADE IN THIS PLAN ONLY IN THE LIVING ROOM. GROUND DIMENSIONS 32 FT. WIDE BY 48 FT. DEEP.

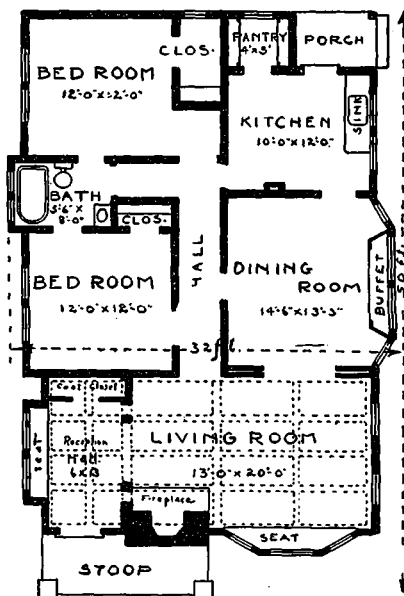
On the other hand it should be pointed out that some of the California bungalows are characterized by a flimsiness of construction that certainly should not be advised in a region where a house must stand any considerable



DESIGN NO. 5.—THIS DESIGN GIVES SOME IDEA OF THE FREEDOM ENJOYED BY DESIGNERS OF BUNGALOWS. THIS 5-ROOM SHINGLED BUNGALOW IS WITHOUT EVEN THE TRADITIONAL BROAD PORCH THAT IS GENERALLY CONSIDERED ESSENTIAL IN THE TYPICAL BUNGALOW. HOWEVER, THE HOODED ENTRANCE, THE MASSIVE EXPOSED CLINKER BRICK CHIMNEY, THE BROAD OVERHANGING ROOF SUPPORTED BY BRACKETS, AND THE HOODED BAYS GIVE THE EFFECT OF COZINESS SOUGHT FOR BY THE BUNGALOW ENTHUSIAST. THE FREEDOM OF EXPRESSION ENJOYED BY THE BUNGALOW DESIGNER IS ALMOST WITHOUT LIMIT AS SHOWN BY THE ABOVE ILLUSTRATION OF A MODIFICATION OF THE ORIGINAL BUNGALOW IDEA.

weather stresses. The lower portion of the Golden Gate State is a region comparatively free from snow and violent storms, and consequently the California carpenter can, with impunity, dispense with frames in some instances and build bungalows with no other support than upright boards, reaching from sill to plate, and with scantlings as cross-ties at wainscot height; but it would scarcely be wise for a builder in Canada to follow such example. Of course, no such liberties have been taken in the case of all California bungalows. Many of the more pretentious ones are characterized by the maximum degree of solidity and stability, and the aforementioned houses are cited merely to show how light a construction will stand up and prove comfortable in that climate, and to illustrate one of the methods whereby the Southern California builder dodges the excessive cost of material. This stability of construction is especially characteristic of the bungalow built in British Columbia, where builders have a more severe climate to deal with.

It has already been explained that the word bungalow has been



FLOOR PLAN OF DESIGN NO. 5.—IT WILL BE NOTED THAT THE SPACE USUALLY ALLOTTED TO THE LARGE BUNGALOW PORCH HAS IN THIS PLAN BEEN UTILIZED TO ADVANTAGE SO AS TO PROVIDE AN IDEAL INTERIOR ARRANGEMENT OF ROOMS FOR SO SMALL A GROUND AREA. GROUND DIMENSIONS 32 FT. WIDE BY 50 FT. DEEP.

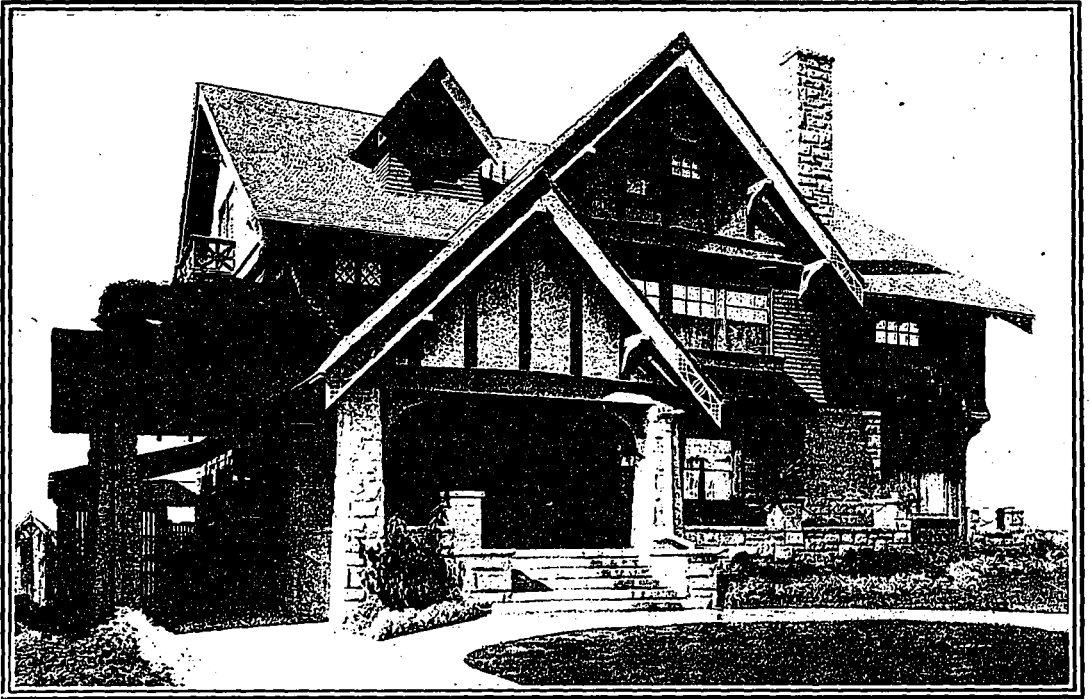
rendered sufficiently elastic in recent years to include one-story-and-a-half, and even two-story houses, in which the broad, low effect is carried out. Often when upstairs sleeping apartments are desirable, for climatic or other reasons, the atmosphere of the bungalow is preserved by placing these in the central part of the house and flanking this part of the structure with one-story construction that may take on the semblance of wings, if desired. A modification of the primary bungalow idea that is proving deservedly popular is found in the Swiss chalet design, with broad overhanging roof, long familiar to European travellers. The chalet type of residence is always picturesque, and if the site be on the side of a hill it may be made to harmonize more effectively with the surroundings than almost any other form of building.

As previously pointed out, the best East Indian antecedents of our modern word "bungalow" prescribed broad verandas, and this obligation is cheerfully met by the average bungalow builder, since a portico adds much to the ensemble of any informal dwelling. The Italian

"pergola" has also been adopted, and while the æsthetic architects may rail against such a combination there is no doubt that it has proven eminently satisfactory to the home-makers who have employed it. In Southern California, where the influence of the so-called "mission architecture" of the Spanish conquerors is ever manifest in the building world, we find the attractive "patio," or an open court of some kind frequently introduced as an adjunct of the bungalow.

It is a mistake to harbor the belief that a bungalow, to be consistent, must be wholly of frame construction. The old-time bungalows of India, the originals of this type, were for the most part built of unbaked bricks and had thatched roofs, so that there is a precedent for the

Almost every conceivable form of frame construction has been employed for structures of the bungalow type, and one of the sights of the residence district of Los Angeles is a "log cabin bungalow," which arouses the admiration of thousands of visitors. Ordinary weatherboarding is used extensively for walls, but the whole policy of the average bungalow-builder being to contrive something out of the ordinary, it is customary to lift this medium out of the commonplace by arranging the studs on the outside, or resorting to some other ingenious expedient. Similarly, where the walls are composed of plain boards, set vertically, it is customary to have them batted with strips which are painted a contrasting color.



DESIGN NO. 6.—AN ARCHITECTURAL NOVELTY IN WHICH THE AMERICAN BUNGALOW IDEA SHOWS A STRONG INFLUENCE. WHILE MANY ARCHITECTS WITH AN OVER ABUNDANCE OF AESTHETIC SENSITIVENESS MAY RAIL AT THIS COMBINATION OF MATERIALS, AND EFFECTS PRODUCED BY THREE DISTINCT KINDS OF CONSTRUCTION—STONE, HALF-TIMBERED AND CLAPBOARD—IT CANNOT BE DENIED THAT THE GENERAL EFFECT IS MOST PLEASING, AND THAT THE DESIGNER HAS HANDLED ADMIRABLY A PROBLEM FRAUGHT WITH DANGEROUS DIFFICULTIES. THIS TYPE OF HOUSE IS RAPIDLY GROWING POPULAR IN THE LARGER SUBURBAN DISTRICTS, AND WITH ITS COSY NOOKS AND CORNERS IS FAST REPLACING THE OLD FASHIONED SQUARE HOUSE.—F. B. BROWN, ARCHITECT.

modern bungalows of brick and stucco. While the employment of these mediums is thus both time-honored and satisfactory, it may be noted that the great majority of present-day buildings of this class are either wholly of wood, or else what might be termed composite construction. For instance, brick may be employed for the foundation, and all or a portion of the first story, this substantial base being capped by frame construction. Clinker brick is also extensively used for unroofed verandas, the balustrades of open courts, etc. Another medium that finds favor with discriminating bungalow builders is the familiar cobblestone. Not only are cobblestones employed for foundations, porch pillars, etc., but they constitute the favorite material for the massive exposed chimneys which are a conspicuous feature of many bungalows. Shingles, stained to meet individual tastes, have the call as a roofing material for bungalows, but Spanish tiles are utilized to some extent.

Transcending all else in the bungalow field, however, is shingle construction, and it is a question whether, after all, it is not the appropriate form of expression for this class of house. Certainly it leaves little to be desired from the standpoint of economy. Of course, the builders do not consider themselves bound to adhere religiously to the time-honored methods of arranging shingles, but introduce all manner of quaint conceits, including shingles of more or less fantastic form, tinted in accordance with any desired decorative scheme. The preferable construction for bungalow walls consists of two thicknesses of shingles, or upright boards and shingles, with a layer of sheathing paper between, and in Canada, where the climate is quite severe, the bungalow should have a second sheathing of paper between the studding and the lath. Incidentally, it may be remarked, that a correspondingly protective layer of felt may with benefit be introduced in the roof in order to mitigate the effect of ex-



DESIGN NO. 7.—A GOOD EXAMPLE OF THE LARGER, MORE EXPENSIVE AND PERMANENT TYPE OF DWELLING THAT IS AN OUT-GROWTH OF THE BUNGALOW IDEA. —F. G. BROWN, ARCHITECT.



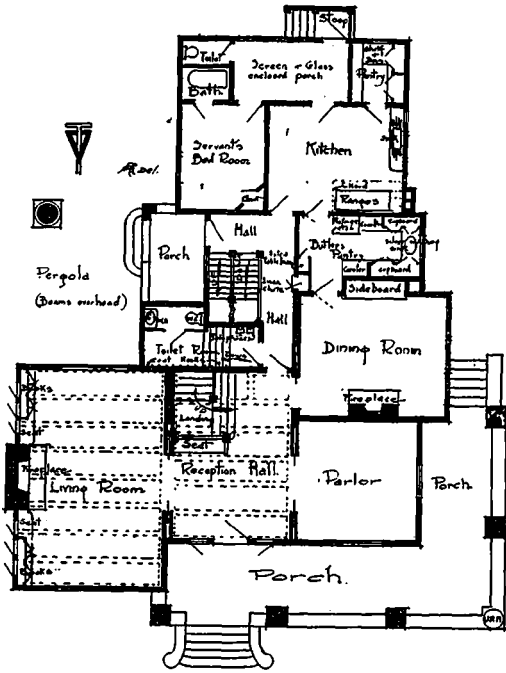
CORNER OF LIVING ROOM OF DESIGN NO. 7, SHOWING THE ARTS AND CRAFTS FURNITURE, FIXTURES AND DECORATIVE EFFECTS WHICH ARE ESSENTIALLY A PART OF THE GENERAL SCHEME IN ALL WELL DESIGNED BUNGALOWS.—F. G. BROWN, ARCHITECT.

cessive summer heat. Indeed, the dodging of the attacks of the sun's direct rays is one of the most serious problems of bungalow construction, alike to all one-story buildings. Moreover, the circumstance is the strongest argument in favor of the story-and-a-half or two-story bungalow, and the latest approved practice prescribes that

inward or outward, according to preference. In some bungalows the builder has even sought to strike an individual note in the main entrance door. In one such house which the writer has in mind, the interior woodwork is all in weathered oak, to harmonize with the "mission," or arts and crafts furniture with which the bungalow is equipped, and carrying out this same idea of bold simplicity, the front door is a massive oak affair, studded with iron spikes and with equally primitive latch and hinges.

Bungalows of light construction with unplastered walls are likely to prove mere whispering galleries, and this objectional transmission of sound is not entirely remedied by making the partition walls all closets, as has been done in not a few instances. Unless it is simply imperative that the cost price be kept down to bed rock, a builder will usually find it vastly more satisfactory in the end to provide partitions of studding, plastered on both sides, and if further obstacles against sound are desired, the space between the studs may be filled with slagwood, deafening felt or paper, or asbestos cotton, which latter also possesses fire-resisting qualities that are of great value. Since many bungalows are set directly upon the ground or on the most pretentious foundations, it is generally considered wise to lay a floor of cement concrete, to which the floor boards, well tarred on the surface, may be nailed direct.

A rule which the bungalow-builder must ever keep in mind is that which calls for the greatest economy of space. If such a house be extended in floor to meet the requirements of a prodigal use of space, it is soon robbed of the atmosphere of cosiness, if, indeed, it does not lose all semblance of a bungalow. In the two-story bungalow the builder has the initial advantage that he is not called upon to waste space in halls, passageways and stairways, and to this saving other economies have been added, thanks to human ingenuity. In California, in particular, the architects and builders who make a specialty of bungalows, pride themselves on their ability to con-

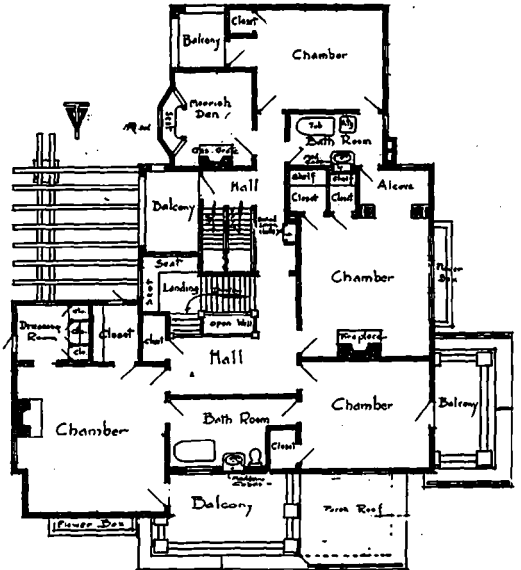


GROUND FLOOR PLAN OF DESIGN NO. 7.—APART FROM THE MANY ADMIRABLE FEATURES OF THIS PLAN AS TO GENERAL ARRANGEMENT OF ROOMS, ETC., IT WILL BE NOTED THAT A LARGE "PERGOLA" AND A SCREENED PORCH ARE PROVIDED FOR. DESPITE THE FACT THAT MANY ARCHITECTS CANNOT RECONCILE THE "ITALIAN PERGOLA" AND THE BUNGALOW, IT HAS BECOME VERY POPULAR WITH BUNGALOW BUILDERS, AND THE SCREENED PORCH WHERE MEALS MAY BE SERVED, IN EXCEEDINGLY WARM WEATHER, IS AN ESSENTIAL FEATURE OF THE PROPERLY DESIGNED BUNGALOW.

if height must be restricted to one-story, there at least be provided a liberal air space, with ample window openings to allow free circulation. This protection against the excessive heat of the sun's rays also tends to keep the bungalow warm in winter.

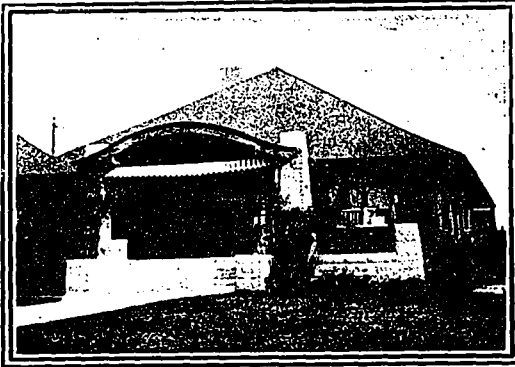
There is no more a standard plan for the interior arrangement of bungalows than there is a set of hard and fast rules for the character of the exterior. Each bungalow is admittedly a law unto itself. At the same time, it may be said that the weight of expert opinion seems to be in favor of one large living room—a combination of reception hall and sitting-room, and perhaps dining-room as well—around which are grouped the bedrooms, while the kitchen is placed at the rear of the house, mayhap in a semi-detached structure. All the more pretentious bungalows have, of course, a dining-room separate from the living-room, and in not a few instances the dining-room opens upon a screened portico, where meals can be served in pleasant weather, and which can, if desired, be converted into a sun parlor in winter.

The windows are almost invariably one of the most attractive features of a bungalow. Two forms lead in popularity—the French windows that render it possible to throw open practically the entire side of a room, and the broad horizontal window, the sashes of which swing



UPPER FLOOR PLAN OF DESIGN NO. 7.—THE BUNGALOW FEATURES OF WHICH ARE THE MOORISH DEN WITH BAY AND WINDOW SEAT, AND THE FOUR BALCONIES. THE GENERAL PLAN IS MOST CAREFULLY WORKED OUT.

struct "a six-room house in four." They accomplish this by introducing in the living and dining-rooms patent wall beds. These adjuncts are, during the daylight hours, to



DESIGN NO. 8.—BUNGALOW WITH COTTAGE ROOF AND STONE PORCH.—F. G. BROWN, ARCHITECT.

all intents and purposes, handsome cabinet mantels, but after nightfall they are transformed into comfortable beds and the rooms thus converted at a moment's notice into chambers. The principle is, of course, that of the old-familiar folding-bed, but this built-in contrivance (nesting in a closet in the wall) is as much superior to the ordinary folding-bed as an incandescent light is to a tallow dip. Incidentally it may be noted that built-in structures are one of the specialties of the bungalow-builder. There are built in bookcases in the living-room, built-in buffets and china closets in the dining-room, and no end of such compact adjuncts in the kitchen, where economy of space reaches its highest refinements.

In discussing the tendencies of the times relative to the construction of detached houses in the new world it is perhaps permissible to digress momentarily to point out the rapidly increasing vogue of the Italian pergola as an adjunct to any such building which has space to accommodate it. Indeed, the latter would seem to be a secondary consideration, for we now find pergolas introduced on sites of very limited area. No longer is the tradition preserved that the pergola must run at right angles to the house—alike to the old-fashioned arbor which it has so nearly supplanted—but, instead, we find it, in many instances, leaning against the house much after the fashion of a veranda.

In effect the pergola is nothing more than a very artistic form of arbor and presumably designed as a support for vines of one kind or another, although unlike the familiar old-time arbor, it is not lacking in attractiveness if the vines be missing. In its standard form the pergola consists of two rows of columns, across the top of which are placed longitudinal beams, while bridging the span between these twin structures are transverse beams. The columns which support the pergola are almost invariably round, while the longitudinal and transverse beams have square corners. It is generally considered essential to the charm of the pergola that the whole structure be painted a snowy white. Builders whose clients have longed for a pergola on very restricted grounds, have, in some instances, resorted to a single-sided pergola, and where such a structure is put up, with

due regard to harmony with the surroundings, the effect is entirely satisfactory.

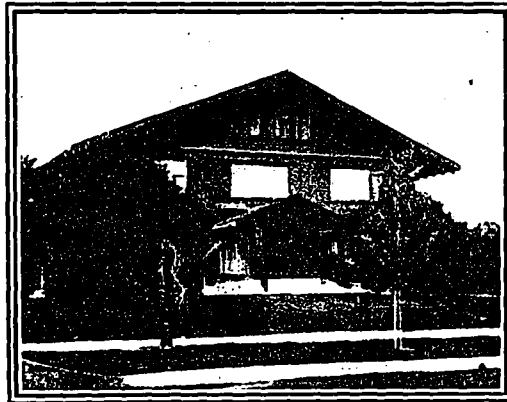
As has been pointed out at various stages in the foregoing, the designers and builders of detached houses enjoy many advantages in comparison with the limitations imposed upon their brethren who concern themselves only with structures which have "party walls" on two sides and, consequently, must derive light and air from two ends, neither exceeding twenty-five feet in width. At the same time it must be admitted that some perplexities beset the constructors of houses that stand alone. These are accentuated by the fact that the man who pays for a detached house usually expects architectural pretensions that he would waive in a city house set in a row.

Now, it is a comparatively easy matter for the architect and builder to achieve distinctive individuality of treatment in the case of a house set down in spacious grounds, or in the case of a cottage type of residence on a site of only moderate size, but is quite another matter to accomplish as much in the case of a large house for which there is allowed only the ordinary forty or fifty foot lot. With present conditions of living, a goodly share of city and suburban residences contain from eight rooms and one bath to twelve rooms and two baths, and

to arrange such accommodations on the limited area mentioned and at the same time prevent the exterior of house from presenting an appearance almost identical with that of its neighbors, is no mean undertaking.

Probably the most favored scheme for making a break in the severe lines of the exterior of such a house is found in the introduction of a tower, but from an artistic standpoint this is by no means an unmixed blessing. There is no doubt that a tower appeals forcefully to the average houseowner and particularly are the feminine members of the household influenced in its favor because of the undeniable attractions of the tower rooms.

At the same time, care and judgment are needed to pre-



DESIGN NO. 9.—A CALIFORNIAN 2-STORY BUNGALOW, THE HEAVY OVERHANGING ROOF OF WHICH IS THE DOMINATING FEATURE.—F. G. BROWN, ARCHITECT.



DESIGN NO. 10.—A CLAPBOARDED ONE STOREY AND A HALF BUNGALOW WITH SMALL CORNER PORCH. THE DESIRED EFFECT IS PRODUCED IN THIS DESIGN THROUGH THE BROAD OVERHANGING ROOF, THE OUTSIDE CHIMNEY, THE WINDOWS AND THE COLOR SCHEME.—F. G. BROWN, ARCHITECT.

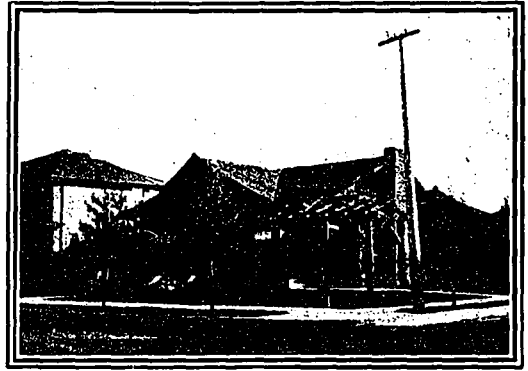
vent the tower from becoming a jarring note in the appearance of the exterior.

Another serviceable expedient for giving the exterior of the large frame house a well-balanced and pleasing appearance is the introduction of the gambrel roof. The effect of this treatment is heightened by having the shingles of the roof stained olive green and introducing a white-painted trim. Yet another touch to take such a house out of the beaten path is to arrange the main entrance at the side. This gives a broad expanse in front that is attractive to the eye.

The many designs illustrating this article were executed by F. G. Brown, of Los Angeles, California, and are intended to give a fairly clear idea of the liberties extended to the architect in the bungalow. Most of these designs, with a few modifications to suit climatic conditions and individual tastes will be found well worthy of adoption by Canadian architects of residence construction.

ARCHITECTURE AND LIGHTING---Quality More Often Than Quantity the Factor in Producing a Suitable Effect---Illuminating Engineering an Art. ---By Mr. Bassett Jones *

THE business of the illuminating engineer is to modernize old methods of illumination without destroying them. If we are to discard tradition altogether, then we may as well abandon the architecture of the past and ignore its influence. This, as I have tried to make evident, is impossible, if not on æsthetic grounds, then on physiological grounds, and to deny its demands would be suicidal. "Habit," says James, "is the great flywheel of society." Any sudden alteration in its movement would only serve to smash the whole machine. Change can only be brought about by infinitesimal alterations in its progress. The illuminating engineer who imagines that he will be permitted to introduce anything radically new into the illumination of buildings possessing historic feeling, is doomed to disappointment. Rather is it his duty to maintain and conserve that feeling in spite of modern appliances and means.



DESIGN NO. 11.—BUNGALOW FOR A CORNER LOT WITH THE POPULAR "PERGOLA" ON THE FRONT CORNER.—F. G. BROWN, ARCHITECT.

The "feeling" of the design must be carried out consistently even to the last detail of the fixtures. It is the duty of the architect to see that this is done. His conception of the whole arrangement must include the lighting, for as he sees it "in his mind's eye" so must it be seen objectively. The light that must be provided, its

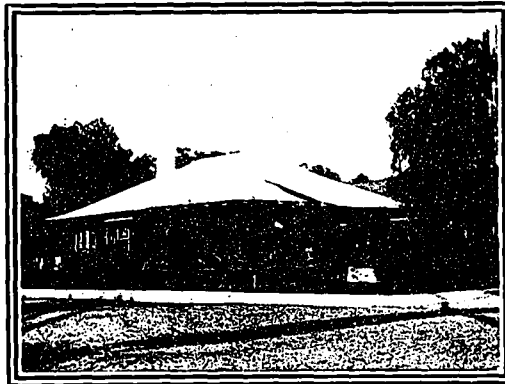
tone, its intensity, its quality, is a feature of his mental conception, and it is this ideal illumination that the engineer must seek to approximate. Of course he can only hope to do this when he, too, is able to see the design as the architect sees it, and not through the eyes of the illuminating specialist alone. The engineer must be able to discern where direct or indirect illumination is required, and the kind of fixtures associated historically and æsthetically with the general design, by means of which he must obtain the proper results.

Illuminating engineering is not a matter of light distribution—it is a matter of suitable lighting, and the conditions determining what is suitable are just as different as any two designs are different—no more, no less. Does the architect consider a building unsuccessful unless each part of it is laid out according to the laws of construction? Not a bit of it! The laws of construction are an after consideration—a means of checking the proportion to see if, after all, it is safe. So, too, the illuminating engineer must use the laws of distribution, not as a method of determining what the distribution shall be, but as a means of adapting the lamps to the distribution required. It is not a question of foot-candles: it is a question of how much light is needed. And it is more often a question of quality than quantity.

You will say that foot-candles and quantity of light are one and the same thing, but I assure you that, from the architect's point of view, they are quite different. Two lamps giving an identical quantity of light may give entirely different quantities of illumination.

What we see is, not only what our optical nerves bring to the visual centres, but, in addition, a vast amount of suggestive material aroused to consciousness through the associative brain tracks.

This associative material, with the actual sensory mat-

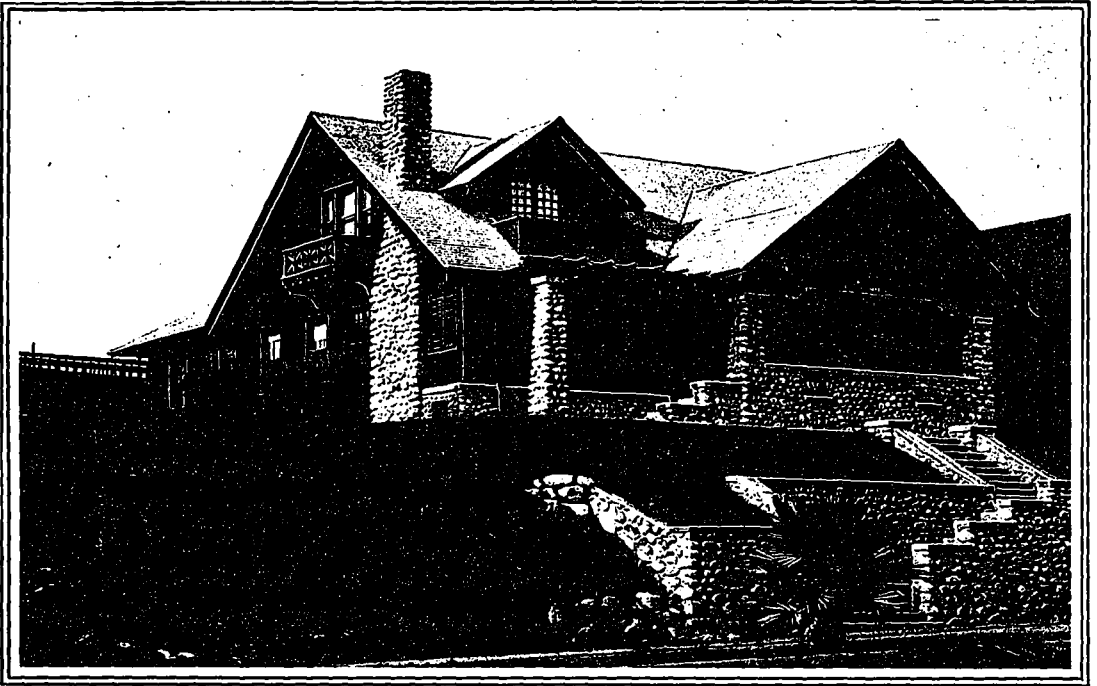


DESIGN NO. 12.—ANOTHER DESIGN SUITED TO A CORNER LOT WHICH HAS A PORCH WITH THE "PERGOLA" EFFECT.—F. G. BROWN, ARCHITECT.

From a paper read before the Illuminating Engineering Society, (Eng.)



DESIGN NO. 13.—A DESIGN WHICH HAS PROVIDED THE OWNER WITH THE BUNGALOW EFFECT, WITHOUT THE USUAL LARGE PORCH, IN LIEU OF WHICH IT IS PROVIDED WITH A HOODED ENTRANCE.—F. G. BROWN, ARCHITECT.



DESIGN NO. 14.—AN EIGHT-ROOM, ONE STOREY AND A HALF BUNGALOW, WHICH ILLUSTRATES HOW FREELY COBBLESTONE MAY BE USED IN THIS TYPE OF RESIDENCE CONSTRUCTION. THE EFFECT PRODUCED IN THIS PARTICULAR INSTANCE IS GREATLY ENRICHED BY THE COBBLESTONE TERRACED STEPS WHICH TEND TO LEND TO THE WHOLE SCHEME A RUSTIC EFFECT ON A COMPARATIVELY SMALL AND UNATTRACTIVE SITE.—F. G. BROWN, ARCHITECT.

ter, together make up the perception which is conceived as an idea. The idea tends to find itself realized or embodied objectively, and this tendency towards the habitual or normal, conversion of the idea is sentiment. In art, sentiment is defined objectively as the feeling of the design, and where the sentiment is not realized, we say that the design is out of keeping, and, in so far, defective.

How, then, is the illuminating engineer, successfully to cope with his problem and advise with the architect as to the best means of achieving results, if the engineer cannot appreciate and understand the architect's viewpoint? Manifestly it is impossible for him to do so.

It seems, then, that a very important, if not essential, feature of the engineer's preparation is a study of the history of illumination and its relation to architectural design. He must make himself intimately acquainted with the means, methods, and results of earlier work—and good work it is—where any attempts were made to obtain adequate and suitable lighting. We must not think, because we alone can formulate and employ the laws govern-

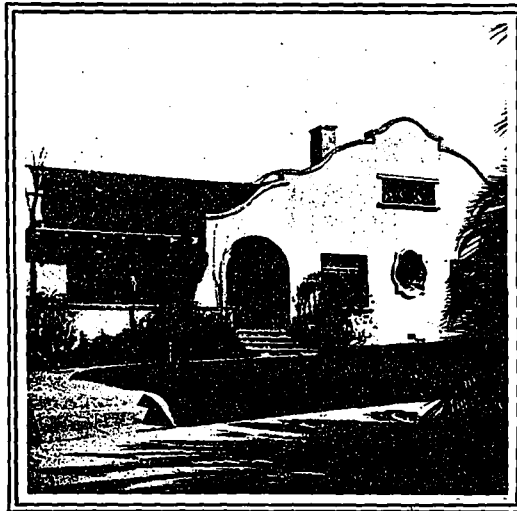
ing the distribution of light, that good lighting has not been earlier achieved by empirical methods. We are simply

in a position to do more efficiently what the masters have done in spite of their manifest limitations.

This branch of illuminating engineering is unquestionably an art, and only a science in so far as an art is scientific in its method. The illuminating engineer, who hopes to cope with the lighting features of architectural problems, must be familiar with architecture, and particularly with the use of color in decoration; for, as we well know, the æsthetic value of color arrangements depends on extreme nicety of contrast, and color contrast is very susceptible to variations in tone and intensity of light, particularly at the low intensities very generally desirable from an artistic standpoint.

The question as to the proper location and arrangements of fixtures, then, resolves itself into the question as to the way in which the design is to be seen. The proportions of the structure, constructive lines and the points where they originate and end—these are to be brought out in relative prominence, and to do this properly.

(Concluded on page 59).



DESIGN NO. 15.—THE IDEA THAT BUNGALOW CONSTRUCTION IS CONFINED TO SHINGLED AND CLAPBOARDED EXTERIOR WALLS IS AN ENTIRELY ERRONEOUS ONE. THE EAST INDIAN BUNGALOW WAS OFTEN CONSTRUCTED OF BAKED BRICKS, AND MANY OF THE MODERN MODIFICATIONS HAVE BEEN SUCCESSFULLY EXECUTED IN CEMENT STUCCO. THE ABOVE ILLUSTRATION SHOWS ONE OF THESE CEMENT PLASTERED TYPES TO COST \$2,000. IT HAS FIVE ROOMS, A LARGE HALL AND TWO TOILET ROOMS. GROUND DIMENSIONS 38 FT. WIDE BY 48 FT. DEEP.—F. G. BROWN, ARCHITECT.

REINFORCED CONCRETE SLAB TEST.---Report of Test Made by Prof. Gillespie of the Faculty of Applied Science, University of Toronto, for the Trussed Concrete Steel Company.---Test Highly Successful.---First of Its Kind in Toronto.

IN ACCORDANCE with instructions a test was made on July 2 to 10 on the reinforced concrete floor slab, built for that purpose at the new building of the Toronto Electric Light Co. on Tecumseh street.

The material used in loading the slab was weighed to determine the load. The deflections at the centre of each beam were measured by micrometer screws from a Riehle compressometer; the deflections at the centre of the slab were measured by a deflectometer taken from a Riehle cross-breaking machine.

The principal results of the test were as follows:

- Total load on slab, 201,412 lbs.
- Load per square foot, 1,500 lbs.
- Deflection of north beam at centre, .131 in.
- Deflection of south beam at centre, .067 in.
- Deflection at centre of slab, .17 in.

The following appendix contains the details of the test.

Respectfully submitted,
PETER GILLESPIE, Lecturer.
J. J. TRAILL, Demonstrator.

Faculty of Applied Science Univ. of Toronto

APPENDIX TO REPORT ON TEST.

The slab was built and reinforced as shown in the blue print herewith submitted, which was supplied by Mr. W. F. Evans. The materials used in making the slab were National Portland Cement, Lakeshore sand and crushed limestone, the last of a size to pass a one-inch ring and to be retained on a three-quarter inch ring, the proportions of these used for piers, beam and slab being one cement to two and to four broken stone. The results of tests made on the cement used are attached hereto. The slab was cast early in June, the casting being completed on or about June 4, 1908, and the test was commenced on July 2, and continued to July 10, the loading being finished on July 9.

Pig iron was used for loading in pigs averaging 50 lbs. in weight each, and these were piled in separate squares to prevent

"arching" until a height of four feet or thereabout had been reached. A layer of two-inch planks was then laid over the top of these squares and wedges used to obtain proper bearing. On top of the planks the pig iron was again piled in a solid mass since it was found to be impossible to make the separate squares stable. Another layer of planks was used when the pile had reached a height of about eight feet, and the remainder of the load was piled on top of these reaching to a height of about eleven feet.

The iron used was weighed immediately before being piled on the slab, and the planks used were scaled and their total weight determined by weighing several pieces and determining the weight per cubic foot from these latter.

To measure the deflection of the beams two micrometer wheels from a dismantled Riehle compressometer reading to ten thousandths of an inch were used. The readings were taken to thousandths of an inch only. In order to prevent settlement of the footings having an effect on the reading, four two by six inch planks were cast in the position shown in red ink on the blue print, two at each side under the beams, and the micrometer wheels were

fastened to these. From the centre of each beam was suspended a two by eight-inch block by means of which the deflections of the beam could be registered on the scales of the micrometer screws.

A deflectometer taken from a Riehle cross-bending machine and reading to hundredths of an inch was used to measure the deflections at the centre of the slab. An adjusting device was arranged so that the initial reading of the deflectometer might be zero.

The loading of the slab was commenced at 4.30 p.m. on Thursday, July 2, and was continued until the following Thursday. At about 1.30 p.m. on the 7th several of the square piles of iron pushed out and about twenty tons of the load slid off the slab. A large pig struck the timber supporting the micrometer on the south side



TESTING A CONCRETE SLAB 13 FT. 1 IN. X 10 FT. 3 IN., CLEAR SPAN OF BEAMS 11 FT. 1 IN. LOADED 1,500 LB. PER SQ. FT. ACTUAL TOTAL LOAD 201,412 LBS; PERMISSIBLE DEFLECTION ONE FOUR HUNDRETH OF CLEAR SPAN = .333 IN. ACTUAL MAXIM DEFLECTIONS SOUTH SIDE, .067 IN., NORTH SIDE, .131 IN.

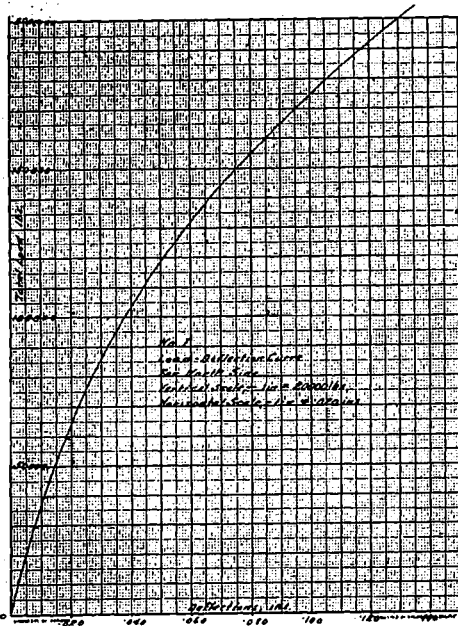


TABLE I.—LOAD—DEFLECTION CURVE FOR NORTH SIDE—TOTAL LOAD.

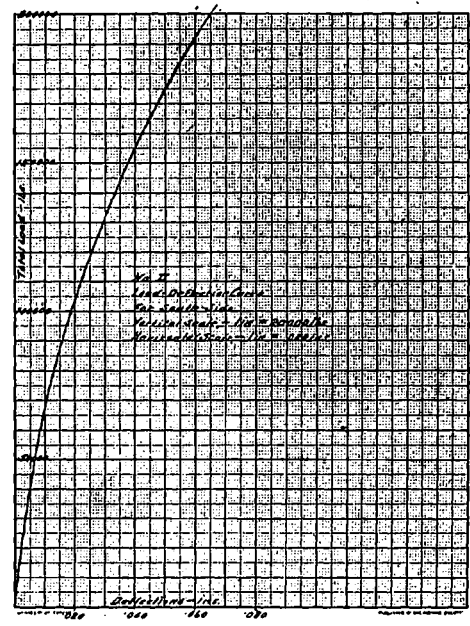


TABLE II.—LOAD—DEFLECTION CURVE FOR SOUTH SIDE—TOTAL LOAD.

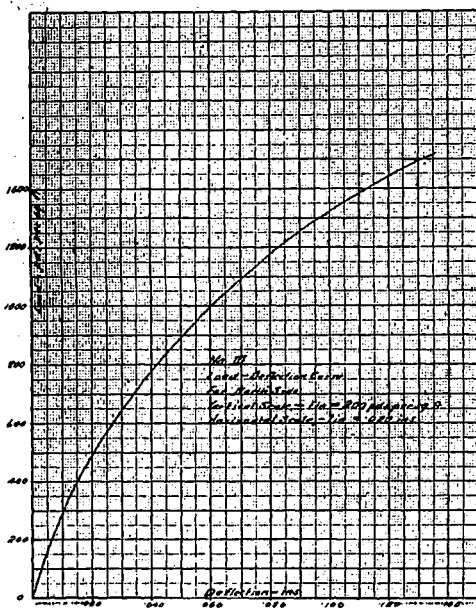


TABLE III.—LOAD—DEFLECTION CURVE FOR NORTH SIDE—LOAD—LBS. PER SQ. FT.

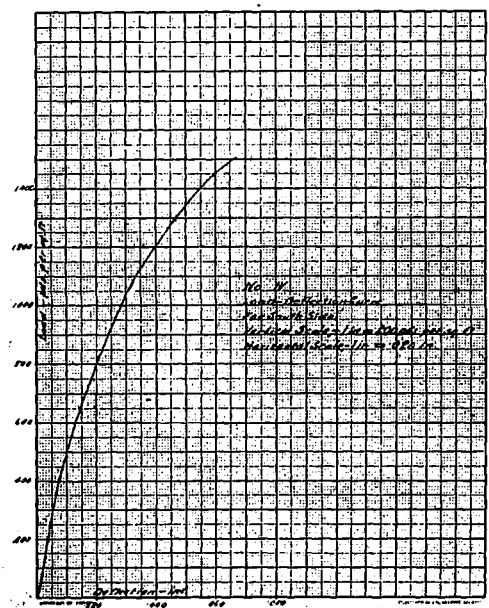


TABLE IV.—LOAD—DEFLECTION CURVE FOR SOUTH SIDE—LOAD—LBS. PER SQ. FT.

C O N S T R U C T I O N

and displaced it slightly. Fortunately, a reading had been taken on this micrometer immediately before, and one taken immediately after showed the displacement to be .031 in.; so that for readings 12 et seq., in the table, .031 must be added to the difference between micrometer readings for no load, and for loads over 140,000 lbs., in order to obtain the deflection of the beam on the south side.

With a total load of 162,000 lbs. on the slab two small cracks were noticed at about the places indicated in the sketch below. At that time (July 8, 4 p.m.) it was impossible to examine the east end of the slab, but on the following morning at 9 o'clock, under a load of 190,000 lbs., similar cracks were noticed in the east end, and the larger of the cracks indicated in the above sketch was seen to extend completely along the bottom of the slab.

The instruments were left in place until Friday, July 10, and readings were taken at 3 p.m. on that day. These proved to be the same as these taken at 11.30 a.m. on July 9.

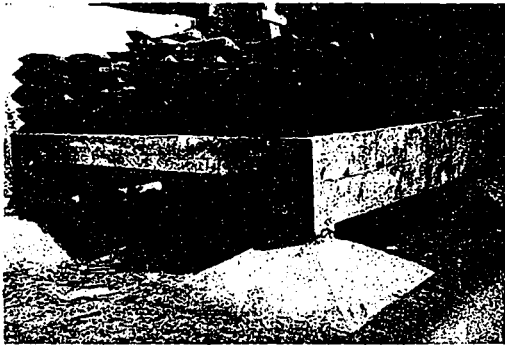
Size of slab—13 ft. 1 in. x 10 ft. 3 in. = 134.27 sq. ft.
 Load to be 1,500 lbs. per sq. ft.
 Total load to be $1,500 \times 134.27 = 201,405$.
 Actual total load was 201,412 lbs.
 Clear span of beams 11 ft. 1 in.
 Maximum permissible deflection was one four-hundredth of clear span = .333 in.

Actual maximum deflections—
 South side, .067 in.
 North side, .131 in.

Table No. 5 shows the results of the various readings and measurements made during the test. Column 5 shows

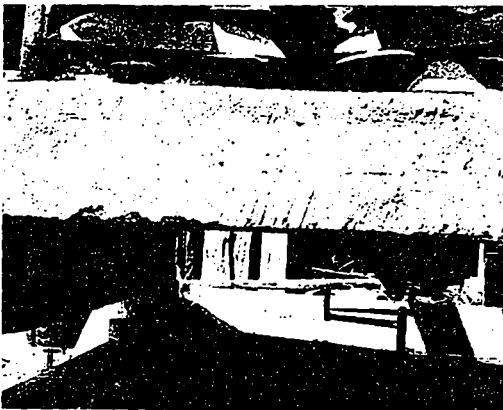
Load on Slab in lbs.	North Side		South Side		Centre		Time	Date
	Micrometer Reading	Deflection	Micrometer Reading	Deflection	Micrometer Reading	Deflection		
0	0	0.00	0.00	0.00	0.01	0.00	8:00 P.M.	8
25000	171	.085	0.05	.025	.03	.02	8:00 P.M.	9
50000	228	.114	0.07	.037	.05	.03	11:00	9
75000	299	.149	0.11	.054	.07	.04	8:15 P.M.	9
100000	378	.189	0.12	.067	.08	.05	8:30	9
125000	447	.223	0.15	.075	.09	.06	8:00 A.M.	10
150000	517	.258	0.19	.090	.11	.07	8:00	10
175000	585	.292	0.25	.125	.14	.09	1:00 P.M.	10
200000	645	.322	0.28	.140	.17	.10	3:30	10
225000	712	.356	0.32	.160	.20	.12	6:00	10
250000	778	.389	0.35	.175	.23	.14	8:00	10
275000	845	.422	0.38	.190	.26	.16	10:00	10
300000	912	.456	0.42	.210	.29	.18	11:30	10
325000	978	.489	0.45	.225	.32	.20	3:00 P.M.	10
350000	1045	.522	0.48	.240	.35	.22	5:00	10
375000	1112	.556	0.52	.260	.38	.24	7:00	10
400000	1178	.589	0.55	.275	.41	.26	9:00	10
425000	1245	.622	0.58	.290	.44	.28	11:00	10
450000	1312	.656	0.62	.310	.47	.30	1:30	10
475000	1378	.689	0.65	.325	.50	.32	4:00	10
500000	1445	.722	0.68	.340	.53	.34	6:00	10
525000	1512	.756	0.72	.360	.56	.36	8:00	10
550000	1578	.789	0.75	.375	.59	.38	10:00	10
575000	1645	.822	0.78	.390	.62	.40	12:00	10
600000	1712	.856	0.82	.410	.65	.42	2:00	10
625000	1778	.889	0.85	.425	.68	.44	4:00	10
650000	1845	.922	0.88	.440	.71	.46	6:00	10
675000	1912	.956	0.92	.460	.74	.48	8:00	10
700000	1978	.989	0.95	.475	.77	.50	10:00	10
725000	2045	1.022	0.98	.490	.80	.52	12:00	10
750000	2112	1.056	1.02	.510	.83	.54	2:00	10
775000	2178	1.089	1.05	.525	.86	.56	4:00	10
800000	2245	1.122	1.08	.540	.89	.58	6:00	10
825000	2312	1.156	1.12	.560	.92	.60	8:00	10
850000	2378	1.189	1.15	.575	.95	.62	10:00	10
875000	2445	1.222	1.18	.590	.98	.64	12:00	10
900000	2512	1.256	1.22	.610	1.01	.66	2:00	10
925000	2578	1.289	1.25	.625	1.04	.68	4:00	10
950000	2645	1.322	1.28	.640	1.07	.70	6:00	10
975000	2712	1.356	1.32	.660	1.10	.72	8:00	10
1000000	2778	1.389	1.35	.675	1.13	.74	10:00	10
1025000	2845	1.422	1.38	.690	1.16	.76	12:00	10
1050000	2912	1.456	1.42	.710	1.19	.78	2:00	10
1075000	2978	1.489	1.45	.725	1.22	.80	4:00	10
1100000	3045	1.522	1.48	.740	1.25	.82	6:00	10
1125000	3112	1.556	1.52	.760	1.28	.84	8:00	10
1150000	3178	1.589	1.55	.775	1.31	.86	10:00	10
1175000	3245	1.622	1.58	.790	1.34	.88	12:00	10
1200000	3312	1.656	1.62	.810	1.37	.90	2:00	10
1225000	3378	1.689	1.65	.825	1.40	.92	4:00	10
1250000	3445	1.722	1.68	.840	1.43	.94	6:00	10
1275000	3512	1.756	1.72	.860	1.46	.96	8:00	10
1300000	3578	1.789	1.75	.875	1.49	.98	10:00	10
1325000	3645	1.822	1.78	.890	1.52	1.00	12:00	10
1350000	3712	1.856	1.82	.910	1.55	1.02	2:00	10
1375000	3778	1.889	1.85	.925	1.58	1.04	4:00	10
1400000	3845	1.922	1.88	.940	1.61	1.06	6:00	10
1425000	3912	1.956	1.92	.960	1.64	1.08	8:00	10
1450000	3978	1.989	1.95	.975	1.67	1.10	10:00	10
1475000	4045	2.022	1.98	.990	1.70	1.12	12:00	10
1500000	4112	2.056	2.02	1.010	1.73	1.14	2:00	10
1525000	4178	2.089	2.05	1.025	1.76	1.16	4:00	10
1550000	4245	2.122	2.08	1.040	1.79	1.18	6:00	10
1575000	4312	2.156	2.12	1.060	1.82	1.20	8:00	10
1600000	4378	2.189	2.15	1.075	1.85	1.22	10:00	10
1625000	4445	2.222	2.18	1.090	1.88	1.24	12:00	10
1650000	4512	2.256	2.22	1.110	1.91	1.26	2:00	10
1675000	4578	2.289	2.25	1.125	1.94	1.28	4:00	10
1700000	4645	2.322	2.28	1.140	1.97	1.30	6:00	10
1725000	4712	2.356	2.32	1.160	2.00	1.32	8:00	10
1750000	4778	2.389	2.35	1.175	2.03	1.34	10:00	10
1775000	4845	2.422	2.38	1.190	2.06	1.36	12:00	10
1800000	4912	2.456	2.42	1.210	2.09	1.38	2:00	10
1825000	4978	2.489	2.45	1.225	2.12	1.40	4:00	10
1850000	5045	2.522	2.48	1.240	2.15	1.42	6:00	10
1875000	5112	2.556	2.52	1.260	2.18	1.44	8:00	10
1900000	5178	2.589	2.55	1.275	2.21	1.46	10:00	10
1925000	5245	2.622	2.58	1.290	2.24	1.48	12:00	10
1950000	5312	2.656	2.62	1.310	2.27	1.50	2:00	10
1975000	5378	2.689	2.65	1.325	2.30	1.52	4:00	10
2000000	5445	2.722	2.68	1.340	2.33	1.54	6:00	10
2025000	5512	2.756	2.72	1.360	2.36	1.56	8:00	10
2050000	5578	2.789	2.75	1.375	2.39	1.58	10:00	10
2075000	5645	2.822	2.78	1.390	2.42	1.60	12:00	10
2100000	5712	2.856	2.82	1.410	2.45	1.62	2:00	10
2125000	5778	2.889	2.85	1.425	2.48	1.64	4:00	10
2150000	5845	2.922	2.88	1.440	2.51	1.66	6:00	10
2175000	5912	2.956	2.92	1.460	2.54	1.68	8:00	10
2200000	5978	2.989	2.95	1.475	2.57	1.70	10:00	10
2225000	6045	3.022	2.98	1.490	2.60	1.72	12:00	10
2250000	6112	3.056	3.02	1.510	2.63	1.74	2:00	10
2275000	6178	3.089	3.05	1.525	2.66	1.76	4:00	10
2300000	6245	3.122	3.08	1.540	2.69	1.78	6:00	10
2325000	6312	3.156	3.12	1.560	2.72	1.80	8:00	10
2350000	6378	3.189	3.15	1.575	2.75	1.82	10:00	10
2375000	6445	3.222	3.18	1.590	2.78	1.84	12:00	10
2400000	6512	3.256	3.22	1.610	2.81	1.86	2:00	10
2425000	6578	3.289	3.25	1.625	2.84	1.88	4:00	10
2450000	6645	3.322	3.28	1.640	2.87	1.90	6:00	10
2475000	6712	3.356	3.32	1.660	2.90	1.92	8:00	10
2500000	6778	3.389	3.35	1.675	2.93	1.94	10:00	10
2525000	6845	3.422	3.38	1.690	2.96	1.96	12:00	10
2550000	6912	3.456	3.42	1.710	2.99	1.98	2:00	10
2575000	6978	3.489	3.45	1.725	3.02	2.00	4:00	10
2600000	7045	3.522	3.48	1.740	3.05	2.02	6:00	10
2625000	7112	3.556	3.52	1.760	3.08	2.04	8:00	10
2650000	7178	3.589	3.55	1.775	3.11	2.06	10:00	10
2675000	7245	3.622	3.58	1.790	3.14	2.08	12:00	10
2700000	7312	3.656	3.62	1.810	3.17	2.10	2:00	10
2725000	7378	3.689	3.65	1.825	3.20	2.12	4:00	10
2750000	7445	3.722	3.68	1.840	3.23	2.14	6:00	10
2775000	7512	3.756	3.72	1.860	3.26	2.16	8:00	10
2800000	7578	3.789	3.75	1.875	3.29	2.18	10:00	10
2825000	7645	3.822	3.78	1.890	3.32	2.20	12:00	10
2850000	7712	3.856	3.82	1.910	3.35	2.22	2:00	10
2875000	7778	3.889	3.85	1.925	3.38	2.24	4:00	10
2900000	7845	3.922	3.88	1.940	3.41	2.26	6:00	10
2925000	7912	3.956	3.92	1.960	3.44	2.28	8:00	10
2950000	7978	3.989	3.95	1.975	3.47	2.30	10:00	10
2975000	8045	4.022	3.98	1.990	3.50	2.32	12:00	10
3000000	8112	4.056	4.02	2.010	3.53	2.34	2:00	10
3025000	8178	4.089	4.05	2.025	3.56	2.36	4:00	10
3050000	8245	4.122	4.08	2.040	3.59	2.38	6:00	10
3075000	8312	4.156	4.12	2.060	3.62	2.40	8:00	10
3100000	8378	4.189	4.15	2.075	3.65	2.42	10:00	10
3125000	8445	4.222	4.18	2.090	3.68	2.44	12:00	10
3150000	8512	4.256	4.22	2.110	3.71	2.46	2:00	10
3175000	8578	4.289	4.25	2.125	3.74	2.48	4:00	10
3200000	8645	4.322	4.28	2.140	3.77	2.50	6:00	10
3225000	8712	4.356	4.32	2.160	3.80	2.52	8:00	10
3250000	8778	4.389	4.35	2.175	3.83	2.54	10:00	10
3275000	8845	4.422	4.38	2.190	3.86	2.56	12:00	10
3300000	8912	4.456	4.42	2.210	3.89	2.58	2:0	

the south side was subjected to great changes of temperature, while that on the north side was almost constantly at the same temperature.



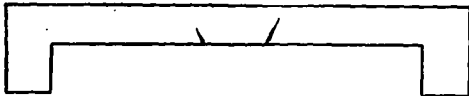
CONCRETE SLAB JUST AFTER THE LOADING WAS FAIRLY STARTED.

Four sheets of curves showing graphically the relation between load and deflection for both north and south beams are herewith submitted and are self explanatory. It will be noticed that the deflections stated in the main



VIEW TAKEN AFTER SLAB WAS LOADED, SHOWING THE DEFLECTOMETER MEASURING THE DEFLECTION OF THE CENTRE OF THE SLAB AND ONE OF THE TWO MIRROR WHEELS USED TO MEASURE THE DEFLECTION OF THE BEAMS.

report and in this appendix as the maximum are those scaled off curves I. and II., being those corresponding to the greater load. No curve has been plotted to show



SKETCH SHOWING THE LOCATION OF THE SLIGHT CRACKS WHICH OCCURRED UNDER A TOTAL LOAD OF 162,000 LBS.

the relation between load and deflection for the centre of the slab; columns 2, 3 and 9 in Table 5 give this information.

PETER GILLESPIE,
J. J. TRAILL.

It is most interesting to note that all deflections shown during the progress of this test, completely recovered during the removal of the load. The

recovery of deflection in the slab was sufficient to close up the cracks when only $\frac{2}{3}$ of the load had been removed. It was intended originally to load this slab to destruction, but it was found too difficult to load sufficient material on the slab for this purpose, and for this reason it was deemed advisable to stop the load at this time rather than run the risk of injuring anybody connected with carrying on the test.—Editor.

Report of tests made on a sample of the cement used in the panel taken on or about June 3.

BOUNDNESS.

A pat of neat cement was allowed to set in air for 24 hours and was then exposed to steam above boiling water for 5 hours. The test proved perfectly satisfactory.

A second pat kept under water for 28 days was also satisfactory.

J. J. TRAILL.

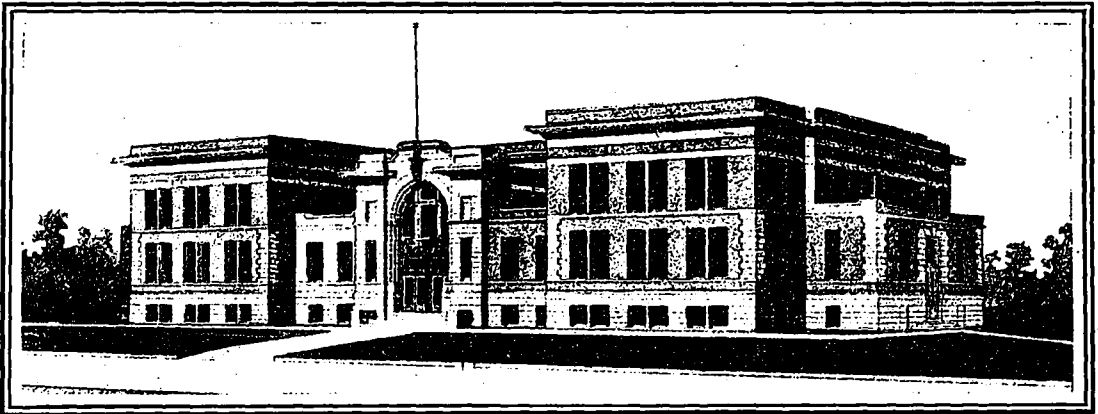
TESTS OF CEMENT USED

Tensile Strength Neat.	
24 hours in moist air	100
24 hours in moist air	105
Average	103
1 day in air, 6 days in water	428
1 day in air, 6 days in water	446
Average	437
1 day in air, 27 days in water	542
1 day in air, 27 days in water	667
Average	601
Tensile Strength, 3:1.	
1 day in air, 6 days in water	128
1 day in air, 6 days in water	120
Average	124
1 day in air, 27 days in water	207
(Note—Second briquette was accidentally destroyed).	
Fineness.	
Residue on a No. 200 sieve	23.5 p.c.
Residue on a No. 100 sieve	5.7 p.c.
Residue on a No. 50 sieve65 p.c.
Setting	
Time of initial set	45 minutes
Time of final set	4 hrs. 50 minutes
Specific Gravity.	
Specific gravity	3.13

HUGE TOWER CRANE IN SHIPYARD.

A LARGE TOWER CRANE has recently been erected in the Vulcan shipbuilding yard at Vegesak, Germany, which has a total rise of the crane hook above yard level of 90 ft. The revolving head has a maximum outreach of the 3-ton hoist of 52½ ft. and 29½ ft. for the 6-ton hoist. The tower frame is a square steel structure, heavily braced, and is mounted for traveling longitudinally through the yard on two-wheel trucks under each of the four corner posts. The jib consists of two girders of box section that surround the tower structure and are suspended from the pivot hood at the top of the tower above it, by rods so distributed as to compensate for the bending moments due to the trolley under loads. The tower structure was designed to withstand wind loads of 50 lb. per sq. ft., and sufficient stability has been obtained by ballast boxes of 16 tons' capacity on each side of the tower at the base. Sets of rail fasteners are also provided for anchoring the structure rigidly to the track when it is out of service, or is handling very heavy loads.—*Engineering Record.*

DESIGN FOR CITY SCHOOL BUILDING.---Exterior Effect Simple, Yet Impressive.---General Plan Has Many Features.---Five Large Exits.---Long, Spacious Corridors.---Gallery for Assembly Room.---Isolated Furnace Room.---Toilet Rooms Outside of Main Building.



A SIMPLE DIGNIFIED DESIGN FOR A MODERN 12-ROOM CITY PUBLIC SCHOOL BUILDING. THE EXCEEDINGLY SIMPLE EXTERIOR IS RELIEVED BY THE HEAVY CORNICE, THE LARGE STONE MAIN ENTRANCE, AND THE ARTISTIC TREATMENT IN THE STONE TRIMMINGS. THE SMALL ONE-STORY EXTENSIONS BUILT ON EACH END OF THE BUILDING NOT ONLY FACILITATE AN EXCELLENT INTERIOR ARRANGEMENT BUT ADD APPRECIABLY TO THE GENERAL EFFECT OF THE EXTERIOR.

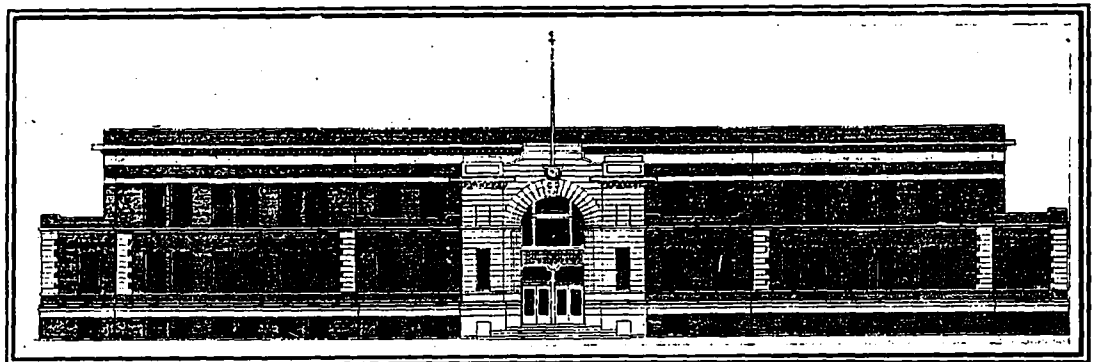
LAST MONTH we illustrated three designs for school buildings well adapted to the requirements of a small town or village. It is, however, not only small municipalities that are at present battling with the important problem of school building construction. Our larger cities after investigation, prompted by recent catastrophes, have found that altogether too little consideration has been given the subject of the plan and construction of the most important of all municipal structures. Authorities in Hamilton, London, Chatham, Ottawa, Winnipeg, Toronto and Montreal, and many other cities in Canada, have found it expedient, yes necessary, to vote large sums of money for either the repairing of their old structures or the construction of entirely new buildings. While in most cases the sums voted for this purpose are far from being equal to the tasks to be undertaken, it is nevertheless a fact that an increased interest in this much neglected municipal question has been demonstrated by what has already been done.

The planning of a city school, which must of necessity accommodate a much larger number of children than the school in the smaller town, presents, in the matter of plan, a much more difficult problem. The class of chil-

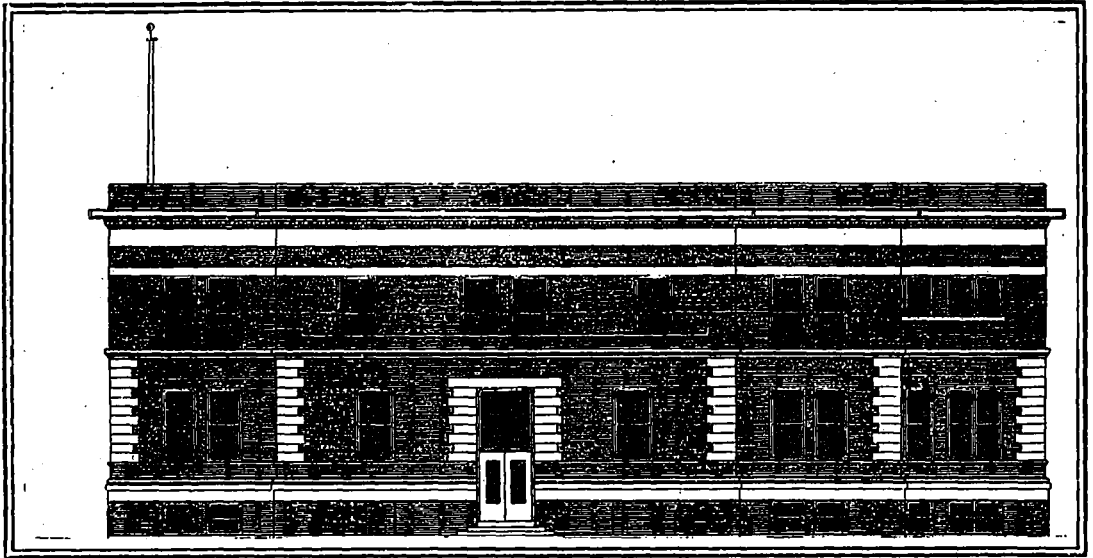
dren to be accommodated is, as a general rule, of a much more cosmopolitan type than attend the schools in the smaller town, thus adding materialy to the importance of good sanitary equipment. Again the broad variety of types of children attending the average city school demands that provision be made for much broader training and the teaching of a larger number of subjects than is required in the country school.

Conditions in the city very often demand that a school building be constructed in a more or less congested district, which fact, in addition to the larger number and cosmopolitan type of the pupils to be accommodated, makes it imperative that the structure itself should not only be as fireproof as modern building science will permit, but that it should be equipped with the best and most modern of fire fighting appliances, and in plan should be so arranged that it may be emptied with ease and dispatch in case of emergency, that will preclude all possibility of bodily injury to the children by either fire or panic.

We illustrate herewith an excellent design for a city public school building, in which every consideration has



FRONT ELEVATION, SHOWING DETAIL OF STONE WORK FOR FRONT ENTRANCE.

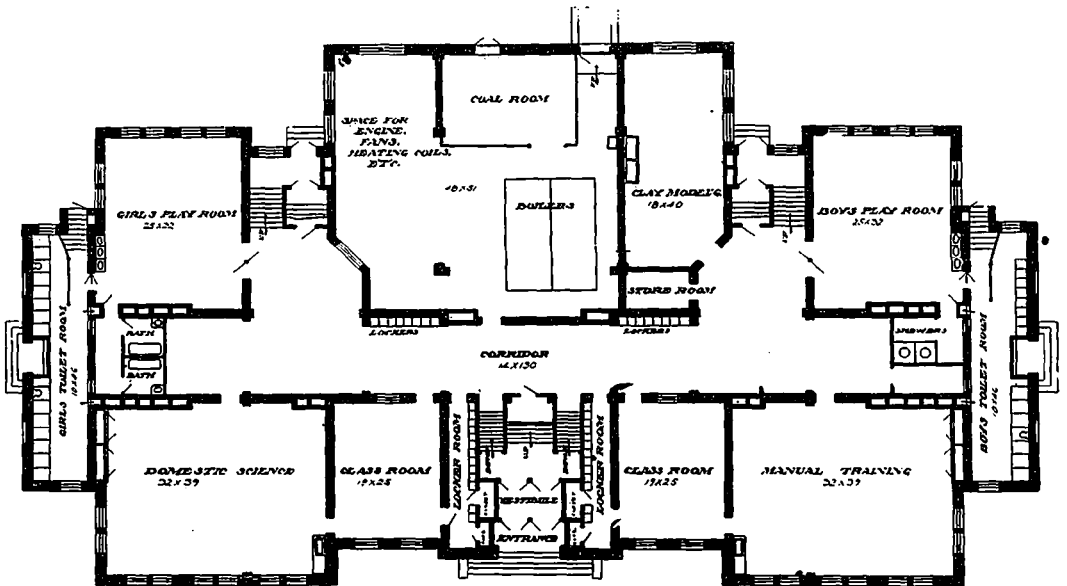


END ELEVATION OF DESIGN FOR 12-ROOM CITY SCHOOL BUILDING, SHOWING DETAIL OF WINDOW ARRANGEMENT AND STONE CORNICE AND TRIMMINGS.

been given to the health, comfort and safety of the children.

In exterior effect it is simple and dignified, the only attempt having been made at architectural ornamentation is in the large imposing stone main entrance, which has a tendency to add color and effect to the whole design. The heavy broad cornice and the stone basement walls and trimmings relieve the monotony of the plain brick walls. The materials suggested are red paving brick and Bedford stone trimmings. These will make a very attractive structure, although many other pleasing combinations could be selected.

The plans provide for a two-storey structure, with twelve class rooms, two in the basement, five on the main floor and five on the upper floor. Besides these a large assembly hall has been arranged for on the main floor, that may be used for exercises of all kinds. A very commendable feature of the whole plan is the large broad halls, the three wide stairways and the five entrances that lead directly through the vestibule straight into the building. This feature is one well worth the consideration of school authorities in the larger cities in Canada. It has been the custom, especially in Toronto, to construct vestibules on the outside of the building, and in

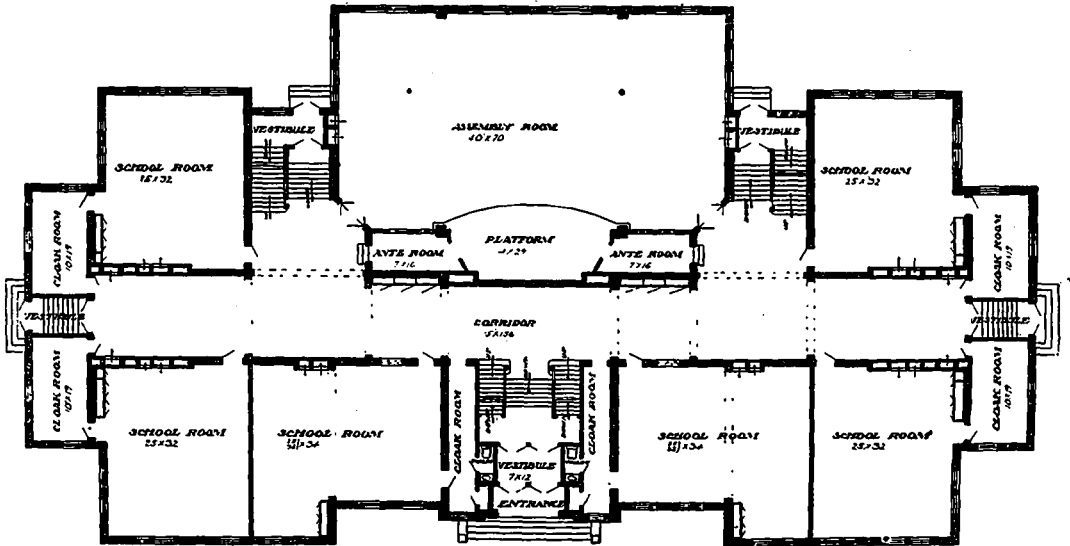


BASEMENT PLAN OF DESIGN FOR 12-ROOM CITY SCHOOL BUILDING, WHICH PROVIDES FOR 2 CLASS ROOMS, PLAY ROOMS AND AMPLE ACCOMMODATIONS FOR MANUAL TRAINING CLASSES. IT WILL BE NOTED THAT BOTH THE BOYS' AND GIRLS' LAVATORIES ARE IN THE ONE-STORY EXTENSIONS, WHERE THEY ARE TAKEN OUT OF THE ZONE OF THE GENERAL VENTILATING SYSTEM, THUS ELIMINATING ALL POSSIBILITY OF FOUL AIR BEING PASSED INTO THE BUILDING PROPER. ANOTHER WORTHY FEATURE IS THE BOILER-ROOM WHICH IS CLOSED OFF FROM THE REST OF THE BASEMENT BY A FIRE PROOF WALL, THE ONLY COMMUNICATION BETWEEN IT AND THE REST OF THE BUILDING BEING ONE SMALL NARROW DOOR.

C O N S T R U C T I O N

most cases, a turn has to be made to get out of the building through the vestibule. Again, most of our schools, even those three stories in height have narrow halls, one narrow, badly located stairway, and one or two badly

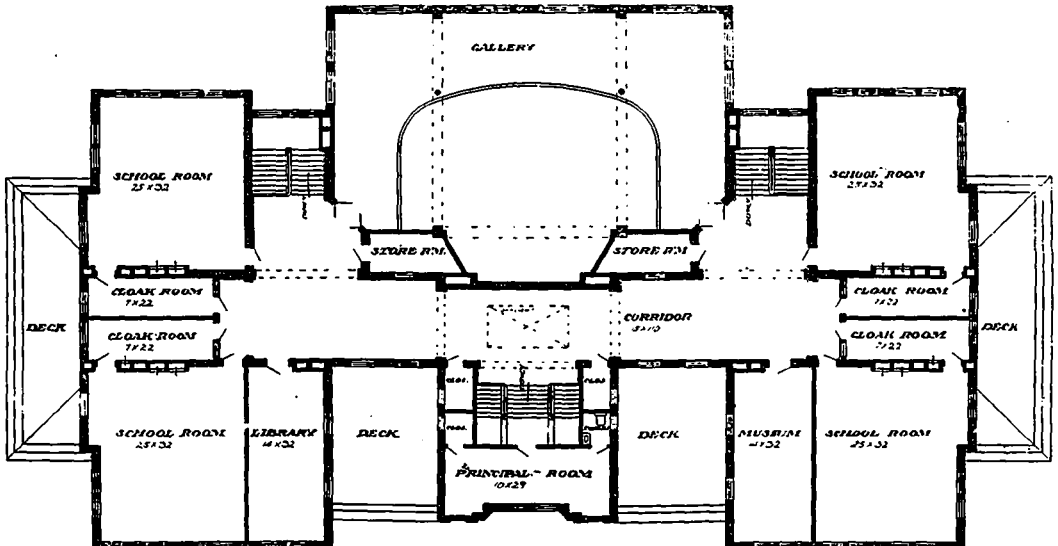
In the basement of the building is the boys' and girls' playrooms, a toilet room, boiler room, manual training room, domestic science room, clay modelling room, and two class rooms. The provision made for



GROUND FLOOR PLAN OF DESIGN FOR 12-ROOM CITY SCHOOL BUILDING, A FEATURE OF WHICH IS THE LARGE WIDE CORRIDOR RUNNING THE FULL LENGTH OF THE STRUCTURE FROM WHICH THE BUILDING MAY BE EMPTIED DIRECTLY THROUGH 5 CONVENIENTLY LOCATED EXITS. THE LARGE ASSEMBLY ROOM WITH ITS WELL PLANNED PLATFORM AND ANTE-ROOMS IS WORTHY OF NOTE, AS ALSO IS THE CONVENIENT ARRANGEMENT OF THE LARGE CLOAK ROOMS ON EACH SIDE OF THE 3 LARGER ENTRANCES.

planned entrances. Dearly bought experience has taught us that one of the most important points to be worked out in planning a large public school is the provision for large halls, wide, conveniently located staircases and an adequate number of wide entrances to serve as exits in case of emergency. In this particular, this plan is an ideal one.

manual training is to be highly commended. The modern city school building should be fully equipped to undertake to give lessons in both domestic science and manual training, as it forms a most important part of the education of the child. Attention is also called to the boys' and girls' shower baths, which is a most excellent feature, and should be installed in every up-to-date city school.



UPPER FLOOR PLAN OF DESIGN FOR 12-ROOM CITY SCHOOL BUILDING. THE GALLERY OF ASSEMBLY ROOM IS AN EXCELLENT IDEA, RELIEVING, AS IT DOES, THE CROWDING OF THIS GREATLY OVERTAXED ROOM AT SCHOOL ENTERTAINMENTS. THE THREE STAIRWAYS WHICH, FROM THE FIRST LANDING, LEAD DIRECTLY OUT THROUGH THE EXITS, MAKE IT POSSIBLE TO EMPTY EVERY CLASS ROOM IN AN EXCEPTIONALLY SHORT PERIOD OF TIME, WITHOUT THE LEAST POSSIBILITY OF CONGESTION. THE LOCATION OF THE PRINCIPAL'S ROOM DIRECTLY OVER THE MAIN ENTRANCE IS AN ADMIRABLE ARRANGEMENT.

building. The cosmopolitan type of children generally attending city schools demands that some such provision be made, for purely sanitary reasons.

The main floor, as will be seen, has five exits and entrances, and a corridor 15 by 156 feet runs the entire length of the building, with all the rooms entering into it. The assembly hall is fitted with a gallery, which is entered from the upper floor, thus doing away with the crowded condition usually existing at school entertainments. All of the class rooms are 25 by 32 feet, and are provided with cloak rooms. The upper floor has four class rooms, each provided with a cloak room, a library room, a museum, two store rooms, and the principal's room. The principal's room is advantageously located directly above the main entrance, with a large arch window at the front. The museum can be used for any other purpose desired, either as a lady teacher's room, or as an emergency or rest room. A new feature in this building is the arrangement of the toilet rooms, which are outside of the main building, but connected with it, which fact takes them outside of the space ventilated by the general ventilating system.

REVOLVING DOOR A MENACE.---Peril Lies in Feature that Has Made It Successful.---Should be Made Subject to the Oversight of Proper City Department.

IT IS SURPRISING that the turnstile door has not long ago aroused a strong protest on the ground that it constitutes a menace to public safety. We say this with due appreciation of the ingenuity of this device, and the success with which it accomplishes its desired end of preventing the inrush of cold air which accompanies the opening and shutting of doors of the ordinary hinged type.

The object of the turnstile is to provide an intermittently obstructed passageway between the interior and the exterior of a building, and it certainly fulfils its end only too well. The peril of this device lies in the fact that in so successfully shutting the cold air out, it effectually shuts the occupants of the building in. The draughty effects of the ordinary door are avoided by permitting only small pockets of air to enter in slow succession; and the menace of the door lies in the fact that people can pass through the same exit in these same rotating pockets only one at a time. It is true that the leaves of the revolving door are arranged to fold together, thereby allowing two persons to pass the door abreast; but in the event of panic, the jam might be too great to permit the folding of the leaves.

Moreover, the doors, even in the folded condition, present at best but a narrow passageway. We have in mind, as we write, a certain hotel, recently opened in this city (and this is merely a typical case among many), in which the only exit to the street in case of fire would be through one of these doors.

Here, in the event of any accident that would cause a rush for the door, two things are certain first, that even if the utmost order prevailed, it would take an interminable time for the population of the hotel to file out through the one door; and, secondly, that in the almost certain event of panic, the door might become jammed, and the one means of exit to the street be most effectually blocked up.

Furthermore, if a turnstile door was once jammed by the congestion of a crowd of frantic people it would be an exceedingly difficult obstacle to break down or clear away, for these doors usually revolve in solid masonry or substantial steelwork.

We are strongly of the opinion that the use of this device should be made subject to the permit and oversight of the proper city department, whether that of building or fire. Otherwise, it is only a question of time when the turnstile door may have to answer for a tragedy of proportions that one does not care to contemplate. Should

the authorities decide to take this matter up, as they certainly should at once, we would suggest that the use of these doors would be prohibited, except in cases where they are flanked by hinged doors, opening outwardly to the street and capable of being quickly released.—*Scientific American*.

EXECUTIVE BOARD OF C.C.C.A. TO MEET.---Will Fix Date and Place for First Annual Convention.---Association Making Material Progress.

SOMETIME the latter part of this month the executive board of the newly organized Canadian Cement and Concrete Association will meet for the purpose of deciding upon the date and place for the first annual convention to be held under the auspices of this organization.

While still in its inception the association is, nevertheless, making material progress, and with the hearty co-operation that is being put forth by those who are identified with its movement, it should, before long, assume proportions which will compare favorably both in strength and character with the National Association of Cement users in the United States.

What this latter association has accomplished across the border in giving to its members the benefits of thorough and universal research along theoretical and practical lines, and in bringing before the public the uses and possibilities of concrete in its various forms, is the strongest kind of an argument in favor of the Canadian organization whose aims are precisely in the same direction.

The value of an organization of this kind cannot be over-estimated, as it is only by concerted action on the part of those allied with the various branches of the cement and concrete industry that the maximum result of good can be attained.

Fortunately the Canadian association has had affiliated with it from the very start some of the best known manufacturers, engineers, contractors and dealers in the Dominion, a fact which in itself is sufficient to give the organization an impetus that will rapidly advance the interests which it represents.

The object of the association is to conduct an educational propaganda with a view of bringing every branch of the work up to the highest standard of efficiency, as the scope it covers takes in the cement and concrete interests in general.

In connection with the annual conventions which will be replete with illustrated lectures, important topics, and discussions of interest to those engaged in this kind of work, exhibitions of the materials, machinery and appliances used in concrete work will be held, at which the public will be given an opportunity to view the progress and accomplishment of the industry.

The organization has a good work before it, one that will bring manifold benefits to all concerned, and it is worthy of the co-operation and material support of all those who are in any manner desirous of advancing the interests of cement and concrete.

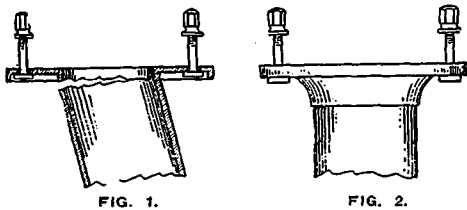
ARCHITECTURE AND LIGHTING.---Continued from Page 52.

ly the individual responsible for the lighting must be able to discern and select these features and modify his illumination accordingly. Take as an example a trefoil Gothic arch. This, we will assume, by its importance in the structure requires to be seen in its entirety. It is not sufficient that one segment, or even the two lower segments, be brought into prominence. It is demanded by the nature of the problem that the light so fall upon it that the eye shall be capable of tracing its outline from one abutment to the other and if this cannot be done there will result a feeling of insecurity and of incompleteness. The problem, then, becomes one of so locating the lights that this result be accomplished.

CLOSET AND SOIL PIPE CONNECTIONS.---Improper and Proper Methods of Making a Junction Between Closet and Waste Pipe.---Danger in Poor Construction.---How to Avoid It. ∴ ∴

THE problem of making a proper connection between the closet and the waste pipe has been a serious one ever since earthenware closets were manufactured, and may be looked upon as the one weak spot in an otherwise almost perfect system of house plumbing. The first earthenware closets were made with a flat base, that is, without a recess in the bottom. The method of connecting the closet to the waste pipe was to make a collar of lead, lay it on the floor and bring the lead pipe up through it and flange it out over the collar and solder them together. This flange was then covered with putty, plaster or cement and the closet was set over it and screwed to the floor. The floor would in time sag or become rotten; the screws would become loose and the joint broken, allowing gases to escape into the house.

The next improvement of any consequence was the brass plate or ring perfectly flat with a slightly beveled inner edge on which the lead bend was soldered; a rubber gasket was then used between the closet base and the brass flange. The potteries, in order to allow for this projection above the floor, recessed the base so as to allow the closet to sit flat on the floor. The brass flange was drawn up into the recess with bolts, compressing the rubber gasket against the bottom of the closet in case the recess was too deep. The rubber was covered with putty.



In fact, to-day, a large percentage of the closets set are placed over a lead bend flanged over on the floor and a ring of putty laid over it and compressed into the recess of the closet by screwing it to the floor with common wood screws and let go at that as good enough.

Red lead putties, etc., are made plastic with oil. When the oil dries out of them they crumble, and then particles drop from the place with every jar the closet receives. Rubber decays and has proven generally unsatisfactory as a gas-tight gasket between the closet base and the brass flange. The objections to the flat brass floor flange is better shown in Fig. 1 than explained. On account of insufficient holding surface for the lead the sharp edges of the flange will shear and cut the lead pipe or bend when the building settles or when the soil pipe stack settles.

The recent plumbing ordinances passed in Chicago, New York, Brooklyn and I believe by this time in Cleveland, cover the point of closet connections very thoroughly and read in a general sense as follows: All earthenware and other closet traps shall have heavy brass floor plates, not less than one-fourth of an inch in thickness, soldered to the lead bend, or where the brass or iron pipes are used, *screwed to the same and bolted to the trap flange, and joints between the flange and trap shall be made gas tight without the use of putty, plaster, cement, rubber or leather washers*, and the use of the putty, plaster, cement, rubber or leather washers in making such connections is hereby prohibited, and any person violating, neglecting or refusing to comply with any provision of this article shall be fined, etc.

There are several closet flanges on the market that comply with the above mentioned ordinance, and the one

shown in Fig. 2 is known as the Renton flange. This flange is provided with a clamping plate for attachment to the closet bowl and with a pipe holding part projecting from the clamping plate and having an inner converging wall. This inner wall or pipe holding part is sharply inclined at its upper part and converges uniformly below the sharply inclined part and is of sufficient depth so as to provide a long bearing for the lead pipe, while the sharply inclined part is adapted to receive solder

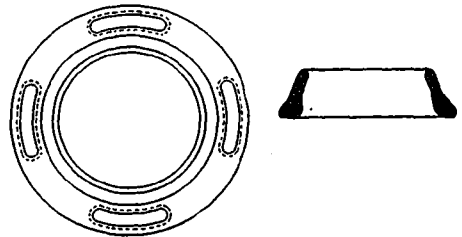


FIG. 3.

for metallically uniting the floor flange and the lead pipe. The long, gripping surface of this flange is one of its best features. The gasket used is an especially prepared asbestos covered with canvas and treated with graphite. A sectional cut of this gasket showing shape is shown in Fig. 3. This gasket is soft and pliable, absolutely water proof, and will not harden or vulcanize, making it possible to compress it and take up any irregularity in the earthenware. Whenever it is necessary to take up the closet to replace, or for any other cause, it does not need to be dug up. This gasket extends between the lead pipe soldered to the brass flange and the spud of the closet bowl, and also between the floor flange and the bottom of the recess in the bowl, and when tightly compressed between these parts not only makes a perfectly gas tight joint between the floor flange and the bowl, but also presses the lead pipe against the inclosing walls of the flange, thus reinforcing the lead along a considerable portion of its inner surface.

Fig. 4 shows the manner in which this connection is made. The particular advantage of the flange over and above its efficiency is that it will fit almost any closet

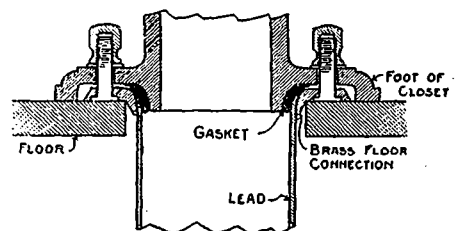


FIG. 4.

made, and on account of its sloping sides it not only makes tight on top, but on all sides.

Figs. 5 and 6 is another type of improved closet flange connection and differs from the Renton flange in many points. This flange is soldered to the lead waste pipe in much the same manner as the Renton except that it does not slope or extend over the top. The brass flange is tapered to a point on top, forming a seat on which a

flat asbestos gasket is laid between it and the closet base, and depends upon one point of compact for a tight joint, which is all right if the recess is perfectly level. The seat of this flange is grooved, the idea or intention being to sink a ridge of the asbestos gasket into the channel to reinforce the joint. Another type of closet connection is shown in Fig. 7 and is known to the trade as the Sanitary-Perfect Screw connection. This connec-

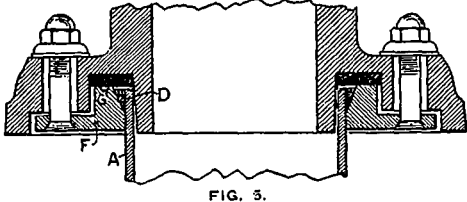


FIG. 5.

tion has been accepted by the different departments of health and sanitary boards wherever the use of putty, plaster, cement, rubber or leather gaskets have been prohibited and has proven gas tight under peppermint test, the only objection to it being that one type of closet must necessarily be used, and again it takes considerable more time and skill to properly install than either of the two mentioned above, but it is a great improvement over the rubber, putty, makeshift arrangement so commonly used to-day.

In using the Sanitary Perfect Screw connection it is much preferable to use a floor slab of either marble or porcelain ware on account of the desirability, in fact the almost necessity of having a level foundation. This closet connection is a heavy brass screw connection secured into the base of the closet, as shown in sectional view Fig. 7. The corresponding threaded brass coupling or socket is soldered in the end of the lead soil pipe.

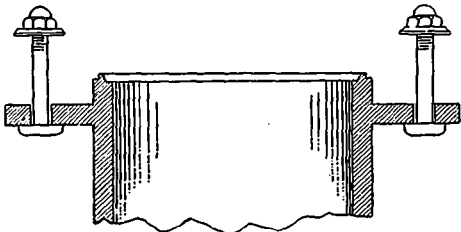


FIG. 6.

The sectional views Figs. 7 and 8 show the manner in which the connection is made fast and tight into the base of the closet. The projecting arm of the flange acts as an anchor, which is cemented into a corresponding channel in the earthenware. Hard cement and lead make the brass connection almost an integral part of the closet bowl. The brass receiving coupling is marked so that when installed it is placed in such a position that when the closet is screwed into it, it makes tight when the closet faces front or in proper position.

This closet connection proposition is a more serious one than is generally supposed. Quantities of illuminating gas escape from mains, and enter the sewer pipes, and the so-called sewer gas often passes in the house through the bath room on account of the almost criminal manner in which some plumbers make their connection.

A Swiss Water-Power Plant utilizing a head of 1,150 ft. is now being completed on the River Loentsch. Pelton wheels rated between 6,500 and 7,000 h.p., direct connected to the generators, are used. The total capacity of the station is 42,000 h.p.

THE "THOMAS" LIFT AT FOXTON, LEICESTERSHIRE.—Description by the Designer.

THE "Thomas" lift used by the Grand Junction Canal Company at Foxton, Leicestershire, is designed much on the same principle as the Trent Canal hydraulic lift locks which have been described in the first and second issues of CONSTRUCTION. The "Thomas" elevator or lift is described by the inventor as follows:

An apparatus constructed for the purpose of transferring barges and other vessels from one level to another on canals and other waterways, in lieu of an ordinary lock or flight of locks, its object being to minimize the loss of water from the higher to the lower level, which is inseparable from the ordinary system of lockage, and to provide for the passage of vessels simultaneously in both directions at a single operation between levels of widely different altitude, whereby the loss of time incidental to the passage through a flight of locks is in a great measure reduced. Generally, this invention con-

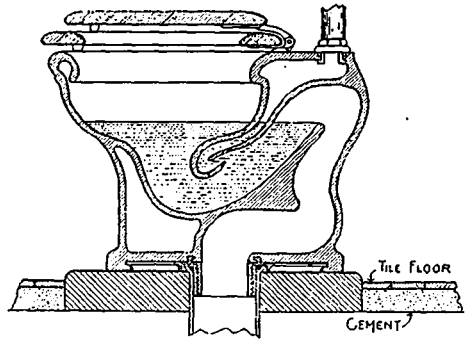


FIG. 7.

sists of a system of wet docks wherein vessels to be transferred are water borne. The docks are mounted on wheeled carriages sufficient to support them horizontally and to run on inclined railways extending between the higher and lower water levels, such railways being transverse to the length of the docks which travel broadside on so as to admit of a short length of wheel base and a steep grade. The docks are provided with end gates which open and close for the ingress and egress of vessels by rising or falling in a vertical plane, suitable grooves being provided for the gates to work it, and means are provided for making a water-tight closure. The end of each dock when in position at the top of its inclined railway makes a practically water-tight joint with the standing work of the extremity of what may be

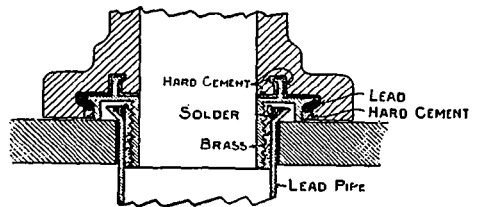


FIG. 8.

termed the head bay or upper pond. The dock then forms a continuation of the upper canal, there being also a similar gate provided at the end of each of the upper bays to retain the water in the upper level of the canal when the docks are absent.

PROSPECTIVE CONSTRUCTION

The following information is obtained from our correspondents, from architects, and from local papers. These items appear in our Daily Advance Reports and are herein compiled for the use of subscribers to the monthly issue of "CONSTRUCTION." Should any of our readers desire this information oftener than once a month, upon receipt of request we will be pleased to submit prices for our Daily Service.

Mills and Factories

Toronto.—Holtz Bros., 16 Robert street, have the contract for the erection of a three storey and basement steel and brick building on Duferin street, near King, for the Sunbeam Incandescent Lamp Company. The structure will cost \$75,000. Architect F. H. Herbert prepared the plans.

Toronto.—The McCann-Knox Milling Company has purchased a site near the foot of West Market street upon which it proposes building a coal plant to cost \$30,000.

Toronto.—The Canadian Silk Company, Limited, King street east, has been granted a permit for the erection of a one-storey brick factory building on the south side of Morrow avenue, near Dundas street, at a cost of \$10,000. Symons & Rae are the architects.

Toronto.—The Diamond Flint Glass Company, Sudbury street, has been granted a permit for the erection of a two-storey brick factory building on Sudbury street, near Dovercourt road, at a cost of \$7,500. Plans for the structure were prepared by Architect J. Francis Brown.

Toronto.—The factory of Robt. Crean & Company, hat manufacturers, 13 Balmuto street, has been damaged by fire to the extent of \$7,500.

Ottawa.—The Ontario and Manitoba Flour Mills, Limited, with headquarters at Ottawa, has been incorporated with a capital of \$50,000. The incorporators are Angus William Fraser, John Mulhail, James Goodwin Gibson and others.

Fort Francis, Ont.—The Ogilvie Milling Company, of Winnipeg, will erect a flour mill having a capacity of 20,000 barrels a day at this place.

Barrie, Ont.—The ratepayers of this place have voted in favor of the agreement between the town and the Grand Trunk Railway, fixing the company's assessment at \$25,000 up to 1929. This, however, is subject to certain conditions, the chief of which is the establishment and maintenance of enlarged shops and a repair plant, involving an expenditure of at least \$150,000 in improvements at this place. The shops are to be completed and in operation by the end of 1910.

Berlin, Ont.—The Hagen Shirt and Collar Company has decided to erect a new four-storey factory, 64x100 feet, on Wilmot street.

Brockville, Ont.—The Algonquin cheese factory at this place has been destroyed by fire, entailing a loss of \$5,000, on which the insurance is \$3,000.

Sombra, Ont.—Messrs. Beckler & Company's sawmill at this place has been destroyed by fire. Loss approximately \$6,000, partly covered by insurance.

Bridgeway, Ont.—The Canadian Shipbuilding Company has completed plans for a dry dock to be built at the shipyard near this place.

Dundas, Ont.—The plant of the Kerr Milling Company has been badly damaged by fire. The insurance carried on

the building, plant and stock amounts to \$17,000.

Galt, Ont.—The Crown Hat Company will erect a new factory building to replace the one recently destroyed by fire, on which the loss was \$25,000. Mr. Chas. D. Brown, Galt, is vice-president of the company.

Tarneworth, Ont.—W. T. Mace's flour and grist mill at this place has been destroyed by fire. Loss, \$7,000, with insurance of \$4,000.

Sault Ste. Marie, Ont.—The "Soo" Falls Brewing Company's plant has been damaged by fire to the extent of \$15,000.

Montreal, Que.—Chas. Gurd, Bleury and Jurors streets, has been granted a permit for the erection of a three-storey factory building. Specifications call for Indiana stone front, concrete floors, galvanized iron cornice, tar and gravel roof. Estimated cost, \$10,000. Architect, J. S. Smith, 207 St. James street; contractors, Shearer, Brown and Mills, 225 St. Patrick street.

Montreal, Que.—The Montreal Waterproof Company's factory has been damaged by fire to the extent of \$35,000.

Lachine, Que.—Work will be commenced in the near future on the new Imperial Locomotive Works, to be built in the north-western end of Lachine, upon what is known as the Johnston farm. The works and machinery it is estimated will cost over \$1,000,000.

Campbelltown, N.S.—The plant and machinery of the Campbelltown Steam Laundry at this place has been destroyed by fire. It will probably be rebuilt. R. M. Curry can be addressed.

Sackville, N.B.—The Enterprise Foundry at this place has been completely destroyed by fire. The plant consisted of warehouse, offices, mill-room, pattern shops, moulding and fitting shops, power-house and storeroom. Loss approximately \$100,000, partly covered by insurance.

Victoria, B.C.—Letters of incorporation have been applied for by a company to be known as the Prince Rupert Whaling Company, Limited, for the purpose of erecting and operating a large whaling station at Big Dundas Island, near Port Simpson. The company has been promoted by Capt. C. J. Kelly, who will be manager and J. G. Hall, who is solicitor for the concern. The capital stock will be \$400,000. The station is to be equipped with appliances and machinery designed by Dr. Rissmuller, of this city.

Vancouver, B.C.—The Graham Island Lumber Company, of which Mr. C. H. Shannon, of Los Angeles, capitalist, is vice-president, will erect a large sawmill next year at Massett, Graham Island, of the Queen Charlotte group. The company, which is capitalized at \$500,000, owns about 10,000 acres of timber lands on Graham Island. They will erect a temporary plant to be in operation in three months' time.

Arden Man.—The flour mill and elevator, belonging to Mr. Wilson, has been destroyed by fire. The loss is \$20,000, with insurance of \$12,000.

Saskatoon, Sask.—At a meeting of the city council it was decided to have specifications prepared for the addition of a small engine and generator to the electrical lighting plant. Mr. E. L. White is superintendent of the electrical department.

Lethbridge, Alta.—Mr. E. H. Erb, of the New Prague Flour Milling Company, of New Prague, Minn., is contemplating the erection of a large mill at this place.

Gas Plants, Elevators and Warehouses

Toronto.—Architect Leonard Foulds has completed plans for a four-storey brick warehouse to be erected on Clinton street,

near College, for the Imperial Storage Company, at a cost of \$25,000. A hand-power freight elevator will be installed.

Toronto.—John Leckie, Limited, will erect a five-storey warehouse at 75-77 Wellington street west.

Toronto.—The old Adams elevator, at the foot of West Market street, recently collapsed, completely destroying the building and wrecking the hoisting machinery. The building is owned by Mr. McCoomb, of Balmly Beach, and will probably be rebuilt, as the company in which Mr. McCoomb is interested was contemplating rebuilding and improving it to the extent of \$25,000.

Toronto.—The Mall Job Printing Company, York street, has been granted a permit for the erection of a five-storey brick warehouse on the corner of Duncan and Adelaide streets, at a cost of \$85,000. Sprunt & Rolph are the architects and Wickett Bros. have the contract for the work.

Toronto.—Jos. Fower has been granted a permit for the erection of a three-storey brick warehouse on the south side of King street, near Spadina ave., at a cost of \$12,000. Plans for the structure were prepared by Architect J. P. Hynes.

Toronto.—The Massey-Harris Company, Limited, 915 King street west, has been granted a permit for the erection of a four-storey brick warehouse on the S.E. corner of King street and Strachan ave., at cost of \$35,000.

Montreal, Que.—The Redpath Estate has taken out a permit for the erection of a five-storey warehouse to cost \$22,000. Specifications call for stone front, steam heating, fire sprinklers, tar and gravel roof. Plans for the building were prepared by Architects McIntosh & Hyde, 159 St. James street. D. G. Loomis, 161 St. James street, has the general contract.

Montreal, Que.—A permit has been issued for a two-storey warehouse to be erected for Fraser Viger & Co., St. James street, at cost of \$15,000. The plans call for a brick building, with concrete foundations, hardwood floors, hot water heating and tar and gravel roof. Simpson & Peel, 10 St. Phillip street, are the architects and contractors.

Regina, Sask.—The contract for the new warehouse to be built for the Provincial Railways and Telephone Department has been awarded to the Saskatchewan Building Company, of this place, at contract price of \$6,350. The building will be of brick construction, and 30x60 feet in ground dimensions.

Bridges, Wharves and Subways

Toronto.—Tenders will be received by the undersigned up to noon, Aug. 18th, for the construction of a sea wall in Humber Bay. Plans and specifications can be seen and form of tender obtained at the office of the City Engineer, Toronto. Joseph Oliver (Mayor), Chairman, Board of Control.

Ottawa.—The Dominion Government has passed an estimate of \$25,000 for the drafting of new plans for the construction of the Quebec bridge.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding include the following:—Burlington, channel piers, reconstruction, \$50,000; Bianch river, wharfs, \$5,000; Goderich harbor, repairs to piers, etc., \$3,300; Goderich harbor, breakwater, additional amount, \$29,000; Hamilton, harbor improvements, \$15,000; Lakefield, old wharf, reconstruction of superstructure, etc., \$4,050; Collingwood, harbor improvements, \$25,000; Grand Bend, harbor improvements, \$5,000; Victoria Harbor, improvements, \$75,000; Wlarton, breakwater pier, \$6,000; Whitby, harbor improvements, \$5,000.

Ottawa.—The contract for the construction of two breakwaters in Cobourg harbor has been awarded by the Public Works Department to the Randolph Macdonald Company, of Toronto, the contract price being in the neighborhood of \$140,000.

Ottawa.—The Dominion Government has voted the following subsidies for bridge improvements, viz:—To the Canadian Pacific Railway, towards the construction of a bridge over the Saskatchewan River, connecting Strathcona and Edmonton, not exceeding \$100,000; to the Quebec, Montreal and Southern Railway Company, towards the construction of bridges across the Gentilly River, \$15,000; across the Bonaventure River, \$30,000; across the Richelieu River, \$30,000; to the Atlantic Quebec and Western Railway Company, towards the construction of 26 bridges on its line from Passpebiou to Gaspé, \$250,000.

Ottawa.—Messrs. Quinlan & Robertson, of Montreal, have been awarded the contract for the construction of the steel and concrete dam above the Chaudiere Falls, at contract price of \$250,000. The dam will be constructed of 50 concrete piers, 23 feet apart, the whole structure being semi-circular in shape.

Ottawa.—The Dominion Government has voted the following subsidies for bridge improvements, viz:—To the Interprovincial Railway Bridge Company, of New Brunswick, towards the construction of a bridge over the Restigouche River from Campbelltown to Mission Point, \$160,000; to the Vancouver, Westminster and Yukon Railway Company, towards the construction of a bridge across the Burrard Inlet, \$200,000.

Hamilton, Ont.—It is expected that the Government will this fall begin the work of extending the revetment wall from the west end out into the bay, at cost of about \$15,000. This will necessitate a steel pier nearly 500 feet in length, 30 feet wide, with a slip 75 feet wide dividing it from the wharf now being built. City Engineer Barrow will prepare a plan to show how the space behind the wall, when filled in, may be used for park and commercial purposes.

Durham, Ont.—The directors of the Gray and Bruce Cement Company, Limited, have decided to run a wharf, 150 feet in length, out into the bay, at estimated cost of \$4,000. Extensive dredging will also be done.

Montreal, Que.—The Canadian Pacific Railway Company will construct a retaining wall at this place, according to plans prepared by Chief Engineer Bridget. The work, which will cost \$65,000, will be done by C. E. Verdin.

Quebec, Que.—The Dominion Government has voted the sum of \$500,000 for improvements to the local harbor.

McPherson's Cove, N.S.—Tenders will be received by the undersigned up to 4.30 p.m., Aug. 21st, for the construction of a wharf at McPherson's Cove, Cape Breton County, N.S., according to plans and specifications on file at the offices of E. G. Millidge, Resident Engineer, Antigonish, N.S.; C. E. W. Dodwell, Resident Engineer, Halifax, N.S.; the postmaster at Middle Cape, C.B., N.S., and at the Department of Public Works, Ottawa. R. C. Desrochers, Asst.-Secretary, Department of Public Works.

St. John, Nfld.—Plans have been completed for the new wharf to be built by the Government in Rodney slip.

St. John, N.B.—The Dominion Government has voted the sum of \$400,000 for improvements, repairs and dredging in St. John harbor.

Victoria, B.C.—The residents of the southern end of Esquimalt lagoon, and in the vicinity of Albert Head, have asked the local government to build a bridge over the entrance to the lagoon and to continue the roadway in the direction of Albert Head.

Victoria, B.C.—Appropriations, amounting to \$168,000, have been voted by the Dominion Government for river and harbor improvements in British Columbia, viz: \$36,500 for improvements at Golden on the Arrowhead Lakes and on the Columbia River; \$7,000 for improvements on the Skeena River; \$8,000 for removal of sand bar on Thompson River; \$50,000 for dredging Victoria harbor; \$10,000 for the improvement of Williams Head Quarantine; \$5,000 for opening a boat channel at Woods and Long Lakes, Okanagan district, etc.

St. Boniface, Man.—The Public Works Committee of the St. Boniface Council has decided to have a 30-ft. concrete culvert constructed over the Seine River on Provencier avenue, as per plans submitted by City Engineer Blair, whose tender for the construction work on the culvert is \$7,000. C. N. Noble, of Winnipeg, will supply the reinforcement bars for the structure.

Brandon, Man.—The City Council is contemplating the erection of a \$25,000 bridge at First street. Debentures for this undertaking will, in all probability, be issued in the near future.

Indian Head, Sask.—The Town Council has decided to proceed with the construction of a large earth dam at the Squirrel Hills reservoir.

Edmonton, Alta.—General Manager Morse, of the Grand Trunk Pacific Railway, has awarded the contract for the construction of the masonry for the bridge across the Pembina River, 60 miles from Edmonton, to Messrs. John Gunn & Sons, Edmonton, Alta. It is expected that work will be completed in three months' time.

Montreal.—It is stated that the Canadian Pacific Railway Company, as a result of the destruction by fire of the bridge at Dumfries, will replace their wooden bridges in the near future with structures of steel and cement.

Electrical Construction

Wingham, Ont.—At a meeting of the town council it was decided to submit a by-law to the ratepayers for the purpose of authorizing the expenditure of \$7,000 for the improvements to the local electric lighting plant. Plans provide for new water-wheels, flume, dynamo, etc.

Merrittton, Ont.—The town council of this place has decided to reconstruct the local electric light plant. K. L. Aitken, E.E., of Toronto, has been appointed consulting engineer.

Lethbridge, Alta.—A by-law will be submitted to the ratepayers of this place for the purpose of authorizing the purchase of the Electric Lighting Company's plant for about \$47,000. Extension and removal of plant will cost about \$100,000. Under the terms submitted the city will take possession Sept. 1st.

Waterworks, Sewers and Canals

Toronto.—Mr. Allan Hazen, of New York, has been commissioned to prepare plans and specifications for the filtration plant to be installed by the city at cost of \$750,000.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding include:—Blanche River, wharves, \$5,000; Byng Inlet, improvements, \$10,000; Grand Bend, harbor improvements, \$5,000; Little Current, improvement of Northern channel in Georgian Bay, \$50,000; Menford, harbor improvements, \$13,700; New Lisicard, harbor improvements, \$5,000; Parry Sound, extension of wharf, \$5,000; Port Elgin, extension of pier, \$5,000; Port Stanley, harbor improvements, additional, \$20,000; Tiffin, harbor improvements, \$50,000; South Nation River, improvements, \$10,000; Southampton, extension of town dock, \$15,000; St. Lawrence River, improvement of Canadian channel between Kingston and Brockville, \$15,000.

Beamsville, Ont.—Debentures are being floated for the following work at this place:—Local improvements, \$11,000; water works, \$5,000. H. V. Robins, Village Clerk.

Port William, Ont.—A by-law will be submitted to the local ratepayers for the purpose of authorizing the expenditure of \$95,000 for improvements and extensions to the water-works system.

Hamilton, Ont.—A by-law will, in all probability, be submitted to the local ratepayers of Hamilton for the purpose of authorizing the expenditure of \$88,000 for extensions to the water-works system.

Lindsay, Ont.—The Town Council has given the Water Commissioners power to issue \$10,000 debentures for the purpose of purchasing a filtration plant. It is understood that this plant is to be installed by J. Howard Bridge, of Philadelphia.

Port William, Ont.—A by-law will be submitted to the ratepayers for the purpose of authorizing the expenditure of \$95,000 for improvements and extensions to the local water-works system.

London, Ont.—At a public meeting a resolution was passed favoring the immediate submission of a by-law authorizing the installation of a high pressure water system, to cost \$200,000, at the fork of the river.

Montreal, Que.—At a meeting of the Finance Committee it was decided to vote the sum of \$20,000 for new water pipes.

Port Hastings, N.S.—Tenders will be received by the undersigned up to 4 p.m., Aug. 25th, for the construction of a wharf, warehouse and roadway at Port Hastings, Inverness County, N.S., according to plans and specifications on file at offices of E. G. Millidge, Resident Engineer, Antigonish, N.S.; C. E. W. Dodwell, Resident Engineer, Halifax, N.S.; the postmaster at Port Hastings, N.S., and at the Department of Public Works, Ottawa. R. C. Desrochers, Asst.-Secretary, Department of Public Works, Ottawa, Ont.

New Westminster, B.C.—Tenders will be received by the undersigned up to 2 p.m., Aug. 18th, from contractors of this city, for certain trapping and venting of the sewers of the Royal Columbian Hospital. W. H. Keary, Secretary of Hospital Board.

Winnipeg, Man.—The City Council, Winnipeg, has passed a by-law providing for the levy of \$32,213.47 each year for 30 years to meet the cost of the proposed high pressure plant for this city.

Arman, Man.—A by-law will be submitted to the ratepayers on August 18th for the purpose of authorizing the expenditure of \$25,000 for the constructing, repairing, completing and extending the waterworks system.

Regina, Sask.—Architects Storey & Von Egmond have awarded to the Municipal Construction Company, a local concern, the contract for the construction of the sewerage and septic tank at the Royal North-West Mounted Police Barracks.

Saskatoon, Sask.—Plans for the proposed sedimentation basin, to be installed in connection with the city waterworks, have been laid before the city council by Resident Engineer George H. Fowler.

Red Deer, Alta.—The by-law, authorizing the expenditure of \$4,500 for extension to waterworks system south on Goetz avenue, and west on Victoria avenue, has been passed.

Calgary, Alta.—At a special meeting of the Waterworks Committee the tender of Gunn & Sons, of Winnipeg, for work in connection with the waterworks system was approved. Contract price, \$156,195.

Public Buildings

Toronto.—The supplementary estimates placed on the table of the House by Finance Minister Fielding, include the following Toronto items:—Addition to Meteorological Observatory, \$40,000; post office, additions to building on rear portion, and on lot at east end, alterations, etc., \$25,000; post office annex for customs parcels purpose, \$12,000; customs examining warehouse, improvements and repairs, \$4,000; customs house, repairs, \$4,000; drill hall, additional accommodation for new corps and armories, additional revote, \$5,000.

West Toronto, Ont.—Architects Ellis & Connery, Manning Chambers, Toronto, have completed plans for the new Carnegie Library to be erected at West Toronto. The building will be one-storey high, 70x65 feet, of brick and stone construction, stone foundation, felt and gravel roofing, galvanized iron cornice, hardwood interior finish, gas and electric lighting, open plumbing, hard plaster and staff work, steam heating. It will cost \$18,000.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding, include the following Ontario items:—Belleville, armory, \$13,500; Hamilton, post office, custom house, etc., alterations and additions to building, \$12,000; Hamilton, drill hall, \$60,000; Glencoe, public building, additional amount, \$12,000; Guelph, armory, additional amount, \$64,000; Kingston, Ontario Military College, new quarters, alterations and additions to building, \$45,000; Kingston, post office, alterations and additions to building, \$5,000; Kingston, military buildings, repairs, etc., \$8,000; Peterboro, armory, additional amount, \$75,000.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding, include the following items for Saskatchewan, viz:—Estevan, public building, \$11,000; Indian Head, forest nursery station, \$5,000; Moose Jaw, public buildings, \$25,000; armory, \$10,000; Maple Creek, public building, \$5,000; Prince Albert, public buildings, \$5,000; Saskatchewan penitentiary, \$40,000; Saskatoon, public buildings, \$30,000.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding, include the following items for British Columbia:—Cranbrook, public building, \$10,000; Cumberland, public building, \$25,000; Chilliwack, public building, \$5,000; Duncan, public building, \$5,000; Grand Forks, public building, \$5,000; Greenwood, public building, \$5,000; Levelstoke, public building, \$10,000; Victoria, post office, alterations and additions, \$13,500; Victoria, immigration building, additional amount, \$10,000; Vernon, public building, additional amount, \$12,500.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding, include the following items for Alberta:—Calgary, Dominion Lands Office, \$20,000; Edmonton, public buildings, \$75,000; Edmonton, Dominion Lands Office, \$10,000; Lethbridge, armory, \$10,000; Lethbridge, custom house and Dominion Lands Office, \$6,000; Strathcona, drill hall and armory, \$10,000; Strathcona, public building, \$5,000; Wetaskiwin, public building, \$5,000.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding, include the following Ontario items:—Goderich, public building, addition, \$5,000; Harrison, public building, \$5,000; Kemptonville, public building, \$5,000; Listowel, public building, \$5,000; Mount Forest, public building, \$5,000; Mitchell, public building, \$5,000; Owen Sound, public building, additional, \$10,000; Ottawa, departmental buildings, \$72,000; Ottawa, Government Printing Bureau, storage building, \$40,000; Port Arthur, armory, \$10,000; Renfrew, public building, additional, \$10,000; Sudbury, public building, \$15,000; Uxbridge, public building, \$8,000; Walkerville, public building, \$8,000; Waterloo, public building, \$8,000.

Ohswegen, Ont.—The Six Nations' Indian Council has voted \$2,200 towards the erection of a new \$3,000 fair building at the local fair grounds, to replace the one recently destroyed by fire. The new building will be of cement, with a lightning proof metallic roof.

Welland, Ont.—Tenders will be received by the undersigned up to 4 p.m., Aug. 24th, for the construction of a building (customs house and post office) at Welland, Ont. Plans and specifications can be seen on application to the postmaster at Welland, or the Department of Public Works, Ottawa.

Kingston, Ont.—At a meeting of the Property Committee, the City Engineer was instructed to have plans prepared for the reconstruction of the dome and general repairs to the city hall, which was recently damaged by fire to the extent of \$15,000.

Ingersoll, Ont.—The Town Council has recommended the acceptance of Andrew Carnegie's offer to erect a \$10,000 library building at this place, and that the committee be authorized to negotiate for a suitable site.

Niagara Falls, Ont.—The architect of the Public Works Department has been instructed to prepare plans for a new \$20,000 armory building to be erected in the near future.

Stratford, Ont.—The Board of Park Commissioners will submit a by-law to the ratepayers authorizing the issue of debentures for \$15,000 for park improvements. The work will include the erection of a boathouse, bath-house, and the construction of a new dam.

Hamilton, Ont.—W. J. Walsh has been awarded the contract for installing the heating apparatus in the local armory.

Simcoe, Ont.—The supplementary estimates introduced in the House of Commons, provide for an additional grant of \$15,000 for the public building at this place.

Montreal, Que.—J. Laurier, has been awarded the contract for placing a new

copper roof on the city hall at contract price of \$12,646.

Montreal, Que.—The Otis Fensom Elevator Company has been awarded the contract for installing a new elevator and repairing the old elevator at the city hall. Contract price of \$11,957.

Montreal, Que.—Tenders for the new bath-house to be erected on Marianne street, for which the Finance Committee recently voted \$20,000, have been opened. The lowest bid was \$27,900. The Hygiene Committee has decided to ask the Finance Committee for a further appropriation of \$5,000 in order to permit of the work going ahead.

Joliette, Que.—Tenders will be received by the undersigned up to 4 p.m., Aug. 18th, for the construction of an armory at Joliette, Que. Plans and specifications can be seen and form of tender obtained at this Department, and on application to the caretaker of the post office, Joliette, Que. R. C. Desrochers, Asst.-Secretary, Department of Public Works, Ottawa, Ont.

Hullfax, N.S.—The M. E. Keefe Construction Company has been awarded the contract for remodelling the post office building. Contract calls for completion of the contract in twenty-two months. The work includes the erection of a new main entrance on Hollis street and the reconstruction and fireproofing of the entire building throughout. An elevator will also be installed.

Arcola, Sask.—The contract for the new court house to be erected at this place has been awarded to Thos. Grayson, of Moosomin, Sask., at contract price of \$27,045.

Regina, Sask.—Peter Lyall & Sons, Montreal, have been awarded the contract for the construction of the new Legislative and Executive Buildings at this place. Architects, E. & W. S. Maxwell, Montreal. The buildings will be of brick and stone construction, and will cost approximately \$1,500,000.

Saskatoon, Sask.—Permission has been granted to the Fair management for the erection of a new stable, an extension to the grand stand and fencing of track.

Brandon, Man.—Plans have been completed for the new court house to be erected here at the corner of Princess avenue and 11th street. It will be a two-storey and basement structure, 110x120 feet, of reinforced concrete fireproof construction, stone basement and brick exterior walls. The building will cost \$100,000. Tenders close Aug. 14th.

St. Pierre, Man.—Tenders for the erection of a court house at St. Pierre, Man., were opened on August 10th. Paul Chevard, Sec.-Treas. of the Rural Municipality of de Salaberry, St. Pierre, can be addressed.

Edmonton, Alta.—The contract for excavation, foundations and stone work for the new Edmonton court house has been awarded to Alderman E. J. Manson, at contract price of \$165,000. Contracts for heating, plumbing, plastering and carpentering will be later on. The basement storey will be faced with granite, and Calgary sandstone will be used for the elevations.

Business Buildings

Toronto.—Mr. Blackley, of the realty firm of Lynden & Blackley, Room 4, 36 Toronto street, is interested in the syndicate that will erect the Commercial Building, a eleven-storey structure on Front street, near Bay, according to plans prepared by Langley & Howland. The building will be of fireproof construction, with brick and stone exterior walls. It will have the floors, hard plastered walls, passenger and freight elevators, combination lighting, open plumbing, steam heating, etc. Estimated cost, \$210,000.

Toronto.—H. Healey, 37 Prince Arthur avenue, has been granted a permit for three attached brick stores, with apartments above, at 569-73 Bloor street, near Bathurst street. Cost, \$13,000. Architect, J. Thompson. Builder, owner.

Toronto.—The Bell Telephone Company will erect a six-storey exchange building on the north side of Adelaide street, west of Bay street. The structure will be of fireproof construction with brick exterior walls. Architect Carmichael, of Montreal, is the designer.

Toronto.—The Trusts & Guarantee Company, 45 King street west, have been granted a permit for the erection of a

one-storey brick and stone addition to their office building to cost \$7,000. J. B. Baker is the architect.

Toronto.—G. C. Craig, 6 Fernough avenue, has been granted a permit for the erection of four attached two-and-a-half storey brick stores and dwellings on the S.W. corner of Lucas street and Sorauen avenue, at cost of \$10,000.

Toronto.—The Imperial Trust Company, 15 Richmond street, west, has been granted a permit for the erection of a one-storey brick addition and alterations to offices at 15 Richmond St. west at cost of \$25,000. Architects, Chadwick & Beckett; builders, Aldridge & Son.

Ottawa.—Senator Cox has purchased two sites on Sparks street, with the object of erecting a building for the Canada Life Assurance Company.

Ottawa.—The Toronto General Trusts has been granted a permit for alterations to building on Sparks street, at cost of \$7,000.

Fort William, Ont.—The following buildings were recently destroyed by fire: John King's departmental store, Kirkup & Winkle's store and Strachan's jewelry store, and the feed warehouse owned by Alf Inman and occupied by Oakley & Fraser. The total loss will be over \$100,000, fairly well covered by insurance.

Gait, Ont.—Tenders will be received by Herbert Fowle, Ainslie street, up to Aug. 20th, for the erection of a building of brick construction.

Winnipeg, Man.—The Board of Control has awarded the contract for the proposed addition to be erected to the Carnegie Library to J. H. Tromblay, at a contract price of \$27,951. The Office Specialty Mfg. Company was awarded the contract for supplying the steel book stacks at \$5,900.

Vancouver, B.C.—E. Cook, contractor, will erect a \$60,000 business block on the west side of Granville street, between Lulvie and Drake. The building will be of brick and steel construction, six storeys in height, with frontage of 50 feet.

Vancouver, B.C.—A. C. Alroyd has been granted a permit to erect a brick business building on Hastings street at a cost of \$10,000. He has also been granted a permit for a two-storey office building to be built on the second lot west of the Province Office. Estimated cost \$10,000.

Vancouver, B.C.—The Vancouver Construction Company has been granted a permit for the erection of a three-storey concrete block building on the west side of Westminster avenue, between Prior street and the bridge, at cost of \$25,000.

Vancouver, B.C.—Architect Whiteway, Vancouver, has taken out a permit for a \$16,000 block to be erected on the east side of Seymour street, between Pender and Bunsuir, for G. W. Cripps.

Grand Forks, B.C.—Two blocks and a half, including three hotels, telephone exchange, C. P. Telegraph office, Dominion Express offices and Eastern Townships Bank have been destroyed by fire. Loss, approximately \$300,000, and probably 25 per cent. insurance.

Nelson, B.C.—Messrs. Green Bros. and Burden will erect a two-storey, 40x40 ft. of brick construction, office building, on Ward street.

Calgary, Alta.—Architects Dowler & Michie have prepared plans for a business block to be erected for Messrs. J. C. Lenon and G. C. Robinson. The building will be three stories high, of brick construction, with stone foundation, galvanized roof, interior wood finish, enamelled plumbing, steam heated and electric lighted, ornamental iron, fire escapes, sheet metal work, metal ceiling, plate glass and prismatic glass. The structure will cost \$15,000.

Edmonton, Alta.—McDougal & Secord have let the contract for their new business building to McSparran & Co. The building will be of brick construction with concrete foundation, and will cost \$40,000. It will be three stories high.

Banks

Grand Forks, B.C.—The Royal Bank of Canada is contemplating the erection of a substantial block at this place, the ground floor to be used for banking purposes, with offices above.

Grand Forks, B.C.—The Eastern Townships Bank will erect a three-storey

bank building on the corner of First and Bridge streets. The structure will be of stone and brick, and will be three stories in height. The top story will be used for lodge purposes.

Medicine Hat, Alta.—It is understood that the Merchants Bank of Canada has completed arrangements for the purchase of fifty feet on Main street, just east of the new post office, on which they will erect a new bank building.

Railway Construction

Toronto.—The Dominion Engineering Company, Toronto, of which Randolph Macdonald is president, has been awarded the contract for the construction of the Central Railway from Montreal to Midland.

Ottawa.—The Dominion Government has passed an estimate of \$30,000,000 for the construction of the National Transcontinental Railway.

Ottawa.—The following railway subsidies for British Columbia have been submitted to Parliament, viz.: Vancouver Island and Eastern Railway Company, from Campbell River on proposed extension of Esquimalt & Nanaimo Railway, towards Fort George on the line of the G.T.P., 100 miles; Vancouver, Westminster and Yukon Railway Company, from Vancouver towards Fort George, on the G.T.P. Railway, 100 miles; Esquimalt & Nanaimo Railway Company, from French Creek to Campbell River, 117 miles; a line of railways around Death Rapids, Columbia River, 45 miles; a line of railway from Nicola to Ponticton, 100 miles a line of railway from Carmi to Ponticton, 50 miles; Vancouver & Lulu Island Railway, from Eburne to New Westminster, 9 3/4 miles; Kettle River Valley Railway Company, from near Grand Forks up the North Fork Kettle River, 50 miles. The total amount of subsidies is \$4,456,000.

Ottawa.—The National Transcontinental Commission will receive tenders up to Aug. 20th for constructing the following sections of railway: From a point near Weymontachene, Que., 196.38 miles west of the north abutment of Quebec bridge, westerly for a distance of about 107 miles; from a point about 107 miles west of Weymontachene westerly to the end of the G.T.P. Railway Company's contract, a distance of about 114.97 miles; from the Western end of Faquier Brothers' Abitibi contract in Ontario, in a westerly direction of about 104 miles, from a point about 60 miles west of easterly boundary of district E., in Ont., easterly to end of Faquier Brothers' contract, a distance of about 100 miles, work to be completed Dec. 31, 1910.

Ottawa, Ont.—The National Transcontinental Commission will receive tenders up to Aug. 20th, for constructing the following sections of railways: From western end of Faquier Brothers' contract north of Lake Nipigon, westerly to a point at or near Dog Lake, a distance of about 126 miles; from Dog Lake to a point at or about mile 2.6 west of Peninsula Crossing, a distance of about 33.75 miles by northerly route, and 24.13 miles by southerly route, the route to be chosen by the Commissioners. Work to be completed by Sept. 1, 1910.

Ottawa.—Over \$13,000,000 is the total of the railway subsidies provided for in the report submitted to Parliament. In all 70 companies are to be assisted, of which 26 are re-votes, and 44 are new subsidies. Among the new subsidies for Ontario are the following: Nipissing Central Railway Company, for a line from New Liskeard to a point in the Township of Guigues, P.Q., 13 miles; St. Mary and Western Ontario Railway Company, from Woodstock to Exeter, 45 miles; Algoma Central and Hudson Railway Company, from Michipicoten Harbor towards the National Transcontinental Railway, 50 miles; Grand Trunk Pacific Railway Company, from line of National Transcontinental Railway to Port Arthur and Fort William, 220 miles; Lac Seul, Rat Portage and Keewatin Railway Company, from a point at Kenora to line of National Transcontinental Railway, 18 miles; Burk's Falls and French River Railway Company, from Burk's Falls to French River, 55 miles; Thessalon and Northern Railway Company, from Thessalon northerly, 4 miles; Canadian Northern Ontario Railway Company, from Sudbury June-

tion to Hutton Mines, 30 miles, and from Hawkesbury to Ottawa, 60 miles.

Ottawa, Ont.—The Ottawa Electric Railway is arranging for the construction of an extra car barn, immediately adjoining the present car barns on Albert St.

Ottawa.—All papers in connection with the Grand Trunk station and hotel to be erected here have been signed, and it is expected that work on the station will be commenced at once.

Brantford, Ont.—The Brantford & Hamilton Radial Company will erect a new station building at this place. Mr. Knox is Vice-President of the company.

North Bay, Ont.—It is reported that the G.T.R. and T. & N. O. railroads will erect a joint station at this place. It is expected that work on the new structure will be started in the near future.

Welland, Ont.—The contract for the erection of a one-story, 26 by 31 ft. addition to the Y.M.C.A. building at this place, has been awarded to P. S. Peacock.

Cobocok, Ont.—The Grand Trunk station and freight shed at this place have been totally destroyed by fire.

Portage La Prairie, Man.—The Canadian Pacific Railway has decided to expend \$29,000 on improvements here this year. The depot and freight sheds will be remodelled, and a storage tank of 100,000 gallons capacity will be erected.

Clubs and Societies

Toronto.—The Canadian Order of Foresters have arranged to purchase a site, 100 x 70 ft., on the north side of College St., on which it proposes to erect a four-story hall, with assembly rooms, lodge rooms, etc., at cost of \$60,000.

Toronto.—The Young Women's Christian Guild have taken out a permit for the erection of a two-story brick bath house and gymnasium on the south side of McGill St., near Yonge St., at a cost of \$10,000. G. Miller & Company are the architects.

Toronto.—Tenders have been received for the new Masonic Temple to be erected on Yonge St., north of Bloor. It is estimated that the building will cost \$65,000.

London, Ont.—The Conservative Club of this place is contemplating the erection of a large club house. Mr. A. T. McMahan can be addressed relative to the project.

Chatham, Ont.—Mrs. Robert Gray is at the head of a project to erect a Y.M.C.A. building at this place. The City Council has given its permission for the structure to be erected in Thurston Park.

Fraserville, Que.—Architects Ouellet & Levesque, 115 St. John St., Quebec, have prepared plans for a two-story club house to be erected here for the Cercle de Fraserville. The building will be of brick construction, with stone foundation, galvanized iron roof, plaster interior finish, hot water heating, and open plumbing. It will cost approximately \$12,000.

Winnipeg, Man.—Tenders were received up to noon, Aug. 11th, for the various trades required in the erection of a reinforced concrete building for the Men's Own, Plans and specifications were prepared by John D. Atchison, architect, Bldg. of Toronto building.

Winnipeg, Man.—The Independent Order of Odd Fellows have decided to erect a new temple on Kennedy St., near Portage Ave. The building will be 66 by 120 ft., five storeys in height, and will cost in the neighborhood of \$100,000. John R. Allward is chairman of the Building Committee.

Asylums and Hospitals

Ottawa.—Architects Weeks & Keefer have completed the plans for the new hospital to be erected in Bayswater for the Anti-Tuberculosis Society of Ottawa. The structure will be 132 ft. in length, 40 ft. in height, and will cost about \$32,000.

London, Ont.—At a meeting of the hospital trustees, the sum of \$7,600 was received from the Meredith family, to be used in transforming the old City Hospital building into a maternity ward.

Kingston, Ont.—Wm. McCartney has been awarded the contract for the masonry and carpentry in connection with the new Orphanage to be built at St. Mary's of the Lake, for the Sisters of

Charity. The building will cost about \$50,000. Architect H. P. Smith prepared the plans.

Vancouver, B.C.—A permit has been issued to McDonau, Wilson & Snider for extensions to the General Hospital. The entire cost of the work is \$95,000, of which \$80,000 covers the new wing of the main building, and \$15,000 for the enlargement of the Nurse's Home.

Vancouver, B.C.—The trustees of the Vancouver Hospital propose to erect a new wing to their building at a cost of \$80,000.

New Westminster, B.C.—Tenders will be received by the undersigned up to 2 p.m., Aug. 13th, from the contractors of this city, for the erection and completion of three isolation buildings for the Board of Managers of the Royal Columbian Hospital. W. H. Keary, Secretary of Hospital Board.

Edmonton, Alta.—Plans are being prepared for the new Provincial Asylum for the Insane, to be erected on a site recently purchased by the Government near the Town of Ponoka. The structure will be three storeys high, and consist of a main building and three wings extending from the rear. The building will have a frontage of 230 ft., and an approximate depth of 135 ft. It will be of brick construction and provided with all sanitary appliances and modern improvements. J. W. H. Cushing, Minister of Public Works, Edmonton, can be addressed.

Saskatoon, Sask.—The J. McDiarmid Company, Winnipeg, has been awarded the contract for the new Municipal Hospital building to be erected at this place. Contract price, \$47,490.

Churches

West Toronto, Ont.—The Jewish residents of this place will, in the near future, erect a synagogue at the corner of Maria and Elizabeth Sts.

North Toronto.—The congregation of the Eglinton Presbyterian Church has purchased a site at the corner of Yonge and Hawthorne Sts., having a ground area of 100 x 175 ft., for the purpose of erecting a new church building.

North Toronto.—The Methodist congregation has purchased a lot at the corner of Summerhill Ave. and Yonge St., for the purpose of erecting a new church building.

Ottawa.—A permit has been issued for the foundation work of the new Church of the Sacred Heart to be erected on Laurier Ave. East. The cost of the foundation to the ground floor is \$25,000. The building will be of solid stone, and will have frontage of 57 ft. and depth of 150 ft. Plans for the structure were prepared by architect Gauthier & Hault, of Montreal. Joseph Bourque, Hull, Que., has the contract for the work.

Hamilton, Ont.—The congregation of St. James' Presbyterian Church has taken out a permit for the erection of a new church building to cost \$13,000, at the corner of Locke and Herkimer St.

Hamilton, Ont.—The Board of Trustees of the Ryerson Methodist congregation has decided to erect a \$7,000 church building at the corner of Main St. and Springer Ave. A committee was authorized to have plans prepared at once.

Owen Sound, Ont.—Tenders were opened Aug. 6th for certain alterations and additions to the chancel and vestry of St. George's Church. Plans and specifications were prepared by architects Forster and Clark.

Brantford, Ont.—St. Matthews Evangelical Lutheran congregation has purchased a site on the corner of King and Nelson Sts., on which they will erect a church building at an estimated cost of about \$6,000.

Paris, Ont.—At a meeting of the building Committee of the Baptist Church, the contract for the constructing of a new gallery, enlarging the entrances, and making other improvements, was let to Shultz Bros., of Brantford.

Bedford Park, Ont.—The congregation of the Bedford Park Baptist Mission will erect a new church building in the near future. Rev. P. A. McEwen is pastor.

Montreal, Que.—St. George's Church Trustees have taken out a permit for a \$5,000 church to be built from plans prepared by Architect T. R. Gardiner, 812 New York Life Building.

St. Anselme, Que.—Olivier Michaud,

Levis, Que., has been awarded the general contract for a chapel to be erected in the cemetery at St. Anselme, for the Roman Catholic congregation. The structure will be two stories in height, 16 by 25 ft., of brick construction. Ouellet & Levesque, 115 St. John St., Quebec, prepared the plans for the structure.

Halifax, N.S.—The Catholics in the west end are negotiating for six lots in the Bishop's chapel property, three lots on Colborne road and three on Edward St. on which they propose to erect a new brick and stone church building.

Varmouth, N.S.—Architect G. H. Jost, of Halifax, has prepared plans for a 50 ft. addition to be erected to St. Andrews Catholic Church at this place. It will be of brick construction, stone foundation, shingle roofing, pine interior finish, plumbing, electric lighting, and hot water heating. The improvement will cost \$20,000.

Winnipeg, Man.—The congregation of the Church of Christ is contemplating the erection of a new church building.

Vancouver, B.C.—The church of the Sacred Heart has taken out a permit for the erection of a frame hall on Fender St. East, at a cost of \$3,875.

Vancouver, B.C.—St. Michael's congregation, corner Ninth Ave. and Westminster road, has been granted a permit for enlarging their church building at estimated cost of \$5,000.

Vancouver, B.C.—At a meeting of the trustees of Mount Pleasant Presbyterian congregation plans were accepted for the new church building to be erected on the corner of Tenth Ave. and Quebec St. at cost of between \$35,000 and \$40,000.

New Westminster, B.C.—The trustees of the Queen's Ave. Methodist church have decided to erect three galleries in the interior of the church, to afford increased accommodation.

Residences and Flats

Toronto.—J. E. Henry, 117 Yonge St., has been granted a permit for the erection of a 3-storey brick apartment house, to cost \$20,000, at 579 Jarvis St. Architect, J. A. McKenzie.

Toronto.—Messrs. H. & J. Hutson, Aberdeen Chambers, have been granted a permit for the erection of three attached two-story and basement brick apartment houses on the north west corner of Grange and Beverley Sts., at cost of \$20,000. Architect J. H. Stanford.

Toronto.—E. C. Tuckett, Estate, 337 Western Ave., West Toronto, has taken out a permit for the erection of four pairs of two-storey brick dwellings on the west side of Dundas St., near Chelsea Ave., at a cost of \$16,000. Architects Designing & Draughting Co., 23 Jordan St. Builder, R. Thompson, 1 Conduit St.

Toronto.—C. R. S. Dinnick, builder and contractor, has acquired a large block of land between Albany Ave. and Howland Ave., upon which he will build a number of modern dwellings.

Toronto.—Messrs. Cameron Stewart & Co., 955 Dundas St., have been granted a permit for the erection of four detached two-and-a-half storey brick and stone dwellings on the east side of Alhambra Ave., near Botstead Ave., at cost of \$12,000. The owners will do the construction work.

Toronto.—C. R. S. Dinnick, 43 Victoria St., has been granted a permit for the erection of a pair and three attached two and a half storey brick dwellings on the south side of Davenport Road, near Avenue Road, at cost of \$10,000.

Toronto.—Architect J. H. Galloway has prepared plans for a two and a half storey, 36 x 32 ft., residence, to be erected on Russell Hill Drive, for Mr. Sinclair, at a cost of \$3,500. It will be of brick and stone construction with slate roof, hardwood interior finish, electric lighting, mantels, open plumbing, and hot water heating.

Toronto.—A permit has been granted A. Teagle, 55 Boswell Ave., for the erection of four pairs of two-storey semi-detached brick dwellings on the south side of Marlborough Ave. near Avenue Road, to cost \$16,000. Architects, Ellis & Connery. Builder, Teagle & Son.

Toronto.—A. B. Coleman, contractor, 191 Dowling Ave. has the contract for an apartment house to be erected on Nanton Crescent, at a cost of \$50,000. The building will be a two-storey struc-

ture, 95 x 115 ft., of brick construction, with hardwood interior finish, nickel plumbing, combination lighting and steam heating.

Toronto.—Wilkin & Co., 70 Wellesley St., has been granted a permit for the erection of four pairs of two and one-half storey semi-detached brick dwellings on the S. E. corner of Huron and Dupont Sts., at cost of \$20,000. Builders, owners.

London, Ont.—John Hayman has purchased the property at the corner of Wellington St. and Queen's Ave. on which he will erect a modern apartment house, to cost approximately \$50,000. The site is 84 by 142 ft.

St. Catharines, Ont.—Architect A. E. Nicholson has opened tenders for an addition to and alterations in the Welland Ave. Methodist parsonage. The work includes electric lighting, new plumbing, steam heating, plate and art glass work.

Peterboro, Ont.—A permit has been granted to James Curran for the erection of a frame dwelling on Lake St., to cost \$9,000.

Montreal, Que.—John Allan, 300 Atwater Ave., has the contract for the erection of a \$17,000 stone and brick dwelling for Mrs. Alex. Woods, 49 Park Ave. Saxe & Archibald, 59 Beaver Hall Hill, are the architects.

Montreal, Que.—G. N. Faust, 1550 St. Catherine St. East, has been granted a permit for the erection of three houses of three dwellings each, at cost of \$18,000.

Montreal, Que.—T. O. Turgeon, 55 St. Francois Xavier St., has been granted a permit for the erection of a dwelling to cost \$5,000.

Montreal, Que.—John Williamson, 810 Sherbrooke St. West, has been granted a permit for the erection of a pair of semi-detached dwellings, to cost \$17,000. The building will have cut stone front. Architects Saxe & Archibald, 59 Beaver Hall Hill, prepared the plans.

Quebec, Que.—Honoré Manguy, St. Foye, Que., has been awarded the contract for an \$8,000 house to be erected here on Maple Ave., for L. F. Burroughs, 60 Maple Ave. The building will be three storeys in height, 25 by 75 ft., of brick construction, and is to be completed by April 1, 1909. Ouellet & Levesque, 115 St. John St., are the architects.

Halifax, N.S.—Architect G. H. Jost has awarded the contract for a \$6,000 frame dwelling to be erected for A. W. Rodden to A. J. Horne. It will have shingle roof, and pine interior finish, modern plumbing, electric light and hot water heating. **Winnipeg, Man.**—Mrs. F. J. Reed, Home St., has been granted a permit for the erection of four dwellings, at cost of \$10,000.

Winnipeg, Man.—A. Osterhout, Athol Ave., has been granted a permit for the erection of three dwellings, at cost of \$9,000.

Winnipeg, Man.—A permit has been granted to Mrs. F. E. Stephen, for the erection of a \$6,000 dwelling on Yale Ave.

Vancouver, B.C.—Parks & McDonald will erect an apartment house opposite the Second Hotel, at an estimated cost of \$13,900. A permit for the structure has been issued.

Regina, Sask.—McGregor & Black have been awarded the contract for a dwelling to be erected for Mrs. Simpson, at a cost of \$3,500. Storey & Von Edmond are the architects.

Calgary, Alta.—Architects Dowler & Michie have awarded to H. Lentz the general contract for a residence to be erected on 7th street west, 12th avenue, for Mr. J. H. Stanley. The building will be of frame construction, two stories in height, and 35 by 26 feet in ground dimensions.

Calgary, Alta.—Architects Dowler & Michie have completed plans for a bungalow to be erected on 4th St. W., for R. S. Whaley of the Great West Life Insurance Company. The building will be of frame construction concrete foundation, shingle roof, interior wood finish, enamelled plumbing, hot air heating, electric light, mantels. It will cost \$3,100.

Calgary, Alta.—Architects Dowler & Michie have prepared plans for a residence to be built on 13th Ave. W., for C. P. McQueen, Great West Life Insurance Company. The building will be two storeys in height, of frame and stucco construction, stone foundation, shingle roof, wood interior finish, enamelled

plumbing, hot water heating and electric light, mantels, fireproofing, metallic lath, shingle stain, plate glass and art glass. It will cost \$4,500.

Hotels

Toronto.—Nurse's Hotel at the Humber has been damaged by fire to the extent of about \$5,000, covered by insurance. Mrs. E. V. Meyer, the proprietress, will rebuild at once.

Ottawa.—Architects Ross & McFarlane, of Montreal, who have been employed by the Grand Trunk Pacific Railway to provide plans and specifications for the new Ottawa terminal and Chateau Laurier, have announced that it will be at least three months before the detail working plans will be ready for the contractors' tenders.

Ottawa.—The Belmont House has been damaged by fire to the extent of about \$6,000.

Winchester, Ont.—The contract for the concrete foundation of the new hotel to be erected here, has been awarded to Messrs. H. W. Empey and Jos. Greer. The building will be 3 stories high, 55 x 40 ft., with a wing 36 ft. x 38 ft. It will be of red brick, and will cost \$12,000.

Montreal, Que.—The hotel Roberval at Roberval on Lake St. John, was completely destroyed by fire, entailing a loss of over \$100,000.

Vancouver, B.C.—A permit has been granted to A. Calori for the erection of a hotel building at the corner of Alexander and Powell Sts. The building will be six stories high, of reinforced concrete, and will cost \$30,000.

Calgary, Alta.—Architects Dowler & Michie will receive tenders until Aug. 25th, for a hotel building to be erected on East Eighth Ave. for L. H. Doll. It will be three storeys in height, of brick veneer construction, with concrete foundation, composition roof, fire interior finish, enamel plumbing, steam heating, and electric lighting, tile work, mantels, fire escapes, plate glass, art glass and prismatic glass.

Regina, Sask.—The Waverley Hotel on Broad St., has been badly damaged by fire.

Fire Stations and Jails

Montreal, Que.—At a meeting of the Finance Committee the sum of \$56,550 was voted for the rebuilding of No. 20 fire station.

Winnipeg, Man.—Tenders were recently received for the reconstruction of No. 2 fire hall at the corner of Smith and York Sts. The work will include the erection of an addition, and will cost \$15,000.

Vancouver, B.C.—The City Council has authorized the issuing of debentures to the extent of \$22,000 for the erection of a jail building south of False Creek, near Cambie St. bridge. Bonds for an addition to present jail building on Cordova St. to cost \$5,500, were also approved.

New Westminster, B.C.—The Chairman of the Police Committee has had plans prepared for a combination jail and police court building, to be erected here shortly. The building will be 57 x 30 ft. in ground dimensions, of masonry construction, and will cost \$5,000. It will contain thirteen cells, and will be provided with a heating plant.

Ladysmith, B.C.—The Provincial jail at this place has been destroyed by fire. The matter of securing plans for new buildings will be taken up at once.

Opera Houses and Rinks

Toronto.—The work of erecting the new Sheela's Theatre on the site purchased nearly two years ago, on the south east corner of Richmond and Victoria Sts., will in all probability be commenced shortly. The building, it is estimated, will cost \$150,000.

Halifax, N.S.—The Opera House at this place has been completely destroyed by fire. The building is fully covered by insurance.

Schools and Colleges

Toronto.—The Board of Education has decided to erect a new technical school on the Borden St. site. This property has a total area of 192,210 square feet.

Toronto.—Mrs. Massey Treble, Jarvis St., has been granted a permit for the erection of a two-storey brick and stone college building on the S. E. corner of North Park Drive and Bloor St., at cost of \$300,000. Architects, G. M. Miller & Co. Builders, Thomson Bros.

Toronto.—The Board of Governors of the University of Toronto has approved the expenditure of \$100,000 for the erection and equipment of the building for thermo-dynamics; also an expenditure not to exceed \$21,000 for the enlargement and equipment of the Worthington House for the department of botany and forestry.

Toronto.—A by-law has been passed providing for the issue of debentures to amount of \$6,000, for the purpose of making additions to schoolhouse in school section No. 28, in the Township of York. W. A. Clarke, Clerk of York Township, Toronto.

West Toronto, Ont.—The Board of Education has awarded the contract for the new \$20,000 school building to be erected at this place to contractors Bloxham & Saxon. This included the heating and plumbing. Ellis & Connerly are the architects.

Ottawa.—The Building Committee of the Separate School Board will recommend the purchase of property in Hintonburg for the erection of a school building.

St. Catharines, Ont.—Architect A. E. Nicholson, has awarded the following contracts for the erection of a \$2,000 brick addition to the St. Paul's Ward school. Masonry, M. Bennett; carpentry, T. Ivién; painting, J. Alban; plumbing and heating, John Peart.

Brantford, Ont.—The Buildings and Grounds Committee, and Principal Burt, are securing information as to the cost, etc., of erecting a new Collegiate Institute. It is proposed to erect a sixteen room building with an annex of at least five rooms, which could be used for technical and manual training work.

Kingston, Ont.—Tenders were received by N. F. Dupuls, Professor of Astronomy, Queen's University, up to Aug. 10th, for the several trades required in the erection and completion of an Observatory building for the trustees of Queen's University. Plans and specifications were prepared by Power & Son, Architects.

Smith's Falls, Ont.—The Board of Education is contemplating the erection of a technical school. R. E. Sparham, chairman of the Board, can be addressed.

Montreal, Que.—Sir Frederick Borden has given notice of a resolution to confirm orders-in-council passed whereby certain Government properties will be sold to raise sufficient funds for the purchase of a site and construction of a building at this place to be used for a Military School of Instruction.

Quebec, Que.—Architects Ouellet & Levesque, 115 St. John street, have awarded contracts as follows for a two-storey brick school building to be erected on Bayard street, for the Catholic Schools Commissioners:—Masonry, cement work, plastering and stone work, Nap. Renaud; carpentry and sheet metal work, P. H. Leclerc. Estimated cost of building, \$4,500.

St. John, N.B.—Architect F. Nell Brodie has prepared estimates, amounting to \$13,483, for the proposed improvements to the local public schools in the way of better fire protection.

Woodstock, N.E.—The Broadway School at this place has been totally destroyed by fire. Loss, \$15,000.

Winnipeg, Man.—Premier Roblin, Rev. Dr. Patrick and J. A. M. Alkens have been appointed to advise the Government architect in the preparation of plans for the new domestic science building to be erected at the Agricultural College here. It was recommended that the Government be asked to erect this building, the work to be commenced next year.

Oak Lake, Man.—The proposed \$4,000 addition to the public school building here has been voted on and approved by the ratepayers.

Regina, Sask.—Wilson & Wilson have been awarded the general contract for erecting the new Collegiate Institute. The building will be two stories in height, 170x80 ft. of brick and concrete construction, with concrete beams and floors throughout. Plans for the structure were prepared by architects Storey & VonEgmond.

Regina, Sask.—McGregor & Black have

been awarded the contract for the erection of the Earl Grey school at a contract price of \$30,591.

Lang, Sask.—Tenders were received up to August 8th for the erection of a four-room school building at this place. D. Clayton, Secretary, Lang S.D. No. 1035.

Moose Jaw, Sask.—At a meeting of the Public School Board it was decided to erect a \$6,000 school building in the near future.

Saskatoon, Sask.—A. W. Cassidy, of this place, has been awarded the general contract for the erection of the new school building.

Whitewood, Sask.—Mr. C. W. Hall, Brandon, has been awarded the contract for the erection of a new six-room school building at this place. The building will be of brick and stone construction, and will cost approximately \$15,000. Architect W. A. Elliott, of Brandon, prepared the plans.

Vancouver, B.C.—The School Board has requested that a by-law be submitted to the ratepayers, authorizing the expenditure of \$188,000 for school extensions, the specified works being as follows:—Changing frame structure to brick in Grandview, Macdonald and Kitstiano additions, \$26,550; four-room new brick school, Clark Drive and Ninth avenue, \$24,200; alterations, Roberts, Seymour and Aberdeen schools, \$30,250; asphalt sidewalks, Dawson, Mount Pleasant and Fairview schools (replacing wood), \$8,250; retaining wall, Aberdeen school grounds, and grading same, \$2,200; advanced manual training equipment and building for High school, \$5,600; alterations to old schools for fire protection purposes, \$35,000; school site, south-east corner of city, \$15,400; school site east part of city, between Macdonald and Grandview schools, \$18,150; janitor's residence, model school, \$1,100; school desks, \$6,150.

Victoria, B.C.—Tenders will be received by the Department of Lands and Works, Parliament Buildings, up to noon, August 20th, for the erection of a large one-storey school building at Quenell; a one-storey school building at Pitt Meadows, in Downey electoral districts; and a large one-storey school building at Courtney, in Comox electoral district.

Civic Improvements

Toronto.—On Tuesday, Aug. 18th, the Court of Revision at the City Hall, Toronto, will hear appeals pursuant to the statutes respecting certain proposed local improvements and the special assessment for the cost thereof upon the lands immediately benefited, pursuant to the report of the City Engineer, on file in City Clerk's office; improvements to include bitulithic pavements, asphalt pavements, tile pipe sewer and cement concrete sidewalks in certain described districts.

Brockville, Ont.—The Council has decided to construct granolithic sidewalks on the following streets:—Emma street, Charles street, Bartholomew street, Perth street, Beecher street, Maple street, Havelock street, Cedar street, Flint street, Hartley street, Jessie street, Ann street, Brock street, James street. Cost of work approximated at \$12,000.

Toronto.—Tenders will be received by the undersigned up to noon, Aug. 18th, for the construction of asphalt pavements, bitulithic pavements, asphalt block pavements, concrete pavement, concrete curbs, concrete walks and sewers in different sections of the city, as per plans and specifications on file at the office of the City Engineer. Joseph Oliver (Mayor), Chairman, Board of Control.

Miscellaneous

Toronto.—The Wm. Hendrie & Company's stables, at Windsor and Front streets, Toronto, have been damaged by fire to the extent of about \$5,000, about \$5,000 of which is on the building. Loss fully covered by insurance.

Toronto.—Among the Toronto companies recently incorporated are the following:—Zenith Manufacturing Company, \$10,000, directors, C. C. Monerleiff, B. P. Corey, G. G. Monerleiff; Eacrett Automatic Filing Systems, \$40,000, directors, Wm. Eacrett, Chas. W. Smith, W. C. Lee, R. B. Young, D. D. Grierson; Wood Fibre and Excelsior Company, \$4,000; Hoffman Patents, \$40,000, directors, C. T.

G. Croft, G. B. Morgan, G. Croft; Canadian Laboratories, \$40,000; Excelsior Mica Mines, \$150,000, directors, A. J. Williams, G. H. Parkes, J. McVittie and Donald McArthur; Snydam Realty Company, \$150,000, directors, H. H. Snydam, Millie C. Snydam, Harold C. Snydam, J. Millbank D. Millbank.

Ottawa.—Among the companies recently incorporated is the Universal Signal Company, whose address is not given, with capital of \$1,000,000. The company will deal in inventions for railway signals and will manufacture, import and export air compressors, electrical machines, trucks and cars.

Toronto.—Among the companies recently incorporated are the following:—The Seymour Power Company, capitalized at \$1,000,000, with head office at Campbellford, Ont. The company is authorized to produce electricity and electric motive force; the Hamilton Brick Company, Hamilton, Ont., with capital of \$40,000; Hyland Silver Mining Company, with head offices at Ottawa, capital, \$500,000.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding, include:—Montreal, general post office, \$310,000; new examining warehouse at Winnipeg, \$150,000; Dartmouth, public building, additional for customs purposes, \$5,000; Halifax, Dominion building, improvements, repairs, etc., additional amount, \$25,000; Painsboro, public building, \$3,000; Wolfville, public building, \$5,000; Westville, public building, additional amount, \$5,000; Shelbourne harbor, deepwater wharf, \$8,000; Annapolis harbor, improvements, ice piers, additional amount, \$25,000; Brooklyn, towards rebuilding of breakwater, \$8,000; Cow Bay, extension of breakwater, \$4,000, etc.

Ottawa.—The supplementary estimates placed on the table of the House by Finance Minister Fielding, include:—\$200,000 for new Victoria Memorial Museum at Ottawa; \$100,000 for Fraser River ship canal; \$355,000 for Maritime Provinces dredging plant; \$200,000 for new dredging plant for Ontario, in Ontario and Quebec; \$150,000 for dredging plant for British Columbia; \$75,000 for water storage dams in the Upper Ottawa; diversion of line at Chatham and branch to wharves, \$40,000; Fort Lawrence, wharf to lay rails, \$12,500; Prince Edward Island Railway, branch line, Harmony to Elmira, \$31,000; diversion of Intercolonial Railway from George's River to Sydney Mines, \$250,000; St. Peter's Canal, \$25,000; Glace Bay, N.S., public building, \$15,000.

Jordan Station, Ont.—Architect A. E. Nicholson, St. Catharines, has awarded the following contracts for a \$3,000 one-storey, 56x130 ft. concrete block driving shed to be built at this place for the Methodist congregation: Masonry, M. Werner; carpentry, L. Frotz, both of Vineland, Ont.; iron work, the Hamilton bridge Company, Hamilton, Ont.

Hagersville, Ont.—The Erie Telephone Central office at this place has been destroyed by fire, entailing a loss of \$25,000.

Windsor, Ont.—Several of the large stables at the Windsor race track have been destroyed by fire.

Fort William, Ont.—The principal losses by the recent fire at this place are as follows:—John King & Co., loss, \$100,000, insurance, \$75,000; Smallgrove & Waddington, loss on building and furniture, \$20,000, insurance, \$12,000, and Bell Telephone plant, entirely destroyed.

Quebec, Que.—The Dominion Government has voted the sum of \$500,000 for improvements to the local harbor.

St. John, N.B.—The Dominion Government has voted the sum of \$400,000 for improvements, repairs and dredging in the local harbor.

Fernie, B.C.—The principal losses in the recent fire at Fernie are estimated as follows:—C.P.R. and Great Northern, \$500,000 each;—Trite-Wood Company, \$150,000; Elk River Lumber Company, \$185,000; C. N. Trading Company, \$100,000; Fort Steele Brewing Company, \$75,000; Fernie Lumber Company, \$50,000; McDougall Lumber Company, \$30,000.

Vancouver, B.C.—The shingle dry kiln at Wood & Spicer's mill, on False creek, adjoining the north end of Cambridge street bridge, has been destroyed by fire. Loss, \$110,000, partially covered by insurance. The company will rebuild at once.

— IF —

DAISY HOT WATER BOILERS

were not pre-eminent in point of merit and results, to be the accepted standard of Boiler excellence, then why do we find it so :: :: :

Extensively Imitated?

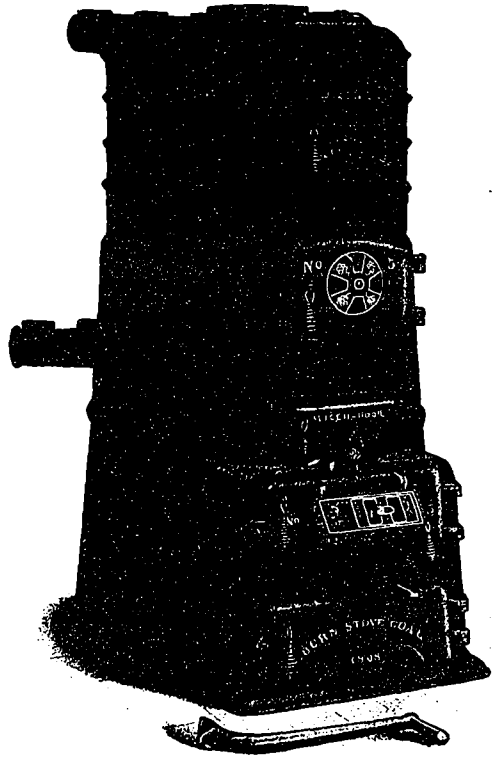
Why have other makers striven to model their boilers as nearly on the lines of the "DAISY" as they dare? 'Tis but the tribute of the commonplace to the exceptional—the "DAISY" is indisputable. :: :: :: ::

The Gift of Genius to Mankind

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Maximum Comfort at Minimum Cost

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Selling Agents : WARDEN KING, Limited

TERRANO FLOORING.

THERE must be something highly commendable about a new flooring that will, in the short space of six months' time, meet with the recognition that has been accorded Terrano. Since Terrano was first introduced in Canada, six months ago, over one hundred and twenty floors of this material have been laid in almost every class of building and in every case it has proven eminently satisfactory.

The difficulties which have heretofore been encountered in finding a jointless flooring which is cheap, durable and effective, and which neither cracks or bulges, has been overcome by this product which is fast winning favor with the architects, builders and public in general.

Among the many features which Terrano possesses are its elasticity, waterproof and fireproof qualities, and non-wearing character. It is laid in a plastic state about the consistency of mortar and in the same manner as a cement floor, forming a continuous sheet without joints or crack over the entire area to be covered. The material hardens in from ten to twelve hours, and, making a perfect bond with its foundation, becomes a permanent floor.

Another advantage of Terrano is that it can be applied to a foundation of concrete, brick, old or new wooden floors. In case of a wood foundation, expanded metal is first put down and then the flooring, one-half inch thick, is applied. Owing to its noiseless effect, it is admirably adapted for use in churches, schools, auditoriums and residences, and being of a hard impervious character when set, it is indispensable in hospitals, armories, theatres, banks, kitchens, or any place where a highly sanitary floor—one that can be easily kept clean—is essential. Terrano can be laid in various colors, in panels or square effects, and will permit of the execution of designs and lettering. It takes a fine, hard finish, and as to cost it is cheaper than tiling and but little more expensive than hardwood.

While Terrano is practically a new product in Canada, it has been laid with perfect success in Germany for over twenty-five years, and within the past five years has met with an unqualified endorsement in England, being specified in the largest public buildings and on the highest class of work. To what extent it is being adopted in this country can best be seen from the large number of floors that have been laid since its introduction here by the Eadie-Douglas Company, 22 St. John street, Montreal, sole agents for the Terrano Flooring Company, Limited.

The work done so far includes public and private offices, cafes, bars and restaurants; kitchens, bathrooms, lavatories, pantries, laundries and outside verandahs in over fifty private residences; industrial plants, and also three railway car floors that are giving splendid satisfaction. The largest floor that has been laid is four hundred and twenty square yards, while several others embrace over two hundred square yards. In industrial plants, such as factories, machine shops, abattoirs, engine-rooms, etc., a special coarse non-slipping floor is furnished that will withstand heavy trucking and the roughest usage.

Architects and others who intend visiting the Toronto Exposition will undoubtedly be interested to learn that a floor of Terrano has recently been laid in the Art Gallery Building. It will give them an opportunity of seeing how well this material serves the purpose of flooring, and it should be of general interest.

The company has just started a plant in Toronto and has already closed a large number of contracts for this flooring in that city, among them being the Victoria Club, Palmer House and Walker House. All floors are laid with a guarantee that they will not break up or bulge, and that they will be satisfactory in every respect.

Further information, estimates and price list regarding this meritorious flooring can be obtained by addressing Eadie-Douglas Company, at either 22 St. John street, Montreal, or 77 Victoria street, Toronto.

Additional lines which this firm handles are terra cotta, enamelled brick, fire brick, sanitary goods, and other products of the Leeds Fireclay Co., Limited, of Leeds, England.

Among the recent contracts which the company has secured is one for furnishing the Leeds terra cotta for the new Nova Scotia Bank building in Winnipeg, which is to be of modern fireproof construction and will cost over \$200,000.

HOUSE INSULATION.

ROOFING, sheathing paper, and deafening felt are three things that must be taken into consideration in the make-up of a building. They are essentials which practically constitute the insulation of the structure, and should be selected with discriminating care, as a building which is properly equipped with these important parts has a decidedly enhanced value.

Of the many patent materials on the market to-day, there is, perhaps, none that are better known or more extensively used than the products of F. W. Bird & Son, of Hamilton, Ontario, makers of Paroid roofing, Neponset waterproof papers, and Florian sound-deafening felt.

All of these materials are especially meritorious and their reputation has been well established in practically every part on both sides of the American-Canadian line.

As a permanent ready roofing and siding, Paroid has a big demand, and while it is largely used on railroad buildings, factories, warehouses and farm buildings, it is also used in place of shingles on residences, especially on porch roofs where shingles rot out very quickly. Its composition consists of strong wool felt, soaked in a special compound which renders every fibre, proof against water and the elements. Both sides are covered with a thick, smooth, and pliable coating that doubly guarantees its strength and durability.

Neponset waterproof paper is admirably suited for sheathing purposes. It provides an excellent insulation against heat in summer and cold in winter, being waterproof and of sufficient thickness and strength to be absolutely impervious to cold, heat and moisture.

Florian sound-deafening felt, both hygienically and constructively possesses many individual features. The innumerable corrugations in this material form minute air cells which make it not only an excellent sound deaener but a good non-conductor of fire. It is used widely in residences, office buildings, hospitals, schools, etc., and is invaluable under tin roofs where it reduces the temperature of the room below to a minimum and deadens the sound of rain.

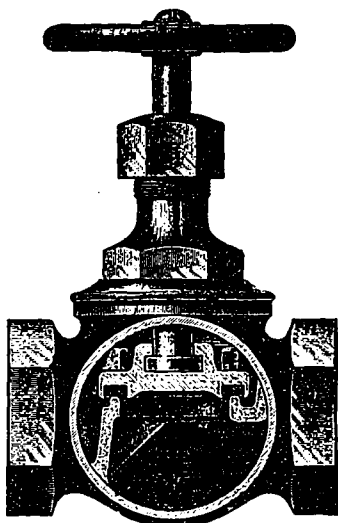
All of these materials are especially adapted to bungalow construction, particularly so when the structure is to be used for permanent occupation. Unless deafening felt is employed in the partitions and floors of buildings of this type, they invariably prove to be mere whispering

Fairbank's Standard Valves

GIVE CONFIDENCE

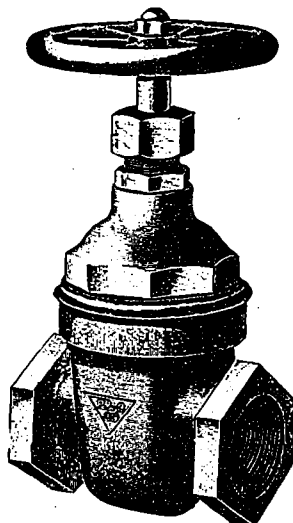
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STANDARD GLOBE VALVES
WITH RENEWABLE DISCS

Construction of seat prevents accumulation of scale, grit or sediment.



STANDARD GATE VALVES
WEDGE PATTERN

Seat and retaining rings of bronze. Renewable.

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galleries. Aside from the afore-mentioned products, this firm manufactures Ko-sat insulating paper, Nonpset insulating paper, Proslate roofing, etc., etc.

The company has just published a booklet of prize designs for low cost houses, the cost being limited to \$3,000.

As it is the intention of this firm to erect at East Walpole, Massachusetts, in connection with their paper mills, a group of moderate price cottages, they inaugurated a competition in which every architect in the United States and Canada were invited to participate. The programme call for a building similar in construction to experiments which the firm had already made with their own products as an exterior covering, and the competition was held for the purpose of obtaining new and varied designs.

The competition was conducted under the rules of the American Institute of Architects; and Professor Francis W. Chandler, head of the Architectural Department of the Institute of Technology, and Mr. Chas. Collens, of the firm of Allens & Collens, Boston, were the judges.

The houses are designed for one family, each family having a living room, a kitchen with pantry, a dining room, four bedrooms with closets and a bathroom. All these designs are highly commendable, showing compactness and economy in plan, and the artistic treatment that can be obtained from the use of Proslate for walls and roofs.

This booklet, together with other information, and sample of this firm's materials, will be sent upon request, by addressing F. W. Bird & Son, makers, Hamilton, Ont.

WOOD STAINS AND PRESERVATIVES.

IN the exterior and interior decorative scheme in residential work, wood stain seems to have found a permanent and legitimate place. Especially is this to be observed in the cottage and bungalow types of construction where, in many cases, it is used to the entire exclusion of paint.

The highly satisfactory results that can be obtained from the use of stains is only too apparent to those who have studied the beautiful subdued effects brought out by the agreeable contrast of two colors, in the exterior treatment of innumerable small homes and cottages erected in recent years in our suburban and summer resort districts.

There is, however, another feature apart from the decorative effect, that makes wood stains highly desirable, and that is their wood preserving qualities. Architects and owners are beginning to realize that in a building constructed either partly or entirely of wood, that the life of the structure can be greatly prolonged providing proper steps are taken to prevent the wood from decaying.

One of the best preparations for this purpose is Solignum, the well-known wood preservative and stain. It is adapted to a great many uses, and can be applied either on the inside or outside of a building, or in treating piles preparatory to driving them into the ground. In addition to preserving the wood, it keeps away insects and vermin of all kinds.

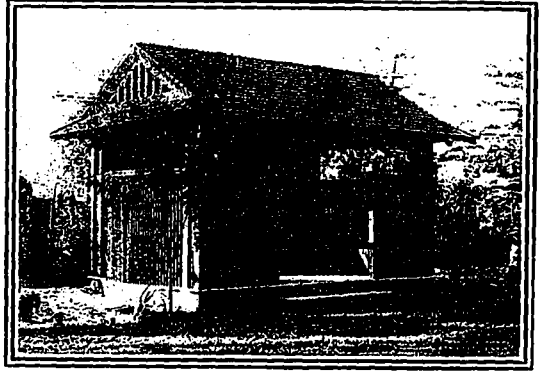
The recently completed summer house of Mr. Beck, Clarendon Crescent, Toronto shown in the accompanying cut, has all the woodwork stained with Solignum. The work was done by the Deecker-Carlyle Company, decorators, 12 Yonge street Arcade, Toronto, and the exterior treatment is a brown with a green roof, a combination which harmonizes well with its surroundings.

Among other Toronto structures on which this preparation has been used are Mr. Proctor's residence, Glen road, Rosedale; school house of the Church of Messiah; and outbuildings in the Allan Gardens, owned by the city.

Solignum is an inexpensive and reliable stain, and it is claimed that it does not evaporate like many stains mixed with alcohol. One gallon will cover 350 square

feet, and besides, the basis being of an oily nature, its color has more body to it and is more lasting than most other stains.

Probably nothing attests to its well-known qualities better than following partial list of work on which it has been used: Military barracks in England, India, South Africa and Australia; railway station at Setchworth, Eng., and other places on the G. N. Ry.; corporation market in Hull and other English municipalities; churches



SUMMER HOUSE OF MR. BECK, CLARENDON CRESCENT, TORONTO, STAINED WITH SOLIGNUM. DEECKER AND CARLYLE, DECORATORS.

such as St. Peters', Harrow, Eng.; Japanese harbor work, etc.; Buffalo River bridge, East London, South Africa and Kelling Sanatorium.

The Toronto Solignum Syndicate, 32 Church street, Toronto, will upon request, be pleased to furnish further information regarding the meritorious character of this preparation.

SAND-LIME BRICKS.

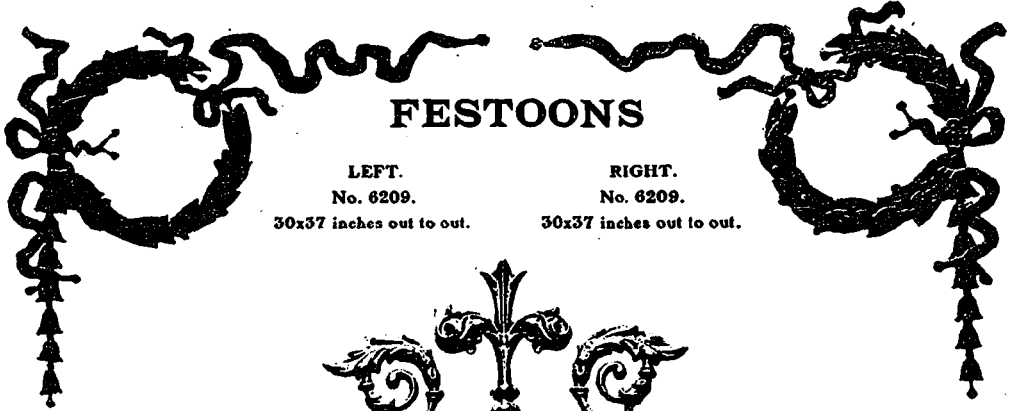
SAND-LIME BRICK have passed the experimental stage. It is useless to doubt that the sand-lime brick industry is not a permanent one. The increasing popularity of this quality of brick has been the best evidence of its staying qualities, and the industry is simply beginning to make itself felt.

While it is true that there are still a number of persons who persist in holding to the view that these bricks are only an experiment and will not bear out the claims made for them, this number is rapidly decreasing. The experimental stage is passed. Sufficient evidence has proved their superiority over the common clay brick, and the increasing number of plants in a further attest to their growing popularity.

Sand lime-brick will make strong and durable buildings, rich in exterior effect, providing they are manufactured in the proper way. There are poor sand-lime brick as well as good sand-lime brick and those considering entering this line of business would do well to get the best system possible at the start, as it costs no more to make the best quality of brick than the poorest kind, but there is, however, a material difference in the selling price.

The Scientific System Brick Company, 75 Adelaide street east, Toronto, claims that by the use of the Schwarz System the best quality of sand-lime bricks can be made. Ernest Stoffer, a prominent engineer of Zurich, and an authority on sand-lime brick and stone, says the advantages of the Schwarz System are many, but particularly so in the certainty of a regular output and the assurance of manufacturing perfect brick and stone without any difficulty at all seasons of the year. For additional information, literature and price regarding this system, address the Scientific System Brick Company at the above locality.

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30x37 inches out to out.

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Pediments,
Verandahs,
Friezes, Etc.



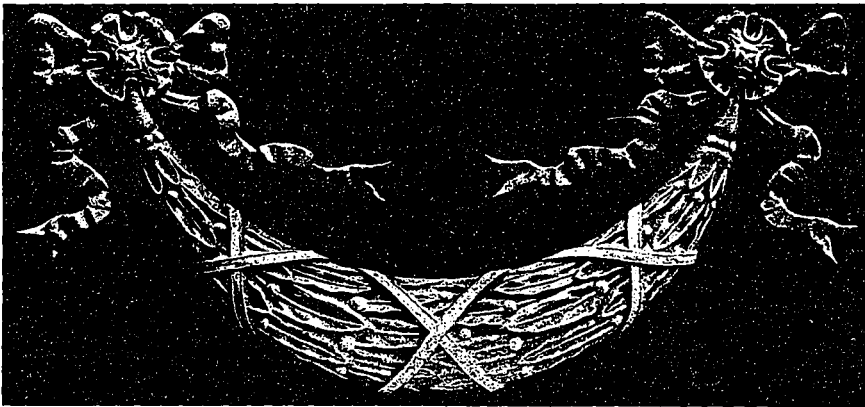
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Countless
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No. 6205—10 1-2 inches wide, 19 1-4 inches on centres.



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TORONTO AND WINNIPEG

No Cheap Trash

KAHN SYSTEM TO BE USED.

ONE of the biggest undertakings this year in Canada in the way of new buildings will be the erection of the proposed Legislative and Executive Building at Regina, for which the contract was recently awarded.

The structure will represent an expenditure of at least \$1,500,000 and when completed it will be one of the finest public edifices in the Dominion, both in architecture and construction.

With the exception of the exterior wall, the building will be of reinforced concrete, constructed according to the Kahn System, a system which is being widely adopted throughout Canada. Owing to the fact that the Kahn trussed bar is shop prepared, this method of construction does away with expensive field labor, and permits the work to be carried on without interruption.

The Trussed Concrete Steel Company, of Canada, Limited, 23 Jordan street, Toronto, who control this system in Canada, originates and manufactures material to meet every requirement or reinforced concrete construction.

The company employs a large engineering staff which is always at the command of the architect and builder. Further details of the Kahn System and its many salient points can be obtained by communicating with the company at the above address.

A. L. OF A. SCHOLARSHIPS AWARDED.

THE two special scholarships of the Architectural League of America in Harvard University have been awarded to Mr. W. H. Larsen and Mr. George Fox.

The successful competitors are Boston men, Mr. Larsen being in the office of Messrs. Shipley, Rutan & Coolidge, while Mr. Fox is in the office of Mr. C. H. Blackall.

Mr. Edward L. Gate, of St. Louis, was an excellent third in this competition of sixteen competitors.

The award was made by Mr. Ralph Adams Cram, representing the League, and Professor Warren and his associates of the Department Architecture, Harvard University.

The Committee on University Scholarships announces that the Washington University of St. Louis, Mo., has granted the League a scholarship in Architecture, this scholarship will entitle its holders to four years free tuition in the Department of Architecture of the Washington University. A detailed announcement regarding this will be made later. Further information relative to scholarships can be secured by addressing Prof. Emil Lorch, Ann Arbor, Mich.

PROGRAM OF A. L. OF A. CONVENTION

THE Architectural League of America announce that the Executive Board of the Detroit Architectural Club have prepared a tentative programme for the coming convention to be held in that city in September 17th, 18th and 19th, 1908.

Thursday, September 17.—Morning—Business Session. Afternoon.—Luncheon and boat ride on Detroit River and Lake St. Clair.

Friday, September 18th.—Morning—Business Session. Afternoon.—Automobiling about the city and parks to the County Club. Evening—Banquet at the County Club.

Saturday, September 19th.—Morning—Business Session. Afternoon—Visit to the famous Freer Art Collection and other institutions of interest. Evening—Smoker.

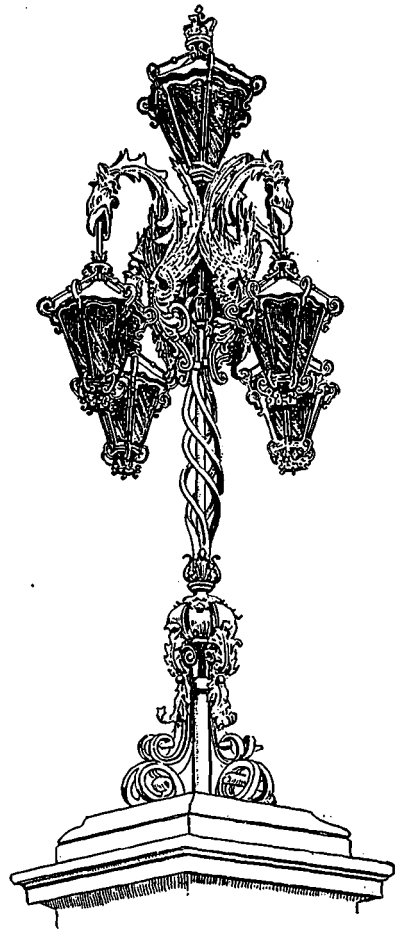
This programme is subject to changes, according to arrangements which may be made later, but it carries the ideas of the Detroit Club at this date. The Convention Committee has fixed upon the new Hotel Pontchartrain as the headquarters for the convention, and very satisfactory arrangements have been made.

Some of the most prominent architects of the country will be present. Mr. Henry Hornbostel, of New York, will make an address at one of the sessions, Mr. Harvey W. Corbett, of New York, will represent the Beaux Arts Society, Mr. L. C. Newhall, of Boston, will represent the Committee on co-operation of the American Institute, and other architects of prominence have been invited to attend and discuss special subjects.

Members should make every effort to be present upon this occasion, as this promises to be one of the most interesting conventions ever held by the League.

For further information, address Frank C. Baldwin, President, Detroit Architectural Club, 1103 Union Trust, A. G. Donaldson, 1314 Penobscot Building, Detroit.

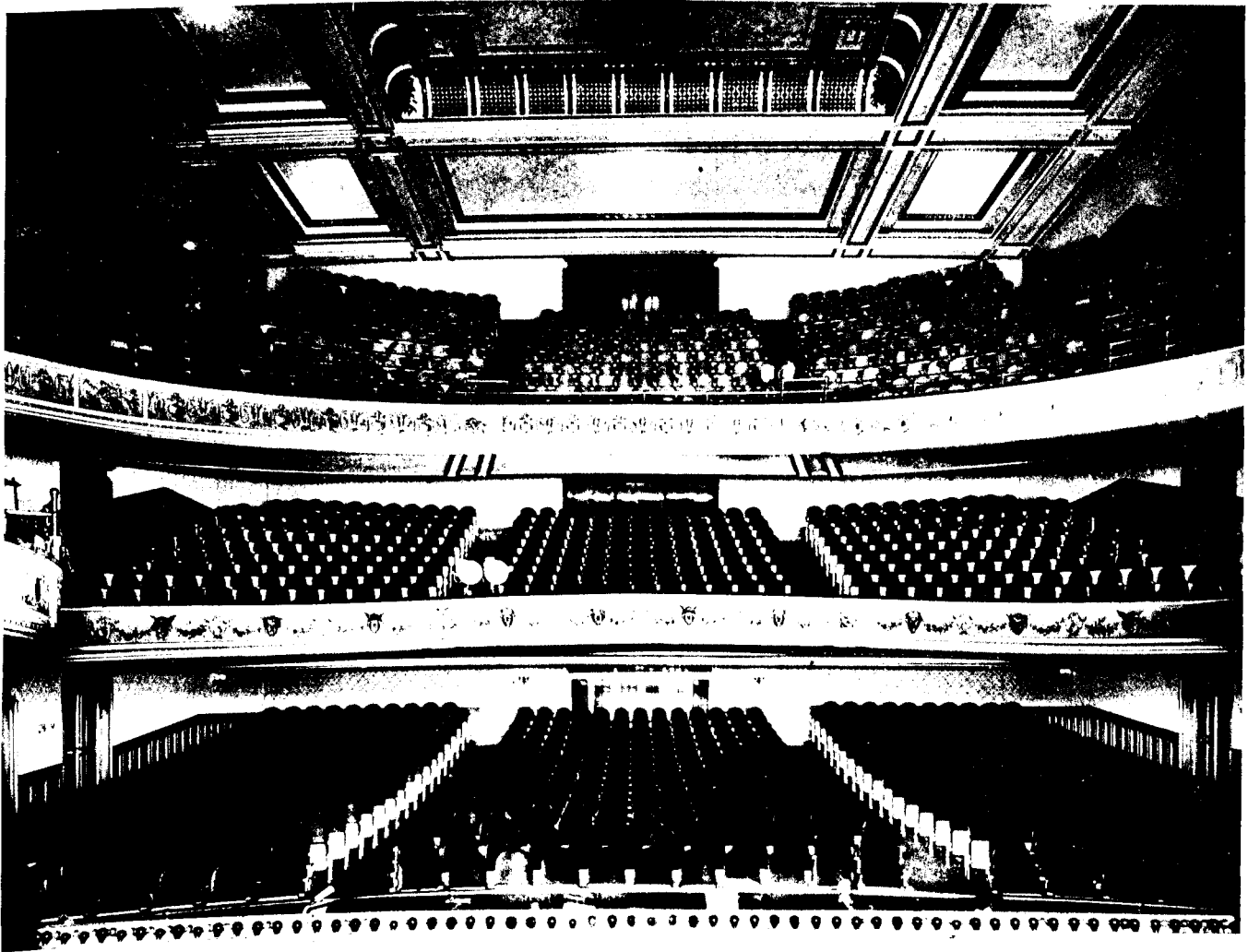
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ERECTED BY THE DAUGHTERS OF THE EMPIRE TO COMMEMORATE THE VISIT TO CANADA OF THEIR ROYAL HIGHNESSES, THE PRINCE AND PRINCESS OF WALES, 1901. THE DESIGN WAS EXECUTED IN WROUGHT IRON BY GEO. B. MEADOWS AND CO., 60 WELLINGTON ST. WEST, TORONTO.

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The above illustration shows the auditorium of the Royal Alexandra Theatre, Toronto, (the most thoroughly fireproofed theatre in America). The Floors, Galleries and Roof were constructed of Concrete reinforced with

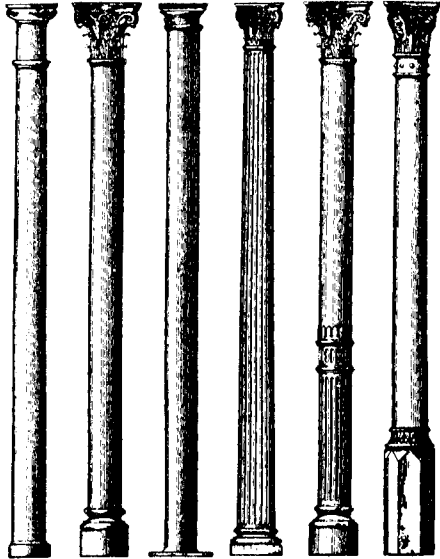
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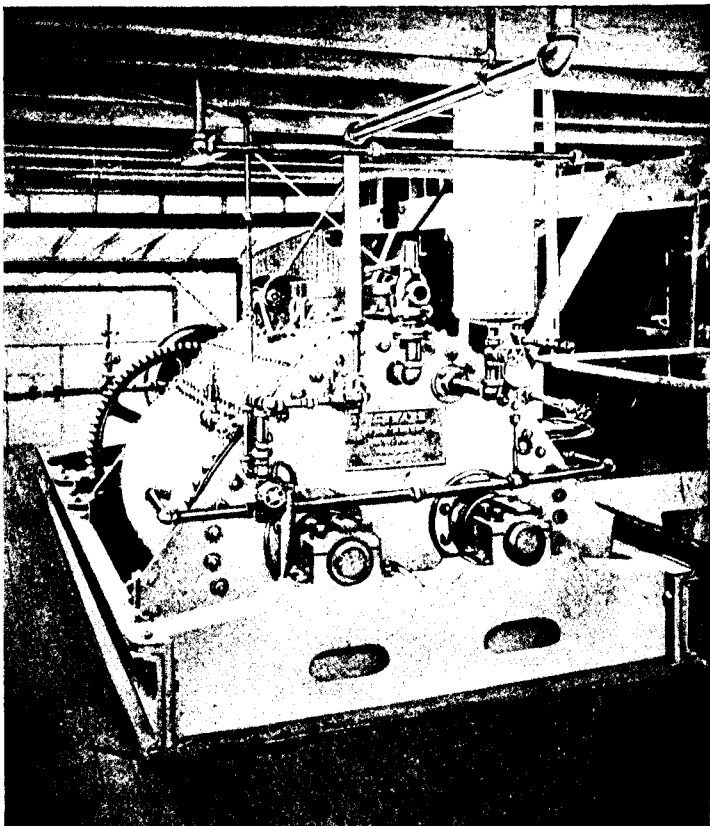
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Sand-lime brick made properly—as by the Swartz System—is one of the most excellent building materials of the present day.

A poorly made sand-lime brick is a deplorable failure, as is any material indifferently manufactured.

The principle of sand-lime is good. It has been mastered in Germany and is now the most popular building material in use in that country.

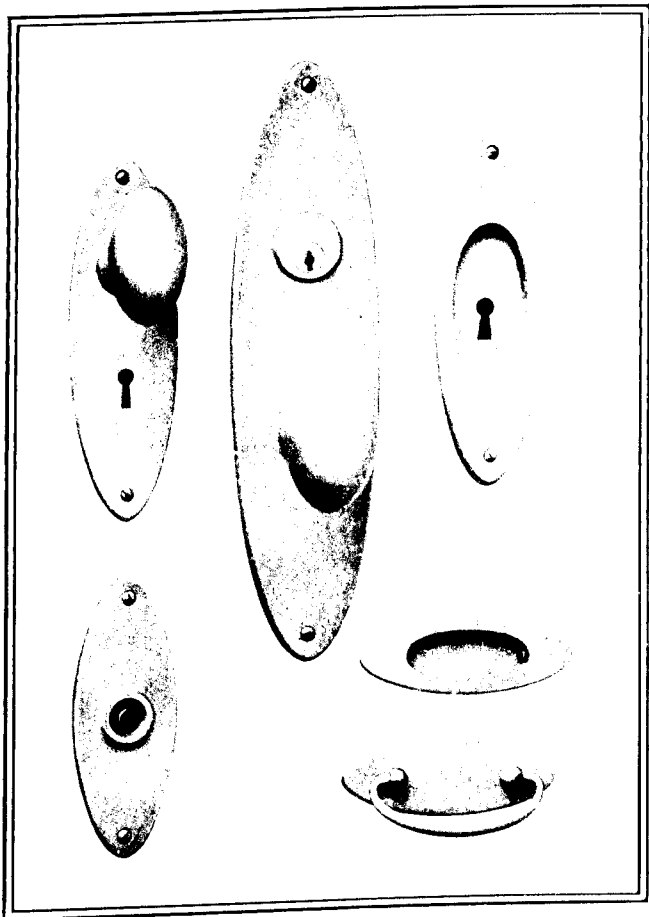
In the United States it has also been mastered by the Swartz System, and some of the finest structures in the Republic are built of sand-lime brick.

Sand-lime brick can be manufactured cheaper than clay brick, and when made by the Swartz System will out-test any brick on the Canadian market.

We will open the market for you. We will supply you with the plant to manufacture sand-lime brick.

**The Scientific System
Brick Company.**

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Style and effect in design as well as utility in operation are important factors to be considered in the selection of Hardware trim.

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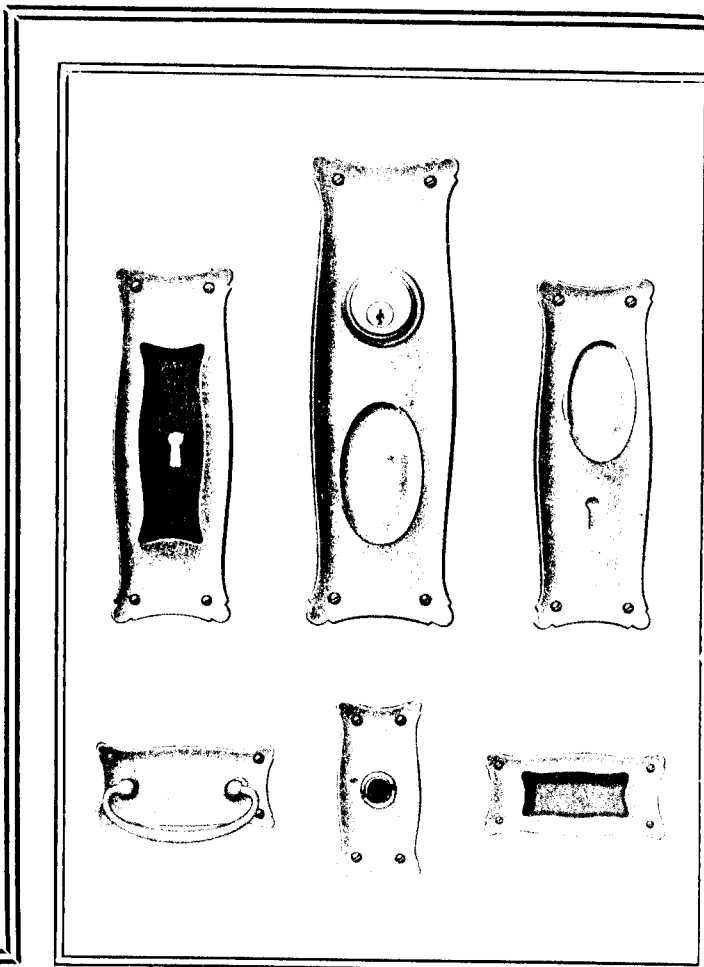
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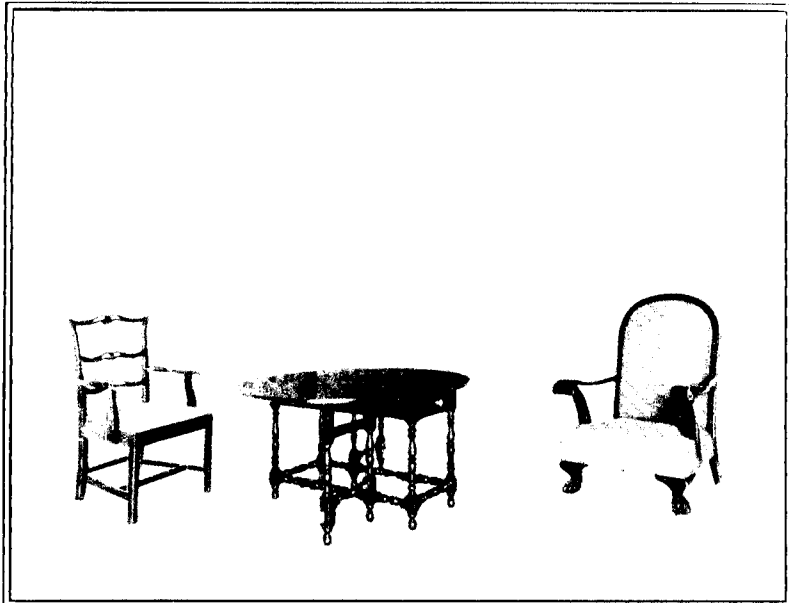
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ROYAL ALEXANDRA THEATRE, TORONTO

The above Illustration shows the Entrance of the

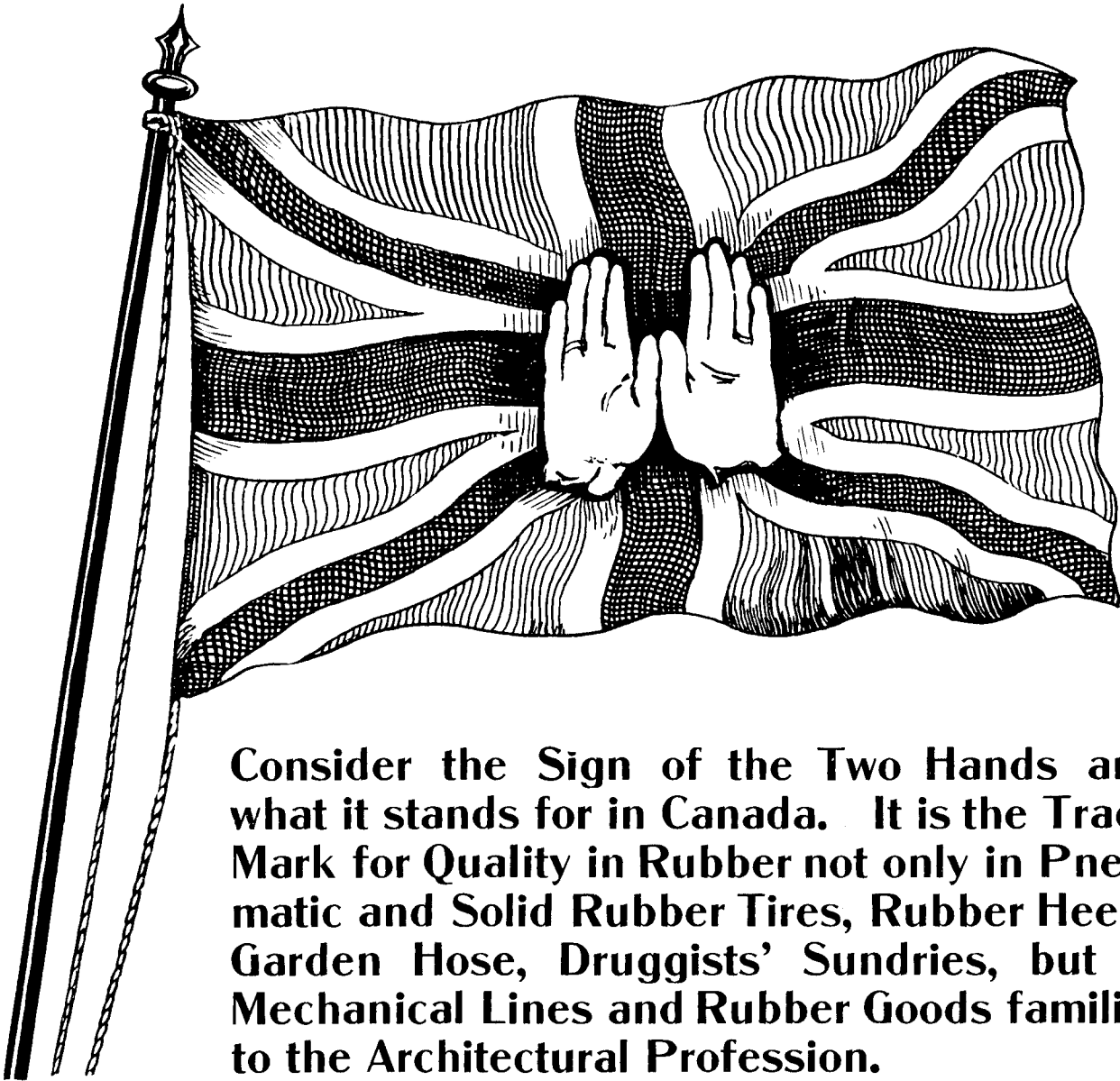
ROYAL ALEXANDRA THEATRE

One of the finest examples of Theatre Construction on the Continent.

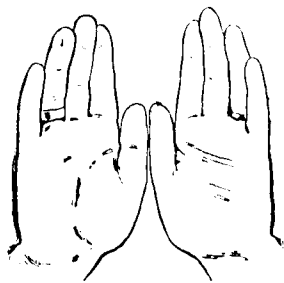
The Woodwork of This Building was Executed by Us.

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Consider the Sign of the Two Hands and what it stands for in Canada. It is the Trade Mark for Quality in Rubber not only in Pneumatic and Solid Rubber Tires, Rubber Heels, Garden Hose, Druggists' Sundries, but in Mechanical Lines and Rubber Goods familiar to the Architectural Profession.



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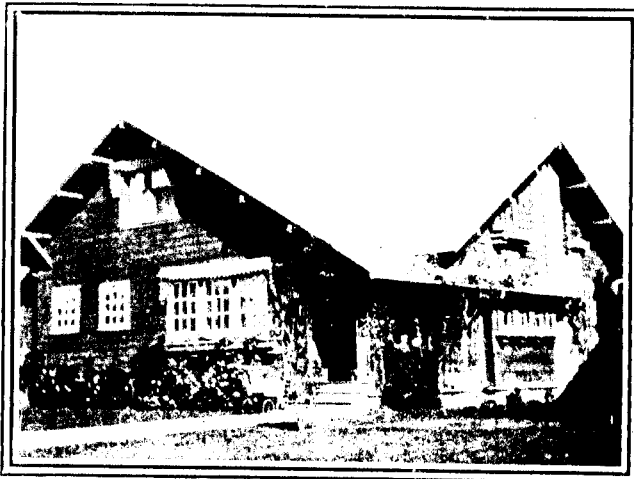
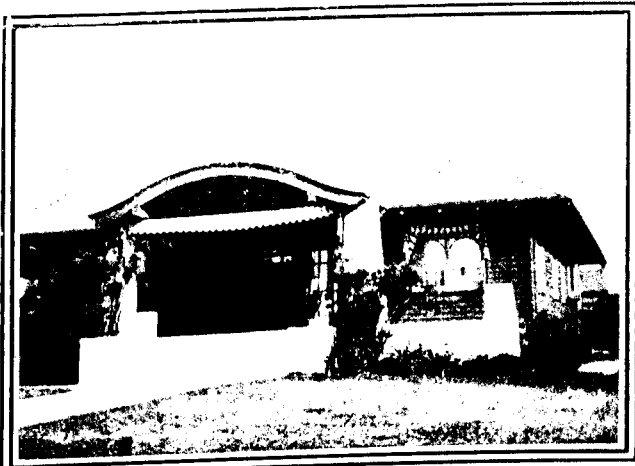
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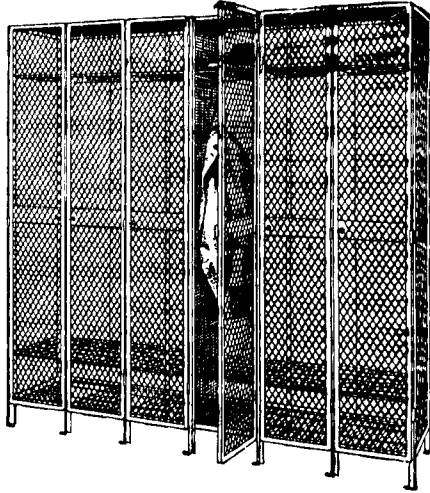
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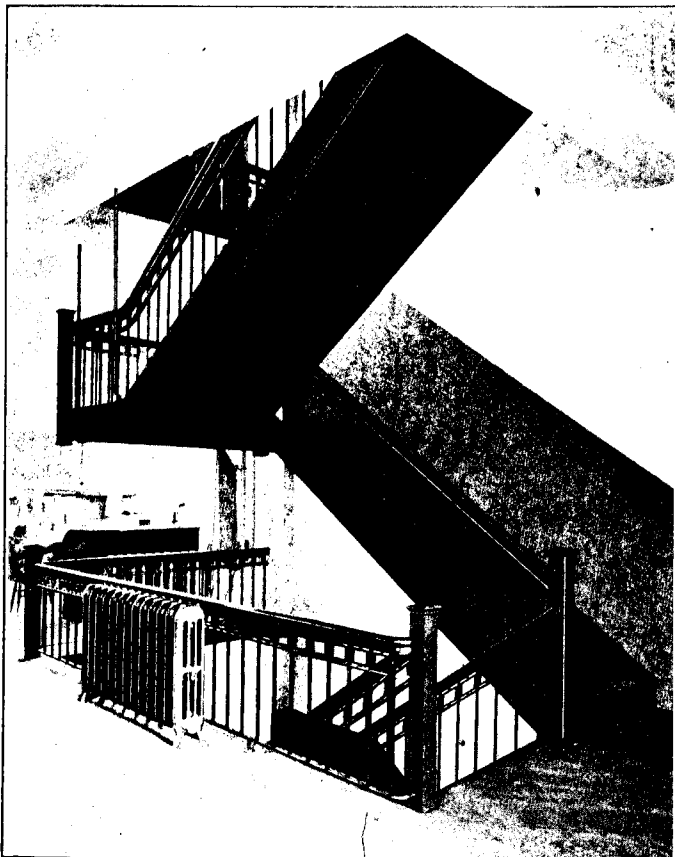
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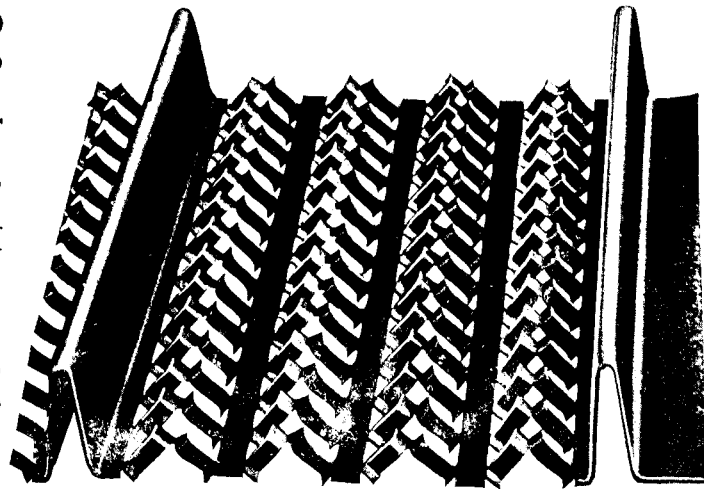
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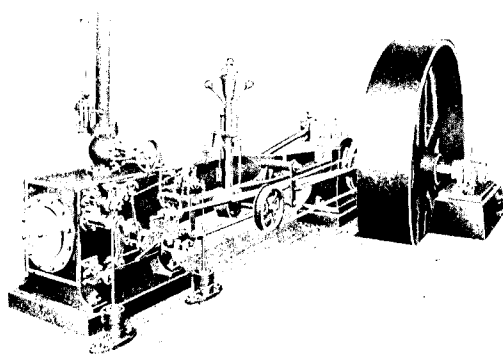
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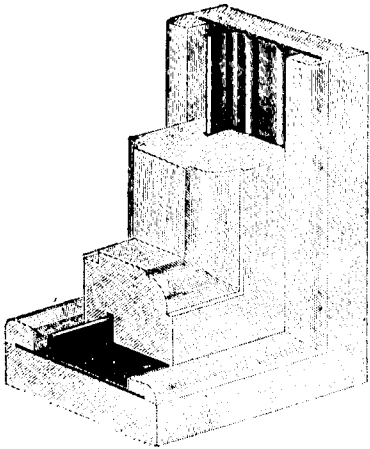
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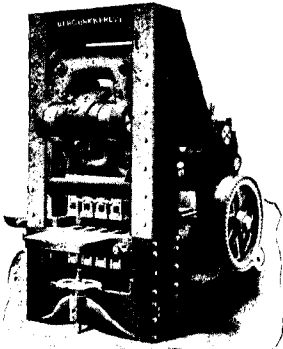
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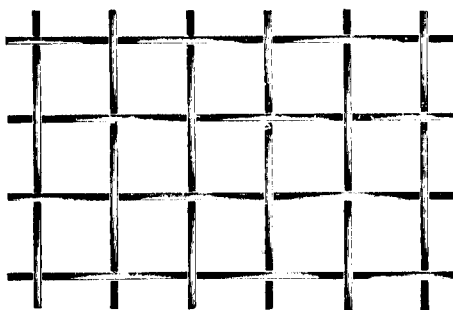
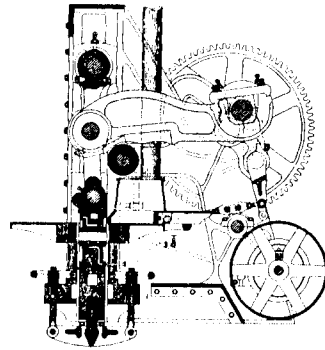


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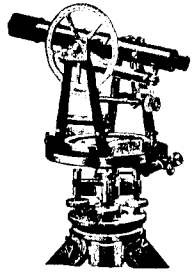
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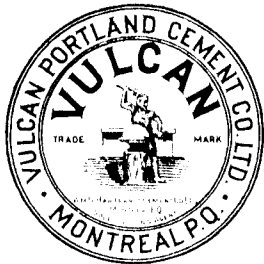
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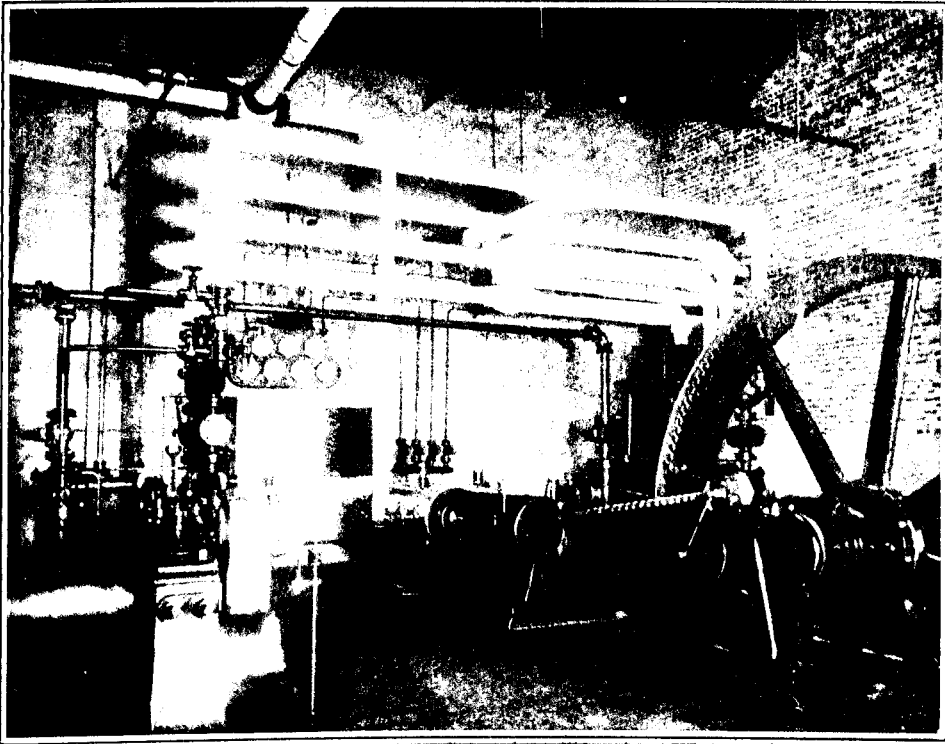
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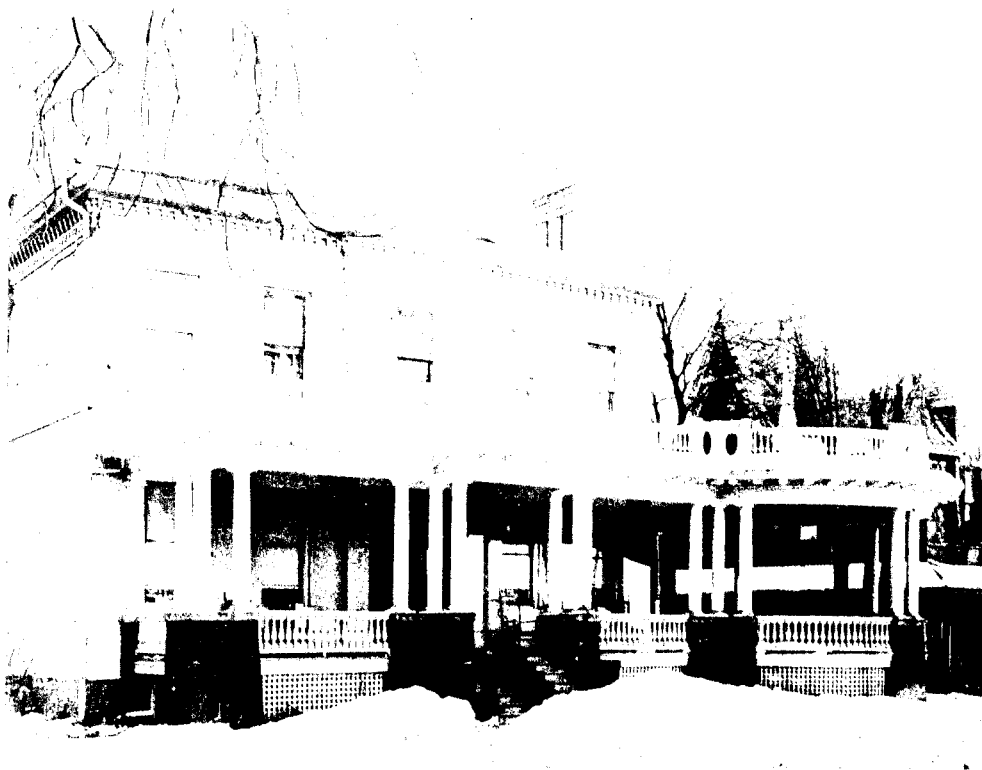
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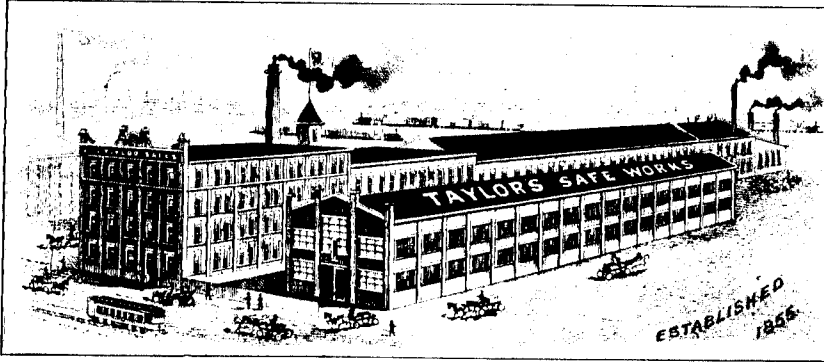
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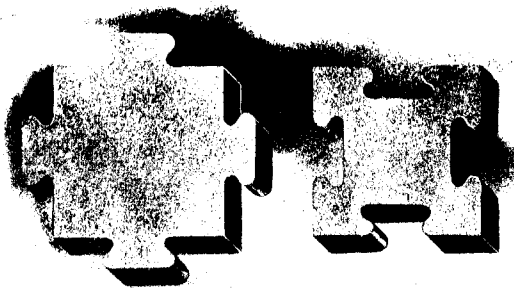
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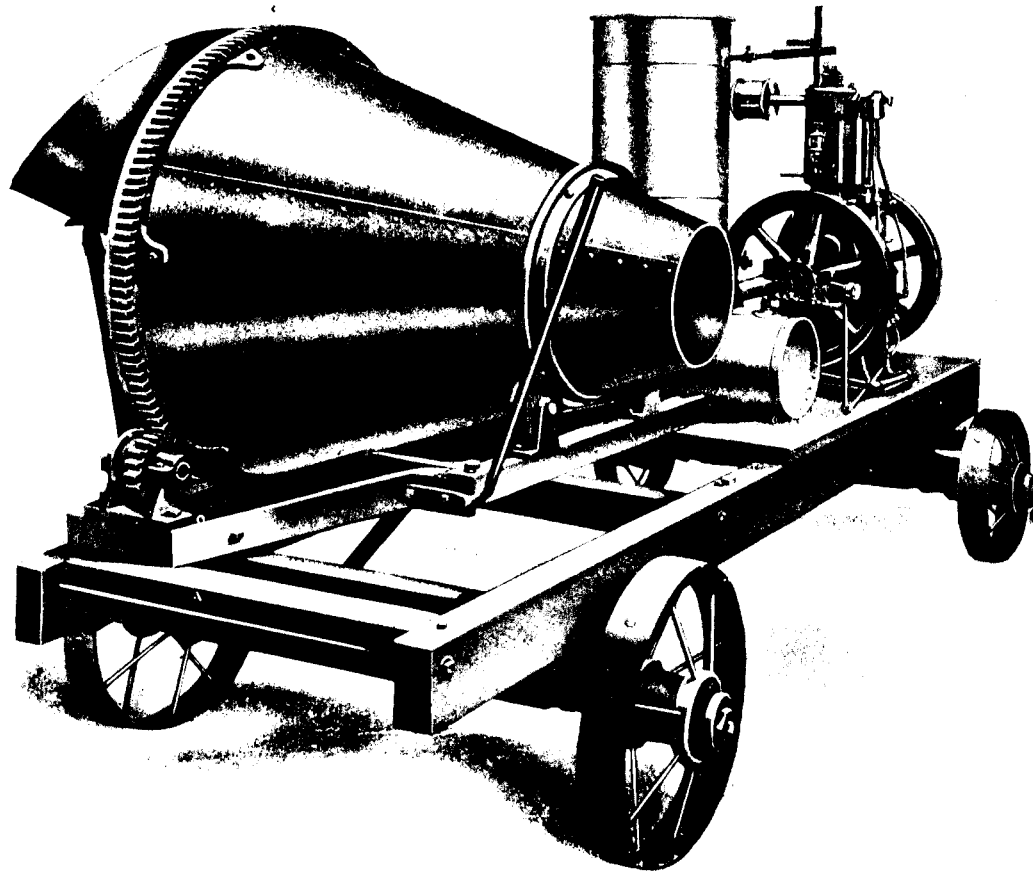
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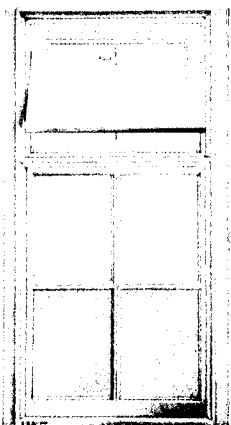
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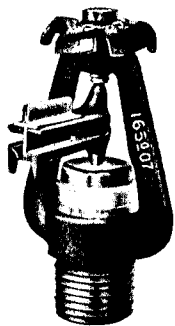
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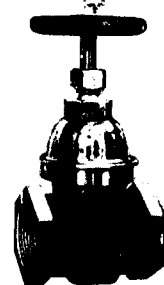
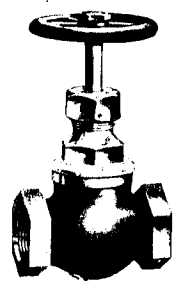
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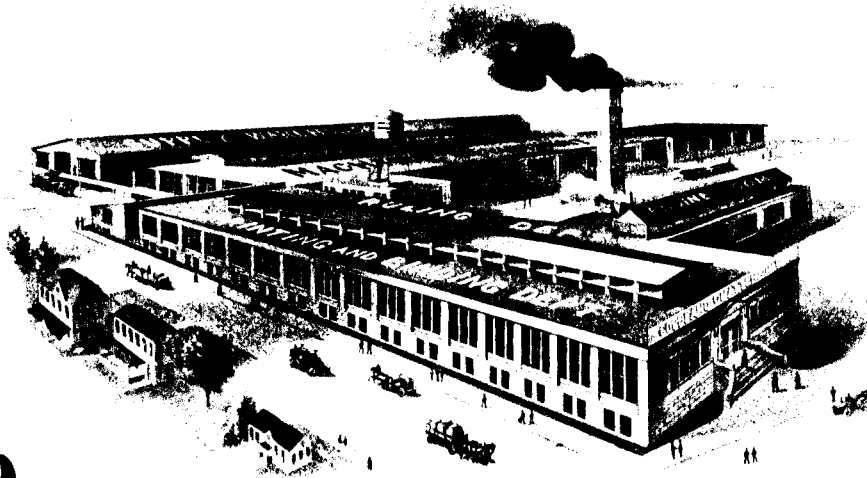
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Owen Sound Portland Cement Co., Owen Sound.

David McGill, Merchants Bank Chambers, Montreal.

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Ideal Concrete Machinery Co., Limited, 221 King St., London, Ont.

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Trussed Concrete Steel Co., 23 Jordan St., Toronto.

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Drummond McCall & Co., Montreal and Toronto.

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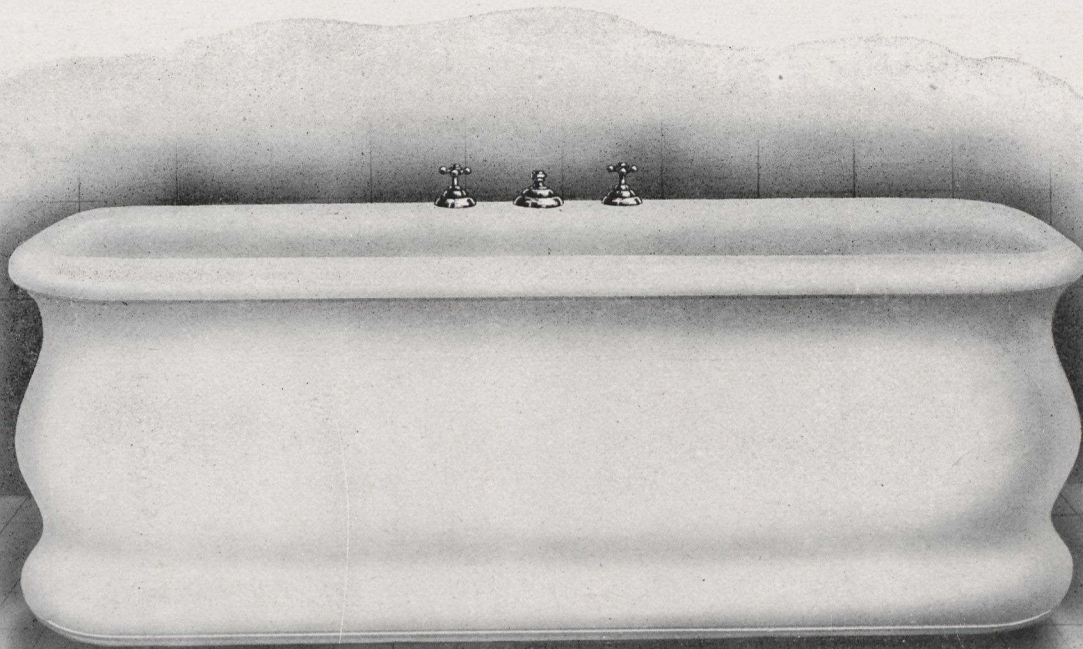
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