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CONSTRUCTION

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

• OFFICE OF PUBLICATION •
• TORONTO •
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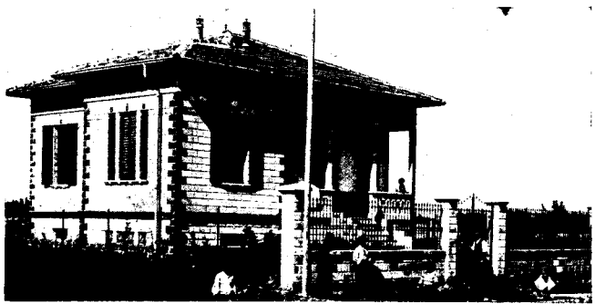
MONTREAL - LONDON · ENG.
WINNIPEG

Ideal Block Construction in Italy

Over $30,000 worth of Ideal Concrete Machinery bought by one Italian Firm alone.

Ideal Concrete Machinery is in use in practically every civilized country in the world; from Italy, where one firm which carries on large operations has alone purchased over $30,000 worth of Ideal Machinery during the past few years, we have just received the photos reproduced in this advertisement —one of an Italian house, the other of an Italian flat.



House erected in Milano, Italy, of Concrete Blocks made on Ideal Machines.

The house is a small one—34 ft. x 30 ft., having four rooms. 7,000 Ideal Blocks were used at a cost of $600.00 The total cost of the building was $2,200.

The "flat," as it is called, has a frontage of 180 ft. and a depth of 46 ft., and contains 66 rooms. 46,000 blocks, 12 in. x 10 in. x 8 in., were used, at a cost of $3,200. The total cost of the building was $22,000.

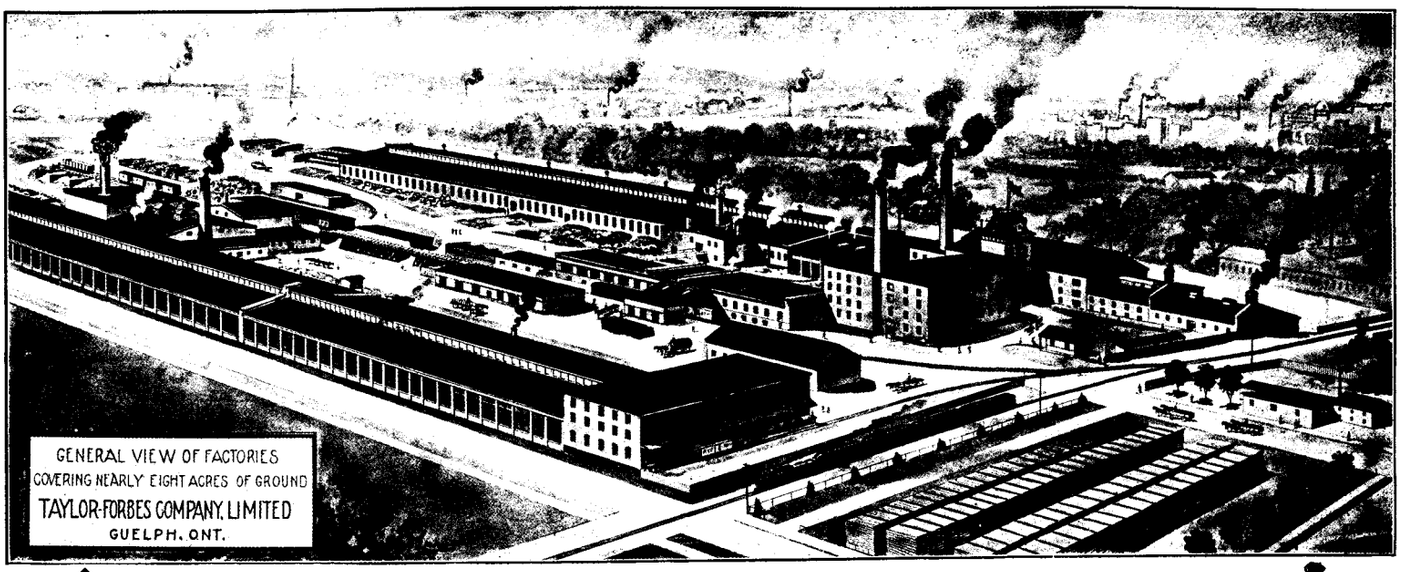
To have used stone or brick in either of these buildings instead of Ideal Concrete Blocks would have increased the cost very considerably without affording even the same durability. There is no type of building in which properly made Concrete Blocks cannot be used advantageously. With our Ideal Block Machines Ornamental Molds, Ideal Sill, Lintel and Dimension Stone Machinery, Tycrete Waterproofing and Colors, any style of architecture can be carried out and the Blocks be faced with any color desired.

Italian Flat erected in Milano, Italy. 46,000 Concrete Blocks made on Ideal Face Down Concrete Block machines were used in its construction.

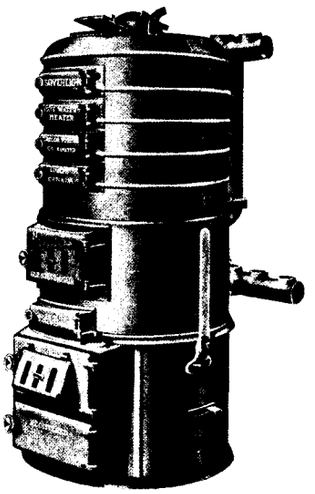
You will want our new 160-page general catalogue.
Send for our proposition *to-day*.

Ideal Concrete Machinery Co., Limited

Dept. C., 211 King St., London, Ont.



"Sovereign" Hot Water Boilers and Radiators



You will have your choice of several good makes of hot water boilers for your new house, and the "Sovereign" will be one of the makes of boilers offered for your selection.

But do not make the selection hastily.

Take the specifications under consideration and ask your friends, who have had experience with more than one make of boiler, where the "Sovereign" stands for heating capacity, fuel economy and ease of operation.

The heating problem is well worth inquiring into, and every inquiry will bring you nearer to the "Sovereign" in preference to any of the good makes it is usually classed with in specifications.

The "Sovereign" is the original boiler with the "Larger First Section," which is an improvement introduced in boiler construction by its makers. But the "Sovereign" still embodies several features of improvement which are not even claimed by other designs of boilers.

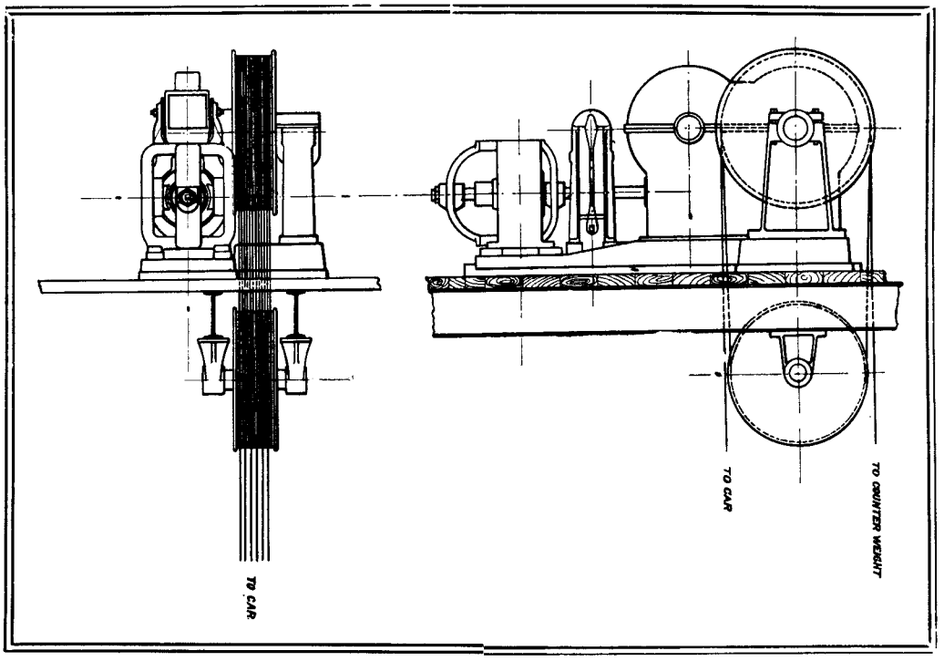
"Sovereign" Radiators have inner screwed nipples and large, straight vents connecting each section. This improved type of radiator was originally introduced into Canada by the principals of the Taylor-Forbes Company.

Write for our booklet, "The Dictionary of Heating." It contains some important paragraphs bearing on the heating problem in a general way.

Taylor-Forbes Company Ltd.

TORONTO—1088 King Street West
MONTREAL—246 Craig Street West
WINNIPEG—Vulcan Iron Works
VANCOUVER—1070 Homer Street
ST. JOHN, N.B.—32 Dock Street
QUEBEC—Mechanics Supply Company

Traction Elevators



The Turnbull Traction Passenger Elevators are designed to meet the exacting demands of modern high office buildings where speeds up to 400 ft. per min. are required.

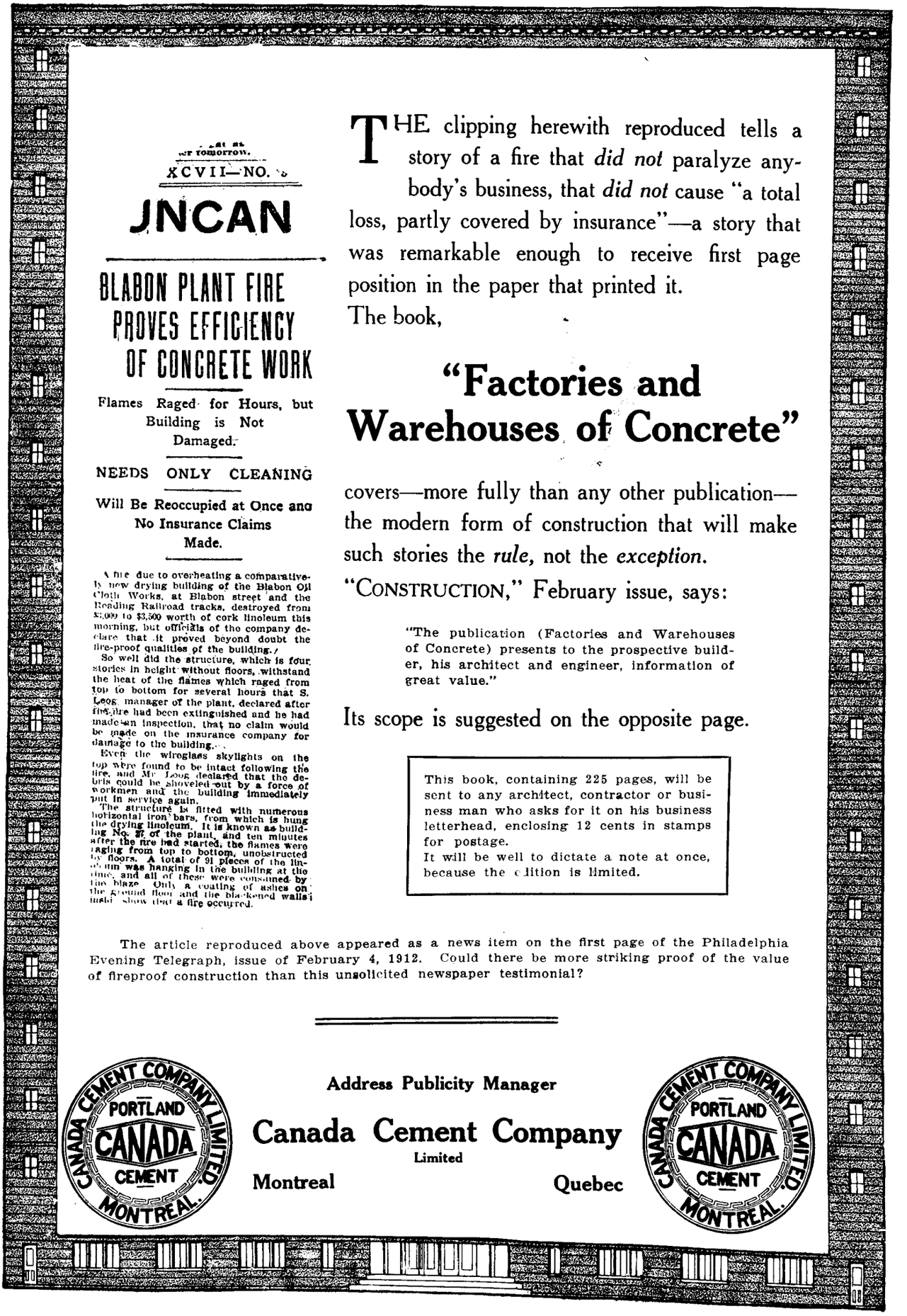
The Tandem worm gear machine coupled to motor is located over the hatchway, and the hoisting cables lead directly to the car and counterbalance.

These elevators are completely equipped with controlling and safety devices so as to be absolutely safe and reliable.

The Turnbull Elevator Mfg. Co.

TORONTO, ONT.

Branch Offices—Montreal, Winnipeg, Vancouver



...er tomorrow.
XCVII—NO. ...

JNCAN

BLABON PLANT FIRE PROVES EFFICIENCY OF CONCRETE WORK

Flames Raged for Hours, but Building is Not Damaged.

NEEDS ONLY CLEANING

Will Be Reoccupied at Once and No Insurance Claims Made.

A fire due to overheating a comparatively new drying building of the Blabon Oil Cloth Works, at Blabon street and the Reading Railroad tracks, destroyed from $3,000 to $3,500 worth of cork linoleum this morning, but officials of the company declare that it proved beyond doubt the fire-proof qualities of the building.

So well did the structure, which is four stories in height without floors, withstand the heat of the flames which raged from top to bottom for several hours that S. Loog, manager of the plant, declared after fire had been extinguished and he had made an inspection, that no claim would be made on the insurance company for damage to the building.

Even the wireglass skylights on the top were found to be intact following the fire, and Mr. Loog declared that the debris could be shoveled out by a force of workmen and the building immediately put in service again.

The structure is fitted with numerous horizontal iron bars, from which is hung the drying linoleum. It is known as building No. 2, of the plant, and ten minutes after the fire had started, the flames were raging from top to bottom, unobstructed by floors. A total of 91 pieces of the linoleum was hanging in the building at the time, and all of these were consumed by the blaze. Only a coating of ashes on the ground floor and the blackened walls must show that a fire occurred.

THE clipping herewith reproduced tells a story of a fire that *did not* paralyze anybody's business, that *did not* cause "a total loss, partly covered by insurance"—a story that was remarkable enough to receive first page position in the paper that printed it.

The book,

"Factories and Warehouses of Concrete"

covers—more fully than any other publication—the modern form of construction that will make such stories the *rule,* not the *exception.*

"CONSTRUCTION," February issue, says:

> "The publication (Factories and Warehouses of Concrete) presents to the prospective builder, his architect and engineer, information of great value."

Its scope is suggested on the opposite page.

This book, containing 225 pages, will be sent to any architect, contractor or business man who asks for it on his business letterhead, enclosing 12 cents in stamps for postage.
It will be well to dictate a note at once, because the edition is limited.

The article reproduced above appeared as a news item on the first page of the Philadelphia Evening Telegraph, issue of February 4, 1912. Could there be more striking proof of the value of fireproof construction than this unsolicited newspaper testimonial?

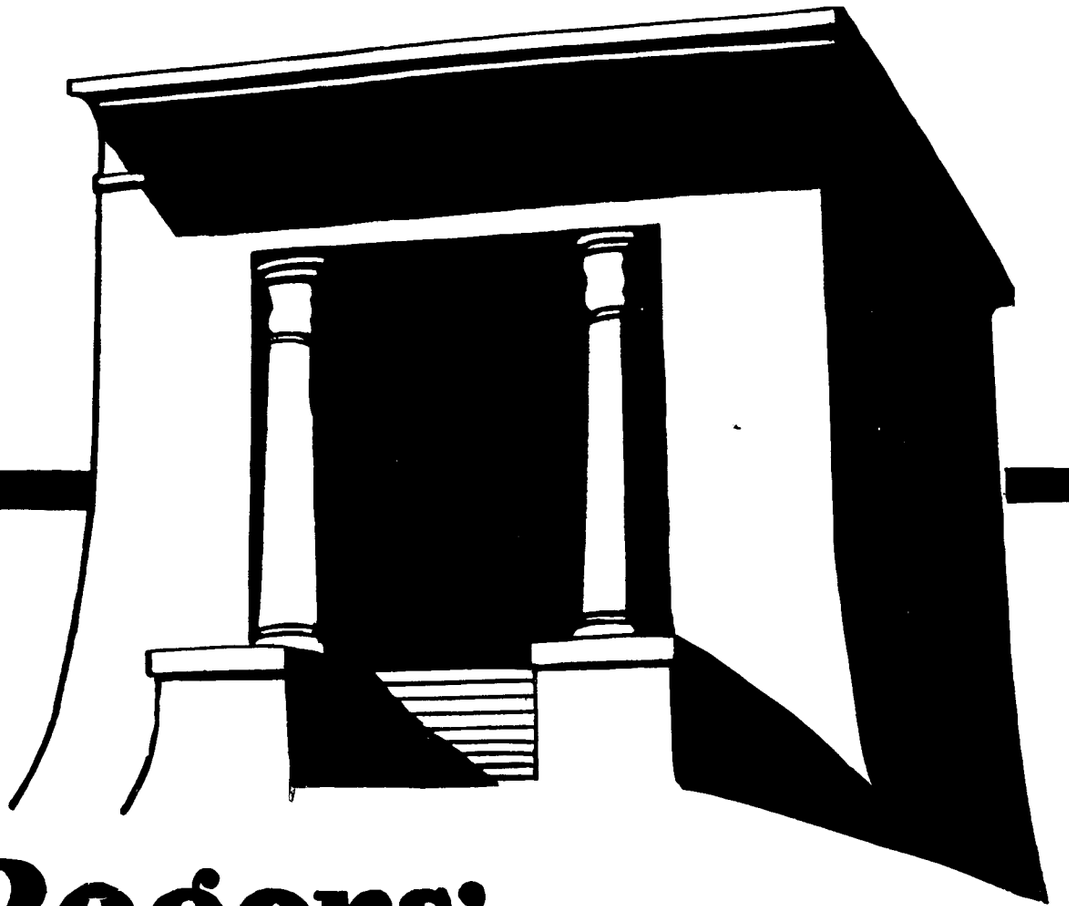
CANADA CEMENT COMPANY LIMITED PORTLAND CANADA CEMENT MONTREAL.

Address Publicity Manager

Canada Cement Company
Limited

Montreal **Quebec**

CANADA CEMENT COMPANY LIMITED PORTLAND CANADA CEMENT MONTREAL.



Rogers' Cement

THE Rogers Brands of Portland Cement are carefully *standardized* to an exact formula, that each brand may *always* give the same high and *regular standard* of strength, *regular* period of setting, and *regular binding* qualities for thin mixtures. It is wise to *specify* Rogers Brands on all important concrete construction. The architect benefits in the *finish* and *stability* of the finished structure. The contractor benefits in the *uniformity* and *rapidity* of set. The mills embraced in the Rogers organization are conveniently located for *prompt* shipment at *low freight cost,* and *reserve stock* is available for *emergency* shipments.

The *Service* of the Rogers organization bears no small relation to actually making the use of Rogers Brands of Portland Cement the most *economical* and *profitable* product for construction undertakings of every type in which Portland Cement is to be *largely* used.

Our Mills are located at Atwood, Durham, Hanover, Kirkfield, Orangeville, Owen Sound and Wiarton.

ALFRED ROGERS, LIMITED

28 King Street West, TORONTO

N. J. DINNEN, Western Sales Manager, Winnipeg

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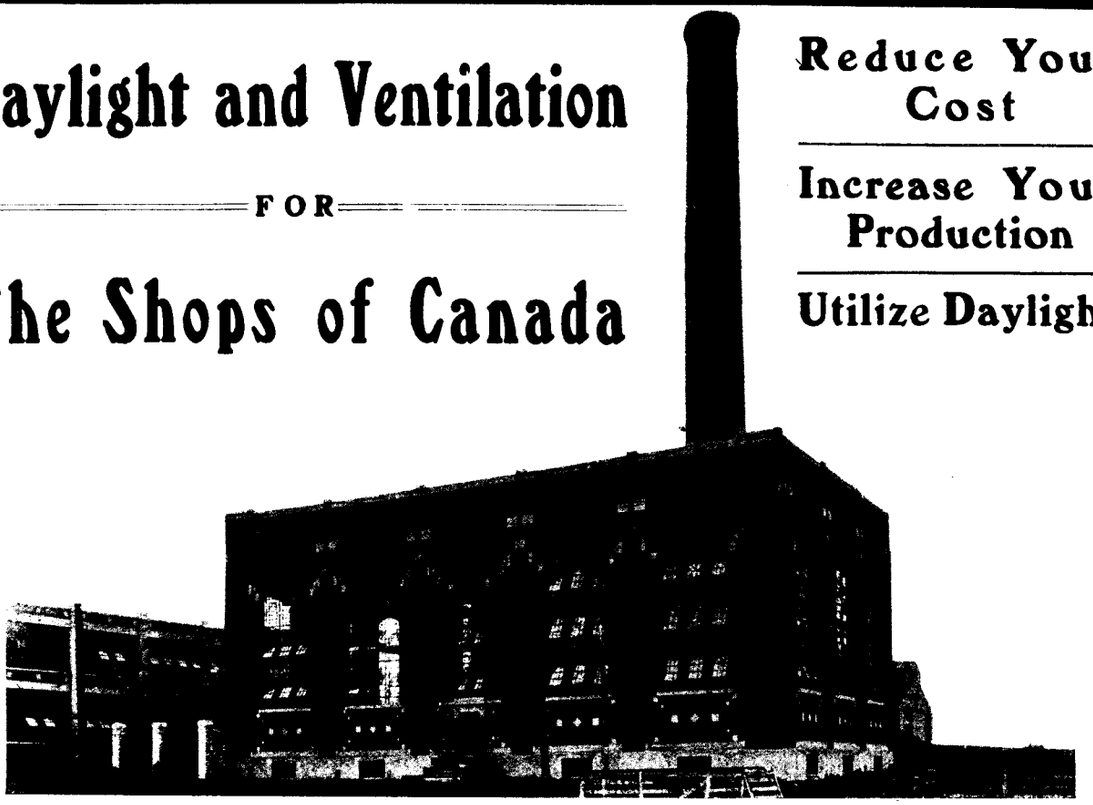
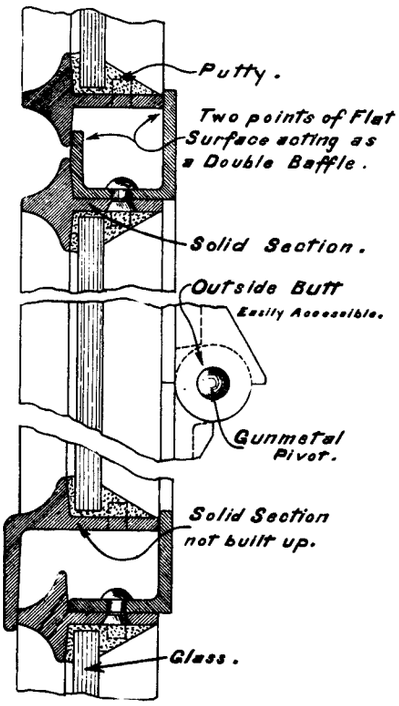
Utilize Daylight





Double Contact Ventilator Detail.

THE illustration shows one of hundreds of installations in Canada and the States, of **"Fenestra"** Solid Steel Windows, representing a superage of approximately ten million square feet.

This remarkable growth of the Solid Steel Window industry in Canada and the States covers a period of less than three years. The fact means something to thoughtful Architects and Engineers. There is a substantial reason back of it.

What our **"Fenestra"** Windows are proving, in installations everywhere—not our printed claims for them—is what sells them.

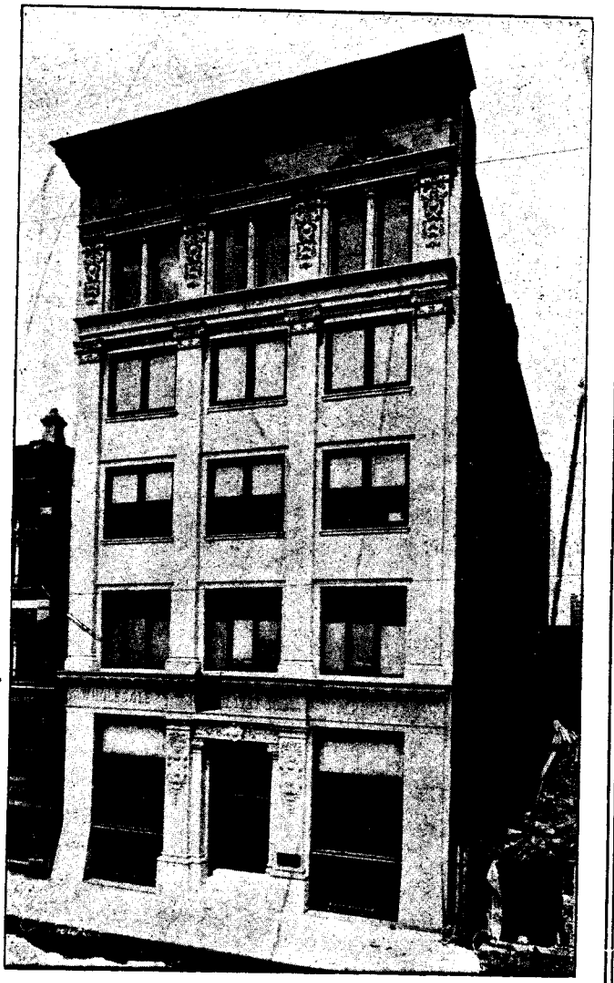
Let us place our Engineering Department at your service for designs and estimates. Send us your plans before they are too far advanced. We are prepared to save you something.

"Fenestra" Windows, for Factories, Foundries, Power Houses, Garages, Prisons, Asylums, etc.

STEEL AND RADIATION, LIMITED

TORONTO

Detail of Stonework furnished by Roman Stone Co.
J. D. Ivey Co. Building, Toronto

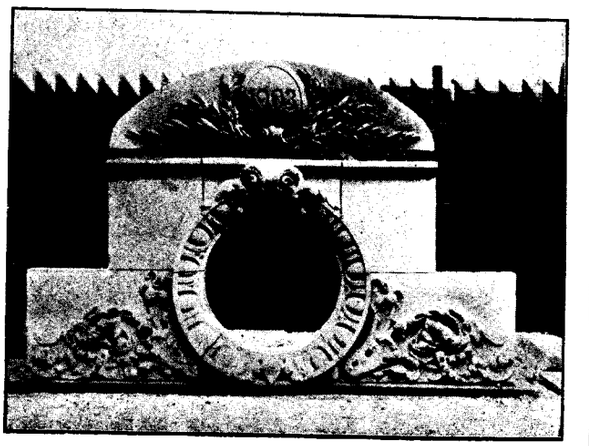


J. D. IVEY CO. Warehouse, Wellington St. W., Toronto
H. C. McBride, London, Ont., Architect.
All the Stone used on this Building is ROMAN STONE

NINE years have improved the appearance of the J. D. Ivey warehouse. Durability and strength, with beauty, make **Roman Stone** an ideal building material; no pains are spared by us to make it satisfy the architect's requirements and the owner's wishes.

ROMAN STONE

Architects who specify **ROMAN STONE** achieve a dignity and beauty of design, at much less expense than those who still adhere to Natural Stone.



Detail of Stonework furnished by Roman Stone Co.
J. D. Ivey Co. Building, Toronto,

The Roman Stone Co., Ltd.

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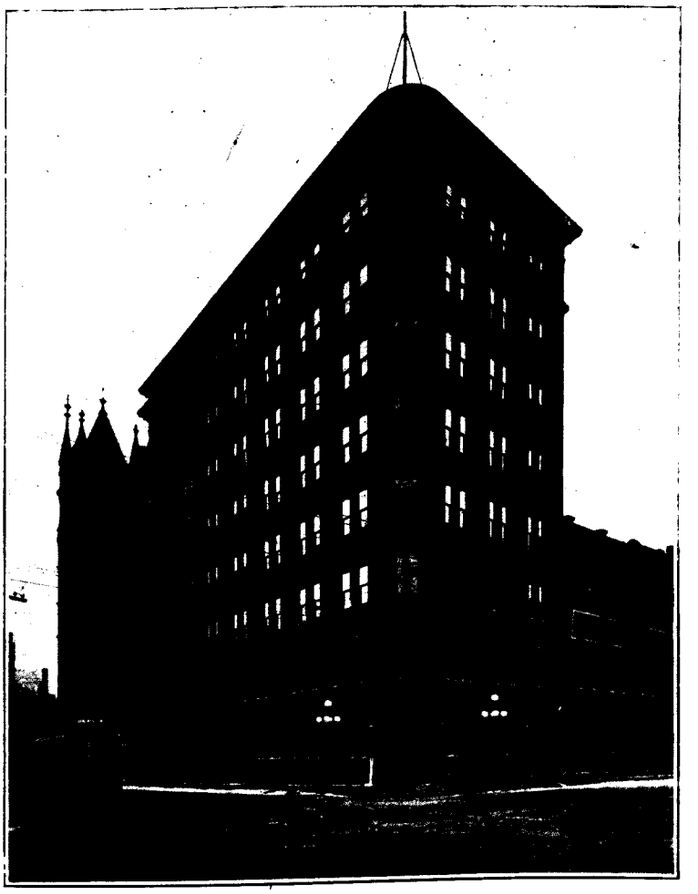
Business Offices:
504 Temple Building, Toronto

T. A. MORRISON & CO.
204 St. James St., Montreal
Sales Agent for Quebec

Is To But Follow The Rule That Canada's Found To Be The Best



Confederation Life Building Addition, cor. Victoria and Queen Streets, Toronto. "Don Valley" Chocolate Color Manganese Brick and Porous Terra Cotta Fireproofing used. J. Wilson Gray, Architect. Brown & Love, Mason Contractors.

Porous Terra Cotta Are "DON VALLEY PRODUCTS"

avail. Canada's foremost architects are pinning their faith on **Don Valley Brick** and **Don Valley Porous Terra Cotta Fireproofing.** It has withstood the severest service test, proving itself to be a fitting material for the architect's worthiest efforts.

Don Valley

BRICK WORKS

Head Office:
36 Toronto St.
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Medusa White Portland Cement

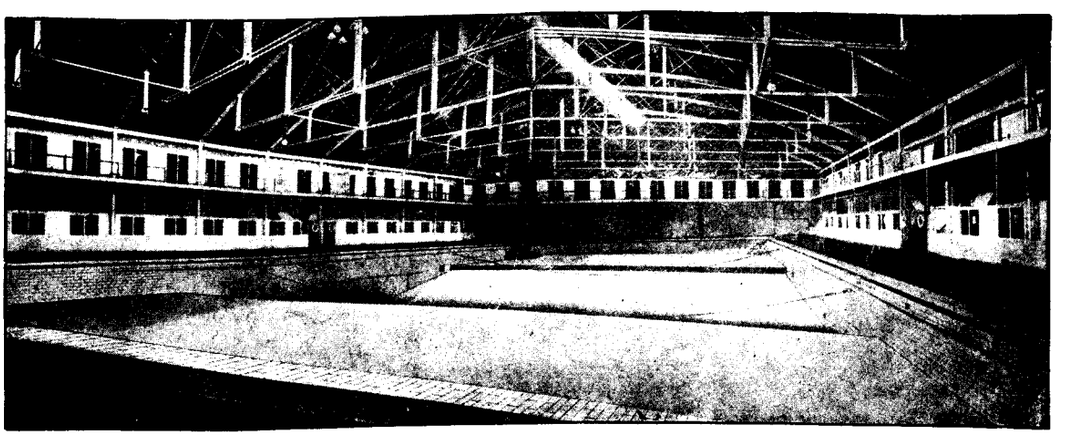
THE ORIGINAL AND HIGHEST GRADE WHITE PORTLAND.

California State Normal School, San Jose, Cal., U.S.A. Largest concrete building of its kind in the world.
Exterior of rough walls are covered with a pebble dash of "Medusa" White Portland Cement.

Medusa Waterproofing

Makes Concrete Impervious to Water

Prevents Discoloration and Efflorescence



St. Louis Auditorium. The largest swimming pool in the world.
Waterproofed with MEDUSA WATERPROOFING
Gives absolutely permanent results and will not affect strength, setting or color of Portland Cement

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REGISTERED TRADE MARK

SUPERIORITY PURITY

DURABLE AS THE PYRAMIDS

AN "ALEXANDRA" BATHROOM.

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ALEXANDRA WARE

Linton Apartments, Montreal. Finley & Spence, Architects. Thomas O'Connell, Plumbing Contractor. Fitted throughout with Standard Ideal Ware.

THE bathroom and lavatory equipment of the modern building, whether it be a residence, or one used for office or factory purposes, is every year receiving a greater share of the Architect's attention. A refinement of design and quality of materials is now demanded, as well as fixtures that embody the newest ideas in sanitary science.

"Alexandra" Ware meets with the approval of Canada's foremost Architects. Built on a quality basis, it has particular claims on the attention of those who value beauty of design, absolute durability, and correct sanitary principles, above all other considerations.

Jacobs Building, Montreal. Equipped with Standard Ideal Ware. Mitchell & Creighton, Architects. W. J. McGuire, Plumber.

THE durability of Alexandra Ware is the result of applying the newest scientific discoveries relating to the process of enameling metal. In our large Port Hope factories, we conducted numerous experiments, before we arrived at the method we now use. "Alexandra" Ware cannot crack or chip. It has a beautiful white surface that cannot discolor under the most trying conditions. For this reason it is particularly suitable for lavatory installation in public or semi-public buildings; places where considerable rough usage must be provided for, and where an appearance and condition of spotless cleanliness is absolutely essential.

CONSTRUCTION

VOL. V NO. 5

CONTENTS FOR APRIL, 1912

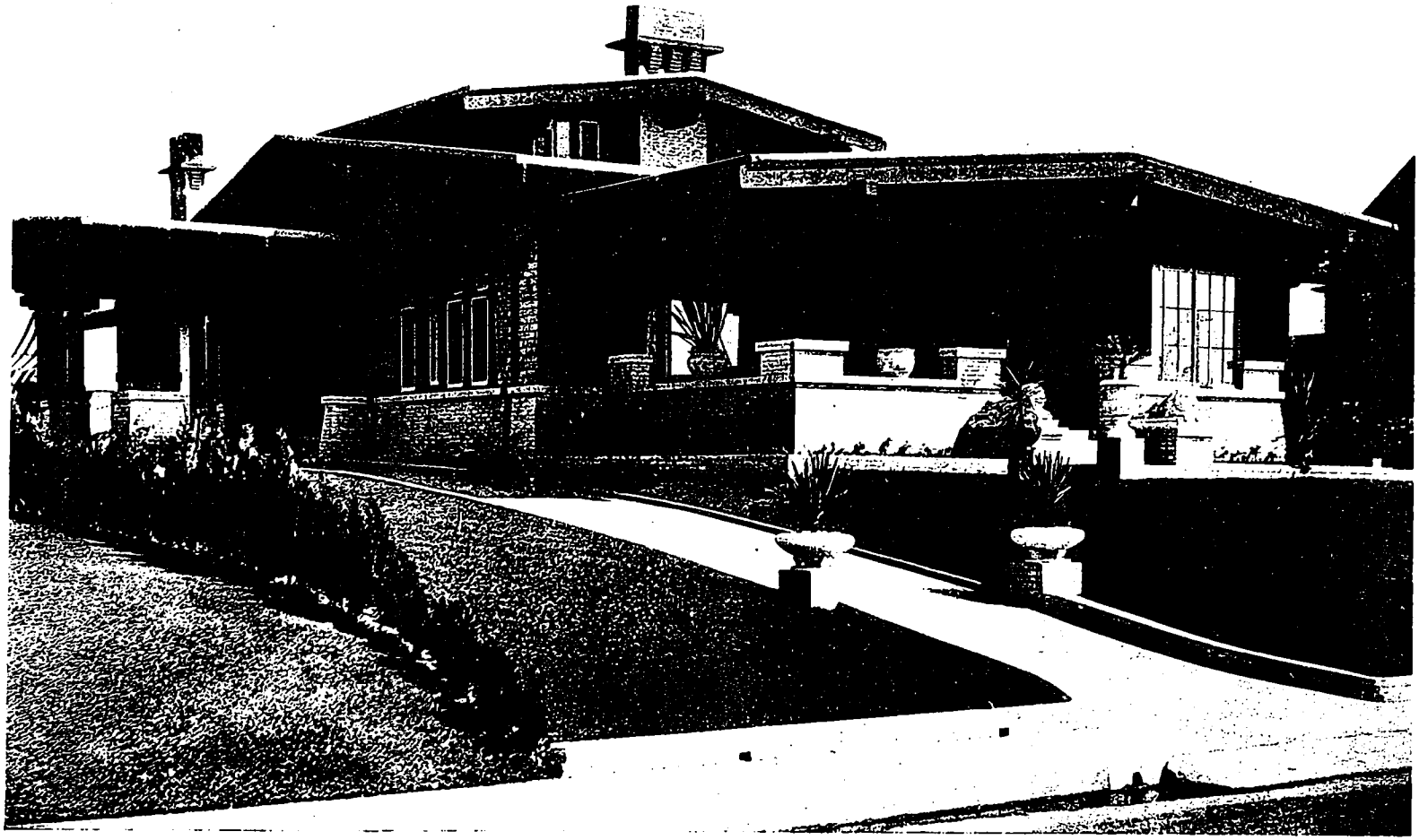
ILLUSTRATIONS

H. GAGNIER, Limited, Publishers

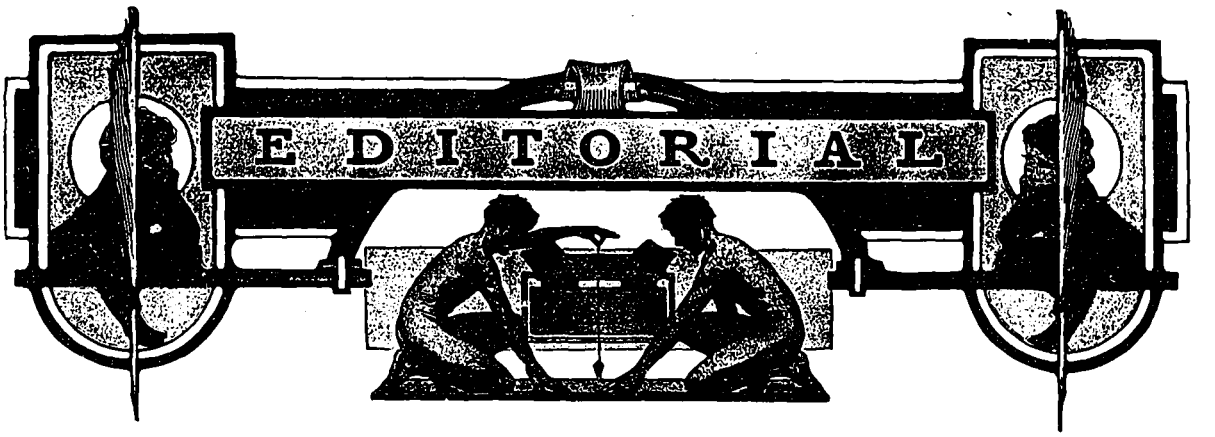
SATURDAY NIGHT BUILDING, TORONTO, CANADA

BRANCH OFFICES :

MONTREAL WINNIPEG CHICAGO NEW YORK LONDON, ENG.



A California Bungalow. Photo by Graham Photo. Co.



¶ *Reason, economy and a judicious selection of site a requisite in the locating and designing of apartment houses.*

APARTMENT houses are fast becoming an integral part of modern life, largely through the economic changes that are taking place in the habits and pursuits of the people. Up to the present their location and construction has been largely without regulation. They are located at any point where the owner of a plot of ground deems an apartment house would be a good investment, except in the rare cases where the objecting residents of the neighborhood are influential enough to secure authoritative prohibition. Their construction is as the architect plans, where an architect is employed, and in too many cases the owner, with the aid of a plan book, is the architect. A well designed and well planned apartment house should enhance rather than detract from the property value of a neighborhood, and the completeness of its interior arrangement give all the comfort that modern civilization can contribute to the occupant. But in order that the apartment house may become popular, where now it is often regarded as a detriment to the neighborhood, both owner and architect should be willing to meet the requirements of position and street perspective. If neighboring residences are set back from the street line, even at the sacrifice of some space, the apartment house should preserve the same uniformity of position. In plan it should be liberal, so that the best sanitary conditions will obtain, and the necessary congestion of large numbers of people living together may not be detrimental to the health of the occupants and the neighborhood. A small amount of common sense, and a less disposition to selfishly carry out that scheme that will bring the largest rental, will make apartment houses popular. It will also tend to ward off the inevitable restrictions that cities will place on this class of habitations, to the detriment of those already constructed and the more or less prohibition of those that may be contemplated. At present in the building laws of most cities the permit is issued upon the plans, and the location does not enter into the matter. It should not only be the business of the city to inspect the neighborhood where apartment houses, garages and other structures often detrimental to a residence district are to be erected, but the authorities should have the same power to prohibit erection in an unsuitable location, as they have to control the constructive features of the building. The time is coming, and it cannot come too soon, for the preservation of the æsthetic and therefore the commercial value of street frontage, when the building line, the light and the design itself will all enter into the question of a permit to build. The more violations of a decent regard for the rights of a neighborhood or a city to preserve a uniformity in purpose and design, the sooner will be laws enacted for such municipal supervision and restriction.

¶ *Necessity of placing a reasonable limit to the height of buildings in Canadian cities—The "disease" brought in by foreign architects.*

THE DEVELOPMENT of Canadian cities has not reached, but soon will, the skyscraper epidemic period, sporadic instances of which are already beginning to appear in ten and twelve story structures, too often designed by foreign architects. It is hoped that municipalities will stop this New-Yorkitis disease before it takes hold of the several ambitious cities of the Dominion and preserve to them a harmonious skyline and a distributed business population. Chicago attempted too late to limit the height of her buildings; other cities in the United States have also, with indifferent results, but this was largely because so many had already been built that it was an injustice to those who wished to meet their rental competition to prevent their building to an equal or greater height. Every principle of beauty is sacrificed to this utility, and, necessary as they may be in New York, and real estate dealers say they are, they are not only unnecessary, but a denial of civic individuality in any city in Canada. The canyons into which high buildings transform streets, shutting out the sunlight, which in some localities is never too much; the crowding of business populations into congested areas, violates every canon of art. The high building is only an Americanism, or, more properly, a New-Yorkism that should be prohibited by municipal statute. Architects will design them if they are ordered, but every architect will con-

demn the principle upon which they are erected. From the architects' standpoint they express in mass an alien spirit of materialism and a violation of every art canon. The limitation of height goes hand in hand with the distribution of breadth in streets and the opening of parkways, and breathing spaces that give convenience to travel and fresh air circulation to the more densely populated portion of our cities. The problem has been worked out in European cities, particularly in Paris, where the height is confined to much the width of the street. While the skyscraper may be an evidence of enterprise it has little to do with settled stabiltiy and the permanent health, comfort, and general good of the city's inhabitants.

¶ *The general ignorance of the people only reflected by the incompetence of civic officers representing them.*

THE BASIC cause of the many municipal ills that cities are heir to, goes beyond the incapacity of the boards of control which seem to hold their constructive destinies in their hands. It lies fundamentally with the people first from whom these nondescript public officials are drawn, and who in the second place are not wise enough to select the best in probity and in business capacity instead of the mediocre to manage their utilities. A most forceful and illuminating example may be found in Toronto, where a park superintendent is badly needed, and report says diligently searched for. Of course an ideal superintendent such as the officials in charge of the parks of Philadelphia or Minneapolis do not grow on bushes, but they can be found if proper inducement, not in money alone, but in opportunity, is offered. The demise of a superintendent of capacity and ability at Toronto makes it necessary that a successor be appointed. An assistant, who has had charge of the office work, a genial, well liked individual apparently, is trying to secure the office of park superintendent. Not because his training in horticulture, engineering, knowledge of the parks of the world, or any of the hundred qualifications that are necessary in the ideal park designer and manager, but because he has served on the staff and wants the position. The argument might seem good to a board of control that knows nothing about tthe work required, and cares only for the votes that keep them in office, but when such an incompetent head is recommended by a horticultural society it makes it at once apparent that this society is only horticultural in name and has no more claim to the high title than the National Geographical Society at Washington that anyone can become a member of on payment of the initiation fee. At its last meeting the name of an applicant who had at least some claims to ability through the possession of a Bachelor of Arts and Science degree, was, according to newspaper report, "unceremoniously turned down" and the appointment of the clerk in the parks department recommended. The reasons given in the debate were indicative of the mental calibre of this horticultural society. One bright mind thought a commission composed of an artist, an engineer and a business man was about what was needed, except that an engineer was unnecessary, and this was the nearest the members came to anything like sense. The matter was at once decided when a member said that he did not see why "citizens should want to put outsiders ahead of citizens who had devoted their lives to the city" and clinched his argument by stating that he had known the father of the candidate and "he was a fine old man." This was certainly a guarantee that under such a head the parks system of Toronto would soon become the envy of the world, but it even then took the last argument to clinch the recommendation. That was a statement by a member that "I don't think we so much want an engineer as a good, practical Canadian boy." This the scribe who reported the meeting states was met by great applause, the phrase being particularly pleasing to the ladies present. This was not a town meeting or a sewing circle gathering, but the formal meeting of the Toronto Horticultural Society, an organization that sympathetically should be the first to demand that the best horticultural talent at least should be obtained to develop a park system that is more in evidence by its absence than in any other city in Canada.

¶ *A warning to real estate speculators applicable to many national projects that are as financially impossible as they are unnecessary.*

THE REFERENCE recently made by the President of the Board of Trade of Edmonton to the purely speculative investment of capital in vacant land in undeveloped districts of the city and vicinity, stating that it was regrettable that this could not be employed where there was an active and unsupplied demand, epitomizes the great mistake and the real danger that lies in Canadian development to-day. While the Minister of Public Works seems to be selecting those improvements that immediate necessity calls for, and which in their entirety will tax the resources of the Dominion not only at present, but for many years to come, private interests are continually urging the Government to expand in unnecessary, and to some extent, ridiculous directions. The development of east and west coast harbors, with improved inter-communication, is more important and feasible than the attempted Hudson Bay transportation enterprise with all that known and unknown quantity involves. The Georgian Bay Canal project would be ridiculous if it were even seriously contemplated. In the face of a falling off of English investment, already indicated, it will be difficult for Canada in the next quarter of a century to take care of those imperative necessities that the rapid development of her manufactures and commerce demands. It will be time enough to introduce new outlets when those already established are developed to a point of highest effi-

ciency and have become inadequate. It is such enterprises as the Trent Valley barge canal of thirty years ago, and the Newmarket fiasco of yesterday that discourage investors. The amount of money sunk in either of these enterprises expended on the harbors of Toronto and Hamilton would have been of present and future benefit to these cities. The double tracking of some of the established railways would be more in the line of sane and practical benefit to the Dominion than a Hudson Bay route that can possibly be used in the future as an outlet to relieve congestion on established lines if it ever comes. Good roads, improved railways, and developed marine terminals are the present necessities. Wildcat speculation, either by the individual or the Governmnt will bring not only the inevitable burst of the bubble, but prove a setback to legitimate progress along lines that mean the true advancement and prosperity of the Dominion.

¶ *The development of an adequate harbor plan for Victoria indicative of the capability of the Minister of Public Works of the Dominion.*

HARBOR improvement in Canada is one of her most pressing needs. While the harbors of her ports on the inland waters of Ontario are important, the improvements are largely in the hands of railroad companies that rival the Government in completeness and expenditure. On the Atlantic and Pacific coasts there are a number of cities that, through their position and harbor advantages, are natural maritime trade terminals. The attention of the Government has been directed to the particular needs of Victoria harbor, and the Minister of Public Works is so impressed with its already immense requirements that an exhaustive report on improvements has been made under his direction by a specially equipped engineer. The significance of this is that the Honorable Mr. Monk is disposed to aid in a practical manner those improvements that are imperative in places where growth is certain, and that he realizes the necessity of expert service in the investigation of present and future conditions, and the formulation of a basic plan for carrying them out in natural progression. The establishment of this comprehensive plan for the development of Victoria as a national port and a western gateway to the Dominion, and the planning of the Capital city through the same system of expert investigation, will alone make his incumbency the most important of any of those who have occupied the office of Minister of Public Works of the Dominion.

¶ *The workingmen's homes and garden suburbs problem now in a conversational state in Canadian cities.*

MODEL SUBURBS are a subject for conversation in Montreal, Toronto and other Canadian cities where congestion has become marked and manufacturers are refusing to locate because of inadequate housing conditions. In none of these cities, except Calgary, has the movement reached farther than the conversational stage. While it is being discussed, however, it is pertinent to call attention to the necessity for the prohibition of the twenty-five foot lot in such districts if any approach to "model" is reached. Municipalities have assumed the right to control the city's milk supply, but no one has thought it possible to prohibit the crowding of tenements upon restricted areas that prevents a circulation of air and sunlight. The price of suburban property, not its value, is such in all these localities that both rents and purchase price of model houses would be prohibitive if even a fair return is sought for the investment. And the investors, no matter what their philanthropic professions may be, will not be satisfied with a profit that would be considered adequate in England. Therefore the housing problem has many difficulties to face that are unnatural as they should be illegal. When the real estate speculators that have got control of most of the available town sites adjacent to these cities have destroyed their chances for profit by their avariciousness and the "boom" has not only ruined them but set back all growth, as it certainly will, then the workingman may be able to realize his dream of a house and garden in the suburbs within convenient transportation distance of his work. Cities in the United States like Chicago have gone through a like experience and the result is that land can be bought nearer that city at half the cost that similarly situated lots but in unimproved sections adjoining these Canadian cities. The workingmen's homes problem is the most serious and vital that confronts Canadian cities. It is already affecting their growth. When it reaches the English investor upon whose advances of capital that growth depends, it will become acute and there will be a scurrying search for a remedy when it is too late.

¶ *The illogical position taken by the Ottawa Improvement Commission in regard to future improvements*

CONSTRUCTION thinks it is strange that men of the supposed intellectual capacity of those members of the Ottawa Improvement Commission, who place obstacles in the way of solving the unification problem of Ottawa by a comprehensive plan, should not see that their avowed reasons are in every way illogical and based on premises that do not exist. The Royal Architectural Institute of Canada does not in any way intimate that the work that is included in such a plan should be done at once. It urges that no work should be done until a complete study of present conditions is made, and those of the future estimated, and a definite plan evolved and adopted as a basis upon which present and future improvements shall be made; and that without change or interference in its general conditions after it is once established as the plan. It is also strange that these members of the commission, in referring to Mr. Todd's report, should say that it referred to a time when "the city

is built upon a much ampler mould," and thus intimate that the complex conditions that now exist through a planless growth should continue until the impossibility for change will cause the city to remain a conglomeration of features, many of them good in themselves, but without a relationship that makes for facility and beauty. As with a single structure so it is with a city. Possibly the two most celebrated public buildings in the United States are the Congressional Library and the Minnesota State capitol. The former wholly because of the interior decoration which includes the best work of America's greatest mural painters. In architectural perfection the latter structure far exceeds the former because, while the Library was designed by architects of no special ability, and even then the working out of the design was frequently interfered with by Congressional committees, the interior was designed after the structure was completed. The capitol of Minnesota was designed, and carried out according to those designs without interference, by a capable architect. The result is that in spite of the ability that is displayed in the Congressional Library interior it does not fit the general design and the structure never can be made other than a patchwork of good and bad architectural details. The entire success of the Minnesota capitol lay in the plan that first outlined the work and the faithfulness with which it was carried out according to that plan. Mr. Todd rightly suggested improvements it would take fifty years to complete, and the fact that he made the suggestion controverts the assumption that there was anything "immediate" in the work other than that which demanded attention at the present time. It only meant that when an improvement is found necessary, a street, a locality or a building, it should have its place and purpose outlined on the plan, and be carried out in general conformity to that outline. It should not require argument to convince the Commission that the first step is a plan; the second step, that the construction now necessary be according to that plan, and that future constructions follow at the time necessity demands, but when made, in conformity with the plan, It also should know that, as laymen, the commission knows nothing on the subject of how the different utilities can be best arranged, and it is as unwise to assume such knowledge as to attempt to direct a law suit or a medical diagnosis. The general contentions noted by Mr. Todd in his report not only exist, but the crudeness that he criticized is still present in a much more aggravated form. The Government cannot afford to delay or even take a narrow view of the improvements necessary in the Dominion capital. The incompetent supervision so far has left undone the one thing necessary, the providing for a definite plan formed by those who are masters of the subject of city planning in all the details from transportation to sanitation and parks. The work that has been done has been not only expensive but crude and unnecessary, and it is time that proper control be placed in the hands of those who are skilled in each line of necessary improvement. No better example of the folly of incompetent planless management need be looked for than in the expensive unbusinesslike and completely inartistic work that has been going on under the direction of the Improvement Commission in Ottawa. Fantastic construction is not art.

¶ *An opportunity for British Columbia to obtain creditable University buildings through a well formulated competition programme.*

IT IS HOPED that the Minister of Education of British Columbia will obtain expert professional advice, or better still, communicate with the Royal Architectural Institute of Canada, before the competition programme for the Provincial University buildings at Point Grey is finally compiled. It will be entirely in the interest of the province in the way of securing results through the designs submitted. As CONSTRUCTION pointed out recently, while the Manitoba Parliament buildings competition programme was approved by the president of the Institute, it had defects that have to our knowledge deterred many of the best firms in the Dominion from competing. It has not, as yet, but properly should, be deemed unprofessional practice for any member of an architectural society, the aims of which are to advance the practice of architecture ethically, to enter a competition the programme for which has not been inspected and approved by a standing committee appointed for that purpose.

¶ *Boards that are financially independent and only responsible to their electors, necessary in in the control of schools and parks.*

WHILE it may be best that the general economic and political destinies of the people in cities continue under the control of delegates in the form of aldermen and boards of control, with service corresponding to the abilities or limitations of the candidates, there are two or three departments in civic government that should be entirely separated from such control. Those are education and recreation. The schools (and, incidentally, the libraries), and parks should each be under the independent government of boards or commissions that are elected by the people, to serve without pay, and from among those citizens intellectually most representative. Their powers should not even be curtailed by the city comptroller. Each should have a definitely provided for revenue, and that revenue expended as the board sees fit, only answerable to the people that elect them for results. This is not a new thought, but on the other hand it is the vogue in every city that has attained any sort of perfection or celebrity for its park or school systems. We believe that the lack of such a system is the greatest deterrent factor in the advancement along these lines in Toronto, where there is no park system worthy to be called such, and the school buildings are mediocre in design, whatever the educational advantages the students that they house may be.

Devon Court Apartments, Winnipeg, Manitoba. John D. Atchison, Architect.

APARTMENT BLOCKS IN WESTERN CANADA

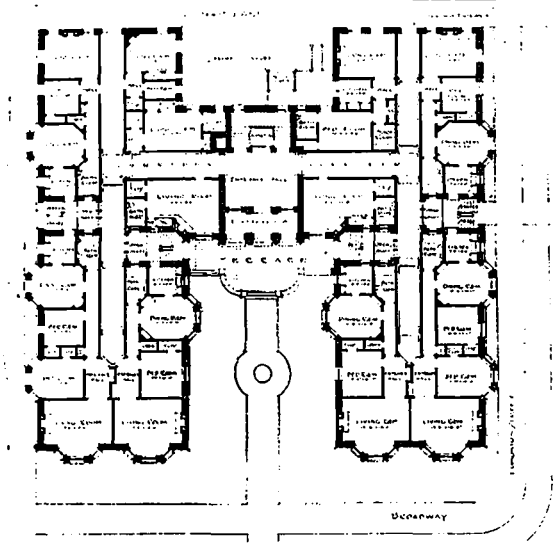
By J. PENDER WEST, Architect

The underlying causes conducive to flat dwelling and their relation to apartment house construction in the newer cities of the Dominion.

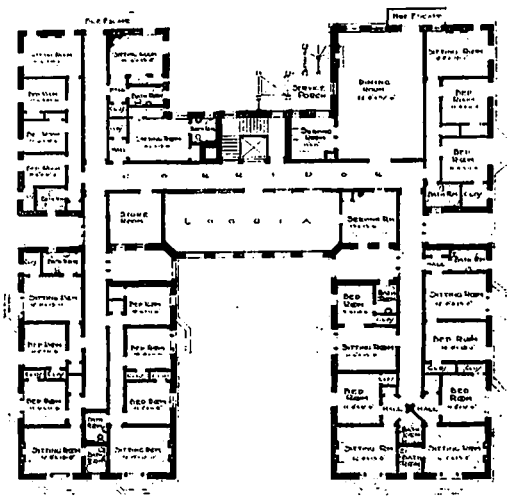
TAKING remarks passed in ordinary conversation as an index to general opinions, the casual observer might easily come to the conclusion that the modern method of living in a suite of rooms forming part of a large building devoted to such a purpose, is a comparatively recent innovation. That such is not the case will be known to those who have visited Edinburgh, Berlin, Paris, Rome, and many other European cities, where buildings of such a character have been erected and occupied for centuries.

An interesting study might be made of the causes underlying this gregarious method of living. The fact that conditions of life differ to an enormous extent in the various countries where a large proportion of the inhabitants occupy these concentrated domiciles, would lead one to the conclusion that in different places diametrically opposite causes have resulted in similar effects. For instance, in searching for such causes it is difficult to discover any that would be common to two such diverse nationalities as the Scottish and Italian. Yet the seven and eight storey houses of old Edinburgh, occupied now, as they have been for probably two hundred years or more, by innumerable families, are as much an integral factor in the life of the population of the Scottish capital as are similar buildings in the gay, sunny and even more ancient Rome. Evidently climatic conditions are not entirely responsible.

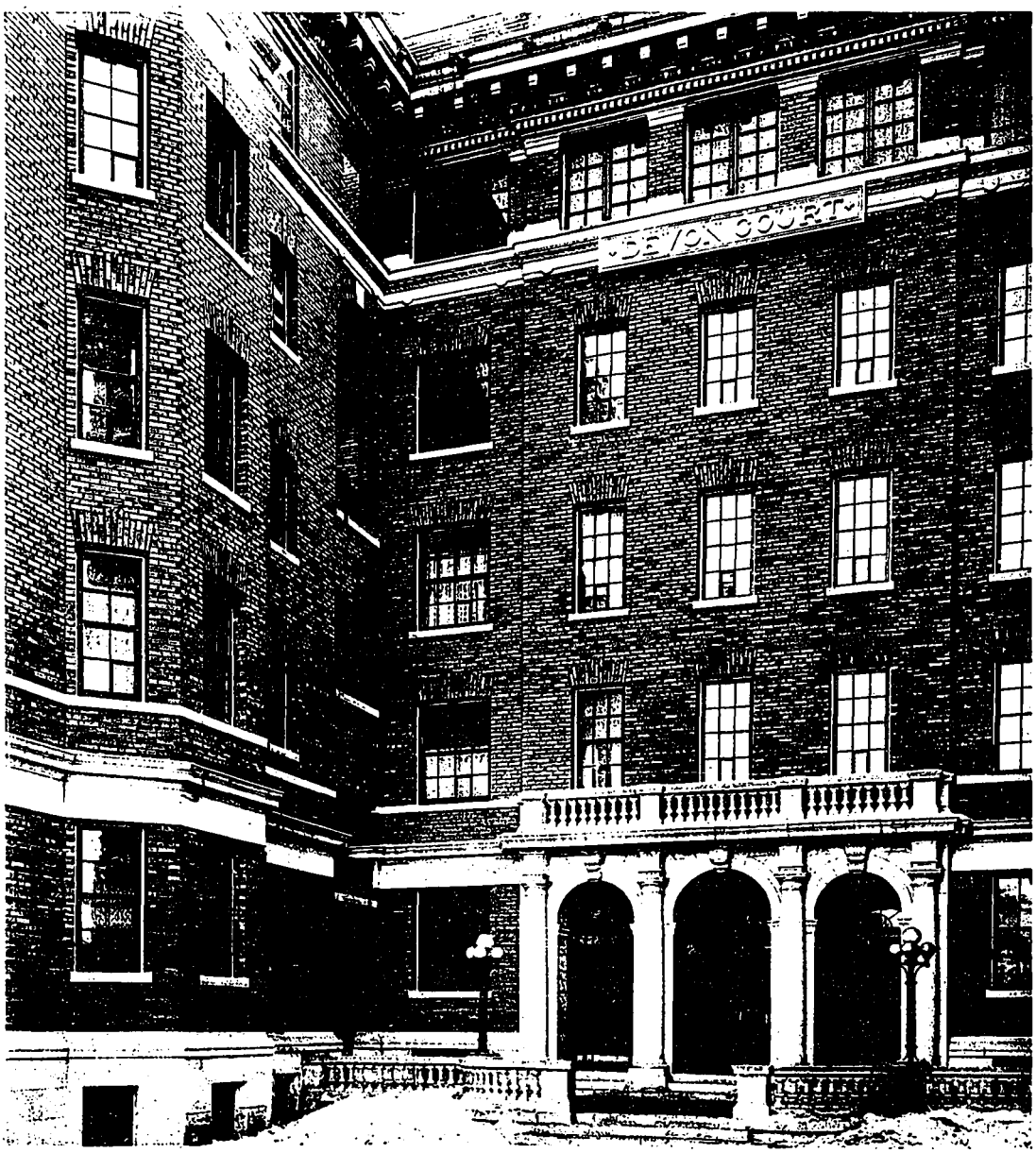
Neither can the custom be attributed to congestion of population, for in that case it would be but reasonable to expect to find a large proportion of the inhabitants of the more crowded parts of London living in this manner, whilst, as a matter of fact, the popularizing of tenement dwellings and flats has proceeded more slowly in the English metropolis than in any other similarly congested city. In Berlin, on the other hand, it is a fairly generally ac-



First Floor Plan.



Fifth or Bachelor Plan.



Detail of Front.

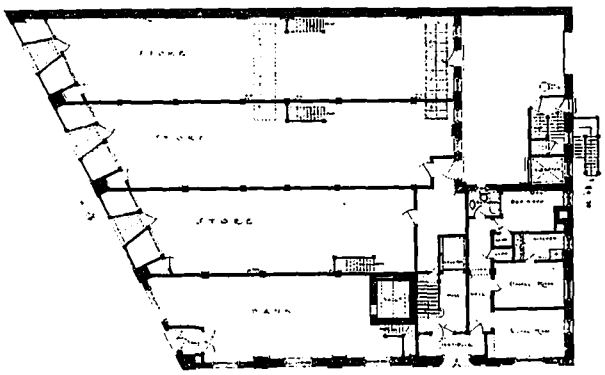
Devon Court Apartments, Winnipeg, Manitoba. John D. Atchison, Architect.

cepted explanation that the undue preponderance of large tenement blocks has been largely caused by the restricted area of the city, whose boundaries till recently were sharply defined by the circumvallation of the old fortifications.

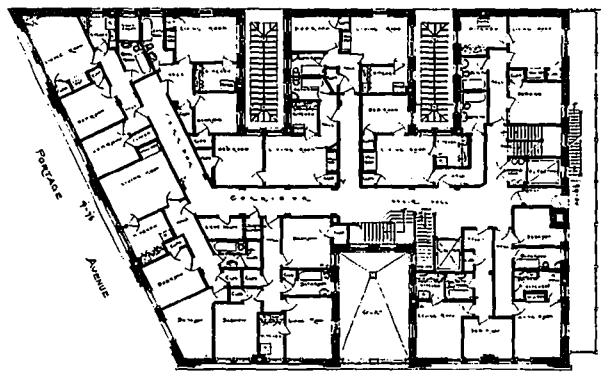
Economic considerations, such as will be referred to later when writing of Western Canada, are obviously not the determining cause in the cases already mentioned. In short, it is much beyond the scope of this article to adequately discuss, much less decide, the causes which have led to such a remarkable coincidence under such widely varying conditions.

In Canada, however, and more particularly in Western Canada, it is not necessary to seek far to find the reasons for the growing popularity of the "apartment block." They may be briefly summarized as follows:—(1), The heating problem. (2), The difficulty of obtaining sufficient domestic help. (3), The necessity or desirability in the long, severe winters of living near the business centre of the city. Of these, probably the first has had the most influence in inducing those who formerly occupied houses to move into the less secluded but more convenient "suite." The high, and increasing, cost of fuel, the inconvenience of giving personal attention to the furnace, and the annoyance and even danger to health resulting from even a temporary breakdown of the heating system of the residence, have driven many against their will to seek the increasingly popular apartment block.

In Winnipeg, upwards of 50 new apartment blocks were erected in 1911, and yet, by the beginning of October it was almost, if not quite, impossible to



Ground Floor Plan.

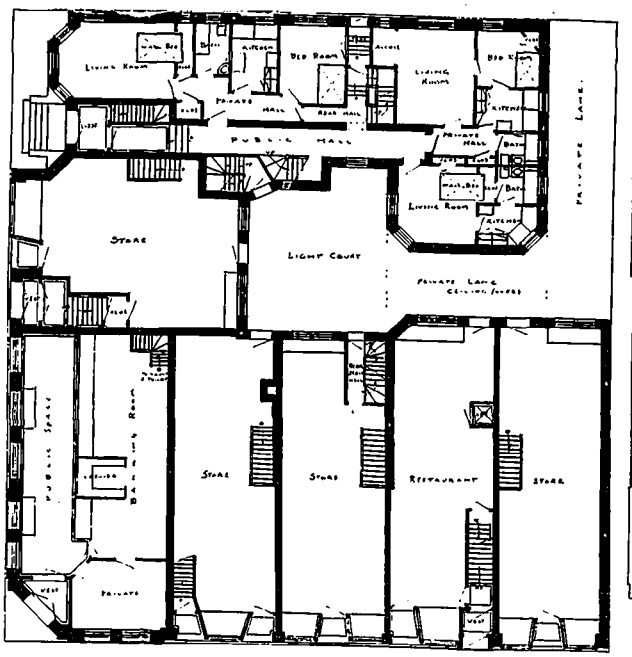


Second Floor Plan.

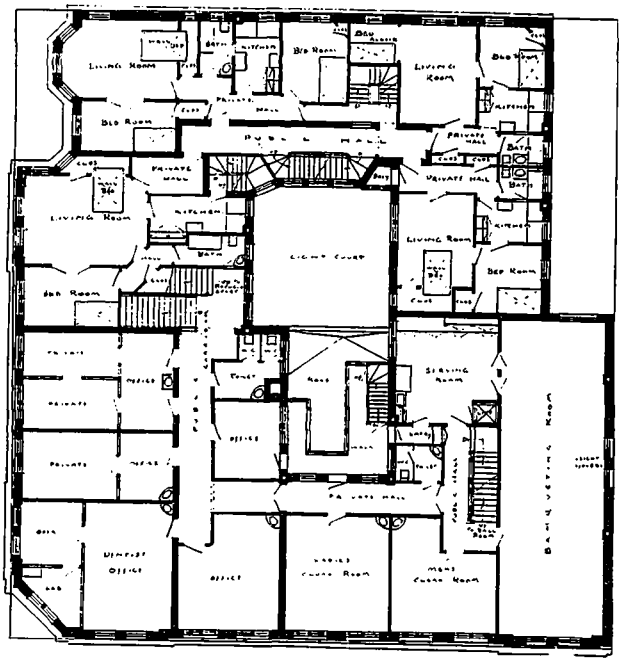
Cassa Loma Block, Winnipeg, Manitoba. J. H. G. Russell, Architect.

secure a suite in the city. The very handsome returns paid by these buildings upon the capital invested is likely to result in a much greater number being erected in the future.

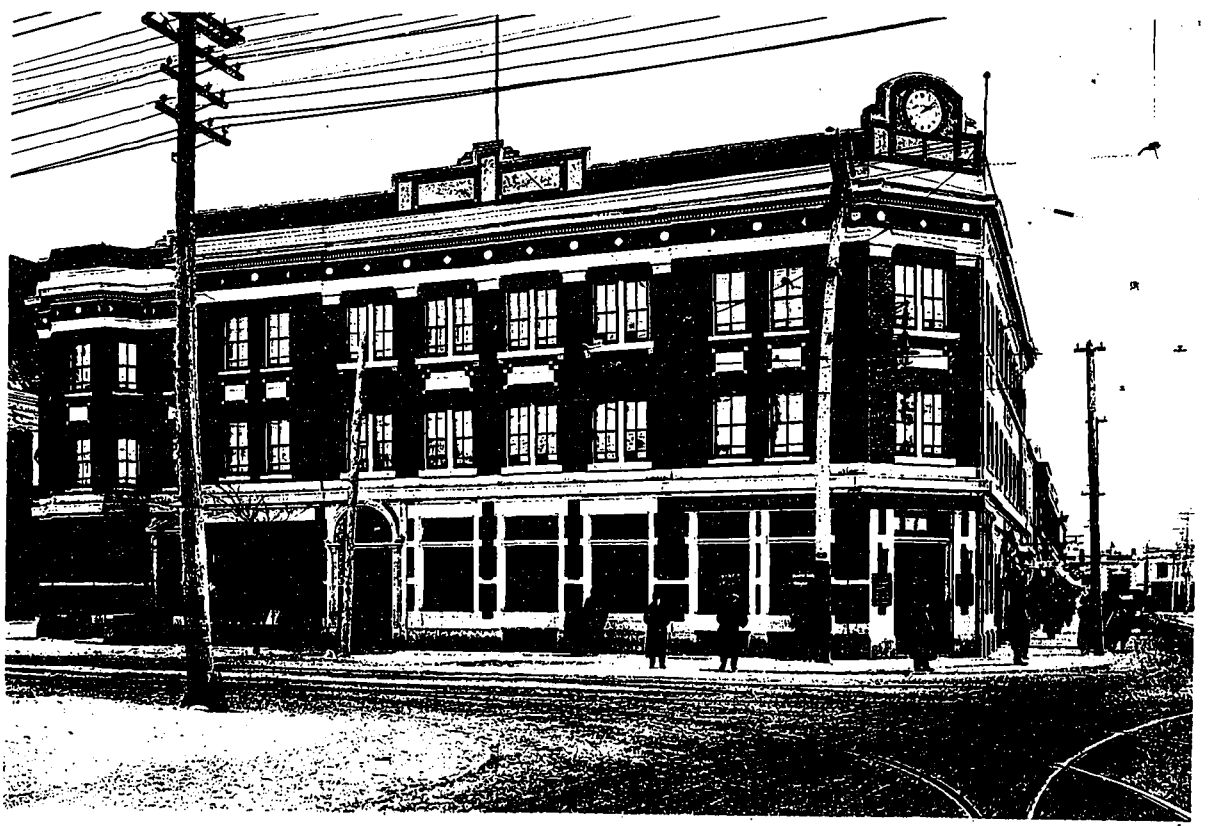
The design of many of the older blocks left much to be desired. In fact, it is scarcely too much to say that in some of them the conditions are such as to be a distinct menace to the health and life of the tenants. The City of Winnipeg, in 1909, made an effort to remedy this state of affairs, and compiled a by-law "to regulate the erection, ventilation and safety from fire or accident, of tenement houses." This by-law was based upon those in effect in various American cities, and although capable of much improvement, has had a most salutary effect in preventing the erection of obviously insanitary blocks. It may be mentioned that in the preparation of this by-law the city authorities invited the aid of the



Ground Floor Plan.



First Floor Plan.



Osborne River Block, Winnipeg, Manitoba. C. S. Bridgeman, Architect.

Manitoba Association of Architects, which, needless to say, was most cordially given.

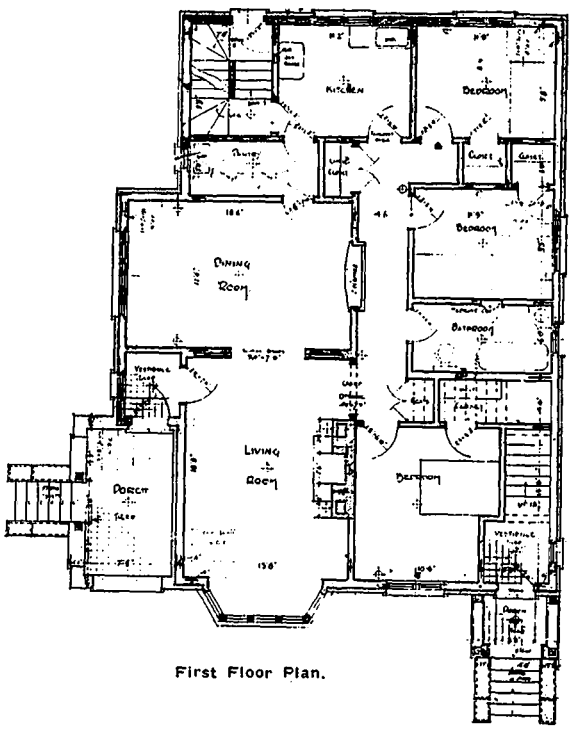
In some of the older cities the erection of apartment or tenement blocks has been limited to the provision of accommodation for particular classes of residents, but in Western Canada, the demand for suites has arisen from almost every class in the community, with, perhaps, the exception of the very wealthy. There are at the present time suites comprising from one to ten rooms, with rents varying from $10 to $125 per month. The demand for palatial residential blocks, such as have become the vogue in New York, Chicago and other American cities, has not yet arisen, but there are signs that at no very distant date, the West will follow in the steps of the East in this direction.

It is impossible, within the scope of a short article, to deal, with any approach to adequacy, with the innumerable points governing the design of a class of buildings varying to such a great extent in their requirements. In fact, it is rather surprising that this class of building has not been the subject of a complete library of handbooks ere this.

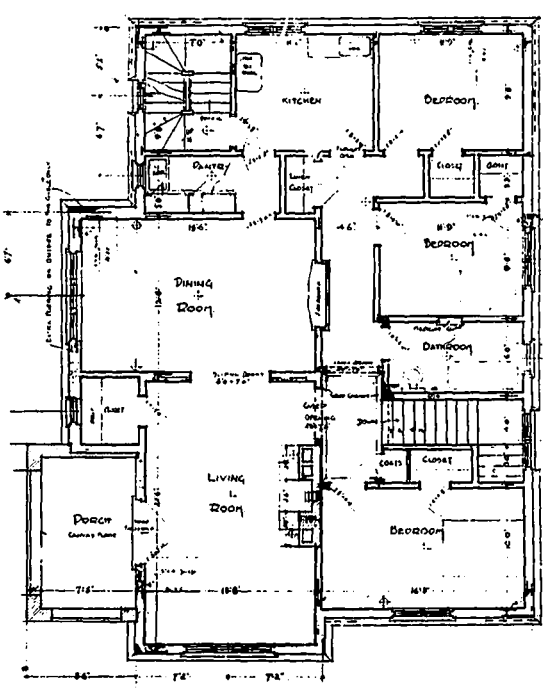
Whilst not demanding the exclusive knowledge and experience that call for the employment of "specialists" in certain classes of building, there is no doubt that a special study of the requirements of this class of building is essential to the architect who would give his client the best and latest results in the block entrusted to him to design. The illustrations accompanying this article are selected with the intention of indicating more or less satisfactory solutions of particular problems, rather than to give a general or comprehensive selection of recent achievements in this direction.

One of the most difficult problems often set before the architect is the designing of a combined business and residential block. In the rapidly developing cities of the West there are naturally many sites, generally situated along the main arteries of communication, the intrinsic value of which is so high as to render it necessary, in order to provide an adequate return upon the capital invested, to place upon the site buildings several storeys in height. The location may be such as to call for stores on the main floor, but at the present time there would be no demand for business premises, such as offices, etc., upon the other floors, and the natural solution of the difficulty is to devote the upper floors to residential purposes. Preferably the arrangement of these upper floors should be such as to admit of their easy conversion into business quarters. The "Casa Loma" and "Osborne-River" blocks, illustrated herewith, are two examples of combined business and residential blocks, both being erected at a corner of a main thoroughfare which will undoubtedly become ultimately a business street. Whilst awaiting this development the owners are securing a handsome return upon their capital investment. In this connection it may be noted that in those cities which have special by-laws governing the erection of "apartment" or "tenement" buildings, special provision has almost invariably been made for these particular cases, by permitting the ground floor, when used for business purposes, to cover the whole area of the site, provided it is separated from the upper portion by a fireproof floor.

In this country the provision of working men's dwellings in the poorer and frequently congested, areas of the cities has not been undertaken by public or philanthropic bodies, as has been the case in some of the cities of Europe and America, and with the spread of the town planning movement the reservation of areas in the suburb for the erection of



First Floor Plan.



Second Floor Plan.

Machray Duplex Dwelling. John D. Atchison, Architect.

Front View.

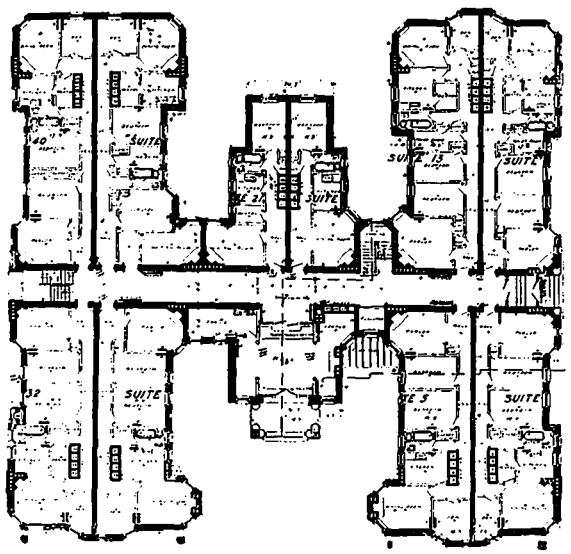
Side View.

Duplex Dwelling for John A. Machray, Winnipeg, Manitoba. John D. Atchison, Architect.

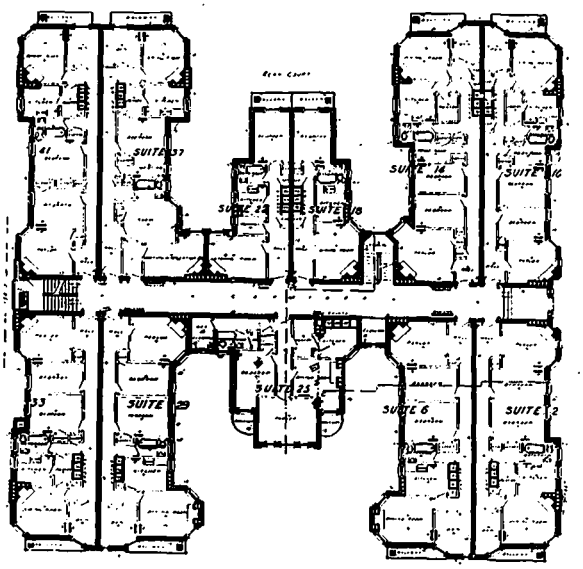
the much more desirable working men's cottages, with means of rapid transit to the scene of daily employment, may obviate the necessity for the erection of "model" blocks within the more confined portion of the cities. In the past a few spasmodic attempts have been made by owners to induce the workmen with their families to live in cramped and unhealthy two and three-room suites, with enormous profit to the landlord, and to the pecuniary, moral and physical detriment of the tenant and his family. Fortunately, there appears to be no decided tendency to move much further along these lines.

The class of apartment blocks most popular in Winnipeg at the present time is that containing about 20 three or four-roomed suites, generally built upon a site with about 70 to 80 feet frontage, and from 100 to 120 feet deep. The illustration of the Hekla Block shows an attempt to deal with a restricted site of this kind, and to provide ample light and air to each room within the building, even should the adjoining lots on each side ultimately be occupied by buildings of a similar nature.

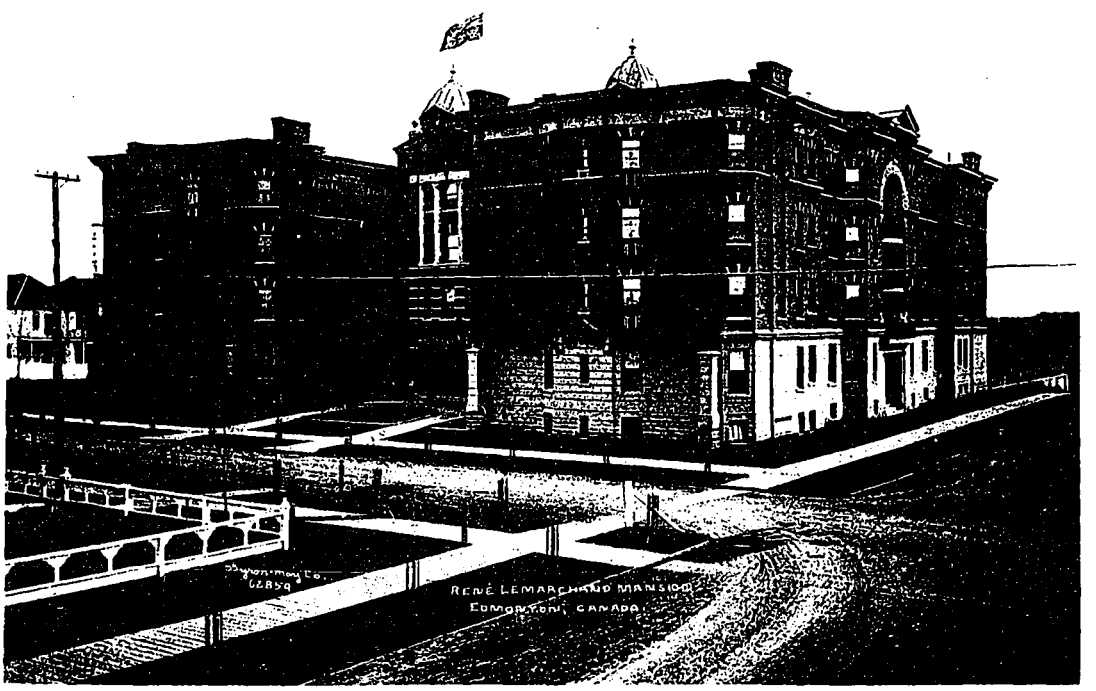
"Devon Court," Winnipeg, and the block at corner of Victoria Avenue and 16th Street, Edmonton, are good specimens of the more ambitious blocks. The former of these provides a cafe and



Ground Floor Plan.



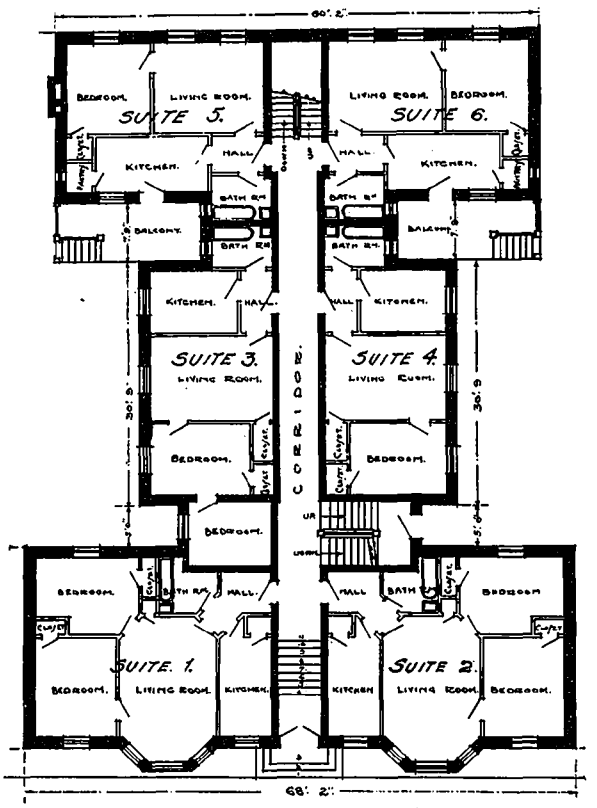
Second Floor Plan.



Apartment Block, Victoria Avenue and Sixteenth Street, Edmonton, Alberta. A. M. Calderon, Architect.

entertainment hall on the top floor, for the use of residents. A comparison of these two plans will give a good idea of how widely different may be the views of competent architects upon some points. In the Edmonton block, for instance, the only way to the front rooms of the principal suites leads past the bedrooms, whilst in the Devon Court block this is considered sufficient justification for the sacrifice of the necessary floor space for a public passage to bring the main entrance of the suite within easy reach of the reception rooms. The provision of hoists in the one building, instead of the rear entrances to the suites, as provided in the other, is another point on which opinions will be divided.

Compromises are notoriously unsatisfactory, but



Plan of Hecla Block, Winnipeg. J. Pender West, Architect.

the position occupied by the "duplex house" as a compromise between the independent residence and the apartment block, has much to recommend it. The one illustrated shows a particularly happy treatment of both plan and elevation, although the full economy of this class of dwelling could perhaps be better appreciated in the case of several adjoining duplex residences with a common heating system, sewer, etc.

Space does not permit of the illustration of basement plans of these buildings, although in some cases interesting features occur. The provision of a common laundry, lockers for each tenant, janitor's quarters, fire escapes, mail boxes, annunciators, gas stoves, and innumerable other points are so much a matter of course as scarcely to need mention. The days of the garbage chute from the upper floors, with its insanitary effluvia, are fortunately numbered, the placing of a small cupboard, accessible both from the inside and outside of each suite, in which the garbage pail can be placed by the tenant and removed by the janitor, proving a much better expedient.

As before said, the planning of apartment blocks, whilst not necessarily the work of a specialist, calls for a large amount of carefully thought out detail, in order to produce the best results. The main points to be considered may be shortly put:—(1) Ample light and air to each room in each suite; (2) Direct access to each suite; (3) The minimum of space wasted in passage and halls; (4) A careful and continued study of the latest conveniences specially adapted for this class of dwellings.

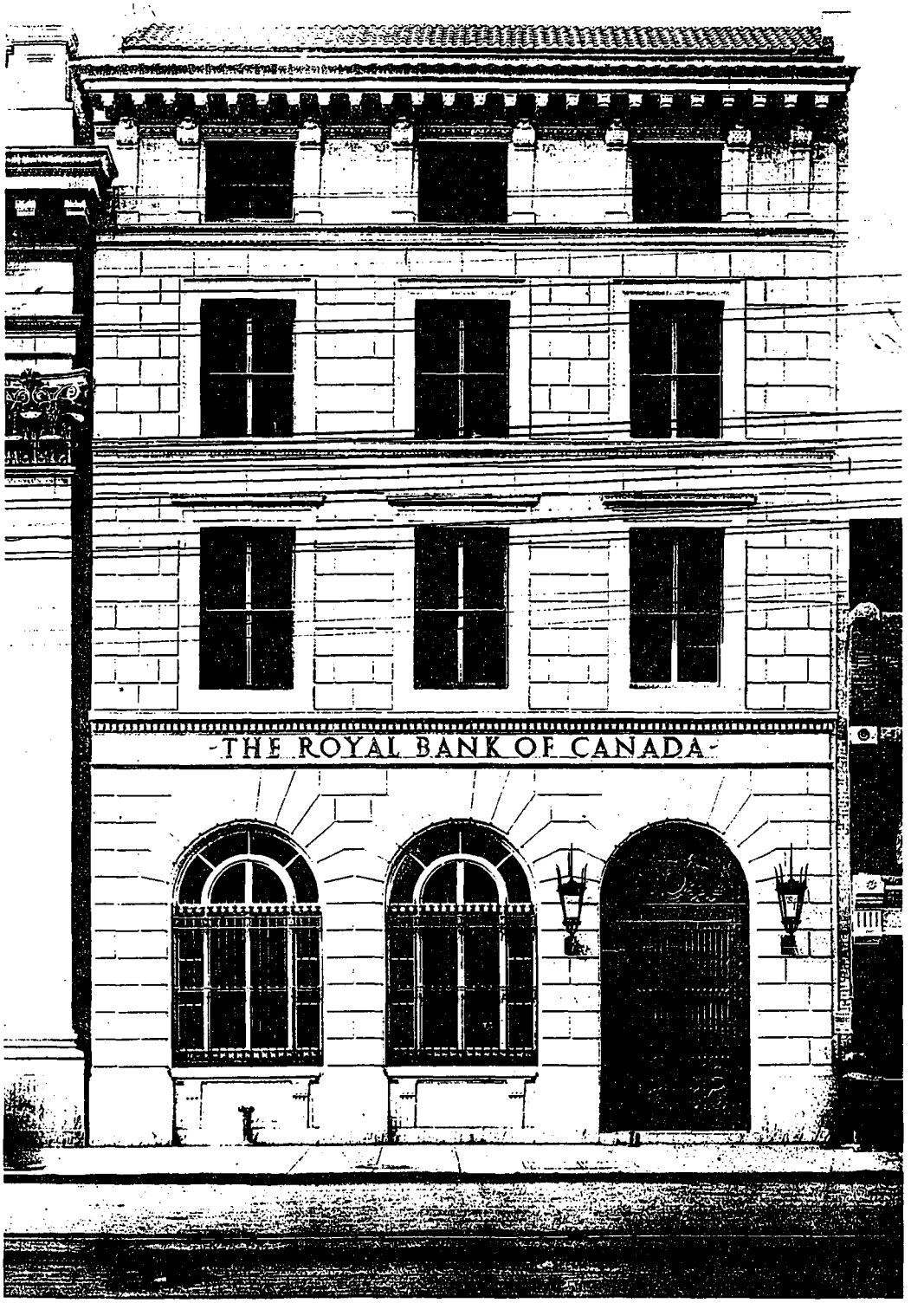
THE ROYAL BANK BUILDING AT WINNIPEG

One of the recent additions to the architectural advancement in Winnipeg. A credit to a great financial institution and a valuable unit in the street architecture of the city.

THE PROBLEM of designing a building set between others that are in themselves distinctive and still retain an individuality of expression that is not obtrusive, yet does not detract from a harmonious standpoint, is successfully solved by the designers of the Royal Bank Building on Main Street, Winnipeg, Carrere and Hastings, of New York, and Eustis G. Bird, of Toronto, associate architects. If one wished to be critical it might be suggested that the grille doors that protect the entrance might have been recessed to an extent that would prevent them when open from obstructing onto the street, but in design these grilles are well worth examination. The building, which was completed last September, is forty feet front by one hundred and twenty-five feet deep, and four stories high.

The upper floors are rented for offices (among them being the Western Canada office of Construction), and a space occupied by the inspector of the western branch of the Royal Bank. The exterior front of the building is executed in especially tooled pink Milford granite, and the exterior grille doors, and also the window grilles, are of solid bronze.

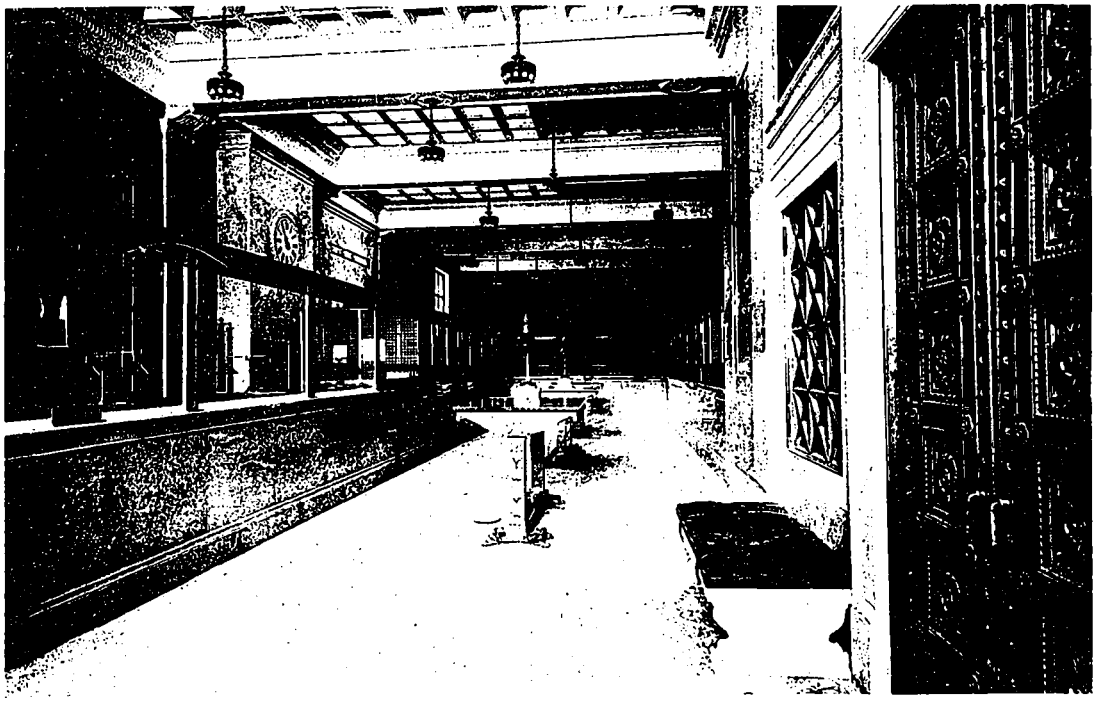
The interior of the banking room, which is on the ground floor, and occupying the centre site, except the space for the hall for elevator and stairway, is admirably arranged. The entire banking room, together with all halls, is lined with Hauteville marble. The floors are laid in Tennessee marble. The counters are also of Hauteville marble, and the grilles in connection with them are of solid bronze. The security vaults and safety deposit vaults are in the basement. These are extensive and perfectly appointed, and include a room arranged for the use of customers of the bank. The walls of the safety deposit department in the base-



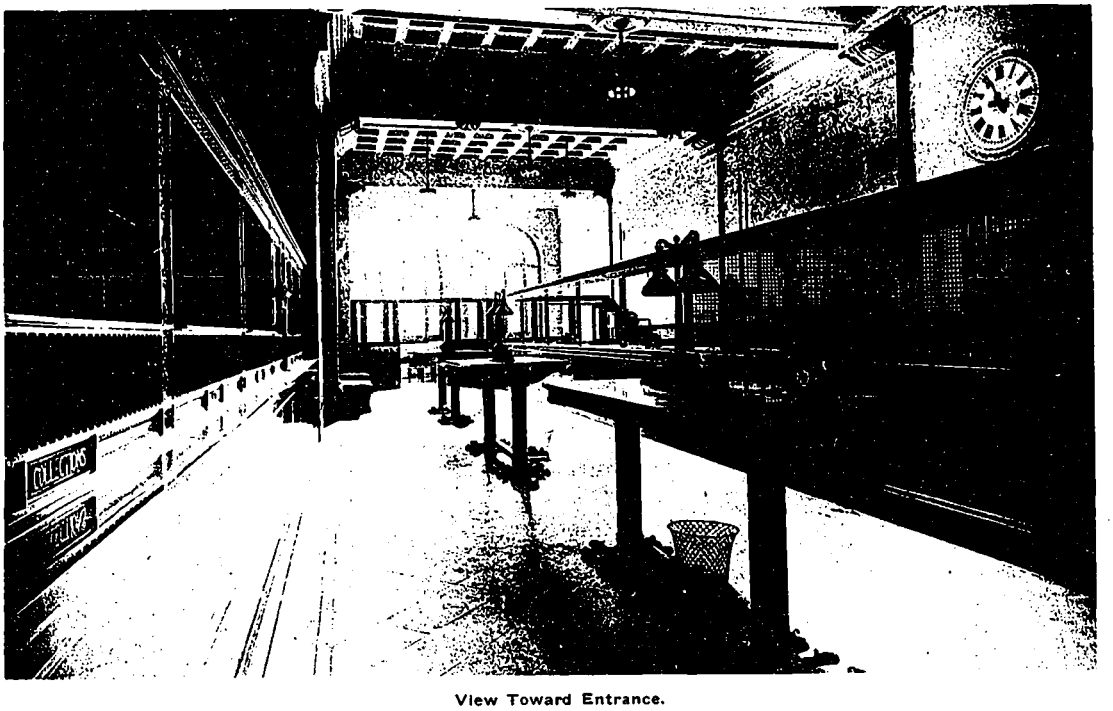
Royal Bank of Canada, Winnipeg, Manitoba. Carrere & Hastings, New York, and Eustace G. Bird, Toronto, Associate Architects.

Detail of Entrance.

Royal Bank of Canada, Winnipeg, Manitoba. Carrere & Hastings, New York, and Eustace G. Bird, Toronto, Associate Architects.



View from Entrance.



View Toward Entrance.

Royal Bank of Canada, Winnipeg, Manitoba. Carrere & Hastings, New York, and Eustace G. Bird, Toronto, Associate Architects.

ment are lined from floor to ceiling with Missisquoi marble, and the floors also are laid with this material.

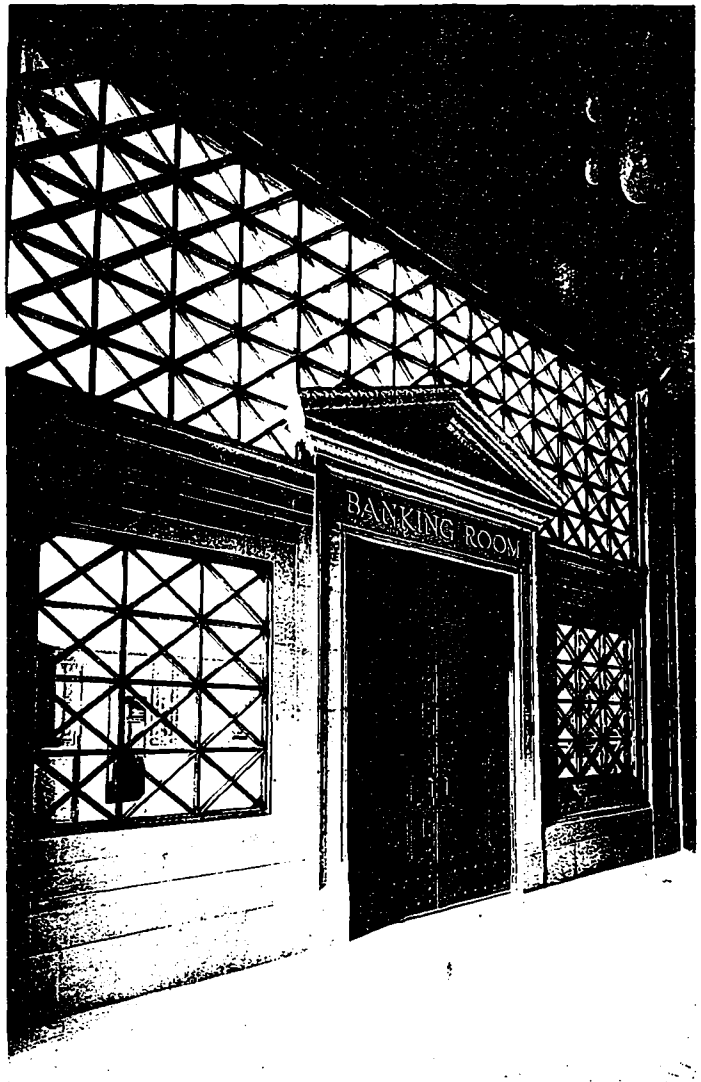
The elevator fronts and all banking room doors are of solid bronze richly ornamented. These doors are said to be the most handsome in Canada. They were executed from the architect's designs by the Canada Foundry Company. There is a noticeable harmony between the ceiling ornamentation in the banking room and halls and the ornamental bronze work, which, with the complimentary color and grain of the marble, gives a most satisfying finish to the interior. The heating is by indirect steam.

The construction was in charge of Norcross Bros. Company, as general contractors, who also supplied the granite and cabinet work. The sub-contracts were represented by: Steel work, Hamilton Bridge Works, Hamilton, Ontario; marble work, Smith Construction Company, Montreal; bronze and iron work, Canada Foundry Company, Toronto; plaster work, the Fernald Company, Montreal; vault work, J. and J. Taylor, Toronto; heating and plumbing, Jas. Ballantyne and Company, Winnipeg; electric light fixtures, Mitchell, Vance Company, New York; bronze cheque desk, John Williams, New York; elevators, Otis-Fensom Company, Toronto.

ROMAN LONDON

ARCHÆOLOGISTS assembled in congress in London recently and their special object being the forming of a chronological survey of London and its antiquities. The remains of Roman London to be found within the square mile of the city were visited. The itinerary was sketched by Mr. Allen S. Walker, acting hon. secretary to the congress. Mr. Walker indicated the course taken by the Roman wall as far as the Tower of London. As to the origin of the city, emphasis was laid on one fact which escaped the casual student of London history, and that was that the whole of the British names which remained were associated with water —the Thames, the Fleet, Dowgate, Billingsgate, (associated mythically with King Lud, who is supposed to have built it), and Ludgate, or Flood-gate. Extracts were read from old histories, suggesting that after Brutus had finished building the city, which he called New Troy, he made choice of the citizens to inhabit it and provided them with laws for their government, and that if King Lud ever did exist he spent most of his time in London. It was singular that there was more of Roman than of Saxon London. The Saxon finds had been extremely few. There was not a single building that was Saxon in date in the whole of London or in the country. London was not a second Rome. It was a colonial city. Many of the houses were of wood with mosaic pavements. It was a place of distribution of the food over the country and for the troops. London was never the most important city. The remains of the Roman buildings were clumsy and rough, and did not suggest that London could have in any way rivalled the superiority of ancient Rome. The first place visited by the archæologists was the remains of the Roman wall in the foundations of the General Post Office. The interesting feature of this bastion is that it is the only one that has been found turning a corner where the walls run round. The bastion had no proper connection with the wall; it was simply joined to it. The view was expressed that the bastion was carried out in later years to a salient angle for the purpose of giving a flank defence, and it was doubtful if it went back so far as the Roman period, and it might be Norman. The Post Office authorities were congratulated for having preserved this interesting memorial of London, and the hope was expressed that if ever the Post Office buildings were extended beyond their present dimensions the memorial would not be disturbed. Quoted archæological authorities went to prove that the bastion was of Roman date, since it was filled with nothing but Roman remains, which were preserved in a small case at present in the possession of the Post Office authorities. At the Guildhall Museum, the curator indicated the Roman remains in the shape of flint implements, pottery, the statue of the Roman warrior found in the bastion in Camomile street, and the tessellated pavement discovered twenty-three feet deep in Bucklersbury in 1869. Another example of the Roman wall was seen at Barber's bonded warehouse, Cooper's row, Trinity square. The Roman bath in Strand lane was visited. Concerning the Roman relic, the theory was advanced that it might be a first or second century bath, and that it was in the house of a man who farmed the lands on the heights of Holborn. This allusion to Roman husbandry led to the supposition that in the Roman period Britain was the Roman Canada, and exported corn to Rome to feed some part of the population there.

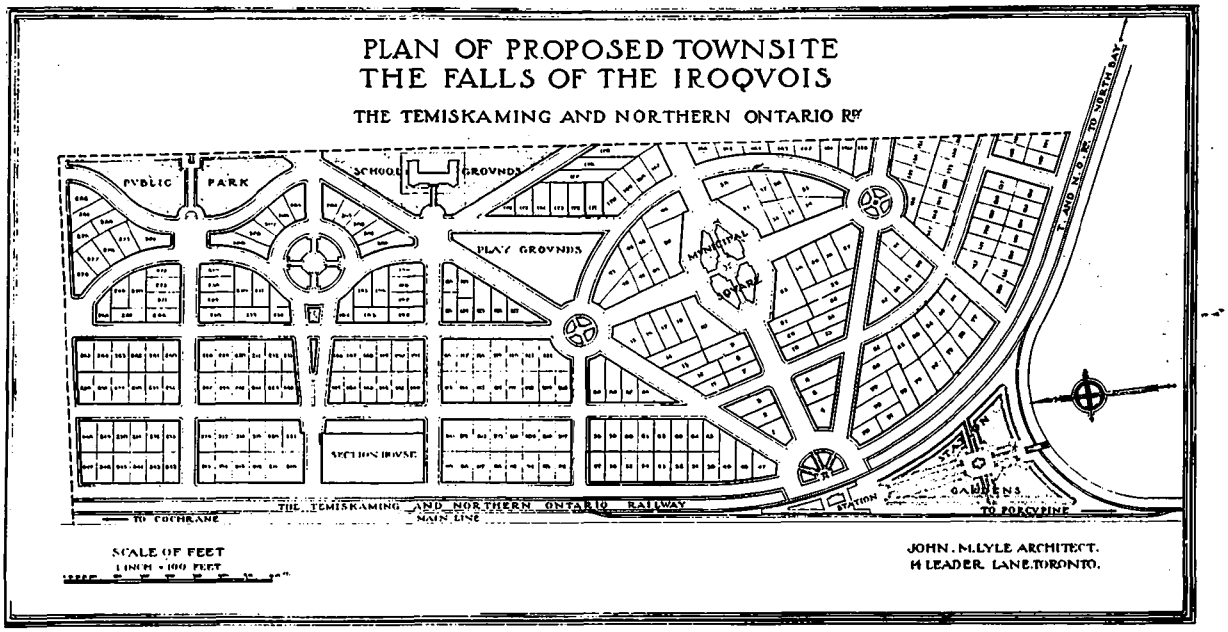
IF PEOPLE would build houses, the walls of which were composed of hollow tiles, with stucco exterior, I am sure that they would have no cause to complain about the high temperature within the building in the summer or low temperature in the winter, says a recent writer. Probably many are not acquainted with hollow tiles, as they are considered by many a new building material. We do not know the exact date or period when this type of material was first used, but we have found hollow tile walls in buildings devoted to bath purposes in the buried cities around the Bay of Naples. The people at that time recognized the efficiency of dead air space as an insulator, and therefore used hollow tiles for walls of the "hot rooms." Stucco and like substances for coating exterior walls were used a great many years before the pyramids were ever thought of. The person who said that there is nothing new under the sun was no doubt correct. He probably repeated the statement made by somebody centuries before. There is no question, in my mind, that the stucco and the hollow tile of this period are the best of their respective classes of material that have ever been produced.



Entrance from Corridor.

Entrance from Banking Room.

Royal Bank of Canada, Winnipeg, Manitoba. Carrere & Hastings, New York, and Eustis G. Bird, Toronto, Associate Architects.



THE IROQUOIS FALLS TOWNSITE PLAN

A townsite plan which in principle expresses the general problem of town planning, as well as indicating the advanced methods adopted by Canadian railroads in projected town establishment.

TOWN PLANNING is no longer confined to the spasmodic efforts of cities to lift themselves out of the chaotic condition which a planless commencement and a shortsighted development has left them. The movement of reconstruction is general throughout the United States with more or less sincerity in its pursuit; but, taking a lesson from England, perhaps, or because of a more enlightened and enterprising disposition among the Canadian people who are building up the newer provinces, it is in these new towns that we find the greatest inclination to plan before they construct. It will, therefore, come to pass that while cities like Montreal, Ottawa and Toronto are struggling with an ever increasing population with the same primitive facilities that were thought adequate when the city was at a standstill, and before the days of twenty-foot building lots and thoroughfares crowded with modern transportation vehicles, these newer cities will be justly celebrated for their livable qualities. From Winnipeg, that did not originally plan, but soon awakened to the necessity, to Victoria, Saskatoon and Prince Rupert, that had an adequate plan outlined for future growth almost from the first, we come to the towns only as yet projected along the transcontinental railways. These, almost without an exception, are being planned in advance with more or less ambition for the future. Some of them will never be great cities, but all that are started upon a definite plan will be successful both from a social and a business standpoint, because of their logical arrangement of utilities.

In Northern Ontario, at the junction of the Porcupine branch of the Temiskaming and Northern Ontario Railroad, where it forms a conjunction with the main line, is located the townsite of Iroquois Falls. In the accompanying plan of the townsite, by John M. Lyle, architect, Toronto, it will be noted that the problem presented was to so plan streets and avenues that for the present at least the focal point will be the railway station. As the town expands it is also intended that these avenues will form the groundwork for future development. If one would think of this for a moment he would discover that after all, this is the identical plan upon which the reconstruction of any city should be developed. It is the basis of the plan which, as a plan alone, has cost Chicago a hundred thousand dollars. The transportation terminal, the "front door entrance," is first to be considered in any city plan. There the circulating avenues are sufficiently wide for the different classes of vehicular traffic, and these reaching out without obstruction to the surrounding country to form groundwork for future development. This principle is incorporated in the Iroquois Falls plan. The dotted line, as shown on the plan, together with the railroad tracks, show the allotment made by the Government for this townsite. As in all probability the station would be the heart of the community for some years to come, it was thought desirable to make it the departing point for the radiating avenues. These avenues are shown 86 feet wide; the smaller streets are shown 66 feet wide. The section towards the north is shown indicating a residential district, and the winding roads are suggested as providing attractive building sites for a residential area. Station gardens are suggested in the triangle formed by the meeting of the two railroad lines.

LICENSING ARCHITECTS

By H. B. WHEELOCK, F.A.I.A.

A paper read before the forty-fifth annual convention of the American Institute of Architects by a member of the Illinois Board of Examiners, that gives the different phases of such restrictive legislation.

LICENSING ARCHITECTS is essentially a modern idea. It has been brought about through the evolution of a new and great nation, with new and great needs. In the twinkling of an eye we have sprung from a few feeble colonies to a world power among the peoples of the earth. So rapid has been our increase in stature that old world clothes will not fit us and old world ideas can not entirely govern us. The changing conditions attending the development of a nation always demand the creation of new laws, and the discarding of any traditions or customs which have proven either useless or inimical to healthy growth. Up to the present decade in our history individual strife for mastery and success has been the predominating force, but now a true sense of brotherhood is awakening. This is the era of the "get together" spirit where men shall stand shoulder to shoulder in well organized effort to forward the greatest good of the greatest number. "Down with the commercialism that knifes the neighbor in greed for individual gain" is the slogan. Shall we, as architects, hear or ignore it?

In a way ours is a unique calling—or at least we like to consider it so. The architect, as we best know him, is a marked individual, full of individuality and imagination, coupled with the genius of art; one born to create and to be the master builder. The love of his art is so absorbing, so fascinating, that it is not to be wondered at that he forgets his brother men, his duties as a citizen, and sometimes his obligations to society. For this reason we find few in our profession who are sufficiently public-spirited to willingly devote their time to finding ways and means of better protection for the public or elevation of the profession. We are either indifferent to the need or scorn the idea that it exists. But it does exist—it is real, and it is urgent. We need higher ideals, better education along artistic as well as scientific lines, greater preparation for our work. Because our nation is so young, has grown so rapidly, and has necessarily been so occupied with developing its vast outlying territories, its ideas of what is good architecture are, to say the least, very immature, very narrow, very absurd. The majority of buildings erected in this country are bad from every standpoint; they are inartistic, unsafe, unsanitary—even when the owner is able and willing to pay for a creditable structure. We all know this, and we all know the reason of it. How can it be otherwise, when any man or woman who chooses may hang out his shingle as an "architect," and may design and construct any building for public or private use, without question as to his fitness or preparation, or even his knowledge as to the common laws of safety and hygiene? Until time and education have produced men who shall command respect for their ability to design and supervise structures that shall be a credit to our profession. I say that until such time arrives, architects the country over should lend a hand to bring about legislation that shall at least insure greater safety and proper sanitation in all our buildings, and eventually place the profession of architecture on the high pedestal it deserves. In order to command this respect of the public for our profession, we must first prove that we know how to build well, construct safely, ventilate and sanitate correctly, and then to clothe the skeleton in a pleasing manner. The sculptor's secret of success lies in his accurate knowledge of the structural parts within that enables him to give strength and proportion to his art, and how much more should the architect be well versed as to the construction of his work of art, for it is not alone from the exterior that his work is to be judged, but it must be also lived in; therefore the public demands and has a right to demand safe building first and art afterwards. How can this best be accomplished? We are loath to acknowledge that the only feasible, in fact the only possible solution is a legal one. Law is necessary to govern mankind, always has been, and always will be, and the architect has no pass from his Creator exempting him from legal restrictions. Our brother professional man, the lawyer, informs us that laws which interfere with the personal liberty of the citizen and his right to pursue such a vocation or calling as he may choose, cannot be constitutionally enacted, unless the public health, comfort, safety or welfare demands this enactment. Quoting from Brooks' legal maxims:—

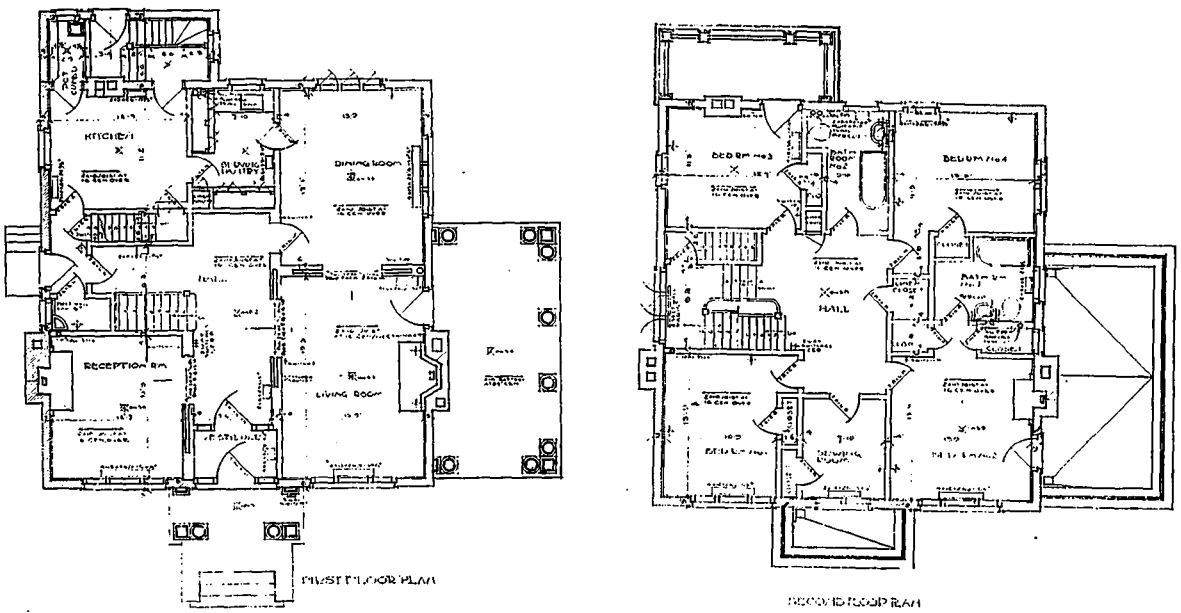
"Salus populi, suprema lex."

"That regard for the public welfare is the highest law."

There is an implied assent on the part of every member of society that his own individual welfare, shall, in case of necessity, yield to that of humanity. The object of all government must be to control human action to the extent necessary and proper for the common good. This control is accomplish-

Residence of Robert E. Ryerson, Toronto, Ontario. Chapman & McGiffin, Architects.

ed by what is commonly known as the police power of the State, that inherent or plenary power which justifies the prohibition of all things hurtful to the comfort, safety, and welfare of society, and may be termed "The law of over-ruling necessity"; therefore it is plainly evident that by virtue of this, it is not only the right, but the solemn duty of the State to enact such laws as will be conducive to these ends; and the profession of architecture should not be found wanting or negligent as compared with



Plans of Residence of Robert E. Ryerson, Toronto, Ontario. Chapman & McGiffin, Architects.

the other recognized professions in assisting and co-operating with legislative bodies to have proper and sufficient laws enacted that will give adequate protection to the public against unsafe and poorly constructed and insanitary buildings. The architectural profession has nothing to lose but everything to gain. To license a man to practice a profession is to grant permission to him, due to his special knowledge and equipment, to do that which common sense dictates others must not do. "Common sense" is here used as a definition of law, therefore it must follow that it is not only right but should be made compulsory for all men who would practice a profession such as architecture to be licensed.

Where the successful prosecution of a calling requires a certain amount of technical knowledge and professional skill, and the lack of them in the practitioner will result in material damage to the one who employs him, it is a legitimate exercise of the police power to prohibit anyone from engaging in the calling who has not previously been examined by the lawfully constituted authority, and received a certificate of his qualifications to practice the profession. Thus we find in every State, statutes which provide for the examination of those who wish to engage in the practice of law, of medicine and surgery, and of pharmacy. Many States, no less than seven, have now enacted laws to govern the practice of architecture. The index finger is even now pointing to the inevitable, that all States must sooner or later adopt similar laws. Illinois was the first to have such a law, which was passed some fourteen years ago, and has been amended several times, and is still not altogether perfect; however, it has not only been conducive to protecting the public, but has been of a very material aid in promoting architectural education, and has unquestionably raised the standard of the profession as nothing else could have done. Many applicants for license have spent from three to five years in serious preparation after having discovered their lack of qualifications through taking an examination. As many fail to prove their ability in plan and design before the Board of Examiners as fail in construction, which shows how thorough the Board is in executing its authorized commission; the same holds good in many of the other States.

The Technical Schools throughout the country testify that their courses of instruction have been greatly advanced since the advent of such laws, that their architectural departments have a much larger attendance, that the establishing of architectural schools and departments is in greater demand the country over.

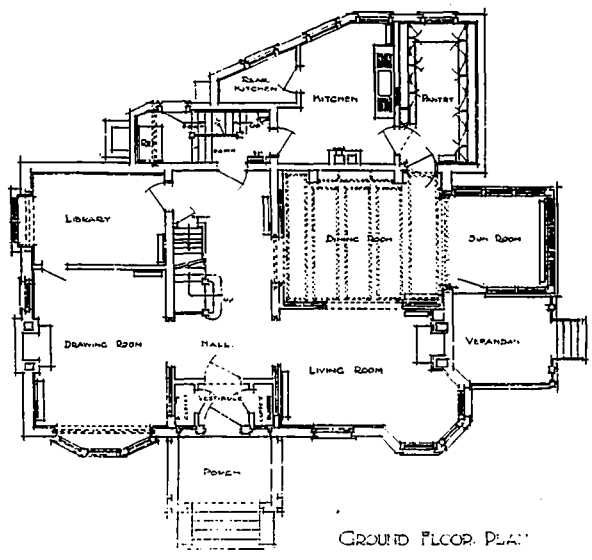
The State Boards all testify that they constantly serve in the capacity as an advisory Board to young men, advising them by all means to seek the advantages offered in some recognized Technical School. What a God-send to any young man to be permitted the privilege of taking an examination before a competent Board who will point out to him wherein he is deficient, that he may the better prepare himself before entering upon his life calling; again, how fortunate for the young man who has unwisely chosen the profession, to have his mistake pointed out before 'tis too late. The public and the profession are mutually benefitted by such incidents which are occurring constantly in several States; and inversely is it true—the public and the

profession is greatly wronged in those States where no adequate law prevails to govern the practice of architecture.

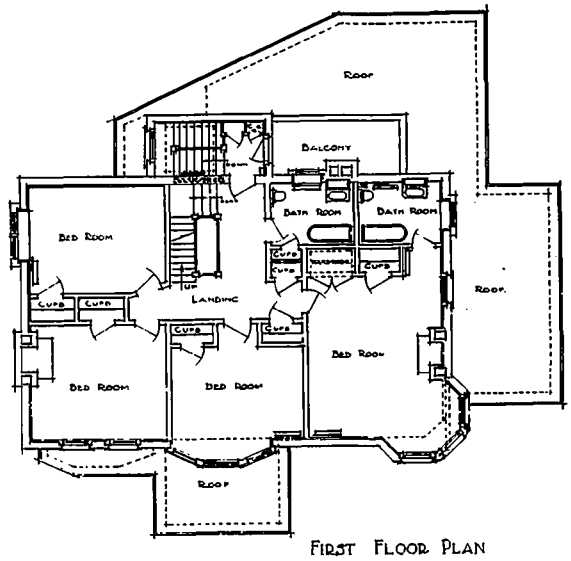
It is a little early in the history of architectural license laws to draw many definite conclusions, but the following has been gleaned from a very carefully selected list of questions which were submitted to the various Examining Boards in the several States having such laws. These States are Illinois, California, New Jersey, Colorado, Louisiana, Utah, and also Manitoba and Quebec.

1. Architects in States where such laws exist give their almost unanimous approval of same; this means only one thing—that the law is operating satisfactorily.

2. The law has not been a hindrance to any worthy practitioner, but rather the reverse, since it has removed the once popular individual called "architect and contractor," the "architect builder," the "architect and engineer," and the alleged architect that carried his office in his hat. Some declare it has been the means of eliminating a brand of the



GROUND FLOOR PLAN



FIRST FLOOR PLAN

Residence of J. Donogh, Toronto, Ontario. F. S. Baker, F.R.A.I.C., Architect.

"giver of something for nothing" that in their far western country had become a menace as well as a nuisance to the profession.

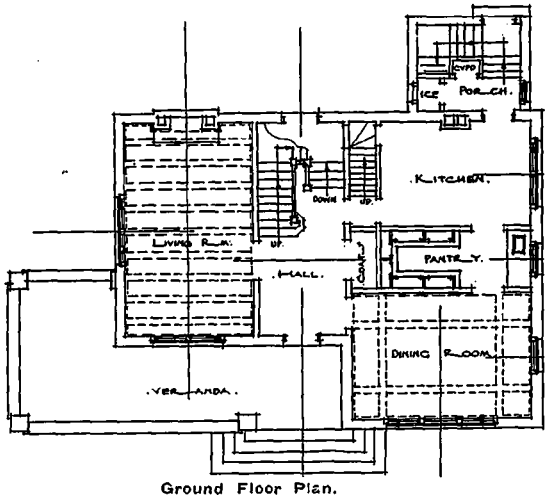
3. Many State Universities and Technical Schools have, since the advent of the architects' license laws revised their curriculum, added thereto and modernized their courses to meet the present demands. It is particularly interesting to note that the University of the State of Colorado is about to establish a course of architectural study, due solely to the fact of the existence of a license law; there is not, at the present time, any technical school in Colorado that has a chair of architecture. Their license law provides that "all surplus funds accruing from fees" shall form the nucleus of a fund to provide for an advanced course of architectural study to be established in the University of the State of Colorado.

4. The law has created a higher ethical and moral standard in the practice of the profession as well as competency in planning and designing.

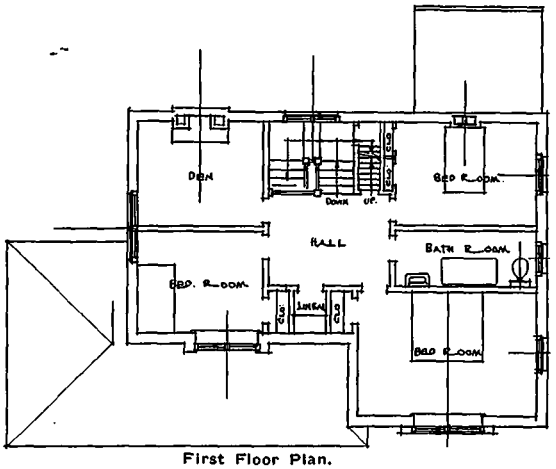
5. There is no doubt that the applicant for a license makes a greater special effort in preparation for the examination than he would otherwise do, thus becoming far better fitted to practice from the very beginning of his architectural career.

6. The public has already learned that in a State where a license law exists, the man who has not a license is a questionable man to deal with.

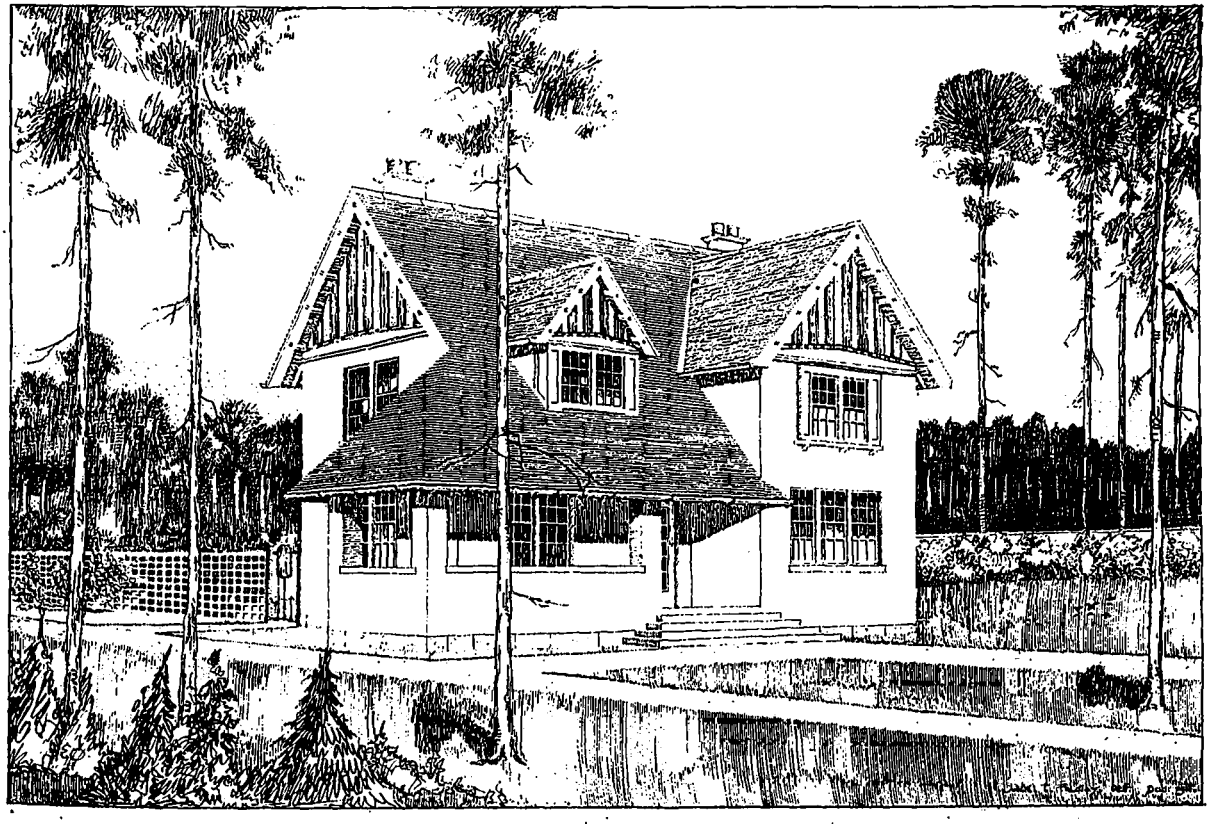
7. No one thing done by the architects has had such a salutory effect towards better architectural



Ground Floor Plan.



First Floor Plan.



Sketch of Residence at St. Thomas, Ontario. John T. Findlay, Architect.

education than the establishing of such laws as are now in existence in the several States, and the inevitable result of all this will be that in a few years only thoroughly competent men will dare attempt to practice architecture.

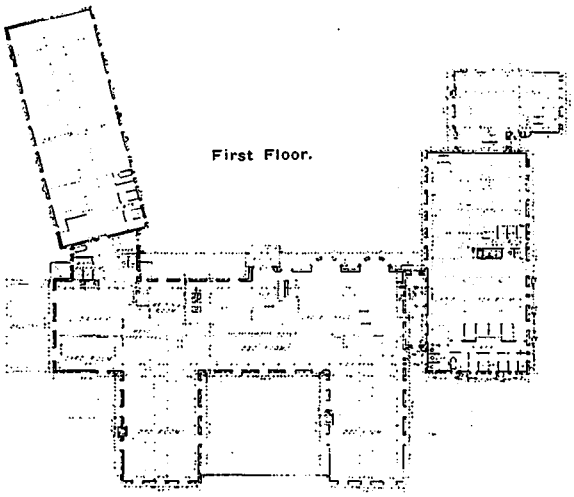
These are indeed the cardinal reasons why the architect should be licensed, and they should also appeal to every member of the A.I.A. who loves his profession and desires to have it receive proper recognition from the public. It is hardly possible to conceive that any broad-gauged architect would lessen his dignity or suffer insult to his esthetic nature by being obliged to prove to the public in some positive manner his ability to build well. Who is there that is not striving almost every day to convince the public of his ability by indulging in competition? Are we not always required to show a client what we have done before we fully secure his confidence? After a law governing the practice of architecture is once established it would thereafter only apply to the young and inexperienced man, who, before presenting himself before the public and demanding its confidence, should first demonstrate his qualifications and ability. The older men in the profession should have sufficient loyalty to the public and interest enough in their chosen calling to lend themselves whole-heartedly to this result. So much for the necessity of licensing architects. Now, just a word as to the necessity of good and adequate license laws as nearly uniform as possible in all the States of the Union. Not statutes concocted by political schemers for political ends, but enactments conceived and put through by the best brains of our profession. It must be so if we are to meet with any measure of success. It is evident that the architect is the logical person to prepare suitable laws for the purpose of governing the practice of architecture, and without hesitation he should take an active part in obtaining such legislation. Why should not the Institute, which takes such a fatherly interest in its Chapters, follow the same course it has taken in presenting the Chapters with model "contract documents," also present its Chapters with a model architectural inter-State license law, and then lend its moral support to its enactment and enforcement? If this were accomplished, I am certain we would not be mortified by having such ridiculous edicts spread on the statute books as exist in one or two of our States. When a State declares that an architect's license can be revoked for only one cause, that of "committing a crime," it is high time the profession should arouse itself to forestall such monstrosities in architectural legislation, face the inevitable, and prepare proper forms, suitable for our purposes, upholding the dignity of the profession, while at the same time conserving the public interest. Delay is especially dangerous, for while we sleep bad legislation goes on.

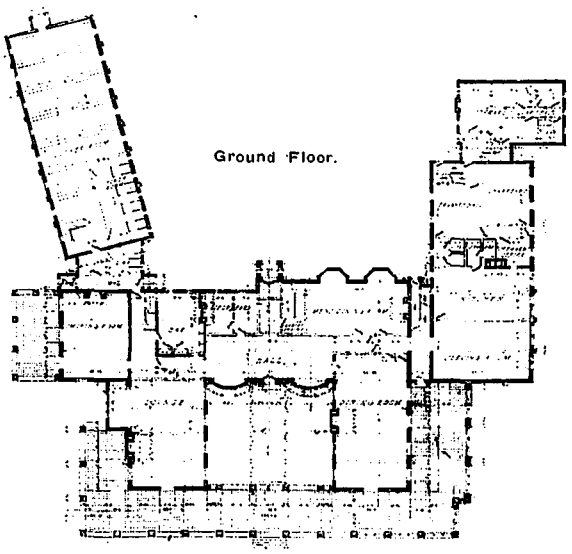
Immediate inter-State communication and co-operation is essential if we would avoid the embarrassing and difficult work of undoing and making over such laws governing the practice of architecture as are now being enacted.

PROPOSED TORONTO GOLF CLUB

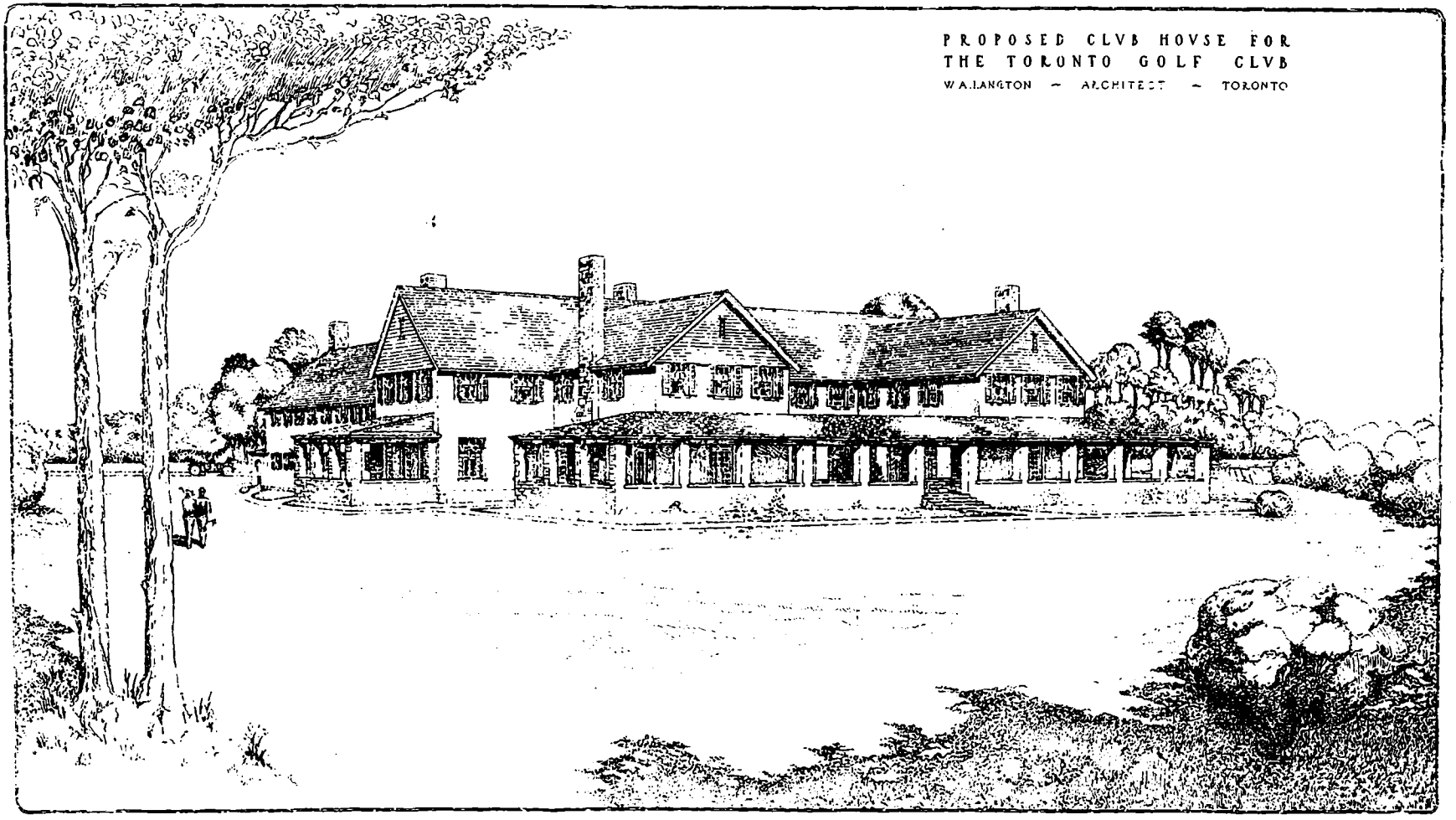
Perspective and plans of proposed club building, with description of scheme and layout of grounds, by its designer, W. A. Langton, Architect.

THE FIRST consideration is the relation of the building to its site. In the position on the promontory, shown on the site plan, all the aspects are fortunately right. The principal rooms face naturally to the south, with a look-out to the east for the dining room and to the west for the lounge. The service department and kitchen yard, which are most out of the way on the east, should





also be placed there in point of aspect. The men's wing is right where it is—on the side of the building which is towards the fair-green. It would, if there were no other consideration involved, be better to associate the men's quarters more closely with the service department, but the necessity of entering on the north made a wide separation. All planning is


PROPOSED CLUB HOUSE FOR
THE TORONTO GOLF CLUB
W.A.LANGTON — ARCHITECT — TORONTO

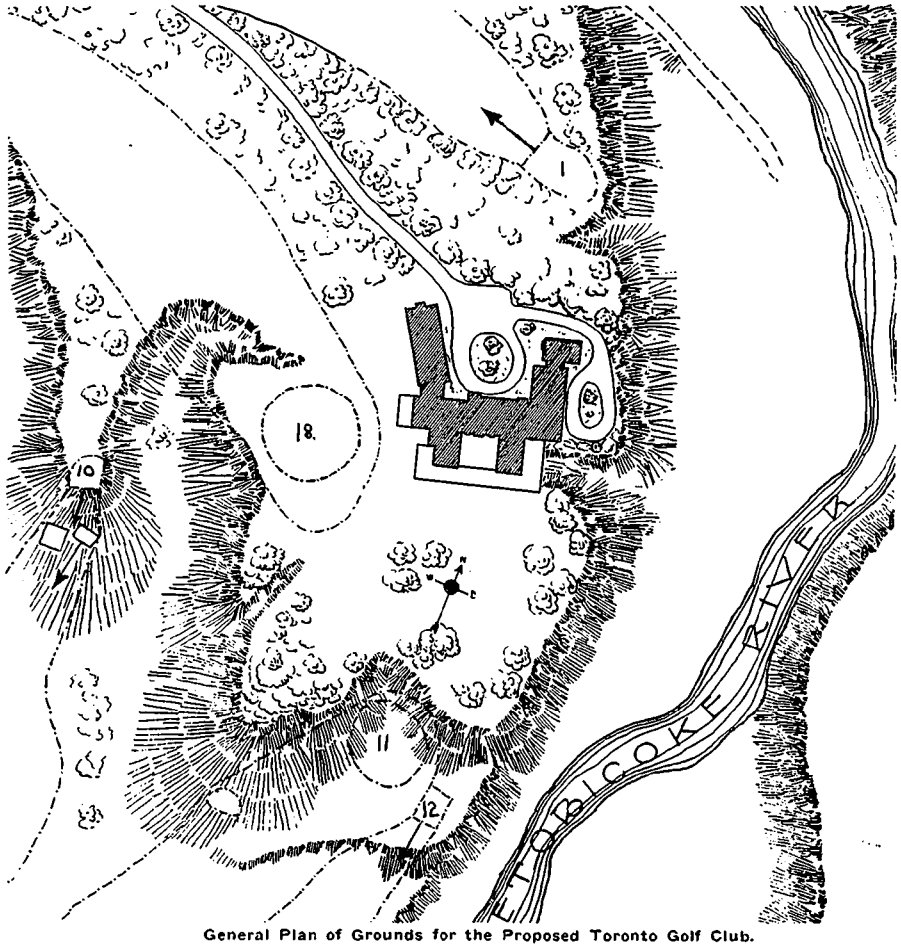
in great part a process of weighing advantages, and in this case the weight of advantage is certainly with an entrance on the north. It is that which keeps the whole end of the promontory, to the south of the club house, free from the intrusion of vehicles. Whether this ground is prepared for games or is planted, it is of immense importance to the attractiveness of the club that the whole space should be kept undisturbed as an out-of-doors addition to the lounging space of the club house.

The building is placed about 250 feet back of the south end of the promontory, at a point where a slight depression in the surface slopes to the edge of the bank, with a fall of eight or nine feet in about fifty. By placing the dining room verandah at the upper end of this slope, the building can look down upon the Etobicoke without leaving the centre of the promontory. Here it is well placed in other respects. There is a foreground to frame the view in all directions. The building is midway between the first tee and the home green, and the verandahs overlook the latter at the right distance and from the right direction. The kitchen yard is well cut off from the rest of the ground.

As regards the general arrangement of the house plan: The functions of the building may be divided under the heads of men's quarters, women's quarters, general club rooms or social rooms, and service department. The general club accommodation requires room out of doors, as well as indoors; and should have, including the entrance, an outlook in all four directions. It seemed, therefore, impossible to place the women's quarters on the ground floor, without increasing the size of the building beyond reasonable limits.

The other three functions will be found in three parts of the building: the club rooms surrounding the open court on the south, the men's quarters in the west wing to the north, the service department in the east wing to the north and its adjacent yard.

The wings extending south were laid down, in the first instance, to make the building consist of narrow parts, so as to make a maximum of bedroom accommodation on the first floor. It immediately appeared that by means of this arrangement was solved the most difficult problem of all—how to provide a verandah of sufficient length, without darkening the living rooms. A continuous verandah can be built which has a look-out from three sides of the building, yet the rooms the verandah surrounds are all well lighted by free windows. The court is susceptible of beautiful treatment. It will have sun as well as shade, and plants will grow there. A small jet of water falling a couple of feet into a basin, makes a very pleasant sound in a place with walls. It is proposed to keep the ground level of the court high, not lower than two steps below the floor level of the surrounding rooms and the verandah. It will thus



General Plan of Grounds for the Proposed Toronto Golf Club.

count as an addition to the floor space of these rooms, and the social portion of the club house may be considered to consist of the whole area comprised by the rooms and verandah surrounding the court and the court itself.

The entrance from the north into the hall brings one immediately into light from the opposite front. The landscape, seen through the stone arcade which forms the back of the verandah, will give a suggestion of the view to be seen beyond.

All the social rooms open off the hall and the secretary's room also.

The men's quarters open off the hall in a less direct way, and are cut off by a door. The ladies' rooms, upstairs, are approached by a stair opening off the vestibule. There is also a stair for lady players, which leads directly from out of doors to their locker room.

In the bar, there will be provision made also for the service of afternoon tea. This room, which is devised to solve the difficulty proceeding from the separation of the men's rooms from the service wing by the entrance on the north, seems likely to be, on the whole, an advantage, from making all the afternoon service shorter than it would be if all service were from the kitchen wing. The only long service is for dinner drinks, and the traffic consequent on these is neither large nor frequent compared with the reverse case of service from the kitchen wing to the smoking room and lounge; nor is the hall so much in use when this dinner service is required.

The service department follows the latest models in simplifying the parts so that there are large areas, few partitions and no passages.

THE ART OF SKETCHING

By ANDREW ROLLS, A.R.I.B.A

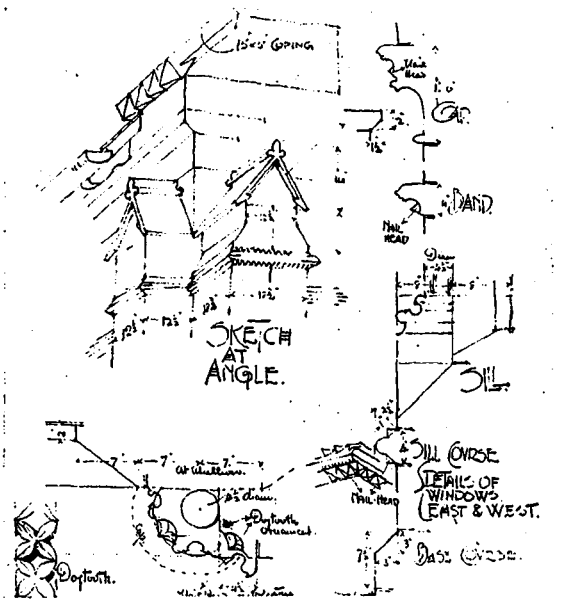
The effectiveness that lies in the sketch-record of an impression, or a work of the past valuable to the architect in practice.

THE WORK of an architect consists very largely in what has been termed "paper work." His implements are necessary to him as the means by which the creative faculty—the working of the æsthetic and the constructive senses—must, in these latter days of estimate and contract, find expression before the embodiment of what were ideas in the abstract, can stand forth in enduring material.

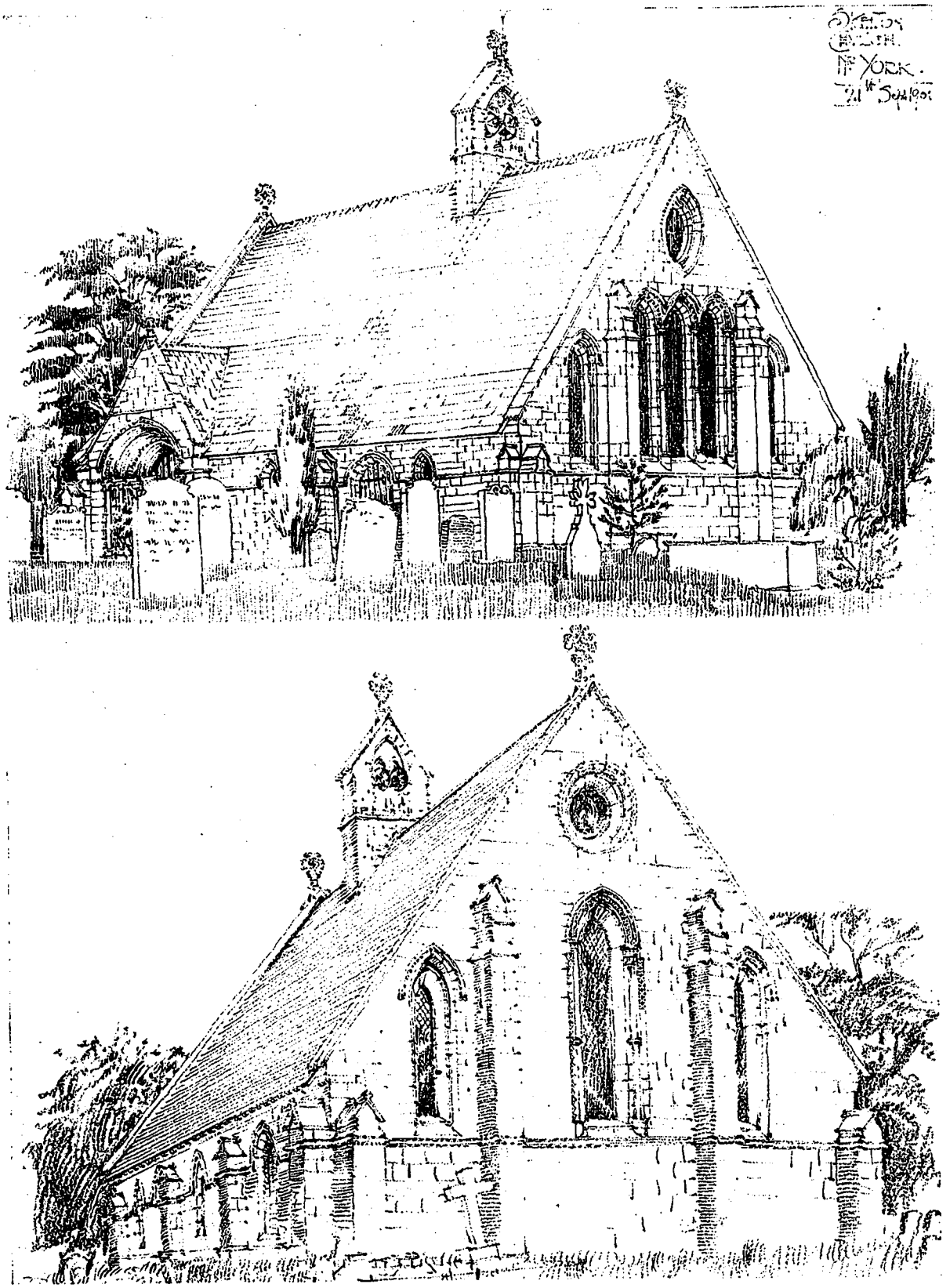
The architect's drawings, in fine, are an essential means to a desired end, and mere draughtsmanship, with the architect, is of not so great importance as that the ideas evolved from his inner consciousness should be set down sufficiently clearly and explicitly to allow of no misunderstanding on the part of the artisan and the craftsman.

Yet good draughtsmanship is not in any sense to be decried, for the grave consideration of the "idea" must of necessity be typified in the due working out of the drawing, and there is a happy mean between the drawing which is merely mechanical and that which is slovenly and ill-considered. It is a platitude to say that the slovenly drawing indicates the slovenly mind.

Moreover, the geometrical projection—the section or the elevation—is but the epitome of many drawings, or of many, so to speak, imaginary drawings, for it is an absolute necessity that the architect should think "in perspective." His study of mass



and proportion, of the relation and scale of parts, are not—should not be—as would appear upon his flat geometrical drawing, but as he judges the appearance in perspective. He imagines the effect as it would appear to the beholder from any actual point—or many actual points—of view, in the ultimate product of his efforts. The geometrical drawing, therefore, may appear to be distorted—nay, it should without doubt appear distorted—if the buildings to be erected shall approach perfection in those many qualities of proportion and fitness which centuries of effort and experiment—centuries of tradition, for we are what our forefathers have made us—have laid down as the "canons of art." How essential is it, then, that the architect should know the principles of perspective as he knows the alphabet from Alpha to Omega, and how essential is it that he should have studied the examples of architecture which have imbued the earnest student of every age with admiration and appreciation. The architect is born, doubtless, not made, but even as the talent of the mathematician must lie latent if he study not the elementary principles of the science, so the architect must remain in embryo unless he prove himself a diligent and a constant student. With the mathematician, of course, the elementary rules are the necessary rungs of the ladder by which he ascends to higher flights, and in his speculative efforts he must always, consciously or subconsciously, have those rungs under him. So with the architect: he must always remain bound by structural



Pencil Sketches of Old Country Work, by Andrew Rolls, F.R.I.B.A., Toronto, Ontario.

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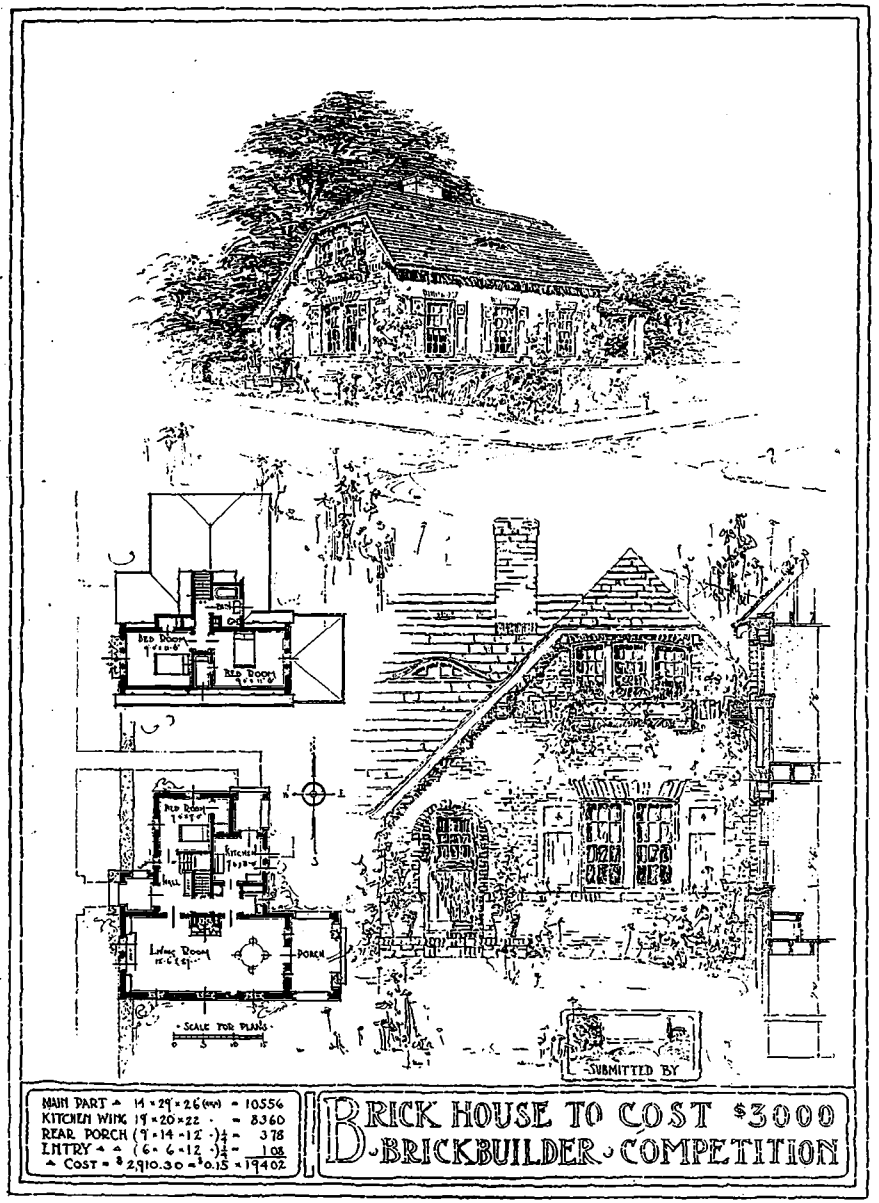
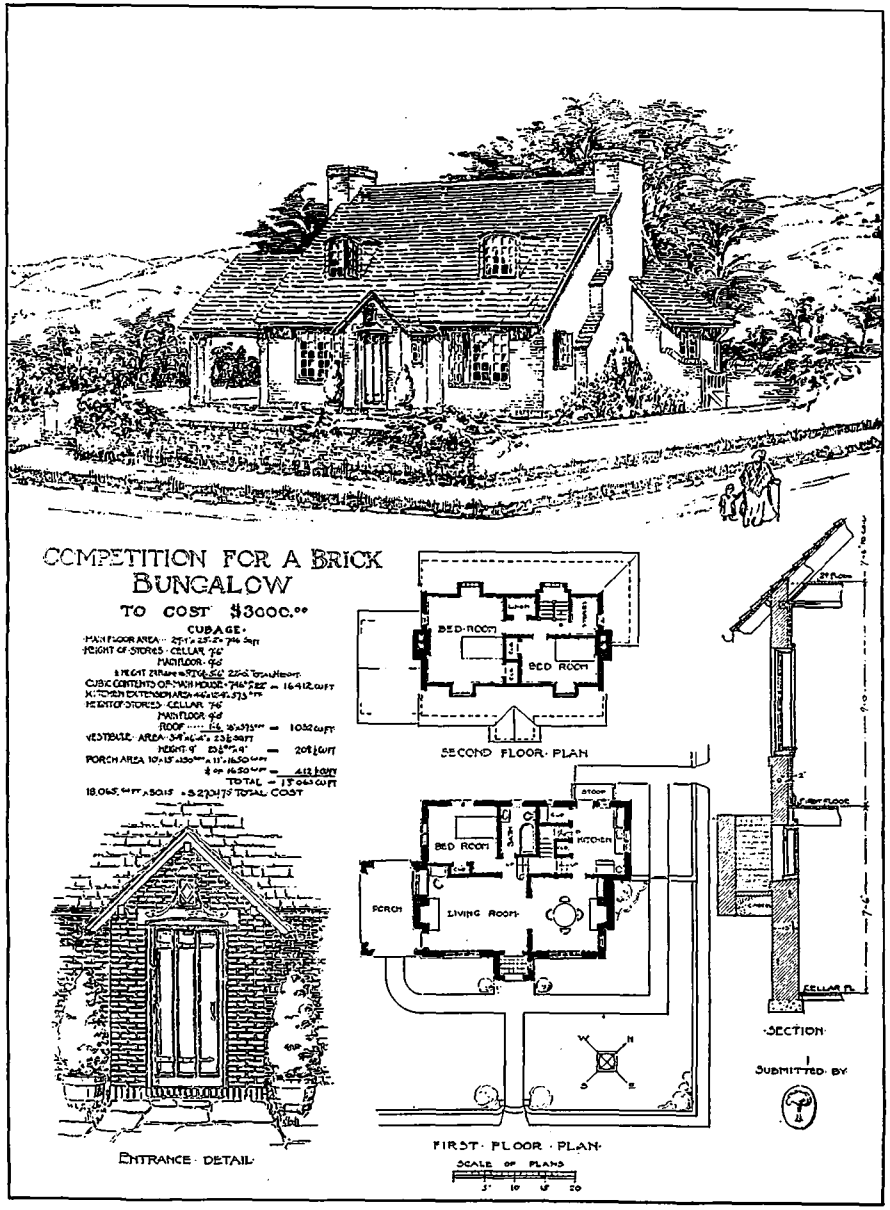
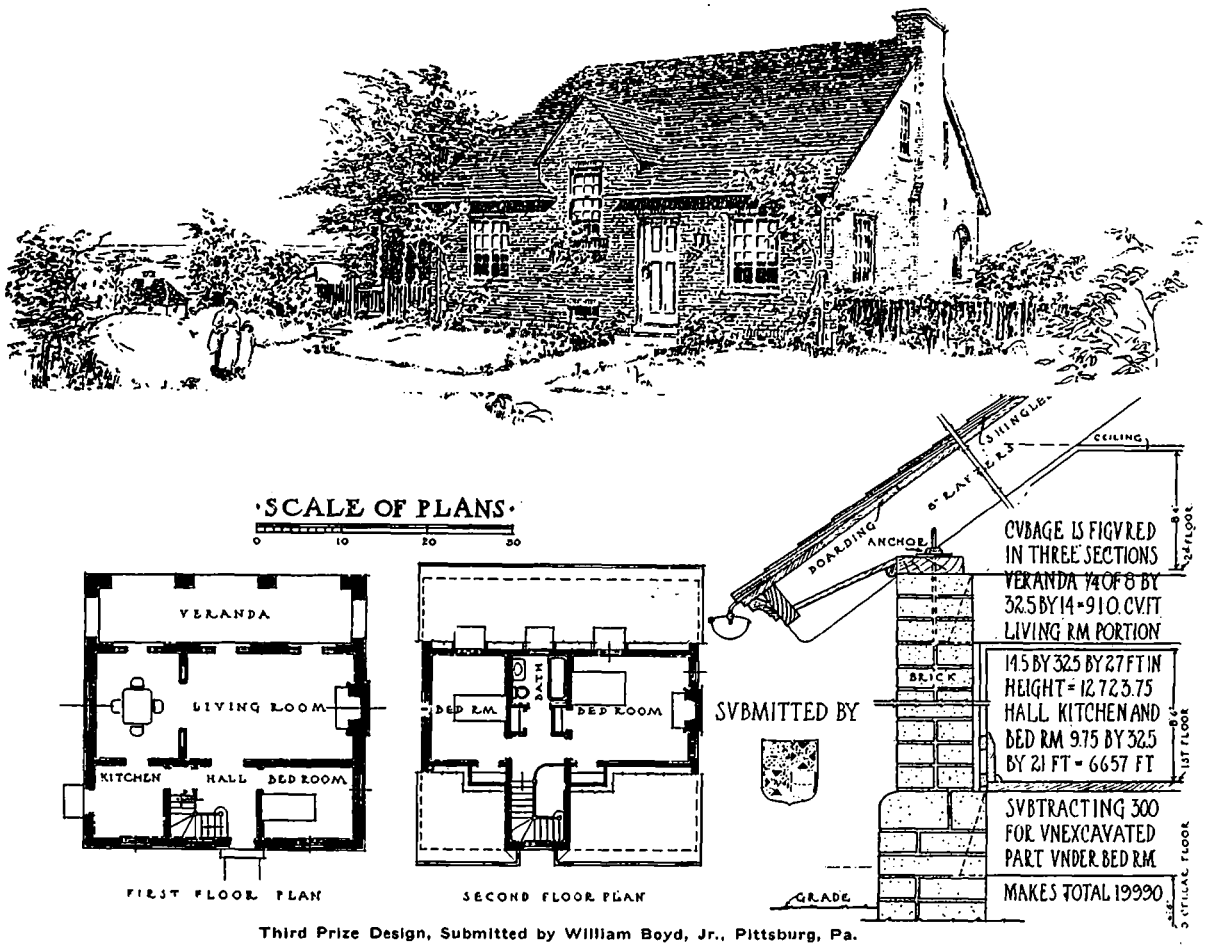


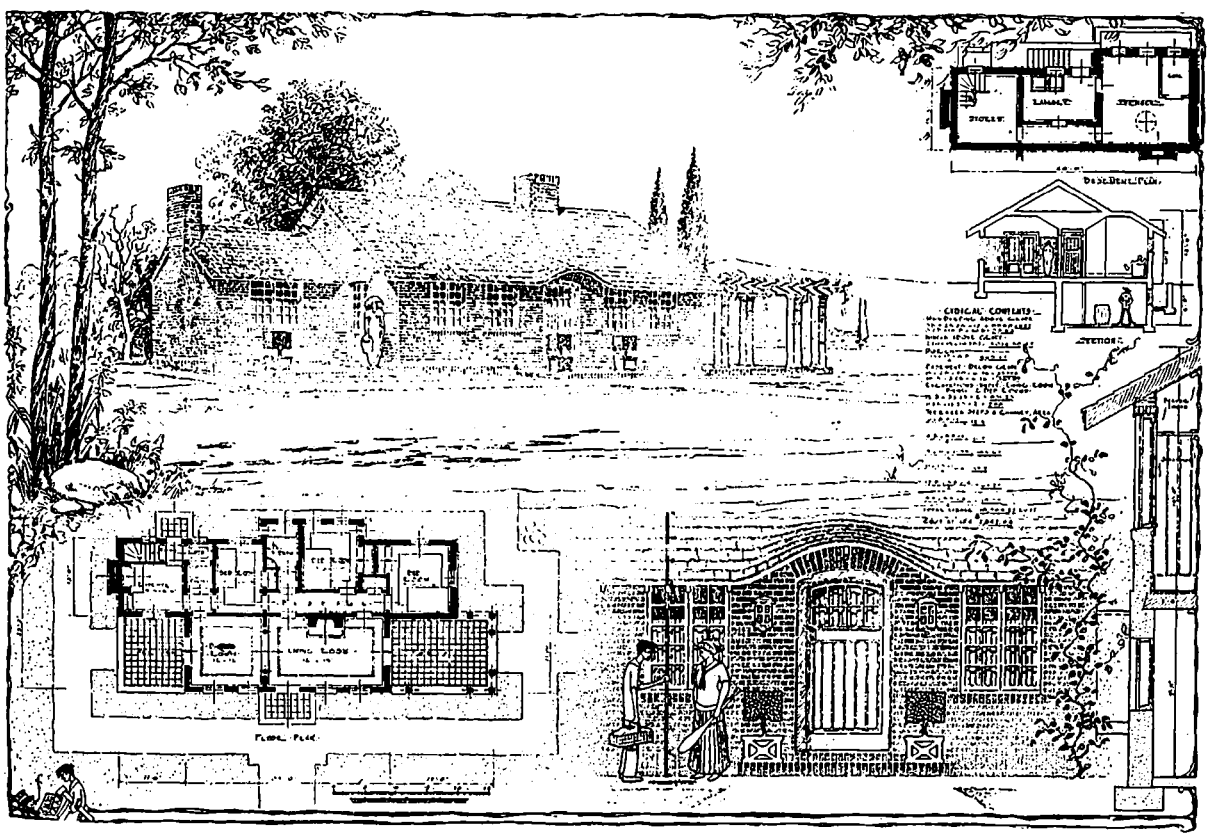
First Prize Design, Submitted by Ralph J. Batchelder, Boston, Mass.



Fourth Prize Design, Submitted by Charles Willing, Philadelphia, Pa.



Third Prize Design, Submitted by William Boyd, Jr., Pittsburg, Pa.



Second Prize Design, Submitted by Jack Lehti, Washington, D.C.

Prize Designs in "Brickbuilder" $3,000 Brick House Competition.

exigencies and necessities, but his higher flights of imagination are those by which he shall be judged —at least by those who are competent to judge, his brother artists. His art, to him, is that greater part which shall not be taken away from him, and among those studies which shall prove of greatest service to him in the evolution of "taste," is that of the art of sketching.

By contemplation, in the spirit of study, of the monuments of the past, does the architect form his conception of which is good in architecture. By such contemplation does he grasp the effect of mass, of grouping and contrast of parts, of light and shade, and of the fit application of detail. By it does he gain his knowledge of style and of the phases of style, and the contemplation of the reality must prove of immeasurably greater help and assistance than any knowledge to be gleaned from books. How shall we judge of the Parthenon from drawings which can but approximate its reality? How shall we judge of the effect of the Pantheon, lit as it is directly from the heavens, if we must depend merely upon the inadequate photograph or drawing? By the study of the building itself is its true effect to be gleaned, and the art of sketching, for the architect, is a means of indelibly fixing that effect upon his mind. Impressions become dim in course of time, but a reference to the sketch shall cause the scene to rise in all its glorious majesty once more in his imagination.

It is, of course, unnecessary that the architect's sketch should be what is called a picture. A mere note, a few lines, may prove adequate to the purpose. The architect makes the sketch for his own use, and it is not at all essential that it should be comprehended by any other. It cannot, manifestly, conjure up the whole thought in any other mind. Nevertheless, the more complete and the more suggestive is the sketch, the more it must appeal to the sympathetic mind.

In sketching from architectural objects, as in sketching from nature, every line should have its purpose and be essential to the complete suggestion of the whole, but—somewhat unlike in general, the study from nature—the detail is very often as important to the architect as the mass, the detail being the means by which the various parts are accentuated, and beautiful detail contributing very materially to the beauty of the mass which it so accentuates. It is the purpose of the architect to analyze, and a suggestion of the whole would be often times incomplete without some sketch—perhaps to a larger scale—of the ornament, together with sections of the mouldings, and mayhap a few dimensions to fix the scale in his mind.

By the study of the old shall the new be evolved, and the architect must always be upon the outlook for suggestions which will help him in his actual work. Beyond the acquisition of the knowledge which has gone before in the receptivity of suggestions whereby the individuality of the architect shall carry tradition some few steps forward in its progress.

Anything, therefore, which offers such suggestion should always be jotted down in the sketch book, for the memory is treacherous, and the note is always at hand for reference. It is, in this connection, unnecessary that the subject of the sketch should always be old work. Modern work is full of suggestion for he who has eyes to see, and the sketch book should be a necessity, not only for the student, but for the architect himself, for the architect who is dead to suggestion is dead to his art.

A $3,000 BRICK HOUSE

THE BRICKBUILDER recently offered four prizes aggregating $1,000 for competition drawings for a brick house of the bungalow type, to cost not more than $3,000. The popularity of The Brickbuilder's competition brings into its service the best designing talent in the United States among architectural draughtsmen. The prize drawings in this competition, which closed on February 15th last, are illustrated by CONSTRUCTION as an encouragement in the use of brick for low cost houses on an artistic basis as the designs show how this material in the hands of competent designers can produce houses of exceptional attractiveness and at no greater cost than when constructed without adequate architectural study in the design and plan. The conditions under which the designs were made

Programme—The problem is a small detached house of the bungalow type. The outer walls and foundations of the house are to be built of brick. Three bedrooms must be provided for in the plan. Two of these may be placed in an attic story. Ample basement room is to be provided. The location may be assumed in any town, small city, or suburb of a large city. The cost of the house—exclusive of the land —shall not exceed $3,000. The method of heating, the plumbing, other fixtures, and finish, to be governed by the limit of cost.

Houses of this type of construction have been built in different sections of the country, and from the data which has been gathered concerning the cost of a number of these houses, an average price of 15 cents per cubic foot has been obtained. This cost is given as the basis upon which the size—figured in cubic feet—of each house submitted in this competition must be approximated.

Measurements of the house proper must be taken from the outside face of exterior walls and from the level of the basement floor to the average height of all roofs. Porchs, verandahs, and other additions are to be figured separately at one-fourth (25 per cent.) of their total cubage. The cost of porches, etc., is to be included in the total cost of the house. The particular object of this competition is to encourage the use of brick for small houses. Thousands of houses costing from $2,000 to $3,000 are being built in this country every year. The larger part of them are of wood construction. The cost of brick is very little more and its advantages over wood as a building material are obvious.

The drawings must be on one sheet, a pen and ink perspective, without wash or color, drawn at a scale of 4 feet to the inch

CONSTRUCTION

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

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Vol. 5 Toronto, April, 1912 No. 6

CURRENT TOPICS

THE PROGRAMME of the competition for the British Columbia University buildings, issued by the Minister of Education, received as CONSTRUCTION is in press, will be most disappointing to Canadian architects, and the consequences of its inadequacy far-reaching in regard to the University and the educational future of the people of British Columbia. While the competition programme offers prizes aggregating ten thousand dollars, the string attached, "while they do not bind themselves to do so it is their intention to engage the successful architect," and other like provisions make it one of the most ridiculous competition programmes presented Canadian architects in a decade. It is not ignorance on the part of the Minister of Education, as he has the splendid example with its satisfactory results of his Parliament Building competition for a guide. It is an evident attempt to exploit the profession in Canada, and its professional and talented members will save their labor and reputations by ignoring this specious document and keeping out of the competition.

BUILDINGS of importance should have special superintendents, appointed by the architect and paid for by the owner. The architect is supposed to give his structures ordinary oversight, but this should not be depended upon, on works that involve engineering and other structural problems that require constant watching. While it is practised in Canada, it has not as yet become the custom, and it is hoped that it will not require the serious accidents that led to the establishment of the rule in the United States. Up to 1889 buildings were constructed with the ordinary superintendence furnished by the architect, which involved no practical responsibility other than the correct carrying out of his plans. In that year the disaster to the Midland Hotel at Kansas City, designed by, and under the superintendence of the then best architectural firm in the West, brought the subject of special superintendence forcibly before architects and owners, with the result that a special superintendent has been required on all considerable structures ever since. The public must be impressed with the fact that the architect's superintendence, which one-half of his commission is supposed to cover, does not include continuous inspection of every detail of the construction, but rather such occasional superintendence as is necessary to the proper carrying out of the scheme of the building. In the disaster at Kansas City referred to in which eight men were killed, the first plans called for a roof over the dining room on the top floor supported by columns. A change was made to trusses and new wall plans were made. The contractor went ahead on the first plans for which the new had been substituted, with the result that the thin wall would not support the trusses when the roof was put on. The casual superintendence of the architect's representative did not discover this, and the result cost the architects and contractors upwards of $200,000. The owners offered the most skilled construction contractor in Chicago $20,000 to superintend the rebuilding, which for business reasons he refused. This expert superintendence belongs neither to the architect or the city building department, but to the owner.

* * *

NO SEWAGE is permitted to be discharged into the river or canals that pass through Berlin, Germany. It is all pumped through large pipes to the city sewage farms, located within a few miles to the north and south of the city. These farms have an area of about 40,000 acres, of which about 6,200 acres are leased in small holdings to farmers and the remainder cultivated by the municipal authorities. While the city administration supervises the cleaning of the streets, the disposal of the sweepings and refuse gathered is left to various contractors. Some of these concerns have purchased barren and unproductive land to be used as dumping grounds, and as the garbage contains principally sand and horse manure, it is exceedingly valuable as a fertilizer and filler for such lands. By law and by municipal police regulations, house owners are obliged to provide for the removal of the waste from their buildings. For this purpose they have

formed an association that includes most of the owners in Berlin. They have erected a building for the purpose of handling the garbage, disinfecting it, and separating the different articles, such as metal, rags and bones. All the refuse is then disposed of for fattening hogs, fertilizing, paper making, or for grading purposes, etc. Ingeniously contrived wagons are used in collecting the garbage. Ash barrels or other such receptacles are not permitted on the streets in Berlin. The experiment of burning the organic waste of Berlin was tried, but it proved costly and unsuccessful and was given up.

* * *

STANDARD symbols for architectural plans have been adopted by the Minneapolis Architectural Club for architects', contractors' and builders' use in reading plans. They cover the entire field of material, and also include symbols to designate the parts in plumbing and heating. While this standardization is only of use to the local architects, it can by the process of adoption become a national standard and its simplicity and the practical utility that attends its use makes it a production most creditable to the Minneapolis Club, and its suggestion could be adopted in Canada with beneficial results.

* * *

AMONG the important constructions contemplated at the "Soo," the Algoma Iron Works have asked for bids for constructing new $500,000 buildings. The Lake Superior Paper Co., Limited, will double its present mill capacity of 100 tons daily. The Y.M.C.A. will soon ask for bids for a $50,000 structure. The Royal Victoria Hospital will be built at a cost of about $25,000. The Sault Ste. Marie Skating Rink and Athletic Co., Limited, will build a $25,000 all steel and concrete skating and curling rink. The city has appropriated $120,000 for streets and roadways, material to be "asphalt concrete" or "bituminous macadam"; $32,000 for cement walks; $50,000 for sewers; $10,000 for West End fire hall; and about $60,000 for school buildings.

* * *

CITIES that through grasping real estate speculators have put prohibitive prices upon unimproved property, should note that there are towns that not only welcome the manufacturer, but by exemption from taxes and even donation of site make the location of an industry attractive. A study of the methods employed by these towns to attract manufacturers and the success met with should show those who sit comfortably in their offices and say, "Why, this city is growing faster than any other in Canada," that this growth is bound to depreciate unless a broad public policy is adopted to meet the competition of the smaller town.

* * *

REGINA proposes a by-law which will doubtless be passed, for the protection of the public during the erection of structures on street fronts. Older cities have already adopted such rules and there should be no argument regarding the necessity. Under the proposd by-law the inspector allots the amount of street space to be occupied up to 22 feet, for which the contractor or owner must pay a fee of ten cents per foot per month on a frontage basis. The time of duration of the obstruction is also limited. Fences, sidewalks, red lights at night, and covered ways are also ordered by the inspector where deemed necessary, and the city is indemnified for damages to persons or property.

* * *

OPEN AIR schools are becoming popular in England, the first having been recently opened at Birmingham. The pupils are carefully selected by the medical inspector of the Birmingham Education Committee from the elementary schools of the city, and are children who are, from environment or perhaps heredity, too weakly to derive any real educational advantage from attendance at the ordinary elementary schools of the city. It is reported that no expense has been spared to produce the nearest approach to perfection in this school. The buildings have been substantially and attractively constructed, and the smallest details are of the best workmanship. The main building consists of dining rooms, bath and drill rooms, and a central clock tower. The pavilions of the class rooms number three; they are open on three sides, and are provided with folding glass shutters in order to furnish protection should it be needed in unusually severe weather. However, it is the intention to give all instruction in the open air when possible and to use the classrooms only in inclement weather.

* * *

THE ROOFING used as a rule throughout Germany is either the common gray slate or ordinary red tile. Slate is almost everywhere the principal roofing material, for there is an abundant supply. The price for the ordinary single roofing slate delivered is from 2 to 2.50 marks per square meter (about 48 to 60 cents per 10.764 square feet). Roofing tiles are manufactured in a small way, but the local factories in some localities are not extensive and their product is very ordinary. Tile roofing used in Nuremberg is brought mainly from lower Bavaria, Wurttemberg, and the Rhenish Palatinate. The shape of the tiles varies greatly, but the most common form is the flat tile, measuring 18 by 40 centimeters (about 7.08 by 15.74 inches), and these cost 40 to 45 marks ($9.52 to $10.71) per thousand, delivered.

* * *

THE GIBSON Electrics, Limited, distributors for the Hupp-Yeats electric motor car, have secured the premises formerly occupied by the Granite rink on Church street, Toronto, and will fit it up as a modern garage and show room The front of the building will be entirely remodelled and plate glass windows put in, giving 75 feet of frontage on Church street. The rink proper will be fitted with a concrete floor and a battery charging equipment will be installed for charging the storage batteries of the cars which are garaged there. The whole quipment will be up to date and consistent with the best methods of practice on the other side, where the service extended to owners of electric pleasure cars has reached a high state of efficincy.

A California Bungalow at Los Angeles. Arthur Hiniman, Architect. Photo by Graham Photo Co.

SIMPLICIT THE RULE IN BUNGALOW DESIGN

The Bengalese house or bungalow, a simple form of residence that is elastic in design, plan and constructive material, and meets western requirements in warm or cold latitudes.

THE WORD "bungalow," like charity, covers a multitude of sins, in this case architectural omissions and commissions. It has been applied to the one-story wide-verandahed shack, the two-story verandahed cottage, and gone even beyond these into the sphere of the palatial summer residence of the opulent. It has in its endeavor to accommodate itself to different climates and uses developed into a myriad of forms of construction and materials, and gone far into the realm of ornament and bizarre effects. Our consideration, however, is with the bungalow as it was originally designed in India, and its prototype, confined to one story of spreading comfort in this country and in the United States. The bungalow (or Bengalese house) of India is a one-story house of light construction, the materials employed being usually obtained from the site and its surroundings. Hence the walls are of mud brick, the roof of thatch, wide verandahs around two or all sides. A space of about a foot is left between the top of the foot thick mud wall and the roof for ventilation, and incidentally the accumulation of mice and snakes. In America the bungalow, when it imitates the Eastern type at all, only takes on the spreading horizontal line character, and copies it in no other particular. It is a low, rambling and attractively commodious structure, simple in design and of materials that give it coolness in a warm climate or warmth and stability in a cold.

The interior of a bungalow ought to be planned to obtain the necessary accommodation without wasting room in stairways and passages. Its simplest type is a large living room with the other rooms opening out of it. Its chief aim is to provide comfort and simplicity. It lends itself to picturesque treatment in whatever site it occupies, especially on the side of a hill or rocky pine-clad island. In fact, no other form of house adapts itself so well to its natural environment. The general plan for a bungalow is an open porch, leading into a hall. The main room, from which the best view can be obtained, ought to be as large as funds will permit, and be a general lounge where all the inmates can meet, and talk, write, read, or work. The dining-room and kitchen should adjoin, and on the opposite side of the hall should be the sleeping apartments, entirely shut off from all other parts of the building excepting one door from the hall.

Types of bungalows in California are illustrated because there the greatest study of this style of house and the largest variations have been produced, and generally of good design. The wooden superstructure generally found there is light, too light for a more severe climate, but this is easily changed to plaster cast and furring, or hollow tile, and the valuable suggestions contained in the rough rock foundations, the foliage and flowers, the breadth of the lot which gives air and sunshine so necessary in a northern climate, all make the California bungalow an elastic type that can be well studied and followed, especially as its simplicity brings it down to the lowest cost and still remains proportionate and attractive, as it can be developed indefinitely.

In their construction, as in other houses, each room

should have its distinctive feature, even if it is only a cosy corner, mantel, or window seat, otherwise simplicity should be the keynote. The finishings should be simple, without any dust-collecting mouldings, and trusting to the natural grain of the wood for beauty. In the ceilings the constructional lines should be exposed to view. This gives the skilful architect an opportunity of unique designs in beams that are very attractive without detracting from the home-like cosiness. All floors should be of hard wood laid to a simple pattern on concrete foundations. This will not add materially to the cost, as no carpets will be required, but a few artistic rugs, and it is a sanitary gain.

NEW CODE REGULATING CONCRETE WORK

Code adopted by New York revising regulations for local reinforced concrete construction.

THE RAPID progress made during the past decade in concrete construction engineering has necessitated the entire revision of the local reinforced concrete building regulations in New York. As these rules have been adopted after prolonged conferences with the leading authorities in this line they can be accepted as a model of their kind. The code in its entirety follows:

1. The term reinforced concrete in these regulations shall be understood to mean an approved concrete mixture reinforced by steel of any shape.

2. Reinforced concrete will be approved for all types of construction if the design is in accordance with good engineering practice, and stresses are figured as required by these regulations.

3. Before permission to erect any reinforced-concrete structure is granted, complete drawings and specifications must be filed with the superintendent of buildings, showing all details of the construction, the size and position of steel reinforcement, and the composition of the concrete.

4. The concrete for reinforced-concrete structures shall consist of a wet mixture of one part of cement to not more than six parts of aggregate, fine and coarse, either in the proportion of one part of cement, two parts of sand and four parts of stone or gravel, or in such proportion that the resistance of the concrete to crushing shall not be less than 2,400 pounds per square inch after hardening for twenty-eight days.

5. Only Portland cement meeting the standard specifications for cement of the American Society for Testing Materials shall be used in reinforced-concrete structures.

6. Fine aggregates shall consist of sand, crushed stone or gravel screenings, passing when dry a screen having one-quarter inch diameter holes, and not more than 6 per cent., passing a sieve having one hundred meshes per lineal inch. It shall be clean and free from vegetable loam or other deleterious matter.

7. Mortars composed of one part Portland cement and three parts fine aggregate by weight when made into briquettes should show a tensile strength of at least 240 pounds per square inch at twenty-eight days.

8. Coarse aggregate shall consist of crushed stone or gravel which is retained on a screen having one-quarter inch diameter holes and graded in size from small to large particles. The maximum size shall be such that all the aggregate will pass through a one-inch diameter ring. The particles shall be clean, hard, durable and free from all deleterious material.

9. Steel for reinforcement of concrete shall meet the requirements of the standard specifications for steel reinforcement of the American Railway Engineering and Maintenance of Way Association.

10. Wire used for column hoops shall be drawn from open hearth billets and shall have an ultimate tensile strength of not less than 85,000 pounds per square inch.

11. The span length for beams and slabs shall be taken as the distance from centre to centre of supports, but need not be taken to exceed the clear span plus the depth of beam or slab. Brackets shall not be considered as reducing the clear span.

12. Length of columns shall be taken as the maximum unsupported length.

13. All reinforcement shall be accurately located and secured against displacement. The reinforcement for slabs shall not be spaced farther apart than two and one-half times the thickness of the slab.

14. Slabs shall not be less than four inches in thickness for floors and three and one-half inches for roofs.

15. As a basis for a calculation for the strength of girders, beams and slabs, the following assumptions shall be made:

(a) A plane section before bending remains plane after bending.

(b) The modulus of elasticity of concrete in compression remains constant within limits of working stresses fixed in these regulations.

(c) The adhesion between concrete and reinforcement is perfect.

(d) The ratio of the modulus of elasticity of steel to the modulus of elasticity of concrete is fifteen.

(e) Concrete has no value in resistance to tension.

(f) Initial stress in the reinforcement due to contraction or expansion in the concrete is negligible.

16. The bending moment of slabs uniformly loaded and simply supported shall be taken as $\frac{1}{8}$ Wl, where W equals total load and l equals span.

17. The bending moments at the centre and at intermediate supports of floor slabs continuous over two or more supports shall be taken as 1/12 Wl.

18. The bending moments of slabs that are reinforced in both directions and supported on four sides and fully reinforced over the supports (the reinforcement passing into the adjoining slabs) may

be taken as 1/F Wl for loads in each direction, in which F equals 8 when the slab under consideration is not continuous or when continuous over one support, and F equals 12 at both centre and supports when the slab is continuous over both supports. The distribution of the loads shall be determined by the formula:

in which r equals proportion of load carried by the transverse reinforcement, l equals length and b equals breadth of slab.

19. Simply supported beams shall be considered as simple beams with bending moments of 1/8 Wl.

20. Beams supported at one end and continuous at the other shall be considered as partially restrained with a bending moment of 1/10 Wl at the centre and 1/8 Wl over intermediate support.

21. Beams supporting rectangular slabs reinforced in both directions shall be assumed to take the proportions of load as determined by the formula in section 18.

22. The bending moments at centre and support for beams or girders continuous over two or more supports shall be taken at 1/12 Wl.

23. The bending moments due to other than uniformly distributed loads shall be computed according to accepted theory.

24. Where adequate bond between slab and web of beam is provided, the slab may be considered as an integral part of the beam provided its effective width shall not exceed on either side of the beam 1/6 of the span length of the beam nor be greater than six times the thickness of the slab on either side of the beam, the measurements being taken from edge of web.

25. Members of web reinforcement shall be so designed as to adequately take up all involved stresses throughout their entire length. They shall not be spaced to exceed three-fourths of the depth of the beam in that portion where the web stresses exceed the allowable value of concrete in shear. Web reinforcement, unless rigidly attached, shall be placed at right angles to the axis of the beam and carried around the extreme tension member.

26. Reinforced-concrete structures shall be so designed that the stresses in the concrete and steel shall not exceed the following limits.

	Lbs. per squ. in.
Extreme fibre stress on concrete in compression	650
Concrete in direct compression	500
Shearing stress in concrete when all diagonal tension is resisted by steel	150
Shearing stress in concrete when diagonal tension is not resisted by steel	40
Bond stress between concrete and reinforcing bars	80
Tensile stress in steel reinforcement	16,000
Tensile stress in cold drawn steel wire used as column hooping	20,000

In continuous beams the extreme fibre stress on concrete in compression may be increased 15 per cent. adjacent to supports.

27. Axial compression in columns without hoops, bands or spirals, and with not less than one-half nor more than 4 per cent. of vertical reinforcement secured against lateral displacement by steel ties placed not farther apart than fifteen diameters of the rods nor more than twelve inches, shall not exceed 500 pounds per square inch on the concrete nor 6,000 lbs. per square inch on the vertical reinforcement.

28. Axial compression in columns with not less than 1 per cent. of hoops or spirals spaced not farther apart than one-sixth of the diameter of enclosed column and in no case more than three inches and with not less than 1 nor more than 4 per cent. of vertical reinforcement, shall not exceed 725 pounds per square inch on the concrete within the hoops or spirals nor 8,700 pounds per square inch on the vertical reinforcement.

29. Axial compression in structural steel columns thoroughly encased in concrete having a minimum thickness of four inches and reinforced with not less than 1 per cent. of hoops or spirals spaced not more than twelve inches apart may be taken at 16,000 pounds per square inch on the net section of the structural steel, no allowance being made for the concrete casing. The hoops or spirals of the concrete casing shall be placed not nearer than one inch from the structural steel or the outer surface of the concrete. The ratio of length to least radius of gyration of the structural steel section shall not exceed 120.

30. In reinforced-concrete columns the compression on the concrete may be increased 20 per cent. when the fine and coarse aggregates are carefully selected and the proportion of cement to total aggregate is increased to one part of cement to not more than four and one-half parts of aggregate, fine and coarse, either in proportion of one part of cement, one and one-half parts of sand and three parts of stone or gravel, or in such proportion as will secure the maximum density.

31. The vertical steel bars in reinforced concrete columns shall bear squarely on steel plates or casting bedded on top of the footing.

32. Bending stresses due to eccentric loads shall be provided for by increasing the section of concrete or steel until the maximum stress shall not exceed the allowable working stress.

33. Whenever it is necessary to splice bars, the connections between them shall be of sufficient strength to carry the stress.

34. In columns, the splicing of longitudinals, having an area less than one and one-quarter square inches, may be done by lapping, the lapped bars to be wired securely to each other. Longitudinals having areas in excess of one and one-quarter square inches shall be spliced by butting the bars squarely one over the other and tying the same securely together by some mechanical means that will not utilize the adhesive strength of the concrete. All such splices shall be made above floor levels, but not more than twelve inches above the same.

35. In columns the ratio of length to least side or diameter shall not exceed fifteen, but in no case

shall the least side or diameter be less than twelve inches.

36. The concrete members of floor construction in which hollow tiles, concrete blocks or other fillers are used, in combination with reinforced concrete, shall be designed in accordance with these regulations, except that the slab portion cast on top of the fillers, may have a minimum thickness of two and one-half inches, provided the fillers do not exceed 60 per cent. of the construction.

37. Exterior and interior bearing and enclosure walls of reinforced concrete, supporting floor and roof loads, shall be securely anchored at all floors, and of such thickness that the compressive stress shall not exceed 250 pounds per square inch, but in no case less than eight inches. The thickness shall not be less than 1/20 of the unsupported height. Steel reinforcement shall be placed near both faces of the wall, running both horizontally and vertically and weighing not less than one-half pound per square foot of wall.

38. Footings for walls and columns may be constructed of reinforced concrete provided the working stresses for concrete and steel are not exceeded and the steel is protected by at least four inches of concrete.

39. The steel reinforcement in columns and girders shall be protected by a minimum of two inches of concrete; in beams and walls by a minimum of one and one-half inches, and in floor slabs by a minimum of one inch of concrete.

40. The contractor may be required to make load tests on any portion of a reinforced-concrete structure within the reasonable time after erection. The tests shall be made under the direction of the superintendent of buildings, and shall show that the construction will sustain safely a load of twice the live load for which it was designed.

41. These regulations do not apply to any construction for which provision is otherwise made in the building code.

AERATION OF PORTLAND CEMENT

A LETTER TO Engineering upon the aeration of Portland cement brings up the interesting subject of deleterious substances in cement, particularly lime. The letter is as follows:

"The discussion on the paper termed "Aeration of Portland Cement," read at the Institution of Civil Engineers in November, 1910, was continued for four evenings, and every speaker, commencing with Sir William Matthews, admitted that there was something in the Portland cement, as delivered by manufacturers, detrimental to its use in concrete before it has been exposed to air and moisture for some considerable time, and continually turned over to expose different surfaces. It is also admitted by all that this detrimental substance is the free and uncombined lime contained in the cement. Logically speaking, therefore, the smaller the quantity of this deleterious substance in the cement the better. Why do engineers therefore still accept the cement containing 15 per cent. or more of this free lime when they can obtain the best cement with not more than 5 per cent.? If they therefore refuse to accept such overlimed cement, the manufacturers will supply them with good cement not containing more than 61 per cent. of lime, only about 5 per cent. of which would be free or uncombined. The introduction of high-lime cement containing 64 to 65 per cent. was only to suit the convenience of makers of rotary kiln cement."

The subject was referred to C. E. Barie, chief chemist for the Canadian Cement Company, in order that the opinion of an expert in cement on this side might be given with that generally prevailing in England. Mr. Barie says:

No manufacturer will carry any higher limed cement than is necessary to get away from quick set troubles, resulting either from high alumina clays or improper grinding and mixing of the raw materials. In all Portland cements there is more or less free or uncombined lime, the exact quantity of which is not known, as there is no chemical method for distinguishing free from combined lime. The physical method (that of subjecting neat cement to five hours' steaming) is the only way of detecting whether or not free lime is in sufficient amounts to be deleterious, and even on this point authorities differ. Personally, I do not believe that free lime, even in considerable excess, is directly a detrimental substance, but, if in this amount, can be taken as a clue to improper manufacture, and usually on testing, this cement will reveal inferior quality.

FRUIT TREES are planted along many of the roads of Europe for shade purposes, for the protection of traffic, and for the revenue from the sale of the fruit. The fruit is usually sold on the tree at auction to the highest bidder, when the green fruit indicates what the probable harvest will be. The proceeds of the sales are expended by the authorities for the maintenance and construction of the roads, and are not used for the benefit of the poor of the respective communities. When circumstances permit the trees are planted on either side of the road, 10 meters (32.8 feet) apart when the surface of the roadbed is 29½ inches above the natural surface of the ground or the bottom of the side ditch. When this height is exceeded, the trees are planted 5 meters (16.4 feet) from each other. In the Province of Hanover, Germany, the climate and soil of which are not especially adapted for fruit raising, the annual gross income per tree along the roads averages 12.61 cents. From 1876 to 1902 the amount realized from the sales of the roadside fruit was $607,396, an average per year of $22,492.

CORRECTION.—Through a mistake in writing the title under a cut of the Davies residence, used in illustration in the Standard Ideal advertisement in CONSTRUQTION for March, Maxwell Brothers, Architects, of Montreal, were erroneously given credit for the design. The Davies residence at Montreal was designed by Robert Findlay, P.Q.A.A., Architect, Montreal.

BOOK REVIEWS

APPLIED SCIENCE. A monthly periodical incorporated with Transactions of the University of Toronto Engineering Society.

The issue for February contains an interesting article on Recent Developments in Electric Iron Smelting, by Thomas D. Robertson, M. Met.; a valuable record of Tests on the Strength of Nailed Joints, by J. H. Thornley, B.A.Sc., with diagrams and tables; Instrument Transformers and Their Compensation; The Science Dance and Its Engineering Features, and other miscellany of engineering interest.

FACTORIES AND WAREHOUSES OF CONCRETE.

This publication, which was noticed in these columns last month, is issued in Canada by the Canada Cement Company, Limited, of Montreal, being one of fourteen publications issued by this company on the several uses of concrete, all of which are standard in their provinces and can be obtained by communicating with that company.

BRANDON. A pamphlet and map illustrating the commercial advantages of the city and immediate neighborhood as a distributing centre.

The development of the cities of Western Canada has reached a stage when attractive paragraphs concerning statistics of growth and more or less accurate prophesies of the future commercial importance are put before the people by the enterprising citizens in the shape of attractive pamphlets. This of Brandon is a sample, in which the railway centres, shipping points and local industries are described statistically and by a map having the imprint of the Department of Interior.

A PRACTICAL MANUAL OF STEAM AND HOT WATER HEATING. By Edward Richmond Pierce. First edition. Domestic Engineering Company, Chicago, 1911.

The author of this exhaustive and somewhat prolix treatise upon the distribution of heat by means of steam or hot water is singularly fitted for the work. His experience has been as varied as it has been long and intimate with the fundamental principles of the science. As his work is for the use of what may be termed the practical rather than the scientific worker in steam heating, he has aimed to place before those who do the practical work of measuring the buildings and erecting house heating systems of steam or hot water the information they desire in simple terms of ordinary conversation. Going beyond his twenty-five years of expert work pursued in all parts of the country where all the different degrees of climate and temperature could be studied, the author has gone into the works of the authorities that have preceded him for suggestions and facts to make more complete this work. In illustration of the thorough computation of facts the first chapter is devoted to chimneys, and the entire process is simply stated, step by step, and so clearly explained that any steamfitter, plumber or mechanic with a general knowledge of the use of the materials and tools of the trade can, by aid of the consecutive details which develop from the chimney chapter through to the fixing of the standard height of two-column radiators, proceed to measure up a house properly, and thus determining the loss of heat, size of radiators needed, the proper size of piping and the proper type or size of boiler to use in each specific case. The volume of three hundred and forty pages is profusely illustrated with diagrams and tables.

FERRO ENGINES. A practical treatise on correct design and construction for layman, experienced boat man and boat builder. The Ferro Machine and Foundry Co., Cleveland, 1912.

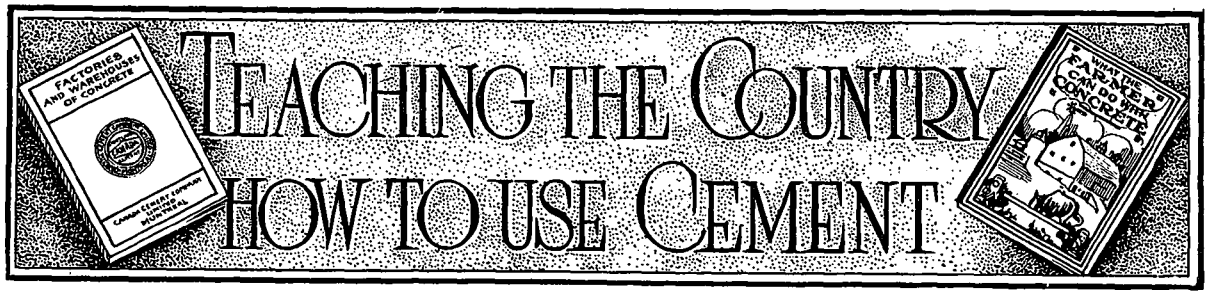
While the purpose of this elaborately compiled pamphlet, the text, illustrations and general typography of a superior excellence, is to advertise the Ferro gasoline engine, for motor boats, it goes further and is of value to anyone who is interested in the marine type of gasoline engine for any power purpose. It shows what the purchaser of an engine, whether the layman, who buys to use, or the boat-builder to install, the high degree of mathematical science that enters into the subject of properly operating gasoline engines. It makes exhaustive explanations of installation and operation, and minute description of each component part of the engine structure. Each part is illustrated, and reference should again be made to the excellent cut work which illuminates the pamphlet.

REINFORCED CONCRETE CONSTRUCTION for Buildings and Bridges. Bulletin 12. Examples of reinforced concrete construction and the work of contractors associated with C. A. P. Turner, M.A.M.Soc.C.E., Minneapolis, Minn.; Winnipeg, Man.

While these bulletins, of which this is the serial twelfth, are mainly intended to explain and popularize the C. A. P. Turner "mushroom" system of reinforced concrete construction, they contain so large an amount of general information along concrete construction lines applicable to concrete engineering, that they should occupy a place in the literature of this class of building, both for structures and bridges. In this bulletin Mr. Turner not only illustrates profusely by photographs structures completed under his system, but presents a general and convincing argument in favor of concrete material and criticizes old and obsolete methods, arguing for a continuous bond system of reinforcement. Additional data on column construction tests as to the accumulative records on this subject. The illustrations of bridge and viaduct work in the pamphlet are particularly interesting.

THE PREVENTION OF POLLUTION OF CANADIAN SURFACE WATERS. By T. Aird Murray, M.Can.Soc. C.E., Ottawa.

The Commission of Conservation of Canada has issued under the above title a pamphlet reprint of a series of three articles written for the Toronto Globe. The purpose of the reprint is to put the material in more permanent form and give it wider publicity.



NO DEVELOPMENT of the last year or so in the Canadian building industry has been more striking than the remarkable increase in the use of cement, both as to quantity consumed and the number of uses to which it has been applied.

In the structural field, this rapid utilization of the new material for factories, warehouses, canals, large municipal sewers and reservoirs, has, perhaps, simply kept pace with similar progress in other countries. The fact that Canada, in proportion to its population, is to-day doing more work of this kind than any other country is explanation enough for the interest with which Canadian architects and engineers view all new methods of employing concrete.

This interest on the part of the engineering profession, stimulated by vigorous activity in all the building trades, would of itself undoubtedly lead to the immediate use of concrete for all purposes to which it is especially well adapted. No "education" by private interests is necessary to keep Canadian architects and engineers fully abreast of the professional men of other countries in this respect.

In another Canadian field, however, no such professional interest, or keen natural demand, can be given credit for the remarkable recent advance in the use of concrete, particularly during the last year. The consumers in this field not only were entirely indifferent to the latest methods of employing concrete, but most of them were also ignorant of the fact that it could be successfully used except by experts. It was necessary to show these men—the farmers of Canada—that concrete might be used profitably by them, and how they could use it.

It is significant of the success which has attended the attempt to educate these possible consumers that they, the farmers of Canada, now provide a market for cement that promises to equal and perhaps exceed the ready-made market offered by Canadian cities. The Canadian farmer, notably prosperous and progressive, has been quick to see the advantage of permanent improvements. Climatic conditions force him to build structures that will protect their contents from all extremes of weather. Concrete, better than any other material, provides this protection at a minimum cost. Its permanency and ease of handling also make it the ideal material for various small improvements that every farmer needs.

These facts, now generally recognized by Canadian farmers, were entirely unknown to them a few years ago. The methods employed to show the farmer what he can do with concrete are interesting in this connection, illustrating, as they do, the efficiency of educational advertising in creating a demand for a new material more quickly than can be done by any other agency.

The burden of this educational campaign fell largely upon the Canada Cement Company, as leaders of the cement industry in Canada. Their first step was to publish a book containing complete instructions for the mixing and placing of concrete without using any elaborate tools or machinery; and also photographs and descriptions of a hundred odd uses for concrete on the farm. Newspaper advertisements in practically all the country papers in Canada were used to obtain inquiries for the book, and also to give the farmer some hint of what he can do with concrete. One novel and very effective feature of the campaign was a Farmers' Prize Contest (to be repeated this year), in which farmers were asked to send photographs and descriptions of improvements that they had made with concrete. Thirty-six cash prizes of $100 each (four in each province) were awarded. Several hundred entries, representing every province in Canada, were received; and the descriptions and photographs proved conclusively that Canadian farmers are not only intensely interested in concrete, but that they are also using it with complete success for every conceivable purpose. In addition to stimulating interest in the use of concrete, the prize contest provided the company with many valuable suggestions, which they are careful to pass on to other farmers. The contest also had the immediate effect of greatly increasing the demand for cement.

Not satisfied to depend upon its farm book, newspaper advertising and prize contests for educational publicity, the company has established a free quarterly magazine devoted to the subject of farm improvements.

All this publicity has greatly increased the consumption of cement in rural districts. In many small towns the cement dealer does a larger business than retailers handling other goods. In other cases, hardware merchants who formerly carried cement as an unimportant side line, have watched it become their most important commodity. This evidence of growing demand has also led many young men to become cement dealers in preference to handling other retail merchandise. The cement companies, fully aware of the value of retail co-operation, make every effort to help these retailers take advantage of all created demand.

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The Barrett Specification Roof illustrated above is 50,000 square feet in area and covers the Roundhouse of the Vandalia Lines (Penna. System) at Terre Haute, Ind.

SPECIAL NOTE—We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding. If any abbreviated form is desired, however, the following is suggested:

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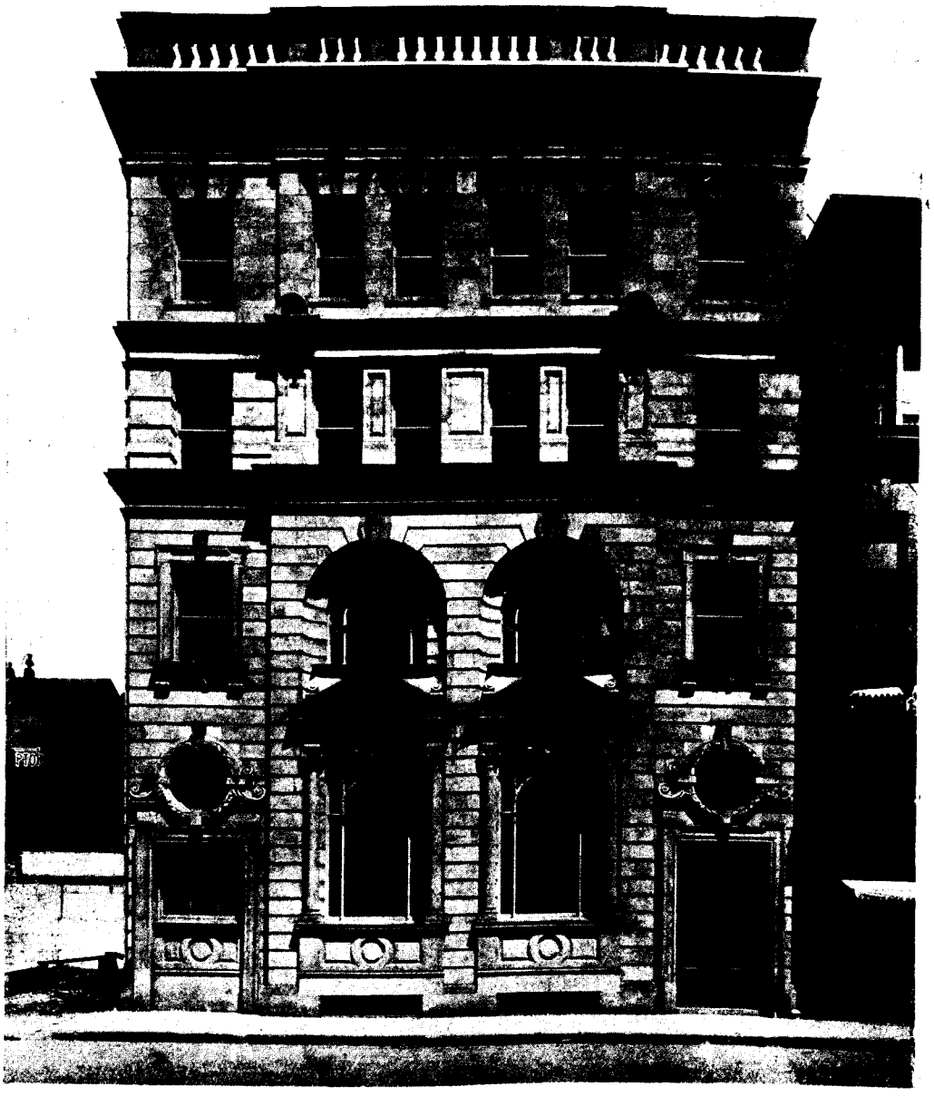

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Taylor-Forbes Co., Ltd.
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Canadian Tungsten Lamp Co.
Seaman, Kent Co.

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Galt Art Metal Co
Stinson-Reeb Builders' Supply Co.
The Pedlar People.
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Metal Shingle & Siding Co.

Laundry Tubs.
Toronto Laundry Machinery Co.

Leaded Glass.
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The Holdge Marble Co., Ltd.
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Metallic Sash.
Steel & Radiation, Ltd.
Hobbs Mfg. Co.
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Metal Shingles.
Galt Art Metal Co.
The Pedlar People.

Metal Store Fronts.
E. F. Dartnell.
Dennis Wire & Iron Co.
Hobbs Mfg. Co.
Metal Shingle & Siding Co.

Metal Walls and Ceilings..
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C. W. Noble
The Pedlar People
Metal Shingle & Siding Co.

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Municipal Supplies.
Mussens, Ltd.

Non-Conducting Coverings.
Ault & Wiborg.
H. W. Johns-Manville Co.
Phillip Carey Co.

Ornamental Iron Work.
Turnbull Elevator Co.
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Canada Foundry Co.
Dennis Wire & Iron Co., Limited.
Meadows, Geo. B., Ltd.

Packing (Steam).
H. W. Johns-Manville Co.

Packing.
Gutta Percha & Rubber Mfg Co.
Canadian Fairbanks Co., Ltd.
Phillip Carey Co.

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Glidden Varnish Co.
R. I. W. Damp Resisting Paint Co.
E. F. Dartnell.
Machan and Hebron.
Brandram & Henderson.
International Varnish Co.
Imperial Varnish & Color Co.

Paints and Stains
E. F. Dartnell.
James Robertson Co., Ltd.
Brandram & Henderson.
International Varnish Co.
Berry Bros. Ltd.

Perforated Steel.
B. Greening Wire Co.

Pipe Covering.
Canadian Johns-Manville Co.
Kent Company, Limited.
Phillip Carey Co.

Plasters.
W. J. Hynes.
Brandram & Henderson.
Johns-Manville Co., H. W.

Plaster Corner Beads.
The Pedlar People.
Metal Shingle & Siding Co.

Plate and Window Glass.
Consolidated Glass Co.
Hobbs Mfg. Co.
Toronto Plate Glass Importing Co., Ltd.

Plumbers' Brass Goods.
Steel & Radiation, Ltd
James Robertson Co., Ltd
Standard Ideal Co., Limited
Canadian Fairbanks Co., Ltd

Plumbing Fixtures.
James Robertson Co., Ltd.
Standard Ideal Co., Limited.

Pneumatic Tools.
Mussens, Ltd.

Porcelain Enamel Baths.
James Robertson Co., Ltd.
Standard Ideal Co., Limited.

Radiators.
Steel & Radiation, Ltd.
Dominion Radiator Co., Ltd.,
Taylor-Forbes Co., limited.

Refrigerating Machinery.
Kent Company, Limited.
Linde British Refrigeration Co., Limited.

Refrigerator Insulation.
Bird, F. W. & Son, Hamilton.
Metal Shingle & Siding Co.
Kent Company, Limited.
The Can. H. W. Johns-Manville Co., Ltd.
Phillip Carey Co.

Radiator Valves.
Steel & Radiation, Ltd.
Kerr Engine Company.

Reinforced Concrete.
Steel & Radiation, Ltd.
Noble, Clarence W.
The Pedlar People.
The Canadian Siegwart Beam Co., Ltd.
Trussed Concrete Steel Co..
Metal Shingle & Siding Co.

Relief Decoration.
W. J. Hynes.

Roofing Paper.
Alex. McArthur & Co., Ltd.
The Pedlar People.
F. W. Bird & Son.
Johns-Manville Co., H. W.
Phillip Carey Co.
Metal Shingle & Siding Co.

Roofing.
Asbestos Mfg. Co.
Bird, F. W. & Son, Hamilton.
H. W. Johns-Manville Co.
Paterson Mfg. Co.
Philip Carey Co.
Metal Shingle & Siding Co.

Roofing (Slate).
Waite-Fullerton Co., Ltd., Winnipeg.
A. B. Ormsby, Limited.

Roofing (Tile).
Waite-Fullerton Co., Ltd., Winnipeg.
E. F. Dartnell.
The Pedlar People.
Metal Shingle & Siding Co.

Rubber Tiling.
Gutta Percha & Rubber Mfg. Co., Limited.

Safes, Fireproof and Bankers.
Goldie & McCulloch, Limited.
J. & J. Taylor.
Canadian Fairbanks Co., Ltd.

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Standard Ideal Co., Limited.

Sand and Gravel.
Sand and Supplies, Ltd.

Sand Screens.
Steel & Radiation, Ltd.
B. Greening Wire Co. Limited

Screens.
Watson-Smith Co., Ltd.

Shafting Pulleys and Hangers.
Goldie & McCulloch Co., Limited
Canadian Fairbanks Co., Ltd.

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A. C. Leslie & Co.
Metal Shingle & Siding Co.

Sheet Metal Workers.
Sheldons, Ltd.
A. B. Ormsby, Limited.
Galt Art Metal Co.
The Pedlar People.
Metal Shingle & Siding Co.

Shingle Stains.
James Robertson Co.
International Varnish Co.

Sidewalks, Doors and Grates.
Dennis Wire & Iron Works Co.

Sidewalk Lifts.
Otis-Fensom Elevator Co.,

Sidewalk Prisms.
Hobbs Mfg. Co.
International Supply Co.

Slate.
James Robertson Co., Ltd.

Sound Insulation.
Philip Carey Co.

Stable Fittings.
Dennis Wire & Iron Works Co., Ltd.

Staff and Stucco Work.
Johns-Manville Co., H. W.
W. J. Hynes.

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Steel & Radiation, Ltd.
Kerr Engine Co.
Sheldons, Ltd.
Taylor-Forbes Co., limited.
Canadian Fairbanks Co., Ltd.

Steam and Hot Water Heating.
Steel & Radiation, Ltd.
Sheldon, Ltd.
Dominion Radiator Co., Ltd.,
C. A. Dunham Co.
Taylor-Forbes Co., limited.

Steel Casements.
Steel & Radiation, Ltd.

Steel Concrete Construction.
Steel & Radiation, Ltd.
Noble, Clarence
The Pedlar People.
Trussed Concrete Steel Co.

Steel Doors.
Dennis Wire & Iron Co., Ltd
Mussens, Ltd.
A. B. Ormsby, Limited.
The Pedlar People.

Structural Iron Contractors.
Canada Foundry Company.
Dennis Wire & Iron Co., Ltd.
Dominion Bridge Co., Ltd.
Hamilton Bridge Co.
Reid & Brown.
Structural Steel Co., Ltd.
Toronto Iron Works.

Store Fixtures.
Burton & Baldwin Mfg. Co

Telephone Systems.
Northern Electric & Mfg. Co.

Structural Steel.
Canada Foundry Company.
Sheldons, Ltd.
Mussens, Ltd.
Dennis Wire and Iron Works
Dominion Bridge Co., Ltd.
Hamilton Bridge Co.
Reid & Brown.
Structural Steel Co., Ltd.

Terra Cotta Fireproofing.
Carter & Co., Ltd.
Waite-Fullerton Co., Ltd., Winnipeg.
Don Valley Brick Works.
Eadie-Douglas Co.
E. F. Dartnell.
Missisquoi Marble Company.

Tile (Floor and Wall).
Carter & Co., Ltd.
Waite-Fullerton Co., Ltd.
E. F. Dartnell.
Smith Marble & Construction Co.
Asphalt & Supply Co.

Vacuum Heating Systems.
C. A. Dunham Co.

Varnishes.
Ault & Wiborg Co.
Berry Bros., Ltd.
Brandram & Henderson.
International Varnish Co
Metal Shingle & Siding Co.

Vaults and Vault Doors, Fireproof and Bankers.
Goldie & McCulloch Co., Ltd
J. & J. Taylor.

Valves.
C. A. Dunham Co.
Steel & Radiation, Ltd.
James Robertson Co.
Kerr Engine Co.
Taylor-Forbes Co.
Canadian Fairbanks Co., Ltd.

Ventilators.
Sheldons, Limited
Metal Shingle & Siding Co.

Wall Finishes.
E. F. Dartnell.
Berry Bros.
International Varnish Co.
Brandram & Henderson.

Wall Hangers.
Taylor-Forbes Co.

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E. F. Dartnell.
Ideal Concrete Machinery Co.
Mussens, Ltd.
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Bird, F. W. & Son, Hamilton
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Glidden Varnish Co.
Johns-Manville Co., H. W.

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Standard Ideal Co., Limited
Philip Carey Co.

Wheelbarrows.
Mussens, Ltd.

White Lead, Putty and Oils.
International Varnish Co.
Brandram & Henderson.
Glidden Varnish Co.

Window Guards.
Dennis Wire & Iron Co., Ltd
Steel & Radiation, Ltd.
B. Greening Wire Co. Limited

Wire Rope and Fittings.
B. Greening Wire Co. Limited
Mussens, Ltd.
Otis-Fensom Elevator Co

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