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CONSTRUCTION

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



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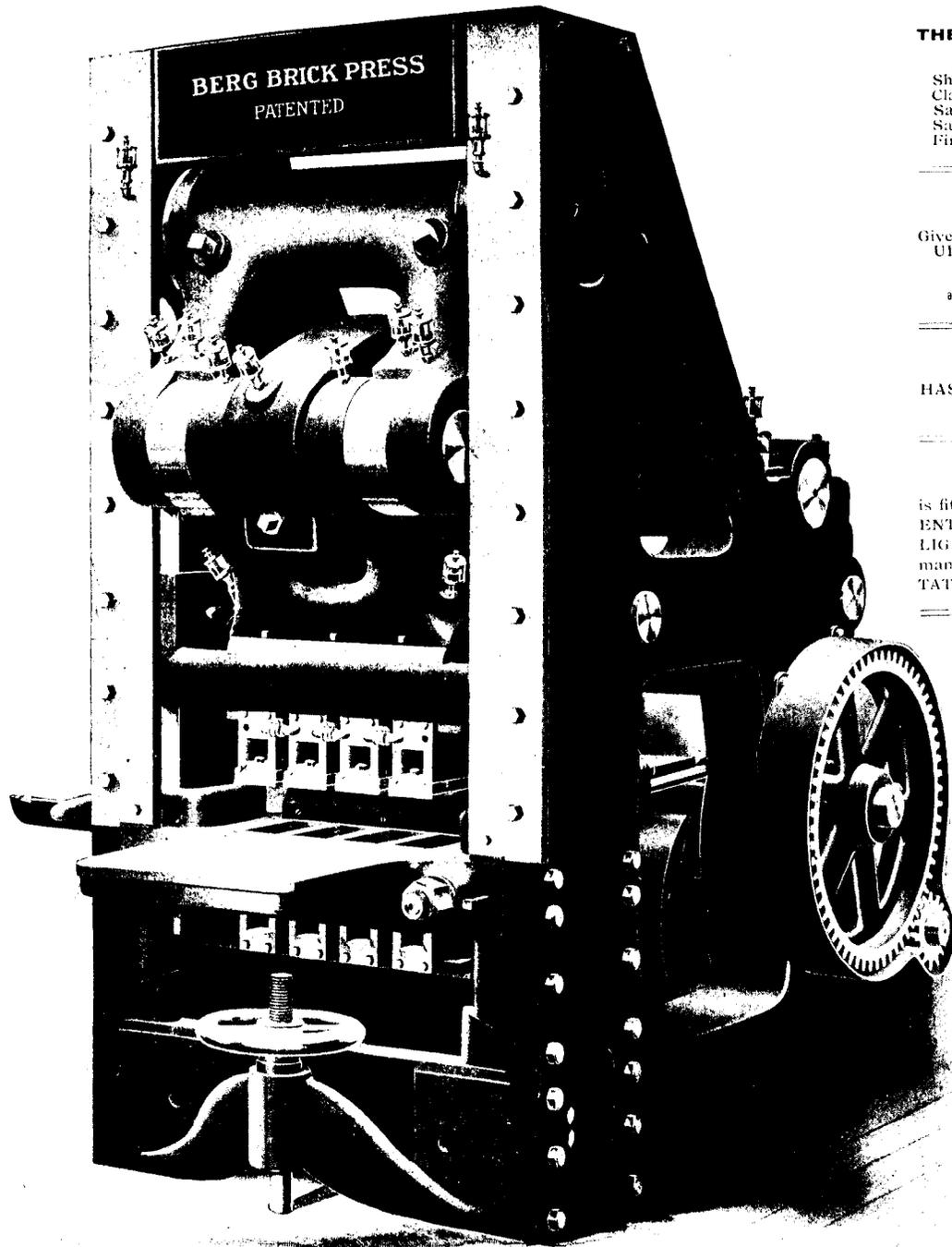
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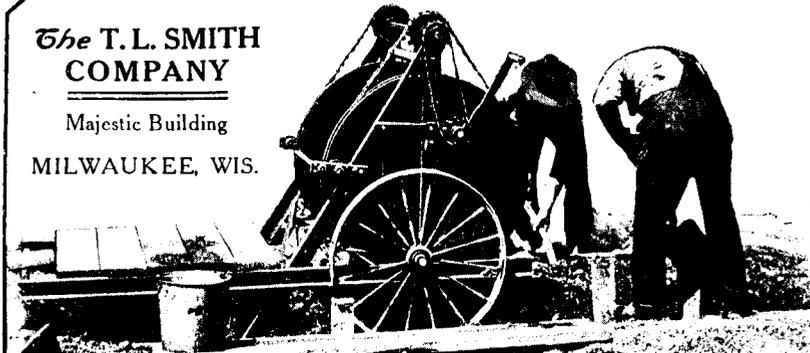
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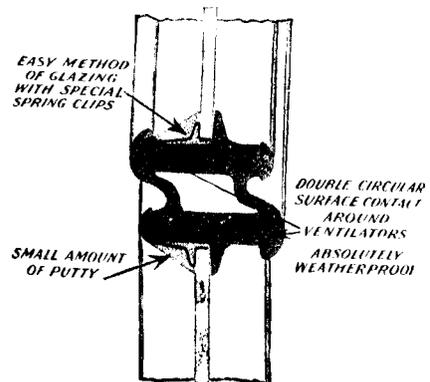
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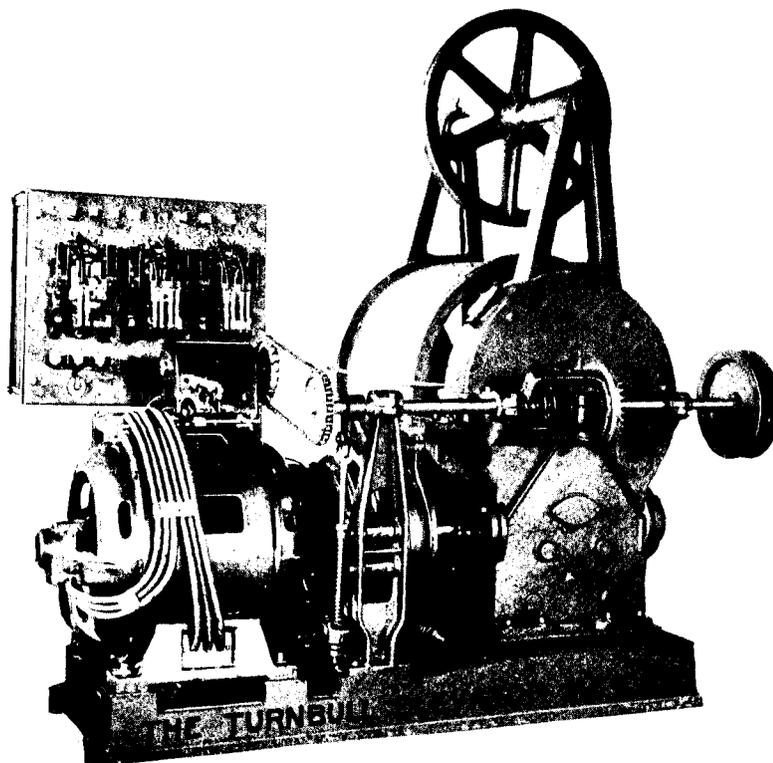
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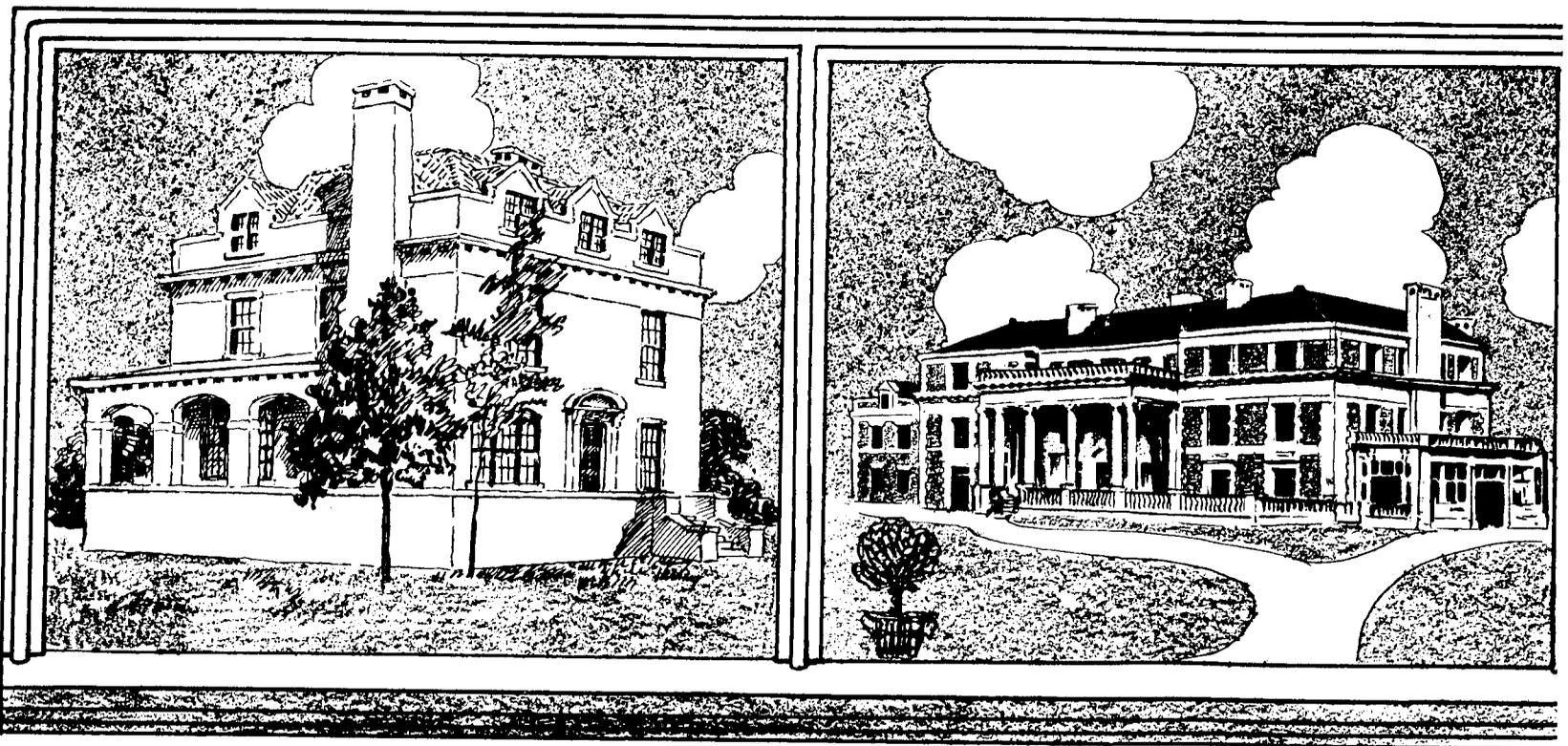
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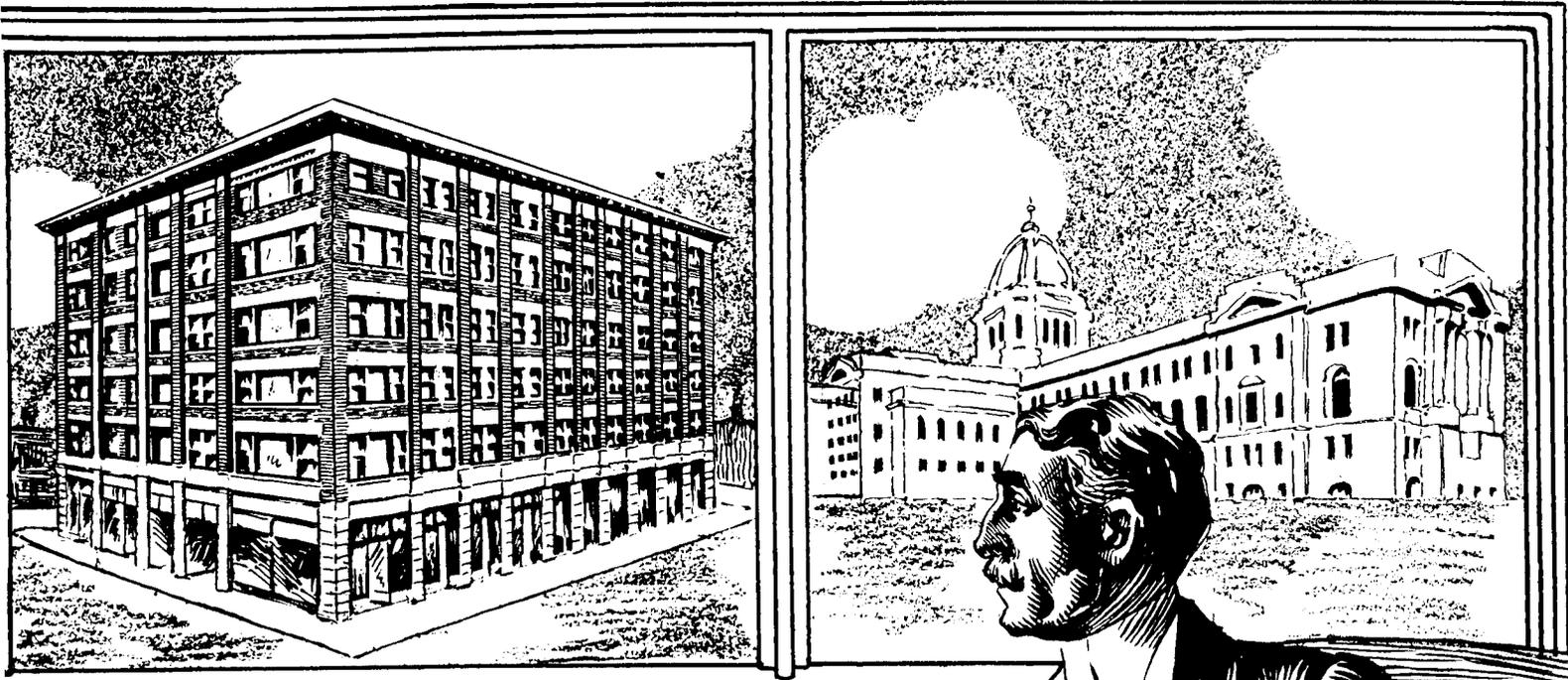
laid upon the vital importance of **quality** in the cement. Whether used in imitation of granite, limestone, or sandstone—or as a **distinctive** building material with decorative features all its own—the complete success of concrete work depends upon the ability of the builder to secure absolute uniformity. This, it will be understood, can only be accomplished when the cement—the basic concrete aggregate—is of uniform high quality.

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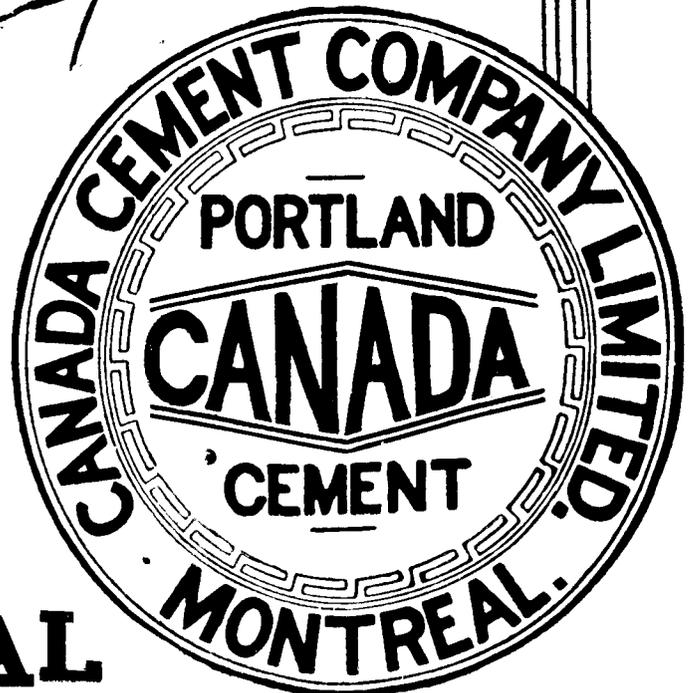
Therefore, in specifying "Canada" Cement, the architects and engineers of this country place themselves in a position of security—security in the knowledge that, the cement being right beyond a doubt, any flaw in the resulting concrete work can only be attributed to careless workmanship—and the workmen, therefore, held solely responsible.

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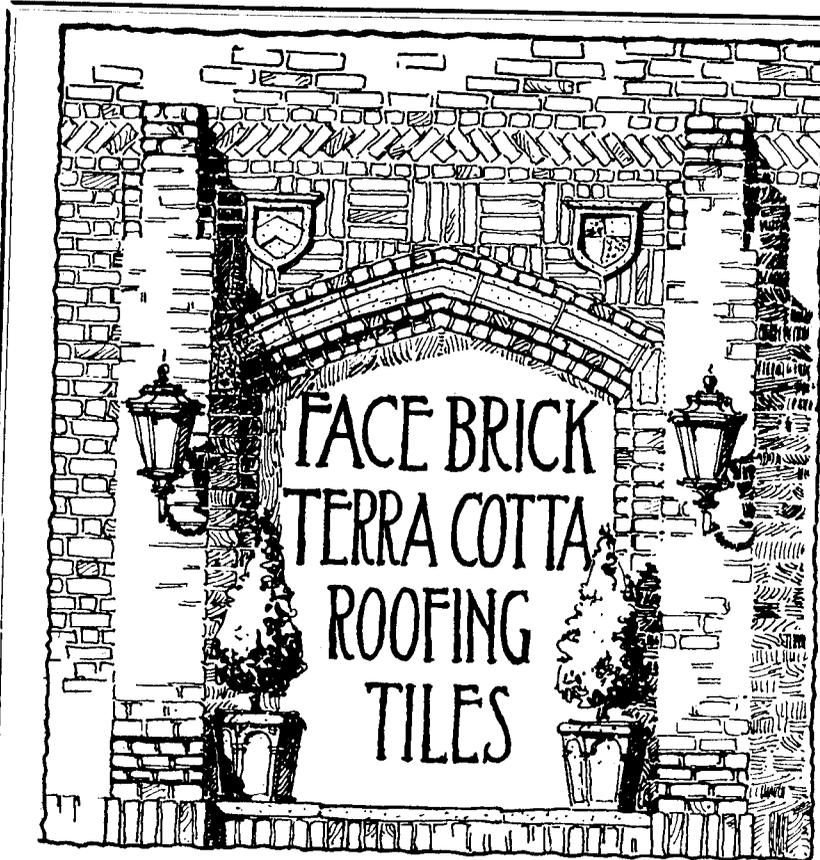
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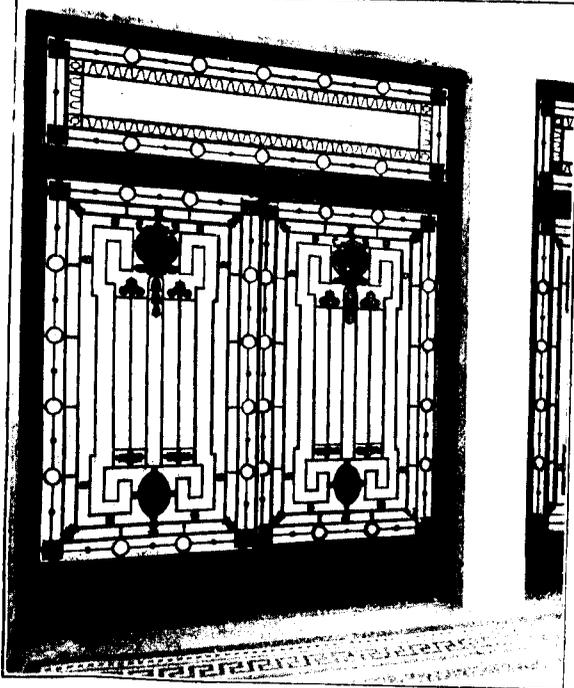
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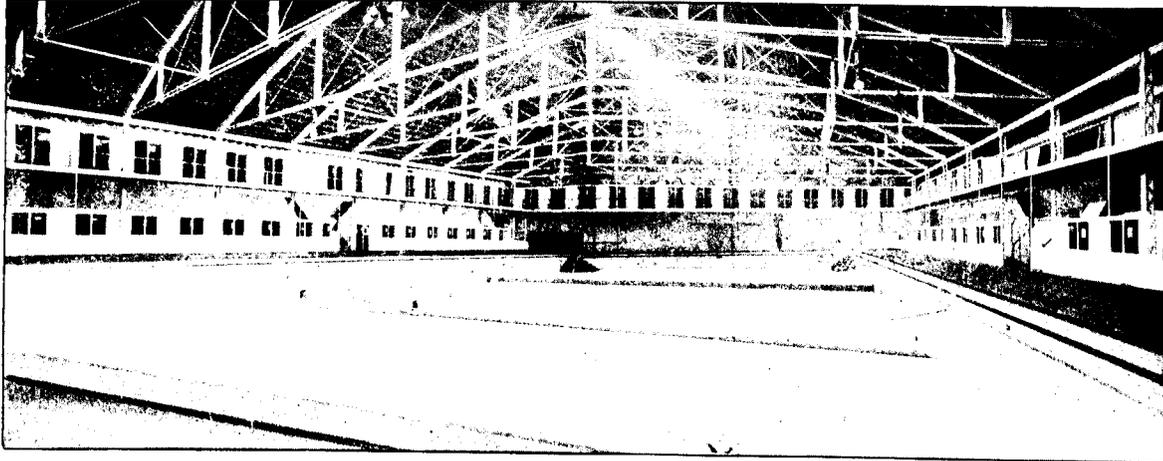
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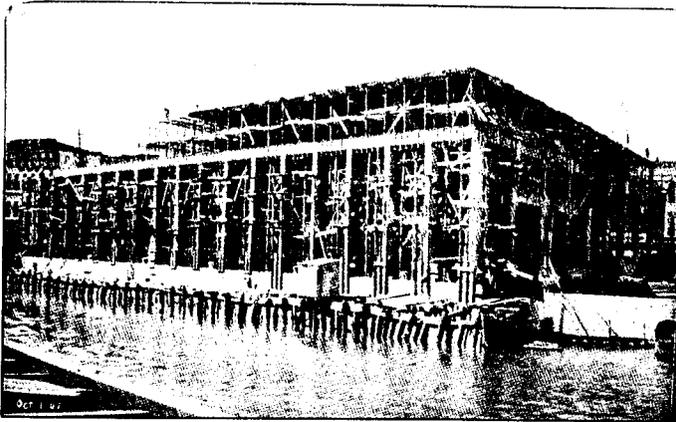
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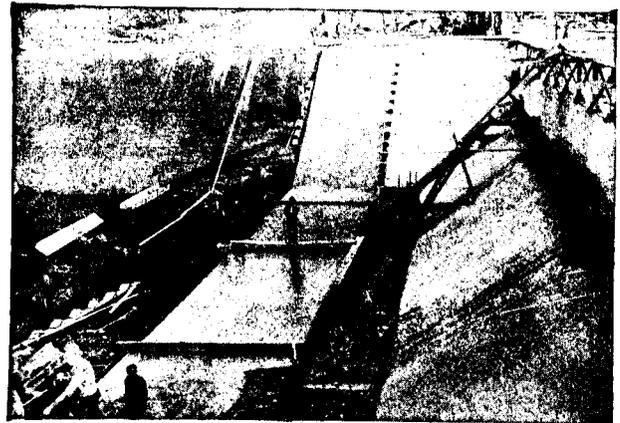
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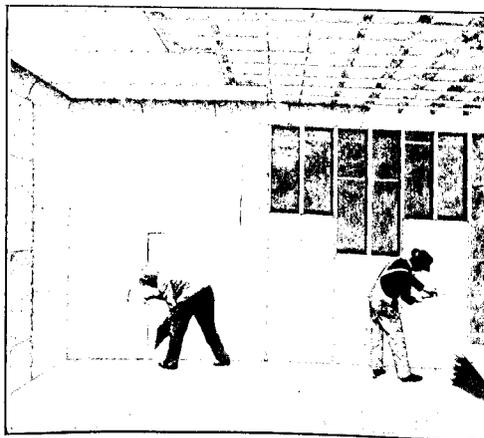
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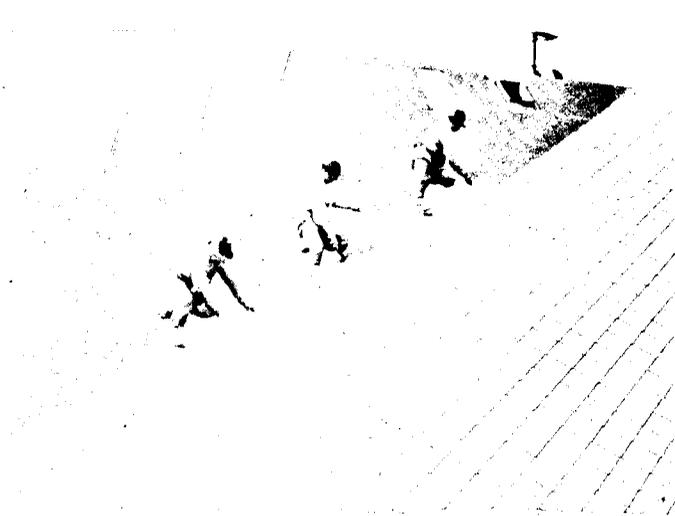
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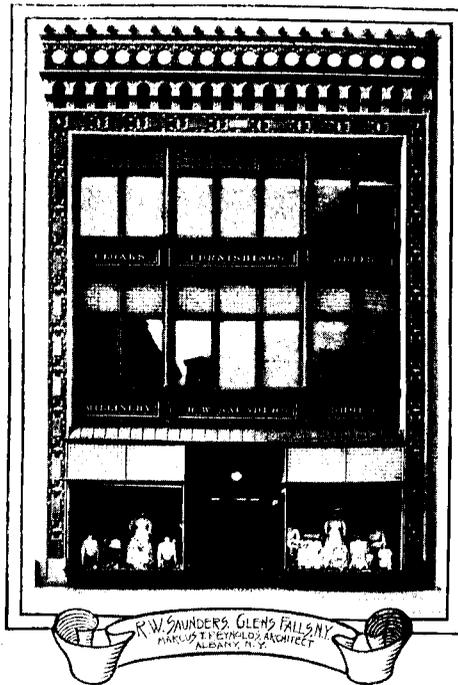
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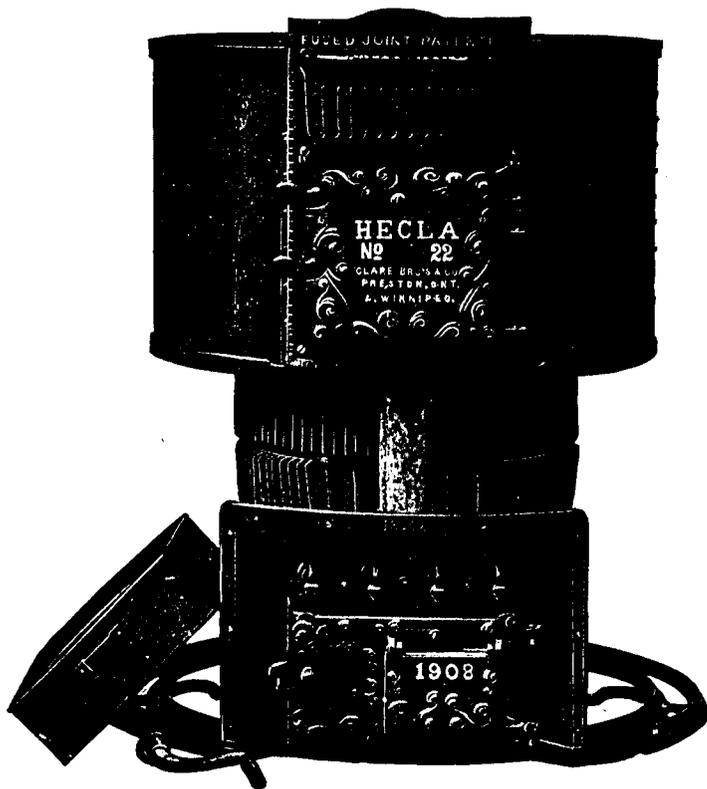
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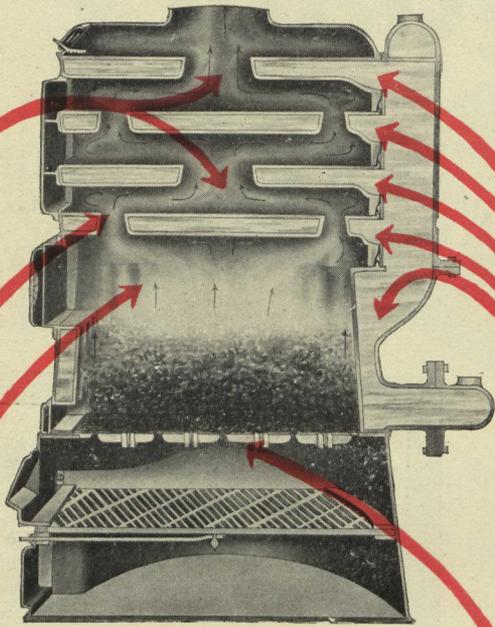
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Sold at the same price as other radiators, the "King" must depend entirely upon its intrinsic merits for its sales.

Its principal merit is its modern construction, both as a fixture and as a heat conductor.

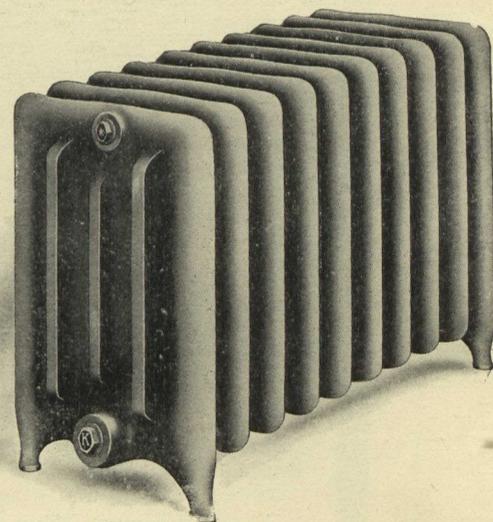
It pleases the Architect, because its patterns are chaste, clean-cut, and "fit into" the best decorative schemes of to-day.

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A Straight Talk to Architects on Cold Galvanized Metal Lath

O many conflicting statements are being made on the subject of galvanized metal lath and so many of these statements are misleading, that I believe it is incumbent upon me to put a few plain truths before the architects of Canada.

I am not going to mince matters; I am going to talk straight from the shoulder—going to call a spade, a spade.

Until ten years ago, metallic lathing used in Canada, was sold and used in an unpainted condition. Naturally enough, it did not last, and metal lathing came to be considered a doubtful proposition.

When the Pedlar People decided to go into the business of manufacturing metal lath, they not only paid the largest price for equipment, but purchased the most modern and reliable machines procurable and immediately turned out the best work of this kind that had yet been made.

Incidentally, we cut the market price in half.

From our forty years' experience in the sheet steel business, we decided that if metal lath was to be a permanency, it was absolutely necessary that it should be protected against varying atmospheric conditions. We decided to paint our lath with the most elastic and non-corrosive plant we could procure. After numerous tests, we decided on Sherwin-Williams Paint for this purpose, and we have continued its use to this day.

About five years ago, after an analysis of the properties of all standard and patented plasters, we found that, in order to make our lathing absolutely everlasting in every case, and especially to meet conditions existing in some sections of the Canadian West, it would be advantageous to manufacture a galvanized lath.

The next step was a careful investigation of all the known processes of hot and cold galvanizing, sherrardizing, etc.

As we investigated the hot galvanizing process, we found it unsuitable; for, as metal lathing is extensively used to form profiles of cornices, etc., we found that when the lath is bent to sharp angles, the hot galvanizing scaled off and left the metal unprotected.

Next we investigated the sherrardizing process. We

found this even less efficient than the hot galvanizing, inasmuch as sherrardizing only means the driving of zinc particles, in a dry state, against the surface of the metal—just as aluminum or bronze powder is applied for size. We also found, on testing samples submitted to us, that the life of the sherrardized surface was very short. Unquestionably, then, sherrardizing would not do. Finally, we made a searching investigation into the merits of cold galvanizing.

Cold galvanizing is an electric process of attraction, whereby the smallest microscopic particles of zinc are drawn to the steel surface, filling all the pores of the metal and covering it absolutely with the preserving element.

We ultimately decided that slow, laborious and expensive as the process was, it was the best in the end and the proper process for us to employ.

We adopted it—cold galvanizing!

The result has been, that wherever our cold galvanized lath has been used, the architect has continued to specify it exclusively.

Of course, other manufacturers who are working along different lines, have advanced all kinds of claims for their own methods. In fact, about a year ago, one young man, who is more or less engaged in this business, went through the country decrying Pedlar Cold Galvanized Lath. He went so far even, as to say it was not cold galvanized at all, but only sherrardized—virtually branded it as a deception.

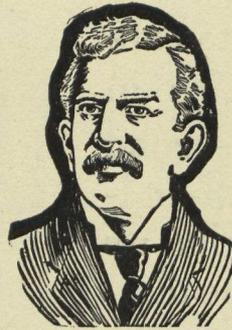
But this did not stop the sale of Pedlar Cold Galvanized Metal Lath—it acted as advertising and the consumption steadily increased.

Imitation was the next step of other makers.

But did they follow Pedlar and galvanize by the cold process? They did NOT!

To-day, these same imitators are talking about the wonderful merits of sherrardizing—the process which they, themselves, were so loud in condemning but a short twelve month ago.

Right here and now, I want just to say that if Pedlar Cold Galvanized Metal Lath were not absolutely all we claim for it, no other manufacturer would bother about it for a moment, nor make any effort to imitate it. And they do try to imitate—sincere flattery, no doubt!



I WOULD like to tell this story to every architect. But I cannot do that. Therefore, I want every architect to read this as carefully as if it were a personal letter. I believe it will be found interesting.

(Signed)

G. A. Pedlar

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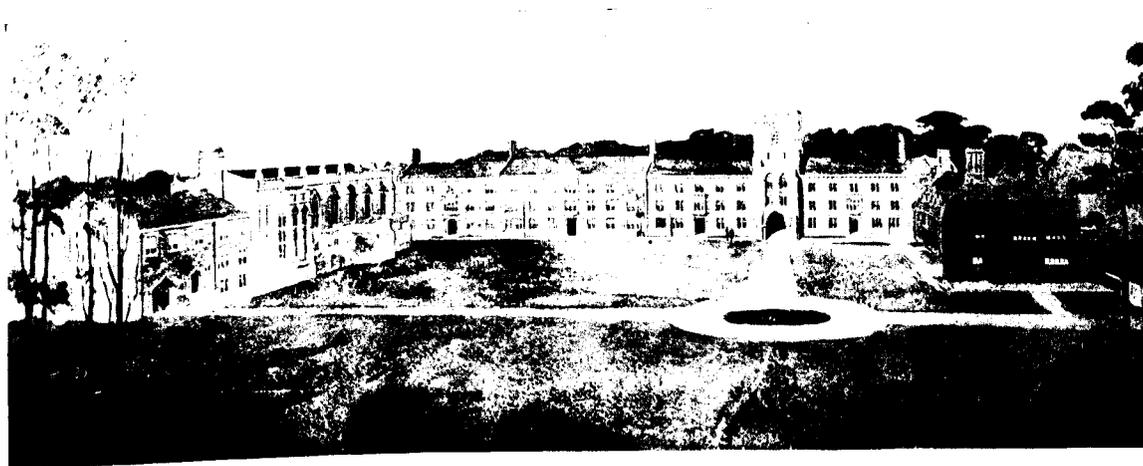
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<i>We also propose to use it for all work in connection with the new University of Toronto group of buildings.</i>	
<i>Yours truly,</i>	
SPROATT & ROLPH.	
<i>P.S.—On examination of the Victoria work this spring, after the severe winter, we find it as good to-day as when it was put on.</i>	

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Glidden's Architectural Varnishes and Advanced Finishes

In a letter from Messrs. Long, Lamoreaux & Long, Architects of the Plymouth Building, a photograph of which is herewith reproduced, they state that Glidden's M. P. Durable Floor Varnish and Glidden's Waterproof Flat Finish were selected, after a thorough test, for the finishing of floors and walls. They report the results as "entirely satisfactory."

Messrs. Locke & Everlof, the Painters and Decorators, write: "We have used many floor varnishes in our years of experience, but have found none that has given us any better results than your Master Painters' Durable Floor Varnish."

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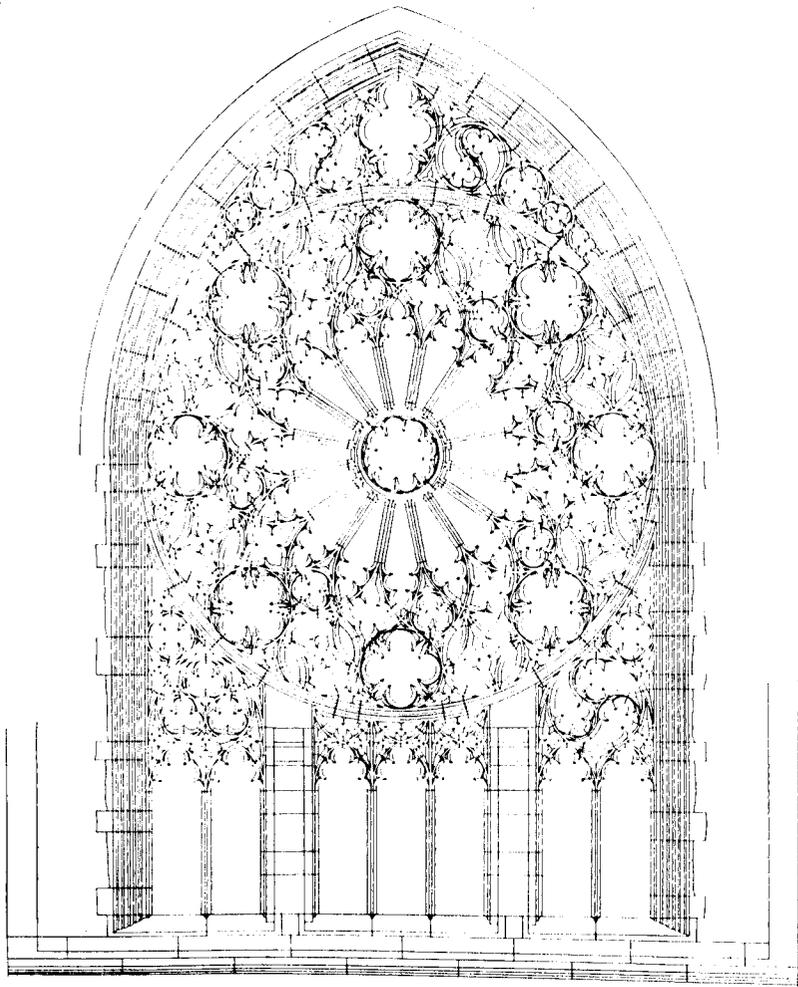
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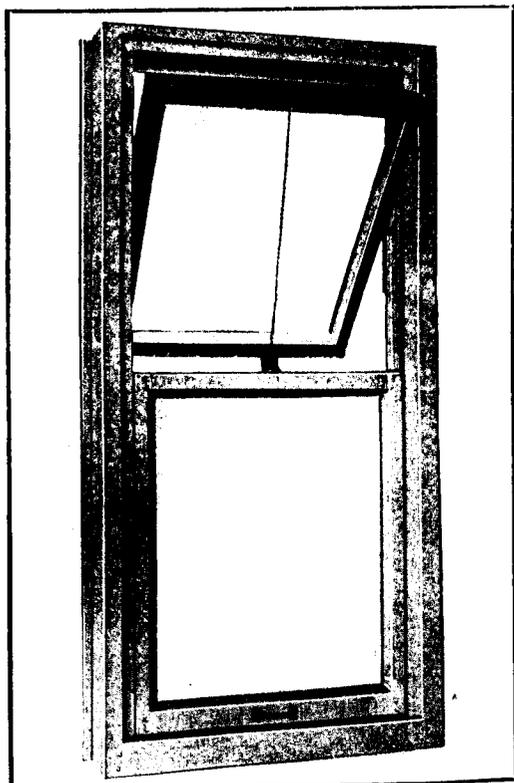
has a selvage edge of ruler-like straightness. These selvages interlock, making wiring between studs unnecessary. Lapping of sheets with Herringbone lath, instead being necessary is a detriment.

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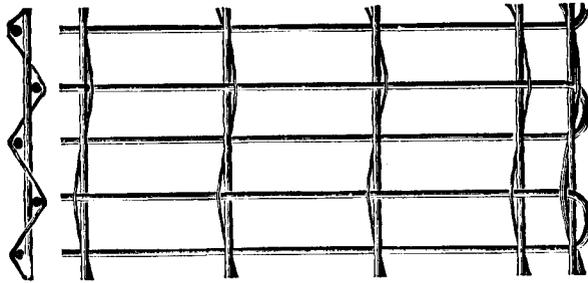
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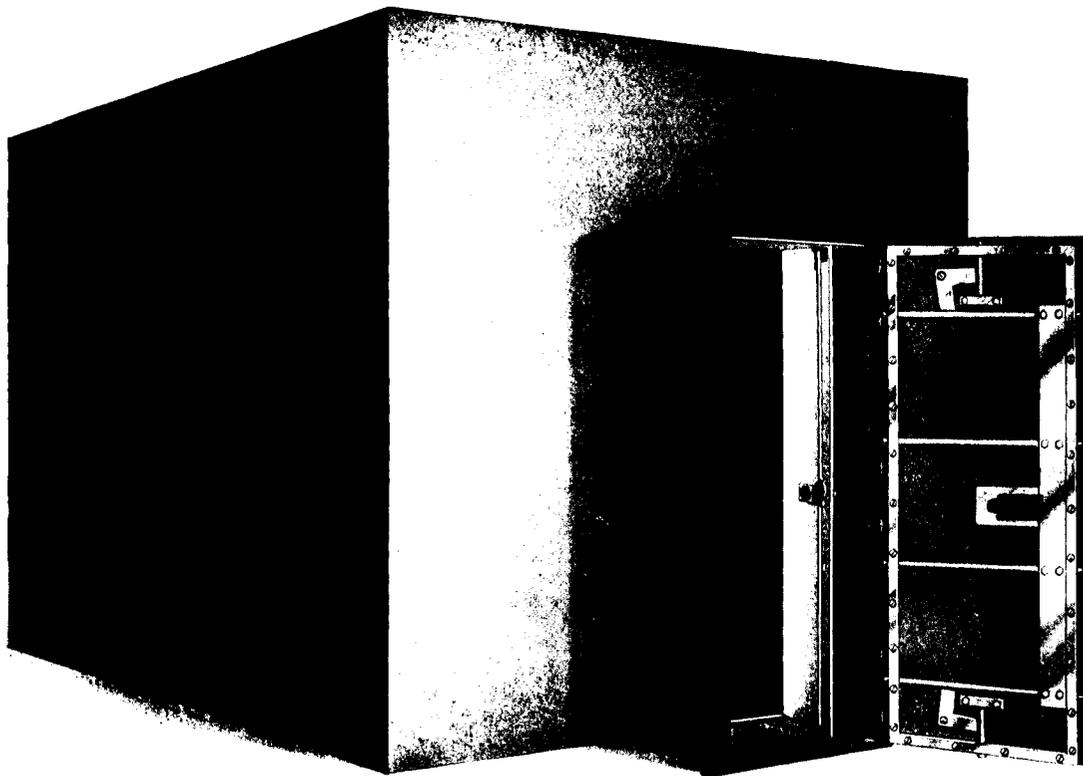


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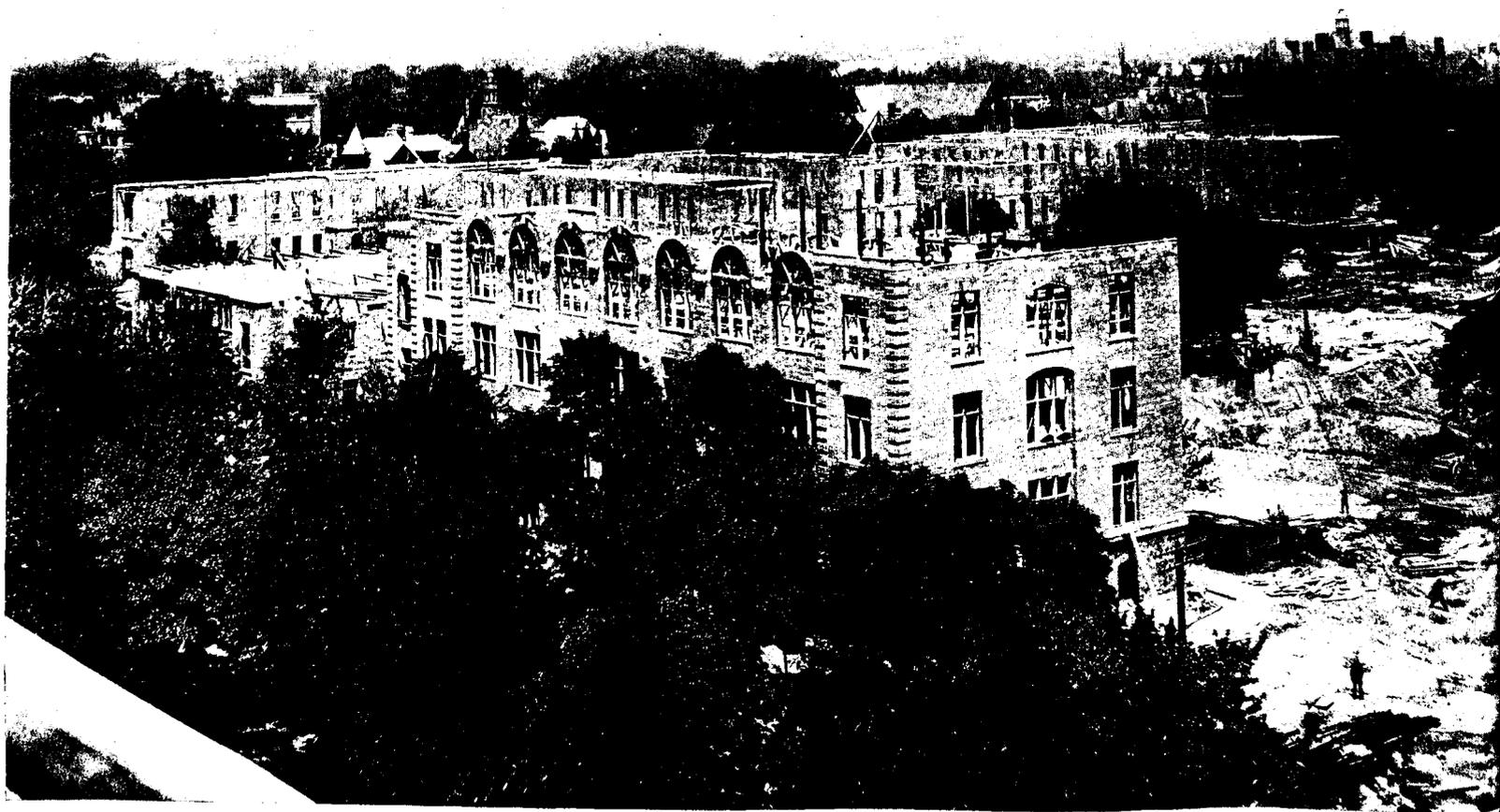
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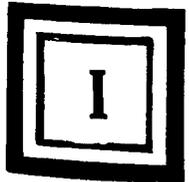
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Architects' Perspective showing bird's eye view of the Toronto General Hospital as it will appear when completed. 5,000,000 Don Valley Bricks will be used in these buildings. Don Valley J.A.P. Semi-Vitreous Bricks will be used for all exterior walls.—Darling and Pearson, Architects.

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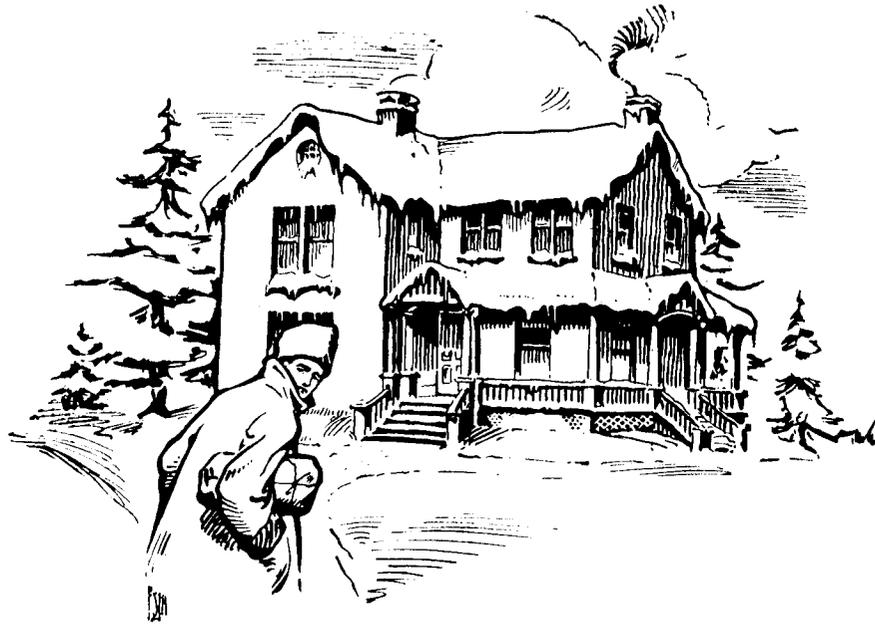
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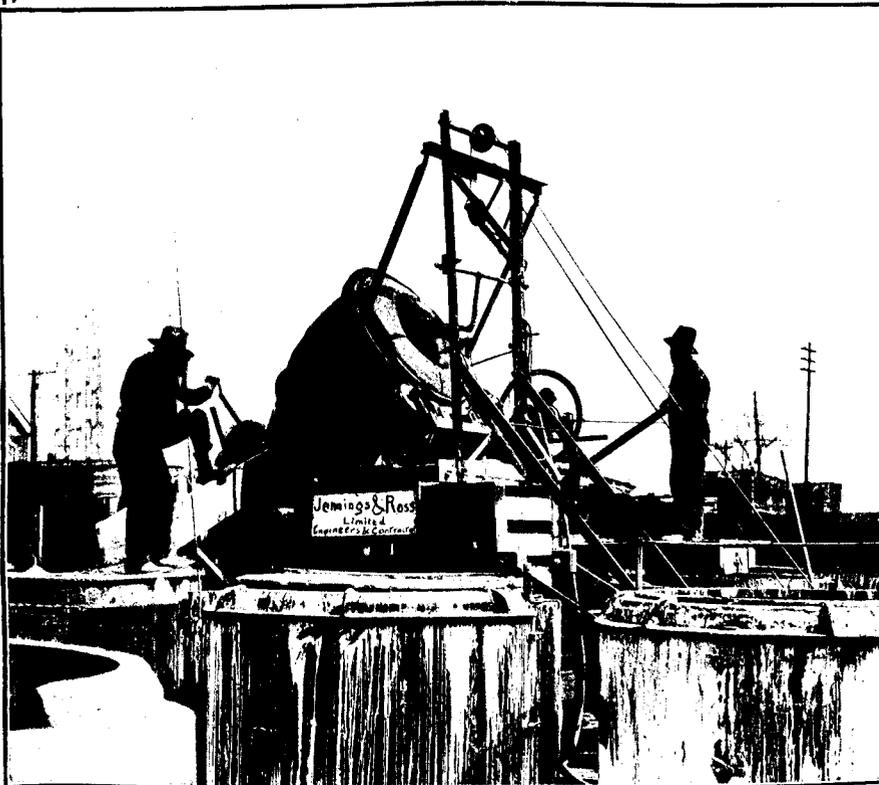
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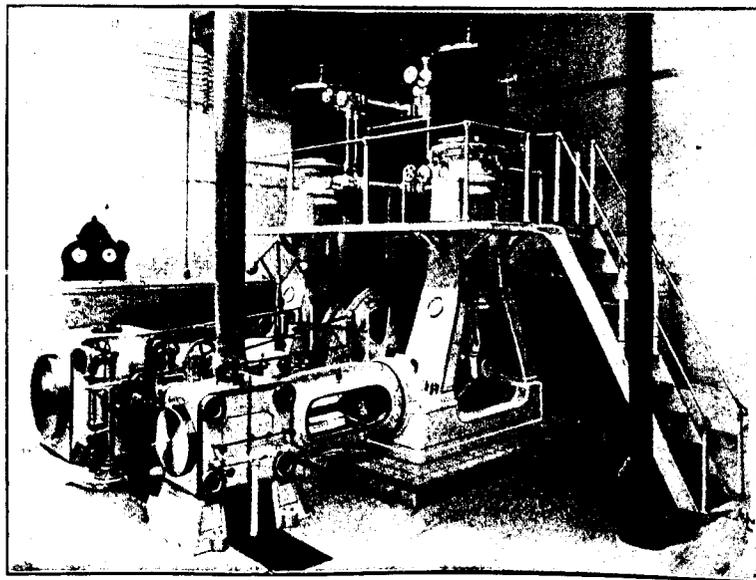
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Why So-Called Solid Porcelain Ware is Unsanitary

FIRE CLAY is porous, especially so when it is subjected to the severe test of acting as a receptor for hot water, as is the case with baths and lavatories.

The materials that enter into the construction of *So-Called Solid Porcelain* ware are *Fire Clay* and Lead Glaze, the *Fire Clay* being painted on the outside and glazed on the interior.

The difference in the expansion and contraction of these two materials causes the *glaze* to *crack* or *craze*, when in the ordinary use of the bath extreme hot water is run into the fixture, thus allowing the water to seep through into the porous body. Each time thereafter the bath is used the expansion caused by the hot water opens the *cracks* and the *porous body* absorbs the dirty water until finally the bath becomes *water logged* and *unsanitary*.

Fire Clay absorbs oily water more quickly than clean water, thus making the *crazed lines* in the glaze of *clay products* more discernable, owing to the darkening of the *porous clay* body underneath.

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"ALEXANDRA" WARE has been designed to overcome all of these defects and at the same time to supply the demand for high class, artistic bathroom fixtures.

"ALEXANDRA" WARE is **porcelain enameled inside and out**, made in two parts; **cannot craze or crack**, is made of specially prepared iron with which is united a **perfect enamel of porcelain**, in such a manner that the ratios of expansion and contraction are equal.

"ALEXANDRA" WARE is perfect in sanitation, artistic in design, practical in construction, easy to instal, and moderate in cost.

Our Catalogue F
shows 48 Patented
Designs in
"ALEXANDRA"
WARE.

The Standard Ideal Company Ltd.

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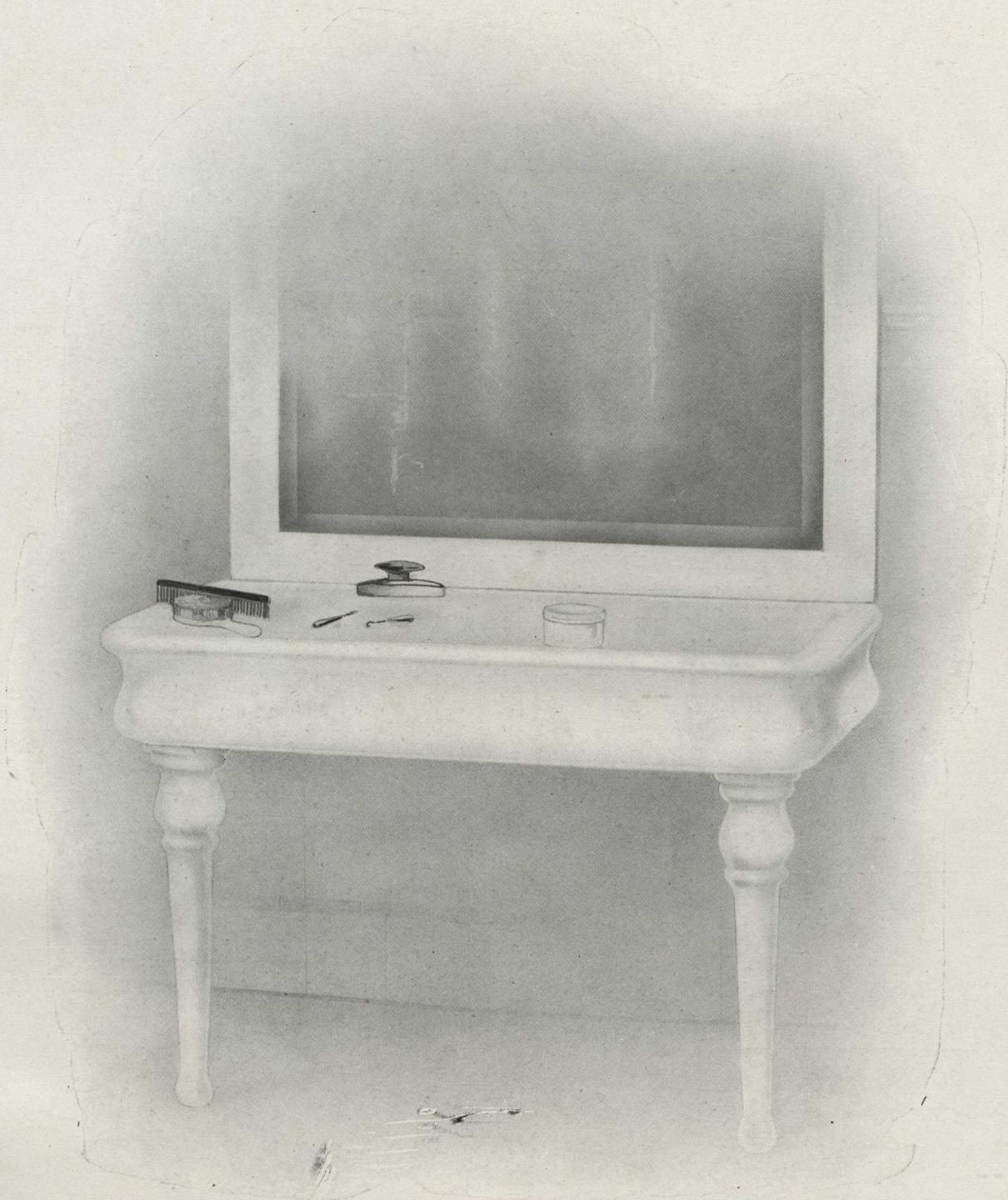
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ALEXANDRA
WARE

“Alexandra” Toilet Tables

THE COMBINATION of *utility* and *beauty* in design, is a most pronounced feature of “ALEXANDRA” WARE. The importance of the equipment of the modern bathroom is fully appreciated by every architect, and designs in “ALEXANDRA WARE” have been provided to satisfy every possible demand for useful, artistic and sanitary fixtures. The “ALEXANDRA TOILET TABLE” is one of the many high class fixtures that excels in every point of comparison.



“ALEXANDRA WARE”—PLATE F. 091.—FIRST GRADE ENAMEL TOILET TABLE, WITH ENAMEL LEGS AND NICKLE-PLATED WALL SUPPORTS. DIMENSIONS—LENGTH, 42 INCHES; WIDTH, 24 INCHES.

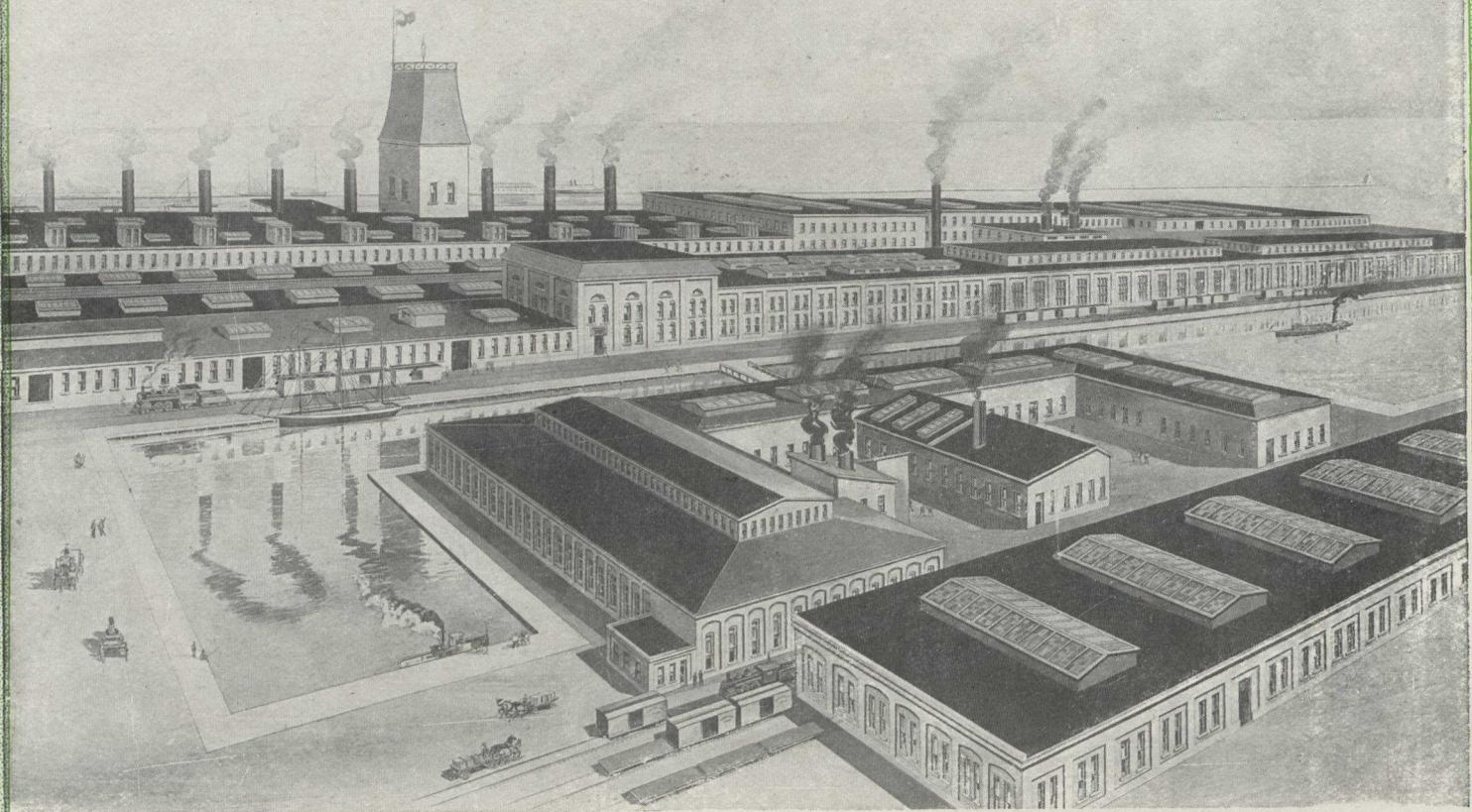
“Alexandra” Manicure Tables

OWNERS OF FINE RESIDENCES invariably give as much or more attention to the *bathroom* than to any other individual room in the house. The fixtures of *that* bathroom must not only be *sanitary*, but in design they must have *artistic lines* and *aesthetic proportions*; in color they must be a pure, *snowy white*, to give the effect of *purity* and *cleanliness*. The bathroom should be the toilet room, in fact, as well as in name. The place for the *Manicure Table* is in the bathroom, and this fixture should be of that beautiful white enamel ware, as well as any other fixture. The model bathroom is not complete without an “ALEXANDRA MANICURE TABLE.”



“ALEXANDRA WARE”—PLATE F. 093.—FIRST GRADE ENAMEL TOILET TABLE, WITH MANICURE BASIN, NICKLE-PLATED COMBINATION SUPPLY AND WASTE FITTINGS, WITH CHINA KNOB AND INDEX, 1 1-4 INCH ADJUSTABLE “P” TRAP ON WALL, NICKLE-PLATED BRASS FRAME AND LEGS. DIMENSIONS—LENGTH 33 INCHES; WIDTH, 18 INCHES; BASIN, 6 INCHES.

ALEXANDRA WARE



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The Largest Exclusive Cast Iron Porcelain Enameling Works under the British Flag.

500 HANDS EMPLOYED.

CAPACITY 110 TONS OF IRON MELTED DAILY.

The Standard Ideal Company Ltd.

MANUFACTURERS OF CAST IRON PORCELAIN ENAMELED SANITARY WARE

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CONSTRUCTION

A · JOURNAL · FOR · THE · ARCHITECTURAL
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INTERESTS · OF · CANADA



Vol. 4

TORONTO, JULY, 1911.

No. 8

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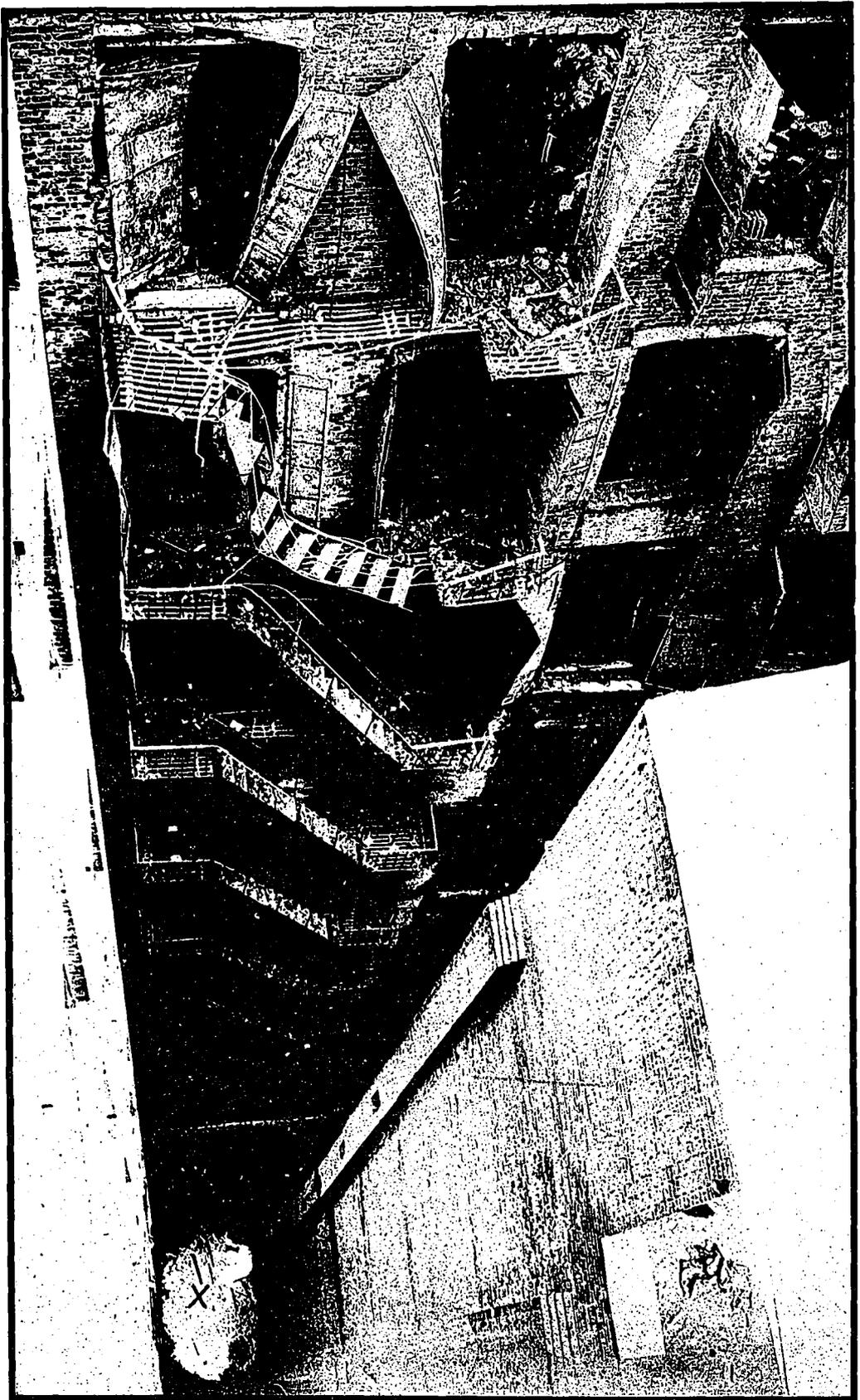
Saturday Night Building

TORONTO

CANADA

BRANCH OFFICES

MONTREAL—Board of Trade Building. LONDON, ENG.—Byron House, 85 Fleet St. E.C.

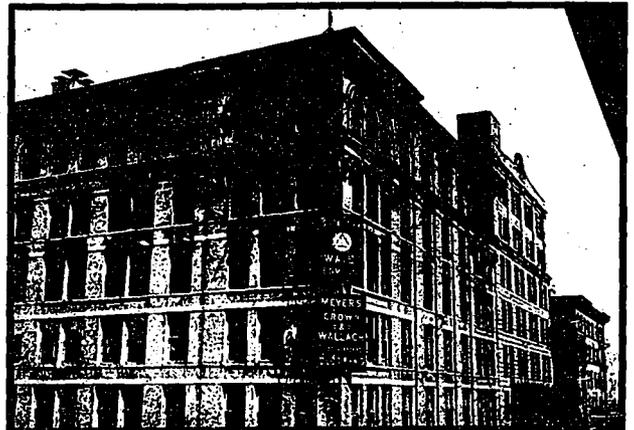


A ten story fire escape in the loft building, Washington Place, New York, in which 141 girls lost their lives. This is a photograph of the fire escape from roof to first story. This miserable excuse of fire escape protection was one of the chief causes of the large number of fatalities in this fire. More than a score of girls fell from these supposed life savers, and their bodies were found in the pit at the bottom of the fire escapes, marked X. These so-called fire escapes are quite equal and in many cases superior in efficiency to what is to be found on our average loft or factory building in either Toronto or Montreal, or in fact anywhere throughout either Ontario or Quebec where large factories are to be found. The City Architect of Toronto, or the Building Inspector of Montreal have to their credit many of such fire escape bungles as the one shown above. The fact that no serious catastrophe has occurred is not a result of the efficiency of the inspection of these departments, but because of good fortune. The fact that this was a ten story building does not change matters a bit, a drop from the fourth or fifth floor would be equally as fatal.

EDITORIAL

Q Horrible catastrophes resultant from official neglect, incompetence or corruption, seldom last long enough in the public mind to effect a reformation or a correction—New York loft building fire, like others, soon forgotten—Canadian cities have many lessons to learn from this appalling affair—Our fire-escapes mere delusions.

NOT LONG AGO a fire occurred in the three top floors of a ten story building of fireproof construction in New York City, in which 141 lives were lost. At the time, the press of the whole continent was ablaze with startling, black-faced head lines about the awfulness and shamefulness of this catastrophe. Editors plied their pens with vigor, pointing out the necessity for better fire protection and more adequate life saving fire appliances. Reporters were busy writing feature stories about the conditions in factories in their own particular city. They interviewed public officials, who gave assurance that buildings under their jurisdiction were properly inspected, and that they were reasonably well equipped in case of fire or panic. They also promised, when pressed by public opinion, to formulate news laws and to bring about the stricter enforcement of laws already in existence. New York City was going to fasten the responsibility. The owners of the buildings were to be prosecuted.



This illustration of the upper three stories occupied by the Triangular Waist Co., taken after the fire, shows how the building proper still remains intact. It is absolute proof that the contents of a fireproof building, filled with inflammable goods, requires life saving and fire fighting apparatus just as much as a non-fireproof building, as far as the protection of life is concerned. If this building had been equipped with a sprinkler system, history would not have had to record such a shameful holocaust.



This view was taken shortly after the fire started. From outward appearances it would seem impossible that a fire could occur in such a structure, that would in a few minutes stamp out the lives of nearly 150.

Union officials were busy demanding laws for the better protection of employees in sweat

shops. The legislature of New York was going to pass a law requiring fire drills in factories, and the Governor of the State of New York promised an investigation.

This sounded good while it lasted, but how soon it was all forgotten. The city of Toronto, which, without question, has the most damnable type of inferior and inadequate flimsy fire escapes on its sweat shops, loft buildings and factories of any city we know of, was even shaken, and it seems that a gentleman, Mr. J. Laidlaw, went to the Fire and Light Committee with a scheme, a plan he had devised for safe-guarding lives in factories and large buildings in the event of an outbreak of fire. He claimed that it is possible to construct stairways and elevator shafts in factories and skyscrapers so that each floor can be shut off from fire for a sufficient time to give any one in the building time to escape. Fire Chief Thompson

endorsed the plan. Ald. Hilton, Chief Thompson and the City Architect were appointed a committee to act with Mr. Laidlaw, dealing with fire protection in factories, but we have heard no more, and from our knowledge of the accomplishments and efforts of such committees, which have been appointed previously on like occasions, we think that a report may get as far as the dump, to which the City Council usually relegates such legislation as might interfere with private interest, about the commencement of 1915.

After the Boyertown disaster, City Architect McCallum of Toronto, together with the factory inspector of the Province of Ontario, were going to mend the regulations governing the construction and equipment of theatres and five cent amusement places, and promised, further, to more rigidly enforce the laws already on the statute books. The Boyertown disaster is now a distant memory, and a visit to any of the five-cent theatres on Yonge Street, in the City of Toronto, is sufficient to give a fair idea of the thoroughness of the building inspection in the City of Toronto. Not only are they without reasonably adequate fire protection, but they are fire traps, boxes with a hole in each end, unventilated pest houses; the odor, due to the lack of ventilation is sickening, and the contaminated air that patrons, mostly youthful, are obliged to take into their lungs, is almost as dangerous and disastrous as the obvious lack of fire protection.



Ninth floor of Loft Building, Washington Place, New York, where a large number of the victims were trapped. Many bodies were found under sewing machines and their postures showed that they were endeavoring to shield themselves from the heat. This illustration forcibly demonstrates the efficiency of modern fireproofing. The twisted pipes and remains of sewing machines show conclusively that a tremendous heat was developed. It further proves that because a building is fireproof, fire fighting and fire protective devices cannot be eliminated. These three stories in which 141 lives were lost remain intact as far as the construction is concerned—the contents fed the flames.

After the Collinwood disaster, just outside of Cleveland, the people of Canada were again aroused over the necessity for fire proof construction in school buildings, together with proper life saving fire apparatus. Again did our press publish thousands of columns dealing with the awfulness of this brutally pathetic disaster. They were full of suggestions, recommendations and demands for new regulations governing the construction and equipment of school buildings. Public officials with whom the responsibility rested for the design and construction and equipment for school buildings, were stirred as never before. They promised an investigation. They promised new regulations. They promised better school buildings and more complete and adequate equipment, but what has been the result. Montreal had to wait for a disaster to occur in one of her own school buildings, in which were sacrificed the innocent lives of little ones of tender years, upon the altar of official neglect and incompetency. Winnipeg, and, in fact, all the western cities, took heed of the horrible lesson, and to the shame of the older Provinces of the Dominion, it may be said that they are erecting a class of school buildings with regard to design, construction and equipment, that is far superior to what is being foisted upon the public in the eastern cities by officials with their settled, antiquated ideas, who have grown feeble and weak-kneed in office. If the infirmities of most of these officials were



The doors leading to the elevator which, owing to the flames that swept around the enclosure, had to be stopped after a few loads had been taken down. On the right of these doors was the iron door, which opened inward at the head of the stairway, and it is claimed that in order to prevent theft, this door was closed, no girls being allowed out without being searched. A fire alarm was given and the girls massed in front of these doors in such numbers that they could not be opened and they were forced back into the flames. This surely indicates that factories, sweat shops and such places should be very closely inspected to avoid in human practice that may be a menace to the safety of their sweated employees.

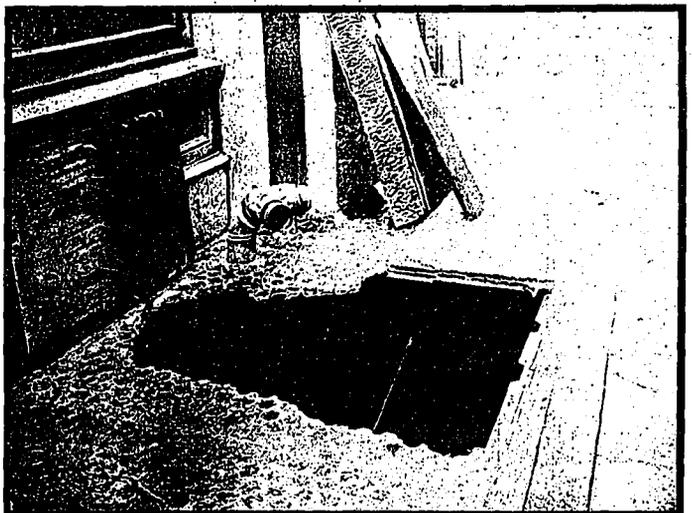
to be measured by the power and intelligence they wield in their office, they should have been pensioned long ago. The City of Toronto, which boasts much of being the educational centre of Canada, also talked much of reforms and improvements, and to quiet public clamor, the School Board promised much of which she has gotten but little. Some additional fireproofing has been done in recently erected schools, and some iron stairs have been put in some of the older fire traps, but from the standpoint of fire equipment and protection against loss of life from either fire or panic, public schools in the City of Toronto, yes, even the Collegiate Institutes, are the worst that we know of, or can find in any city nearly the size on the North American continent. And so might we continue pointing out how soon public officials forget their responsibilities, their promises, when the public mind is at peace. It seems that in every community some horrible, shocking catastrophe must take place before the public wrath is stirred to that point where civic officials will really perform their plain, sworn duty. The public press could do great service in bringing about reforms that

would obviate many of these evils if they were not saturated with politics.

And so after the 141 poor, innocent, sweated employes of this hell perched in the air, have been laid in their allotted number feet of earth, we have passed on to other things, and seem to be oblivious of the necessity of correcting the conditions that that brought about such an extraordinary sacrifice. In the meantime there has been a successful revolution in Mexico. A few air men have been killed and wounded. We have had a murder mystery or two to excite our minds. There has been an international polo match, and the Coronation is approaching. It is truly wonderful how soon we forget.

The enormous loss of life in the Triangle Shirt Waist factory in Washington Place, New York, was the result of conditions that are generally prevalent in buildings of like character in our Canadian cities. The fact that this building was ten stories high does not change matters one iota, as a drop of three or four stories is equally as fatal as a drop from a greater height, with the exception of the fact that the firemen's nets could be brought into service in the former case, while they proved absolutely useless in the latter. A panic may occur in a five story building just as easily as it would in a ten story. Lack of proper inspection, and inhuman conditions imposed upon employes by the employer will bring the same net result in buildings of ordinary height as it would in one of ten stories. Lack of proper protection around elevator shafts, stairways and other means of egress from a building where a large number of individuals are employed would effect the same dire results in case of fire panic in a building half

the height of the one in Washington Place. The fact that we have not many skyscrapers in Canada, at the top which hundreds of people are employed, does not minimize our ever present danger in this respect. The direct



Owing to the lack of proper fire equipment, many of the poor unfortunates jumped from the windows to escape the flames. The New York fire department spread the stoutest life nets they had but the velocity of the bodies was too great and they fell through. The above illustration gives some idea of the velocity of the bodies when they reached the sidewalk. The hole in the pavement was caused by the bodies of fallen victims.

causes of the appalling loss of life in this particular fire has been widely discussed. There was no available fire apparatus on the premises, and while the building was equipped with iron doors, it is claimed the employers were in the habit of keeping them locked, so as to prevent the employes from descending the stairs until they were searched at the end of each day. Against these the frightened victims were packed to the height of a man's shoulder in their effort to gain egress from the building. The fire escapes were nothing more or less than flimsy ladders, and of a type to be found on our loft and factory buildings in Canada. This fire escape system, if it might be termed such, was but of little use, located as it was in a court, and



View showing interior stairway, New York catastrophe, where the charred wooden handrails and steps give evidence of how the flames leaped through the doorway and up the stairway, thus cutting off this means of egress from the building.

tically nothing more than flimsy ladders of high risers and narrow treads, erected at an angle which renders it almost impossible for the average individual, in the normal state of mind, to descend them with any degree of a feeling of safety.

Fire Chief Croker, of New York City, repeatedly warned both the civic officials and the public of the danger of the conditions of the loft buildings in New York City. In an interview given to one of the New York dailies, during January of this year, he made the following statement:—"All fireproof office buildings, and so-called loft buildings used for manufacturing purposes should be equipped with fire escapes and closed in wire mesh to prevent panic-stricken people from falling when they try to use them, and provided with good iron stairs and broad treads and easy risers, with rails instead of ladders." The law, he pointed out, was strict with regard to the theatres, requiring asbestos curtains and exists and all safety devices, besides having a fireman on duty on the stage to guard the prosperous who go to them to find amuse-

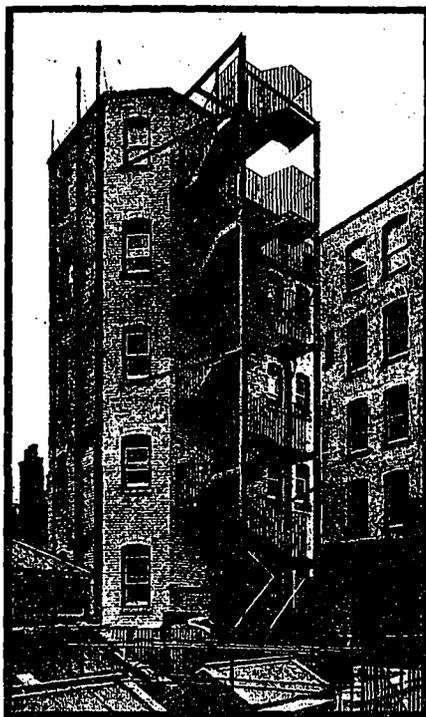
the girls that attempted to make use of this supposed life-saving contrivance were either dashed to pieces in falling from the escapes or were drowned in the pit in the court, which was filled with water from the standpipes. Yet most of the conditions that were the cause of the loss of so many lives in so short a period of time, are those to be found prevalent in most of the factory buildings in Toronto and Montreal.

The building was fireproof, and, as will be seen in one of the accompanying illustrations, the terra cotta fireproofing of the building remained intact, despite the enormous heat to which it was subjected. This demonstrates conclusively that even fireproof buildings, where a large number of individuals are employed, must have fire protection equipment. If this building had been equipped with a sprinkler system not a life would have been lost. If manufacturers find it profitable to equip their buildings with fire sprinkler apparatus to reduce insurance on inflammable merchandise, then should the public surely demand that the manufacturer equip his plant with a sprinkler system for the protection of the lives of his employes. As evidence of the fact that greater value is placed upon merchandise than life, we would point out that warehouses are invariably better equipped with fire protection appliance than are our factories. The type of fire escape required or permitted on factories and loft buildings in both Toronto and Montreal, are the worst type of delusive excuses. They are prac-



Possibly after a few more such catastrophes, people on this continent will become a trifle more serious in insisting upon proper fire protection and proper public inspection, by honest, efficient and public spirited officials. The above is a fire escape on a three story college in England, erected according to the requirements of the London County Council.

ment. "All this," said Mr. Croker, "is as it should be, but the poor devils were forced to work in factories all day and often through the night; the laborers in the loft buildings; the toilers in the sweat shops are much less elaborately guarded, and the risks they take are necessary." He pointed out that the large percentage of deaths from fire throughout the country happened in such places, and that nearly every one of them could have easily been prevented. It is just such conditions as Fire Chief Croker pointed out that was the cause of the Washington Place catastrophe. As a result of his observations at the New York fire, Mr. Croker, who



The above illustration is another type of fire escape in England built in accordance with the requirements of the London County Council. As may be seen, this type of fire escape may be continued to any height, and would be well adapted for high buildings on this continent.

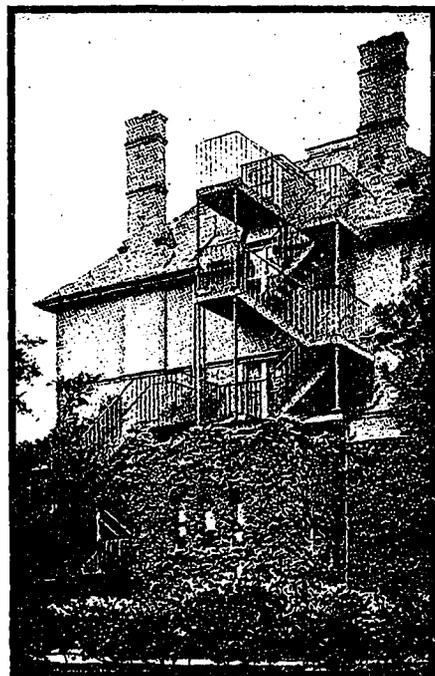
was in the thick of the fight, makes the following recommendations relative to the fire protection that should be provided in every factory and loft building: fire escape landings in the form of balconies at each floor level on the outside of the building, wide enough to accommodate two persons; adequate outside stairways leading right down to the ground; stairways to be enclosed in fireproof partitions; fireproof exit doors; all doors to open outward; no exit doors should be locked or blocked; no fire escape window should have sills above the floor, but each window in reality a door open to the level of the floor, like a French window, to swing outward and back to the wall; each floor should be protected with standpipes, automatic fire alarms, automatic sprinklers, and other approved safety devices. He also suggests a law for the compulsory fire drill in all factories, lodging houses and institutes. There is possibly no man on the American continent who is in a better position to judge just as to the extent of the danger to life from fire in factories and loft buildings than ex-Fire Chief Edward F. Croker, of New York, and these recommendations coming from a man with such broad and thorough experience in fire fighting, should have considerable weight with municipal authorities.

The press of Europe was merciless in its criticism of the causes that led up to this New York calamity, and in Germany advantage was taken of this opportunity

to condemn the skyscraper type of building as largely responsible for such catastrophes. Newspapers were filled with communications and editorials decrying tall buildings and warning Berlin municipal authorities to continue their opposition to the introduction of what is termed in Germany "cloud-scrappers." In fire equipment, as in many other branches of building construction, we have still much to learn from the more set and conservative methods and regulations employed and adopted in the countries of the Old World. Like the United States, our growth in Canada has been and will be exceedingly rapid, and unless we face our responsibilities squarely, and "hold our heads" (so to speak), we shall pay dearly for our slipshod methods, resultant from rapid development. Herr Reichel, Chief of the Berlin Fire Department, in discussing the Washington Place horror, points out that a disaster of such magnitude is practically excluded in Germany, because of the relentlessly rigid building and inspection laws, which are not only enacted, but enforced in that country.

German cities clothe their fire departments with the authority and responsibility of seeing that buildings are genuinely fireproof. According to Herr Reichel, ladders and elevators are useless when fires break out in tall buildings, and that only trustworthy, precautionary arrangements in such structures are balconies at every floor, with substantial steps leading to the street.

We illustrate herewith some fire escapes built in accordance with the regulations of the London County Council. It will be seen that these fire escapes are practically outside iron stairs, with balconies at every floor. It is only fire escapes of this type that are of any practical value in case of either fire or panic. Newark, N.J., not long ago had a factory fire where 26 lives were lost. The result is that the authorities there have enacted a set of regulations that requires a very much more superior type of factory structure.



It will be noted that in these fire escapes erected in England, that they are really external iron staircases, having iron guardrails; gangways to roof; balconies and foot bridges. The above is a fire escape on a private residence.

A factory recently erected under these regulations by the Wolfe Muslin Underwear Company, which has nine floors, is provided with four elevators, four separate stairways, six exits to stairways on each floor, two exits to fire escapes on each floor, and four entrances to elevators on each floor. There is no reason why any manufacturer who finds it necessary to employ a number of individuals at a height of three stories or more should not be enforced to provide it with such adequate means as shall make it reasonably safe.

These things have occurred in other cities, and we here, so far away, do not feel the real horror and sting of such calamities, but why not take heed and profit by these terrible lessons that others had to be taught, or, must we wait until some such catastrophe occurs in our own midst; until we can see with our own eyes the long rows of charred remains being viewed by thousands of weeping and wailing mothers, brothers, sisters, fathers and friends, trying to identify one of their kin. Must we wait until we have to be impressed by a public funeral of forty or fifty unidentified bodies to be thrown together in one common pit marked by a stone common to all. It seems beyond all reasonable conception that it takes such horrible lessons to awaken the public and its servants to the full realization of their stern responsibilities.

Building Returns for May—Month experiences brisk forward movement—Thirty-two centres invest \$18,747,894 as against \$11,324,898 in previous year.

IF BUILDING RETURNS for May can be taken as an indication, activity in the building line throughout the country is veritably rampant. At no previous time, considering the large list of cities reporting, have the gains been greater in number, or the individual increases of more striking magnitude. Comparative figures submitted to CONSTRUCTION show an average gain for thirty-two centres of 65 per cent., the permits totalling \$18,747,894, as against \$11,324,898 in the same period of last year. But seven decreases in all are noted, and only five of these can really be considered as being on the reverse side. Montreal, for instance, where the permits amounted to \$1,703,120, the loss was less than 1 per cent., while in the case of Stratford, the comparative totals represent so little as to indicate practically nothing one way or the other. Saskatoon, with a decrease of 43 per cent., suffered the greatest loss from an investment standpoint. Fort William is next in this respect with a decline of 55 per cent. Ottawa, with a falling off of 17 per cent., is third, and Port Arthur and Peterboro' follow with decreases of 67 and 46 per cent. in order named. Saskatoon, as it was, registered a total of \$489,000, while Ottawa's amount was in excess of the half million mark.

Calgary's heavy investment, amounting to \$3,616,812, shows a remarkable state of development, as does also Toronto's total of \$2,643,755 and Vancouver's amount of \$2,488,050. In fact all sections with the seven exceptions previously noted, experienced a most marked advance. Winnipeg, where new work amounting to \$2,229,480 was undertaken, reversed the less favorable condition of the previous month. Brandon, in the same Province, with an investment of over half a million, is 166 per cent. ahead. In Saskatchewan, Regina, with a total of \$1,036,190, jumped forward 160 per cent.; Prince Albert advanced 740 per cent., and Moose Jaw annexed a gain of 44 per cent. Other Western gains are Edmonton, 118 per cent.; Medicine Hat, 89 per cent., and Victoria, 11 per cent. North Vancouver, while not submitting comparative fig-

ures, indicates by her amount of \$52,068 a very wholesome condition.

A notable feature of the month was the marked reversal of conditions in the Eastern Maritime district. Halifax, Sydney and St. John, which were behind the two previous months, are all on the "upside," the former noting an advance of 207 per cent. and the latter two places gains of 378 and 30 per cent. in order named.

In Quebec, aside from Montreal's total and the figures of Westmount, which gives a gain of 23 per cent., statistics are unavailable, although it is definitely known that Quebec City and a number of the smaller municipalities undertook a substantial amount of work. This also is true of other unheard-from centres in the various other Provinces, many of which are establishing new records with each succeeding month.

As to the immediate outlook, it might be said that at no time in the past has there been so much important work in prospect. June, July and August should record tremendously large totals, although labor troubles which threaten at the present time might interfere to some extent with operations in one or two important centres.

	Permits for May, 1911.	Permits for May, 1910.	Increase, Decrease, per cent. per cent.	
Berlin, Ont.	\$55,200	.....	.....	.....
Brandon, Man.	621,428	\$232,990	166.71	.....
Brantford, Ont.	60,823	25,805	136.09	.....
Calgary, Alta.	3,616,812	525,066	588.83	.....
Edmonton, Alta.	504,425	231,055	118.31	.....
Fort William, Ont.	116,375	259,230	.....	55.11
Guelph, Ont.	244,770	18,600	1215.97	.....
Halifax, N.S.	111,450	36,200	207.87	.....
Hamilton, Ont.	539,005	202,625	166.01	.....
Kingston, Ont.	20,470	19,535	4.78	.....
London, Ont.	195,470	87,165	124.25	.....
Medicine Hat, Alta.	77,775	40,949	89.93	.....
Montreal, Que.	1,703,140	1,709,200	.....	.36
Moose Jaw, Sask.	298,950	207,000	44.4.	.....
Nelson, B.C.	16,945	.....	.....	.....
Ottawa, Ont.	538,445	651,150	.....	17.31
Peterboro', Ont.	67,108	124,845	.....	46.25
Port Arthur, Ont.	42,550	131,975	.....	67.76
Prince Albert, Sask.	93,250	11,100	740.99	.....
Regina, Sask.	1,036,190	397,040	160.98	.....
Saskatoon, Sask.	489,000	859,350	.....	43.10
Stratford, Ont.	2,100	4,500	.....	53.34
St. John, N.B.	40,600	31,000	30.97	.....
St. Thomas, Ont.	34,315	33,550	2.28	.....
Sydney, N.S.	124,120	25,928	378.71	.....
Toronto, Ont.	2,643,755	1,870,350	41.35	.....
Vancouver, B.C.	2,488,050	941,570	164.24	.....
N. Vancouver, B.C.	52,068	.....	.....	.....
Victoria, B.C.	287,335	257,290	11.61	.....
Windsor, Ont.	69,790	21,580	223.40	.....
Winnipeg, Man.	2,229,480	2,104,450	5.94	.....
Westmount, Que. ..	326,500	263,800	23.76	.....
	\$18,747,894	\$11,324,898	65.54	.....

PROPOSED FEDERAL AND MUNICIPAL SCHEME FOR TORONTO

A few reasons advanced by John M. Lyle, Consulting Architect of the Civic Improvement Commission, why the projected improvement should be adopted.

TORONTO as at present planned, has neither a civic centre or proper arteries for travel. She is like a large overgrown boy, and like the boy she is just commencing to feel her growing pains. Many of us who are familiar with the great continental cities are praying that the city fathers will take a leaf out of their books, and re-plan the city before it is too late. The Civic Improvement Committee is now attempting to devise ways and means to bring about this result. The Plan Committee, a sub-committee of the General Committee, is actively engaged in not only drawing up a scheme for the improvement of certain sections of the city proper, but is also at work on the general plan of comprising the territory within a radius of eight miles from the City Hall. The Committee, with the approval of the Board of Control, deemed it wise that certain studies of the older portions of the city should be made public from time to time. The above mentioned scheme is the first of these to be placed before the public. It must be self evident to anyone who cares to take the time to study the map of lower central Toronto, that the present layout is very bad. The streets are narrow, and many of them are what may be termed blind streets—not in the real sense streets at all. There is not a through street of any length from Spadina Avenue to Yonge Street. The whole intervening territory is honeycombed with blind arteries. It is true, that there is sometimes an outlet for traffic along a more or less direct line, but such is not always the case. The result of this planning has been to force the travel along three principal streets—Yonge Street, Queen Street and King Street. Yonge Street by reason of its great length, and also because of the fact that it forms the artery of traffic connecting with the numerous towns directly to the north of Toronto, has become the principal business thoroughfare; and in that it is a very narrow street, the congestion of late has become most acute. If present conditions are not remedied, in twenty-five years' time the situation will become intolerable. In order to relieve this congestion it has been suggested that additional through streets should be developed. Diagonal boulevards should be cut through in a northeasterly direction and also in a northwesterly direction, and Terauley Street should be widened and cut through to link up with Davenport Road, so as to give a direct line of travel to West Toronto. Perhaps the average citizen does not fully realize the great injury to business, the great loss of time and economic waste, that is occasioned by a congested district. If there was any possible way for computing the lost time due to congestion in street traffic the figures would surely be startling.

Directly interested in the relieving of congested pedestrian traffic is the shop keeper. With inadequate sidewalk accommodation, there will be no room for the prospective purchaser to stand and admire the tempting goods displayed. Everyone will be carried along with the rush the throng. Perhaps this is one reason, even to-day, why Toronto shop keepers, with but very few exceptions, dress their windows so badly. As it is, the country store idea prevails in the case of ninety-nine per cent. The practice of putting as much and as many kinds of articles as can be crowded into a limited space evidently being the popular conception of an attractive display.

On examining the present plan of lower Toronto, we find that instead of having numerous wide arteries in the lower section where the great bulk of the business is transacted, we have comparatively few arteries, and many long blocks. For instance, the block between Yonge and Bay Streets is a long one and the block between Bay and York Streets a longer one still. With increasing office buildings of importance, an enormously heavy increase in foot traffic is bound to come. It would therefore seem very necessary that new business streets should be opened up in this section. A fine new business street cut through from Front to Queen Streets, having the new Union Station at one end and the proposed Federal and Municipal Squares at the other, is one of the suggestions embodied in the Civic Improvement Committee plan—to give Toronto a civic centre and to relieve the aforementioned congestion. The interior of the blocks affected by the cutting of the proposed avenue constitute one or subsidiary buildings of little or no value. The new frontages given by the avenue as planned would be immensely valuable: and the city having the right to buy 200 feet in addition to the expropriated line, could then re-sell to advantage. The loss of present frontage in cutting through this avenue would be 1295 feet; while new frontage would be 3970 feet, thus netting a gain of 2675 feet.

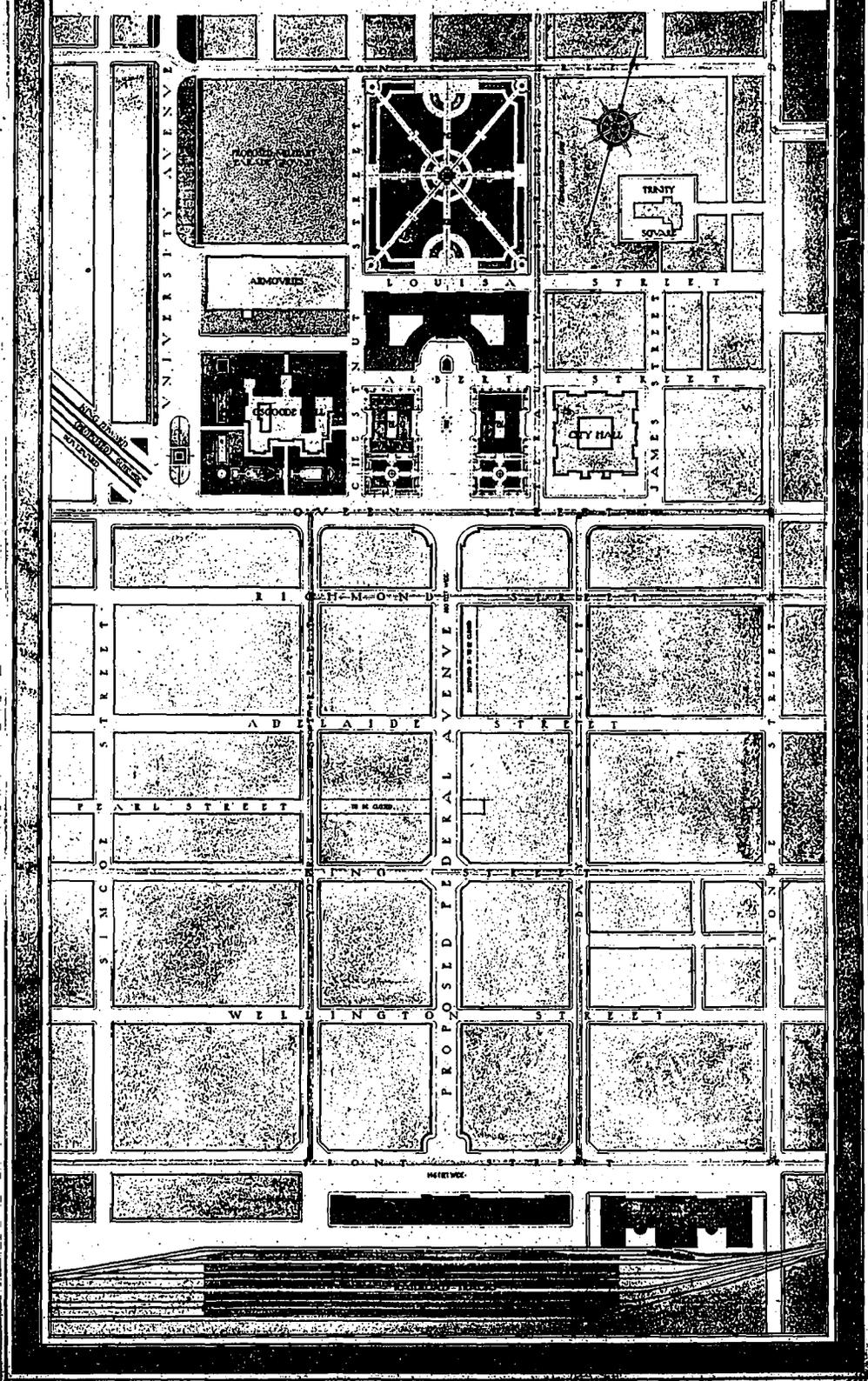
The buildings affected by the proposed changes are, with but very few exceptions, of the poorest possible character: especially is this true of the properties north of King Street. If action is not taken at an early date, the land affected will increase in value to such an extent, that the cost will be almost prohibitive. It is estimated that by the re-sale of lands taken in excess of the expropriated line, and the increased assessment due to the greatly enhanced value of the lands on the proposed new avenue, the city would be enabled to finance this portion of the scheme with practically no cost to the tax payers. If the properties in St. Johns Ward were expropriated, they ought to carry themselves until the city and Governments are ready to erect their new buildings.

Reasons for Immediate Action.

Plans are now being prepared for the new Union Station. It is also probable that the Dominion Government will erect buildings such as the new Customs House, Post Office, Receiver General's Offices

PLAN SHOWING PROPOSED FEDERAL
AND MUNICIPAL SQUARES
AND FEDERAL AVENUE

CIVIC IMPROVEMENT COMMISSION
CITY OF TORONTO.
JOHN M. LYLE
CONSULTING ARCHITECT.



and numerous other buildings in the near future. The City Hall is crowded to the attic and more accommodation for the different departments will have to be provided. The Provincial Government should certainly aid in the beautification of the Capital City. There are many offices of the local government scattered throughout the city. These could possibly be grouped in a building or buildings conveniently situated between the Parliament Buildings, the City Hall and the business district; for example, the Temiskaming and Northern Ontario Railway Commission, the Hydro-Electric Power Commission, the Department of Education. There are many departments of the Civic Administration which will need accommodation in the near future, and which could not be better placed than between Osgoode Hall and the City Hall; for instance, The Registry Office, the Law Courts. Both of these will have to find accommodation outside the City Hall.

The military authorities are also sadly in need of a parade ground. If the land immediately north of the Armories were procured for city purposes, it could be used for a playground in the day time. In conclusion, it may be said that this scheme is not only aesthetic in character but practical to a high degree. If carried out as planned, it will give a splendid setting for our public buildings; give open spaces and plaza for public demonstrations; eliminate slum conditions now existing in St. Johns Ward; relieve the downtown congestion; give a fine new business street to the city—in short, a head, a heart, and a pulse to Toronto.

Description of Proposed Scheme.

According to the projected scheme, it is proposed to lay out a civic centre between the blocks bounded by Queen Street on the south, Agnes Street on the north, University Avenue on the west, and Terauley Street on the east; the City Hall, Osgoode Hall and the Armories to form part of this scheme. An avenue 100 feet wide is to be cut through from Queen Street to Front Street, thus affording direct access from the new Union Station to Queen Street and thence to University Avenue, and Terauley Streets. Directly at the head of this new avenue would be grouped the proposed public buildings both governmental and civic. Two of these buildings are shown flanking a fine plaza 200 feet wide, at the head of which a more important building is shown on the main axis of the proposed new avenue. The idea of this arrangement being that space for great public demonstrations would be afforded, and that the buildings facing this plaza could be seen to advantage. The incoming traveller's first impression of Toronto would be materially enhanced by the splendid vista opening up before him. It is proposed that this Federal Avenue should be preserved for vehicular and pedestrian traffic only, and that no street car lines should be allowed.

The buildings shown grouped about the plaza have been placed on a line with Osgoode Hall. Queen

Street is shown widened to a width of 108 feet; Terauley Street is shown widened to a width of 86 feet. Directly behind the Armories, it is proposed to form a military parade ground on the ground on the land bounded by University Avenue, Agnes Street, Chestnut Street and Louisa Street, and on a line eastward with this parade ground is shown an open square or garden. The former could be used as a playground when not in use by the militia; the latter as a breathing spot for the worker, and as a setting to the public buildings directly in front.

The commencement of the proposed King Edward Boulevard is shown at the intersection of Queen, Simcoe Streets and University Avenue. This Boulevard is to be 132 feet wide and is to have four street car tracks, two for local and two for rapid transit service. The new Union Station is shown set back 66 feet from the present line of Front Street, giving a width of 146 feet in front of the station. The proposed public building shown to the east of the station is set back on the same line, and on its eastern and western sides is set back 40 feet.

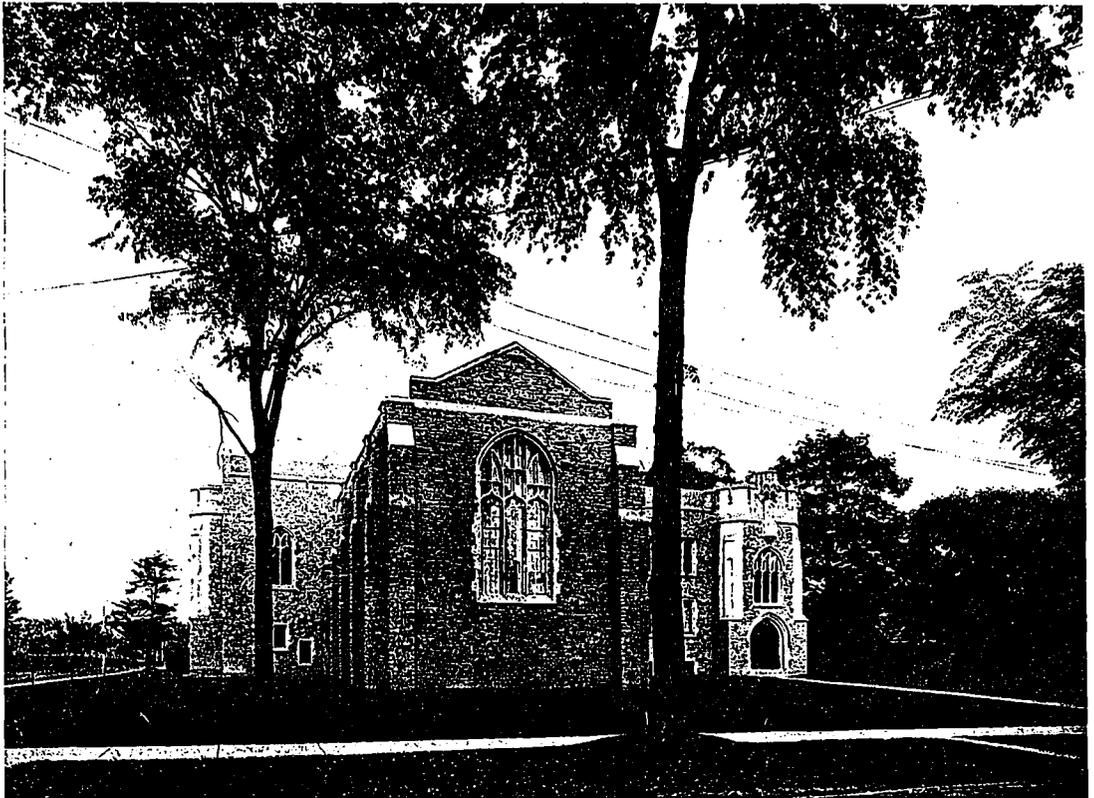
In the property affected by these proposed changes there are only two buildings of importance—namely, the Manning Building on Queen Street, and the Queen's Hotel on Front Street. Ninety per cent. of the buildings affected are of a very ordinary character, and in the Ward District, and immediately below the Ward ninety-nine per cent. are of the cheapest possible description.

The time would seem to be opportune to make this great improvement, which would give to Toronto a civic centre worthy of its position as one of the leading cities in Canada.

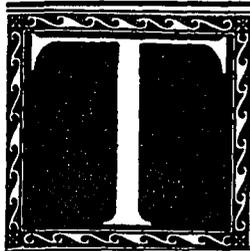
THE UNATTRACTIVENESS of most suburban development lies, first in the fact that the land is hopelessly sub-divided into uniform and monotonous units admitting of little or no variety, excepting by the expenditure of money which the investment does not justify; hence the attempt to attain variety by stunts and detail, much of which is tawdry. Secondly, the designing of these houses, which has been mostly in the hands of speculators and promoters, has not usually been entrusted to architects of skill, and has not been developed with the idea of elevating and developing public taste, but rather of catering to passing fancies. Assuming four lots, each fifty feet wide, if, instead of building, as usual, four houses with a narrow frontage and extending back into the lot—all in a row, with a small garden in front, a contracted space separating them, and ugly yards in the back—it were planned to place the two end houses with narrow fronts, and extending back, and the two middle houses set back and designed with broad fronts, thus forming a court, a composition would immediately be possible, and a better distribution of light, air and grounds—whether for ornamental or merely back-yard purposes—would immediately result without any interference of property lines or of light easements.—John M. Carrere in *Country Life in America*.



Victoria College Library, Toronto. View from the North. Sproatt and Rolph, Architects.



Victoria College Library, Toronto. View from the West. Sproatt and Rolph, Architects.



THE NEW VICTORIA COLLEGE LIBRARY BUILDING, TORONTO

An imposing stone structure, in which line, mass and detail are effectively combined. To control architectural scheme of future buildings.

IF ONE IS TO JUDGE the final results of the architectural scheme which is now being worked out for Victoria College, Toronto, from the new Library Building recently completed, the Board of Regents has indeed a magnificent system of structures in contemplation. Not only is this building unrivalled in architectural character by any structure in the present University group, but as an example of Collegiate Gothic it is possibly unsurpassed by anything that has yet been carried out either in this country or the United States.

Viewed from either the north or west boundary of the open site on which it stands, the building presents a scheme in which admirable proportions, harmony of detail and texture of material, all combined to give a sum total effect that is strikingly impressive. The exterior is carried out in Georgetown gray, Credit Valley ashlar with Indiana limestone trimmings, the tracery of the windows being exquisitely executed, and the buttresses of the large hall of proportions that are beautiful in scale with the general design.

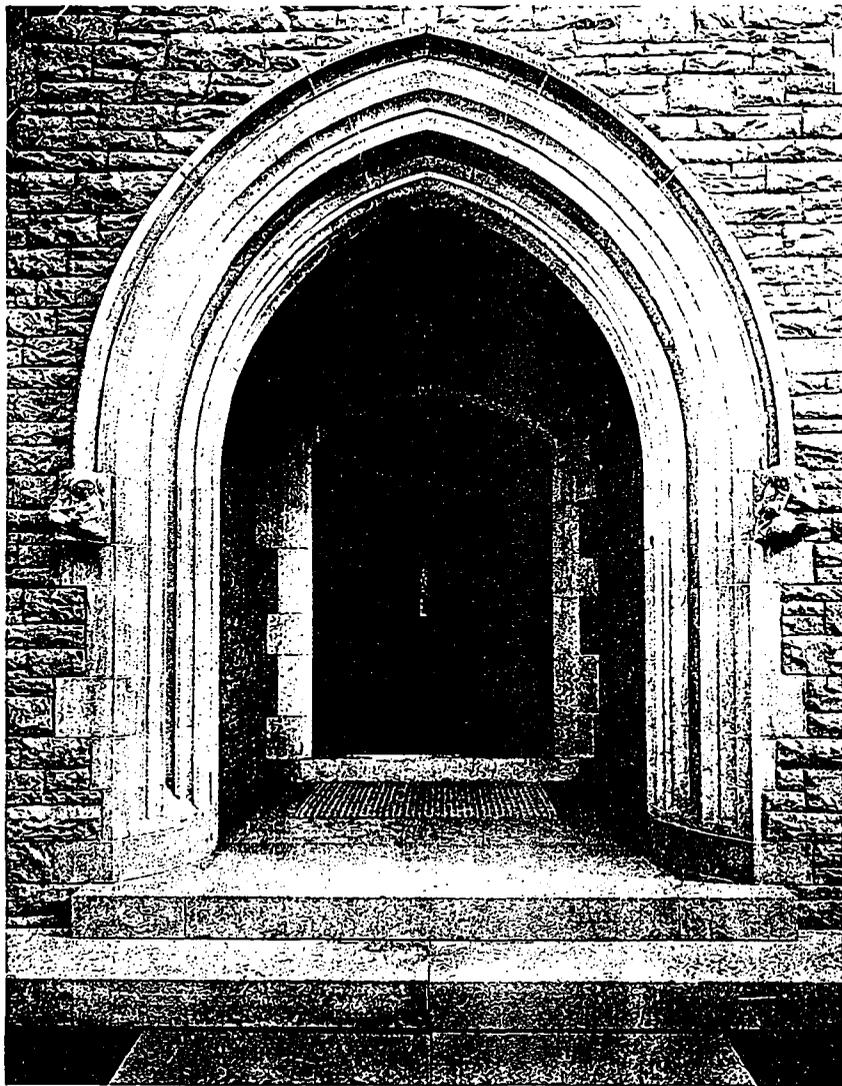
An interesting feature of the decorative work is a series of small individual carved figures terminating the extrados molding of all arch openings. Two of these figures are to be seen in the accompanying view of the north entrance bay, as can also the detail of the heavy oak doors leading into the interior. The entrance bays, which form the dominating feature of the scheme, are similar in motif; the west bay or principal entrance, facing North Drive, having a large statue of Queen Victoria set in a niche dividing the machicolated parapet above the upper window. This statue, which is a most masterly piece of sculpturing, is carved out of Bath Stone, and was designed and executed by the Brommsgrove Guild of Worcestershire, England.

On entering the building, the scheme which unfolds itself is so strikingly simple in its general lines as to cause one to marvel at the degree of architectural excellence that it is possible to attain by mere proportions and carefully appointed detail. Few interiors can be found so decidedly unadorned and yet so decidedly admirable in treatment. It is perhaps the quiet and restful atmosphere and dignity of feeling of the place, so essential in a building of this character, that impresses one the most. The rooms are arranged on either side of a long corridor which forms an open space or rotunda at the north end. Opening from this space to the west is the large hall or men's reading room, a vast interior overlooked by the delivery desk in the rotunda, which is also arranged to control the women's reading room, cataloguing room, stack room and north entrance and staircase. The walls are finished in stucco, and all

woodwork, with



Rotunda, Victoria College Library, Toronto. Looking Towards North Stairway and Entrance. The Delivery Desk to the Right is in Fumed Quartered Oak with Linen Fold Panels. Sproatt and Rolph, Architects.



Detail of North Entrance and Doorway, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

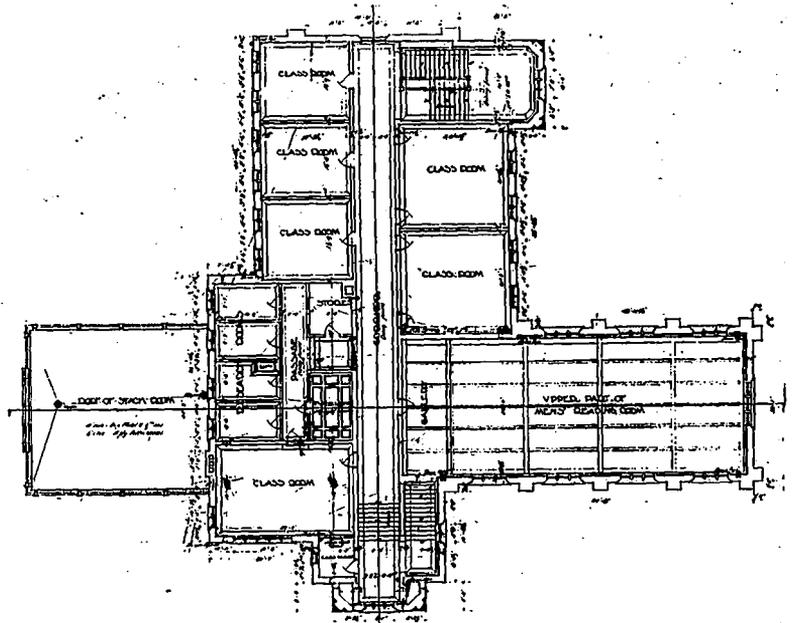


Detail of West Entrance Bay, South Wing, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

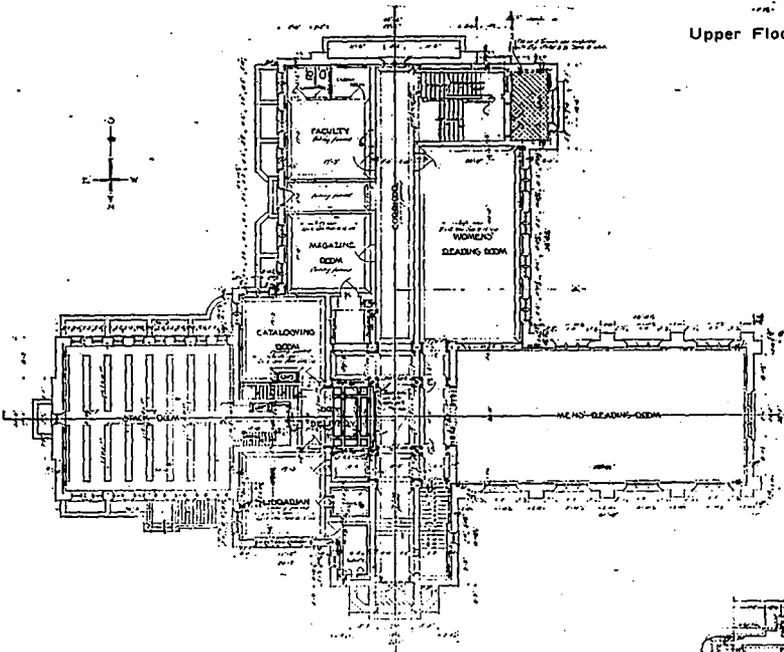
the exception of the ceiling in the large hall, is of brown fumed quarter cut oak; the base of the walls being of marble throughout the ground floor, where the trim is of stone.

In the men's reading room, which is 28 x 80 feet, the character of the scheme depends entirely upon the general proportions, window tracery and ceiling and trusses the latter being carried out in Georgia Pine with a brown solignum finish. Extending across the east wall over the doorway is a balcony which is entered from the upper corridor. This balcony, as well as the pilasters and columns of the main corridor, and the door frames throughout, is of Indiana limestone.

The stair-cases are situated adjoining both entrances. These are con-



Upper Floor Plan, Victoria College Library, Toronto.



Ground Floor Plan, Victoria College Library, Toronto.

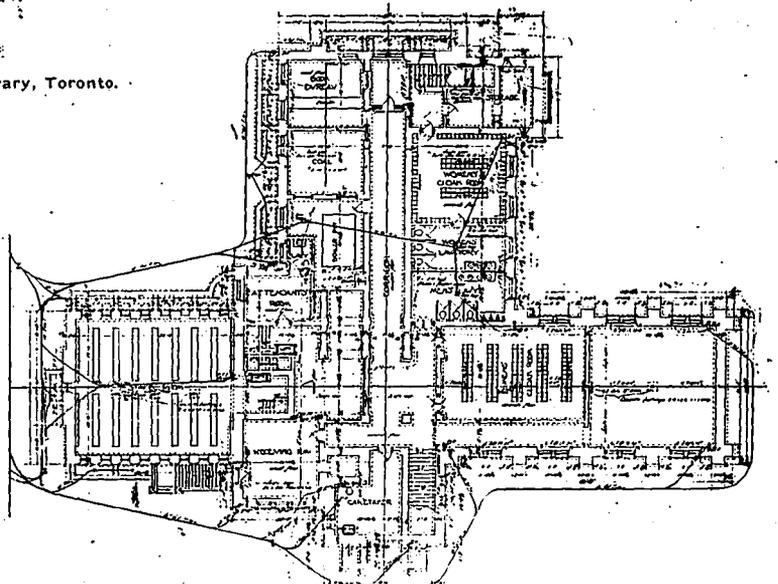
structed of sawn Missisquoi marble of a grayish white texture, the individual steps being of one solid piece 7 in. x 13 in.

In every particular, the building has been most thoughtfully considered, the doors being treated to be in spirit with the general feeling, while the table and chairs, which are in oak stained to correspond with the woodwork, were all made from designs furnished by the architects. An interesting bit of wood-carving is seen in the counter or delivery desk, which is of fumed quarter oak with linen fold panels.

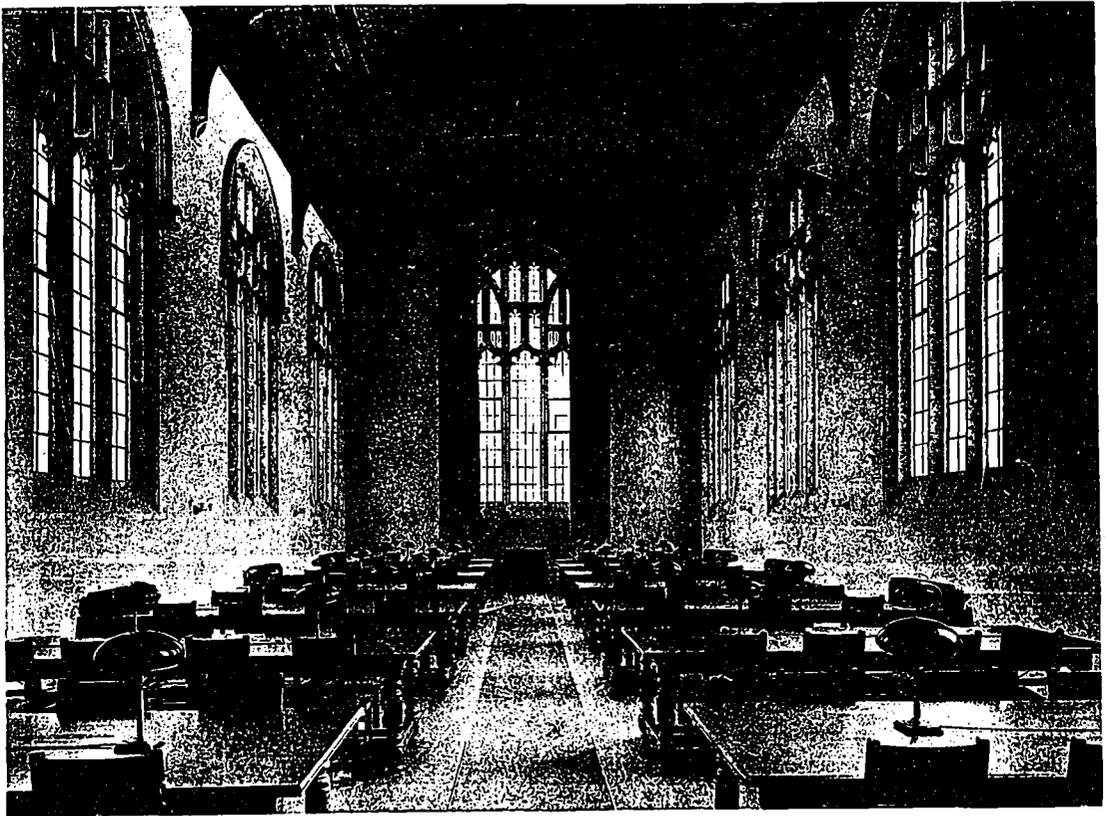
The librarian's room, which has an interesting stone fireplace in Gothic

design, is placed north of the delivery desk while at the south end of the corridor, on the same side, is a good sized magazine room and the faculty room. The latter interiors, like the main reading rooms, have wooden ceilings.

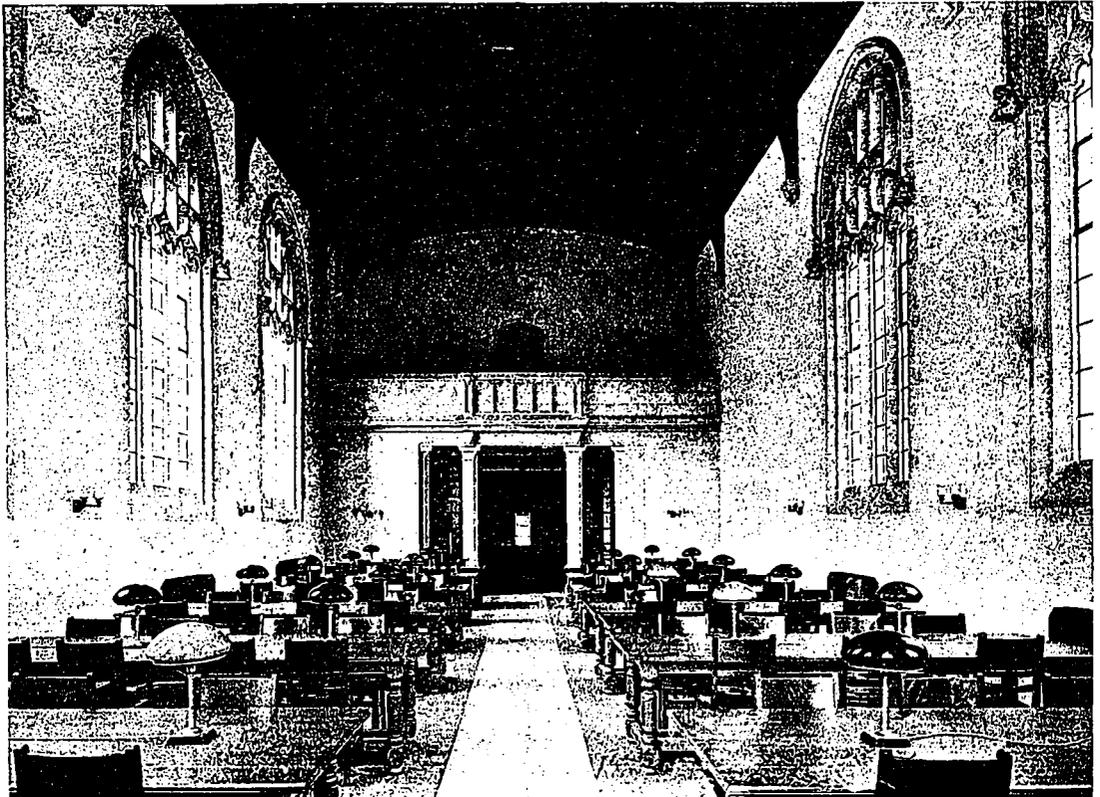
On the upper floor there are two large seminary rooms and a number of small rooms, each furnished with one chair and table for research work, where students can have their books sent up from the stack room and study without interference. The stack room, which has a capacity of 64,000 volumes, is finished with the Sneed System of shelves, and has



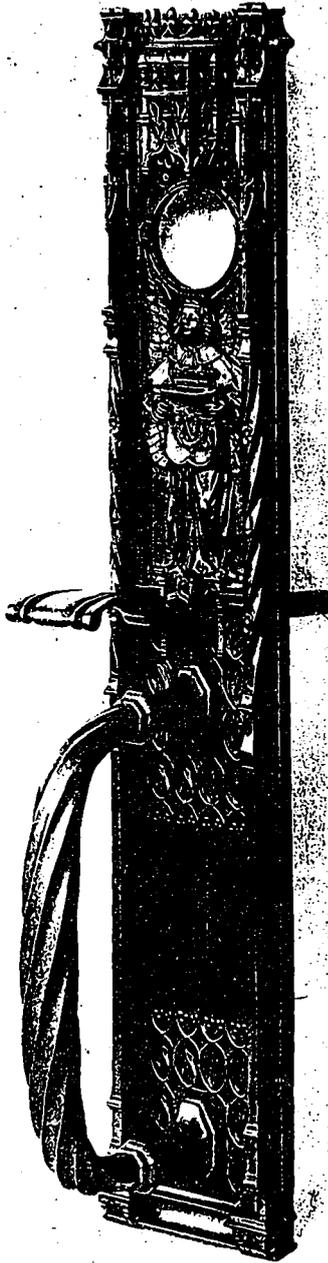
Basement Floor Plan, Victoria College Library, Toronto.



View Towards West Window, Men's Reading Room, Victoria College Library, Toronto, Showing the Roof Scheme and Wall Treatment. Sproatt and Rolph, Architects.



Men's Reading Room, Victoria College Library. Looking Towards the Rotunda and Delivery Desk. The Balcony, with its Supporting Columns, is Executed Entirely in Natural Stone. Sproatt and Rolph, Architects.



Detail of Door Plate, Victoria College Library, Toronto. Designed and Executed in Bronze Gun Metal by the Bromms-grove Guld, Worcester, England. This Type of Door Plate is to be Adopted for the Exterior Doors Throughout.

lighted from both above and below by electricity. The windows of this room are equipped with Hope frame and sash made of steel and filled in with steel and glass doors and veilings, the stacks being English glazing.

In every other case, the windows throughout, both

inside and out, are of stone, there being no wood-work used in any of the openings.

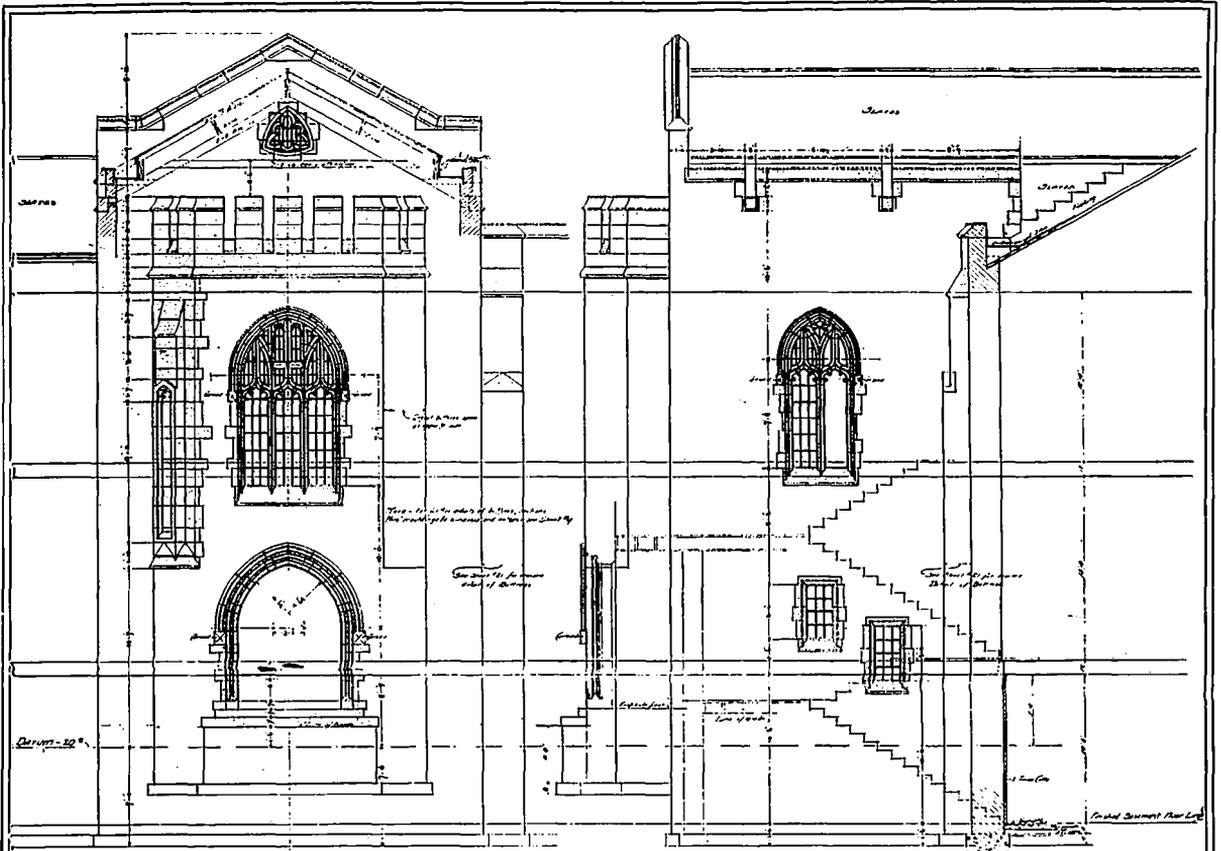
The men's and women's cloak rooms and lavatories are in the basement, which is approached by the main stairs at the north and south end. This part of the building also contains a book bureau and receiving room, as well as caretaker's quarters, attendant's room, boiler pit, a large storage and similar offices.

In planning the structure, the architects have given careful thought to both present requirements and future needs. The stack room can be extended indefinitely along Charles Street, and additional accommodations for the students can be provided by extending the building southward on North Drive. Such additions can be carried out as a natural development of the plan and without sacrifice in any way to the features of the architectural scheme adopted.

Taken in its entirety, the building, either in architectural character or construction, leaves but little room for improvement. The reading rooms are situ-

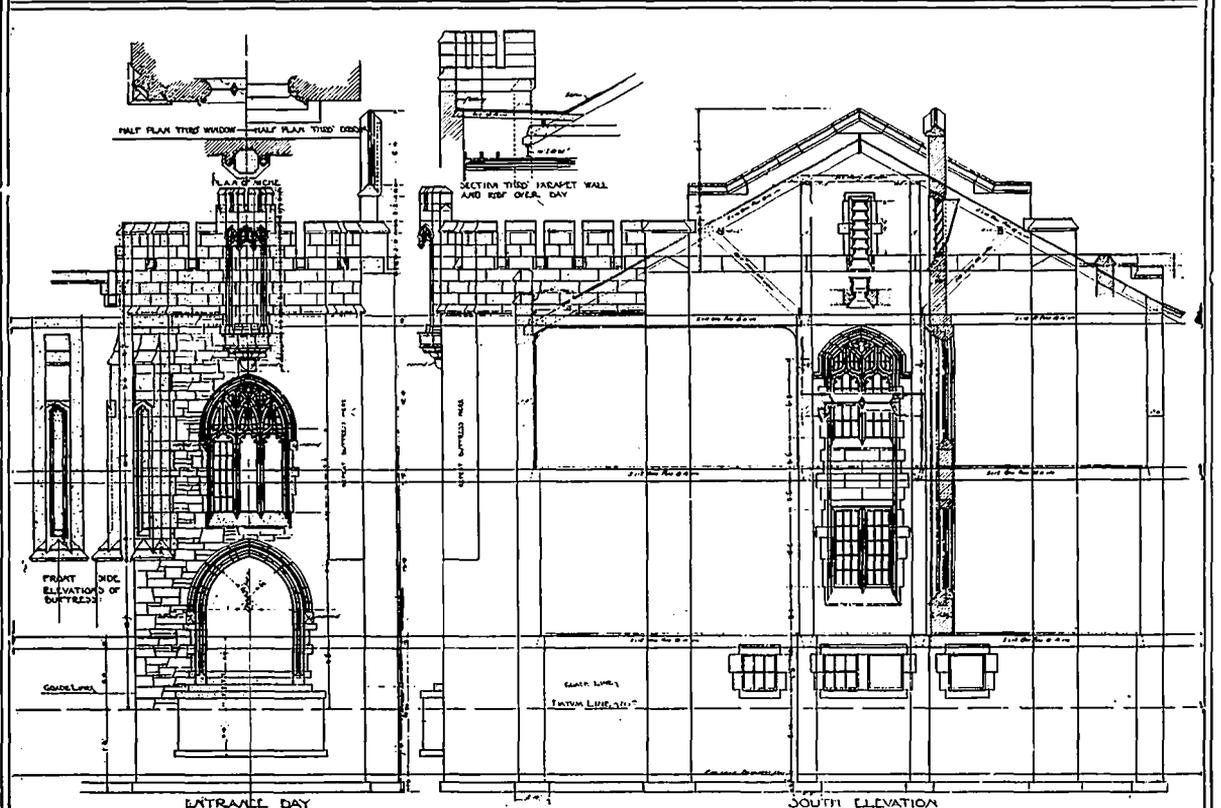


Statue Over West Entrance, Victoria College Library, Toronto. Sproatt and Rolph, Architects.



FRONT ELEVATION NORTH ENTRANCE BAY SIDE ELEVATION AND SECTION THIRD WALL OF MEN'S READING ROOM

Detail of Elevations and Section, North Entrance Bay, Victoria College Library, Toronto. Sproatt and Rolph, Architects.



Detail of West Entrance Bay and South Elevation, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

ated so as to assure perfect quiet and freedom from disturbance from students changing books and from messengers or casual visitors; the stairs, located near the entrances, being placed to minimize as far as possible the traffic along the corridor between the delivery desk and main reading rooms. But few details as regards the architectural scheme still remain to be carried out, one of which is the lighting fixtures which are being made from special designs, while another is the permanent door plates and



Typical Interior Door with Cut Stone Frame, Victoria College Library, Toronto. Sproatt and Rolph, Architects.



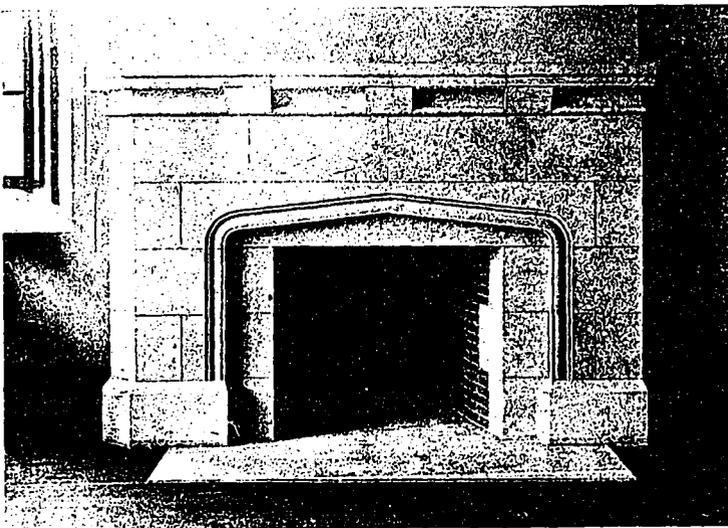
Brass Wall Plate in Rotunda, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

work and plaster, Hoidge Marble Co.; slate roofing, A. B. Ormsby, Ltd.; plumbing, heating and electric wiring, W. J. McGuire, Ltd.; painting, the Faircloth Art Glass and Decorating Co., Ltd.; hardware, steel windows and glazing, Aikenhead Hardware Co.; stack room equipment, Sneed Co., New York.

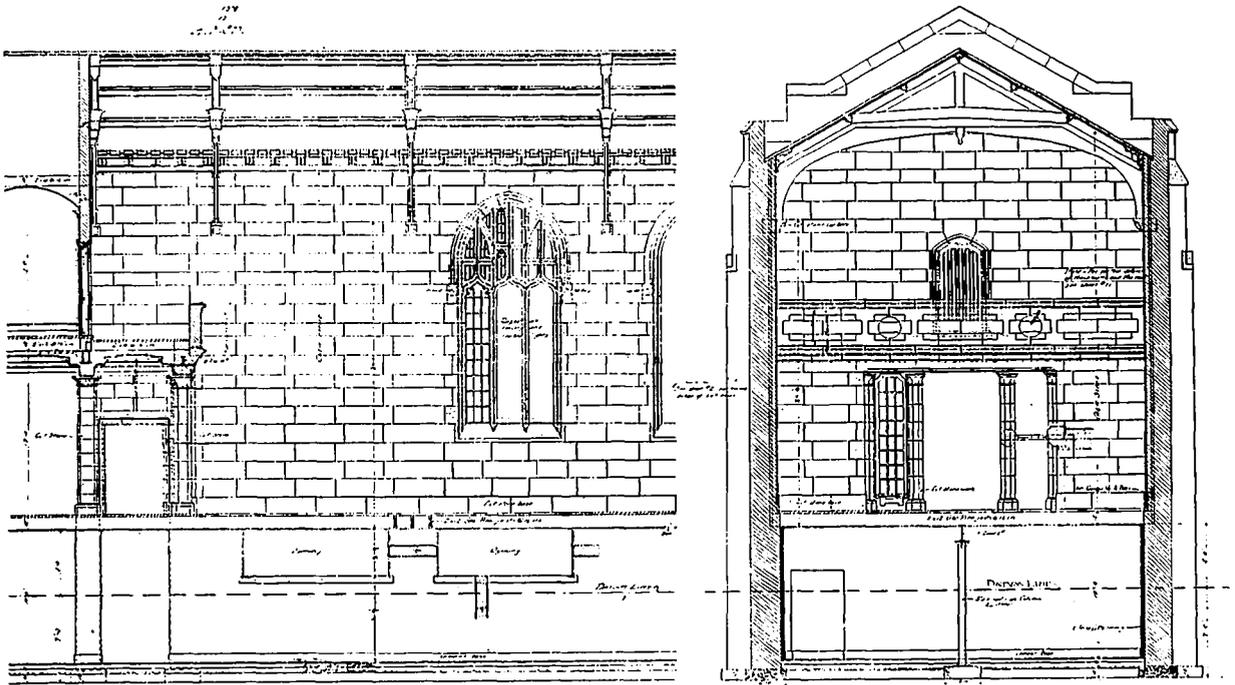
latches to be adopted for all exterior entrances. These door plates, a photographic detail of which is shown in an accompanying view, are a most beautiful example of the metal workers' art. They are made of bronze gun metal, and were designed and executed by the Brommsgrove Guild of Worcestershire, England.

As regards the construction of the building, possibly its best recommendation in this respect is the statement of the underwriters, to the effect that it is one of the most satisfactory buildings of its kind that has yet been brought to their attention.

The architects of the building were Messrs. Sproatt & Rolph Toronto, and the contracting firms identified with its erection were as follows: Masonry, Page & Co.; carpentry, J. C. Scott; marble

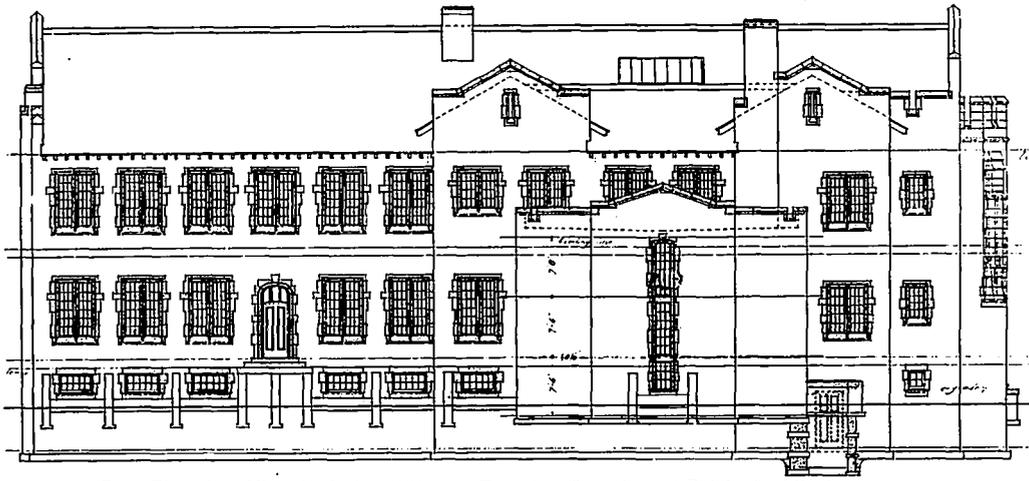


Detail of Stone Fireplace, Librarian's Office, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

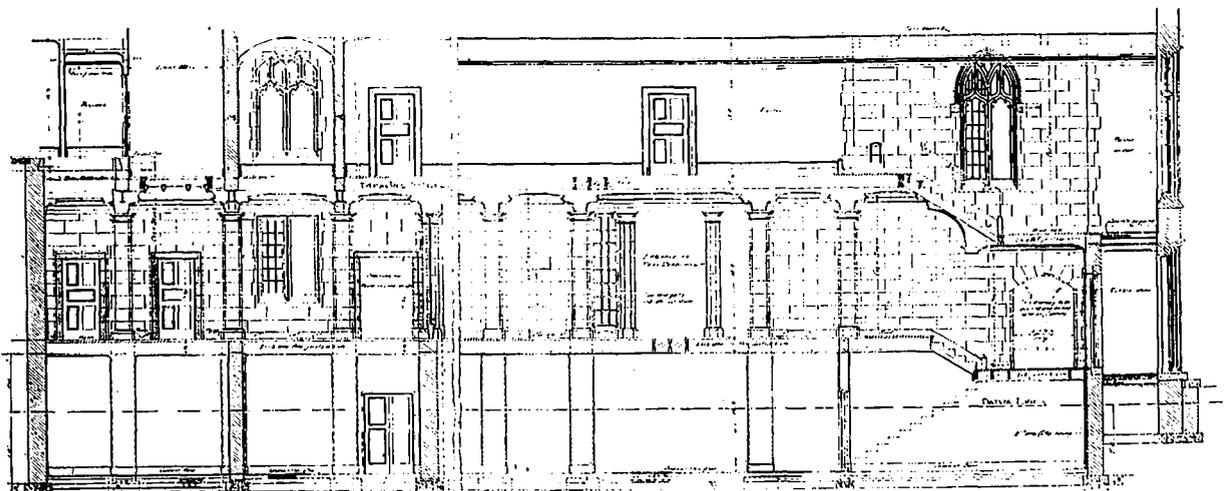


SECTION LOOKING SOUTH MEN'S READING ROOM SECTION LOOKING EAST

Detail of Sections, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

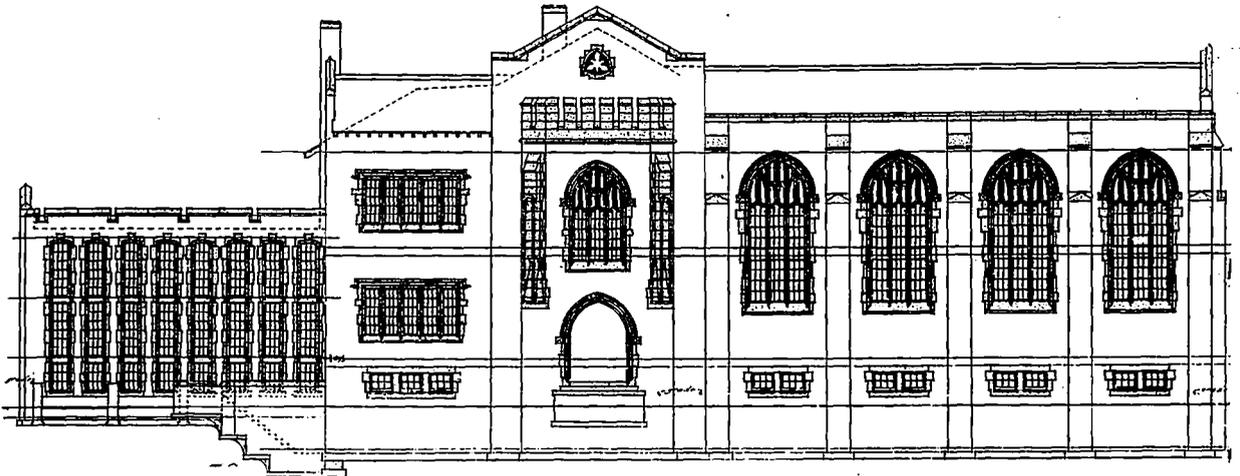


East Elevation, Victoria College Library, Toronto. Sproatt and Rolph, Architects.



SECTION THROUGH HALL LOOKING SOUTH SECTION THROUGH MEN'S READING ROOM WALL LOOKING WEST

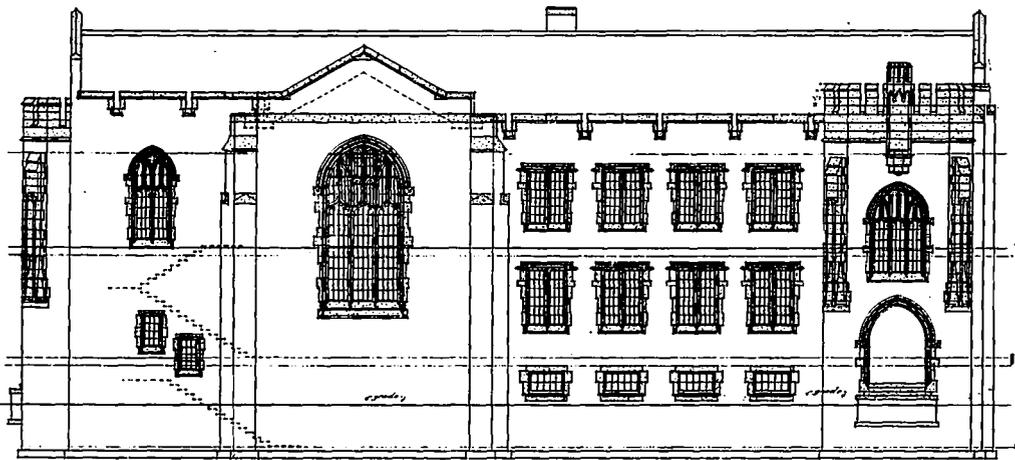
Detail of Sections, Victoria College Library, Toronto. Sproatt and Rolph, Architects.



North Elevation, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

SUPPLEMENTARY ESTIMATES recently brought down in the Dominion Parliament, contain a grant of \$35,000 for a survey of the proposed tunnel under the Strait of Northumberland to connect Prince Edward Island with New Brunswick.

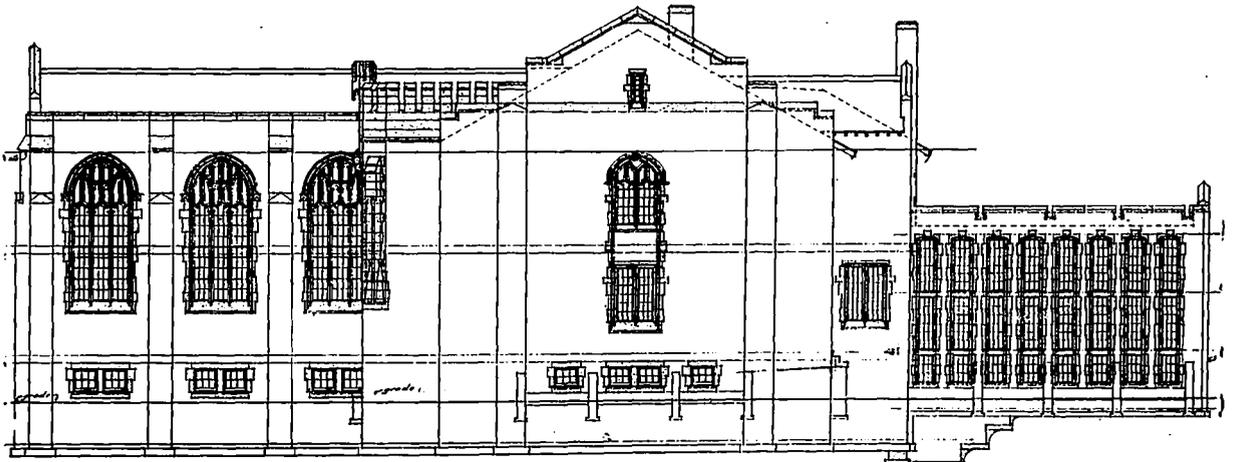
points is 90 feet. An improvement such as is contemplated would infinitely better conditions in Prince Edward Island, in that it would establish an all-rail route to the mainland, and thereby do away with the isolation which more or less obtains at the present



West Elevation, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

The distance between Cape Traverse on this island and Cape Tormentine in New Brunswick, the nearest approach on the mainland, is about 7 miles and the maximum depth of the strait between these two

time owing to uncertain and irregular means of communication, during certain periods of the winter months. The cost of the tunnel is estimated at \$15,000,000.



South Elevation, Victoria College Library, Toronto. Sproatt and Rolph, Architects.

THE CONSTRUCTION AND EQUIPMENT OF THE MODERN GARAGE

Economy is found in the selection of materials and labor saving features such as are the best and most approved.

THE ONE THING to be considered above all others in building a garage is practicality. It must be practical in plan, practical in its construction, and practical in the character of its equipment. No matter, says a recent writer, how beautiful it may look—no matter how it may be finished or how many pretty windows it may have if the car to be housed within scrapes the top in passing in or out, or is jammed in the sides, the garage fails to successfully serve its purpose. Any garage, big or little, is built to protect. If it fulfills its mission it must protect from the weather, from thieves and robbers, and as much as possible from fire. Within the last few years a number of marked improvements have been made in buildings of this type. Features are now being introduced which make for every facility and convenience in the handling, overhauling and storage of cars without necessitating any great additional expense on the part of the owner.

An important labor-saving device in the modern garage is the turn-table. Where the floor space is limited, and where there is no chance to back or turn around, this device is practically a necessity. It is also very useful when the machine is being washed or repaired, as any part desired can be turned towards the light. A common form of turn-table consists of a circular platform slightly dished towards the centre and braced on the under side by heavy ribs. It is supported at the centre by heavy ball-bearing and near the edge by a circular ridge on the lower side of the platform. This ridge rests on several small wheels placed with their axles in standards resting on the bottom of the pit. These wheels prevent the platform from tipping when the cars run on to the turn-table and also act as roller bearings when the platform is turning. A less expensive type of turn-table is one built without a pit. In this case the platform comprising it is placed directly on the floor and does not require any bolts or screws. This type of table is compact and complete in itself, and will not tilt and it can be installed at a very little expense as the only thing needed when installed in the finished garage is the concrete approaches, which can be made at a small cost. If the space in the garage is so limited that it is necessary to turn the steering gear three or four times whenever the car is backed out, the price of one of these tables would be saved in the wear and tear on the tires and the steering gear that otherwise would result.

Where a turn-table is omitted, it will be found advantageous to adopt a sloping concrete floor. This type of floor, which is becoming decidedly popular in many small garages, is so graded that a

slight push will dislodge the car and send it out of the door. In case of fire this would prove to be a big advantage to the owner, for fires generally break out so quickly that there is no time to crank up, and cars must be gotten out without loss of time. The car is kept from sliding while it rests either by setting the brakes or by placing a small wooden wedge under the wheels. In the modern garage, the lack of space generally requires an arrangement that will permit of all the space being utilized and not wasted. It is wise for anyone contemplating building to be sure that he has enough space for future enlargement. Very often more space is desired, and unless provision is made for extension in the original plan it cannot be obtained without considerable expense. The matter of equipment is also something that must be thoroughly considered. One of the most important features to demand attention in this respect is a storage tank for gasoline. This in the interests of safety should be buried outside of the building and the gasoline pumped through a connecting feed pipe into the automobile as required. In this manner a large quantity can always be kept on hand without unduly endangering the property. It is also necessary to have convenient facilities for cleaning the car. A commendable device which is being adopted quite extensively is a swivel washing apparatus. This swivel hangs from the ceiling and the hose is fastened to it so that one can walk around the car and reach all points with ease. Both in the construction and equipment of buildings of this type economy is found in selecting such materials and features as are the best and most approved, and automobile owners are awakening to the fact that unless the garage is fireproof the investment at the best is an uncertain one.

AN UNUSUALLY LARGE NUMBER of big buildings are at the present time projected in the West. Included among them is a \$1,000,000 G.T.R. hotel at Winnipeg, to be known as the "Selkirk," plans for which have recently been approved; and a ten story office building necessitating a like expenditure is to be built by the Confederation Life on Main Street in the same city. The Bank of Quebec has also acquired an important piece of property in Winnipeg on the south side of Portage Ave., immediately opposite the Queen's Hotel, and will erect a modern office building of many stories as soon as the present lease expires. Calgary and Edmonton also have in contemplation a number of important buildings, while a quarter million dollar addition is shortly to be built to the Empress Hotel, at Victoria, by the C.P.R.

CONSIDERABLE INTEREST is being taken by aerial navigators, according to a report from France, in a new substance known as Liege metal, which gives promise of being adopted extensively in the construction of both "heavier than air" and "lighter than air" crafts. It is said to be 40 per cent. lighter than aluminum and has a density of 1.762. Its surface is grayish-white, reflecting rays analogous to those of poorly worked aluminum.

CONSTRUCTION

A JOURNAL FOR THE ARCHITECTURAL
ENGINEERING AND CONTRACTING
INTERESTS OF CANADA



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Vol. 4 Toronto, July, 1911 No. 8

CURRENT TOPICS

A NUMBER OF NEEDED CHANGES in the building by-law of Owen Sound are at present being considered. Two special meetings dealing with the proposed revision has already been held by the city council, and it is expected that a much improved code will shortly be adopted.

A CONTRACT HAS BEEN LET for the Culwulla Chambers, a 13 storey structure to be erected at Sydney, Australia. The exterior construction is to be red open-kiln bricks with polished trachyte piers and freestone dressings. When completed it will be the tallest office building within the Commonwealth.

VISITORS TO THE ORIENT for many years have been impressed with the beautiful tonal qualities of the large bells of native make, used in the monasteries and temples throughout China and Japan. In no country perhaps can one listen to the detonation of bells more exquisitely soft and smooth. This is due to the superior quality of materials used in their manufacture, and also to the absence of iron clappers. The bells are never swung, being always suspended in a fixed frame, and the sound is produced by striking them on the outer edge with a wooden mallet. This brings forth tones that are a marvel of softness and delightfully melodious.

PROPOSED AMENDMENTS to the building by-law of Calgary, shortly to be submitted to the council for ratification, provide for the extension of the business area or fire limits of the city in order to insure a better standard of construction in general. The proposed changes, if adopted, will make it necessary for owners building over six stories, to erect their buildings of fireproof construction, and to fireproof five and six story buildings on the first and second floor, according to each respective height. In all other buildings, mill or slow burning construction will be required, while all tenements or apartments or with three stories will have to be of fireproof construction.

* * *

SCHEDULED IN THE LIST of improvements to be carried out in the Eastern maritime district is a project calling for the extension of the Halifax dry dock to a length of 650 feet. At present the dock, which is 600 feet long, is the largest in the Dominion, and with one or two exceptions the largest private dock on this side of the Atlantic. When the extension is made, it will rank next to the docks at the Brooklyn Navy Yards, which now take priority as to size. Plans for the enlargement were recently filed at Ottawa. It is estimated that the proposed work will cost \$250,000. Other extensions that will make the total length of the dock 800 feet, it is said, will eventually follow.

* * *

FINISHING TOUCHES are now being given to the Portland Bridge, a 1,400 feet concrete structure crossing the Delaware River and forming an important part of the extensive cut-off of the Delaware, Lackawana & Western Railway between New Jersey and Pennsylvania. The erection of the bridge, which costs over \$700,000, and has been twenty-eight months in course of construction, has been closely watched by engineering interests, both in the United States and abroad. It has five spans of 150 feet, and a number of lesser ones averaging 120 feet. The deck of the structure is 36 feet wide and the rails are 70 feet above the low water mark. A trifle over 70,000 barrels of cement and 82 tons of crushed stone were required in carrying the work out.

* * *

GOVERNMENT MADE BRICKS, according to a statement recently given out by the Australian Minister of Home Affairs, will in all probability be used in the new capital buildings to be built at Canberra. The vastness of the projected capital scheme, coupled with the discovery within the new federal area of promising deposits of raw materials for this purpose, has led the Government to the conclusion that the establishment of a brick-making plant on the property would be both highly advantageous and profitable. Sample lots of the clay, which is said to be practically unlimited in quantity, have been sent to both Melbourne and Sydney for tests, and if the results prove satisfactory as expected, the Government will undertake to install a modernly equipped plant.

CONTRIBUTING TO THE FEATURES of interest to engineers visiting England during the ceremonies attending the formal accession of King George will be a modern 1,300 horse power locomotive of the leviathan type, which has just been turned out at the London & Northwestern Crewe Works. The steaming up of the locomotive, which has been christened "Coronation," marks the completion of the five thousandth engine constructed by its makers. It is to be used for the train on which the King and Queen are to travel by the West Coast route on their visit to Wales.

* * *

THE TYPE OF BUILDINGS adopted in China varies in different localities, and depends principally on the character of materials available in the immediate vicinity. A somewhat interesting form of construction, according to U.S. Consul General Samuel S. Knabenshue, is found in and about Tientsin, where the majority of native houses are built of clay and kao-liang. The latter is a plant much like American broom corn, growing to a height of 10 to 12 feet. In erecting a house a rude frame work is set up for the side and end walls, and filled in with kao-liang stalks placed lattice fashion. This is then plastered thickly, outside and inside, with clay, which is smoothed down. The roof is built in exactly the same way. At the end of the rainy season, if there has been any damage to roof or walls, repairs are made, and the hot sun of the late summer bakes the clay to a considerable hardness. The Chinese house is invariably of one story. The houses of the better class of Chinese are built of brick with tile roofs. These tiles are set in clay and such a roof is immensely heavy. In the foreign settlements, of course, the buildings are on European or American models.

* * *

ANNOUNCEMENT HAS BEEN MADE in the House of Commons, Ottawa, of the Government's determination to construct the Halifax & Eastern Railway and to link up other sections of the Province with the Intercolonial Railroad. The estimates submitted call for an appropriation of \$1,000,000 towards the construction of a railway from a point on the Intercolonial Railway at or near New Glasgow, in the county of Pictou, to the town Guysboro, and from the said line of railway at Crossroads County Harbor, to the deep water of said harbor. One million dollars is also asked toward the construction of a railway from a point on the Intercolonial Railway at or near Dartmouth, in the county of Halifax, by way of Musquodobit Harbor and the valley of the Musquodobit, to Dean Settlement, in Halifax County. Toward the construction of a railway from a point on the Intercolonial Railway at or near Alba, in the county of Inverness, to the town of Baddeck, Victoria County, \$200,000 is asked for. These are reported to be only the preliminary appropriations to provide for the immediate commencement of operations and to cover the cost of construction during the current year.

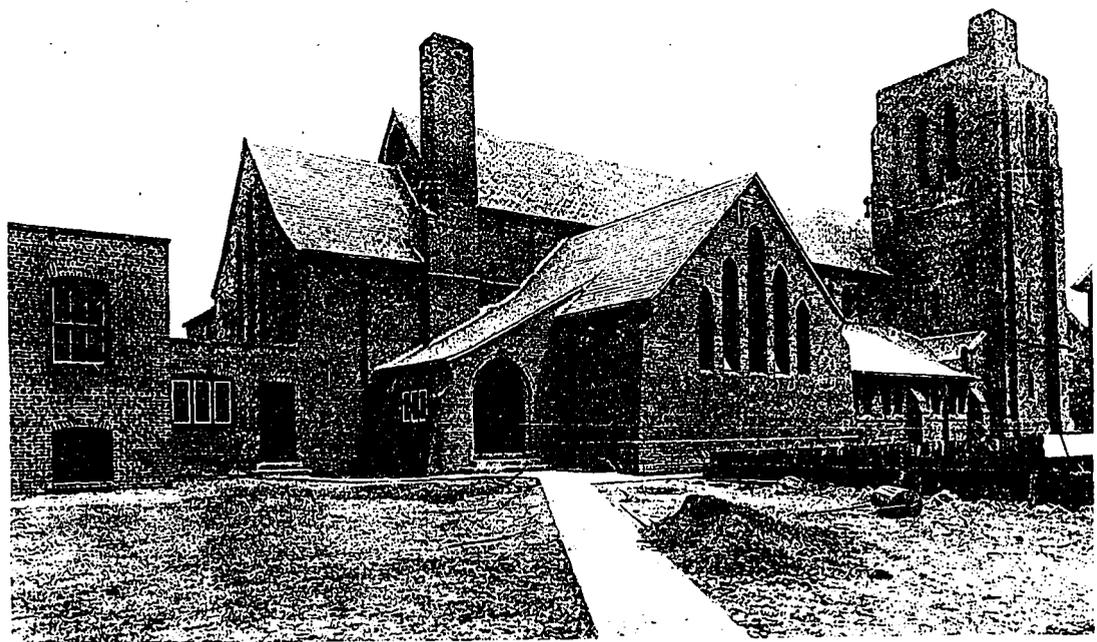
AS THE RESULT of experiments recently made with different classes of bricks, says the "Slate Trade Gazette," it was found that with mixtures of magnetite and marble with kaolin, the refractoriness of the magnetite brick decreases as the amount of clay increases, and the same applies to the addition of lime. With mixtures of alumina and silica, additions of kaolin bring down the melting point of pure alumina considerably below the normal value of about 2,000 degs. Cent., and if quartz be added with 9.1 per cent. alumina, the melting point is reduced to about 1,566 degs. Cent., after which a very small amount of alumina raises the melting point rapidly to 2,760 degs. Cent.—the melting point of pure silica. In the case of silica brick with a certain amount of clay introduced as a binder, it was found that as the amount of clay is increased, the refractoriness rapidly falls off after the added amount reaches six per cent. This points to the desirability of making bricks either very high in silica or entirely of clay. Other investigations indicated the effect of the potash, soda, lime, magnesia, and iron on the melting point of clay. Slight additions of the fluxes named reduced the melting point, the reduction being proportionate to the quantities added.

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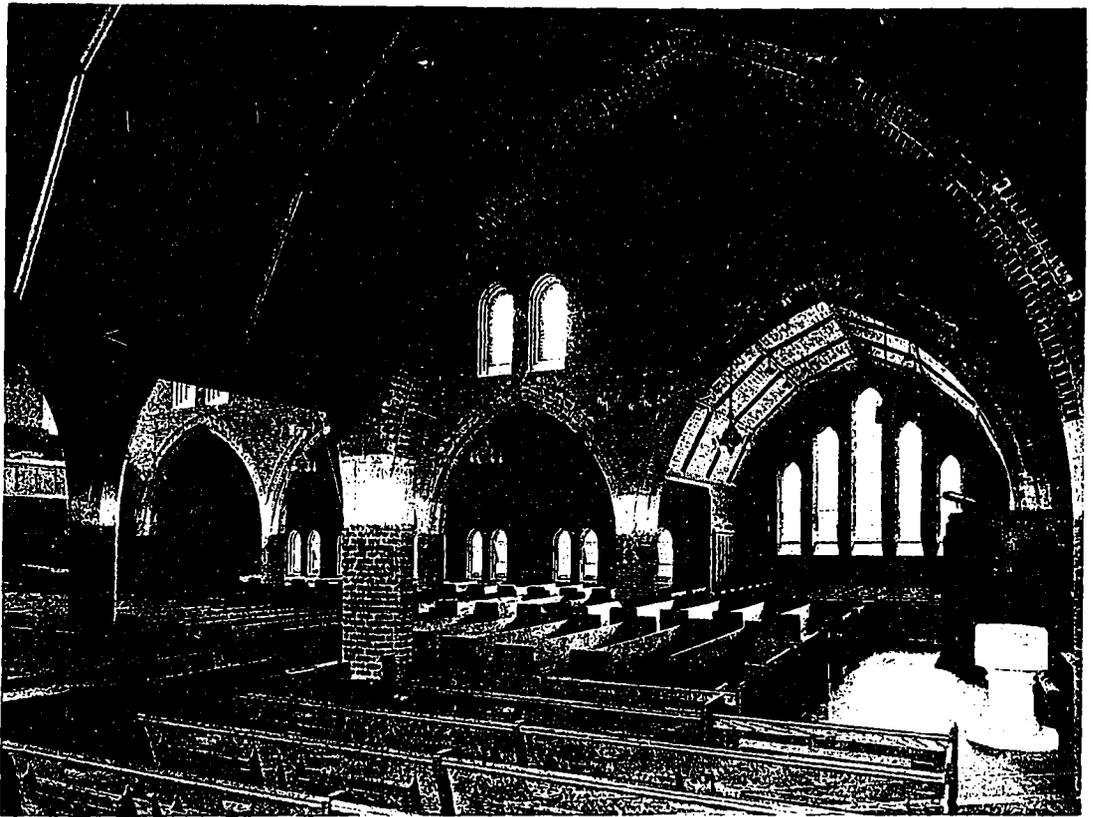
THERE HAS BEEN ERECTED at Govan, Scotland, on the River Clyde, for the Fairfield shipyards, one of the largest, if not the largest, cranes in existence. The official trials of this mammoth appliance have been satisfactory, and it stands in bold relief, a landmark on the River Clyde, where a number of the most powerful cranes in the world had previously been erected. The jibhead of the crane is of the hammer-head type, built on the cantilever principle, and stands 160 feet above high-water level, or to rail level 169 feet. The jib, with a total length of 270 feet, extends 169½ feet outward from the centre and can be utilized within every point of a circle 336 feet in diameter. The motors for operating the gear vary from 60 to 90 horsepower, and are situated in the machinery house at the rear end of the crane, the test load of which is 250 tons. The crane, on slow gear, can elevate 200 tons extended 75 feet along the jib, and on quick gear it can manipulate a load of 100 tons at 133 feet. The maximum load of 200 tons can be lifted from 30 feet below wharf level to 140 feet above, a total of 170 feet. The three controlling brakes are worked by magnetic, mechanical, and hydraulic action. The stability of the structure of the crane depends on four huge steel cylinders, one under each corner of the tower. These great tubes, 15 feet in diameter at their base, are filled with concrete and sunk 74 feet below ground. The heavy materials necessary in the construction of warships can be handled advantageously by this colossal machine. It is expected that it will be utilized first in the completion of a New Zealand cruiser soon to be launched.



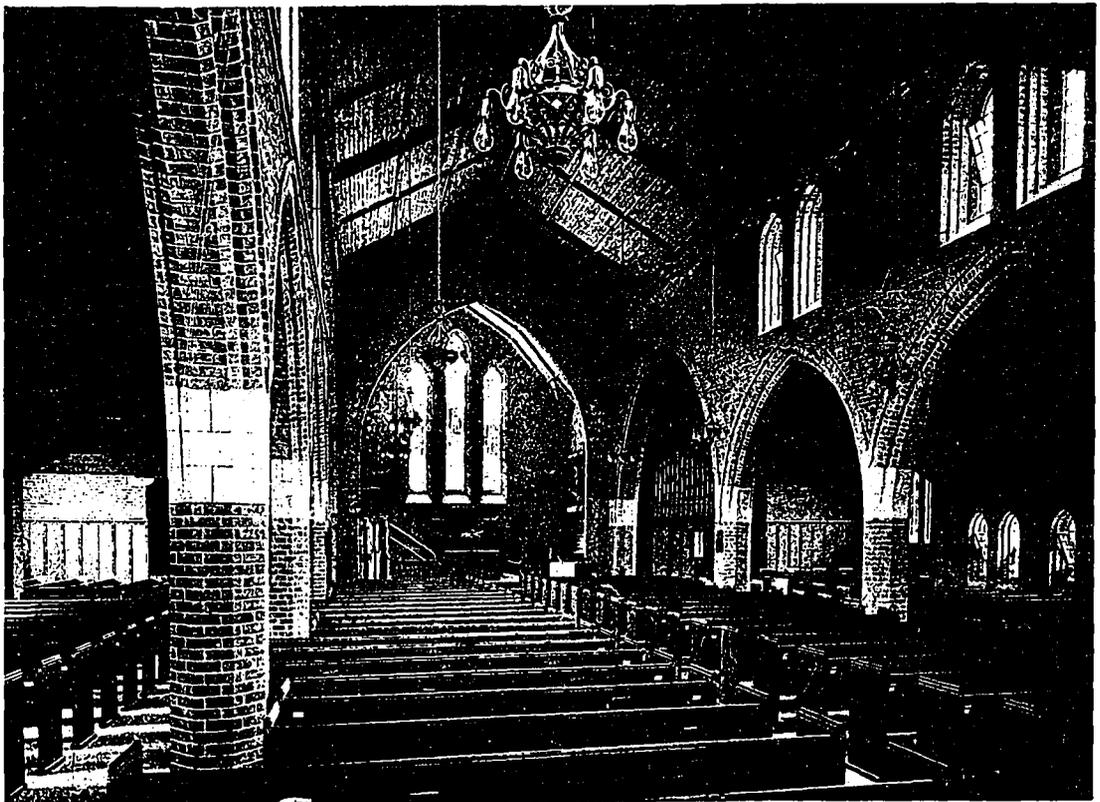
Bonar Presbyterian Church, St. Clarens Avenue, Toronto. From a North-East Viewpoint. A. McKenzie Brydon, Architect.



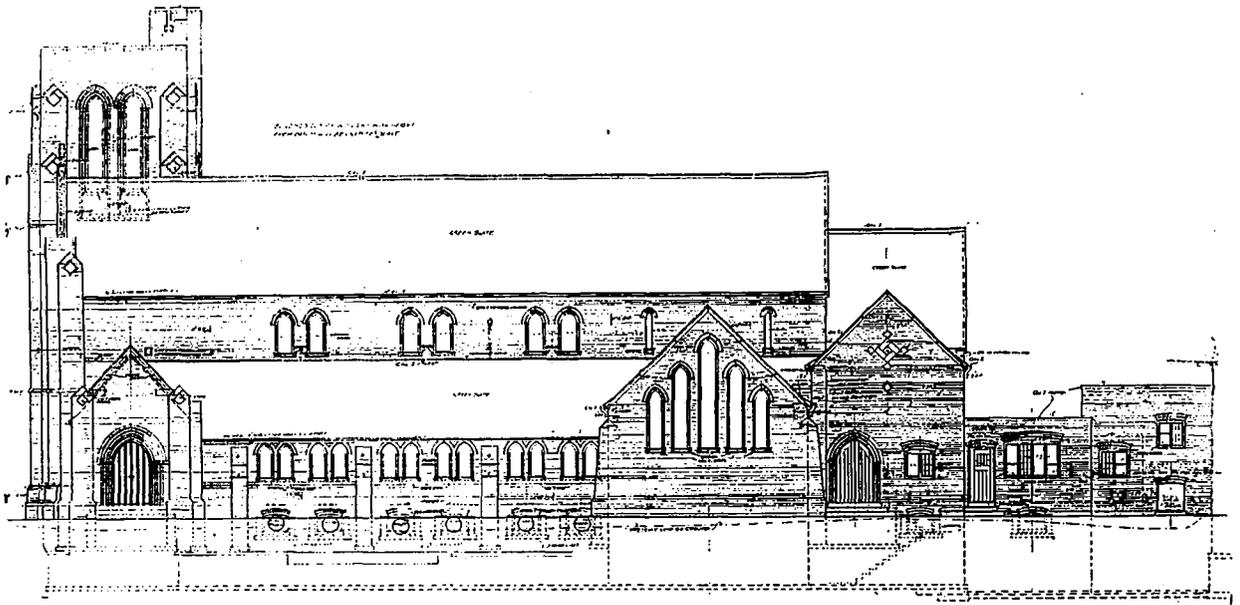
Bonar Presbyterian Church, St. Clarens Avenue, Toronto. View from the South-West. A. McKenzie Brydon, Architect.



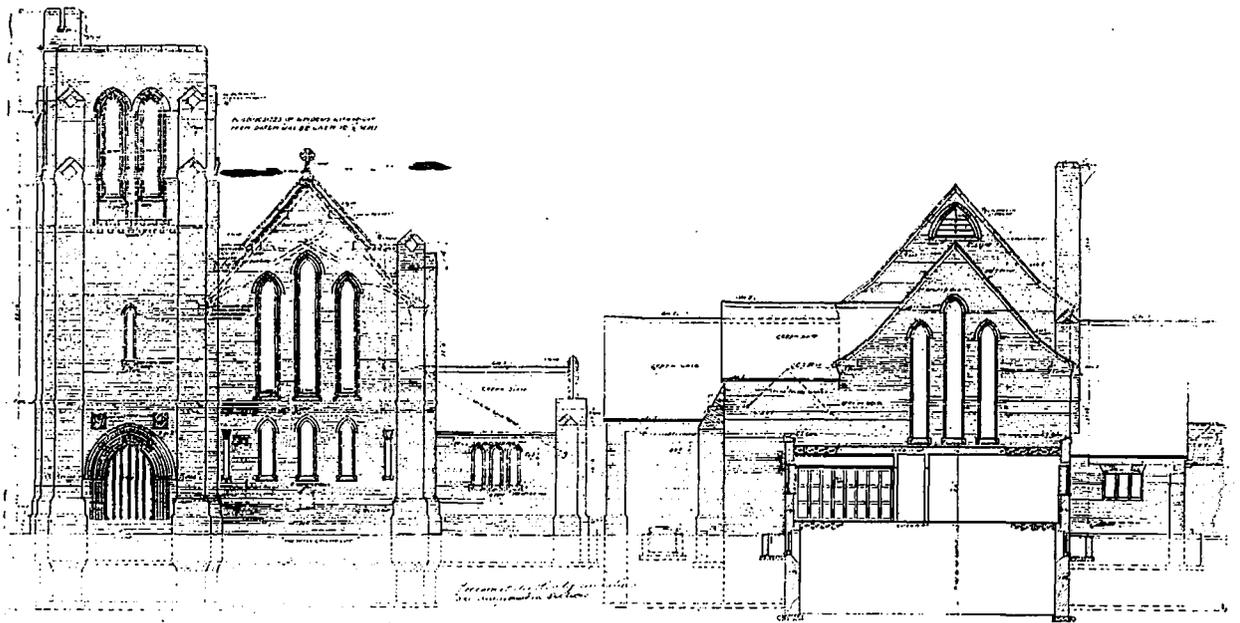
View Looking South-East from North Transept, Bonar Presbyterian Church, Toronto.—Showing the Wall and Ceiling Scheme and Seating Arrangement. A. McKenzie Brydon, Architect.



View along Nave towards Chancel, Bonar Presbyterian Church, Toronto. A. McKenzie Brydon, Architect.

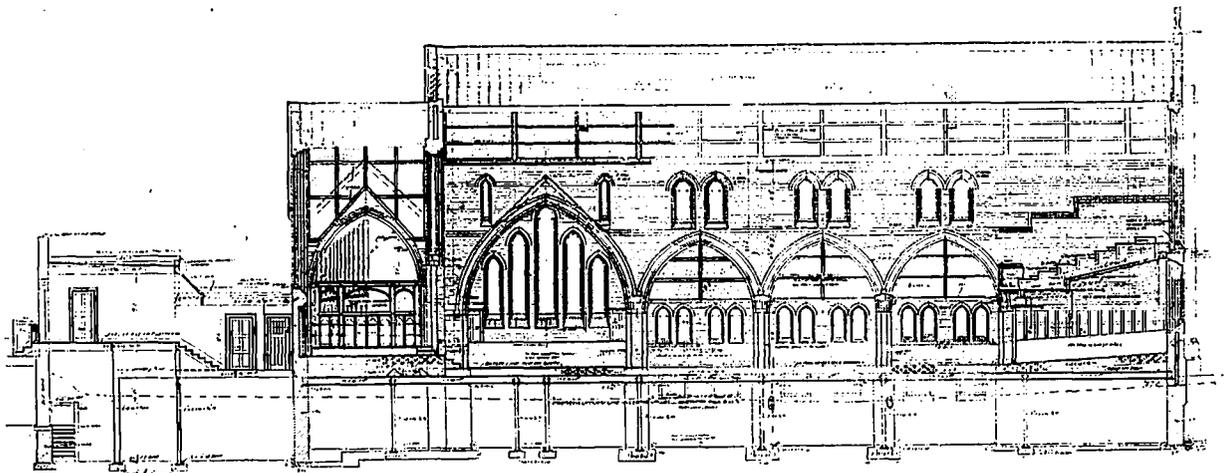


North Elevation.



East Elevation.

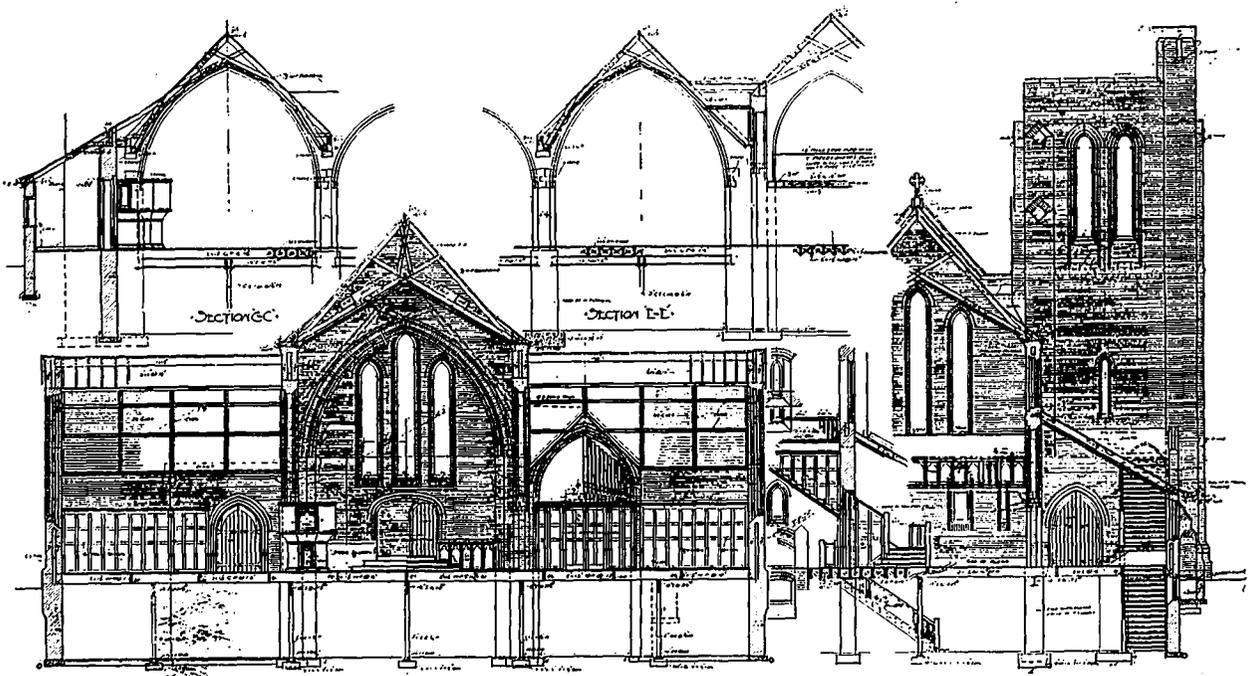
West Elevation.



Longitudinal Section.

Bonar Presbyterian Church, St. Clarens Avenue, Toronto. A. McKenzie Brydon, Architect.

CONSTRUCTION, JULY, 1911.

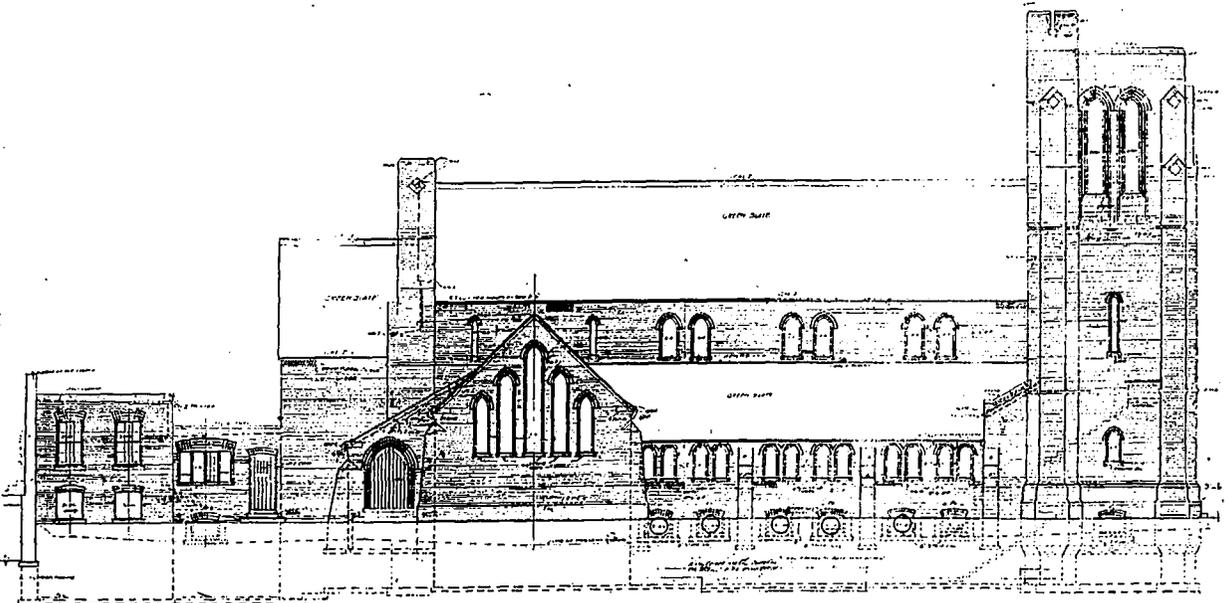


Transverse Section and Detail of Tower, Bonar Presbyterian Church, St. Clarens Avenue, Toronto. A. McKenzie Brydon, Architect.

tirely omitted. The walls are built with a half brick cavity, the inner and outer sections being bounded together by $\frac{3}{8}$ " round iron rods. In addition to the ready respond to sound which this type of wall gives, the acoustics are improved by the deep reveals of the doors and windows, as well as by the large nave piers which are designed to materially assist the sound-carrying properties. Dark brick is employed for the outer walls as well as for the nave piers and arch wings, while a lighter brick has been selected for the inner wall facings. The brick is laid in common gray lime mortar, at four courses to the foot, the exterior joints being weather cut, and those in the inside raked out to emphasize the texture. Rather an interesting feature are the window openings, which are built wholly without frames, the

glass being bedded right into the brick, thereby effecting a saving in labor and material and preventing the possibility of deterioration. Metal sash has been adopted only for the basement and the ventilating hoppers, and with the exception of the memorial windows depicting the life of Christ, which are executed in green white glass on a white ground. The glazing throughout is of sheet rectangles with a half-inch lead. Maple flooring is employed throughout the building, including the gallery at the east end, and the woodwork and seating is of chestnut, $\frac{3}{8}$ " sheeting being used for the ceiling. Aside from the doors, there is no wood employed in the exterior nor is there any painting on any part of the structure, excepting that used on the eavetroughs and leaders, all the wood-

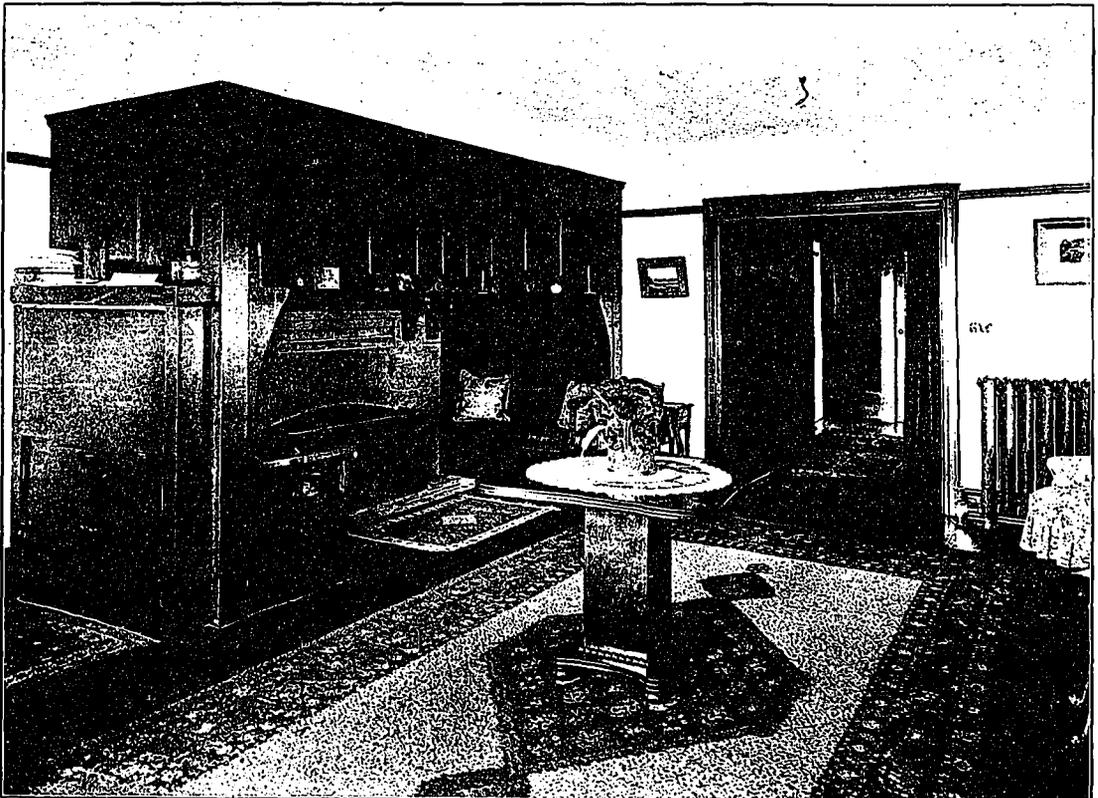
(Concluded on page 76.)



South Elevation, Bonar Presbyterian Church, St. Clarens Avenue, Toronto. A. McKenzie Brydon, Architect.



Residence of A. W. Briggs, Port Credit, Ont. Built of Stone Taken from the Shore of Lake Ontario, which the House Overlooks, and Finished Above with Red Cedar Shingles. Chadwick and Beckett, Architects.



Living Room, Residence of A. W. Briggs, Port Credit, Ont., Showing the Inglenook with its Brick Fireplace and Brown Stained Georgia Pine Panelling and Seats. Chadwick and Beckett, Architects.

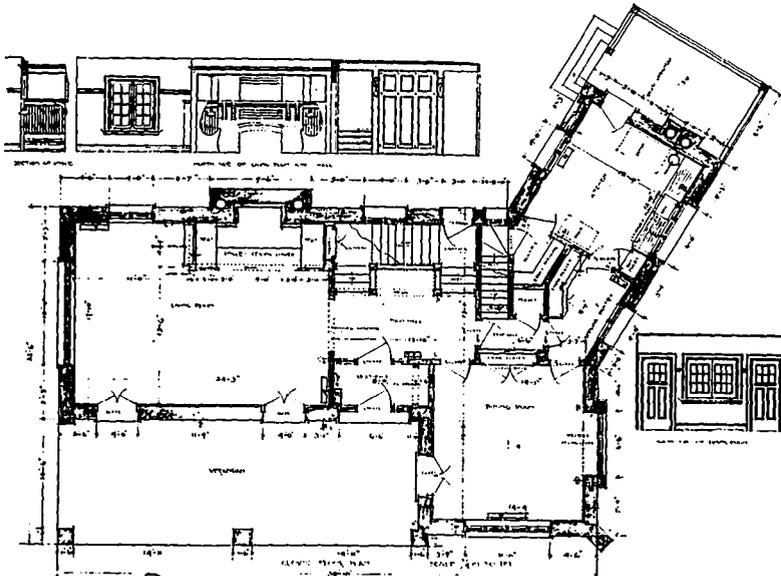
SUBURBAN
RESIDENCE AT
PORT CREDIT, ONT.

Recently erected Lake Shore Home of A. W. Briggs, which shows an interesting use of local stone in exterior wall construction.

BOTH THE AUTOMOBILE and the better accommodations afforded by steam and electric lines within the last few years, have induced a large number of owners to acquire residential sites and build their homes at a considerable distance from the more congested centres. The movement in this direction has, in fact, become suf-

proached from the Lake Shore Road through a heavily wooded tract. To the southeast, about 75 feet away, lies Lake Ontario on which the property abuts, and from the shore of which the stone employed in the lower walls of the house was taken. By utilizing the material obtainable from this source, and adopting red cedar shingles for the upper walls and roof, the architects have not only produced a structure that fits in harmoniously with the natural features of its surroundings, but one which, owing to the admirable treatment of the design in general, is extremely pleasing in the simplicity of its domestic character.

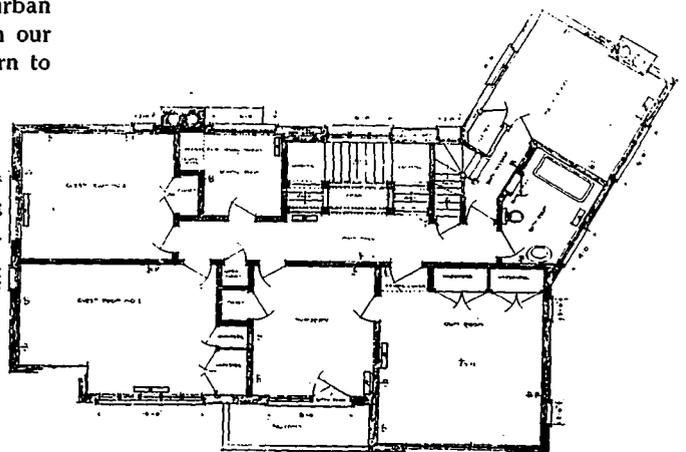
In the arrangement of the interior, which is explained in the accompanying plans, all the principal rooms on both floors are located to get the benefit of the Lake view towards the south. The living room, which faces in this direction, opens through case-ment doors on to a large deep verandah, having rustic stone piers which support the roof extension forming the shelter overhead. This room occupies the entire west portion of the lower floor, and has a built-in ingle nook panelled in Georgia Pine, with bracketed shelves and fixed seats on either side of a brick fireplace. Aside from this interior, the ground floor has a large central hall and dining room, the latter being connected with the pantry and kitchen wing which is taken off at a slight angle to the north. At the rear of the hall is an open staircase connecting the lower floor with the upper story and basement, while adjoin-



Ground Floor Plan and Detail of Wall Scheme, Residence of A. W. Briggs, Port Credit, Ont. Chadwick and Beckett, Architects.

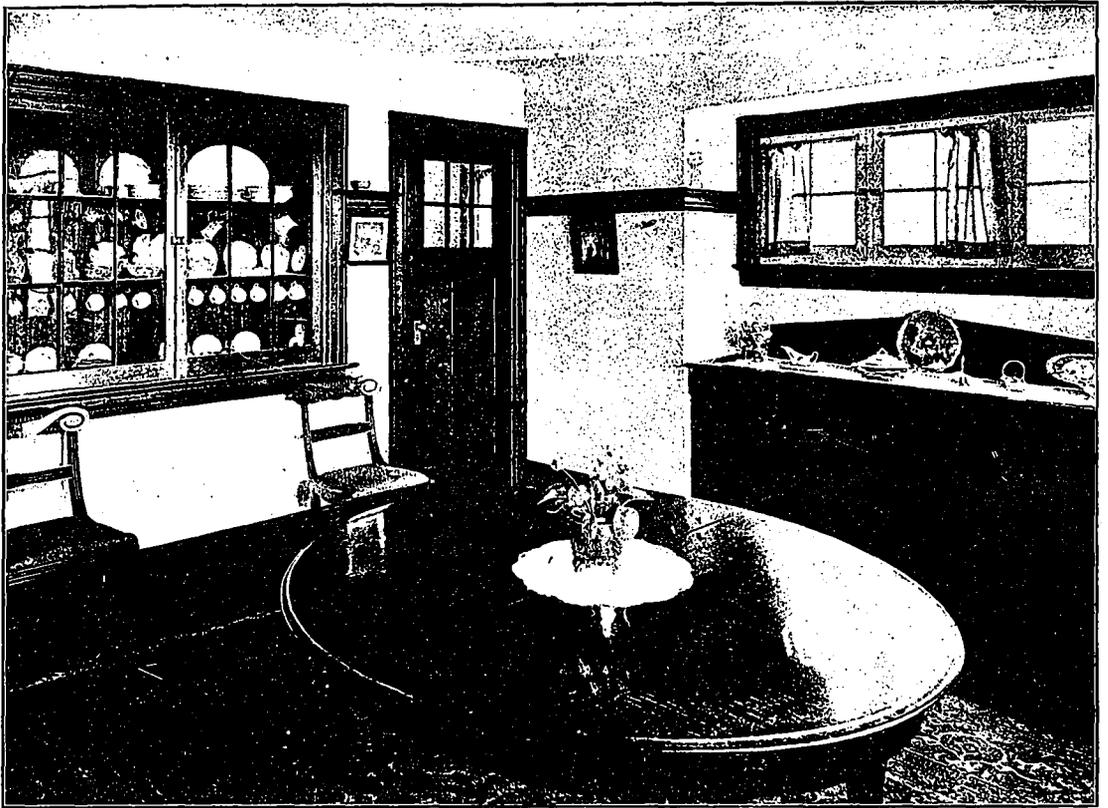
ficiently pronounced of late to make the suburban or country home a factor of no little promise in our domestic life. Even now it is necessary to turn to the outlying districts in order to view some of the more noteworthy examples of recent domestic work, and judging from the creditable type of houses which are now being erected in general, it is quite evident that the development of our architecture in this respect is rapidly attaining a standard that compares most favorably with the work of other countries. Owners not only find the country with its trees and foliage and natural vistas more ideal, more healthful and more liveable in every way, but in many cases, either through foresight or good fortune, sites are acquired having an abundance of good stone suitable for the construction of the building itself.

Such an advantage favored Mr. A. W. Briggs in the selection of a site for his suburban home, illustrated herewith, and the architects, Messrs. Chadwick & Beckett fully availed themselves of the opportunity thus offered in designing the structure. The house, which is located a short distance east of Port Credit, Ont., stands on spacious grounds, and is ap-

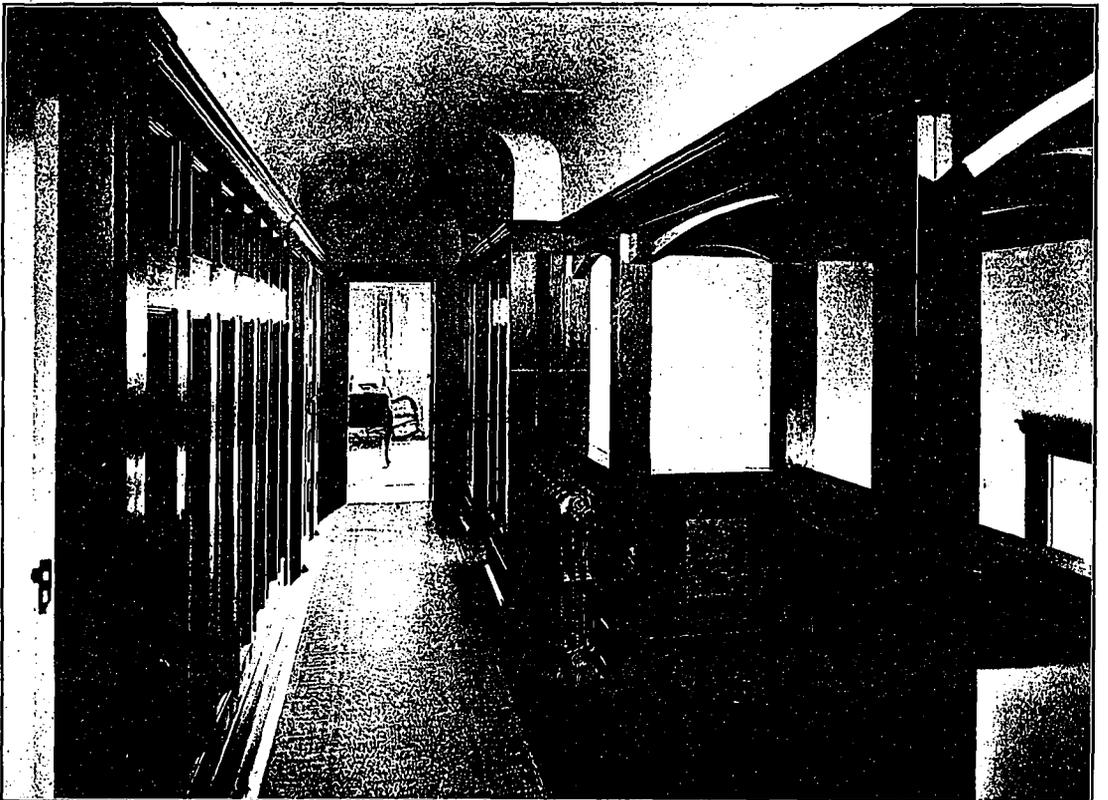


First Floor Plan, Residence of A. W. Briggs, Port Credit, Ont. Chadwick and Beckett, Architects.

ing this to the right is a small entry giving convenient access to the interior from the Lake Shore Road. Entrance can also be obtained from the north through the service wing which terminates with a deep covered verandah. The upper hall, in keeping with the woodwork throughout, is finished in brown-stained Georgia Pine and panelled in burlap. This hall with its



Dining Room, Residence of A. W. Briggs, Port Credit, Ont. Note the Simplicity and Individuality of the General Scheme with its Interesting Door, Wall Cupboard, and High Placed Window. Chadwick and Beckett, Architects.



Upper Hallway, Residence of A. W. Briggs, Port Credit, Ont. Finished in Brown Stained Georgia Pine with Bur-tap Panels. Chadwick and Beckett, Architects.

built-in recess forms an interesting feature, as does also the inset balcony breaking the south roof, which opens off the nursery. There are three bedrooms in all, together with a sewing room, maid's room and bathroom.

In the basement the space has been advantageously utilized, over one-half of the area being taken up by the children's playroom. Here a beamed ceiling and a large open fireplace add to the domestic character of the scheme; while the open stair arrange-

evolved a type of dwelling which in the early days of Canadian history more or less adequately fulfilled the requirements of the situation. The log house, the clap-boarded house and the plastered house of Quebec Province were tried and tested in the strenuous days when men literally hewed their way forward to the present stage of Canadian development.

Out of the moil of the early days have come down to us examples of the houses in which a future great nation was cradled and while much must be allowed for the hallowing influence of sentiment and antiquity it is impossible to deny that the smaller houses of to-day will not bear comparison with the simple quiet lines of the old work. Chief among the points of superiority of the latter must rank the harmonious selection of materials to meet the exigencies of the situation. The charm of some of the old French Canadian villages in this respect is paramount. Complication of form and material was entirely absent, hence the attainment of that unstudied, intangible kind of beauty which is evolved by unaffected simplicity. While it is not sought to prove that the early houses are suitable types of modern

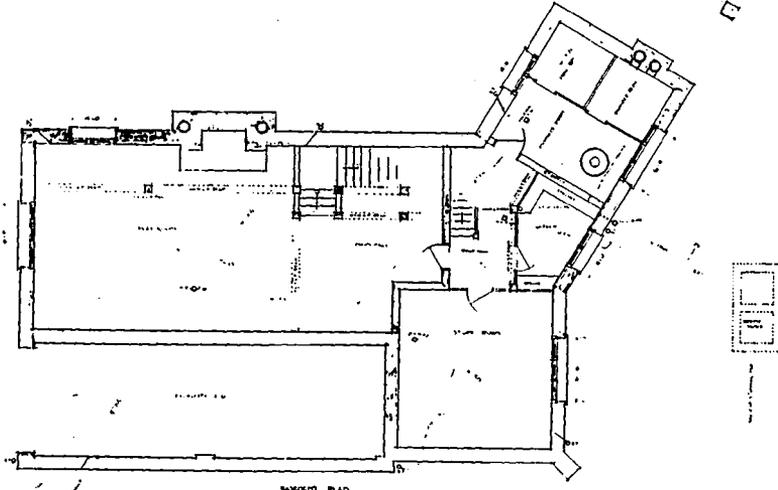
reproduction, the fact remains that much can be learned by following the broad principles on which they were evolved.

One of the most prominent faults of the modern type of small house is an all-pervading restlessness—an aggressive desire to force itself upon the notice of an innocent and long-suffering public.

Whatever publicity is lost by its demerits is regained by a rampant self-advertisement which compels people to take notice, much on the principle of the old adage which tells us that "empty vessels make the most noise." The unthinking section of the public is carried away by the show and vulgarity of such types, hence the extraordinary vagaries of taste which fell our way. The rich man builds his house sometimes well, often badly. The poorer man endeavors to imitate his richer brother, and he usually succeeds in developing a cheap imitation of the worst designs of the latter. It is a case of "skim milk masquerading as cream."

Canada is getting along in years now, nationally speaking, and Canadians have the advantages of observation of other people's mistakes, which other nations had not. When are we going to realize that beauty in architecture has its basis in structural growth, and that it is a perversion of all principles to put up a box and then seek to make it beautiful by applying alleged ornament, devoid of relation to the structure and with no considerations of texture or fitness? The box may be far more beautiful as a box, pure and simple.

In Europe much time and thought has been given of late years to the problem of inexpensive and artis-



Basement Plan, Residence of A. W. Briggs, Port Credit, Ont. Chadwick and Beckett, Architects.

ment connecting with the main hall, brings the playroom well within touch with the other portion of the house, and makes it eminently suitable for dancing or other forms of entertainment should the occasion demand.

The property is exceptionally well provided as regarded sanitary conveniences, having a system of septic tanks for the disposal of sewerage, and approved plumbing fixtures throughout. Since the exterior was photographed the owner has undertaken to develop a small formal garden to the west of the structure, and this when completed will further add to the many attractive features which already make the estate one of the most interesting in the vicinity in which it is located.



ARCHITECTURE
IN RELATION TO THE
INEXPENSIVE HOUSE

Simplicity and truthfulness of early Canadian work as compared with modern examples—the Model Home Association and what it aims to accomplish—By Albert J. Hazelgrove

THE ADVANCES, which in recent years have been made in the aesthetic and sanitary construction of our larger Canadian houses have not been equally evident in the construction of the smaller homes, suitable for working people and the lesser paid population generally. Man's first instinct for protection from the elements

tic houses, and a great measure of success has followed the efforts. In England numerous garden suburbs have been laid out on the outskirts of the large cities, and in these suburbs are to be found unpretentious houses grouped together with all the charm of the old work. These houses also possess all conveniences which modern invention can supply and are the work of eminent architects, some of whom have specialized in this class of work.

With a view to bettering the conditions in our Canadian cities the Model Homes Association of Ottawa has been organized. This association is endeavoring to enlist the co-operation of architects and the public generally throughout the Dominion, in a campaign for better houses. The movement is as yet in its early stages, but it is universally realized that a great amount of good can be done on these lines with an organized effort.

The problem of the inexpensive house has been virtually neglected in this country from an architectural standpoint. Possibly architects have been too busy on works of great magnitude to bother about work so unremunerative and seemingly insignificant. Looking at the matter in a broad public spirit, however, the profession must realize that by reason of special artistic and technical qualifications it has a duty to the public at large, and if work of this character does not come under architectural influence in the ordinary course of business, it rests with the profession to exercise an advisory interest in the matter for the public good.

The conditions prevalent in Canada at the present time do not seem to call for a solution of the problem on the lines which have been adopted in other countries, and the Model Homes Association has wisely decided to start its work by getting at the man who is building his own small house.

A competition was recently organized among architectural draughtsmen throughout Canada, and although the response was somewhat disappointing, a number of good designs were received.

It is the intention of the association to develop further plans from time to time, and these, together with the best of the competition drawings, will be duplicated and prints will be available to the public at a nominal charge to cover cost of reproduction. By means of these drawings, the Association hopes to raise the standard of taste among those who are building such houses. It is hoped that in the future a marked improvement will take place as the results of the modest efforts originated by the Association. The movement is bound to grow when its objects become more widely known.

The many applications which have already been received for plans are indicative of the great interest which is being taken in the Association.

There is no reason why Canadian cities, which are so beautiful naturally, should continue to be defaced by the misguided efforts of minds untutored to the particular phase of art which finds its expression in the building of the house beautiful. It is due to the generations to come that the present in-

action in this matter shall be succeeded by that of a great reaction which can only be obtained by systematic effort.

BONAR PRESBYTERIAN CHURCH—Continued from Page 71

work throughout being treated with "Solignum." All the electric light wiring is in conduits, and the nave pendants, pulpit light and exterior lights, with the exception of two carried out in cast brass and copper, are executed in wrought iron.

The rear apartments contain the minister's vestry panelled in chestnut, a ladies' parlor in the character of a large living room, a private coat room, board room and lavatories. The roofing of the building is of green slate, very rough in texture, and the heating is done by a system of furnaces.

Despite the limitations as to funds, which admitted of an expenditure of but \$40,00 for both the church and organ, the architect has succeeded in producing an edifice that is not only Gothic in feeling and spirit, but one in which the acoustics, lighting and general arrangement has been thoughtfully considered.

The building was designed by Architect A. McKenzie Brydon, of Toronto, and the various branches of the work were executed by the following firms:—Masonry, Witchall & Sons; carpentry, Geo. Nicholson; plumbing, J. R. Jackson & Co.; plastering, Hoidge & Sons; painting, Joseph McCausland & Son; glazing, Robt. McCausland Ltd.; roofing, A. B. Ormsby, Ltd.; seating, Valley City Seating Co.; heating, Jas. Smart Mfg. Co., Ltd.; furniture, Lickley's Ltd.; organ, Casavant Freres; font, Macintosh Marble Co.

VERY MATERIAL PROGRESS has been made within recent years in the process of welding metals. Especially is this true as regards Germany, where many systems for this purpose have been devised and adopted. Possibly the most marked advance is to be noted in the increasing use of the acetylene apparatus which is quite generally replacing the older hydrogen method, owing to the fact that it makes the process of welding not only cheaper, but more generally applicable. In the case of the more approved system, the acetylene gas is generated directly from calcium carbide by the apparatus itself. The cost of acetylene gas thus produced is about the same as the market price for hydrogen gas, but only about one-fifth as much acetylene gas is required for a given piece of welding. Furthermore the considerably higher temperature attained with acetylene gas makes possible the welding of metals of greater thickness. The temperature limit for hydrogen is 1,900 deg. C. (3,452 deg. F.) and of acetylene it is 3,500 deg. C. (6,332 deg. F.). The metal thicknesses that may be welded by the two systems are one-third and one and one-fifth inches, respectively. One authority estimates that welding apparatus is used in upward of 12,000 plants in Germany.



AN ATTRACTIVELY DESIGNED LOW COST CITY DWELLING

Built on a narrow lot and planned to give maximum accommodation for a small family. Detail of construction explained by architects' specifications

THE PROBLEM of designing the average city house not only, as a rule, revolves itself around the limitations of a narrow lot, but in many cases imposes a further restriction in that the designer finds it necessary to erect a structure of certain given requirements, within an extremely modest and sometimes inadequate sum. To produce a house under these circumstances, and still to impart character and individuality to the scheme, is at the best a somewhat difficult task. Aside from the fact that the site generally offers little or nothing in the way of natural advantages to assist the general scheme, the narrowness of the lot allows the architect but meagre latitude in working out the design. Of necessity the building must be carried up in elevation, and to do this and still preserve dignity of line and proportion is wherein the hard part of the problem really lies. Not only is it necessary to take full advantage of all available floor space, but if the scheme within is to be made interesting in its character of treatment and appointment, the law of economy must be exactingly applied. As to what degree a house of this kind can be successfully produced and still be erected at a reasonably low cost is to be seen in the residence of W. Dinsmore, Geoffrey street, Toronto, which is illustrated herewith. This house at the time of its erection cost \$3,100, although according to the architect, Mr. E. G. Wilson, Toronto, its construction at the present time would require a sum at least seven hundred dollars again as great. Not only

is it a residence of pleasing architectural character, but one which from a standpoint of construction, plan and internal appointments, is exceptionally well considered in every respect. The lay-out of the house, as can be seen by the plans in the accompanying supplement, provides for a scheme that not only gives the greatest accommodation for the space available, but is particularly commendable in its general arrangement. A feature of the ground floor is the hall with its built-in seat, and the staircase which is placed further back than is usually the case. Considering the small amount set aside for the building, the structure represents an investment in which architectural ability and business acumen have been most successfully brought to bear. The thoroughness with which the construction of the building has been carried out in detail, is possibly best judged from following the specifications from which the house was built.

Mason Work.

Lay footings for all walls, of hard stock grey brick, two courses deep, with 4 in. offsets, well flush up in cement mortar. Lay damp proof course upon footings, of one ply ready roofing. Build foundation walls as shown 9 in. and 14 in. thick as shown, of hard stock grey brick, first four courses to be built in cement, remainder in lime mortar, thoroughly bond every six courses with headers. Build in all window and door frames where shown. Carry up chimney flues as shown, 9 in. by 9 in. and 9 in. by 14 in., and carefully point; build in clean-out soot doors and frames, also collars to each flue; carefully bed all lintels, build piers in basement as shown in cement mortar. Parge outside face of basement walls with cement mortar, 3 to 1, $\frac{3}{4}$ in.

thick. Provide and set one footing stone roughly squared to 18 in. for steel column.

Walls of ground, first floor and part of attic gable to be built of hard stock red brick, free from rub marks and of an even color; lay with a dark colored lime mortar joint $\frac{3}{4}$ in. thick; bond every fourth course with Flemish bond. Build in all window and door frames and turn relieving arches over all brick openings and lintels; carry up chimney flues and carefully point. Carry chimneys above roof as shown with hard select brick, top four courses to be laid and rendered in cement $\frac{1}{2}$ in. thick.

Window sills on ground and first floor to be $5\frac{1}{2}$ in. by 8 in. sawn sand stone. Heads to windows on front and south to be $4\frac{1}{2}$ in. by 9 in. sawn sand stone; jambstones and sill blocks where shown to be of similar material.

Lay concrete floor throughout basement, foundation to be 4 in. thick of broken brick and cinders well pounded down; grade to floor gratings; concrete to be 2 in. thick of four parts broken stone and 2 parts sharp coarse sand to 1 of Portland cement. Finishing coat to be 1 in. thick of sharp sand and cement 2 to 1. Provide and fit floor gratings where shown.

Carpenter Work.

Ground and first floor joists to be 2 in. by 8 in., set at 12 and



Residence of W. Dinsmore, Geoffrey Street, Toronto—An Interestingly Designed Small City House Built at a Moderate Cost. Ewart G. Wilson, Architect.

16 in. centres. Attic joists to be 2 in. by 8 in., set at 16 in. centres. Balcony joists over kitchen to be 2 in. by 8 in. at 12 in. centres. All joists to have at least 4 in. wall, old. Size and set all joists level. Trim for chimneys, stairs, plumbing and heating pipes; joists supporting partitions to be doubled and trussed and set 4 in. apart for the free passage of hot air pipes. Cross bridge all joists in each span with 2 in. by 2 in., well nailed. Collar ties in attic to be 2 in. by 4 in. on every pair of rafters; support to roof rafters with 1 in. by 4 in. Anchor joists to brick walls with wrought iron ties, with ends turned down into brickwork, anchors to be placed every 8 ft. apart and extending over two spans of joists, where joists run parallel with wall, and on every sixth joist where ends run into wall.

Construct roof with 2 in. by 6 in. at 16 in. centres; well spike to 2 in. by 8 in. wall plate, and 1 in. by 10 in. ridge board. Valley rafters to 2 in. by 8 in. Cover main roof, also balcony, with 1 in. by 6 in. matched hemlock, closely lay and well nail. Cover main roof with 14 lb. asbestos and with B.C. cedar shingles laid $4\frac{1}{2}$ in. to weather.

Gutter eaves to have 2 in. by 6 in. wrought exposed rafters, sheet upon same with $1\frac{1}{2}$ in. by $2\frac{1}{2}$ in. beaded pine sheeting, cut $\frac{3}{4}$ in. by 5 in. in between each rafter at wall line, and finish under with 3 in. bed-mould. Stud side gable from top of attic windows with 2 in. by 4 in. at 16 in. centres; fur out on inside to same thickness as brick wall, enclose with matched hemlock, cover with 14 lb. asbestos felt, and with stained shingles $4\frac{1}{2}$ in. to weather; finish with crown mould and rail as shown, also cut blocks, form hood over west attic windows as shown. Construct dormer window on front as shown with 2 in. by 4 in. and 1 in. by 6 in. matched hemlock, deck joists 2 in. by 4 in. at 16 in. centres, cover sides with 1 ply 14 lb. asbestos felt, and with stained shingles $4\frac{1}{2}$ in. to weather; finish on angles with 8 in. by 8 in. casing; cornice to have $\frac{3}{4}$ in. fascia and soffit, with crown and bed-mould. Finish front gable on brickwork with 2 in. by 10 in. plank, bolted down to brickwork, with $\frac{1}{2}$ in. by 18 in. bolts, finish on face with 3 in. by 6 in. crown mould.

Lay $\frac{3}{4}$ in. by 3 in. spruce flooring throughout. Lay $\frac{3}{4}$ in. by $2\frac{1}{2}$ in. quarter-cut oak flooring in ground floor hall, vestibule, and 18 in. border in sitting room including bay, also dining room. All flooring to be thoroughly kiln dried, free from large or black knots, to be closely laid and well nailed every 12 in.; all hardwood flooring to be thoroughly cleaned up. Construct partitions as shown, with 2 in. by 4 in. at 16 in. centres, double all angle and door studs, also heads, truss all openings over 3 ft., all plates to be single, partitions over partitions to run between joists and spiked to sides of same. Form for plaster arches at bays and recesses and where marked. Provide and fix 10 in. cove furring, at ceilings of vestibule, ground floor hall, dining room and sitting room. Provide $\frac{1}{2}$ in. by 2 in. bond strips to be built into brick walls every 8 courses. Strap exterior walls with 2 in. by 2 in. at 16 in. centres.

Basement window frames to be 3 in. by 4 in. rebated, with moulded hanging stiles, sub sills to be fitted with iron tongues, sash to be $1\frac{1}{4}$ in. moulded and divided as shown; hang with 3 in. steel butts, fit with 4 in. barrel bolts two to each sash, also hook and eye to hold same open. Small windows in sitting room, high windows in dining room and ground floor hall to have solid frames, no sash, glass to be fitted in place with stops; attic, main stair landing, and small window in coat room to be similar, but fitted with sash, hang with steel butts, and fit with bronze sash adjusters and fasteners. Remainder of frames to be made for balance sash, frames to be made weather proof, with moulded hanging stiles, fit with cast iron pulleys and sash to be $1\frac{1}{4}$ in. moulded, hang with stout sash cord and cast iron weights, fit with bronze sash lifts and locks.

Construct front bay frame as shown with $1\frac{1}{4}$ in. material, frame to be made for balance sash similar to other frames; roof to same to be constructed with 2 in. by 4 in. and $\frac{3}{4}$ in. matched boards, eaves to be finished similar to main roof eaves. Fill in between deck joists over kitchen with 1 in. boards and mill shavings or sawdust.

Outer door frames to be 3 in. by 7 in. rebated and moulded, with moulded hanging stiles. Front and vestibule doors to be of veneered quarter-cut oak, lower panels moulded with raised panels, upper panels to be divided and made for bevelled plate glass; side and balcony doors to be of pine, upper panels made and divided for glass, lower panels moulded. Hang front and vestibule doors with plated steel butts, three to each door. Other doors to be hung with bronze butts and fitted with stout mortice locks and bronze hardware complete.

Interior door frames to be $\frac{3}{4}$ in. by $5\frac{1}{2}$ in. fitted with stops; all closet, stair and attic doors to be $1\frac{1}{2}$ in. moulded and panelled; hang with $3\frac{1}{2}$ in. steel butts, and fit with bronze face mortice locks, with bronze trim and white porcelain knobs. Remainder of doors to be $1\frac{1}{4}$ in. moulded and panelled, with solid bronze hardware.

Basement doors to be $\frac{3}{4}$ in. sheeted and battened; hang with strap hinges, and fit with thumb latch complete. Basement stairs to have $1\frac{1}{4}$ strings, housed for $\frac{3}{4}$ in. risers and $1\frac{1}{2}$ in. treads; newels to be 4 in. square, with rounded top, rail 2 in. by 4 in. with rounded angles, no balusters. Main stairs from ground to first floor to have $1\frac{1}{4}$ in. and $1\frac{1}{2}$ in. open strings with $1\frac{1}{4}$ in. treads, with moulded nosing, risers $\frac{3}{4}$ in., newel at start to be 6 in. square, with tapered chamfered angles, and moulded and dented cap and moulded base; remainder of newels to be $4\frac{1}{2}$ in. square, with moulded and dented cap and no base. Rail, 3 in. by $3\frac{1}{2}$ in. moulded, balusters $\frac{3}{4}$ in. by $1\frac{1}{2}$ in., three to a tread, fit in place with string and rail mouldings. Stairs to attic to have closed strings, treads $1\frac{1}{2}$ in., risers $\frac{3}{4}$ in., newel $4\frac{1}{2}$ in. with moulded cap rail 3 in. by $3\frac{1}{2}$ in. moulded balusters $\frac{3}{4}$ in. by $1\frac{1}{2}$ in. set 2 in. apart. Newels, rails, treads and risers of main stair to be of Georgia pine, remainder of white pine for enamelling, newels and rails of attic stairs to be of birch, remainder of pine for staining.

Trim doors and windows with $\frac{3}{4}$ in. by 4 in. moulded architraves with $1\frac{1}{2}$ in. band mould; door openings from main hall to have moulded caps.

Stiles in dining room to be $\frac{3}{4}$ in. by $3\frac{1}{2}$ in. of Georgia pine 6 ft. 6 in. high, fastened 9 in. apart and connect with moulded plate rail. Sitting room, ground and first floor hall, vestibule and dining room to be finished in select Georgia pine, for staining. First floor hall doors to be of white pine for painting. Remainder of interior finish to be of white pine for painting.

Lathing and Plastering.

Lath the whole of the walls, ceilings and soffits of stairs of ground, first floor and attic with first quality lath, laid $\frac{3}{4}$ in. apart, breaking joints every six courses; nail solid in all angles and at door studs. Render outer walls with a heavy coat of lime mortar, well flush between ends of joists. First coat of mortar to be composed of grey lime and clean sharp grey sand, 3 to 1, mixed with a full proportion of long clean cattle hair. Apply to lath, forming a good key, float and trowel to a true, even surface. Second coat to be composed of white lime putty, slacked at least seven days before using, and calcined plaster in full proportions, mixed with a small proportion of clean sharp sand, float and trowel to a smooth hard finish. There will be no plaster cornices, or centers, but ceilings of sitting room, ground floor hall and dining room to have coved ceilings. All arches to be plain, no beads.

Painting and Glazing.

The whole of the wrought wood work to be painted three good coats of white lead and linseed oil including galvanized iron work. The whole of the front verandah to be oiled and twice varnished. Newels and rails of main stairs to be filled, shellacked and wax varnished.

Dining room, vestibule, ground and first floor hall, and sitting room to be stained, shellacked and wax varnished, and balusters of main stairs and bath room to be enameled; remainder of interior finish to be painted three good coats of white lead and linseed oil; fill with best linseed oil putty colored to match work, and sand paper all work smooth. Floors of ground floor hall, including vestibule, and 18 in. borders in dining room, sitting room, to be filled and wax polished.

Glaze front and vestibule doors with $1\frac{1}{4}$ in. bevelled plate glass. Glaze lower lights of sitting room bay with 32 oz. glass. All small lights in upper sash to be of 16 oz. glass, remainder of sash to be glazed with 21 oz. glass; carefully bed, sprig and bevel all glass into sash and leave sound and complete. Small window in dining room, two small windows in sitting room and hall to be lead glazing.

AUSTRALIAN CAPITAL SCHEME COMPETITION

THE MINISTER for Home Affairs for the Commonwealth of Australia, Melbourne, has issued a memorandum in connection with the designs for the federal capital city, to be constructed in a federal district, which will be the permanent seat of government of the Commonwealth of Australia, where all Commonwealth legislation will be conducted and where the Governor-General will have his official residence.

A copy of invitation to the competitors, issued on April 30, 1911, embodies the conditions of competition, historical and introductory matters relating to the district of Yass-Canberra and its selection as the federal district, and the requirements for the consideration of designers, the allocation of appropriate areas embracing sites for the following buildings, viz.:

House of Parliament.	Mint.
Residence of the Governor-General.	National art gallery and library.
Residence of the Prime Minister.	Statehouse.
Public offices, as follows: The Department of the Prime Minister.	Printing office.
The Department of External Affairs.	Government factories.
The Attorney-General's Department.	University.
The Department of Home Affairs.	Technical college.
The Department of the Treasury.	City Hall.
The Department of Trade and Customs.	General Post Office.
The Department of Defence.	Museum.
The Postmaster-General's Department.	Central railway station.
Courts of Justice.	Railway marshalling yards.
Places of public worship.	Military barracks.
	Criminal and police courts.
	Jail.
	Hospitals.
	National theatre.
	Central power station.
	Gas works.
	Markets.
	Stadium.
	Parks and gardens, etc.

(Continued on page 91.)



AMERICAN ARCHITECTURAL DEVELOPMENT

Full text of interesting address delivered before the Royal Society of Arts at London,
(Eng.) by Frank M. Andrews of New York.

THE ART OF ARCHITECTURE in any country finds a twofold source from the architectural tradition and the moral and intellectual character, political organization, and mode of life of its people. To trace intelligently its development and artistic worth, these broad conditions must be accounted for.

Unlike the sister arts of painting, music, and sculpture, it cannot be detached from the masses, for it is not a creature of the museums or of the private collector, nor of the exclusive patronage of the favored intellectual few, isolated as a thing apart, to be sought out and found in order to be felt and understood.

Contrary to these, it is the serviceable and intimate art of man, insistently a part of his familiar daily routine, a creature of his needs and circumstances, arousing in even the most heedless a consciousness of its existence and its power of expression either of beauty or of ugliness. For this reason, architecture artlessly becomes an inevitable exponent of the characteristics of the people it serves, and the unerring index of their time and epoch.

The wisdom of the Greek philosopher was the intellectual flower of the human race, belonging to all mankind, but the architecture of Greece expressed the genius of the Greek alone, indicating the antecedents, environment, and soil which nourished and made possible the Greek philosopher. The Gothic cathedral, the feudal castle, the walled town, the monastery, and the vanished hovel of the common people told the story of mediæval times, of the great religious movement and the feudal system of the Dark Ages, with its cloistered learning, its strong arm of military and exclusive political might, and the subserviency of the masses. Again, the readjustment of these conditions, the resulting dissemination of learning, and the establishment of political and religious freedom, are faithfully reflected by the architectural development that kept pace with it throughout Europe.

In this brief allusion to a period momentous in its importance to the development and uplifting of the human race, I am touching upon matters entirely familiar to yourselves, yet which I wish to emphasize in order that you may appreciate that a discussion of American architecture must necessarily be approached with a similar regard for its political and civic development.

What I have to present to you deals with, perhaps,

one hundred years of antecedent history, and with not to exceed four decades of a subsequent movement that possessed any degree of architectural significance to others than ourselves, and yet as unerringly as in Europe we have recorded, in the terms of our art, the forward movement of our people.

Our land, colonized from England, Spain, France, and Holland, drawing to it ever since a population from most of the peoples of the globe—a land stretching from ocean to ocean, having climatic conditions ranging from those of Norway to those of Northern Africa—with its mineral, agricultural and other natural resources sketched in with a broad and lavish hand, was in its inception and early history notable for its isolation. This isolation was not only geographical, but is reflected in a political system that is intensely and jealously individualistic, the keystone of its fabric being personal freedom and independence. As a new star in the firmament of government, it was peculiarly jealous of its own orbit, and largely justified its being by its very indifference to all European influence, fearing that therein lay discord and entanglements dangerous to the common welfare. Clearly the fundamental concept of this new government was the abandonment of the established European order of things, with its habits, customs, traditions, and conclusions, in so far as human determination could effect it. Pomp and display, class distinction and the exaltation by rank or otherwise of an individual or group, which in Europe played so important a role in the development of its civilization, were not to find place in this new scheme of things, and, as a natural corollary to it, almost the entire vocabulary of architectural thought was automatically abandoned.

Therefore we find in early times but a tract of the interesting and inherent architectural beginnings such as were characteristic of Egypt, Greece, Rome, and the various European nations, nor do we find a place for a receptive disposition towards those architectural types which at that time prevailed throughout Europe, as its expression of the power and importance of government or of a class.

A timid concession to traditions, which could not be altogether denied, we find reasonably applied to the first structure of the national capital and in the Executive Mansion at Washington. That these structures should owe their existence and excellence to the interest of Washington and Jefferson, and to Hamilton, the locating of the capital itself gives to

our most important architectural effort of the time a personal significance, corresponding to their influence in the affairs of our Government. Throughout the Colonial period we find in New England and in Virginia, with its sister States, a faithful adherence to the manners and customs of the Mother Country, its architecture consequently that of the coincident Georgian period of England, and the word for it in our architectural vernacular, "Colonial." With us an architecture of brick and wood, severe, simple, and with a certain refined stateliness, owing to its existence as a precedent to the influence of our then leaders of thought and action, and merely reflecting their point of view, it ultimately became only a mode or habit of construction without architectural force or vitality. Its earliest and best examples, preserved by a fortuitous circumstance throughout a century of neglect and indifference, became in the end a helpful educational influence pointing towards the true path of artistic excellence; a cudgel with which to belabor a heedless utilitarian public but too prone to an inartistic display of its swiftly-acquired wealth, and to awaken its artistic conscience.

Again we rediscovered the rare beauty, quiet strength, and world of suggestion in the old Spanish missions of California and the south-west. Glowing with artistic spirit, in their extreme isolation from the then civilized world, they seem a miracle of accomplishment. They are the product of minds who loved art, and remembered it as of the land of their birth; but, forced by environment and conditions to a fortunate simplicity, they preserved and created for the admiration of our future generations the essence of all that is good in the architecture of Spain. To-day this work is a powerful source of inspiration to the prosperous people of all that region of the United States where these good old mission fathers did their work of civilization, leaving behind them evidence of their love of the beautiful. These, then, were the slender links that united us with the ancient architectural forms, and while they were not inherent nor endowed with a spontaneous expression of ourselves, nor an indication of our future development, they, for the moment, served as a borrowed garment, fortunately a good one.

The story of our departure from these standards, and the subsequent period of artistic squalor and ignorance, which I may refer to as our architectural Dark Ages, was one, however, not of wilful ignorance nor purposeful neglect, but of a condition.

It is the story of these people isolated by a great ocean, and by the greater intellectual ocean of abandonment of European traditions and ties; with the great task of solving an experiment in Government on a huge scale; with a vast wilderness to subdue and render serviceable to man; with the problem of assimilation of an influx of foreign population possessed of alien thoughts and customs; of a country that, as a whole, may be likened to the pioneer settler whose log-cabin is reared quickly out of the immediate material at hand for convenience and shelter only, so that he may the sooner set about the task of clearing his land and gaining his livelihood.

Should accumulated wealth later bestow upon him or succeeding generations its independence of labor, and the opportunity to cultivate the mind, he may then observe the stored wisdom of history, and bow to its influence and tradition.

Colonial Architecture.

Therefore in our country, in this condition to which I have likened it, we find the Colonial type of domestic architecture principally interpreted, not by architects nor under an artistic impulse, but by the builders of the period whose personal vagaries and idiosyncrasies more and more overwhelm the meagre examples of this authoritative style. Throughout the country, and for the greater part of the nineteenth century, these conditions prevailed, for we cannot take as essentially typical the attenuated architectural movement, if it may be so described, that was discernible in a few of our more important sea-board cities. Broadly speaking, the entire scheme of things involved no application of artistic code or principle, but was merely the product of the builder-craftsman. In the older portions of the country we find the more important structures reared of brick and stone with a generally prevalent application of our own peculiar system of wood-construction to domestic requirements. Throughout the Middle West, in Ohio, Michigan, Indiana, Illinois, Wisconsin, and all that region west of the Mississippi River, the saw-mill was king and the carpenter-builder its faithful apostle and exemplar. The strictly utilitarian held sway, and the rapidly-increasing population of this region had neither the time nor inclination to consider such matters as art nor the refinements of a wealthy and settled community, and thus there became impressed an habitual habit of thought which stood for years as an obstacle to artistic growth and development. Buildings were an object of pride, and aroused interest and appreciation only because they expressed in size, materials employed, and in numbers, the growth of a community or the prosperity of the individual. These structures, with here and there a reminiscent architectural detail, usually crude and illiterate, were devoid of architectural sense of meaning, as were the people themselves of a proper understanding of the codified systems of artistic thought.

In this connection it does not appear to me that it is logical nor permissible to trace the course of that spark of architectural knowledge which moved onward from the early Colonial days, revealing itself from time to time in isolated instances throughout this period, and claim that its description is the story of American architecture.

Personally, I prefer to deal with that which in its broader sense arises from the people, as with the seed that is sown with Nature's forces working invisibly and within, until, under favoring conditions, its growth and full flower appears. Despite their apparent indifference to artistic feeling and their devotion to material development, these people held within them the seed of art, and during this period its germination and hidden growth was sure, awaiting but the bursting of a materialistic envelope to blos-

som into a keen love for and appraisal of the value of beauty and art to mankind. Manifestly this must be true of them since there were no kings, nobles, nor courts to patronize the arts, nor leaders of thought who could arbitrarily establish an artistic movement. The accomplishment of this could only be through the gradual dissemination of knowledge of and love for the beautiful throughout a people concentrated on practical problems, until they, in a unity of thought and action, should respond to the resulting impulse, thereby making possible an architectural epoch in their history.

It must be borne in mind that we are dealing with the development of architecture within a democracy, describing a movement probably without a parallel in the history of the art. Republican Venice in its day of commercial supremacy had her traditions of Rome and Greece, an old order of things to build upon, and an unavoidably inherited environment not of its own creation; of an artistic bequest authoritative in its derivation, and certain of itself.

We are dealing with a nation in which no individual could so dominate as to become a mainspring of artistic action, a nation so wedded to the formula of democratic simplicity that he who would lead must become its consistent votary, a nation that expressed this habitual attitude architecturally by its wholesale neglect of the artistic excellence of its public buildings of this period.

Passing over the time of the Civil War, the reconstruction days, and the panic of 1873, we find architecture at its lowest ebb concurrently with the renewal of the energetic development of railroads and of other fundamental industries, a consequent rapid increase in accumulated wealth, and of the power of the individual as well as of communities to assert their importance by a material display. The individual respected no architectural authority, save that of his own taste, under the guiding influence of the carpenter-builder. The architect was a negligible quantity, a mere speck in the background; and, in fact, the name had small significance except only when applied to the builder. An architect was a dubious being at best, who insistently expounded impracticable and useless theories about art and other effete things of European origin that were quite inimical to the interests of the local dealers, building trades, and their political henchmen. These were the controlling influences, and this was the day of diluted East lake and whimsical variations of Victorian Gothic, of jig-saw ornament, and of cast-iron tortured into night-mare semblances that to this day can scarcely be traced to their remote ancestry even by an expert. Under the authority, and with this vernacular, the residential architecture of the time was created, and cities and states so announced their power and importance in their institutions of learning, their capitals, court-houses, and other public structures.

Thus we have before us the spectacle of democracy, with its growing newly-acquired wealth and leisure, embarking without rudder or compass to range aimlessly the broad unfamiliar stream of traditional art.

Many souvenirs of this extraordinary excursion still remain with us, but, fortunately, the greater portion of the work of that day has vanished, to make way for better things. The climax of this era occurred in the Exhibition buildings in 1876 in Philadelphia, and the greater part of the succeeding decade was required to mark its fall.

The Modern American Style.

To-day it may be justly claimed that the fundamental elements of our peculiar American type of architectural expression are discernible. Its precise formulation may not yet be possible, but it is a vital and growing thing, plastic, perhaps restless and unsettled, yet reflecting our rapidly crystallizing characteristics as a people. As an art, it has unquestionably found itself, and its underlying purposes and tendencies are capable of analysis and discussion. In method it is bound to no exact tradition nor architectural style, but does acknowledge the underlying principles and authoritative precedents that energize them all. For the present it is transitional in character, and, as to detail, is essentially an architecture of adaptation, wedded, as I have said, to no particular style, but seizing for the purpose at hand any suitable architectural form that applies to our situation and environment, but controlled by a trained art intelligence.

Here we have the interesting example of an art movement rather typically American, wherein the love of the beautiful and the desire of its intelligent expression is not due to the stimulus of the patron towards the artist, but, on the contrary, has flowed from the artist to the patron, or, rather, from an entire group of artists to an awakening public. Democracy having solved its fundamental problems, now encourages intellectual and artistic growth with a lavish patronage, that in its aggregate volume and result will some day be viewed with deep interest by the world at large. Even from the standpoint of historical analogy, the forces are at work and the material exists out of which to fashion this result.

The entire material equipment of this country which served its purpose throughout a period of transition and development must be, and is being, recreated in permanent and enduring form, thereby affording an extraordinary volume of architectural opportunity. A practical people, accustomed to quickly grasping and solving broad problems by concerted action, they have realized that beauty and art is a vitally important thing, and that to be acquired as a national asset their guidance and direction must be assigned to that group of men whose training and experience entitle them to it, and whose active propaganda are but reflected by this conclusion.

The educational influence now at work within us is as wide as the nation itself, proceeding primarily from the group of men referred to, also from schools of art, which are to be found in every important city in the land, from the regularly-established schools of architecture in our various colleges and universities, from the active and alert efforts of the lay press, and the intelligent and interesting art-criticism and dis-

cussion of the popular magazines and the technical journals of the profession.

In this scheme of education Europe may be regarded as one great laboratory, in which the practical application of the theories and influences of this educational movement are tested and applied. The thousands of Americans who, year by year, cross the Atlantic and travel about Europe have, regardless of their immediate motive, both consciously and unconsciously, absorbed the spirit, the grandeur and nobility of its artistic achievements, and have at last perceived that, besides the material wealth of a country, there must be a spiritual and intellectual wealth which art alone can express, and without which no nation can be truly great nor the full fruition of a people's destiny be accomplished.

I believe these influences have resulted in a public sense of discrimination and a sound professional analysis of the art and artistic influence of Europe, and from this I reason that there will ultimately appear in America a characteristic American style that will be grounded upon the verities of architecture, sincerely expressing the organism, use, and purposes of our structures, yet not insisting upon the forced and unnatural adaptation of motifs and detail in archæological reproduction of other styles not suited to ourselves. The day has passed in my country when the ideas and so-called originality of the individual is to be tolerated as a worthy substitute for the time-honored forms and concrete conclusions which represent the cumulative authority of the many minds of the past striving for truth and beauty of expression.

That our growth and development will be to a large degree homogeneous is to be expected, because of the ease of intercommunication and consequent habit of travel between our various states and cities. While interesting variants may appear, due to the Colonial influence of which I have spoken, there will be none of those phenomena that have in the past arisen from restricted intercommunication, isolation of cities, division of languages, and customs which so strongly individualized and restricted the art and thought of European groups, and which so comprehensively effected the formation of its various styles of architecture. Speaking one language, and existing under one Government, with facile and established habit of intercommunication, we are not subject to, in any given locality, the possible provincial outlook nor the requirements of local materials or customs peculiar to that locality, as in Europe.

Influence of the Chicago Exhibition.

Undoubtedly the greatest, if not the primary, stimulus of the present artistic development of the United States is to be found in the Columbian Exposition of 1893 in Chicago. It was here that the profession for the first time found itself in possession of a theme monumental in its scope and dignity, and of that peculiar quality and complexity which put it beyond the capacity of the layman or of the builder to control: resulting, therefore, in its assignment to a profession now become powerful enough to assert its right to assume direction within its own domain.

The initial moment in our art history that required the united action of a group of properly-trained men, it was the first time when they had to deal with a problem in which architecture was the dominant note; recognized as the visible and vitally-important expression of the dignity and scope of the enterprise. The interest of a great public was to be aroused, and a situation of charm and beauty was to be created as a functional part of the display itself, and for this purpose the business men in charge perceived that good architecture was indeed a practical necessity. For the first time the ability of architects accustomed only to separate individual effort was to be gathered together, synchronized and welded into unified action, where the individual tendency must be subordinated to the requirements of all while dealing with a grandiose plan, the grouping of buildings in harmony of mass and outline conforming to a central governing ideal.

For the first time on American soil there was to be produced in orderly triumph the majestic splendor of ancient Rome, of Italy, of the dreams of France, and these architects, recruited from the field of conventional daily routine, thus found in their grasp the opportunity to display to a great people the possibilities and meaning of the art of architecture. To-day it is a thing of the past, ephemeral in its material existence, but everlasting in its message and impression upon the nation. With difficulty can you, to whom the traditions of your own land and the storied riches of Europe are familiar things, realize the revelation contained in this work of art, and its stimulus to our people. Its direct influence is manifest in every important city of our land, by local agitation for civic beauty, by established and projected control, and direction of the art expression of individual enterprises, by the popular demand for the beautifying of streets, the monumental groupings of public buildings, and the constantly increasing intelligence of popular architectural criticism.

A hitherto unknown language to the masses, this enterprise aroused in them a spirit of inquiry and appreciation, that with one great sweep of thought elevated the profession of the artist and architect into a plane of equality with all of the utilitarian pursuits of a practical money-getting age.

In the buildings erected during the past twenty-five years we have run the gamut of practically all known architectural thought—have experimented with about everything this side of the Indian wigwam. This has been done, not because of any lack of inventiveness on our part, nor of imagination, nor, again, does it suggest any feeling of satisfaction with such a state of affairs. We realize that we are dealing with something much more important than passing fads in millinery, automobiles, or dress, and that eventually this indiscriminate borrowing of other people's architectural garments must be succeeded by a costume more fittingly our own.

The incredibly rapid growth of our cities, increase of population, the demand for a new equipment of buildings of every variety of use and purpose, the razing of existing buildings (products, perhaps, of a

previous decade, but become obsolete and in the way of imperative necessities), constituted a movement of such overwhelming volume, to be accomplished in such a short space of time, as to crowd upon the shoulders of one generation of architects—who virtually at the same time were re-creating themselves—a variety and volume of new problems, complicated in their every practical aspect, and presenting an entirely new artistic field of attack, that perhaps would not have been an easy task for three generations of men well entrenched amidst familiar traditions.

Genesis of the Skyscrapers.

Again, the entire absence of suitable precedent or style, and the presence of a prevailing and entirely new form of construction having no European prototype, obviously presented a free range for the exercise of individual fancy, resulting oftentimes in incongruity and an inharmonious eccentricity and lack of restraint. Owing to the ever-increasing height and the form of our buildings—a subject of great importance to which I shall give a special attention—new problems in the scale and application of detail were presented, which resulted in many architectural catastrophes, but are now better understood.

Due to all these conditions the successful architect found himself burdened with an extraordinary and varied assortment of buildings difficult to deal with at one and the same time, with the demon of American rush-methods relentlessly pursuing him—regarded by all of our highly-organized and efficient building trades as a sort of human rubber-stamp that worked automatically—what otherwise could he do but throw up his hands in despair, with one backward look of envy towards the old monks who constructed a few feet of cathedral in a generation, turn archæologist, and plaster his steel skeleton with a tidy arrangement of architectural dope, calculated to soothe the owner, the public, and the contractor, making everybody perfectly happy, but the poor architect being left alone with his sadly disfigured ideals?

It is my personal belief that this has had much to do with the exploitation of certain historical styles by several of our notable architects; to the extent that their names have become synonymous with those styles, as, for example, Richardson with the French Romanesque.

It is an undertaking that requires no small amount of executive ability and a highly-organized office to successfully manage this condition, and whatever tends to standardize and unify its efficiency must perforce be found and used.

Richardson, with his masterly knowledge of the style, was quite justified in his adherence to the Romanesque. It was not too violent a departure from the prevailing mode, was easily managed by the building trades, and suitable to the then existing range of available building material. How clearly he perceived this is proven not only by his own work and that of his immediate successors, who were trained under him, but also by the complete collapse of the movement he established when it fell into the

hands of the horde of imitators who neither saw nor appreciated the importance of this fact, and who, in attempting novelties of treatment without proper means at hand, helped it to an early death.

Our next important architectural revelation fared more fortunately by proving itself much more adaptable to our wants, and, dealing with an almost infinite variety of refined flexible forms easily applied, became the reigning fashion for an extended period, and is to-day reasserting itself in a salutary and refreshing way.

This revelation came through the work of White and of MacKim, who did not at first display a full mastery of the style, but temporized with a curiously interesting architecture of brick and a reserved application of Italian detail. They soon became the leading exponents of the Italian Renaissance, and since their output of residential, commercial and other classes of work was enormous, its educational influence with us must be counted of prime importance, and by their own good taste, fine sense of proportion, and full appreciation of the refinements of the style, they elevated our standards to a plane that will not be abandoned. In their extensive use of the Georgian period they reminded us of our best tradition, showed us the value of simplicity, control of expression, and respect for architectural law and order. Office expediency is to be apparent in much of their work, particularly in their bold confiscation of entire architectural compositions, as, for example, in the Tower of Madison Square Garden.

With us the first important exponent of the modern French school of thought and design was Richard Hunt, and his work was of such volume, his clientele so important, as to place him as one of the factors that shaped our tendencies. His earlier work adhered closely to the contemporaneous French Renaissance, but later his frequent and facile application of the style of Francis I. to noteworthy structures produced a widespread interest in the style. His high place is accorded him, not only because of the importance and quality of his work, but also for his sturdy maintenance of the best traditions of the French school, which now have become so important to us.

These men were great artists whose inspiration given to the young men of their day, now become the active men of this day, and to the whole trend of architectural thought in the official, governmental, and private life of our country, cannot be overestimated.

American Architectural Association.

It is important that I refer to the aims, influence, and results of the system of architectural education prevailing in our colleges at home and of the foreign schools, notably that of the Beaux-Arts system of instruction, and the theory of architectural training as formulated by it. Better than any other, it seems to us to concern itself with the broad principles of architecture, of the laws of composition, mass and proportion, the proper use of ornament, and emphasizes the comprehensive grasp of problems of a nature comparable to our own. Furthermore, it has evolved

a technical method of expressing these things so intelligibly that it is peculiarly suitable to the student, first grounding him in principles and then developing in him the power to individualize his interpretation of them. It is this insistency upon principles, and freedom from exploitation of any particular style or fad and the resulting flexibility, which popularizes this school of training with us. The general result of this organized system of education is already apparent, and will, in our succeeding architectural generation, mark the greatest forward step in the right direction that we have yet known. Already the sobering influence of logical thought based upon this training in principles is visibly impressing itself upon our buildings, to their infinite betterment, and revealing a firmness of touch and a sure handling of design. There is forming a unanimity or trend of thought that is replacing the scattered individual assertiveness of style that was characteristic of former days, which presages a typical American mode that will continue and prevail as a foundation for consistent development. I believe that the English influence and traditions will be always more in evidence in our expression of domestic architecture, because our habits of living are modelled upon the English customs, with particular reference to country life. Our public buildings, and our disposition of the larger civic architectural problem, will undoubtedly exhibit more decidedly than ever the French influence and system.

In the field of commercial buildings, we have presented to us our own peculiar characteristic American problem, and out of it we are developing our own positive contribution to architectural form.

Unlike the Gothic architecture, with its organic union of construction and design, it partakes of one characteristic Gothic quality, namely, the emphasis of the vertical and subordination of the horizontal line in composition. But, again, it requires a superficial envelope, a simulacra inclosing and concealing the real structural elements beneath, and in this respect becomes analogous to the arcuated construction of the Romans with its outward application of Greek forms and orders.

That we should have indulged in architectural floundering and fantasies with such a problem as this to deal with is not to be wondered at when all things are taken into consideration.

Tall Buildings.

Our most unruly problem, the tall building, is, from my way of thinking, the result of the logical working of the law of supply and demand. It is neither fantastic, avoidable, nor useless, will not yield to adverse legislation, because public necessity formulates a public opinion that will not legislate.

It is amusing to read in the publications of fifteen years ago the diatribes against it and prophecies of its early extinction which were provoked by the modest fifteen and twenty-storey structures of that time. The architect of the then tallest building in New York announced in print his belief that the end of tall buildings was in sight. Structures of twenty-five, thirty, forty, fifty, and even sixty storeys have

been the answer. It furnishes a typical example of practical necessity and mode of existence creating a movement which ends in something distinctively characteristic of a people, and in this instance steel-construction and the tall building is affecting us as did the round arch and vault of the Romans. The business centres of such cities as New York and Chicago, as created to meet the conditions of 1860 to 1870, were soon outgrown, and the necessity for larger and better buildings became apparent. The established business centres could not be, or, at least, were not, moved, property values and the existing inter-relations in those centres being of too great moment at the time.

This generally prevalent condition produced different immediate results in different sections of the country, which long since have converged into an established common practice.

Skeleton Construction.

In Chicago, we find that the direct causes that led to the first example of true skeleton construction were—(a) the necessity for increased height; (b) which the character of the supporting soil rendered impossible on account of the weight of the then prevailing type of massive masonry walls and interior columns, and which could not be overcome unless (c) a system of construction be devised stronger and of less weight than other types, which was accomplished by the device designated by us as the "Skeleton Steel Construction."

The system as developed is a simple one in principle, consisting of supporting columns of steel or cast-iron, braced in all directions, and riveted or bolted to the horizontal girders and beams, which not only support the floor construction, but, more important still, also carry, story by story, the outer walls of the structure, which thus cease to have constructional value, becoming a thin screen of material that serves to enclose the building and to protect the steel fabric from exposure.

The outer walls being but screens, the masonry supporting nothing, their piers were in consequence easily reducible to a minimum surface width, and the area of glass could thus be largely increased, thereby giving a maximum lighting to the interior, a device rendered necessary by the generally increased height of our buildings fronting upon streets that could not be increased in width. The effect of this condition is manifest in the earlier treatment of the architectural design of these structures, and has become typical of them in the work of the present day.

The walls, being non-supporting, could be reduced to a minimum thickness, thus providing an important addition to the interior area of each floor, and materially increasing the earning power of the building—an imperative necessity because of the rapid rise in ground value in central business districts.

None of this development would have been possible, however, if it had not been for the American type of elevator, which was promptly developed in response to this new demand, and has kept pace with it ever since by evolving new principles of construction and operation necessary to cope with the constantly-

increasing height of buildings and the enormous increase in service, both as to speed and volume of traffic.

These foregoing advantages, meeting our conditions and requirements, led to the general widespread adoption of this system, resulting in the development of remarkable contracting and building skill and organization, of which we have every right to be proud, and which has produced amazing results as to speed of construction, quality of work, and economy. With our high ground values and the necessarily great earning power of these structures, the saving of time in their erection became a matter of momentous importance, and this necessity led to the creation of the skill and organization referred to.

This type has come to stay because of its attributes of structural endurance, safety, economy in first cost and of upkeep, and its general suitability to our modern conditions.

While it has belonged to the domain of the architect, becoming the accepted type for our huge hotels, apartment houses, and commercial structures, and under his direction is fast becoming a thing of grace and beauty from a beginning of sprawling ugliness, nevertheless it must be said in all fairness that these structures could not have been devised without the skill and genius of our mechanical and structural engineering professions, the builders, and the skilled mechanics, whose trades have become specialized and developed by this demand, all united in effective co-operation with the architect.

The question is frequently propounded, "Are these structures beautiful, or can they be made so, and thus enter the realm of artistic thought?" In my opinion the answer is emphatically, "Yes." It is no conclusive argument to decry them because in certain communities people live and pursue their vocations in such a manner as to make this type of building unnecessary, or because, since they have thereby been enabled to restrict the height of all building to a lower level, producing a uniformity of general effect, they can then point to Paris as the grand example of this sort of thing, and claim her artistic virtue as their own. Beauty of this sort is the outgrowth of suitability to local conditions, plus the artistic thought that may be apparent in the means adopted, but it is, after all, only one kind of beauty. There is beyond question the beauty to be found in truthful picturesqueness when it is a natural outgrowth of conditions inherent to the people, and it can be made quite as respectful of architectural law, and the result of individual effort being made with regard to the effect of the whole, while working in this freedom of spirit, as though it were hemmed in by ironclad restrictions as to height, etc., that are characteristic of certain communities.

The development of the exterior treatment of the tall building architecturally has been exceedingly interesting, and in the time and space afforded to me in this discussion cannot be described in detail. The stereoptical views and the comment thereon which I have to present will illustrate the subject in a more effective manner.

Treatment of the Tall Building.

Briefly stated, our fundamental principle in design seems to have become established by treating the tall structure as a column with its base, shaft, and capital. In all of the best and most pleasing examples of the later work this element appears, and we find the lower storeys grouped in a single architectural composition supporting a long vertical and shaft-like series of storeys grouped into a simple treatment that carries the eye upward without interruption to the crowning feature of the entire design, which again is a series of storeys combined into the capital, as it were, of the mass. The pleasing variety of thought in the handling of this scheme of treatment is one of the best features, and, generally speaking, is now characterized by a sober, refined self-control and a truly architectural spirit. In the classic feeling of the Italian Renaissance the municipal building of New York is unquestionably one of the best solutions of the problem on these lines that we have, while in the West street building and in the Woolworth building, both in New York, we have equally good examples of the application of Gothic feeling and detail. Considering its extraordinary height and unusual mass, the design of the Woolworth building is, in my judgment, an architectural achievement of the highest order. I have referred to these buildings not only because of their architectural merit, but also for the reason that they represent the two broad schools of design which seem most suitable to the problem presented by the tall building, and are, I believe, typically representative of our lines of future development.

In pointing out the consummation of this century and a half of architectural growth in my country, I would have you enter the harbor of the city of New York on a transatlantic liner, and from that point of view for the first time observe the buildings of the lower end of Manhattan Island, with their towering and amazing skyline and mountain-like mass of architectural grouping, picturesquely artistic and truthfully expressive of the spirit of our lives and activities.

I believe that it will grip the imagination of any observer, whether he sees it for the first or the hundredth time, and that he will experience from it that flow of thought and impression which is produced only in the presence of some great and inspiring thing. To me it illustrates the quality and the character of our people, their aspirations, and their peculiar genius in terms of architecture, as do our mountains and valleys, our lakes and rivers, the physical character of our land. Prosperity, wealth, and power we are surely possessed of, and we are as surely acquiring from the artistic wisdom and traditions of Europe that which is useful and good for us to have, and are applying it intelligently to our needs. As a people we are learning to respect and revere art, and to value its uplifting influence, and with these fundamentals to build upon, and with the artistic forces that are ever active amongst us, the future of American architecture will be worthy of high regard.

THE ROUND CORNERS OF NEW YORK CITY

How the improvement of business intersection, such as is under discussion in Toronto and other Canadian cities, has been accomplished in New York.

JUST NOW, when the question of widening certain intersections in the downtown business district of Toronto is under discussion, an article of timely interest by Franz K. Winkler, dealing with what has been accomplished in this respect in New York city, appears in our contemporary, the "Architectural Record." The author, who discusses in a broad way what is termed in the caption "Mitigating the Gridiron Street Plan," describes in part the round corners of the American metropolis as follows:

It is, no doubt, the interminable monotony inflicted by the rectangular plan which is, architecturally, its most depressing feature. "A whole city full" of "straight-sided and right-angled houses" must necessarily be a most depressing spectacle to those condemned to witness it and traverse it daily. Irregularity in the street plan enforces some ingenuity in the house builders, some picturesqueness in the houses. How much more interesting to walk about is, on that account, the irregularly laid-out Dutch settlement below Wall street than the "long, lovely streets" above Fourteenth, which were "regularly laid out" by the system of a hundred years ago. An

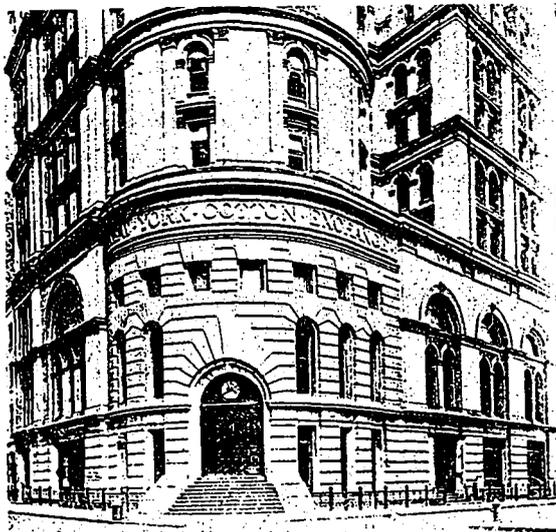


Fig. 1.—The Cotton Exchange, Hanover Square, New York City. Geo. B. Post, Architect.

acute or an obtuse angle cannot be as monotonous as the unvarying succession of corners where two walls meet at a right angle. The obtuse or the acute angle not only offers, but in some sort imposes, an architectural opportunity. Accordingly, it is in the downtown district, and up-town, along Broadway, where every street corner offers two obtuse and two acute angles to the builder that some variety is offered to the monotony that prevails elsewhere.

The site of the down-town Delmonico's almost compels an interesting building. It is one of the most commanding that the irregularly laid-out street plan of the lower island supplies. The opportunity impressed the designer of the elder building on the site, doubtless dating back to just after the great fire of 1835. When that was outgrown, its architectural features, the porch and the order at the narrow end on the rounding corner, were in effect judiciously reproduced in its successor. The successor is of

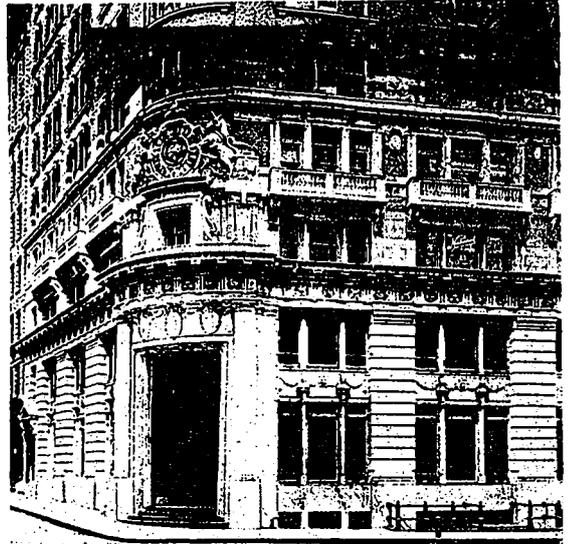


Fig. 2.—The Royal Insurance Building, Corner William Street and Maiden Lane, New York City. Howells and Stokes, Architects.

modest altitude among its neighbors now, though its eight stories made it a portentously tall building when it was erected in 1892, being an example of the transitional building in which, of the factors which have gone to the production of the modern skyscraper, only the elevator was already in operation. A sensitive passer can hardly look at it without deploring that "the system" prevents the multiplication of such opportunities as that which has here been so effectively employed.

The Cotton Exchange (Fig. 1), in the neighborhood of Delmonico's, is another transitional building between the old five-story office building and the new indeterminate skyscraper. One may remark, in passing, that that transitional building, of from seven to twelve stories, with real walls of masonry, seems to have invited or compelled more originality and individuality of treatment than its successor of the steel frame. In this case the rounding or other signalization of the corner was not compulsory, since the angle is nearly or quite a rectangle. But the rounding, it will be agreed, is very effective all the same, enables the designer to give dignity and importance to the principal entrance, and gives the passer something to look at for which he ought to feel grateful, and if of an appreciative constitution does feel so. And Gradgrind himself, to whom the unusual disposition has nothing to say, could hardly complain that the effect was too dearly bought by the sacrifice of room. There is no such sacrifice.

It is satisfactory to observe that the effectiveness of

such features as these has not been lost upon the designers of the fully developed skyscrapers, and that, when they have the good luck to deal with a corner and not a mere inserted street front, they are increasingly showing their sense of their good fortune by endeavoring to make a feature of the corner, even when it is rectangular. One cannot always, nor perhaps generally, say that the corner is the "logical" entrance for a building fronting on two streets. But it is the logical entrance, at least, to the room at the corner, and, in a building erected primarily for the uses of an institution, and secondarily only for what



Fig. 3.—Broadway, South-east Corner of Twentieth Street, New York City. McKim, Mead and White, Architects.

rental may be derived from it, the corner is often the logical abode of the institution, and its separate entrance a logical and suggestive feature. On the other hand, there is, structurally, a want of logic, in a building which is designed upon the assumption, however false, that it is a building of masonry, in piercing with large openings the corner which should be, and which, if the assumption were true, would have to be, the solidest and most fortified piece of masonry in the entire building, as being the ultimate abutment of the walls on both sides. *De non apparentibus et non existentibus, eadem est ratio.* Of course, the passer knows that, as a matter of fact, by means of the steel frame, the masonry of the corner can be gouged out and weakened to any extent without compromising the stability of the structure. But all the same, the architect engages in a self-destructive process when he contradicts his false pretence that what the spectator sees is an actual structure competent to carry itself. He ought to bear this truth in mind when he undertakes to scoop out his corners, and to leave as much solid-seeming wall, and to fortify it as speciously as is compatible with his purpose of cutting an "important" hole in it. In this respect the entrance to the Royal Insurance building (Fig. 2) is particularly well contrived, and is, indeed, pretty nearly a model of treatment for a corner entrance to an institution which, like the "private family" that let lodgings in the old days before the apartment house, "has more room than it requires."

Starting from the financial district northward, one comes upon one notable example of irregularity in the southern end of the Post Office. One cannot call it exemplary, for undoubtedly the city gave away its birthright for a mess of pottage when it yielded to the importunity of Mr. Mullett forty years ago and consented to move away the park fountain which had been playing for twenty-five years, or ever since the introduction of Croton water, in order to make room for the Government building. All the same, the most interesting point of design, some may say the only interesting point of design, in the granite pile is the manner in which the ground is taken advantage of, and the triangle filled out, by the advancement of the southern front in narrowing echelons. Unfortunately, there is no proper distance from which it can be seen. It is good enough to stop a vista withal.

Nevertheless, the one anomaly which the layers out of 1807 allowed to stand is also the one up-town thoroughfare which offers opportunities for any picturesqueness of outline. Broadway does this all the way up from its westward turning at Grace Church. That church itself owes much to its situation just at the turn. From there up to the Harlem River every intersection of the thoroughfare with the "sieve" of the system offers at least two obtuse and two acute angles, of various degrees of obtuseness and acuteness, according to the curvature of Broadway. Every one of these corners is more or less a challenge to the ingenuity of the architect. The challenge has commonly been shirked, perhaps not by the fault of the architect, but in the interest of economy. There is no denying the postulate of the commissioners of

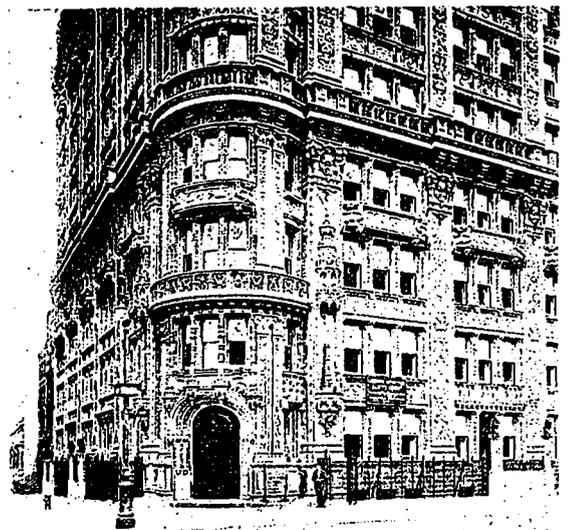


Fig. 4.—Seventh Avenue, South-east Corner of Fifty-eighth Street, New York City. Harde and Short, Architects.

are the cheapest to build," grossly as they exaggerated the importance of that consideration. Nevertheless, there are examples along Broadway where the challenge has been taken up and satisfactorily met. One of the most noteworthy of them is at the southeast corner of Twentieth street, where an acute

angle is rounded and furnished with an entrance which is a highly attractive feature (Fig. 3). In the stiling of the arches compelled by the arrangement and the curvature, we may see repeated the process of the architects of the French Romanesque, where, as in the circling of an apse, they had to deal with arches of different spans and the same height. Doubtless it was the awkwardness which this process entailed, in complicated cases, where the round arch was retained, which led, among other similar drawbacks, to the introduction of the pointed arch, which it is evident that the Gothic architects employed at first under compulsion and not from choice, seeing that they continued for so long to use round arches where they could and pointed arches only where they must. This New York example shows how effective may become the stiling of round arches of less than the normal span of the openings of the building in which narrowing compels the stiling. On the corresponding corner of Twenty-second street occurs another interesting feature, made, this time, by truncation and not by rounding. The truncation is sufficient to afford a face wide enough to admit an oriel window, which, though rather domestic than commercial in character, is yet an effective feature.

But, upon the whole, the architects of upper Broadway have by no means lived up to their privileges in "featuring" their corners. The instances we have cited are almost alone, though, to be sure, there is a rather picturesque turret in red brick at the north-western, and, therefore, acute-angled corner of Eighteenth street and Broadway, by the late Ed-

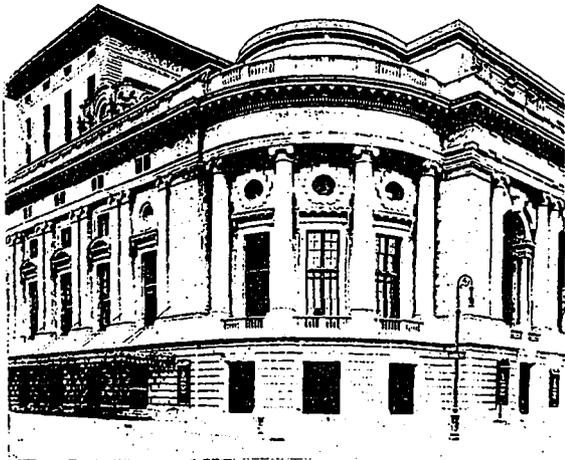


Fig. 5.—The New Theatre, Eighth Avenue and Sixty-second Street, New York City. Carrere and Hastings, Architects.

ward H. Kendall, rather interesting, though much weakened by the absence of any visible means of support.

But, desirable as the irregular angle is to draw attention and lend distinction to the building upon it, the square corner is also capable of some distinctive and individual treatment, although so few architects seem to appreciate that fact. Doubtless it is the common superstition that there is a "waste of room" in every building which stops short of the

building line, which is not "built to the limit" in every dimension, that is responsible for this abstention.

Yet, in domestic architecture, in particular, a rounded bay at the corner not only offers an opportunity for a picturesque exterior feature, but very often, by the simultaneous command it gives of two streets, furnishes an interior attraction which any occupier would be delighted to acquire at the infinitesimal cost of the space it sacrifices. For the purpose of producing a grandiose architectural feature at a street corner, the New Theatre very impressively illustrates the advantage of rounding the corners,



Fig. 6.—Fifth Avenue South-west Corner of Thirty-eighth Street, New York City.

even when the street system has squared them (Fig. 5). Nothing in the treatment of that building is more admirable than the introduction and the design of the rounded and crowned pavilions at the corners which shelter and denote the entrances. There are other methods of circumventing the street system and mitigating its asperities. But they require some municipal co-operation. This of giving more importance and interest to the corners any architect can apply, in a case suitable to its application, with no other assistance than the connivance of his owner. All the same, one can by no means commend the performance of the architect who is responsible for the building at the south-western corner of Fifth Avenue and Thirty-eighth street. He has compelled attention to his work; there is no doubt about that. But he has compelled it by compelling wonder how the thing stands up at all, why it does not kick out at both its unabuttended ends and tumble into its own yawning void. Of course, that it what it would do if it were what it purports to be—a construction of masonry. And, of course, one understands that the real structure is not at all what one can hardly call the "ostensible" structure, but is a concealed framing of metal, which has nothing to do with the architectural case.



PRESENT DAY ECCLESIASTICAL BUILDINGS

English architect deplores perversion of constructive principles in modern work. Says cheapness began when traditional architecture died out.

THE PERVERSION of constructive principles so manifest in much of the present day ecclesiastical work form the subject of an interesting article by W. D. Caroe, F.S.A., F.R.I.B.A., which appears in a recent issue of the "Church Builder." After a brief introduction, in which the "cheap" church is characterized as a product entirely of modern origin, the writer says: Our church building ancestors, who may be said to have invented and developed for us the type of building which so materially influences our designs and methods, never indulged in unsubstantial work erected chiefly because of its cheapness. They worked under a continuous tradition which had its best development in church building, and made them beautiful, substantial and solid. This statement is consistent with the fact that these great builders many times began a work which they had not the means to complete on the scale of magnificence contemplated at the outset. In such cases a simplification of detail took place; a vault perhaps was omitted and a wooden roof erected in its place. But still, the work finally accomplished was never "cheap." Again, there were instances where the building materials more usually desired were too costly to come by owing to difficulties or distances of transit, and they had in such cases to put up with such inferior materials as they could collect on the spot. A large part of their art consisted in the suitable use of such local material. We find notable examples where piers, arches, and every part possible are erected in the roughest rubble masonry plastered over. Dressed stone is used in the smallest possible quantity only where, as in window traceries, it could not be dispensed with. But in such cases the pillars, being comparatively weak in construction, were made stout and sturdy, and extra thickness was given to the walls. Here again we cannot accuse them of cheap building.

Cheapness not Economy.

Cheapness seems to have begun when traditional architecture died out. Some of the churches erected towards the latter end of the 18th century were essentially cheap, and cheapness was rife in the early part of the 19th. In latter days it has been held in check in England, only by such societies as the Incorporated Church Building Society, and to a lesser extent by the Ecclesiastical Commissioners.

Economy, the author contends, is not necessarily cheapness; this is the distinction to be made clear, for the two in fact are wholly opposed. Experience tells us that cheapness in building involves with un-

erring certainty dearth of upkeep. Cheap building is invariably bad building, and for the results of bad building there is no remedy save demolition and starting afresh, when at length funds and patience alike have been exhausted in the fruitless effort to heal running sores.

Now there are, nevertheless, those who promote the building of cheap churches, and influence ignorant committees unable to distinguish between cheapness and economy. As cheapness and vulgarity seem to run in harness, it is not surprising to find the art of self-advertisement, for which the press of today affords such ready facility, frequently resorted to in this association. Such advertisement generally takes the form of a promise of a church at so much a sitting (a wholly fallacious standard). In the outcome the promise is frequently unfulfilled, but if fulfilled, it is only by sacrificing essentials. But whether fulfilled or not, there is the same special puff in the ear of the local reporter, when one of these structures receives episcopal benediction.

The Stereotyped Design.

A study of churches of this type is worth making. It will be found that each and all of them come in each individual case from a brain which has not two ideas. Precisely the same set of plans and details and the same specifications are used again and again, no matter what or where the site or the locality. At the very outset this bespeaks economy of production in favor of the producer, but at the lack of it to the payer, because the cost of materials and their lasting qualities vary with the locality. The specification is, moreover, apt to be of the most meagre and inadequate type, with large provisional sums reserved, so that, in the event of a breakdown in price in any locality, some alternative material may be substituted, no matter how unsuitable.

As far as granting and approving authorities are concerned, the design manages to run the gauntlet of approval with the narrowest possible margin, but having done so is loudly belauded as having secured what is represented as cordial recognition. As a matter of fact stereotyped design is submitted again and again and the same faults are pointed out by granting authorities *ad nauseam* and with difficulty secure correction, though apt enough to appear again in the erected building. It is one of the curious facts connected with the revision of design that the worse the design the more stiff-necked is its author in consenting to amend it.

Again, the class of design we are considering is generally of that garish and showy type abounding in fussy architectural features, thoroughly poor in themselves, but devised to catch the eye of the uneducated in these matters, who predominate on many building committees. It tries, with small success it is true, to found itself upon the past, and is apt to provide capitals and bases and tracery and mouldings, all those features which remove the architecture of the past out of the sphere of cheapness. In trying to give these things cheaply they are given badly, while at the same time matters of more importance are sacrificed.

The Qualities of Economical Architecture.

All the time the money thus squandered might have been spent upon genuine, creditable and economical architecture, the qualities of which may be briefly set forth as follows:

(1) The use of suitable and, if available, local materials in a simple and direct manner, as best suits their nature. This requires much more art than is usually displayed in the class of buildings we are considering. Appropriate style, in fact, really depends upon it.

(2) The disposition of the materials so as to secure the greatest possible solidity and stability in relation to the amount of material used.

(3) The special adaptation of each design to the site upon which it has to be placed, and also to the needs of the climate and surroundings.

(4) The securing of architectural effect and interest by simple lines and good proportions rather than by elaboration of detail.

Reticence in design and harmony of parts go far to produce the element of solemnity and inspire that sense of reverence which ought to be present in every building devoted to the service of God.



THE THEORETICAL AND PRACTICAL SIDE OF VENTILATION

Both should be thoroughly considered if best results are to be obtained. Too much rule of thumb in present practice.—By Theodore Hough.

THE PROBLEM OF VENTILATION is largely an engineering problem, but, as in all such problems, the highest efficiency can be secured only by knowing accurately the conditions with which the engineer has to deal and the ends he must secure. Is the theory upon which we base our practice in accord with the advance of knowledge during the past two or more decades? This is always a good question to ask, and especially with regard to matters involving costly and often inconvenient building construction.

The old idea that the purpose of ventilation is to keep the air reasonably free from carbon dioxide and supplied with its normal content of oxygen, has long since been given up. Rarely does the carbon dioxide rise to more than 50 or 100 parts in 10,000, or the oxygen fall below 19 or 20 parts in 100, and we have no reason to think that this of itself, is responsible for the effects of poor ventilation. At the same time it is by no means proved that the quantity of oxygen available to the body or the effectiveness of the removal of carbon dioxide from the body are without influence, for it is the quantity and especially the tensions of these gases in the lungs and not the quantity in the air of the room which is the important thing. It is not impossible that there may be various reflex or psychic interferences with the normal working of the breathing mechanism which results in deficient or perhaps in the equally undesirable over-

ventilation of the lungs. Fortunately, the introduction of Haldane's simple method of analysis of the alveolar air now renders this subject capable of comparatively easy investigation, and it is to be hoped that our knowledge about it may soon be materially extended.

The failure to make the composition of the atmosphere in oxygen or carbon dioxide responsible for the results of poor ventilation led to the theory that the cause of the trouble is the presence of minute traces of extremely poisonous material in the expired air, and it was furthermore assumed, with utterly inadequate proof, that these poisons came from the lungs. Hence the teaching that while the carbon dioxide of the expired air is not itself responsible for the bad effects, it may be used as a measure of the imponderable or undeterminable poisonous material. And so there have been thousands of analyses of air for this gas in the endeavor to measure thereby the efficiency of ventilation.

Expired air unquestionably contains material not present in normal air, and these materials often have a very offensive odor. But it is not true that they are contributed chiefly by the lungs. Decaying food particles in the mouth, catarrhal exudates, uncleanness of person, and the like, are far more responsible for their presence. If this is so, it is perfectly clear that the carbon dioxide is not a measure of their amount. A room crowded with typical representatives of the great unwashed, who do not brush their teeth and have never occupied a dentist's chair, would certainly impart to any assembly room a flavor which could not be given by the same number of individuals of cleanly habits; and yet the carbon dioxide content of the two rooms would in all probability be identical.

Nor is this all. Even granting that these offensive substances are present, it is not proved that they are poisonous, or at least to what extent they are poisonous. The fundamental assumption of all such theories is that in the bad effects of poor ventilation we are dealing with some sort of intoxication, i.e., with the action of a poisonous material reabsorbed into the body with the inspired air. Good as this assumption may be to serve as a working hypothesis upon which to base accurate investigation, we may confidently challenge the production of any adequate proof that poisonous material in the inspired air is the sole or even the chief cause of trouble. In other words, even on the theory upon which it is based, this measurement of carbon dioxide is an example of "barking up the wrong tree," wasted effort which the exercise of a little common sense would have saved. Nor is the teaching of physiology lacking in indications of other and certainly equally important sources of trouble. A crowded, badly ventilated room is always in an overheated room with an atmosphere surcharged with moisture. The heat comes from the oxidations going on in the bodies of its occupants, and every breath of expired air leaves these bodies not only with an increased percentage of carbon dioxide and possibly other material of organic nature, but saturated with aqueous vapor. In other

words, the atmosphere of the room comes to repeat the conditions of a warm, muggy summer day. Indeed, it only requires an appeal to experience to see that there is a suspicious similarity in the effects of the two conditions upon the human organism. The importance of these atmospheric conditions is, moreover, enhanced when we remember that it is not the general air of the room, but that in immediate contact with the persons of its occupants which exerts the physiological effects in question. The writer cannot but feel that if more attention had been paid to the physical condition of the air within a few inches of the body and less to the general air in the room, the practice of ventilation would to-day be far more efficient, simply because it would have coped intelligently with at least two of the main evils.

The treatment of the practical problem of ventilation as a portion of the applied physiology of respiration takes far too narrow a view of the subject, and indeed this is recognized in much of our practice. In technological schools, courses usually combine the treatment of the subjects of heating and ventilation. But they do not generally look upon heating and ventilation as two separate things, instead of being, as they really are, two parts of the same problem. Of course, in such matters all depends upon our definition of terms and we may confine our conception of ventilation, if we will, to supplying of "fresh air" to an inhabited room. At the same time it is no uncommon occurrence to get wrong points of view because of the previous adoption of unfortunate definition. Ventilation as it is popularly understood, and we think it should be understood, is not simply the replacement of vitiated pure air; it is rather the maintenance of ideal atmospheric conditions in a room, the correction of all undesirable atmospheric conditions, such as the presence of offensive and possibly poisonous constituents, too high or too low temperature or humidity, contamination from leaky gas fixtures, the up-draught from damp cellars, and numerous others for which the practical engineer must be on the lookout, and which he must understand how to estimate with approximate accuracy. The practice of ventilation as an art is perhaps more a case of the applied physiology of temperature regulation and the circulation of the blood than of the physiology of respiration; it is far more a physiological than a toxicological problem; and, more than this, it requires practical knowledge of many factors of domestic and public sanitation.

The practical side of ventilation should also take account, to a far greater extent than it actually does, of the variable nature of the conditions with which it must cope. The maintenance of ideal atmospheric conditions in a climate whose mean temperature is 75 degrees is an entirely different proposition from what it is in one whose mean is 65 degrees; it is entirely different according to the relative humidity; and the problem differs, above all, with the variability in these conditions from day to day. Has there not been entirely too much rule of thumb in our practice? Every treatise on the subject gives tables of the number of cubic feet of air which should be

supplied to hospital wards, to school rooms, to factories, and so on. Surely it must make all the difference in the world in what sort of a climate these buildings are located. Formulas are excellent things, but only when they are judiciously applied, and a good formula for one city may be a complete failure in another.

It may also be pointed out that it is almost certainly a mistake to seek for any single convenient test of the efficiency of ventilation. It is, of course, not impossible that some test may be found which would give an approximate measure of this efficiency; but there certainly is no such test known to-day, nor is it likely that it will ever be discovered. The determination of carbon dioxide, as above pointed out, has been lamentably overworked. The operation of this test by a chemist sent from the office of a ventilating expert may at first impress the layman who knows nothing of its significance with a pleasurable feeling that he is getting the worth of the money spent in installing a ventilating system; but too frequently the same layman is found a year or so later expressing his opinion of "these scientific fellows" in language more picturesque than quotable, but he is usually justified in doing so. Efficiency tests should certainly include temperature and humidity, and the results of all tests should be interpreted in the light of actual knowledge of the conditions to be dealt with. After all, the final test is the experience of the occupants of the room.

There is in this whole matter a large field for the very best kind of scientific study.

AUSTRALIAN CAPITAL SCHEME COMPETITION—Continued from Page 78

A description of the site selected is also given, and a model of the city site on a horizontal scale of 400 feet to 1 inch with a vertical scale of about 100 feet to 1 inch has been prepared, and a cast of the model will be sent to each of the centres of distribution for inspection. The invitation to competitors states that:

(1) The government of the Commonwealth of Australia invites designs for the laying out of its capital city, and undertakes to remunerate the authenticated author or authors of the designs that may be placed, respectively, first, second, and third in order of merit at the final adjudication upon the designs, in accordance with the "Conditions of competition," as follows: For the design placed first, premium £1,750; for the design placed second, premium £750; for the design placed third, premium £500.

(2) The conditions under which designs are invited and will be received by the Commonwealth follow under the heading "Conditions of competition."

(3) Information and particulars are also given, solely to assist intending competitors, under the respective headings: "Historical and introductory"; "Requirements"; and "Description." The statements contained therein do not form part of the contract between the Commonwealth and the competitor.

(4) Information for the guidance of intending competitors will be available, free of cost, at the following places: Australia, the Department of Home Affairs and the Public Works Department of each State; New Zealand, Public Works Department, Wellington; Canada, Public Works Department, Ottawa; South Africa, Pub-

lic Works Department, Pretoria, and Public Works Department, Cape Town. London, Office of the High Commissioner of Australia; Paris, the British Embassy; Berlin, the British Embassy; Washington, the British Embassy; New York, the British Consulate General; Chicago, the British Consulate General.

(5) Applicants must establish their bona fides as intending competitors before being supplied with information.

(6) The information comprises the following: (a) Historical notes, conditions of competition requirements, general information, descriptive matter, and statistics relating to meteorology and climatology; (b) map of preliminary contour survey of site of Federal capital at Canberra; scale, 20 chains to 1 inch; (c) map of contour survey of site of Federal capital at Canberra (two copies); scale, 400 feet to 1 inch; contours, 5 feet vertical intervals; the trigonometrical meridian may practically be regarded as the local true meridian; (d) topographical map of Federal territory of about 900 square miles; scale, 6,000 feet to 1 inch (approximately); (e) map of the State of New South Wales; (f) map of the south eastern portion of the State of New South Wales; (g) geological map of the city site, scale 800 feet to 1 inch, and two reports by the Government geologist of New South Wales; (h) map showing rainfall and temperature statistics of the site for the Federal capital and surrounding district; (j) report by the Commonwealth meteorologist on the climate of the Yass-Canberra district; (k) reproductions of landscape sketches taken from points within the city site.

(7) Competitors will be bound only by the "Conditions of competition," a copy of which must accompany any design forwarded by any competitor.

A feature of this world-wide competition contemplates that immediately after the announcement by the Minister of the adjudication of the premiums, which will be made at Melbourne within two months of the date of receipt of designs, it is intended to publicly exhibit in Melbourne for a reasonable period all designs admitted to competition. Should the competitors desire on their own behalf to arrange a second exhibition in London or elsewhere, the Minister will, if requested, supply as exhibits reproductions from the originals of the premiated designs only.

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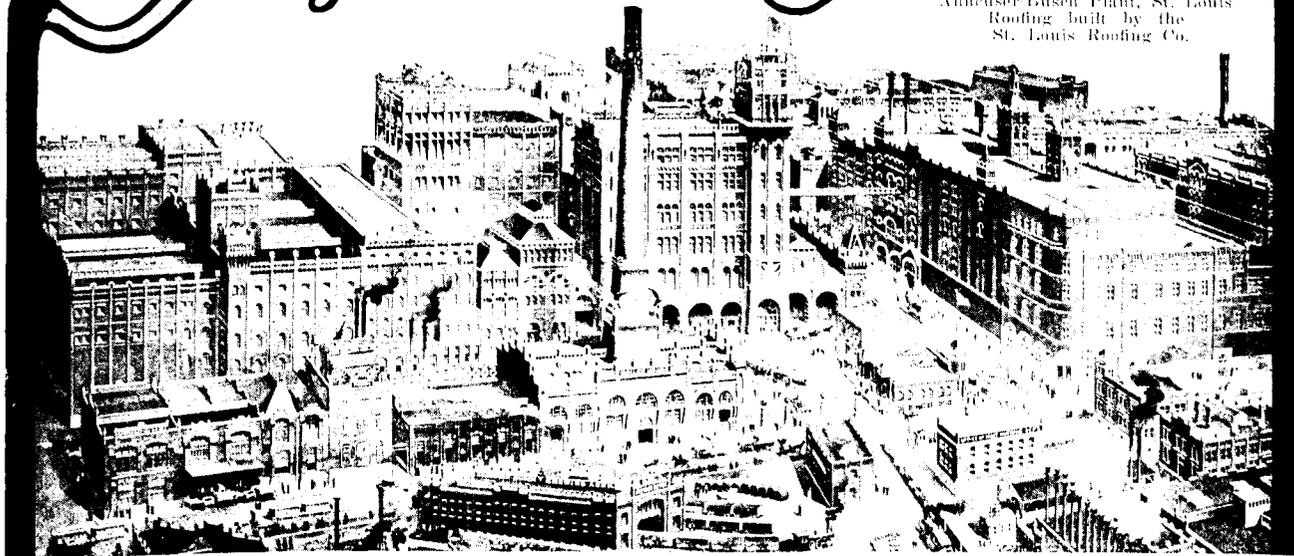
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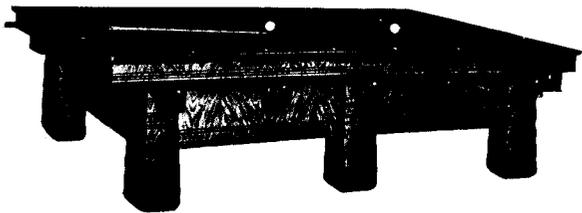
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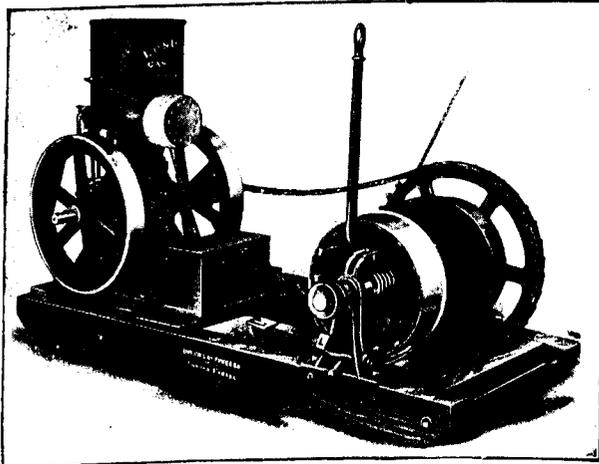
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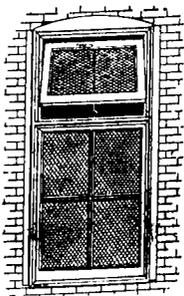
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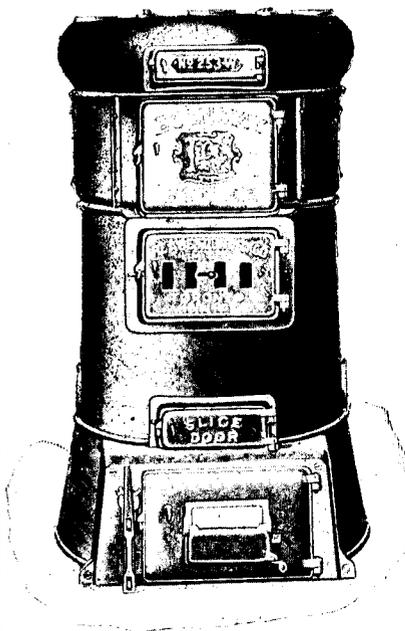
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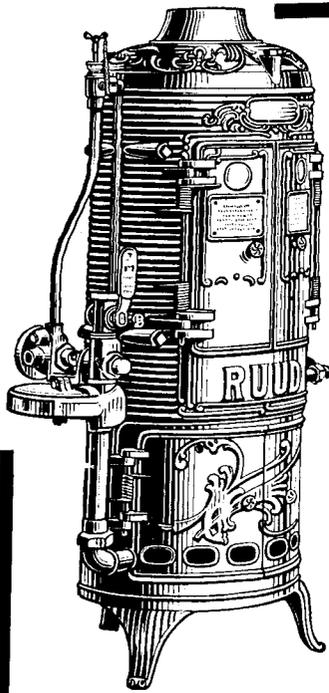
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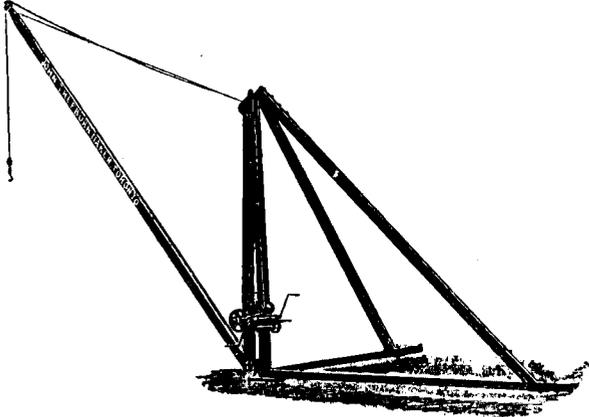
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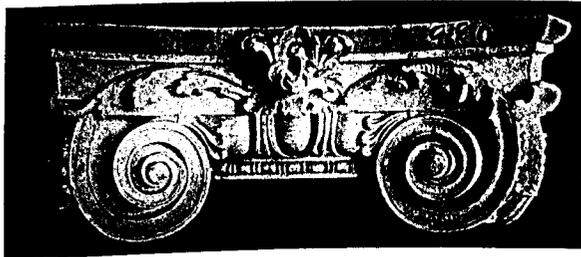
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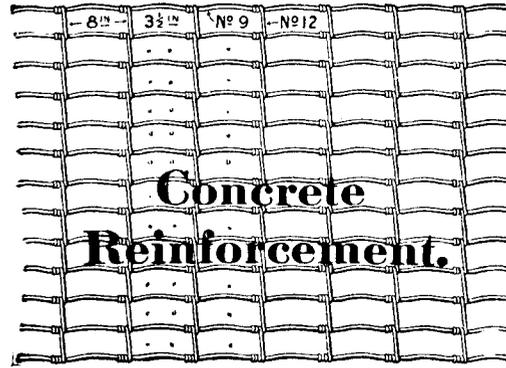
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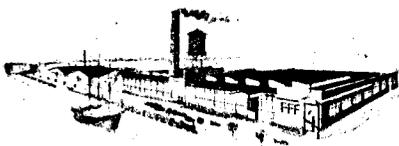
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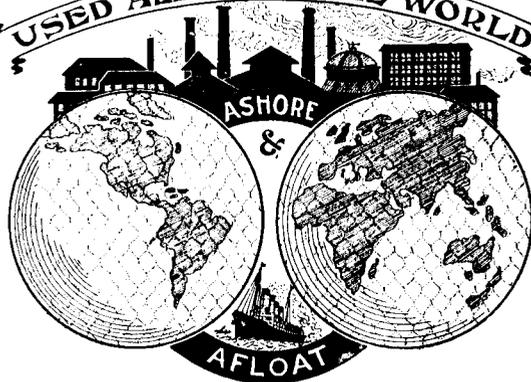
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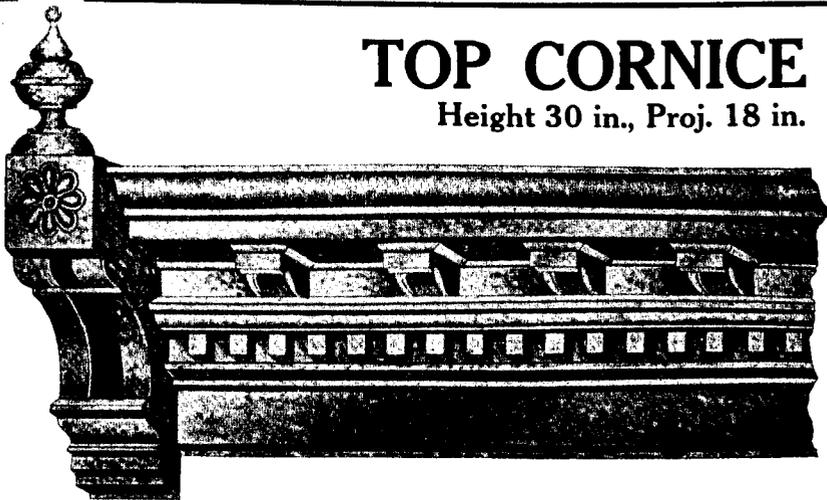
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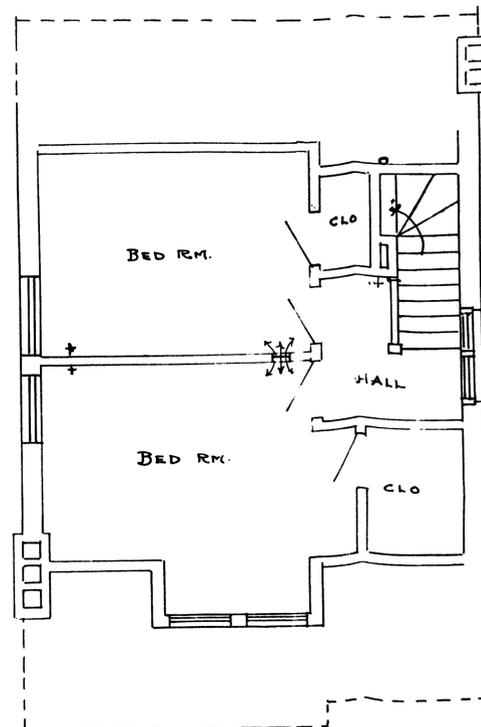
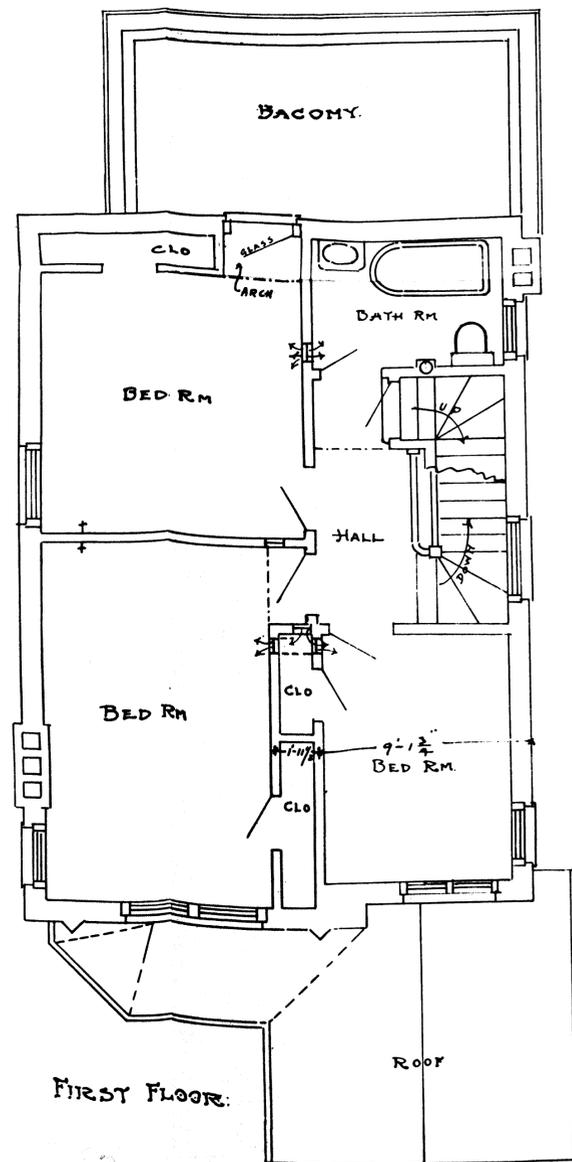
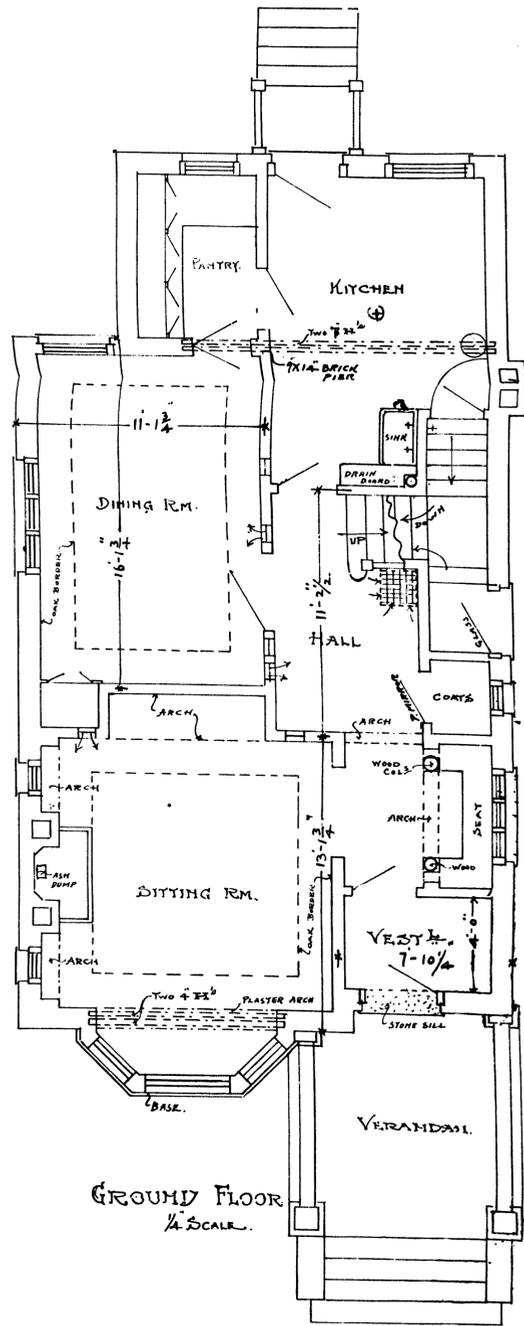
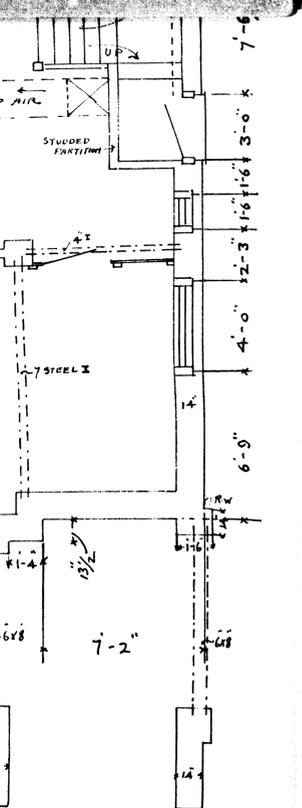
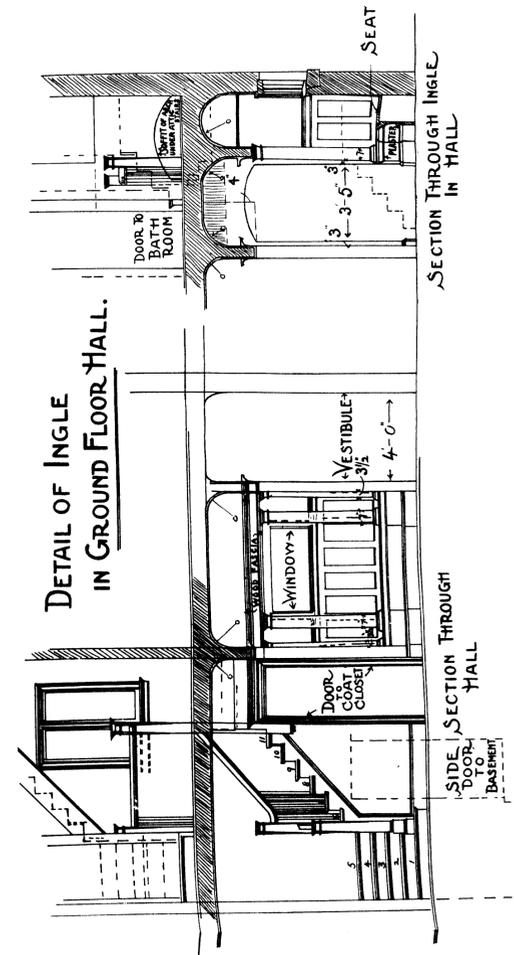
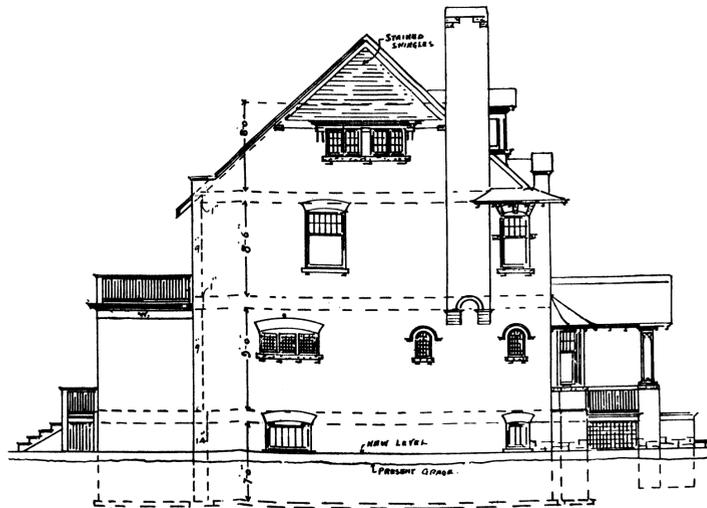
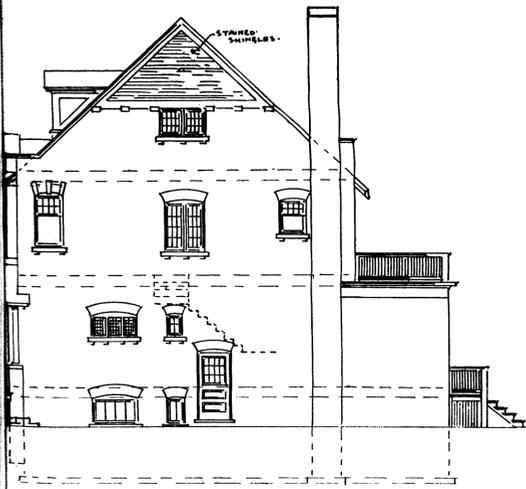
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July, 1911. Vol. 4. No. 8.

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