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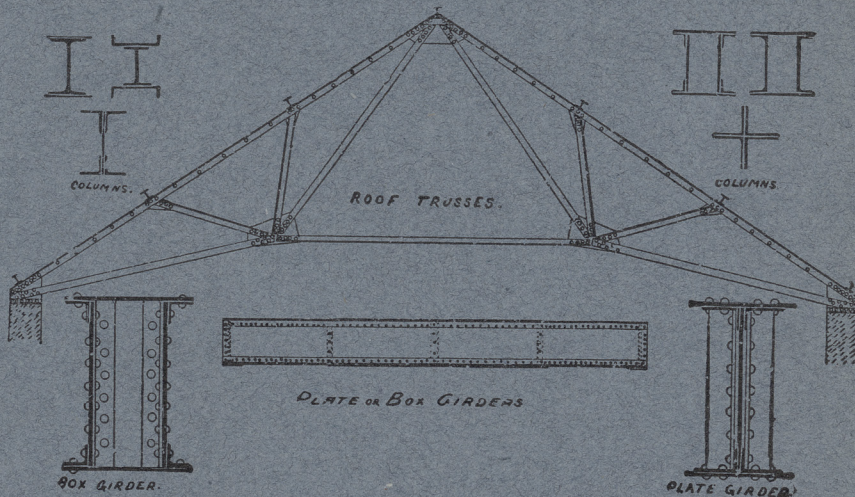
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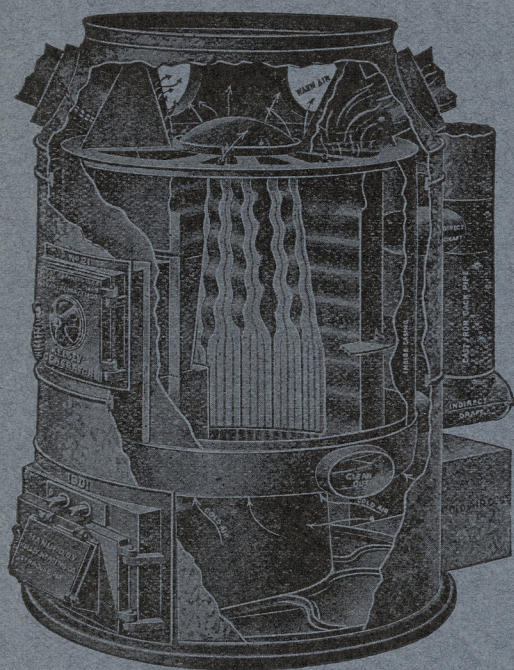
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## INDEX TO ADVERTISEMENTS

<b>Architects.</b> Ontario Directory... III Quebec Directory... III	<b>Books</b> Renouf Pub. Co... xii	<b>Mortar Colors and Shingle Stains.</b> Cabot, Samuel... i J. Langmuir & Co... v	<b>Sash Windows.</b> Alza Co... xii
<b>Architectural Sculptors.</b> Adamson & Wicks... III Holbrook & Mollington... i McCormack & Carroll... xv	<b>Building Block Machine.</b> Ideal Concrete Machinery Co... vii	<b>Office Furniture</b> Canadian Office & School Furniture Co... 107	<b>Stained and Decorative Glass</b> Crown Art Stained Glass Co... ii Horwood & Sons, H... 107 St. George, H E... xii
<b>Architectural Iron Work.</b> Canada Foundry Co... x Dominion Bridge Co... i Locomotive & Machine Co... v	<b>Cement Brick Machine</b> London Concrete Machinery Co... v	<b>Ornamental Iron Work.</b> Canada Foundry Co... x Canadian Ornamental Iron Co... iv Dennis Wire & Iron Co... xiv	<b>Sanitary Supplies</b> Standard Ideal Co... xi Standard Sanitary Mfg. Co... iii
<b>Bells</b> Gillett & Johnston... ii	<b>Creosote Stains</b> Cabot, Samuel... i	<b>Ornamental Plaster Decorators</b> Hynes, W J... III	<b>Shingles and Siding</b> Metal Shingle & Siding Co... xiii Ormsby & Co., A B... I Roofers Supply Co... xii
<b>Bridges</b> Canadian Bridge Co... ix Dominion Bridge Co... I	<b>Drafting</b> Montreal Drafting Co... xii	<b>Painters.</b> Montreal Directory... xvi Toronto Directory... xvi	<b>Soil Pipe.</b> Toronto Foundry Co... 107
<b>Builders' Supplies</b> Hogue, Jos... xi Luxfer Prism Co... xv Montreal Directory... xvi Morrison, T. A... xvi Ontario Lime Association... xvi Rhodes, Curry & Co... IV Toronto Directory... xvi	<b>Drawing Inks</b> Wagner, Gunther... ii	<b>Prisms.</b> Hobbs Mfg. Co... xv Luxfer Prism Co... xiv Toronto Plate Glass Co... viii	<b>Sheathing and Deafening Material.</b> Cabot, Samuel... i
<b>Builders' Hardware</b> Vokes Hardware Co... x	<b>Elevators</b> Malloch & Co, W... IV Otis-Fensom Elevator Co... I Parkin Elevator Co... I Turnbull & Russell Co... viii	<b>Paints &amp; Varnishes</b> Canada Paint Co... xii	<b>Tubing and Fittings</b> Conduits Company... 108
<b>Building Stone Dealers.</b> Amherst Red Stone Quarry Co... iv Hoidge Marble Co... vii Brodie & Co., Jas... iv Doolittle & Wilcox... ix Eadie & Douglas Co... II Hood & Son... iv Hagersville Contracting Co... iv Horse Shoe Quarry... iv Myers, Oakley... iv Niagara Quarry Co... iv Philipsburg Railway & Quarry Co... vii Roman Stone Co... iv	<b>Engravers.</b> Alexander Engraving Co... iii	<b>Parquetry Floors</b> Elliott & Son Co... viii	<b>Tiles.</b> American Enameled Brick & Tile Co... i Craven, Dunhill & Co... I Gould, Chas. H... xii Gutta Percha Rubber Co... xv Holbrook & Mollington... i Robinson & Co., H. M... v Toronto Plate Glas. Co... iii Woolscroft & Son... ii
<b>Bricks</b> American Enameled Brick & Tile Co... i Beamsville Brick & Terra Cotta Co... IV Don Valley Brick Works... xiv Fort Credit Pressed Brick Co... II Toronto Pressed Brick & Terra Cotta Co... III	<b>Engineers</b> Canadian White Co... IV Dominion Engineering & Construction Co... vi	<b>Plate Glass</b> Consolidated Plate Glass Co... ix Toronto Plate Glass Importing Co... viii	<b>School and Church Furniture.</b> Globe Furniture Company... xvi Can. Office & School Furniture Co... 107
	<b>Folding Partitions.</b> Springer, O. T... xvi	<b>Plumbers</b> Montreal Directory... xvi Toronto Directory... xvi	<b>Vaults</b> Taylor, J & J... III
	<b>Grilles and Railings.</b> Dennis Wire & Iron Co... viii	<b>Roofers</b> Duthie & Sons, G... xvi Douglas Bros... xvi Forbes Roofing Co... xvi Nicholson & Co... xvi Rennie & Son, R... xvi Ormsby & Co., A. B... I Ringham, George... xvi Williams & Co., H... xvi	<b>Wall Plaster</b> Albert Mfg. Co... II
	<b>Granite</b> McIntosh-Gullett Co... vi	<b>Rubber Tiling.</b> Gutta Percha Rubber Co... xv	<b>Window Cord.</b> Samson Cordage Works... i
	<b>Hardwood Flooring.</b> Knight Bros. Co... 107 Siemen Bros... III	<b>Reflectors</b> Frink, I. P... i	<b>Waterproofing for Brickwork</b> Cabot, Samuel... i
	<b>Heating.</b> Gurney Foundry Co... xi Mahony, A... v Sheldons Limited Smart Mfg. Co., Jas. II	<b>Roofing Material</b> Galt Art Metal Co... xii Ormsby Limited, A B I Metallic Roofing Co... 107 Metal Shingle & Siding Co... xiii Roofers Supply Co... xii	<b>Wire Rope</b> Allan, Whyte & Co. IV BGreening Wire Co IV
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	<b>Lime.</b> Ontario Lime Association... xvi	<b>Sash Cord.</b> Samson Cordage Works... i	
	<b>Mail Chutes.</b> The Cutler Mfg. Co... IV		
	<b>Mantels, Grates, and Tiles.</b> Holbrook & Mollington i		

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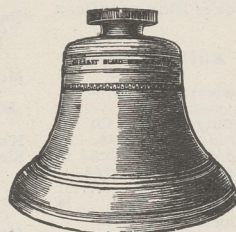
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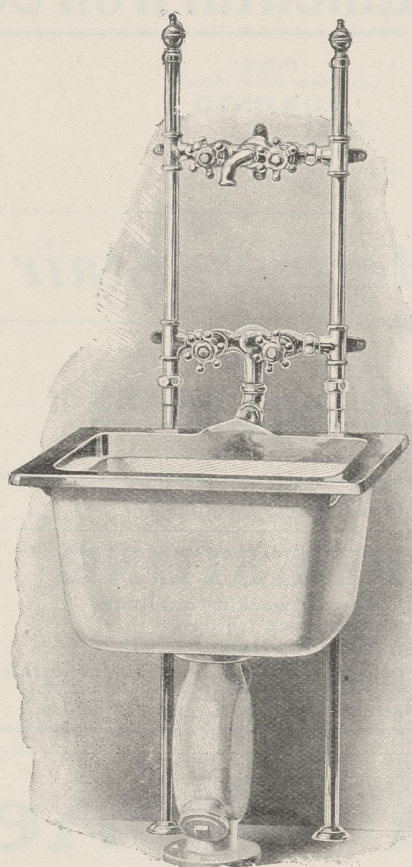
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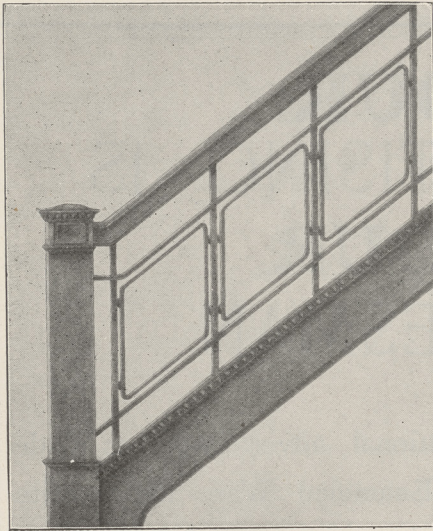
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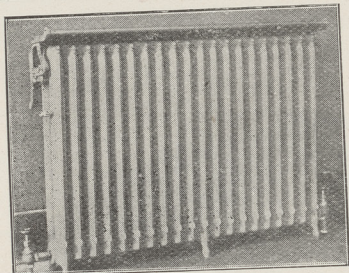
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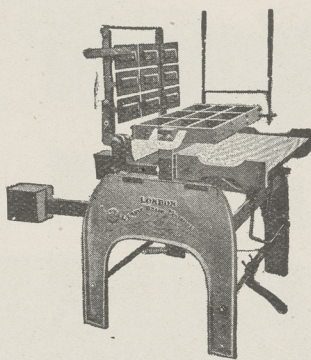


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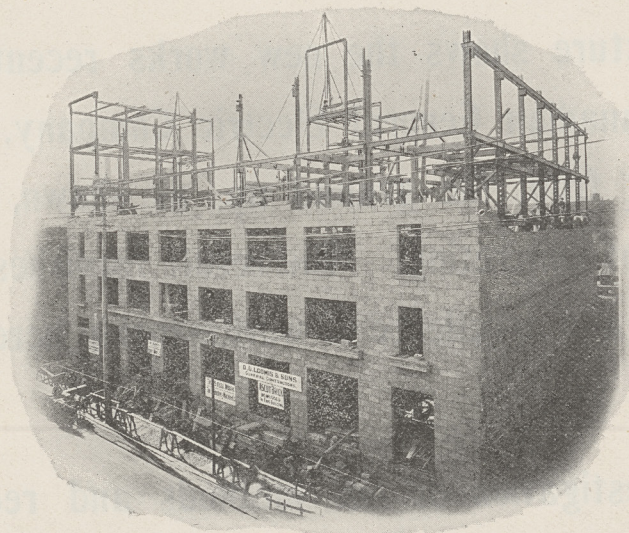
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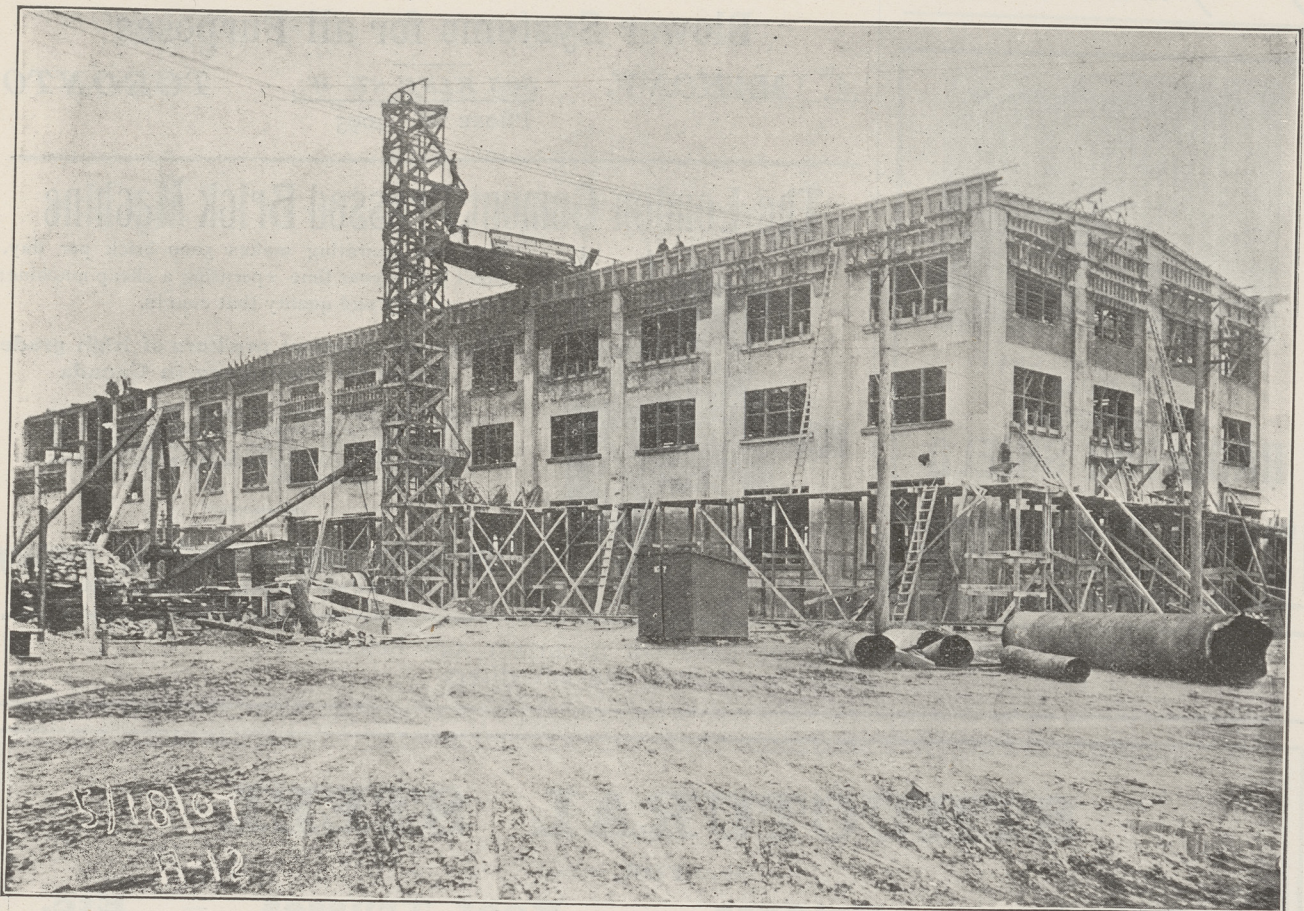
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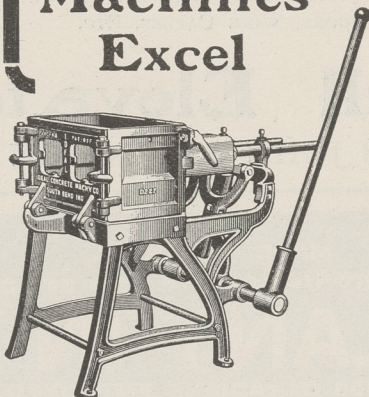
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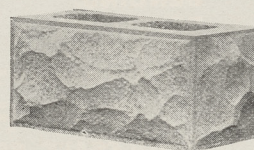
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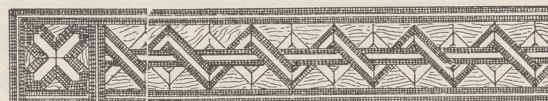
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# The Canadian Architect and Builder

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## ILLUSTRATIONS.

CANADIAN ARCHITECT AND BUILDER Competitions:—

- 1.—For a Small Suburban House.—Design Submitted by "Architecture".
- 2.—For a Farmhouse.—Design Submitted by "Byzantine".

## ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Views of the New Post Office, Mexico.

## CONTENTS

Editorial	89-90	A Properly Equipped Bathroom	104
Some Special Features of Traders Bank Building, Toronto	91-92	The Chimney Flue	105
Varieties of Damp Courses and their Treatment	93-94	Heating and Ventilating a Modern Hotel	105
Architecture at the Royal Academy	95-96	Discovering Leaks in Water Mains	105
Institute of Architects of Canada	97	Concrete Blocks for Building Purposes	106
Canada's Advisory Council of Fine Arts	98	Danger in Decay of Concrete	106
Glass as a Material for Interior decoration	99	Wood for Water Pipes	ix
Montreal Notes	100	Architects' Invention for Railroad Wrecks	x
P. Q. A. A. Sketching Club	101	Master Painters and Decorators to meet in London	x
Architecture in America	101	Canadian National Exhibition for 1907	x
Our Illustrations	102	Perfect Color Combinations	xiv
Hamilton Having Phenomenal Building year	103	To Photograph Blue Prints	xv

### Capital to Educate Labor.

No one can deny that at the present moment the difficulties that are constantly arising between employer and employe, not only in Toronto, but throughout the entire country, go to form one of the most vital questions of the day. At this time of year, when building activity should be at its strongest, these labor difficulties make themselves most apparent, and inconvenience, not only the persons directly interested, and the general public as well, but seriously impair the general prosperity of the country.

Who are responsible for the troubles? Ask the capitalist, and he invariably denounces trades unionism as a monster of insatiable appetite, relentless in demand and incapable of comprehending the difficulties of the employer. Trades unionism, on the other hand, recognizes in capital a hard task master, from whom nothing can be secured save through the severest form of pressure.

Neither thoroughly understand the other, and to this phase of the question at the present time much careful thought is being given by the National Association of Manufacturers in the United States. At its recent convention in New York, this Association appointed a committee of thirty-six to consider ways and means of raising \$500,000 a year for three years, to be used in a campaign against the labor unions. This is not to be a "corruption fund," the trustees of the association assure the public. "The money will be devoted to a campaign of education solely," one of them declares. "We think," he continues, "that we will be able to open a good many people's eyes to what the many unions really mean. Gompers and his friends have a fund of a million or so. It is time that there was some federated action on the part of employers. We mean to lead off in such action and in the right way."

Following this announcement, a variety of strongly

expressed opinions has been handed out by many American papers.

This is just "the wrong way" to grapple with the problem, declares The Wall Street Journal (New York). "Co-operation, not war, should be the program. It were better to adopt the suggestion of Secretary Straus and invite the leaders of organized labor to meet with the manufacturers for joint consultation and action. Organized labor is here to stay, just as organized capital is. Both are proper within certain limitations. The abuse of organization is as bad on the part of labor as it is on the part of capital. Boycotts are as wrong as rebates, or any other method of unfair competition. The thing to do is for organized capital and organized labor to get together on a program of conciliation, and not to make war on each other."

A similar attitude is assumed by the Washington Times. It recalls the experiences of railroad managers two or three decades ago, when they attempted to combat unionism in a manner similar to this campaign of the Manufacturers' Association: "The unions were not destroyed then and will not be destroyed now. The railroad managers solved the problem of their relations with the unions by recognizing them, dealing with them as organizations, making them responsible, encouraging them to place their strongest, ablest, most skilful men in charge of their business. To-day there is no complaint by the railroads against labor organization. Strikes are almost unknown, the men are satisfied and the corporations feel a security that was unknown to them until they had recognized their employes as intelligent, well-intentioned people, who enjoyed the same right to organize that the government has conferred upon corporations."

The New York Times scoffs at the idea of a campaign of education and asks: "How can the Manu-

facturers' Association by the use of its funds hope to inform the public about union methods better than they are kept informed by the newspaper press? There is no necessity to raise or to spend a million and a half dollars, or even one dollar, for a 'campaign of education' upon labor union methods. The federation of labor unions naturally suggests a federation of employers. If that policy were carried out there would be no little danger that the analogy of the vicious 'sympathy strike' might be followed. It would not be consistent, nor would it be sensible, to resort to methods that have been so unsparingly condemned by employers. There are bad unions, just as there are bad corporations, and the good must inevitably suffer from the wickedness of the bad. The mere raising of a fund will not put a stop to the abuses of the boycott, the causeless strike and the violence of 'entertainment committees,' nor will it check the spirit of unreason that possesses so many labor agitators. We know of no better cure for these evils than public opinion, the sense of fairness and justice, that pervades average humanity. Its working is often discouragingly slow, but it is sure to be reasonably effective."

This idea, as expressed by the Times, was dwelt upon in these columns a few weeks ago at the time of the organization of the so-called "Labor Party" in Toronto. It scarcely follows that a federation of employers necessarily involves resorting to methods "that have been so unsparingly condemned by employers." For purposes of self-protection it is high time that Canadian employers get together on some such scheme as has been undertaken by the National Association of Manufacturers. If they hesitate too long they may find themselves ere long confronted by an organization of labor whose compact ranks will prove unassailable. Small combines of employers, or unsatisfactory "understandings" of manufacturers, are not the only methods of opposing trades unionism, and the sooner that fact is recognized in Canada the earlier will the present feeling of uncertainty that pervades the building industry in this country give place to a clearer understanding between employer and employee.

Not long since we received from a large Ontario manufacturer a communication in which appeared the following:

"Labor unions combine and by strikes, boycotts and other means, are constantly endeavoring to force employers to pay certain rates of wages, whether they may be able to do so or not, or whether the wages demanded are reasonable or not; but the public press do not appear to deal with this feature of the so-called 'combines,' although we believe it is one of the principal reasons why manufacturers are practically driven, in many cases, into arriving at some understanding with their competitors in order to enable them to get a living profit upon the goods that they produce. We believe that if many of them did not do this they would very shortly be unable to pay their liabilities.

"We think, in many cases, there are much stronger combines or understandings contrary to the public interests amongst some contractors than almost any other class in the community, with the exception of the labor unions, whom we consider have the strongest combine of all, and while we are not parties to any-

thing of the kind we are very much of the opinion that understandings upon the part of all concerned to maintain reasonable prices that would net a fair profit would really be in the interests of the general public."

The tone of this confession is typical of that of so many Canadian capitalists in speaking of the condition of affairs in this country. Almost invariably labor has been able to gain its ends in the past, not so much because of its superior organization as because of the lack of unity among employers. Whether or not the scheme of the National Association of Manufacturers will be productive of good results time alone can tell. It is in any case a step in the right direction, and shows that some unanimity of feeling and effort is manifesting itself among employers with regard to the important question of dealing with labor.

#### Canadian Slums

The attention of the Health Committee of Montreal was recently called to the unsatisfac-

tory conditions of certain of the poorer parts of that city. There are several reasons why the problem of housing the poorer classes is a more serious one in Montreal than elsewhere in Canada. It is a port at which during the summer a continual stream of immigrants is being landed. Those who go on to other cities generally have a more or less definite idea of where they wish to go and why, but there remains a class willing enough to merge itself in the first community ready to absorb it. In addition to this, the population is liable to be swelled at certain seasons of the year by a swarm of laborers whose sojourn in the country is temporary, as in the case of Italian harvesters. These people, during their short stay, are crowded into lodgings in a way which nature would not long endure. Besides these difficulties, Montreal is a city old enough to have considerable districts originally well and substantially built, but which, in the course of a century and a half of varying fortunes, have become insalubrious and sometimes ruinous, and the complaint is made that slums of the worst type are being developed. That this calamity has overtaken some of the larger cities of the United States, in a form as virulent as in the case of the oldest cities of Europe, is a circumstance that should put our Canadian municipalities on their guard against these malignant growths. The cause of slums is largely the desire to make property pay without large initial outlay, but the eventual cost to the community must be disastrous. The preventive of readiest application is a scheme of by-laws aiming at a fair standard of sanitary building and officers of inspection with powers to see that the spirit of such by-laws is not transgressed. A severe application of such a system might result in so large a condemnation of existing methods and conditions that houses for the poor would become too scarce, and it would not pay to build new ones to conform to a high standard of excellence. Architects are sometimes called on to solve the problem of how to accommodate most people in least space. This is, of course, to aggravate and not to solve the difficulty before the community. The question seems rather to offer an opportunity to the builder who can arrive at the cheapest manner of building houses which shall at the same time be good and durable.

## SOME SPECIAL FEATURES OF TRADERS BANK BUILDING, TORONTO

In April, 1905, the work of removing the old buildings on the site of the present Traders Bank Building was commenced, and not long afterwards the process of excavation for the immense foundations, necessary for so high a building, was begun. The construction of these was very interesting, as it was found necessary to increase their capacity, owing to the moisture in the ground. Old residents in Toronto say that within their recollection this very property consisted of a morass or swamp, and the engineers were instructed to take the greatest precautions, regardless of expense, to secure for the building an absolutely safe foundation. In consequence, the ground under

mild one, which allowed the work in all departments to proceed without interruption, and as a consequence the whole building was practically completed ready for occupancy by the first of October, 1906, at which time the first tenants, the Parry Sound Lumber Company, took possession of their offices.

In describing the building briefly it may be said that to obtain a building which would have an imposing and artistic appearance, combined with the greatest amount of usefulness and revenue-producing qualities, the typical American office building style was adopted for the exterior, with details and general character from the architecture of the French Renais-



MAIN OFFICES AND ROTUNDA, TRADERS BANK BUILDING, TORONTO.

these footings is loaded to a much lower degree than is demanded by the requirements of the building laws of the city.

The same rule was applied to the entire structure in all its parts, and a very heavy steel frame was designed. This frame, which is supported by thirty-six columns, includes upwards of seventeen hundred tons of steel, every part of which was riveted together under the minute inspection of a permanent engineer, employed for the special purpose. The first section of this steel frame was erected on the 20th day of September, 1905, and carried up at the rate of about two storeys every three weeks, unusually rapid delivery being made by the contractors.

The winter of 1905 and 1906 proved to be a very

sance. This allowed a simple arrangement of window spacing in that portion of the building where every inch of floor space was required, and the bank premises, being at the base of the building, allowed a very rich treatment of columns and pilasters, giving great dignity and suggestion of strength. An extensive cornice at the fourteenth floor level, with the French mansard roof above, gave the necessary crown to the structure, and with the addition of ornamental balconies a satisfactory effect was obtained.

The materials of the exterior consist of a fine, light-colored limestone, imported from the State of Indiana by Nicholson, Curtis & Vick, of Toronto, in the basement or first storey; then three storeys of terra cotta, exactly matching the limestone in color

and texture; then the main field of the facade in a pressed brick, also of a grey color to match the stone and terra cotta.

The upper cornice is of copper left natural, and the roof is also of copper, the high railing along the outer edge of the main cornice forms the top of it into a comfortable balcony, from which a splendid view of the city and surroundings is to be obtained; this is entered from the fourteenth floor offices. There is a large, flat surface on the main roof, which is also accessible from the elevators and stairways.

A word should be said descriptive of the foundation work put in for this building. When the bottom was reached for the footings as originally planned at a depth of about fifteen feet below the sidewalk, the architect found that, owing to moisture in the ground, a greater spread would be necessary for the footings, so that the load would be properly distributed and that the pressure at any one point would not be too great. As it was found that some of the columns would be supporting a greater load than 1,000,000 pounds, the footings necessarily became very large in the case of two of the columns. grillages of heavy steel beams were inserted in the concrete mass of footings to take up the tensile strains, and at the north side, where it was found necessary to spread the footings beyond the building line, cantilever beams of reinforced concrete were formed, anchored on the end by the weight of the inner columns and supported by immense piers of reinforced concrete kept just within the north line, a portion of the weight of the columns being thus supported on the overhang of the beams beyond these piers.

Before these foundations were decided upon a test pipe was sunk to a depth of thirty-five feet below the surface to ascertain the nature of the soil, which was found to be of blue clay, and this was after verified by the shafts for the plunger elevator, the stratum under the City of Toronto consisting of blue clay for a depth of fifty feet, then about thirty feet of blue shaley rock, after which a solid blue rock, similar to that found in the Niagara ravine, extending to at least a depth of 200 feet, where the hole for the plunger of No. 4 elevator stopped.

All the concrete footings were capped with large templates of solid gray granite and large, well-set, heavy cast iron shoes, supplied by the Canada Iron & Foundry Company, to which the first section of the steel columns were connected.

The steel frame was erected with a heavy boom derrick placed in the centre of the building and arranged so that the boom swung out in every direction, and steel was lifted from the wagons in Colborne street in bundles, sometimes weighing as much as eight tons, to the floor where it was required.

Throughout the whole of the work there was no mishap of any kind with this derrick, which indicated great care and careful management on the part of Mr. Greenshields, the superintendent of steel erectors, the Hamilton Bridge Works, of Hamilton. The structural steel work in this building was inspected and tested by Messrs. Chambers & Hone, New York, through their representatives, the Canadian Inspection Company, Limited, Montreal, which latter company were also the inspectors on the Yonge Street Branch.

As soon as the steel frame was well under way the contractors commenced to put in forms for the reinforced concrete floor slabs, and two large steam hoists were put in the centre of the building for the purpose of hoisting this material, which was mixed in the basement and sent up and dumped into the forms, where it was tamped down in position. These hoists were afterwards very useful for the carrying up of masons' material. The brickwork followed very closely upon the concrete floor slabs.

The masonry walls of a steel frame building are, of course, supported at each floor by the horizontal beams, but from outward appearance these are supported directly from the foundation.

Ahead of the masonry work, and following closely upon the concrete floor slabs, came the steamfitters, plumbers and electricians, with their forest of pipes, as, of course, all of these had to be built in out of sight. This work was performed with great skill and rapidity by W. J. McGuire & Company, and when the other contractors were ready for the plastering, the plumbing and heating and wiring work had been installed and passed.

The plastering, which was also completed within a very short time, was carried through by Dancy Bros. Company, a Toronto sub-contractor, and Toronto workmen, in a manner which reflects credit upon everybody concerned. This brought the work to the point of wood trim, staircases and elevators in the meantime having gone into shape, and here the contractor's greatest difficulty began owing to the immense amount of woodwork involved in the finishing of the 600 odd doors and 500 odd windows, to say nothing of the stretches of base, picture mould and chair rail.

All of the office part of the building is finished in black birch stained down to a mahogany color and rubbed to a soft, even surface; this finished with polished brass hardware, gives the building a very rich and handsome appearance.

The woodwork in the banking room and the ground floor offices is of quarter-cut white oak with a Flemish finish. The above mentioned woodwork was supplied by A. Miles Company, and the brass hardware by the Aikenhead Hardware Company, both of Toronto.

A building of this height is necessarily equipped with a very good elevator plant. Before deciding upon the nature of this plant the most elaborate and up-to-date plants in the United States were visited, and the experience of the owners of buildings having such equipment interviewed, so that, regardless of first cost, the safest possible type of elevator might be obtained and at the same time cost the least to run and keep in repair. After the most careful consideration the architects and engineers employed unanimously decided that the Otis-Fensom Elevator Company's most improved elevators of the hydraulic plunger type should be installed.

The building is equipped with four high pressure, high speed hydraulic plunger elevators, and the equipment is said to be the finest of the size ever installed.

The elevators, when operating up to specification, will run at a speed of 600 feet a minute.

One of the elevators is so arranged as to handle freight and the effects of the tenants comfortably,

the entire front of the car being arranged to open, and the carrying of an extra load being provided for.

These elevators are equipped with an electric signal device, which was found to be the most serviceable for intelligent operators.

The cars are large enough to carry twenty people, but the rule of the building requires that not more than twelve shall be allowed in one car at a time. The operation of the elevators is directed by a man who stands in the entrance hall and starts each car at its proper time, thus preventing all of the cars being in one place at any time, arranging so that there will always be some of the cars in the upper part of the building and some in the lower part.

Enclosures for these elevators are of a very handsome design of wrought iron, finished in an antique bronze, and corresponding with the main staircase.

The staircase from the ground to the fourth floor is entirely of iron, with white marble treads and risers, the top member of the railing being of polished brass. The staircase from the fourth floor to the sixteenth floor, and continuing up to the roof, is entirely of iron, with heavy black slate treads. This staircase continues around a well about five feet by ten feet in size. In looking down this well one gets the best idea of the immense size of the structure. The halls and corridors are finished in green and white marble, supplied by the Hoidge Marble Company, Toronto, which impart a charming effect.

The building contains an extensive power plant, which includes three water tube boilers, 150 horse-power each, which were made in England expressly for this building, and two 150 horse-power high pressure vertical engines, with two direct connected 150 kilowatt dynamos. This plant is placed in such a way that there can be no possibility of vibration in the building, and is placed in a handsome engine room at the south side of the building, the walls and floors of which are of a light colored tile.

These, with the elaborate pumping plant for the elevators, the 9,000 gallon elevator pressure tanks and equipment for house pumps, etc., pretty well fill the basement with machinery.

The banking rooms, the principal motive of the building, and the quarters of the head office, as well as the Toronto branch of the Traders Bank of Canada, include the whole of the first and second floors of the building.

These rooms are approached from the street by a broad flight of white marble steps, protected by a very handsome balustrade of Istrian marble, highly polished. The floors of the public portion of the premises are of selected marbles in white, grey and dull red colors, in handsome geometrical patterns.

The supporting pillars, of which there are twelve, are of Ionic design, made to represent highly polished Breche Voilette marble, with heavy polished bronze bases and caps. These columns are about twenty-three feet in height and support a heavily coffered and enriched ceiling with elaborate cornices. The pilasters opposite these columns on the walls are of the same marble. The walls of the rooms are lined throughout with Pavanazzo marble.

Between these twelve columns extend the handsome antique bronze counter fronts and grilles, having marble panels below and plate glass, neatly

framed in ornamental bronze work, above. The counter tops are of polished plate glass. The Toronto manager's office is at the southwest corner, and the space occupied by his staff extends along the south side of the building.

A gallery extends around back of the large columns, providing a space for the head office.

On this floor, also, is the board room, where the Board of Directors hold their meetings, and the incinerator for destroying old notes.

Among the most important features of the bank are the vaults, of which there are three, viz.: The treasury vault and two large book vaults.

The treasury vault is lined with chrome steel three inches thick, and has an outside door of chrome steel nine inches thick, and two inner doors of one and a half inch steel.

The outer door is fitted with a very elaborate series of time locks and is a very handsome piece of workmanship, indeed, so accurate are the joints in this piece of work that the thinnest piece of paper inserted in the jambs prevents the door closing.

A handsome polished steel grille gate is used during business hours in the place of the large outer door, which stands open.

## VARIETIES OF DAMP COURSES AND THEIR TREATMENT.

By W. M. BROWN, C.E.

(Article written specially for THE CANADIAN ARCHITECT AND BUILDER.)

The question of damp courses in building operations is of great importance, especially in localities where the climate is wet and variable. When damp arising from the soil is absorbed into the brick or stone wall of a building it ascends gradually until it penetrates the inner surface, affecting the timber and plaster work, and consequently causing a moist atmosphere in the interior. It may also arise from imperfect joints at window lintels and sills, from unfilled and unpointed joints on the face of the wall, from moisture forced into the walls during heavy rainstorms, and from several other causes.

All building materials with very few exceptions are porous and capable of absorbing and transmitting moisture in large quantity. The two main purposes for which damp preventing devices are adopted in connection with buildings are to prevent the moisture from getting into the walls, and, if any be within the walls, not to hinder its extrusion. The former is accomplished by an absolutely waterproof covering, such as asphalt or tar, or the complete isolation of the wall from any sources of dampness (exceptions, of course, being made here to the moisture which is put into the walls in buildings, and which should be allowed a proper opportunity to dry out). The latter will eventually be accomplished by the perfect ventilation of the walls on all sides.

There are several methods for preventing moisture from entering the cellar walls, which may be divided into, first, applications to the outside of the walls, and, second, constructive devices. The efficiency of the former depends greatly on the care and thoroughness with which they are applied. Of this class we have rock asphalt, tar and cements. The first and second are applied to the wall with a large brush, and should be boiling hot. The coating must be not less than three-eighths of an inch thick, covering every joint, and be carried down to the bottom of the foot-

ings. In order to obtain perfect protection, the wall should have been built as carefully as possible, the joints have been well pointed, the whole have become well dried, and the asphalt or tar applied in two or more coats. These coatings should not stop with the face of the wall, but be carried entirely over the top. Some builders recommend that the asphalt be mixed with linseed oil.

Regarding cement as a preventive against absorption of water, there are differences of opinion. That it is an excellent protective covering, when thoroughly applied, goes without question. It is, however, often fractured by the settlement of the walls, and, being somewhat porous, suffers from the action of frost. In either case, it has no further value as a protective. In order to lay it properly, all the beds and joints of the walls should be raked out at least one-half inch deep. The coating should not be less than one-half inch thick, and should, as far as possible, be applied all at one time. If it is necessary to make a joint, it should be vertical and not horizontal. The last precaution is that the earth must not be filled in against it until the cement has thoroughly set.

A similar protective covering is made of a concrete of one-half lime mortar and one-half good cement (Portland preferred).

Of the constructive devices adopted to guard against dampness, we have first those that are in the wall itself, and which comprise the horizontal damp courses, hollow brick lining and facing and hollow wall. There are several kinds of horizontal damp courses, which are placed at the bottom of the wall, either on top of the footings or a short distance above them. That which is considered the most effective damp course is one of asphalt or tar, applied in coats in the same manner as described for the facing of the walls. A great degree of efficiency is given by laying the course of bricks immediately above the damp course, while the last coat is still hot and soft. When this damp course is set in a stone wall it would be better to lay a course of bricks, and, on this, place the asphalt course, starting the stone course above the latter. A layer of slate set in cement has often been adopted as a damp course. The disadvantage, however, of using this method is because of it being very liable to fracture under uneven pressure.

Sheet lead also is an excellent protective from damp, and has been applied for that purpose for about two centuries. It is precluded from being used for ordinary work because of its cost.

Perforated terra cotta bricks may be also used as an excellent damp course. These are made the same size as the ordinary brick, and can be readily beaded into the wall. A course may be set immediately above the footings, and another at, or near, the top of the wall. The bricks should be laid so that the openings run through the wall, and so allow of ventilation and evaporation of any moisture that might rise in the hollow bricks themselves. The perforated bricks are also used to form a vertical damp course. They may be placed either on the inside or outside of the wall, and may be laid as stretchers, as there is not the same liability to collect and retain moisture as there is in the horizontal course. Headers should be placed at frequent intervals to bond the facing of the body of the wall.

A simple and somewhat inexpensive system of rendering walls absolutely damp proof, and of adding much to their strength and stability, is to build the brick work into two four and one-half inch thicknesses, with a half inch or three-quarter inch cavity kept clear of mortar. Thin boarding is inserted in the cavity as the work advances, the space being afterwards filled with rock asphalt compositions. The compositions answer the double purpose of binding the two thicknesses together, and making the wall impervious to moisture.

In general, damp-proof courses should be six inches or more above the level of the external ground, but, where possible, under the wall plate carrying the joints for the floor. In buildings finished with a parapet wall, a damp-proof course should be inserted just above the flashing of the gutter, so as to prevent the wet which falls upon the top of the parapet from soaking down into the woodwork of the roof and into the walls below.

In some localities courses are formed with slates, set in cement. These are sometimes liable to crack, and thin impervious stones are better. Sometimes vertical damp courses are used, particularly when the ground outside is higher than the wall plate inside, to prevent the damp penetrating through the wall. The damp course is bedded in the wall directly under the wall plate. This prevents the moisture rising and destroying the wood. The vertical damp course acts in a similar manner in excluding the damp through the side of the walls. The joints of brickwork should be raked out to receive this damp course.

There is another method of preventing damp from getting into a wall, and that is by what is known as the "dry area method," which consists of building a dwarf wall all around the building, and leaving a space of two or more feet between the dwarf wall and the walls of the building. The dwarf wall is finished with a brick-on-edge coping, built in cement. The floor of the area is usually covered with cement concrete paving, to prevent the water soaking in.

Hollow or cavity walls should be adopted for external work in damp situations exposed to driving rains. These walls are generally built of brick or stone, having a cavity of two or two and one-half inches. The outer wall should be four and one-half inches, the thicker portion being inside, false headers being used in the outer wall. The thick wall inside will carry the doors and roofs, the woodwork being kept clear of the outer portion, which is liable to be damp. The cavities should be ventilated by air bricks in the external portion at top and bottom, care being taken that no mortar or other drippings get into them. The wall ties, usually of cast or wrought iron, galvanized or well tarred and sanded, should be employed to tie the two walls together, or a tie or bonding brick constructed especially for the purpose may be used. Walls constructed after this manner not only exclude the damp, but the layer of air they contain, being a non-conductor of heat, tends to keep the building warm.

There is another method sometimes adopted, because of its cheapness, and that is to lay common field tiles all around the walls, both inside and outside, and connect them by drain tiles to the sewage system or some low spot where the drainage will be effective.

## ARCHITECTURE AT THE ROYAL ACADEMY

By D. B. DICK.

Architecture is represented at this year's exhibition of the Royal Academy by some two hundred drawings. The room devoted to them is not very large, but it is admirably lighted. It is at the south-east corner of the building, and forms a sort of annex, outside the main walls which enclose the picture galleries. It is, therefore, not a thoroughfare, nor is it likely to be entered by many visitors, except those who wish to look at its contents. Consequently, if one may say so without being suspected of ironical intention, there is always plenty of room to study the drawings without being hustled, even at times when the other rooms are so crowded that it is almost impossible to get more than a glimpse of any pictures except those that are skied and so can be seen over the heads of the people. This deserted air seems to show the justice of the oft-repeated assertion that the general public takes very little interest in architecture. And the following remark, made in the hearing of the writer, appears to afford further confirmation of its truth: "I wish I could find a seat in a room where there is something to look at." But, this lady notwithstanding, the architect or student will find much to look at, good, bad and indifferent. It may, however, be said at once that there is nothing which stands conspicuously forth to challenge attention, either on account of the importance of the subject or the excellence of the design. It is to be supposed that anything admitted to the Royal Academy exhibition must be up to a certain standard of excellence. But it is possible the decisions of the Hanging Committee are sometimes influenced by collateral considerations. Indeed, in view of the extreme ingenuity with which frames of the most varying dimensions are arranged to cover the wall space, it seems not unfair to hazard a guess that sometimes things get hung because they happen to fit an awkward gap, while others, better entitled to a place, have to be rejected simply because they do not happen to fit any of the vacant spaces.

Almost every class of work that a modern architect can be called upon to design is represented: Educational, ecclesiastical, domestic, commercial, monumental and decorative. There are also a number of designs of various sorts that appear to have been made either to relieve the overflowing exuberance of the designer's fancy, or, in default of remunerative work, or perhaps out of a public-spirited desire to suggest methods of effecting desirable public improvements. Many of the designs in these classes have the unpractical air which is so often noticeable in students' designs.

One amongst them which is practicable enough, although not likely to be carried out, is entitled "Suggestion for Street Bridges Across the Thames," by T. E. Collent and S. Hamp. It is a birdseye view of part of the river and its surroundings, showing a new bridge substituted for the present Charing Cross railway and foot bridge. There is a suggestion of the Ponte Vecchio in Florence in the design of the bridge, and of the Place de la Concorde in Paris in the grandiose approaches at either end. A contin-

uous row of small shops, with a covered calonnade in front over the sidewalk is shown all along each side, but the uniformity is rather tame and the design might be vastly improved by being broken up by some picturesque features. Perhaps the largest building delineated is the University of Birmingham, by Sir Aston Webb and E. Ingress Bell. The plan, shown in block only, is in the form of the letter D, with the straight side forming continuous building, while the loop appears to consist of a corridor with seven blocks radiating from it in a manner suggestive of the wards of a hospital. The style is French Renaissance, but it is difficult from the two drawings shown to judge of the general effect. One is a geometrical elevation to a small scale of the long side above mentioned. This is about 350 feet long by 50 high, with a narrow, square tower rising behind it to height of about 320 feet. These proportions give the elevation somewhat the effect of an inverted T. The other drawing is a larger scale perspective, showing the main entrance, which is at the opposite end of the central radiating block. This is a striking composition, with a plain massive pile, suggestive of an Egyptian pylon, rising to a height of about 80 feet at each side, and between there is a large and very richly detailed arched and mullioned window over the imposing entrance doorway. The effect is bold, but one is tempted to ask what is inside of these two windowless piles.

There is, of course, a good deal of church work, some of it very good. In a number of instances, however, the towers appear to be disproportionately large and rather overpowering for the size of the church.

The domestic work is mostly in what may be called the English vernacular, which is so profusely illustrated in the architectural journals. In some instances the ground floor plan is shown to a small scale as an inset. In the drawings, which are hung high, these are unreadable, unless one mounts a step-ladder or uses an opera glass. Some, on the other hand, are so near the floor that one can only read them by going down on all fours. Upon the whole, the plans convey the impression that the English architect pays more attention to the external appearance of dwelling houses than to the internal arrangement. Not infrequently a good external design is associated with a slovenly and undignified plan, with perhaps a large hall leading nowhere and some of the principal rooms entering off narrow passages, and with inconvenient arrangements for service. There are some good "bits" in narrow street fronts, both for residence and business purposes.

It is interesting when opportunity occurs to compare competition designs with each other, as in the cases of the "Birmingham Council House Extension," of which five are exhibited. The extension forms in itself an important Renaissance building, connected by a bridge with the old building. One of the five designs is marked "Premiated," why, it is not easy to tell, as one of the others is much better and is a very good design indeed. The floor plans are not shown, so it may be that superiority of internal arrangement

carried the day in spite of an inferior elevation. Eight of the English competitors have sent their designs for Mr. Carnegie's "Palace of Peace" at the Hague, generally in the form of a perspective view. Mr. Belcher, however, shows only a couple of sections in plain line, which convey little idea of the general design. Art critics usually say that every building should be so designed as to express the purpose which it is intended to serve without the aid of anything that might be described as a trademark. None of these designs can be said to fulfil this condition. The obvious trademark for a "Palace of Peace" is a statue representing the Goddess of Peace, and that has been freely used. With one exception any of these designs might be intended for a town hall or almost any other civil or municipal building. The only one displaying any freshness or special skill in composition is that by W. S. Cross. This is planned with two parallel wings connected at the back, thus forming an entrance court, which is entered through a graceful pillared screen. There are four domes, one at the end of each wing, which draw the parts together and give unity to the whole, while at the back of the court there rises high above the roofs a tall Doric column, surmounted by a statue representing peace. The whole scheme is well thought out in detail, and forms a very pleasing composition.

The "City Hall, Belfast," by Sir Brummell Thomas, is a fine monumental design of Palladian character, but sadly spoiled by a weak and insignificant carriage porch. If one had seen this on the actual building instead of on the architect's own drawing it would have been difficult to believe that it was not a later addition by another hand. There are, amongst the newer buildings in London, several which are quite unworthy of the sites they occupy and the amount of money expended on them. The design for "New Offices for The Northern Assurance Company, Lothbury, E.C.," shows that unfortunately another is to be added to the number. It is fussy in composition, unpleasing in proportion and coarse in detail. A great contrast is the exceedingly satisfactory design of Mr. Reginald Blomfield, A.R.A., for the "United University Club." This building, recently erected on Pall Mall East, is a carefully thought out composition, dignified and scholarly, and well suited both to its site and purpose.

How to make good architecture out of a building that appears to be supported mostly on upright sheets of plate glass is a problem which there is little reason to believe will ever be solved under present methods. It may be that the only possible solution is a frankly expressed iron or steel construction. Any degree of success that has been attained hitherto has generally been due to a compromise. An illustration of this is afforded by two designs exhibited here. Both are for large business premises in Oxford street, one for Waring & Gilloro, now completed, and the other for Selfridge, in course of erection. They are very different in architectural character, although the same architect's name appears on both, that on the former being R. French Atkinson, and on the latter Atkinson & Burnham. In both the ground storey piers are presumably as large as is compatible with the demands of the owner for the greatest possible extent of window space for the display of goods. These demands have in both cases been comparatively

moderate, so neither does much towards the solution of the problem. The Waring building above the ground storey may be described as consisting of a flat red brick wall with window opening elaborately framed with stonework, the whole crowned by a sloping roof and dormers. The dominant expression is that of solidity and weight, demanding a correspondingly massive substructure to support it. The building is nearly 200 feet long, with a street at each end. The corners on the ground floor have been cut off, with a heavy stone pier on front and return, with a small show window between them. In the centre, between similar piers, is a very wide doorpiece, contracted to the actual doors by bent glass sides forming show windows. Midway between the central feature and the corner pier is another heavy pier. There are, therefore, six piers and five lintels. As no attempt is made to disguise the fact that the lintels must be of steel, and as they are of ample depth they convey the impression of being fully sufficient for their work. But the eye fails to receive a similar impression as regards the piers, and they look insufficient. The reasoning mind, acquainted with modern methods of construction, may know that the building is quite safe, but the artistic sense is not satisfied that it ought not to fall down. One rather clever feature is worth mentioning. Over the window in the angle at each end is a heavy projecting window of stonework and one storey in height. Whether intentional or not, the effect produced is that of a cantilever apparently counterbalancing the load on the lintel on the other side of the pier. In the other design the main feature is a series of heavy Ionic columns extending through the first, second and third storeys, and supported by flat piers under them, no wider than their own diameter and showing practically no reveal nor anything to suggest that their narrowness is compensated for by their depth. Consequently they look entirely inadequate for their duty.

The mausoleum to the late Mr. Bannister Fletcher is not a striking design. It consists of four columns, with an entablature forming a canopy over a bust and surmounted by a plinth and urn, the whole standing on a pedestal and steps, with an allegorical figure seated at each of the four corners. It is effectively rendered in color, with adjuncts of funeral-looking cypresses, which, however, are not exactly suggestive of Hampstead Cemetery.

One notices in this exhibition great variety of draughtsmanship, with less of pen and ink work than there would have been a few years ago, and more color. A number of the colored drawings, especially some of the interior views, display great skill and might have been sent to the water color room as paintings. Perhaps they err in being too pictorial. One cannot study the work in this room without being impressed by the importance to the architect of good rendering, whatever be the method chosen. Every architect knows that many a competition has been won by good drawing rather than by good design. Some of the drawings already referred to afford illustration of this. For instance, Mr. Blomfield's fine club design might be passed unnoticed, because it is represented by an exceedingly slovenly and inartistic pen and ink drawing. On the other hand, the Northern Assurance Building, which does not compare with it in design, is displayed to the best advantage by a

well-executed colored perspective. Sometimes carelessness in putting in figures in the foreground spoils an otherwise good drawing. A case in point is the view of the "Lancaster Town Hall," by E. W. Mountford. The figures are not at all badly sketched, but unfortunately the draughtsman has not known how to keep them in perspective. The result is that while the spectator, who is supposed to be standing on the ground, is looking up to the building, he appears to be looking down on the heads of the intervening people. The effect is very peculiar, especially as the nearest figures are on quite a large scale. An excellent drawing is the view of a "Villa at Antibes," by Ernest George and Yeates. Suggestive of the California mission buildings, the design is admirably suited to the site on a rocky part of the sunny Mediterranean shore, but the sky is more characteristic of England than of the Riviera. An effective pen and ink drawing in brown shows the round tower of the Gaiety Theatre at the corner of Aldrough and the Strand. It would be difficult to find anywhere a more effective treatment of a round corner than this.

There are some good mark drawings in Indian ink, a style of rendering which can be made most effective, but which has been much neglected of late years. It calls, however, for fully as much skill as color work, because, if badly done, the result is even worse than bad coloring. Two notably good examples may be mentioned: the "Offices for the Royal National Pension Fund for Nurses," by Mr. Paul Waterhouse, now being erected at the foot of Buckingham street, just behind the fine old water gate which stands there and is shown in the foreground, and with which it harmonizes well; the other, Mr. Collett's "Suggestion for Street Bridges Across the Thames," already referred to.

Students can learn much from such an exhibition as this, both as to what to do and what to avoid. Some of the drawings illustrate the necessity for exercising a wise restraint, and show how an undue striving after originality often leads to bizarre effects which serve only to make the spectator wonder what the designer has been trying to produce.

#### INSTITUTE OF ARCHITECTS OF CANADA.

Widespread interest appears to have been aroused among Canadian architects regarding the project of forming a national organization to embrace all members of the profession. The first report of the secretary of the provisional board, Mr. Alcide Chausse, shows that up to May 21st, application for charter membership had been made by ninety architects, all of whom had expressed enthusiasm for the project.

The report also outlines the probable provisions of an Act of Incorporation, according to which "no person within the Dominion of Canada shall be entitled to use the title of architect or any abbreviation thereof, or any name, title or description implying that he is a corporate member of said institute, nor to act or practice as architect within the meaning of this Act,

(a) Unless such person is a corporate member of the Institute or becomes such under the provision of this Act; or

(b) Unless he is entitled, by some statute of the Dominion of Canada, or of any of the provinces of

the Dominion of Canada, to use the title of architect; or

(c) Unless he is practising as architect in the Provinces of Ontario, New Brunswick, Nova Scotia, Prince Edward Island, Manitoba and Saskatchewan, and the territories of the Northwest and of the Yukon, within two years, prior to the passing of this Act, however, a corporate member of the Institute."

According to the Act as outlined, the following persons only shall be admitted as corporate members of the Institute to practice in Canada:

"(a) All persons now members in good standing of the Province of Quebec Association of Architects, the Ontario Association of Architects, the Regina Association of Architects, and the Manitoba Architectural Association.

(b) All persons, being practising architects within the Dominion at the time of the coming into force of this Act, who, within one year therefrom, apply for admission to and pay the entrance or admission fee and the subscription fee required under the by-laws of the Institution; the application must be supported by an affidavit verifying the allegation of the application.

(c) All persons who, having been admitted to study under the provisions of this Act, shall have passed the prescribed examination and shall have been licensed as architect by the Institute.

(d) All members of the aforementioned Associations of Architects at the time of the coming into force of this Act, who, at any date thereafter, apply for admission to and pay the admission and subscription fees required under the by-laws of the Institute.

(e) And whosoever hereafter establishes to the satisfaction of the Council that he was not a resident of the Dominion at the time of the coming into force of this Act; that by reasons of such absence he could not comply with its provisions or give the periods of study and service required in the office or service of a corporate member of the Institute; that he has, however, been practising as an architect within the meaning of this Act, for a period not less than two years, and that he is a member of the highest grade of a society of architects or any other national architectural society of similar standing; gives one month's notice and, at the same time, pays the Institute the sum of twenty-five dollars, and passes the examination prescribed in this Act.

No member of the Institute shall himself be a building contractor or manufacturer or dealer in building materials or supplies, nor shall he enter into partnership with any such contractor, manufacturer or dealer.

A meeting of the Council of the Institute of Architects of Canada shall be held within six months after the incorporation of the Institute for organization, making by-laws, election of officers, etc. The membership of the Institute shall consist of honorary members, corresponding members, associate members and students. A board of examiners of not less than seven persons, who shall be resident in the Dominion, to examine candidates for admission to the study or for admission to the practice of architecture, shall be constituted. Five members of this board, two of whom must have the proper qualifications and competency to examine all candidates for the preliminary and final examinations in French or in English, at the option of the candidate, shall be appointed by the Council, one member from McGill University, one from Laval University and one from the University of Toronto. Three members of the board shall constitute a quorum. The board shall meet at least twice each year, at the cities decided by the Council, on the second Monday in January and July."

The first convention of the Institute will be held in Montreal, August 19 to 23, next.

### CANADA'S ADVISORY COUNCIL OF FINE ARTS.

In consequence of the efforts of the Royal Canadian Academy of Arts, the Federal Government recently appointed an Art Commission, to be known as the Advisory Council of the Fine Arts, composed of Mr. Byron E. Walker, Toronto, and Sir George Drummond and Hon. Arthur Boyce, Montreal. The memorial of the Academy, which was presented to the Governor-General, and outlines the lines along which the efforts of the new Commission will be directed, reads as follows:

To His Excellency, the Governor-General:

The Council of the Royal Canadian Academy beg leave to place before Your Excellency the following considerations and suggestions with a view to securing a more adequate encouragement of the Fine Arts in Canada. Whilst they realize that the rapid growth of the Dominion in a material sense has prevented in some degree the attention due to the Fine Arts, they are hopeful, bearing in mind the frequently expressed interest in the welfare of Canadian Art on the part of your Excellency and your advisers, together with the general growth of interest in public Art and the great prosperity of Canada, that the present conditions will soon be ameliorated.

Although an improvement might perhaps be effected without changing the present system of aid, the Academy believe that no really satisfactory results will be obtained without a clearly defined plan based on the requirements of the country in its present stage of development, and they are of opinion that the time has come for the concentration in one section of the administration of all matters connected with the national encouragement of Canadian Art.

That such a plan may be secured, your memorialists respectfully ask for the appointment of a Commission in order that a well-considered report may be prepared, and they submit the following points as the basis for the work of such Commission:

1—The establishment of a section in connection with the Department of Public Works to deal with all matters connected with the Fine Arts.

2—That the head of this section should be the Director of the National Gallery of Art and its collection, and should be possessed of a wide knowledge of the Fine Arts.

3—That there should be an Advisory Council of the Fine Arts, composed of painters, sculptors, architects and laymen, such Council to be appointed by the Royal Canadian Academy, but that the Director need not necessarily act in accordance with such advice.

4—That the national collection should be representative of all periods and phases of Art, and inasmuch as that object could be achieved only by the exercise of extreme care and judgment and would necessarily be a slow process, whether it would not be advisable in the meantime to procure the best possible copies, casts and models of notable works of various periods from the galleries of Great Britain and Europe.

5—That as a rule all works of Art, the execution of which is controlled by the Federal Government, be entrusted to Canadian painters, sculptors, designers and architects, and that care should be taken and all means possible employed to secure the highest order of merit.

6—That there should be an annual estimate or allotment of funds for expenditure in connection with the Fine Arts.

7—That the Royal Canadian Academy grant for expenses should be increased to \$6,000 per annum.

The adoption of the foregoing suggestions would, your memorialists believe, have the following results: In the first place, the creation of such a section or bureau, with a competent head and an Advisory Council, would so systematize and control all efforts on the part of the Federal Government in connection with the Fine Arts that the highest order of merit would be secured and the best value obtained, and by the use of such expert knowledge and advice would also be ensured the proper development of the National Gallery.

In the second place the grant of \$2,000, made annually since the foundation of the Academy twenty-seven years ago, is now insufficient to do the work which the great expansion of the country demands. An increase of this grant to \$6,000 would make it possible to provide annual scholarships for artists and architects and to hold exhibitions in the extreme eastern and western parts of Canada, besides the annual exhibitions in the central part of the country; and, in short, would enable the Academy to carry on with some degree of success the work entrusted to it by its Act of Incorporation and to achieve results manifestly impossible with its present inadequate means.

Signed on behalf of the Council of the Royal Academy of Arts.

(Sgd.) G. A. REID,

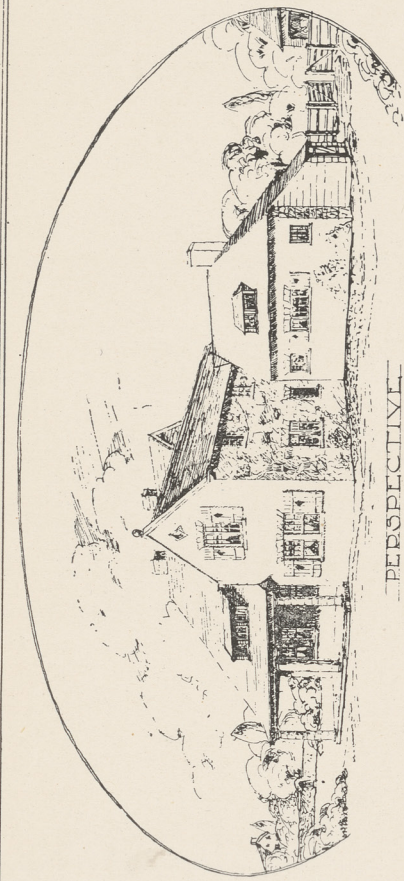
President.

In this memorial the Academy asked for a Commission of the usual character, which should make a report and pass out of existence, and that the members of the Academy should themselves appoint an Advisory Council of the Fine Arts. However, the Government did not see its way clear to carry out the plan as proposed and themselves appointed a permanent Commission of three, as named above.

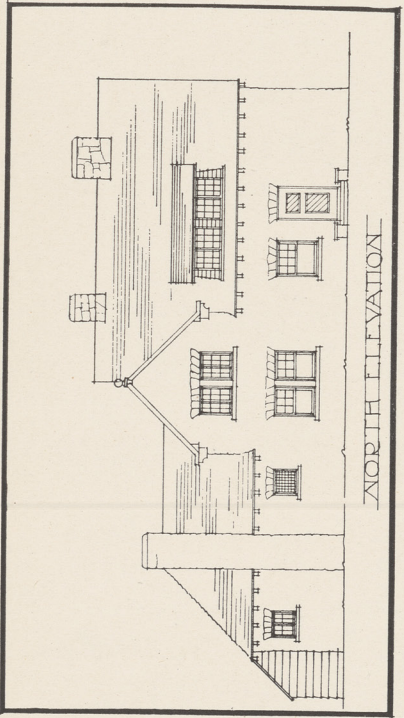
In this appointment Canada stands in the unique position of having the only Commission in the world which has the power to advise the Government on all matters connected with the Fine Arts. The principle is not new, as there are many Art Commissions in existence the world over, which have been appointed for various purposes. Art Commissions, Councils and Committees are numerous, and the results in almost every case have been satisfactory. The manifest advantage of Canada's Commission is that it will have supervision of the Fine Arts under the control of the Dominion Government throughout Canada, and, while at present its full scope is undetermined, it is likely to have charge of all public monuments, public portraits, both in sculpture and painting, the supervision of the National Gallery of Art and purchases for the same, and will, in connection with the Chief Architect's Department, advise concerning the design and decoration of all buildings of importance under the control of the Federal Government.

The personnel of the Commission has been admirably chosen; its members are men whose standing in general affairs is of the highest, and whose knowledge of the Fine Arts is respected by all belonging to the professions of painting, sculpture and architecture.

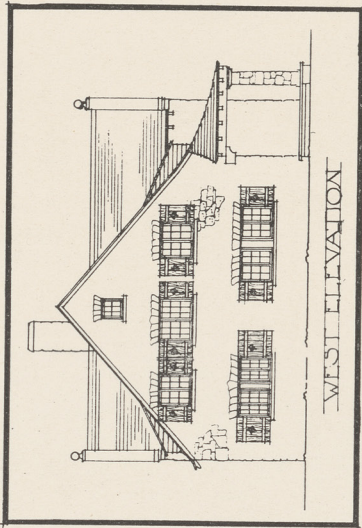
It is now in order for the various provinces and cities to adopt similar methods. Recently the suggestion was made by the Property Commissioner of Toronto that a committee be appointed to take charge of a scheme of decoration for the City Hall, which has been drawn up by the Toronto Guild of Civic Art.



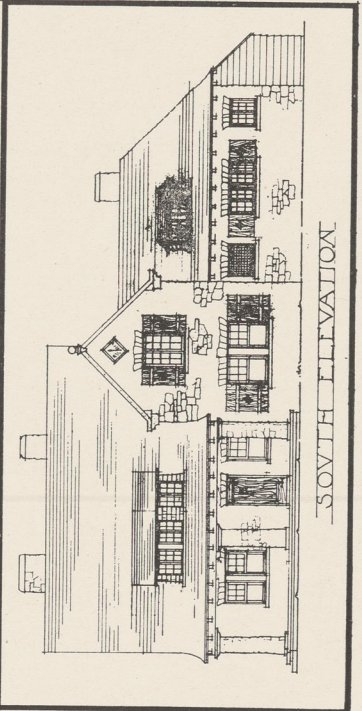
PERSPECTIVE



NORTH ELEVATION



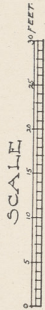
WEST ELEVATION



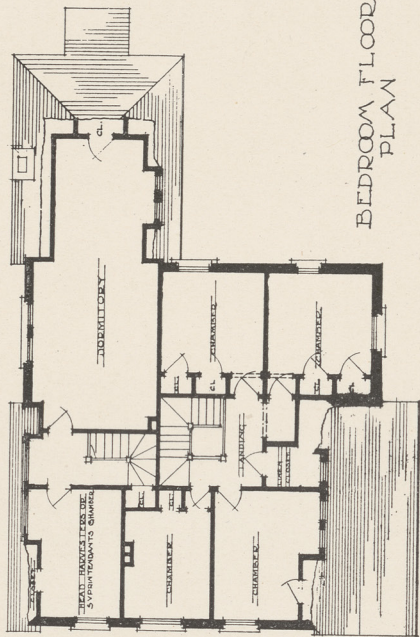
SOUTH ELEVATION

COMPETITIVE DESIGN,  
FOR A FARM-HOUSE,  
TO COST ABOUT \$4500,  
CANADIAN ARCHITECT,  
& BUILDER MAGAZINE,

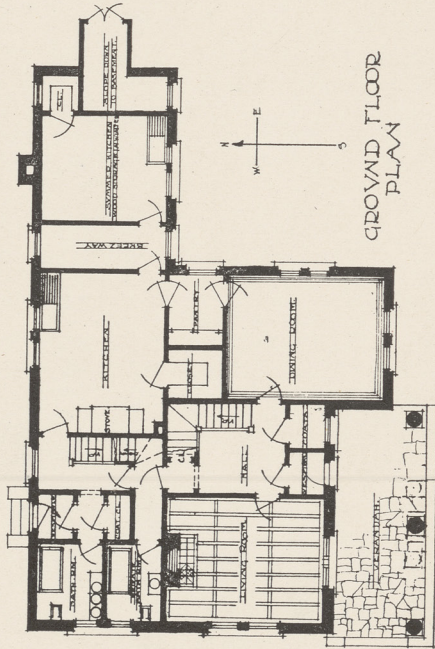
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BEDROOM FLOOR PLAN



GROUND FLOOR PLAN

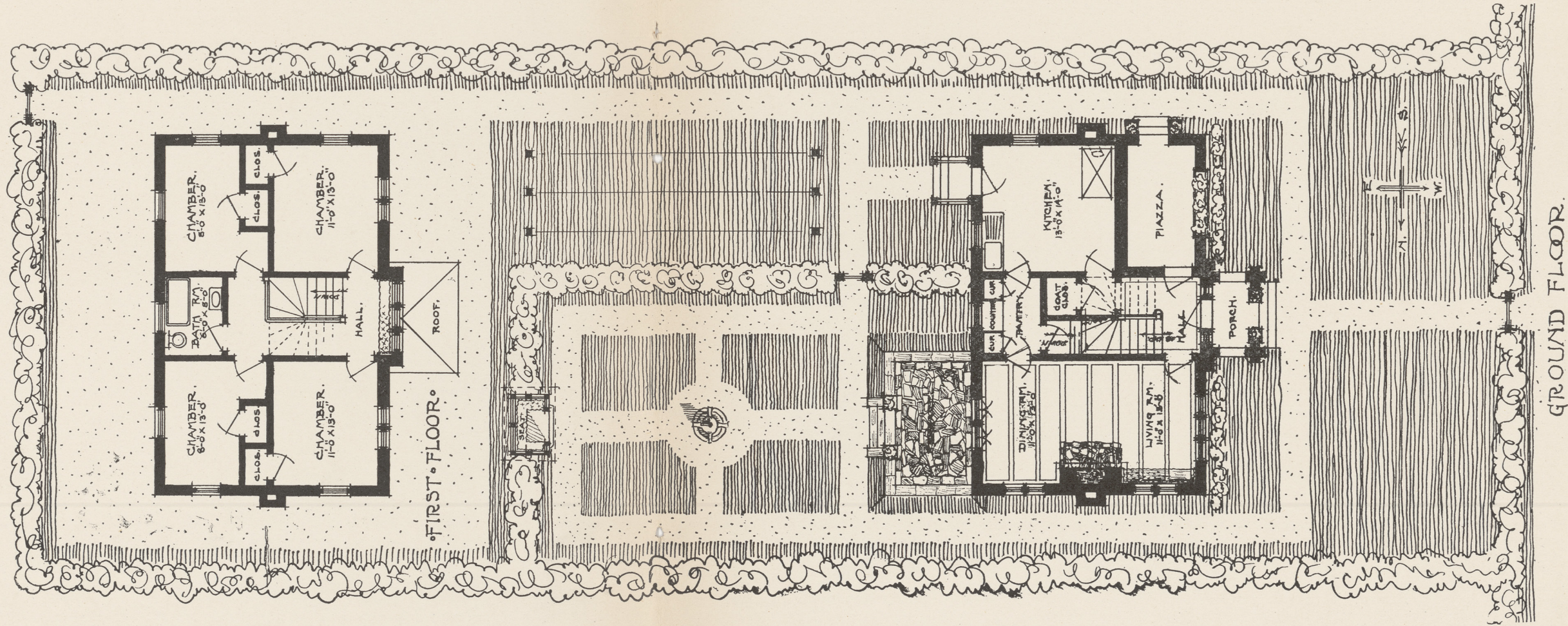




DESIGN FOR A  
3000 DOLLAR HOUSE.  
SUBMITTED BY  
ARCHITECTURE

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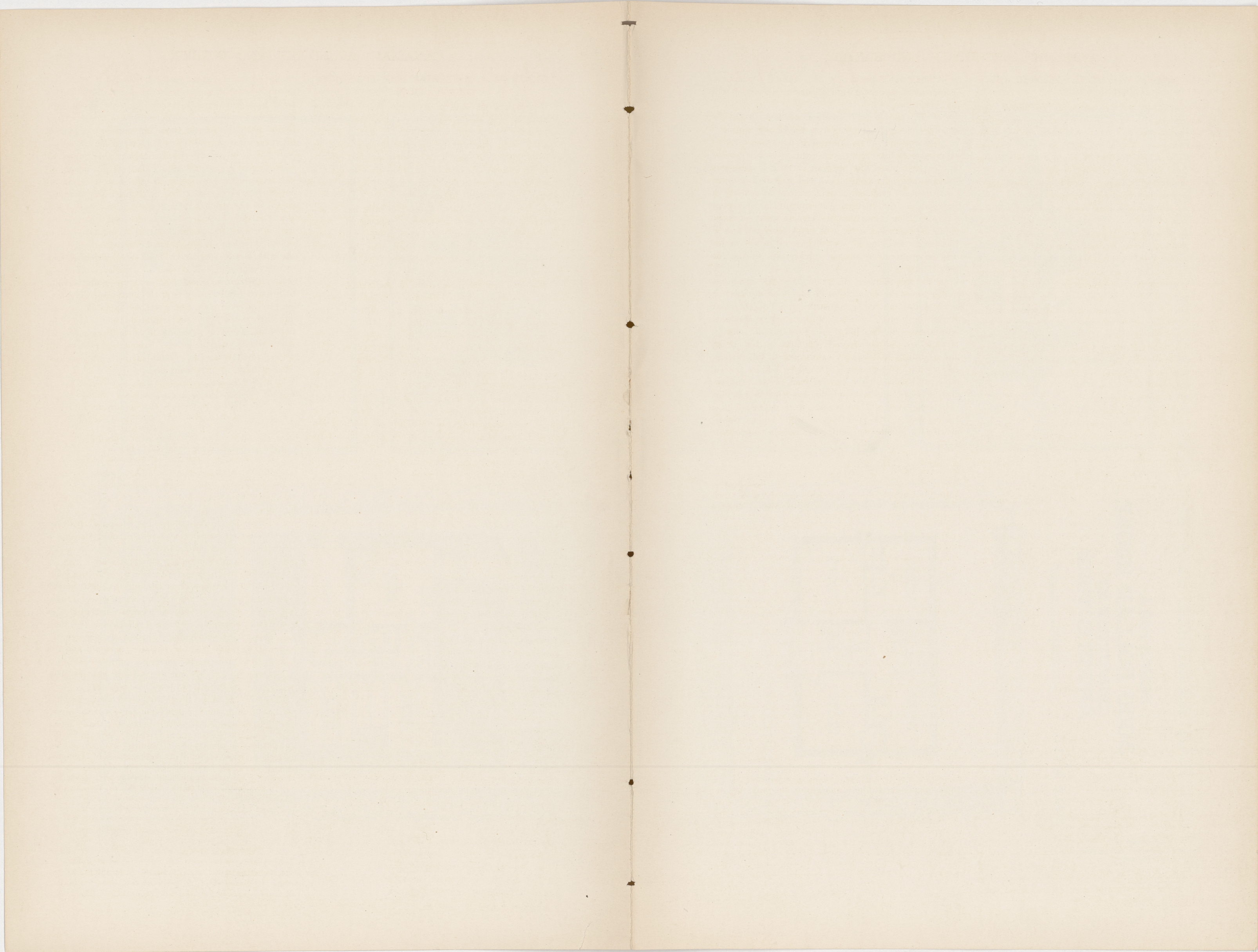
3000 DOLLAR HOUSE.

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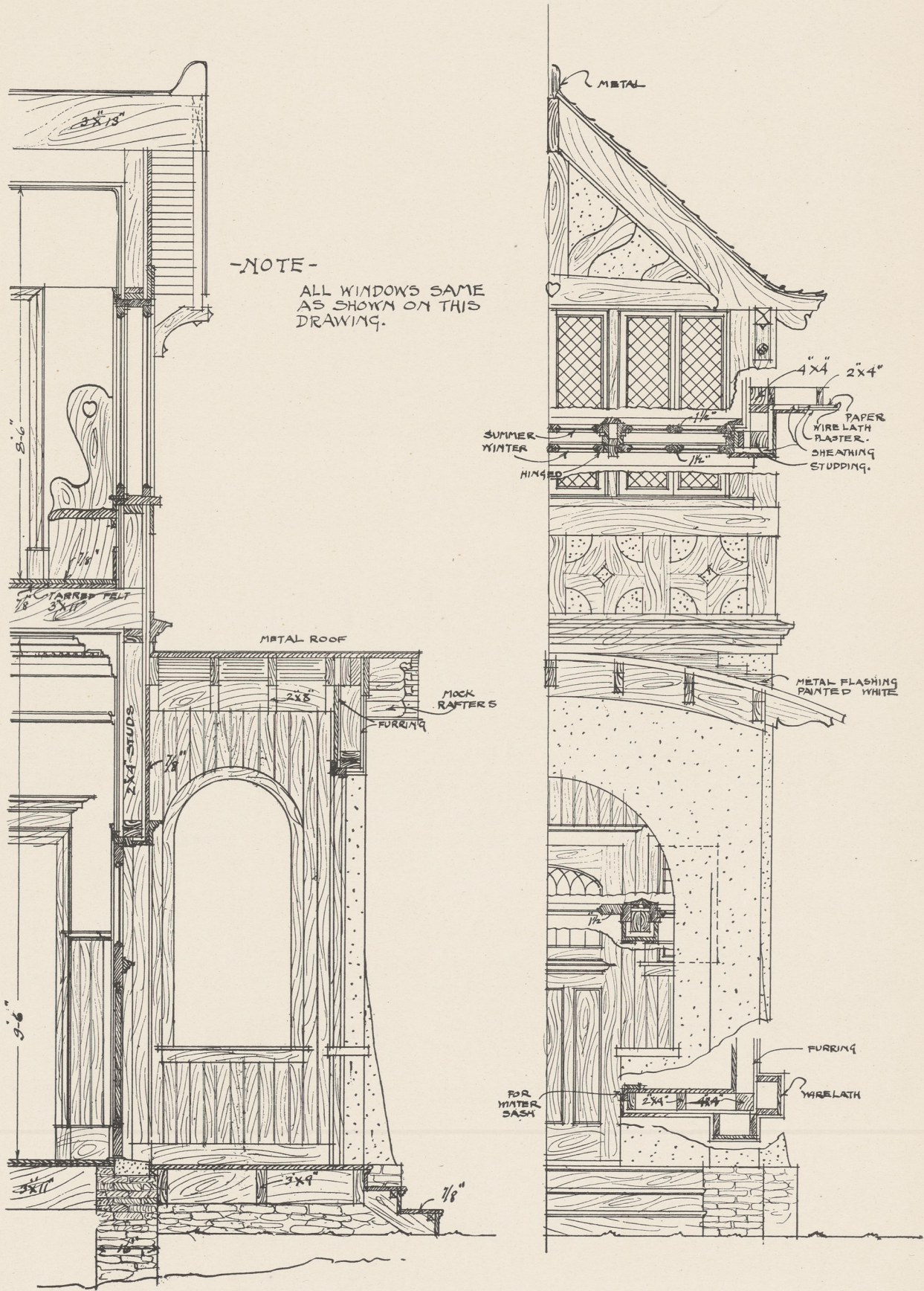
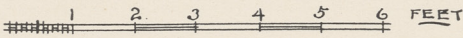
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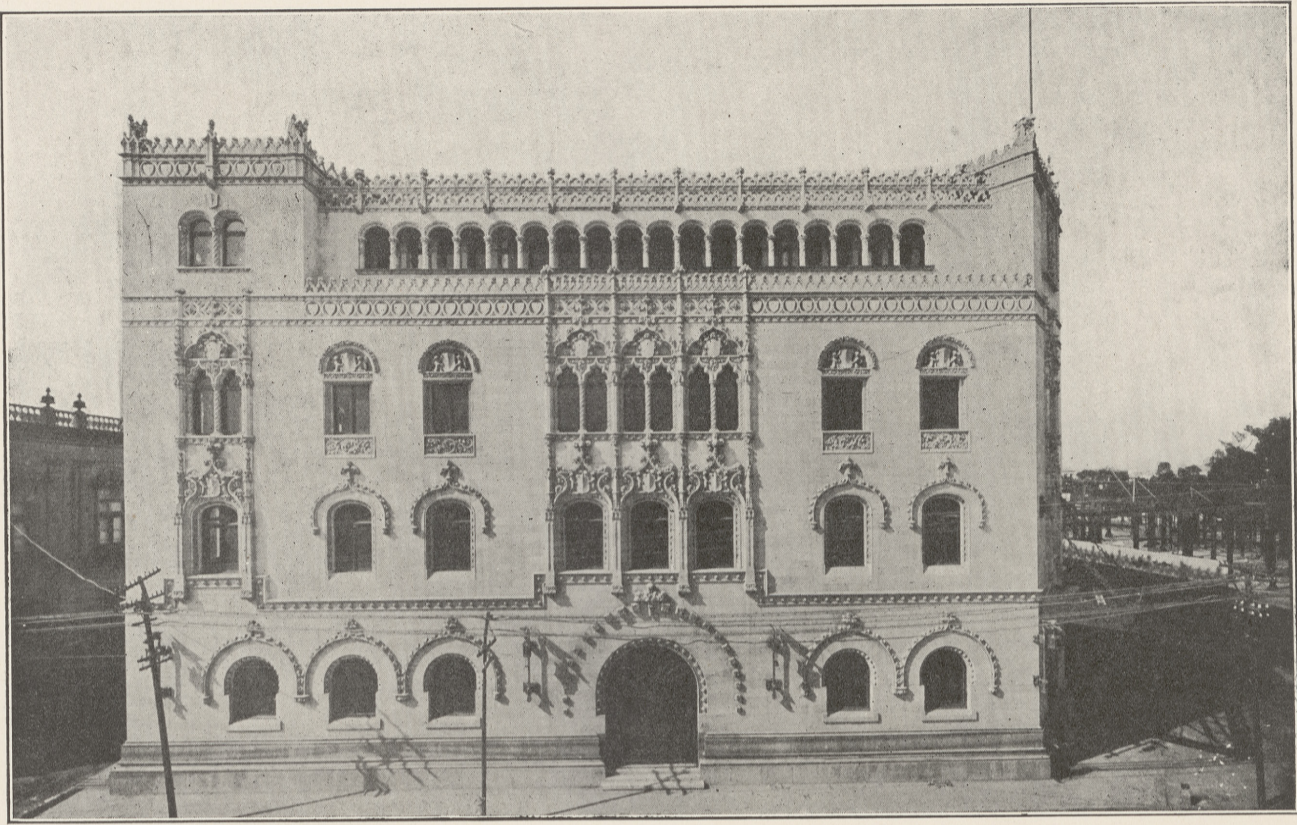


3/4" SCALE DETAILS OF DESIGN SUBMITTED BY ARCHITECTURE

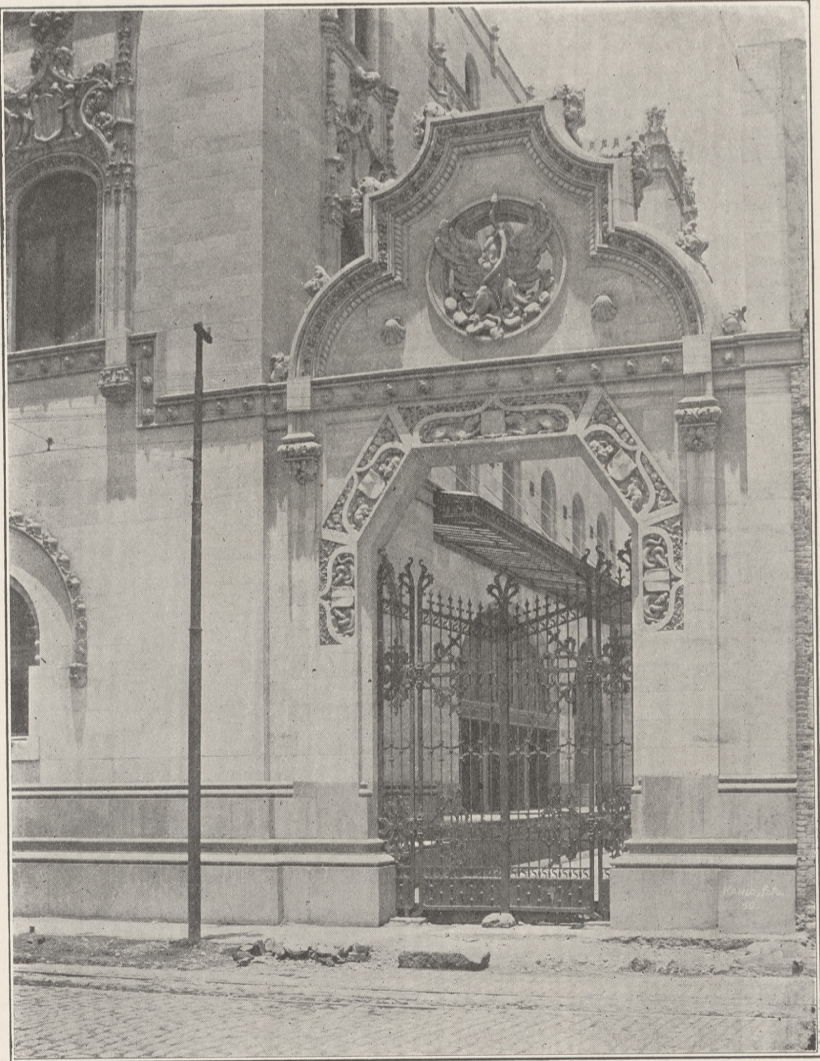


SUPPLEMENT TO DESIGN SUBMITTED BY "ARCHITECTURE" IN A. & B. STUDENTS' COMPETITION FOR TOWN HOUSE TO COST \$3,000.

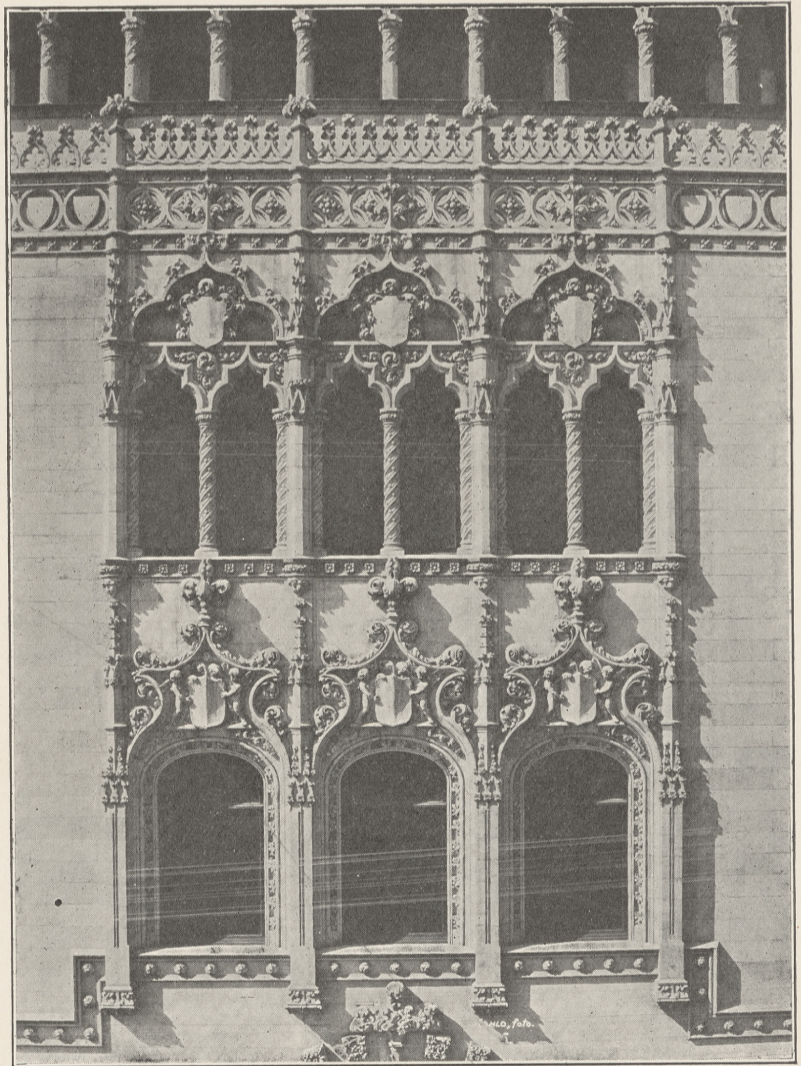




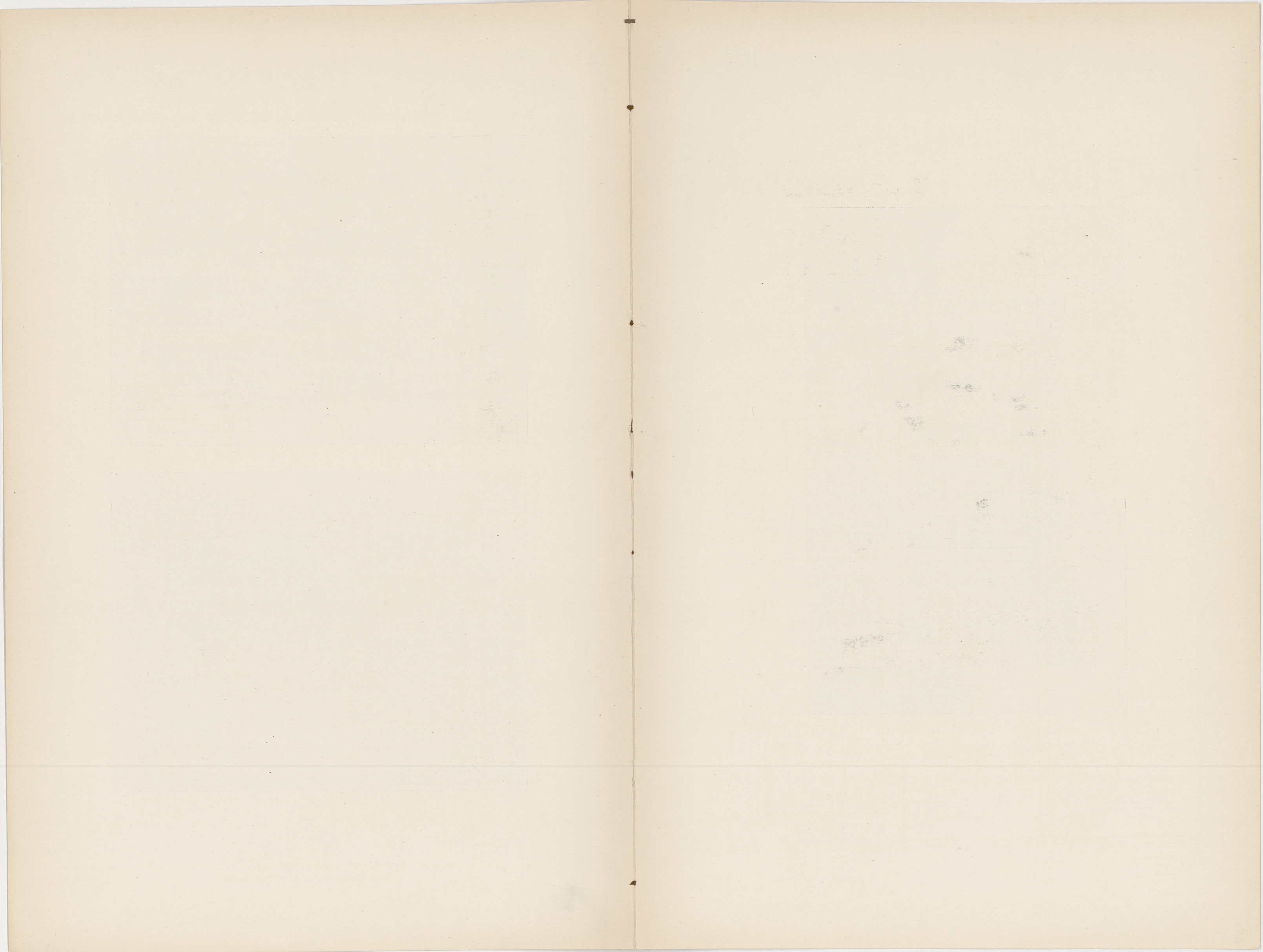
NORTH END OF THE NEW POST OFFICE, FACING CALLE SAN ANDRES.—Photo by Kahlo.



WAGON ENTRANCE OF POST OFFICE.—Photo by Kahlo.



DETAIL OF NORTH WINDOWS OF POST OFFICE.—Photo by Kahlo.



## GLASS AS A MATERIAL FOR INTERIOR DECORATION.

Considering the fact of its being practically everlasting, as well as its comparative cheapness and its capability for taking any desired form, and the facility with which it can be tinted or colored for special effects, it has always surprised me greatly that in interior decoration so little practical use is made of glass, writes Mr. Percy Russell in the *Decorators' and Painters' Magazine*.

I have always wondered why it should not be employed profusely and generally, instead of being limited to the conventional overmantels, with sometimes a certain amount of stained glass for certain windows and hall doors. Practically, glass can hardly be said to be very much used by decorators, and yet it has long seemed to me that the marvellous versatility of glass—if such a term is permissible—marks it out for the very material required, seeing that, properly placed, it is exceedingly beautiful, and that it is capable of being adapted to any scheme of form and color wherewith the decorator has to deal.

But glass, as I have said, is almost totally neglected, unless in the case of crystal gasaliers or electroliers, and sometimes in dining table decorations; in the latter instance, as I have seen, showing a river down the centre in clear glass, widening at intervals into lakes, with fern and plant filled islands in their centres. But as to any endeavor to use glass on a large scale about the house, for general decorative purposes, no one appears to have conceived that anything of the kind could be practicable.

Mouldings of bevelled glass are highly effective if put in the right places, whether by day or night, when well-lighted up. A cornice of bevelled glass round a boudoir could not fail to prove most effective and attractive. To keep it in perfect order nothing but dusting is needed, and that surely is a recommendation. Such ornamental glass mouldings in a variety of designs could be more securely fixed in sections than the corresponding plaster, which in the long run cracks and requires touching up pretty often.

When we come quietly to consider the subject, glass has really a very wide range for ornamental purposes. It is well known as the base of, and chief substance in, the imitation gems now so familiar to everybody, and which are often of extreme beauty. Has it never occurred to some artistic decorator, when gazing at the display of artificial jewellery made in some of our shops, that advantage could be taken of the chameleon-like qualities of good paste for the adornment of mansions, while in a modified manner much could be done to beautify middle-class homes in this way? These imitation gems, personally worn, soon become impaired, but in fixed positions and unexposed to friction they would be durable, and could be judiciously employed to produce really lovely effects in ceiling devices, lintels, scrollwork over windows, around drawing room fireplaces and in jewelled panels for doors. In these flowers might be enclosed, and with bright butterflies and gaily colored moths would certainly render doors a delight to the eye. These decorations, of course, would never fade; they would really be permanent decorative effects, proof against all but fire and earthquakes.

Then it is evident that an obvious and important

advantage of the liberal employment of glass for interiors would be to give spaciousness to each apartment thus treated, to halls and, indeed, to wherever the substance was used to an unlimited extent. This in the case of confined flats, or what are known as bijou residences, would be well worth paying for, especially when the improvement in giving such apparent room was accompanied and enhanced by charming decorative effects as well. In the case of cramped entrances, too, the use of crystal columns, and crystal panels between them on the walls, would entirely correct the defect of want of width, and designs in various colors and forms could be so employed as to render the place quite a scene of fairy beauty directly the hall door was opened. Thus it is evident by the artistic employing of crystal in a variety of devices most brilliant, dazzling and splendid results could be achieved quite easily, and the appearance given to even an ordinary house of a palace of jewels. In the day time the interiors thus treated when touched by the sunshine would be beautiful beyond the power of words to adequately express. Prismatic glories would spring forth from the crystal surfaces and devices. Then it might be well said that—

From the art we thus created,  
In the house glass-decorated,  
From each surface then before us  
And extending all around,  
To each seer's raptured gazing,  
There would gather colors blazing,  
Wheeling in prismatic chorus  
Like the Peacock Throne renowned!

Lighted by electricity the effects would be very much finer than even that Peacock Throne of the famous Indian Emperor at Delhi, which, by the way, was worth some millions sterling.

Crystal, cleverly distributed by the good taste of the decorator, would work wonders, and that at a comparatively moderate outlay when we fully consider the magnificent results thus obtained.

I am well aware some will raise the objection that this form of ornamentation is much too pronounced and altogether too theatrical for ordinary dwellings; but, after all, that is only a question of degree. In the Hotel Metropole, Northumberland avenue, London, there is a bridal suite of apartments generally reserved for very rich or elevated persons, and, as stated above, for newly married couples. It is a highly artistic suite of chambers, but decorative glass would have multiplied its beauties indefinitely.

However, all that I have put forth above are but the merest hints and suggestions for properly qualified decorators to consider. It is obvious that if glass were employed in the manner that I have indicated its production would be so enormously stimulated that the substance could be cheapened, and economic designs could be produced, as in ornamental tiles, at prices which would bring these decorations within the easy reach of the well-to-do classes; while for the very rich, I think that when once the capabilities of decorative crystal were fully demonstrated, they would prove in many cases a very great attraction, and one would vie with another in thus producing a house beautiful on altogether novel lines.

With our present advance in Decorative Art there is no doubt that, with the general employment of glass in the directions indicated, marvellous effects could be obtained, and, considering their wonder-working character, at only a comparatively moderate initial outlay.

## MONTREAL NOTES.

The Parks Committee has reported in favor of the purchase by the city of St. Helen's Island, with the restriction that no buildings except those of a temporary nature shall be erected thereon. This restriction is not imposed by the Federal Government, who are the present proprietors of the Island; it is suggested by the Parks Committee as a means of preventing commercial concerns from securing a permanent private foothold on the island. Of course this object is very desirable and should never be lost sight of, but it seems a curious way of attaining it by voluntarily making such a condition part of the purchase titles. Much stress is being laid by aldermen on the convenience of this island as a place to hold exhibitions. No doubt it is; but it is sincerely to be hoped that it will not be allowed to become a camping ground for every kind of cheap exhibition. The place is well wooded in almost every part, it is patronized to the full as a picnic ground for poor people, and this should always be kept in view as its chief function. If the city authorities will set about providing the island with such conveniences as will ensure pleasure, comfort and tidiness to picnickers, they will be doing a good work. They are at present to be congratulated on having improved the Mount Royal by the new outlook and shelter, and also by a very neat little kiosk, which is near completion, near the bottom station of the mountain elevator.



SOUTH AFRICAN WAR MEMORIAL, MONTREAL.  
 Photo by United Photographic Stores, Limited, Montreal, Quebec and Ottawa.

Another public work which reflects credit on the city is the South African War Memorial, unveiled on the 24th of May in Dominion Square. Both statue and pedestal are carefully designed and picturesque pieces of work. The bronze battle scenes, forming side panels, are pictorially treated and not quite equal in decorative character to the main statue. The plat-

forms and steps surrounding the monument give it an artistic basic setting. The large lettering of refined cinque-cento type is very happily applied as a decoration on the broad surfaces, and the same may be said of the manner in which the swords are introduced, though they do not form any natural division to the panels of lettering. The granite foliage, as it is very properly restrained in character to suit its material, might with advantage have been a little more restrained in its application. The sweep outwards from top to bottom of the monument gives it a pleasing suavity and grace, making it an agreeable object in a peaceful square, though perhaps not so suggestive of a war memorial as would a more sombre and abrupt outline.

The amount of dust occasioned by the destruction of the Temple Building (in which, by the way, the proud boast of total demolition in a month's time was not fulfilled) has occasioned considerable complaint. At this season of the year there are always (and this year more than ordinarily so) many buildings being demolished to make way for new structures, and this dust nuisance suggests that any who can devise ways and means of reducing it will be public benefactors. At the McGill Engineering Building many of the bricks were sent by box-loads at a time down wooden chutes, which did something to abate the trouble, but seemed to prove a slow method of working. It may have resulted in the preservation of many bricks, but materials would need to be very valuable to justify this careful treatment.

The Protestant Board of School Commissioners have taken to heart the terrible lesson of the Hochelaga School fire, and are to erect two fireproof school buildings, one at Hochelaga and one on the Boulevard in St. Denis Ward. The exterior is to be of brick and stone, and the floor construction of steel in concrete and terra cotta blocks. The partitions or wall linings are to be of hollow plaster blocks. Cement will take the place of wood dados and linings, woodwork being eliminated as far as possible. Two staircases are provided in each case, and external fire escapes, protected with wire guard. The heating is to be by low pressure steam, while fans are to be installed for introducing and extracting air. Works of this kind will prove a severe drain on the funds of educational interests, but necessity compels. It may be mentioned here that a couple of memorial windows have been dedicated in St. Mary's Church in memory of Miss Maxwell and the children, for whom she sacrificed her life in the endeavor to save.

Work was at a standstill for some time on the huge Linton Apartment Building in Sherbrooke street. The operations had been more expensive than anticipated, largely owing to the amount of solid rock through which the excavations had to be carried. Financial difficulties also arose, but these are said to have been successfully surmounted and work is to be proceeded with. The total cost, it is anticipated, will exceed \$800,000. It is expected that the annual revenue from rentals will be in the neighborhood of \$100,000. The work at the Windsor Hotel, which had also been going forward without any appearance of undue haste, suddenly shot up two storeys in about a couple of weeks' time.

On the 21st of May the Laprairie Brick Company invited a number of persons interested in brick sup-

ply to make inspection of the new plant which they have laid down across the water. The company is now equipped to turn out three hundred thousand bricks per day. These bricks are made from shale rock, which is simply ground and moistened into clay for common bricks. The kilns are on the "continuous" system. The resultant bricks are dense and of great strength. The shale rock from which they are made appears to be of inexhaustible extent.

The work of demolition is proceeding between Philip's square and St. Alexander street, on the south side of St. Catherine street, to make way for a new theatre opposite the as yet unfinished Bennett's Theatre, and still another building of the same class is projected for St. Catherine street, between St. Urban street and St. Lawrence Boulevard. The promoters are French-Canadian business men.

Protests had been lodged with the city against the proposed erection of the new Fusiliers' Armory on Esplanade avenue, to which a number of adjoining proprietors were objecting as being out of accord with the residential character of the surroundings. The city attorneys, however, declared that the objection could not be legally enforced.

The building permits issued by the inspector's office are, as usual at this period of the year, surpassing all previous records. Amongst other buildings in contemplation, or in course of erection, is the uptown branch of the Bank of Toronto, to be a stone building, with a frontage of 48 feet on St. Catherine street and 110 feet on Guy street. Another warehouse, to cost \$50,000, is to be built on the southwest side of Victoria Square. The Royal Bank, besides its new headquarters in St. James street, is building a new branch at the corner of St. Catherine street and Stanley street, and another in Westmount. The First Baptist Church have broken ground for their new building at the corner of Sherbrooke street and Union avenue. A new apartment house, which is to stand at the corner of Sherbrooke street and University street, is to be built over the treacherous streak of running clay which has been the ruin of numbers of buildings along its course. Some time has, therefore, been occupied in driving piles for the foundations, but this has now been accomplished.

#### P. Q. A. A. SKETCHING CLUB.

The Sketching Club of the Province of Quebec Association of Architects had the first of its summer excursions on May 11th, when a number of members travelled to St. Anne to inspect the new Agricultural College buildings there being erected under the care of Messrs. Hutchison & Wood, architects. Nine different buildings were visited, all well advanced. They extend over a wide area of land, situated beside the southern branch of the Ottawa River, just where it joins the St. Lawrence. The material employed is a reddish buff brick, with stone dressings. The architectural features employed are for the most part such as arise out of requirements of structure and plan, and other buildings harmonize well with their rural surroundings. The roofs are of red interlocking tiles, laid upon concrete roofs. The central building is the Administrative Department, with Chemistry and Biology Buildings set diagonally to the rear with connecting corridors. To the right and left, and advanced

well in front of this suite, are the residential buildings for men and women, the latter much the larger and containing the main dining hall and kitchen. Beyond are the Power House, the Stable, the Horticultural Building and the Poultry Farm, the last already in active operation. A large modern dairy farm, on the other side of the railway line, has been purchased for the purposes of the college. A number of laborers' cottages will subsequently be built. Mr. Wood, jr., was with the excursion to explain the arrangements of the college.

The second of the club's excursions, on June 8th, was to the village of Terrebonne, with a view to



OLD HOUSES, TERREBONNE, QUE.

sketching in that locality. Intermittent showers interfered with this intention, but a pleasant afternoon with spent visiting the picturesque old village, which contains a number of old stone houses and a manor of severely classic and dignified design, which is now used as a school

#### ARCHITECTURE IN AMERICA.

Mr. Ernst E. von Ihne, one of the guests at the recent opening of the Carnegie Institute at Pittsburgh, and court architect to Emperor William of Germany, is reported by the American press as having given expression to his views on American architecture as follows:

"You are at work meeting conditions. That is the thing that architects have always to do. No nation can achieve a national architecture whose artists say: 'Let us build in the Gothic style,' or 'No, let us build in Romanesque; that is better.' A country has simply to begin and build; it will start with what style it believes best suited to its particular problems, but it will just develop as it appreciates its needs. I have my idea as to what historic style is best suited to the foundation of your architecture, but you may find another to be the best one. That doesn't matter. The point I make now is that you in America are earnestly striving to meet the particular problems of buildings fitted for dwellings, business houses and public halls in America—problems different in many respects from any hitherto attacked by architects—and you are meeting these problems with a surprising degree of success, considering how brief has been the time during which you have been at it.

"New York is most impressive in the daring and untrammelled spirit in which it is thrusting up its gigan-

tie fabrics into the air. Consider, whoever before undertook to erect what is almost a city under a single roof on such a plot of ground as that which stands that Flatiron Building? And how brilliantly you have dealt with a similar problem in the Times Building.

"You do right, precisely, to treat these tall buildings frankly as towers. That is exactly what they are. Already you have the campanile of Giotto standing in the most conspicuous point along your thoroughfare, and, I believe, other great towers reproduced in other parts of the city.

"Your problem has been to make the most of every inch of land. The concentration of the people in the city has brought conditions from which architects of former years have been free.

"Until within the last few years architecture has had no chance. The nineteenth century was one of war and of disturbed social and political conditions and of general poverty. All the arts suffered, and especially did those which require large outlay suffer. Not only were no great buildings erected, but men forgot how to build, and when we began again it was in ignorance and forgetfulness. The result was the horrible warnings which exist on every side. If only the tradition of good building had been remembered we should have been spared all that.

"Now that we are prosperous again and minded to build, we shall do well if we go back to the eighteenth century and begin again where architects left off. Why begin at the beginning? Why puzzle again over the problems which earlier centuries have definitely settled? I consider that there are certain things pretty well determined in architecture. The sixteenth century definitely discarded Gothic as a style for domestic or commercial architecture. Conditions of life have altered since the days when Gothic was properly employed, and it is mere slavish imitation to build in it now. I do not speak of ecclesiastical architecture. Religion is essentially unchanging, and its aspirations express themselves in forms permanent and stretching from age to age. But domestic life is not to-day what it was in the middle ages, and commercial life in its modern sense is a new thing in the world.

"My belief is that the world was right in agreeing, as it did, that the classic form was the one which might best be progressively adapted to the needs of modern life. In the eighteenth century it had reached the highest development, for its purpose, of the classical style. My feeling is that we are wise in going back to that point, not to rest in its achievement, but to progress from it, having in mind always the necessity of studying our particular problem and in dealing with it freely and creatively, yet with intelligence informed of the history of past architectural endeavor."

### OUR ILLUSTRATIONS.

CANADIAN ARCHITECT AND BUILDER STUDENTS' COMPETITION FOR A SMALL SUBURBAN HOUSE TO COST \$3,000. DESIGN SUBMITTED BY "ARCHITECTURE" (MR. CHAS. DOLPHIN, 73 PARK AVENUE, ST. HENRI, MONTREAL, QUE.)

House to be stucco and half timber, balloon frame, with basement under entire house except piazza. The

lumber of white pine, unless otherwise specified. Dining and living room to have oak floor with oak finish; kitchen, maple floor with pine finish, as also bedrooms and bathroom, the latter having hot water connection with kitchen; hall, oak floor with pine finish. The porch to have hard pine floor, and to be converted into a vestibule in winter. French windows open from dining room to terrace. Doors to be of white pine, the front door of oak veneer. Upper windows to have beaded glass; lower, wood mullions. House to be heated by hot air furnace.

CANADIAN ARCHITECT AND BUILDER STUDENTS' COMPETITION FOR A FARM HOUSE, TO COST ABOUT \$4,500. DESIGN SUBMITTED BY "BYZANTINE" (MR. CECIL BURGESS, 230 WOOD AVENUE, MONTREAL.)

Exterior walls to be of field stone, with weathered shingle roof. Living room to have white pine wainscot, about 6 feet high, with plate rail cap, stained for an oak finish. Wainscot to be composed of boards about 10 inches wide, nailed to the wall, with a 3 inch strip planted on to cover joint of boards. Roughcast plaster between joists and above wainscoting. Floor joists over living room to be adzed, joists to form a beamed ceiling. Dining room to have a burlap dado, with wood chair rail. All other rooms to be of pine painted. Floors throughout building to be Carolina pine. Basement floor to be of cement. All exterior trimmings, etc., to be painted chrome green, except doors, windows and shutters, which will be painted a darker green.

NEW POST OFFICE BUILDING, MEXICO

Work commenced July 8th, 1901. Style mediaeval Spanish, known as "plateresque." Total cost \$2,921,009.94. Interior of building of magnificent marble and onyx, the beautiful Italian bronzes of the doors being particularly striking.

### E. STANLEY MITTON ESTABLISHED IN WEST.

Mr. E. Stanley Mitton, architect, late of Toronto, has established an office at 70 Hastings Street West, Vancouver, B.C.

Nearly 800,000 tons of Portland cement have been used during the last ten years on British Naval works.

A laboratory for testing building materials has been established by the Bureau of Building Inspection of Philadelphia, Pa. A sample room has been established in connection with the laboratory, in which will be kept samples of every kind of building material approved by the bureau.

One of the most unique styles of finish for the exterior of a building has come to light in Milwaukee, Wis., where a one-storey structure used for office purposes has been veneered with eight tons of grate coal, the largest size of hard coal sold in that section. The idea was conceived as an advertisement for the coal company occupying the building, and while the cost of the veneering was about as much as would have been the cost if brick were employed, it required three times the labor in laying. The coal was laid in a cement of lavender tint.

### HAMILTON HAVING PHENOMENAL BUILDING YEAR.

From all indications Hamilton is to see a phenomenal building year, in spite of strikes and unusual difficulty in procuring building material. Earlier in the season the scarcity of brick threatened to seriously handicap contractors, but that difficulty has since vanished. It is estimated that there will be at least 500 new houses built in Hamilton this year, besides an unprecedented amount of structural alteration. In respect of large and important buildings, Hamilton has had better years, but never before has the amount of general construction run into such figures as will the operations slated for the present season. The building permits for 1907, up to the end of April, totalled \$1,984,690, as compared with \$1,257,310 for the whole of 1906.

A curious feature of the situation is the surprising number of frame dwellings that are this year being erected by the working classes. Contractors also are doing a lot of cheap speculating in this direction, induced thereto by the strong demand for workingmen's houses. One prominent Hamilton architect stated that he had drawn up plans for a frame house costing about \$700, and that numerous examples of this class of "shack" were to be seen in the outskirts of the city. The house is built on cedar posts and boarded beneath to encure greater warmth. No cellar, furnace or lighting is furnished, and yet \$10 a month is asked for this class of dwelling. If the tenant asks for electric wiring \$12 is the rental demanded. The mania for speculation in houses of this class is fostered by reason of the city's seeming disinclination to take up seriously the problem of providing houses for workingmen. Earlier in the season considerable enthusiasm in this direction was manifested by the Board of trade, and plans were secured from Messrs. Stewart and Witton, which, however, have since been temporarily shelved.

The great demand in Hamilton at the present time seems to be for medium priced and centrally located houses. So far but little has been done to meet this demand, and people are living on the outskirts of the city, on the mountain, or in Dundas and neighboring towns, and are dependent upon a precarious street railway service for reaching their daily work.

The new terminal station being constructed by the Cataract Power, Light & Traction Company on King street east is attracting considerable attention in Hamilton, and promises to relieve in no small measure the rather untidy appearance of that section of one of Hamilton's principal streets. The new station, into which will be carried all the electric lines now running into the city, has been designed by Chas. Mills, of Hamilton, and is constructed of Indiana limestone over reinforced concrete. The cost of the new station is estimated at \$500,000, the Canada White Company being the contractors. To the rear of the station, a new vaudeville theatre, known as "The Bennett," is being constructed by E. C. Horn. The structure is of red brick, and promises to add much to the attractiveness of the new pile of buildings.

Messrs. Stewart & Witton have designed the new Armories on James street north, which are now being erected at a cost of \$250,000. Red brick with stone trimmings are the materials being used. The same firm have drawn up plans for the Herkimer Baptist Church on Locke street, to cost \$23,000. The new

structure will be of Gothic architecture, with a Sunday School in the basement. In the line of public buildings, Messrs. Stewart & Witton have in hand designs for the Home for Incurables, to be built adjacent to the House of Refuge, at a cost of \$30,000; the Isolation Hospital, to cost \$75,000, and also a new building in connection with the Home for Consumptives, at a cost of \$10,000. In connection with the Sanitarium an infirmary is also being erected from plans drawn up by the same firm at a cost of \$5,500, the gift of Mr. J. J. Grafton, of Dundas. Plans for a new school building have also been accepted by the Separate School Board, although the actual work of construction will not commence until next year. Messrs. Stewart & Witton have also in hand numerous dwelling houses, ranging in value from \$1,000 to \$12,000, the majority of which, however, will cost from \$6,000 to \$8,000.

One of the finest residences to be put up in Hamilton and vicinity this year will be that of G. D. Smith, M.P., at Winona. Messrs. Munro & Mead have drawn up the plans, which provide for a stone structure to cost \$20,000. The same firm have designed extensive additions and alterations to the Hamilton Club Building, at a cost of \$35,000. They also have in charge alterations on the Commercial Club Building, to cost \$10,000. The same architects have drawn up plans for a Sunday School for Knox Presbyterian Church at Dundas, which will cost \$15,000. Dundurn Park is receiving some attention from the city authorities, and Messrs. Munro & Mead have drawn up plans for a new Art Gallery at Dundurn Castle and a new pavilion for the Park. They have also in hand the plans for a new four-roomed High School for Grimsby. The structure will be of stone and cost in the neighborhood of \$4,000. The same firm have also designed numerous up-to-date dwelling houses for the city and vicinity.

A two-storey addition to the Westinghouse premises has been designed by Mr. Charles Mills, to cost \$50,000. The accommodation will provide for 200 extra men. The firm also are increasing their office building accommodation, and have commenced a three-storey enlargement of their plant. Mr. Mills has also designed alterations to the premises of the Canada Screw Works, Wellington street north, which will cost \$125,000. The Landed Banking & Loan Company have also secured from Mr. Mills plans for a large reinforced structure to be erected at the corner of Main and James street south. The same architect has planned a new branch of the Bank of British North America for Barton street near Fullerton avenue.

Prominent among the recent additions to Hamilton's commercial strength is the Berlin Machinery & Tool Company, of Beloit, Wisconsin, who are building an extensive plant east of Lottridge street. Three large factory buildings and several smaller structures are in process of erection and will render possible the employment of 500 men.

Mr. Stewart McPhie has under way a three-storey hotel on King street east, besides a fireproof store and billiard room for Mr. D. Aiken. Mr. McPhie is making a specialty this season of dwelling houses, costing about \$2,000, with three or four bedrooms, cellar and complete plumbing. Mr. McPhie has also found an unusual call for cheap frame houses by the working classes.

A new fire station on Sanford avenue north, east of the Britannia ball grounds, has been designed by Mr. W. A. Edwards, and work will shortly be commenced.

Mr. E. B. Patterson is designing a good class of residences this season, a couple of examples of which are in process of construction on Barton street east.

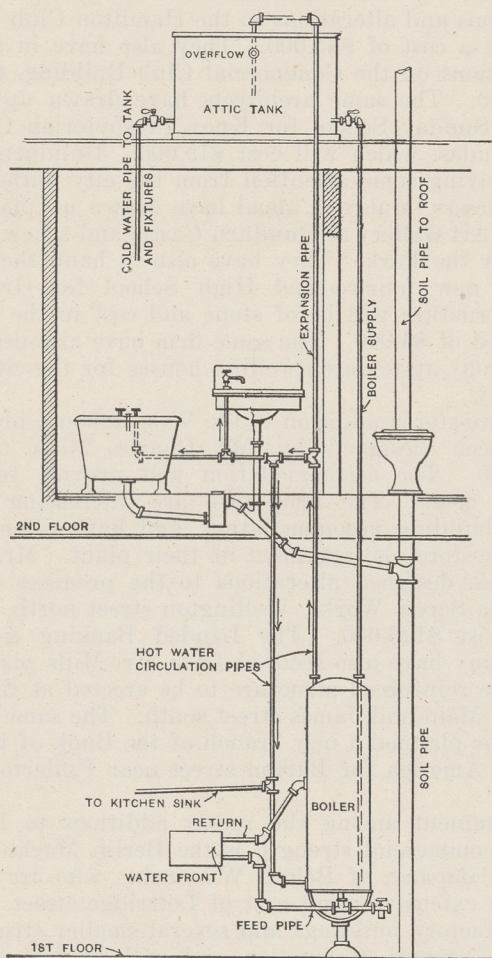
Plans for the new Central Presbyterian Church have been prepared by Mr. John M. Lyle, of Toronto. The structure will be of classic architecture, brick with stone trimmings, and will cost \$165,000.



[NOTE.—Contributions suitable for publication in this Department are invited from subscribers and readers.]

### A PROPERLY EQUIPPED BATHROOM.

With a view to educating the public generally, and the farming class in particular, regarding the best and most sanitary plumbing methods, the United States Department of Agriculture has issued a bulletin entitled "Modern Conveniences for the Farm Home," by E.T.Wilson, formerly Assistant Professor of Civil Engineering in the Iowa State College, from



Domestic Hot Water Circulation System.

which we take the following, relative to the proper equipment of the bathroom:

There is a great difference of opinion among those who have made a special study of sanitary plumbing concerning many of the details of construction and design, but the vital things to be kept in mind when laying out the system are to use the best material, isolate all plumbing and concentrate as much as possible. By "best material" is not meant the most expensive, but the most durable. Secure simplicity in all needed fixtures. Avoid complications in waste pipes. Select sinks without grease traps, bathtubs without inaccessible overflows, wash basins free as possible from fouling places, and water closets without valves, connecting rods or machinery.

The drainage system must be so constructed as to

carry away completely, automatically and immediately everything that may be delivered into it. It should be constantly and generally vented, frequently and thoroughly flushed, and have each of its openings into the house securely guarded from the entrance of air from the interior of the drain or pipe into the room. All drains, soil pipe and waste pipe should be absolutely tight against the leakage of water or air.

The main line of the house drainage system begins at the sewer, flush or septic tank, as the case may be, passes through the house by such a course as may be indicated by a judicious compromise between directness and convenience, past the location of the highest fixture that is to discharge into it, and then out through the roof for free ventilation. If possible, have the fixtures which are located on different floors in a direct line one above the other to avoid any considerable horizontal run. If bathrooms or water closets are required in different parts of the house, let each have its own vertical line of soil pipe. All plumbing fixtures on bedroom floors should be confined to bathrooms, and under no circumstances should there be a wash basin or any other opening into any channel which is connected with the drainage system in a sleeping room or in a closet opening into a sleeping room. Each bathroom should have exterior location and at least one window for light and ventilation, but pipes should not be placed against outer walls unless adequately protected against frost. Never have plumbing out of sight; let each pipe be in full view, and each closet, bath or basin be unhidden by any sort of inclosing woodwork. There is quite as much danger from the dirt which is apt to gather around concealed pipes and beneath inclosed sinks, bowls or closets as there is from the admission of sewer gas. The simplest way to prevent the accumulation of dirt is to make it easier to be clean than to be dirty. Therefore keep the plumbing fixtures where there is plenty of light.

The bathroom should be a light, well ventilated room, with every facility for cleanliness. Floors and wainscoting of tile or composite material are most desirable, but painted walls are much less expensive and give excellent results. Tile is undoubtedly the most satisfactory material which can be used for the covering of the floors and walls where it can be afforded. Tile floor with covered base and walls finished with cement or hard plaster, painted with enamel paint, are much cheaper. When a tile floor cannot be had, linoleum is an excellent substitute, as it is practically impervious to water. It should be laid before the fixtures are set, in order that there may be no joints. Cement mixed with small chips of marble well rubbed down after setting makes an excellent floor, one that washes as clean as a porcelain plate and has no cracks to harbor dirt; the cost is only about twice that of a

double wood floor, or 50 cents per square foot, including the necessary cement bed on which it is laid.

When it is desired to lay a cement, composition or tile floor upon wooden floor joists, proceed as follows: Nail a 2 x 4 to the side of each of the floor joists flush with the bottom. Upon the top of these stretch wire lath, after the joists have first been covered with tarred paper to prevent them absorbing moisture; and upon this lay cinder concrete, made of 1 part Portland cement, 3 parts loose sand, 6 to 8 parts crushed and screened furnace clinkers, filling in to a level at least 2 inches above the tops of the joists. Upon this is placed the floor finishing. Cinder concrete is used because it is so much lighter than that made of stone. When a tile or cement wainscot is too expensive the walls should be painted. Wall paper is not desirable in a bathroom, nor is wood panelling.

### THE CHIMNEY FLUE.

Improperly built chimneys have been the means of endless distraction to householder and plumber alike. The location of the chimney flue is not of material consequence, although for convenience in installing the system it is well to arrange for it near the centre of the building. Of greater importance, however, are the character and size of the flue. The draft in a chimney flue is spiral. This is doubtless due to the pressure of the atmosphere and the friction caused by the draft in overcoming this pressure. For this reason a tile flue, 12 inches in diameter, with an area of approximately 113 square inches, is just as effective as a 12 x 12 inch tile flue with an area of 144 square inches, and because of this fact a chimney flue should be built round, or square, or as nearly square as possible.

There must be a sufficient air supply through the grate of the heating apparatus to properly burn the coal, and the chimney should be of sufficient area to pass the residue of this air after it has expanded, together with the gases of the products of combustion. The following table of sizes of chimney flues recently appeared in an article by A. G. King in the "Architects' and Builders' Magazine":—

Sq. Ft. Radiation for Steam.	Size of Flue.	Sq. Ft. Radiation for Hot Water.
300 to 400	8 x 8 ins.	300 to 700
450 to 700	8 x 12 ins.	800 to 1,200
700 to 1,200	12 x 12 ins.	1,200 to 2,400
1,200 to 2,400	12 x 16 ins.	2,400 to 3,600
2,400 to 3,500	16 x 16 ins.	3,600 to 5,500
3,500 to 5,000	16 x 20 ins.	5,000 to 8,000

Chimneys 16 x 16 inches and larger should be at least 50 feet high, otherwise a flue of larger area should be used. No chimney flue for the use of a heating apparatus should be less than 8 x 8 inches, and a flue 8 x 12 inches would be safer, even for a small apparatus.

A tile-lined flue is best, but if for any reason this is not practicable, the flue should be smoothly plastered. It should be built straight up, without offsets of any kind, and should extend well up above the roof of the building and above the roofs of any surrounding buildings.

Adding height to a chimney increases the velocity of the draft, but not the effectiveness of the flue; therefore, the test commonly employed of burning

paper in a flue, as a test of its efficiency, is a fallacy. Remember, a flue which is too large may be easily regulated, but a flue of too small area cannot be made efficient except by rebuilding.

### HEATING AND VENTILATING A MODERN HOTEL.

The heating and ventilation equipment of the Hotel St. Regis, New York City, is of unusual interest, says the "Engineering Review," on account of the use of the indirect steam heating system for all public portions and 550 guests' rooms in a building eighteen stories in height, direct radiation having been eliminated in all portions except in the dormitory located upon the eighteenth floor. For this indirect heating service a number of independent blower systems are used with cheese-cloth filter intakes, automatic temperature control on heating stacks and humidifiers for automatic regulation of the moisture carried in the air. The systems are in all cases designed to maintain, in connection with the exhaust ventilation system, a uniform temperature of 70 degrees Fahrenheit in zero weather, in all having exhaust vent connections through register openings or fireplace flues. A feature of the installation is the sub-division of the heat supply to the guests' rooms upon the upper floors into three nearly equal divisions, each of which is supplied by a heating fan on a floor underneath for upward delivery.

The blowers are all three-quarter housed steel plate fans, with top vertical outlets, delivering to overhead lines of duct work, which supply the delivery systems on the floors above. They are located with short connections to the tempering coil casing and all have individual motor drives. The motors are all of direct current type.

### DISCOVERING LEAKS IN WATER MAINS.

A new method of locating leaks in water mains has been discovered in Geneva, Switzerland, and is described by Alf. Betant, Engineer and Director of the Waterworks of that city, in *La Technique Sanitaire* for April. In most soils, except those which are very porous, leaks of any magnitude will show themselves at the surface in the shape of moisture; but this method is claimed to reveal quite small leaks (as little as one-half gallon per minute from a pipe about 16 inches diameter having been detected), and in ground where the surface remains quite dry. The method consists of noticing the appearance of melting snow or frost over a trench, it having been found that when this begins to thaw visibly in the morning the points immediately over the leaks thawed most rapidly. Investigation also showed that the water escaping from the pipes at such times had always a temperature of 41 degrees to 43 degrees F., while the ground surface was about 32 degrees; and the phenomenon was attributed to the heat contributed by the escaping water. It is evident that this method is applicable only when the ground has a light covering of snow or frost and its temperature is raised from well below to slightly above freezing, and is therefore restricted to certain seasons and climates. At Geneva the indications, when observed, were invariably reliable. Thirty-eight leaks were discovered in three days from which a total of 136 gallons a minute or about 200,000 gallons a day, had been leaking; the pipes being from about 24 inches to about 2 1-2 inches in diameter, and the amounts of leakage from each from 1-2 gallon to 30 gallons a minute. Observations for this purpose must be made when the frost or snow begins to thaw, hence generally in the morning; and snow is found to be a more sensitive indicator than frost.

# CEMENT AND CONCRETE

[NOTE.—Contributions suitable for publication in this Department are invited from subscribers and readers]

## CONCRETE BLOCKS FOR BUILDING PURPOSES.

In a recent consideration of the properties of the hollow concrete building block, which particularly fit it for residence construction, H. H. Price, the well-known writer on concrete matters, says: "The block is made as large as can conveniently be handled in laying. Thus its volume is equivalent to from 20 to 35 bricks, greatly saving the masons' time, reducing the proportion of mortar joints and facilitating the maintenance of true lines in the wall.

"The form of the concrete block is its most decided advantage, affording an air space which prevents the passage of moisture, which makes a house cool in summer, which cuts off 25 per cent. of the winter's fuel bill, which impedes the passage of sound, and which so promotes ventilation that maximum sanitation ensues.

"The accessibility of materials used in manufacturing the concrete block is a very great point in its favor. There is no place where it is necessary, except for special grades of work, to ship in any other ingredient than Portland cement. No other building material is known to man of which 87 1-2 per cent. of the necessary raw material is universally at hand.

"The strength of the well-made concrete block is so far in excess of any duty likely to be imposed upon it in residence construction that it seems unnecessary to dwell upon this quality. In most cities ordinances now provide that concrete block walls, with usual percentage of air space, may replace solid brick walls of equal thickness, although some have been progressive enough to vary this regulation in favor of the concrete block. As a matter of fact, in no ordinary residence will a twelve inch wall be found inadequate. Well made, properly cured and properly laid blocks may be relied upon to carry a minimum load of 2,500 pounds to the square inch. It will therefore be seen that, where joists are properly hung, the point of greatest danger will be in the floor span rather than in the walls. Of course, good construction will not place a concrete block in tension, as its compressive strength is about ten times its tensile strength. Hence a transverse strain or eccentric loading demands a distribution of the load by the introduction of reinforced concrete members.

"The term fireproof is greatly abused and is often applied to a material which is merely non-combustible. A fireproof building must be not only non-combustible, it must be fire-resistant, it must be so constructed that its contents will be protected from excessive heat. It is in this respect that the concrete block stands foremost among fireproofing materials. Concrete being of itself a non-conductor, and its conductivity being decreased by dehydration of the outer quarter

of an inch at a temperature of 1,000 degrees F., its efficacy in a fierce conflagration is enhanced by the air space in the wall, which effectually prevents the transmission of heat to the interior. In actual fires it has been noted that the hand could be comfortably held against the interior of a concrete block wall while flames from an adjoining burning building were beating against the exterior."

Regarding the selection of materials, the writer is insistent that only the best should be employed, and that the gradation of aggregates and the proper proportioning of materials to eliminate voids and secure maximum strength and density with the maximum saving in cement, should receive much greater consideration than is usually accorded.

"To manipulation in mixing too much attention cannot be given. In many of the smaller plants mixing is still done by hand, because of the expense of purchasing and operating a good power mixer.

"In the curing of blocks great progress has been made, and the day is no more when blocks were allowed to lie exposed to sun and wind until they dried. When curing is by sprinkling, the common practice of the present day is to cover the blocks with hay, straw, burlap, or some other moisture-retaining material. The result is not only blocks of far greater strength and soundness than in the early days, but blocks of more uniform color, greater freedom from map or crazing cracks, and an almost entire absence of that white efflorescence which was formerly the cause of so much vexation. Many of the more progressive block makers are curing by steam. Of course it has long been known that blocks placed in a cylinder under steam pressure cured with great rapidity, but to-day numerous plants are curing in sheds lined with tar paper, the blocks being stacked in these sheds and steam turned in for 24 hours with excellent results, both as to saving in time and as to color and hardness of the finished product. Especially are the steam sheds advantageous in the north, as they enable the manufacturer to continue operations throughout the winter."

## DANGER IN DECAY OF CONCRETE.

Are our structures of armored or reinforced concrete, now so popular as a building material, likely to be permanent? It has been assumed hitherto, and no facts to the contrary have been adduced, that the concrete envelope protects the iron rods or bats embedded in it, so that there is no danger of rust. Recent experiments, however, show that, where there are electric currents in the vicinity, corrosion may take place within the concrete very quickly. The latest tests are these made by A. A. Knudson, of New York, and reported a few weeks ago to the American Institute of Electrical Engineers. The experiments were

carried out as follows, as described in The Scientific American (New York, April 13):

"Some blocks of one-to-one Portland cement sand concrete were moulded in a common metal water pail, with a piece of two inch wrought iron pipe placed vertically within the blocks to a depth of about eight inches. When the blocks were three years old, one of them was placed in a tank of sea water, and another in a tank of fresh water, and direct current was fed to the iron pipes in the centre of each block, the negative electrode consisting of a piece of sheet iron placed in the tank. A third block, similar to the other two, was placed in a tank of sea water, but was not subjected to the electric current. After a period of thirty days the last named block was found to be in perfect condition, and the embedded pipe was perfectly bright. But the two other blocks, which had developed cracks during the test, were easily broken open; yellowish deposits were found in the cracks, where the concrete had deteriorated to such a degree that it could be cut easily with a knife; and the pipes were considerably corroded, showing a loss of weight of over two per cent. Similar results were obtained in tests with blocks of standard Rosendale cement, made in the same mould although in this case the blocks were tested thirty days after they had been made."

That these results are of profound significance is asserted by the writer, who is of opinion that they call

for careful investigation on the part of concrete engineers, and the provision of special insulation in all cases where embedded steel, or reinforcing material, is liable to attack by stray currents near wet foundations. He concludes:

"The whole subject of electrolysis, which, because of the exaggerated use to which it has been put by a sensational press, has not received from technical men the attention which it deserves, should be made the subject of a searching investigation with a view to determining the laws and limits of this form of corrosion."

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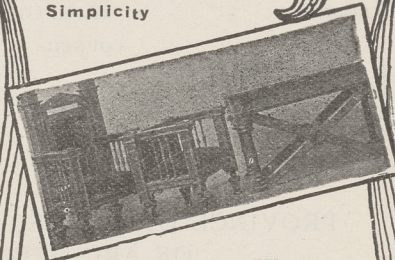
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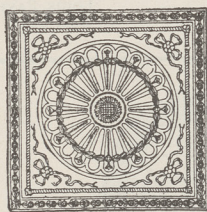
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The use of wood for water pipes is increasing in the Western States, and is said to present many advantages. Pipes made of bored logs were used long ago, but modern wooden pipe, built of staves and fastened end to end by metallic clips, was introduced in Denver about 1882. Andrew Swickard, writing in The California Journal of Technology, says:—

"Wood pipe is, as a general thing, much cheaper and more economical than riveted steel pipe. Where the pipe is to be subjected to a comparatively high pressure (say 250 feet head or over) it might be cheaper to build of steel. There are so many variable elements due to locality that enter into the cost of pipe that it is difficult to make comparisons. As a general thing, wood pipe is from 30 to 50 per cent. cheaper than riveted steel.

"The interior of a wooden pipe will not deteriorate as does that of an iron pipe. From the standpoint of steady capacity the wood is far superior to iron. Not many careful experiments have been made on the flow in wooden pipe. The results are not materially

better than those obtained by experiments on the flow in new, smooth iron pipe.

"The comparatively early deterioration of two or three existing pipe lines has been used as a premise for arriving at the conclusion that wooden pipe is a failure. Where there is one pipe line that has been a partial failure (there are no absolute failures) there are dozens that are giving the utmost satisfaction. Each partial failure has been due to local causes which might have been avoided if they had been understood. It is well known that iron pipe gives under some conditions the greatest satisfaction, while under others it is very unsatisfactory.

"The use of wood pipe has been greatly extended in recent years. A number of long lines have been built in the East during the past two years. It is even attracting attention in Europe. The use of wooden pipe, on a large scale, was decidedly a Western innovation. After a demonstration of its worth it has found favor with the engineers of the East. At least in one case, wood pipe has been favorably considered by conservative English engineers. This is in connection with a large water project in India."

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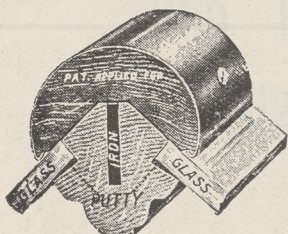
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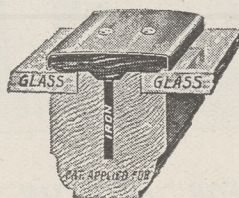
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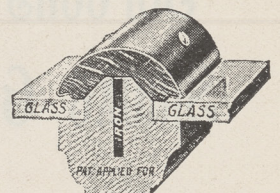
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## ARCHITECT'S INVENTION FOR RAILROAD WRECKS.

Mr. G. T. Martin, architect, Smith's Falls, has taken out a patent for an improvement in the construction of railway coaches, by which he claims to lessen the danger of cars piling upwards when a collision occurs. At present the front cars invariably pile up on each other. Mr. Martin claims to have overcome this by having the ends of the cars constructed on a slight level instead of making them perfectly straight, so that when the impact comes the cars will be hurled to right and left and ditched, instead of being piled up.

## MASTER PAINTERS AND DECORATORS TO MEET IN LONDON.

The annual convention of the Canadian Association of Master Painters and Decorators will be held in London, July 23rd, 24th and 25th. Mr. E. J. Linnington, of Toronto, will deal with the subject of "Shellac," and having recently made a test of this material, will be able to give some valuable information. "Moral Obligations of the Members of the Association to One Another" will be treated by Mr. James J. O'Hearn, Toronto. Mr. L. Graves will present a paper on "The Successful Painter of the Twentieth Century." Mr. Wm. Davenport, of Hamilton, will discuss the question of "Wax Finish vs. Varnish." One of the important topics of the convention has been assigned to Mr. J. W. Knott, of Toronto, who will deal with "The Master Painter's Relation to the Architect." Mr. Benjamin Goodfellow, of Galt, will contribute a paper on "Paint Shop Pointers." The reports of

the Committees on "Apprenticeships" and "Trade Schools" will also probably furnish some very valuable data.

## CANADIAN NATIONAL EXHIBITION FOR 1907.

The prize list of the Canadian National Exhibition of Toronto, to be held August 27th to September 7th, is just out. Many changes are made, making it more convenient for reference by exhibitors. The regulations are altered so that all animals exhibited in the live stock sections must be registered in the Canadian Herd Book registers.

The directors have endeavored in every way to protect and encourage Canadian-bred horses, the prizes in the breeding classes of the horse section having been increased over \$600. Several new classes have also been added, including the one for strings of ten horses, which is expected to be one of the features of this year's exhibit.

In the speed division the prizes have been increased by \$1,000, and a new class has been added, providing for horses that are not fast enough for the "free-for-all," but that are too speedy for the 2.30 classes. The conditions remain the same.

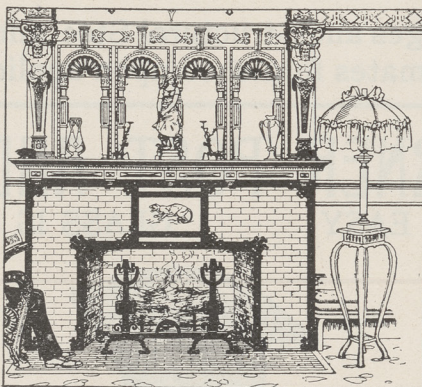
In the cattle section A. T. Gordon, of Combscauseway, Scotland, has consented to judge the Shorthorns, which is the largest class in this section.

The general arrangement throughout the prize list this year is alphabetical, so that the finding of any section is simplified. The aggregate amount of the prizes is \$39,000, not including the \$2,600 given in the speed department. This is the largest purely agricultural prize list on the American continent.

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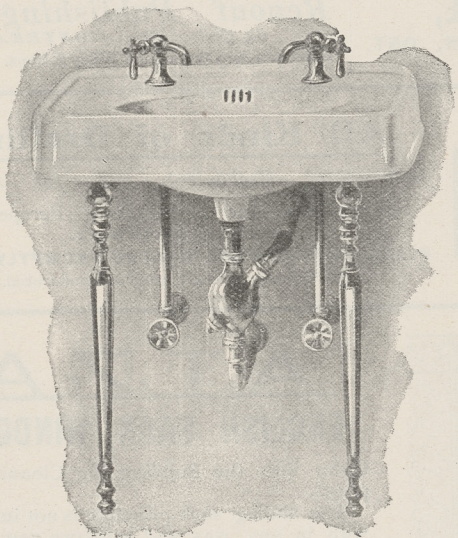
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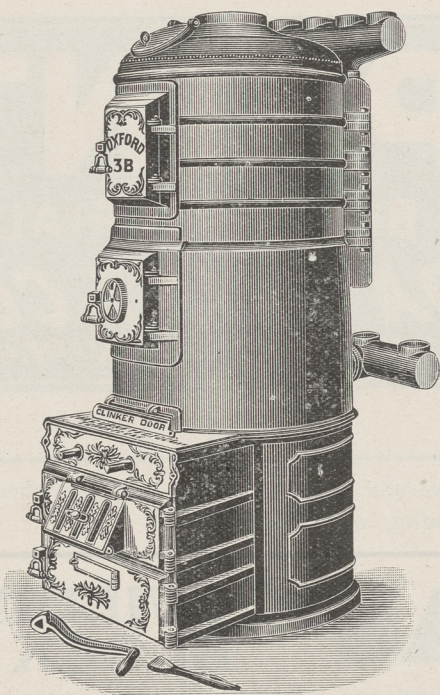
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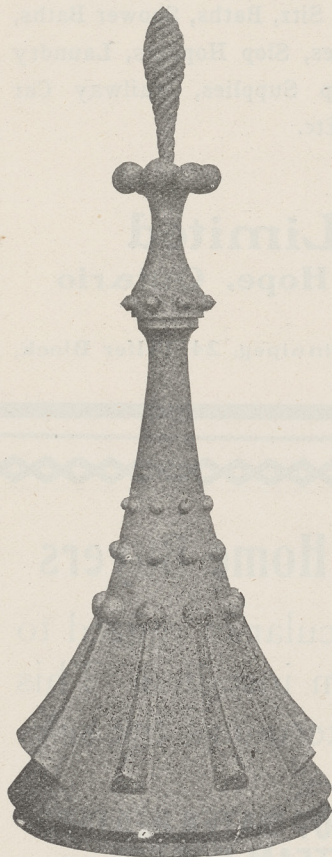
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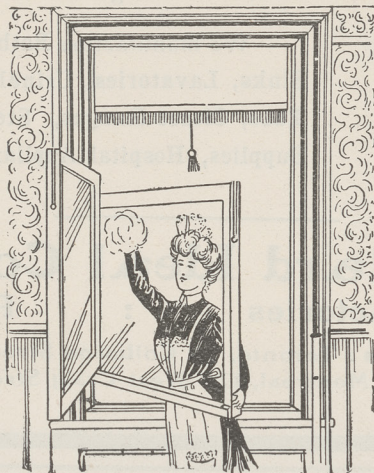
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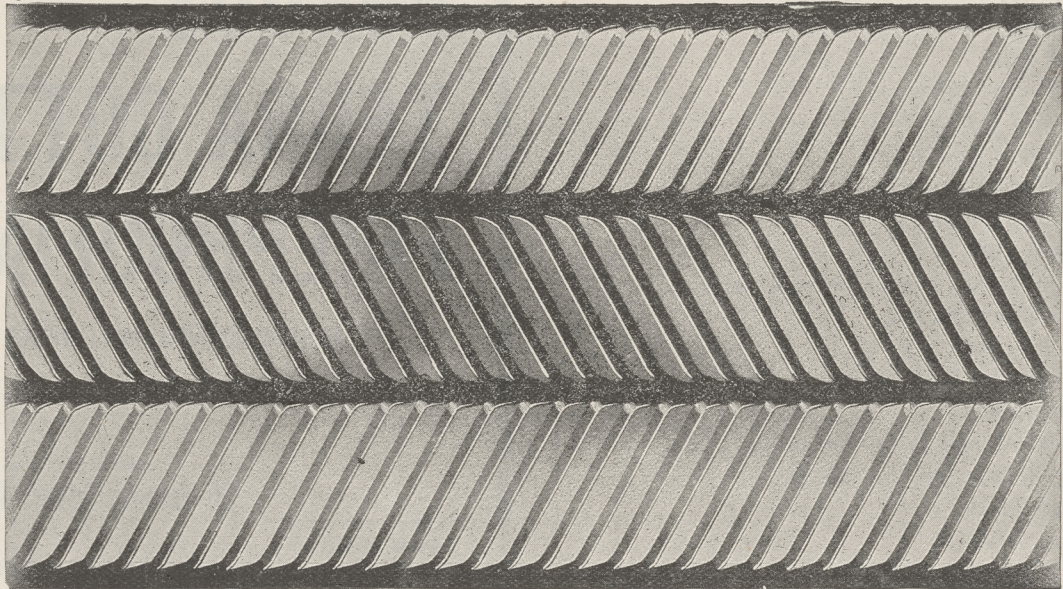
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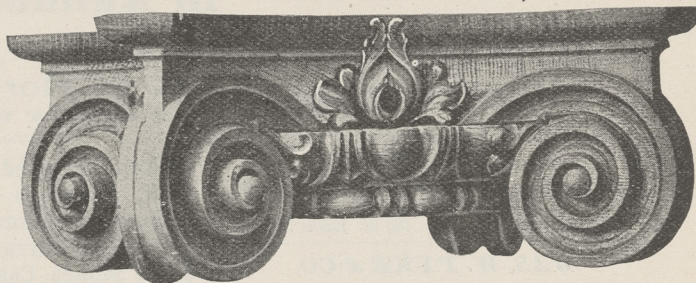
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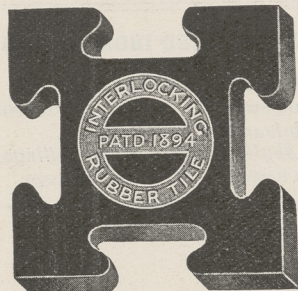
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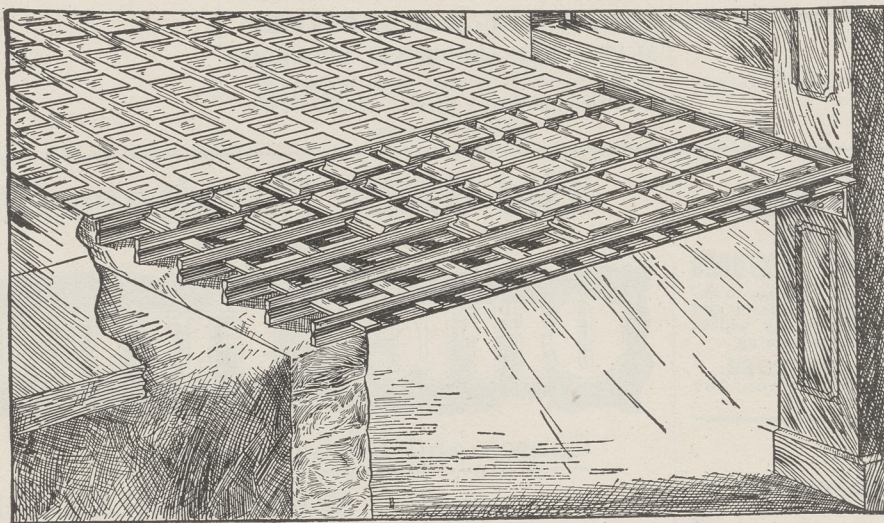
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