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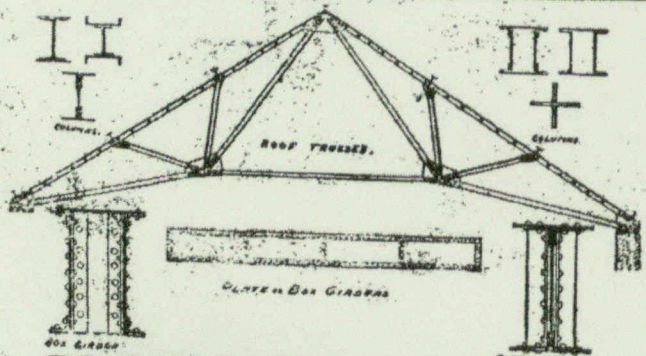
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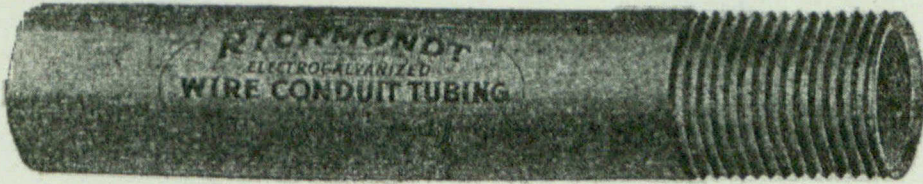
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where the winters are usually much more severe than in Toronto, the rule is to place all water and other pipes at least seven feet below ground.

The Collapse of a New York Steel Building

On March 2nd the Darlington hotel building, an eleven storey steel frame structure in course of erection at 59 West 46th street, New York, suddenly collapsed and twenty-one persons were killed. There was an outer casing of brickwork covering the steel framework. The floors were supported by cast-iron columns seated on separate off-set brick piers with concrete footings and granite caps and placed 13 feet apart. These columns carried I-beam girders and floor beams about 12 and 8 inches depth, the average spacing of the floor beams being 4 feet. Beam, column and girder connections and splices were, according to the specifications, to be bolted, no rivets being used. There were no knee or other braces. The building was designed to carry a floor load of 130 lbs. per square foot. Beams and girders were proportioned for working loads of one-quarter of this load and columns for one-fifth. The architects who prepared the plans and specifications were not employed to superintend the construction, but this duty was largely entrusted to one of their draftsmen who left their employ for the purpose. The original plans were submitted to the Building Department and approved. Afterwards these plans were changed and a new set of plans submitted which were rejected; then a third set was prepared which were also rejected. The contractors then proceeded with the erection of the building in violation of a notice from the Building Department that operations must cease until the building laws were complied with. Objection was made by the Department to the improper method of bolting beam, girder and column connections, and to the relative rate of construction of walls and steel work. The Building Department found itself powerless, however, to enforce the building regulations, and the contractors taking advantage of this fact, proceeded with the construction of the building.

When the collapse came a number of arrests were made and an investigation was instituted by a Coroner's Jury to ascertain the cause. The jury reported finding the owner and steel work contractors "grossly criminally negligent in the methods adopted and followed by them in the erection of the building". The jury further made the following recommendation: We recommend that the practice of the erection of buildings without the superintendence of the original architect or a competent builder of at least five years' experience be prohibited by law. We further recommend that the Building Department of the City of New York have a corps of competent engineers to inspect the erection of all buildings requiring engineering skill, and that a copy of the approved plans of each building be kept on the premises during construction." The building regulations at present in use in New York were formulated only three or four years ago by a Commission appointed for the purpose, and were thought to be very carefully and skilfully prepared to cover all possible contingencies. The occurrence to which we have referred, however, shows them to be faulty in at least one most important particular, and should lead the authorities of New York and other cities to carefully revise and make as effective as possible their regulations governing the construction of important buildings.

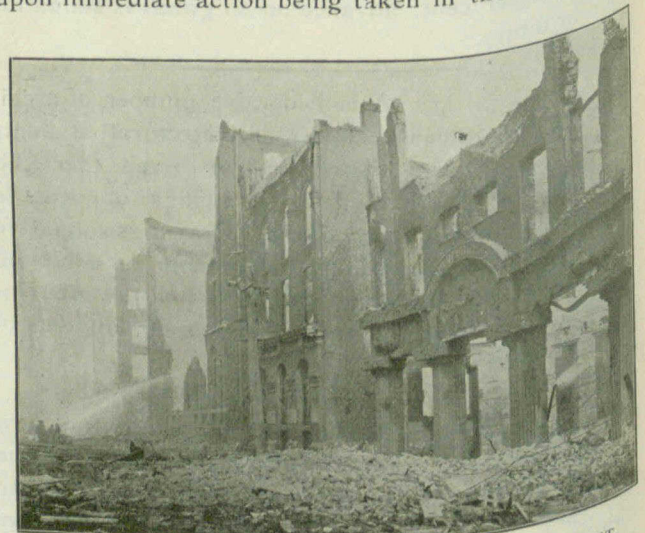
THE TORONTO FIRE.

Two things have specially impressed us in connection with the disastrous fire in Toronto—one that the insurance companies required only two days to decide to advance insurance rates from 50 to 75 per cent.; the other, that the City Council of Toronto have had under consideration for two or three years the framing of an up-to-date building by-law, and no decision has yet been reached. This is a fair example of the relative speed with which private corporations work in com-



CORNER OF BAY AND WELLINGTON STREETS, NEAR WHICH THE FIRE ORIGINATED.

parison with public bodies. Perhaps the thing that most requires prompt action at the present time is the adoption and putting into force of proper building regulations. There is now an opportunity such as will probably never occur again of improving the character of buildings for business purposes. The opportunity should not be lost. It would be unreasonable to compel firms who have been burned out to defer the rebuilding of their warehouses, therefore the Mayor should insist upon immediate action being taken in the direction of



WAREHOUSES ON SOUTH SIDE OF WELLINGTON STREET, WEST OF BAY STREET.

the consideration and adoption of regulations which will insure that none but substantial buildings will be erected in the place of those destroyed.

This fire, as well as those in Baltimore, Rochester, and elsewhere has clearly demonstrated the fact that no better check can be put in the way of a conflagration such as Toronto has experienced than solid brick walls. Unfortunately, many of the warehouses which stood in the path of this fire were so flimsily constructed that the walls were not strong enough to stand

alone, and when attacked by the fire toppled over leaving a clear path for the extension of the conflagration.

The insurance companies should change their methods of assessing buildings, and offer greater inducements than heretofore to the owners of substantially constructed buildings. In the past buildings have been simply grouped into classes, each class being rated the same regardless of differences in construction. This method should no longer prevail, but substantial inducement should be given those who will put up solidly built structures and employ fire-proofing methods. When it is considered what great losses have been incurred by the occupants of buildings destroyed in the recent fire because of interruption to their business, it will be seen that, apart altogether from the question of insurance rates, it would pay the owners and occupants of such buildings to use a higher standard of construction.



VIEW ON WELLINGTON STREET.

At least one important building was saved by the fact that the windows on one side were protected by iron shutters. The advantage of protecting windows by this or other methods equally effective is beyond question. The value of open spaces in preventing the progress of fire has also been demonstrated. Had it not been for the open spaces immediately to the west of the Custom House and east of the Queen's Hotel, and the fact that facing on these open spaces were walls of solid brick, the fire would doubtless have spread further in both directions. While the water pressure was very defective, yet in the face of the unfavorable weather conditions prevailing this fact had little bearing on the situation. No matter what the pressure might have been, the fire could not have been stopped by the fire brigade after it had once got headway. In this connection it seems pertinent to enquire if, by the exercise of better judgment on the part of the heads of the Fire Department, the fire might not have been confined to the building in which it originated. It is said to have stated at the rear of the building, and that, instead of attacking it there, the firemen broke open the front doors, thus allowing the flames to be driven by the fierce wind through the building and across the street, setting fire to the large warehouses opposite. It would seem to be the duty of the Chief of the fire Department to direct his men on the street instead of as on this occasion entering burning buildings, where he was partially disabled, thus throwing upon the shoulders of subordinates the direction of affairs.

"Here all is sunny, and when the truant gull
Skims the green level of the lawn, his wing
Dispetals roses; here the house is framed
Of kneaded brick and plumed mountain pine,
Such clay as artists fashion, and such wood
As the tree-climbing urchin breaks.
My house, I say."

—LOUIS STEVENSON.

LESSONS FROM THE SOUTH KENSINGTON MUSEUM.

One of the best things in London is the South Kensington Museum. It shows examples of nearly every kind of design and is invaluable to designers of all kinds. Books and photographs are very well—there are books and photographs in the Museum Library—but when it comes to really feeling at home with design, to know what it is really like and measure one's mind against it with certainty, there is nothing like an example. For purposes of study it need not be the original; a model is as good. A model may fail to convey exactly the sentiment attaching to its original, or the beauty it has acquired from a bath in the atmosphere of centuries; but these are accidents which the designer's own work cannot share, and it is just as well that their attractions should not disturb his judgment as to what is essential. All that is necessary is that the actual modelling of the object should be presented to the eye; if coloured like the original when it was new, so much the better.

As a matter of fact it is a great question whether the most important part of the work of the South Kensington Museum is not done by models of its own originals, rather than by the originals themselves. Part of its work is to send out examples to Provincial Museums and Art Schools, and though it sometimes sends originals, the greater part of these little circulating exhibitions consists of models in plaster, made by workmen, attached to the Museum, who have attained to so much skill, in colouring as well as in casting, that the copies are, for practical purposes, facsimiles. They demonstrate incidentally the possibility of improving architectural casts by the application of colour; which would, in many cases, add to their instructiveness by expressing the design more perfectly. In the case of the casts which constitute the circulating exhibitions, colour is essential as part of the design of the original or to represent its material. The works exemplified are, for the most part, textiles, book binding and leather work, wood carving, silver and other surface metal work, medals, plaster work, gesso, and other decorative handiwork. The examples already prepared are in constant circulation, and a demand in any direction is met by fresh preparations. Classes of work which are not easily reproduced by casting or electro typing, or are not sufficiently portable, are represented by photographs or coloured drawings; and there is a catalogue, 138 pages long, of books for circulation in the same manner. In addition to these the Museum has a collection of classified lantern slides on all subjects, from the composition of monumental buildings down to lace work, with catalogue numbers running to 3,000, which is available for lectures and instruction in any part of the country. The card catalogue of this collection is worth noting. Each card has, underneath the title of its subject, a print of the negative from which the slide was made, and, an application for slides for a lecture on a given subject is responded to by a set of the cards which catalogue the

illustrations of that subject; so that the lecturer can make his choice with certainty.

The special interest of these proceedings to us is that they are conducted away from London, at any distance in Great Britain or Ireland from which an application is made; and one of the directors of the Museum has expressed the opinion, not official but personal, that it is conceivable that the distance to which the material of the circulating department is sent, might be extended to the colonies. The Museum authorities seem to be always on the look out for fields for further expansion of the Museum's usefulness, and an enquiry from any bona fide Museum or School of Art in Canada would be heard with attention at any rate and might be productive.

The weak point in the situation is the absence of depositories on the other side; and, in view of the excess of advantage over cost, one wonders at it. Toronto ought to have a museum of architecture and decorative art. It is a mistake to try to go on without one; and to have one is not such a great affair after all in the way of cost. It is not necessary to have originals to do good work; and it is not necessary to have everything that can be got together. Many of the old world museums are fuller than would be necessary for us, or indeed desirable. For them there is a mixed motive. There are more critics of the past among their frequenters than creators of the future, and for historical purposes a collection cannot be too complete. But what we, in Canada, want to study is not history in design but design in history. We need only a skeleton collection, the elemental types and nothing else; but we need these if we are not to flounder about, arriving at last, if we arrive anywhere at all, only at a point from which we should have started.

A well selected collection, arranged according to subject only, ignoring history as a theme by itself, would not be too extensive either to be purchased or housed. The greater part of such a collection has already been cast, and there is nothing to prevent special castings being made to complete a sequence or scheme.

Casts of the various objects of manufacture would be for the most part inexpensive. It is architecture that costs sums to cast which require consideration; yet architecture is, if anything, more in need of models than the manufacturing arts, for its originals, while the buildings exist, cannot be transported. The cost of an architectural room may be fairly gathered from an examination of the rooms at the South Kensington Museum; for the cost of each piece that has been bought is, as a rule, printed in a corner of the label which gives the name and date of the object from which the cast was taken. The examples below are given, not as subjects particularly suitable for a Toronto gallery, but as types of size in relation to cost. Size at the South Kensington Museum runs large. They have, in casts, the whole three portals of the 13th Century Gothic Cathedral of Santiago de Compostella, in Spain; measuring 57 feet in width, covered with sculptured figures in all possible and impossible places, and costing £2,300. They have the whole of Trajan's column (the top half standing on the ground beside the bottom half); the whole doorway of San Petronio at Bologna, 51 ft. by 40 ft.; the whole of the mantel from the Palais de Justice at Bruges, including 6 or 8 feet pro-

jection of the ceiling above it. In originals, they have a Flemish rood screen 42 ft. by 30 ft. costing £900; and the timbered front of the Sir Paul Pindar house as it stood on Bishopsgate Street, except the gable. But not to consider objects of this magnitude for the beginning of a collection, here are some examples, selected as being familiar either as individuals or as types:

1. Niccolo Pisano's pulpit in the Duomo of Pisa; panels crowded with figures half detached; 8 columns resting on beasts and groups of figures; a sufficient height of the column, against which the pulpit is set, included, and the steps which go round the column. Over all about 14 ft. x 18 ft. x 13 ft. high. Cost £320.

2. Tomb of Carlo Marsuppini in Santa Croce, Florence. Elaborate 15th century work. Carved podium; niche with columns, entablature and circular pediment; 12 ft. wide by 20 ft. high over all; pair of figures at base; pair of figures on cornice; bas relief in tympanum; elaborate sarcophagus in niche, with recumbent figure on top. £210.

3. Donatello's Singing Gallery for the cathedral at Florence. Double planes, columns in front of figures; about 18 ft. by 14 ft. and 4 ft. projection. £152.

4. 13th Century Doorway from Norwich Cathedral. Jambs recessed four times with columns in front of mouldings. Enthroned figure with angels on soffit of the arch. Over all 11 ft. by 15 ft. high. £120.

5. Choir screen from cathedral at Hildesheim. Arcade of 13 arches; 12 filled each with a figure, the 13th a doorway. Smaller open arcade above. 25 ft. long by 11 ft. high. £81 10s.

6. Tomb of Filippo Decio from the Campo Santo at Pisa. Half reclining figure on top reading a book. The arms and book being partly free complicate casting. 6 ft. 6 in wide, 9 ft. high. £45.

7. Chimney piece from Hotel Lallemand Bourges, French, 16th Century. Large fireplace, carved projecting top and portion of ceiling. 12 ft. x 13 ft. £44.

8. Doorway, 15th Century Italian. Pilasters, lintel and cornice; all carved. 10 ft. 6 in. by 12 ft. high. £34 10s.

9. Portion of Dutch screen, with 5 elaborate 16th Century columns. 11 ft. x 6 ft. £9 18s.

10. Anglo Saxon cross, at least 15 ft. high, with low relief carving. £7 15s.

11. There are several valuable models to scale, of buildings or rooms. These appear to have been made to order but the cost is not attached. Models of sections of Italian buildings, decorated by painting, probably cost serious sums to produce; but possibilities are shown by a model of Fergusson's theoretical restoration of the Parthenon, which cost only 14 shillings.

Some of the Italian originals at the South Kensington Museum were got at prices which tempt one to stray from decision in favour of casts. £75 for a black marble doorway 9 or 10 ft. high, carved all over with cinque cento carving, is cost price or less; £16 for a carved stone mantel 8 ft. by 12 ft. is certainly less than cost. But buying prices are not what they used to be, and as a matter of fact these particular pieces are not such good work as the subjects in the cast room; and a cast on the same scale costs less.

If there is to be any dealing in originals, England is the country for it. There is a continual pulling down and rebuilding going on and good details find their way to dealers or to museums. The South Kensington Museum has some beautiful specimens of this kind, gifts from the owners of old buildings which were pulled down.

In fact it is well worth noting in conclusion that gifts to the South Kensington Museum far exceed in number and value, its purchases. It is also the repository of some fine collections which the owners have no means of housing themselves. At first as a nucleus, later as a recognized centre, the Museum has attracted gifts and loans, which is also instructive.

THE FINK TRUSS BY GRAPHICAL STATICS.

By W. H. B., BERLIN, ONT.

Professor Wright's solution in the March number is ingenious, and roundabout. Here is another :

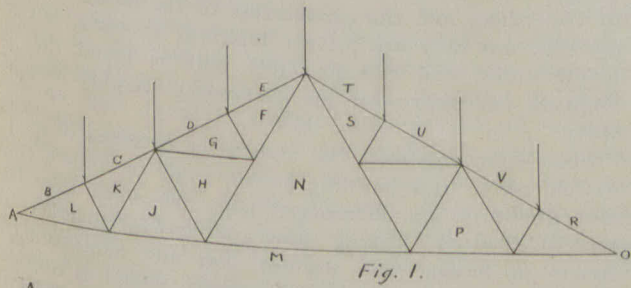


Fig. 1.

Assume a vertical load of 10 units applied at each panel point. Consider first the primary members of the truss, giving a frame of single triangulation, Fig. 2.

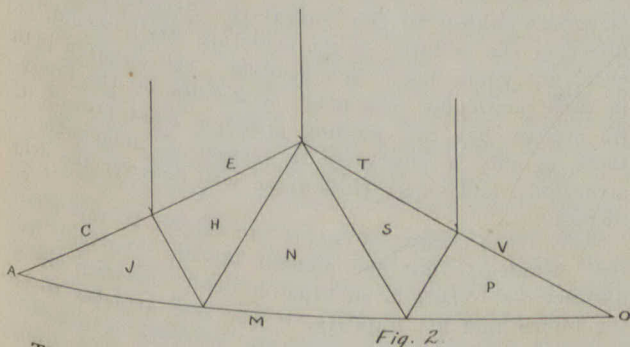


Fig. 2.

The load BC, 10, is carried 5 to A and adds 5 to CD; DE adds 5 to CD and 5 to ET; and so on. Ignore loads at A and O as they do not affect the frame. There remain loads CE, ET, and TV, 20 each. The stress diagram, Fig. 3, easily follows :

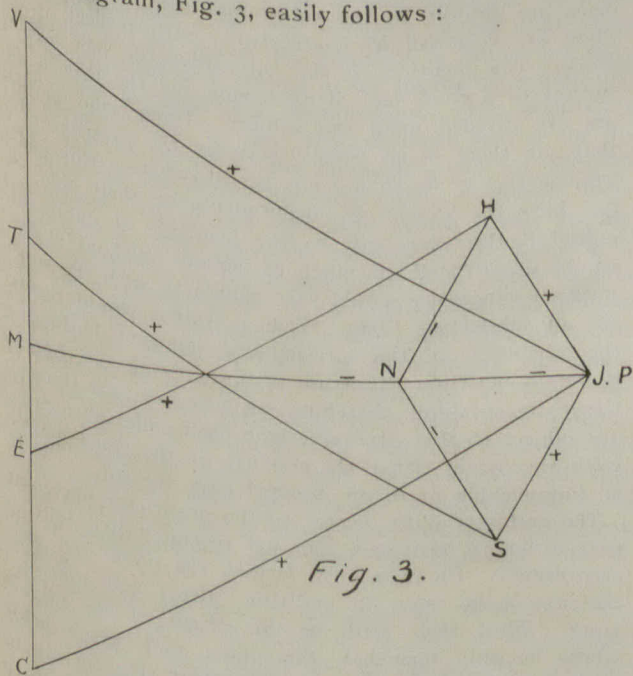


Fig. 3.

VTEC MV is the force polygon, made up of the loads VT, TE, and EC, and the two reactions CM and MV. It is a straight line because all the forces applied to the frame are parallel. Beginning at point O of the frame draw, in the stress diagram, from the ends of MV, the known force at O, the two lines VP, and PM parallel to VP and PM of the frame. The force MV, the reaction at support O, is upward. Following around the triangle in the direction given by that of the known force, VP is found to be in compression because the direction is towards O, the apex, and PM

is in tension because the direction is away from O. Mark these lines at once, in the stress diagram, + for compression and - for tension. Pass next to the apex SPVT of the frame, because the load VT and the stress VP are known. Draw PS and ST parallel to the corresponding lines of the frame. Both of these stresses are found to be compression. Proceed in like manner throughout the frame to the support A. For the closing line, the stress JC, the points J and C are fixed and the line must at the same time be parallel to the frame line JC Fig. 2. If the procedure has been correct this will be so. With the reaction line, CM, the operation is carried back to the point M from which it started, and the necessary check of its correctness is had.

Consider next the secondary stresses induced by transference of the intermediate loads to the main panel points. In the present case one determination only is required. Take the frame consisting of the triangles L and K Fig. 1, shown separately in Fig. 4. The supports are A and D. Fig. 5 is the stress diagram :

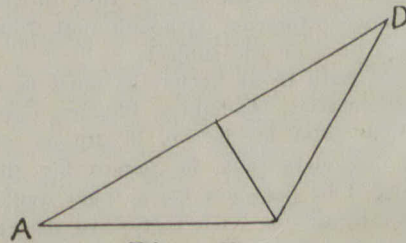


Fig. 4.

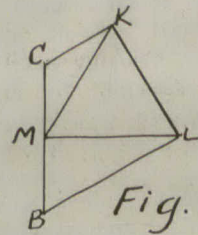


Fig. 5.

The stresses for the complete frame, Fig. 1, are obtained by adding the respective stresses of Fig. 5 to those of Fig. 3. BL Fig. 5, and CJ Fig. 3, give the required stress BL; CK and CJ give CK; BL and EH give DG; and so on. In the bottom chord the end panels only are affected by the secondary system. LK, KJ, and the similar members throughout the frame are affected by the secondary loads only, while stresses JH, HN, etc., are obtained from the assumed primary loading only.

It will be seen that this solution gives the same stresses as that of Professor Wright, whose solution would not be possible were the stresses LK, KJ, etc., due to anything else than the loads at the secondary panel points alone.

The solution given is for static symmetrical loading. The maximum stresses in a roof truss are due to drifted snow and wind pressure acting on one side only. These forces may cause reversal of some of the stresses due to static loads.

The term vector diagram is new, to the present writer at least. It may have a certain fitness in that the objective at any stage is the determination of two lines of which the directions are known. It is farfetched at best, and is an unnecessary innovation. And why deprive ourselves of the useful and expressive word "stress" which has the authority of Rankine and other foremost investigators? Professor Wright lacks a common word for tension and compression. Why interpolate "push" and "pull" when we may as well say "compression" and "tension" directly? The direction followed around the diagram governs in either case.

Some writers use - to indicate compression and + tension, on the mental association that compression subtracts from the length of a member and tension adds to it. It may be a matter of early training. The use of + for compression and - for tension has in its favor the practical, and graphically strong, argument that + is a good symbolical representation of a built compression member of a truss while - suggests a rod or bar, in tension.

THE ARCHITECT BEFORE THE LAW.*

By S. G. Archibald, Advocate.

Your President has asked me to give a course of three lectures before this Association on the subject of the Architect Before the Law, a subject as interesting as broad. It will not be my aim to cover the whole subject in detail, nor would it be possible for me to do so. I shall endeavor, therefore, to give you as complete an idea as I can, in the time at our disposal, of certain of the more important and vital questions with which architects have to deal in the daily practice of their profession, and I propose to begin with the question of the ten-year guarantee to which architects and builders are subjected.

An architect before the law is one who makes the plans and specifications for a building and who directs work, whose execution is entrusted either to a contractor or to workmen. The profession is, perhaps, the oldest of all professions. When Adam delved and Eve span, I presume Adam was his own architect; and when Noah built the ark, I presume, also, he was his own architect under the guiding hand of Providence. Since then architecture has advanced with advancing civilization and with its advance the law in respect thereto has become gradually more and more complete, more and more crystallized by commentators and judicial decisions. Our own law is that of the French law before the Code Napoleon, although that Code differs but slightly from ours on the subject.

The Architect must not only be an artist, he must be a "savant" as well. Mathematics, Mechanics, Physics, Geometry, Geology and Law must all be his in greater or less measure. For as Desgodets says, he cannot lay the foundation of a building if he does not know what ought to be observed between neighbors with regard to fences, wells, closets, cess-pools and so forth; he cannot erect it, unless he knows how he should place direct and side views, customary views and those of servitudes; and how he should place chimneys, hearths, furnaces, and galleries, and what contribution each neighbor ought to make to the mitoyen wall. He cannot cover it, unless he knows on what side and how, he must drain off the water; and finally he cannot tear it down unless he knows the precautionary measures which he must take with regard to the neighbors, who are always ready, at the least fault, to seek reparation from the proprietor. He might have added, that without some knowledge of the law of privilege, he will not know how to protect himself in respect of his payment for work done upon the building. In addition to this theoretic knowledge, his artistic sense must be highly developed, while on the other hand the range of his practical work-a-day knowledge must be almost unlimited.

As I have said, we will consider this evening the question of the "ten-year guarantee." The nature of the contract entered into between the proprietor and the architect is one of "louage d'ouvrage" or lease and hire and work—a contract by which one of the parties agrees to do something for the other in consideration of a certain price. Thus the architect leases his work represented by the plans and specifications and by his time and attention if he also directs the construction. Now, as a rule, and as a matter of common law, the reception by the proprietor of work done releases the workman in respect of that particular work, in the absence of fraud on his part; but our law governing architects in this regard is found in Articles 1688 and 2259 of the Civil Code of Lower Canada which derogate from the common law and are as follows: (1688) If a building perish in whole or in part within ten years from a defect in construction, or even from the unfavorable nature of the ground the architect superintending the work, and the builder are jointly and severally liable for the loss; and 2259 says, "after ten years, architects and contractors are discharged from the warranty of the work they have done or directed."†

While at first sight this guarantee may seem to some unduly severe, yet reflection will lead to the conviction that it is a most salutary measure. In passing this law

the Legislature had a three-fold object:—the proprietor was to be protected against his own ignorance, the architect and builder against their carelessness and neglect by means of this wholesome threat, and the public from the danger to which it might be exposed from the ignorance of the former and the carelessness of the latter. We thus see that not only are private interests at stake, but also public order, and this principle will be found the very fountain and source of the architect's weighty responsibility.

What structures does the Code refer to when it says in Article 1688, "if a building perish," and in Article 2259—that architects are discharged from the work they have done or directed. Taking these two articles together, the Courts in France have decided that any habitation, no matter how small, for men or animals, would be considered a building. Greater repairs, modification of old buildings which would affect the solidity of the main building, the establishment of a well, of a bridge, of a terrace wall, or of chimneys have all been held by French authors to be works subject to this guarantee. Accessory works not affecting the solidity of the structure itself, however, never, not come under this heading. The question of fact in each particular case must be decided by the Court on its merits, but this guiding principle must prevail, that there is only a guarantee in respect of immovable constructions, and where time alone will discover the defects thereof.

Now, what classes of people are subject to this guarantee? Evidently not the manual laborer who only leases his services. There is no "lien de droit" between him and the owner and his liability, if any ever attaches to him, is that of the general law, that everyone is responsible for his own fault. On the other hand, the lessor of works, whose object is an immoveable, is liable to this guarantee and these lessors are architects, builders and civil engineers. Under Article 1696, masons, carpenters and other workmen who undertake work by contract for a fixed price are subject to the rules prescribed in this section. They are regarded as contractors with respect to such work. The position of the sub-contractor has been the subject of a good deal of discussion and the French authors are divided upon the subject. Those who maintain that, as there is no "lien" between the proprietor and sub-contractor, he should not be subjected to this guarantee, have the weight of jurisprudence on their side. And indeed if this were not so the principle of public order would be violated inasmuch as persons without skill and without experience would take contracts with the sole object of sub-letting them. Such a system would result to the advantage of the careless and ignorant builder, and it would multiply litigation in multiplying sub-contracts. Generally speaking, therefore, we may say that those only are subject to this guarantee who have undertaken directly with the owner either the conduct or the construction of an immoveable or of an integral part thereof.

The architect with respect to the proprietor may occupy two different positions, and his responsibility will vary accordingly. He may only furnish the plans and specifications—or he may, in addition, direct and control the work. What then will be the extent of his guarantee where he only furnishes the plans and specifications? With regard to the plans it is evident that he can only warrant them in so far as they have been faithfully followed. His liability therefor, will only be for defects which are the necessary consequence of the plans which he has drawn or of the specifications which he has given. Supposing that for motives of economy the proprietor himself employs the workmen to execute plans furnished by an architect, and after the building has been constructed some five or six years, it threatens to fall down. The proprietor, in order to exercise a recourse against the architect would require to prove that the plans and specifications had been followed, and that the defect lay in them and not in the construction—such a defect, for example, as a weak foundation or insufficient beams, and so forth.

So also with respect to the material, the architect will only be liable for the nature of the material which he specifies.

* A series of lectures prepared for and delivered before the Province of Quebec Association of Architects, 1903, and published by permission.

† In the Province of Quebec.

ifies, but not for the quality used by the contractor. Thus, an architect who specified wood where he should have specified steel, will be liable if the building be endangered on that account. On the other hand, if he specify a material commonly believed among architects to be proper material, he will not be so liable.

A very much more important and interesting question presents itself with respect to the architect's liability for defects in the ground, where he only furnishes the plan. This point is very much controverted. Some of the French authors and notably Lepage and Guillouard consider that the architect has no responsibility with respect to the soil, inasmuch as he may never see it, but that the contractor who is on the spot must answer alone for this. On the other hand, though this guarantee may seem almost too rigorous, there is the question of public order and safety to be considered, and the sounder conclusion would seem to be, that the architect is charged with this responsibility. The proprietor asks for a plan for a certain piece of ground. How then can the architect answer for the soundness of his plan if he does not examine the ground? How will he be able to tell of what depth his foundation should be without a careful examination of the soil? This, it seems to me, is the very first thing he should do and besides is a thing which falls specially within the sphere of his particular knowledge. Without such an examination his foundations will be the merest guess work—someone must be liable. Shall it be the contractor alone, who, as a rule, has not so special a knowledge as the architect in that respect, and who, on discovering the fault in the soil will have to come to the architect to notify him that his foundations are insufficient, and that he would do well to visit the ground in order to get some idea of what his foundation should be. Surely not. A defect in the soil is intimately connected with a defect in the plan because the plan must vary according to the soil. An error in this respect would be rather an error of conception than of execution. I am, therefore, of opinion that the architect is liable for defects in the ground even when he only furnishes the plans and specifications. It goes without saying that these defects in soil for which the architect is liable, are only such as a careful man, versed in his profession would discover upon a reasonable examination. The architect's responsibility then, is this: that he must answer for his plans, for the nature of his materials, and for the soil for which he has drawn his plans—and, of course, under the common law for his own fault which causes damage to the owner, even when the solidity of the building is not in question. If, for example, he were asked to give plans for a school capable of accommodating five hundred pupils, and after construction it was found that 300 would crowd it, he would be liable in damages for this fault. If, however, as is generally the case, the architect also direct the work, his responsibility is still more weighty. Besides, all of the obligations to which the architect who only furnishes the plans is held, he must warrant their proper execution, must see that the materials are of the proper quality and are properly used, and, generally speaking, is responsible for everything in connection with the building.

Not only, in this case, is the architect liable for defects in the soil, but he is liable for defects in construction which are only such on account of the peculiar situation of the building. Thus, for example, if the house is to be erected on a high bank exposed to heavy gales, it would be a vice of construction to roof it with slate if experience had shown that that class of roof could not properly resist heavy winds.

With respect to materials furnished by the owner, the architect is not liable unless a reasonable examination would have shown him their defective nature. If, on the other hand, they are furnished by the contractor, there can be no doubt of his liability, saving always his recourse against such contractor.

All defects absolute or negative other than those of soil or material may be called defects of construction—such, for example, as too weak foundations, insufficient dimen-

sions of any of the materials, or a lack of proportion between the different parts so as to affect the solidity of the structure.

In addition to all this there is a presumption of defect in construction under the law, when a building threatens ruin within ten years without extraordinary reason.

But not only are the architect and builder jointly and severally liable for their own work, but they are liable where they have gone on with work already commenced by others; the architect is liable where the plans are furnished by another architect, and the builder is liable where he goes on with work commenced by another. The leading case upon the subject is that of *Wardle vs. Bethune*, which was carried to the Privy Council. The facts in that case were as follows (R.L. 637):—

Wardle, a builder, contracted to build Christ Church Cathedral, in Montreal, according to plans furnished by an architect and upon foundations laid by a previous contractor and approved by an architect having charge of the work. Before the cathedral was finished the tower sank and damaged the building. The cause of the sinking was found to be the insufficiency of the foundation as planned by the original architect and constructed by the former builder. This defect, though not patent, might have been discovered by *Wardle*. It was proved at the trial that *Wardle* had no knowledge of, and took no part in the testing of the soil or in the designing or planning of the building or foundation. Under these facts the Privy Council held that the builder was responsible for such defects and was not freed from liability either by acting under the direction of his employer's architect, or by reason of the fact that the defective foundations were the work of a previous builder. This judgment was a confirmation of judgments already rendered in our Superior and Appeal Courts.

The legal question was very fully gone into on both sides and a mass of authorities cited. Counsel for Mr. *Wardle* argued that as the foundations were not contracted for or executed by him he could not be liable for any defect in their execution nor for any defect in the soil upon which they were built. He was only bound to put the building on the foundations as they stood, and having done that properly he had no further liability. The plans and drawings were made by an architect employed by the Cathedral, and he, and not the builder, should be held liable. For the Cathedral, the case of *Brown vs. Laurie*, the leading case in our Courts, was relied upon and it was contended that both under the old French law and under our law the builder who constructs on insufficient foundation is liable even though he acts under the orders of his employer's architect. If the obligation to answer for the foundations is a necessary part of the obligation to warrant the stability of the building, how can a distinction be made between a builder, building on his own foundation, and a builder building on a foundation made by another builder. And if a builder is not relieved by following the directions of the architect, how can he be relieved, by the fact that the foundations were already laid, from the duty of examining them. In this case, as in all others of this nature, the element of public policy is not to be lost sight of. In rendering judgment in this case, their Lordships referred to *Brown vs. Laurie*, and adopted the principles there laid down.

Their Lordships, after a discussion of the case went on to state, that the broad general rule of law—the rule certain for architects and builders in the execution of the works entrusted to them—is that there is annexed to the contract, by force of law, a warranty of the solidity of the building, that it shall stand for ten years at least; that the approval and directions of a supervising architect, or his omission to ascertain the nature of the soil of the foundation, by known and available tests does not exonerate the builder from the consequences of following such direction, or of building on the foundation without making himself sure of its sufficiency.

In connection with the same building, *Scott*, the architect, sued Christ Church Cathedral for commissions due him. The defence was that the Church had suffered dam-

age, for which he was responsible, which more than offset any commission due him. Scott answered that he had faithfully followed the plans of Mr. Wills, the architect, who had first been engaged for the building, and that he was not liable for defects in Mr. Wills' plans. This pretension was overruled and the Courts laid down the principle that an architect was liable even where he only followed plans of another architect handed him by his employers.

The architect is liable along with the builder for errors committed by the latter, because he is held to see that a work well conceived by him is well executed by the builder—this doctrine was illustrated in a case of McDonald vs. David, 14 L. C. R., 31. In this case the floor of a building on St. James street had sunk in consequence of the insufficiency of the timbers used to support the joists. It was there held that the architects, as well as the carpenters and joiners employed in the erection of the building, were jointly and severally liable for the damages incurred.

It was held in a case of Cowen vs. Evans that where a contractor undertakes certain works for the proprietor of a building for a certain price, independently of the other contractors, and not having the general direction of the works, he is not liable for the faults of the other contractors. In this case Cowen put a brick wall on the stone foundation of another contractor; after his wall was up some way, he found defects in the foundation, pulled down his wall, and sued for annulment of the contract. He was answered that he had accepted the foundation and was responsible for it. This plea was dismissed, the Court rendering judgment in the sense just quoted. The architect must also warrant that he has not violated any of the municipal regulations or any of the laws of neighborhood. Thus, if a mitoyen wall be pierced without the neighbor's consent, or if a chimney hearth be placed directly over beams of wood, or if a well be dug near a neighbor's wall without any counter wall being provided for, in all this class of cases the proprietor could recover not only the damage to his own building but whatever he may have been compelled to pay his neighbor for damage done to him. The architect must build so as to leave no room for any complaint on the part of the neighbors. This guarantee must be distinguished from the guarantee of solidity on the part of the architect, from which he is relieved after ten years. Under Article 1053 of our Civil Code, everyone is liable for his own fault which causes damage to another. Prescription, therefore, of this action will only begin to run against the owner from the moment when he had knowledge of it and would not be acquired in favor of the architect for 30 years from that date. This, at least, is the opinion of the majority of the authors, though Duvergier, Troplong, Fremy-Ligneville and Perriquet consider that it is prescribed in ten years—and is in the same position in that respect as the guarantee with respect to solidity. This, however, is hardly a question of practical utility. It will be time enough for you to discuss it, when you are actually troubled with it. If a fire were caused through a beam, placed underneath a hearth, becoming ignited, the action against the architect would lie from the moment of the fire whenever it occurred, and would only prescribe by thirty years. The guarantee of solidity, on the other hand, only lasts for ten years, because the law has fixed this as an arbitrary period after which the building will be presumed to have fallen through some other cause than a defect in construction. The practical effect of this is, that a defect which doesn't threaten the ruin of the building for ten years is no defect at all. Even should the whole edifice crumble to the earth in its eleventh year, yet would there be no liability on the architect's part, if no fraud is alleged against him. Not only is there a presumption that the building was properly constructed; there is more, there is an actual bar to any action on the part of the proprietor, who will not be admitted to prove, even out of the mouth of the architect himself, that there was any defect in construction. Questions of guarantee, however, are of no importance the moment fraud is alleged. Everyone is

liable for his fraud. If, for example, you have purported to build a stone wall three feet thick, but have in reality filled in the centre with rubbish and have merely put on a stone facing, you could not possibly hope to be discharged in any other way than by thirty years without action on the part of the owner from the date of the discovery of the fraud.

We have seen that the architect under the law is liable for every derogation from the principles of his art and for every infraction of the rules and laws which, as a professional man, he ought to know. Can he, by contract with the proprietor, rid himself of this weighty burden of responsibility? What if, when he has pointed out to the proprietor the defects in the soil or in the material or in the plans furnished him, the proprietor insists on his proceeding and contracts to relieve him from the guarantee imposed upon him by law. What then is his position? A glance at the principle in virtue of which this responsibility is placed upon the architect will give us the answer. Public order and safety are concerned, and private individuals cannot by contract derogate from that which concerns public order. The architect is not relieved in such a case and his duty to himself and the public is to refuse to proceed with the work. It, of course, goes without saying that he is not responsible towards the proprietor who has so released him, but he would be towards third persons damaged in any way by the ruin of the building. It is often important to establish the exact day from which this guarantee will begin to run, and this will be from the date when the work was received. It will always be safer to have this fact fixed by a writing. All doubt upon this point will then be removed and the interest of both proprietor and architect better served. The question of prescription of this action has some theoretic interest, but is not of practical importance for the moment. It is contended on the one hand that the arbitrary term of ten years puts an end to any action against the proprietor even though the building have fallen down within the ten years. In other words, the owner must sue the architect before the ten years have expired. On the other hand it is argued that the fall of the building within ten years only gives rise to a right of action, which right will only be prescribed by thirty years, and this latter view seems to me the more sound of the two. The question of burden of proof with respect to this guarantee is a most interesting and important one. Does article 1688, when it says that the architect and the builder are jointly and severally liable for the loss, if the building perish within ten years from a defect in construction or from the unfavorable nature of the ground, mean that they will be held guilty until they prove themselves innocent, or does it simply bind them for ten years, when without that article they would have been discharged by the reception of the work? It can readily be seen how vitally this question interests the architect. Who must prove his case—the plaintiff who demands damages or the architect, who says "I am not responsible?"

At common law the reception of the work would discharge the workman. The proprietor has had an opportunity to examine it; has examined it and has received and paid for it, and the workman's responsibility ceases. But in this case Article 1688 specially derogates from this principle and says "architects and builders must guarantee their work for ten years." The French authors are very much divided upon this question. Troplong, Duvergier, Guillaud and Laurent argue that fault is not presumed and that all Article 1688 intended was to carry the architect outside the common law which would have liberated him from the moment his work had been received by the proprietor. These are onerous sections and must be interpreted strictly and the very fact of the reception of the work creates a presumption that it was well done. The article does not say that they are presumed to be in fault; it simply says that if the defect exist, they are liable for it. They argue, therefore, that the proprietor, plaintiff, in responsibility, must prove the fault which he alleges. On the other hand, Marcade, Fremy-Ligneville, Aubry and Rau and others consider that until the architect

clears himself the damage caused will be presumed to be caused by his fault. This contention has the advantage of being supported by the jurisprudence in France. In my opinion, it is the correct solution. A building which falls down can only do so through defect of construction, material, or soil, or on account of some extraordinary event which could easily be established in proof. Now the architect for ten years must guarantee the building against all these causes, save the last, and it will be perfectly easy for him to make affirmative proof of any fortuitous event which may have caused the ruin, and if he can't do this, he is liable.

If this were not so, you would force the proprietor to make negative proof; because, if he must prove that defects of construction caused the ruin, he must prove the particular defects, and this, in cases where the building had fallen down, might be very difficult proof, indeed, for him to make. He would often be forced to attempt to prove that nothing else could have caused the ruin, forced to go through a process of elimination, in fact forced to make negative proof. I do not believe that that was the intention or the spirit of the law. As I have already said, the Legislature in placing this heavy responsibility on architects and builders, did so because public order and public safety were involved. Architects and builders must, at all cost, be thoroughly alive to the importance of building well and safely, and that is why this salutary burden was placed upon their shoulders. The building must stand for ten years, or the architect must show good cause for its not doing so. While this interpretation may not be in accordance with the exact wording of the Code, yet I do think it is in accordance with its spirit.

The Privy Council in the case of *Wardle vs. Bethune* already cited, while not called upon to pass upon this point, gave expression to the opinion that the onus would be on the builder in the circumstances under discussion.

It is hardly necessary for me to say that this liability of the architect or builder for the whole amount of the damage suffered, has only reference to the proprietor and that as between themselves each is liable for his own fault. Thus the architect would alone be liable for defects of construction depending solely on defects of plan. On the other hand the builder would be alone liable for his own mistakes, where the architect had only furnished the plan. Where the architect has also directed the work, each is liable for his own fault. The builder would not be received to set up the negligence of the architect with respect to a fault committed by himself. As regards third parties Article 1688, which we have been discussing, would have no application. The architect's responsibility towards them would be governed by the general law contained in Article 1053, that every one is responsible for his own fault which causes damage to another.

We have seen, therefore, gentlemen, that you are under a serious responsibility to look to it that the buildings you erect are solid and built according to the rules of the profession to which you belong, and further that you cannot liberate yourself from this burden even by contract with the proprietor, because as private individuals you cannot derogate from the laws of public order which concern all citizens and to which all private interests are subordinated.

MONTREAL LETTER.

No. I.

MONTREAL IN GENERAL.

To the student of architecture to whom the cities of Europe are bekown, some for their ostentatious splendours, others for the sake of old world charms, arrival at Montreal brings a new sensation and not one of unadulterated pleasure. Every town has its architectural character just as it has its specific odours. The best way to understand this architectural character is to arrive late in the afternoon, to feed at some famous hostelry and then sail forth into the waning light to get the general impression of things—to cross the great squares and steal around the high cathedral walls what time they stand up in all their grandeur of scale in ever deepening silhouette against a lemon sky. Daylight means details to the roving quizzical architectural eye and details are architectural accidents whereby much good work is spoiled and little bad work is redeemed. At dusk the details are washed out and a first impression at the magic hour may be the truer as it certainly is the more lasting on this account. Unfortunately steamers which have spent the night at anchor between Montreal and Quebec are apt to arrive in the morning and after the beauties of the St. Lawrence it is forcibly brought home that "God Made the Country and Man Made the Town," and the

comparison of workmanship is trying to the latter. Thus it is conceivable that the sensation above referred to may have suffered by unfair comparison and too much sunshine upon a certain fair September day.

But to return to the general architectural character of the place, which is over theme, it must be understood that the writer finds there are many expensive buildings and some handsome ones in Montreal; there are a few really good buildings and a very few exceedingly beautiful ones, but all these are but a drop in the bucket and the average structure fronting on her streets is neither good nor beautiful—rarely sensible.

Architecture is a public art—the only truly democratic art—and a few isolated private examples however good will never redeem the architectural character of a city where the citizens dwell in ugliness. What makes the sensation above alluded to different from that produced by many other cities is the fact that there is so little decent building tradition manifesting itself. Where houses do not stand cheek by jowl they are most of them afflicted with one front and three backs and the backs are as a rule the less offensive compositions judged in pure elevation. Where houses stand hard up to each other the prevailing ideal is differentiation—this is attained by recourse to enormities in wood work with the underlying idea of a balcony as an excuse, or to crimes in zinc perlying petrated with no excuse at all and a very light heart. Of material frauds—wood masquerading as stone, etc.—there is no end. Amid these distressing reflections there is one ray of hope: this caricaturing of Architecture is only a phase in the city's development, and from its very unserviceableness will succumb the rigours of a climate (which by the way a new arrival has no right to mention.)

A little closer inspection reveals the fact that two serviceable types of plain house were evolved in Montreal a short time back and it is deplorable to think that the excellent traditions of which they are manifestations have not struck deeper roots.

There are in Montreal many plain limestone houses—some quite plain—others with a soupçon of French architectural instinct—not very sincere but quite charming. Substantial houses these are, built of fair blocks of stone with reasonable tin or iron roofs and decently proportioned chimneys and windows. There are none of them quite good enough to be worth an architectural student's trouble to make measured drawings of, but they are the best things on the streets and represent a once live local building tradition at least—the kind of tradition, that is, with which the architect must saturate himself if his work is to be indigenous at all. It is the curse of the modern house that it usually proclaims pretty clearly of what stock it comes, and hides as far as possible every hint of having been bred on the soil on which it stands. Local tradition has quite died out of the building trades in most parts of England and on this side many of the towns have not yet got the length of a tradition at all; but here is Montreal with a very excellent tradition in quiet grey stone houses—and the tradition appears to have been plucked up by the roots about two score years ago, since when, chaos!—confusion worse confounded. The other type is in brick. Red brick, green shutters, white window frames, a medium pitched roof—what more can any designer want? Properly used these simple ingredients have been combined to form streets too has given place to walk down, far more to live in; yet this type too has given place to the vulgarities above alluded to, and is no longer put up—nay it is being pulled down in several places at this moment.

The problem of winter glazing outside the ordinary window frames has been solved in Montreal in a more slovenly way than in other civilized cities subject to a "cool" winter. The appearance of a house depends immensely on the external window finish, and for four months of the year every house in Montreal wears spectacles which spoil the expression of eyes that might be quite pleasant. In Russia and Northern Germany the double glazing has been solved in a variety of ways, neat and handy, some of them very ingenious and all without recourse to the barbarous expedient of slapping a rough chamfered frame of inferior glass on the outer edge of the window opening.

The real difficulty which has not from its nature been better solved elsewhere is the roofing question. The slates of Montreal are very good and very ugly, and they don't improve or deteriorate with the kindly hand of time. Lead is no use. Copper goes as black as the slates. The good old tin has been out of the market goodness knows how long. Zinc and iron remain, and the genius who could give artistic expression to these obdurate and unsympathetic materials is not yet in evidence. A medium pitch roof has to be cleared of snow, a steep pitched roof is a danger to the community—a flat roof remains the best solution, but how is a building as a whole ever to look right even in the glory of evening light and growing shadows with its top shorn off and its chimneys growing like mushrooms, here and there, in a desert of asphalt and gravel?

Yes, the architects of Montreal have their little problems to solve and by degrees, if properly faced, the architectural character of the place will improve, but it is not solving the problem of designing for a flat roof treatment to put an 80° slate slip above the cornice just as an acknowledgement of the old habit of slating roofs, while a flat roof is concealed behind, nor is it any use relying on zinc "wheriligiums and whigmaleeries" to distract the attention from the drawbacks of a dull sky line.

There is a little and a very little good old work in Montreal—a closer study of it would do much to improve the present state of things.

There are a few and a very few beautiful new buildings in Montreal—and these will be recorded from time to time by the

GARGOYLE.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.*

Address by John S. Archibald 1st Vice President.

There comes a time in the life's journey of everyone, when it is advisable and advantageous to stop and calmly survey the road recently travelled. Such contemplation may not always be pleasing for the reason that no matter what the results may have been we feel convinced that if we had to travel the same ground over again we could improve on the past and the results would be more satisfactory. Faults become apparent in the perspective of time, lost opportunities stand out strongly in vivid contrast to the background of what little has been accomplished and results which called forth extraordinary effort, seem, in the blue haze of the distance, to become pigmy and insignificant. Such are usually the first thoughts which strike us. Yet when these depressing mists have been brushed aside, we begin to see and realize the steep hills successfully travelled, the many milestones passed, and here and there, the seeds sown on the journey springing up and bearing fruit according to the quality of the seed placed in the hands of the sower. And so it is with the life of our Association. We are now entering upon the 14th year of its existence, and from the point of view of time and circumstances, I consider it advantageous to glance over our past history with a view to finding out if any work whatever has been accomplished, what that work may be, if the results obtained can be considered satisfactory and on what lines must the work continue.

The Association was brought into being on the 30th December in the year 1890, when, at that time, the Act of Incorporation was assented to by the Lieutenant Governor in Council.

I have very little to say regarding the first period of the Association life, viz., from the date of its inception up to the year 1898. At the same time, we cannot be too loud in our praise of those members of our profession who recognizing their duty to the public interests, comprehending the immense responsibility placed upon the shoulders of the followers of our profession in the Province of Quebec, and being alive to the possibility and advisability of advancing the art of Architecture by united efforts along recognized lines, bent all their efforts to obtain the original charter. These members have every right to congratulate themselves on being the pioneers of compulsory registration of architects on the Continent of America. At this late date it is difficult to realize the mighty obstacles and prejudices that had to be overcome, and when we to-day discuss this phase of the question, we are apt to forget the labour and toil which terminated in such a successful issue. Their example has been followed by the State of Illinois, and many attempts have been made to have a similar law enacted for the Province of Ontario, and I am strongly of the opinion that some of us will live to see the day, when the work begun in the Province of Quebec, will branch out and bear fruit from the Atlantic to the Pacific, and we shall have the practice of the profession recognized in law as of such importance as to merit the attention of the Legislative bodies and result in the passing of enactments similar to those under which we now govern.

It is true, that up to 1898, the work of the Association was limited in extent, but this I consider was a necessary probationary period, wherein its limited membership became alive to the scope of its usefulness, its possibilities and even its drawbacks; and even at this time it began to prove its usefulness to those of the profession who were not included in its membership, for it was often used as a shield behind which they were pleased to protect themselves. In the public eye it justified its right to exist by demonstrating on every possible occasion that it existed primarily for the protection of the public and for the fostering of art. It is not surprising therefore that when amendments to the Charter were desired in 1898, all parties recognized the right of such an Association to exist, and as a result, little or no opposition was met with.

From this period, the scope and usefulness of the Association is now enhanced and the horizon has extended.

It is on the work of this second period that I desire to dwell for a few minutes, not with a view to bolstering up a case for congratulation, but with the objects stated in the introductory remarks.

The first step that was necessary after the charter had been amended, was to perfect the organization. To the Association this was imperative, in order that full benefit could be taken of its provisions. The machinery put into the hands of the Association was complicated and required the most careful study

*Delivered before the Province of Quebec Association of Architects, March 15th, 1904.

and investigation. It was necessary that the members of the Council at that time make themselves thoroughly familiar with all its different parts, to examine its mechanism in every respect, and where possible to test it under action. This all took time, and those of you who have been members of Council during the last five and a half years, will remember the difficulties and tribulations which we had to undergo. In some respects the provisions of the Charter turned out satisfactory, but in other respects it is found to be entirely inadequate. In spite of the careful consideration that was given to its compilation, errors have been noted, omissions discovered, and in some cases what can be called by no other word than "carelessness."

In the 8th annual report, presented to the members in 1898, we read "The arduous task of the material organization is now nearly completed and the Association can congratulate itself on having secured an authority much coveted by many similar Associations and from other points of view, much more influential than ours. Not only the interests of the profession but more especially those of the public, are now protected against incompetent and doubtful practice." According to this everything appeared rosy and hopeful, but under the experience of the past five and a half years, we are forced to the conclusion that there is great room for improvement in our charter. The protection of the public, spoken of, amounts to nothing, for no matter how incompetent a man may be to practice the profession of Architecture, our charter has got no authority over him unless he designates himself "Architect." The usefulness of this designation becomes apparent when we realize the fact that buildings are going up around us every day from plans drawn by persons other than those of the profession, and yet we cannot even step in and say "nay." Even when someone does transgress the law, we are met with the difficulty that no provision has been made in our charter for naming the court in which the case ought to be tried and we are therefore open to the danger that, under certain circumstances, the Association might be mulcted in heavy damages when prosecuting. Even in the case where members, after belonging to the Association, have fallen into arrears, we find that under our charter we cannot sue them for such arrears. The time has therefore come when we should look the matter boldly in the face with a view to amending our charter along the lines of greater possibilities. There should be no difficulty in having our charter amended, that the practice of the profession would be protected instead of the mere name of "Architect" and thus make it impossible for any individual to undertake architectural work unless having undergone architectural training on the lines laid down in our charter.

During this period, the by-laws governing our Association have been amended in many respects. This arose from a closer acquaintanceship with the work, and the by-laws governing the examinations have received much attention. This question of the examinations has at all times been a difficult one to contend with, but under the new by-laws, it is anticipated that all, or nearly all the difficulties will be removed and the work of the Examining Board made much simpler.

SECOND—DUTY TO THE PUBLIC.—The Association has at all times recognized their duty to the public and much good work has been done in this respect. We see evidence every day of the public becoming educated to a higher standard and appreciation of art and for this no small meed of praise is due our Association, for they have, by means of lectures, exhibitions, and the mere fact of the existence of such an Association, exercised a leavening effect on the public mind. In our city, the building laws were drafted by the Association, and by steady, persistent effort, have passed into law. It is undoubtedly true, that there is great room for improvement in these by-laws, yet we have established the principle and precedent that we, as a body, have a right to be heard and our views receive every consideration.

The Association should at all times keep an eye over the regulations governing the erection of buildings in the city, to protest against any tinkering that might result in depreciating their value, and at all times seize the opportunity to have them amended and improved in the public interests.

That we as a body have been considered worthy of attention is evidenced in the action which crowned our efforts in the appointment of an Architect to the Building Inspectorship of this city, and this department of the city work has graciously received any suggestions from the Association, made in the interests of our profession or the public.

It is more directly in the public interest that legal proceedings were taken against those persons who violated our charter.

This work has always been done in a quiet way, and it is no doubt from this fact that much of the criticism has arisen, but the Council have always felt it incumbent upon them to perform this part of their duty with as little noise as possible, recognizing the fact that this part of the work of our Association, while being a necessity, does not redound to the glory of our profession. It is often said that the Association does little or nothing respecting the taking of legal proceedings against offenders of our Charter, yet in one year alone, eleven actions were entered and no year has passed which has been free from some action or other, but whereas we are a liberal profession and as such should be imbued with the highest ideals, legal proceedings are never entered, and I hope never will be, unless all other means possible fail to bring about the desired result.

Efforts have also been made to safeguard the public interests in other respects. Efforts have been made to establish a precedent, and in fact to make it law, that when any public buildings are to be erected by either Federal, Provincial or Civic Government, that means should be adopted to call forth the best that the profession can produce. It is to be regretted that we have not been more successful, but yet we must not give up the struggle; we must persevere, and some time, when we least expect it, our continued knocking may be heard.

THIRD—EDUCATION.—One of the duties laid down in the preamble of our charter, states, that it is "Expedient to insure a standard of perfection in the present practice of our profession in the province of Quebec." We think that considering the age of our Association, this duty has been well recognized. The work has been of the first importance and has taken up a considerable amount of the Association's time. It may not have resulted in all that might be desired, but there is nothing perfect under the sun, yet there is cause for congratulation. The recognition of the necessity for proper architectural education is one of the paramount causes of our being, and while the work must necessarily be arduous and require much painstaking, it must not be shirked.

Being empowered by the charter to make it compulsory for all students to pass certain examinations before being permitted to practice, the Association acknowledged it as their duty to place before these students such information as would be necessary for them to acquire before presenting themselves for examination. As a result, our library has been greatly enlarged and now contains many useful and valuable books. These are being added to from time to time and before many months have elapsed, our library will contain all of the books suggested as authorities to be studied, in the pamphlet regarding examinations. Of course our purchases, in this respect, are limited to the amount of money at our disposal and this is very limited indeed, and recognizing this fact, your Association made arrangements with the authorities of McGill University, whereby the Architectural Library of this seat of learning was thrown open to members of our Association. This is a valuable acquisition, and the members should show their appreciation of such liberal consideration by exercising their right of membership on every possible occasion. Our Association has also exercised some influence over architectural education, as taught at McGill, the authorities of which have at all times received our suggestions with kindest consideration and have profited by them on every possible occasion.

In the recognition of our duty to the cause of education, a scheme of scholarship has received the attention of the Council for nearly two years and has now become an accomplished fact, and we trust that by the time the term of scholarship has ended that means will have been provided for following it up with a travelling scholarship.

We might also point out the connection that has been established with the R.I.B.A. of England, that well known pioneer of collective effort, and as a result of the efforts of some of our members, it is now made possible for anyone to present himself for their examination in our city.

Still, in spite of all that has been done regarding education, I will admit, that if we are to live up to our ideals and to our duty we have to go much further. As the Association is dependent upon the ranks of our students and draughtsmen for its coming practitioners, we should endeavor to inculcate in their minds such feelings of self-interest and good fellowship as will make them aspire to the ranks of our membership. As a parent body, we must take an interest in their educational welfare and we should therefore endeavor to bring them together in our rooms, to bind them together by some junior Association and to undertake courses of systematic lectures. The Association should

also be jealous of their right and opportunities given them to educate the public in the art of Architecture.

Courses of public lectures should be given at stated intervals and thus interest the public in the possibilities of our art with a view to a higher appreciation in their own particular case, and eventually bring a stronger force of public opinion to bear on the problem of the architectural improvement of our own city.

FOURTH—MUTUAL IMPROVEMENT.—The duty of the Association to its own members has not been overlooked and I expect that it is under this title that we will encounter the greatest criticism. The success or otherwise of the Association in this respect, depends entirely upon the point of view of the critic. Some criticise as if the question of our Professional Tariff was of the first and vital interest. Others are ready to judge the value of the Association by the number of legal proceedings that have been taken against offenders, while a few believe that our first duty is to the public. They may all be right in their way, yet it is my humble opinion that we are formed into an Association, first, for the public good, and second, for the good of the profession—and the majority of the profession at that—and judging by the work of the past Councils, I am not alone in my belief. After several attempts our tariff was at last amended and passed by the Lieutenant-Governor in Council. You are thoroughly familiar with the facts of the case and it is useless now to repeat them. True, it was not the tariff that was passed by the Association, but I for one will frankly admit that I would rather have it than none at all, for at least we have the principle accepted and established that architects have a right to a Tariff that will be accepted at law. To my mind, the tariff as amended is a standing lesson to architects to be more business-like in their methods. Who among us, would give out work amounting to any considerable amount, unless the contractor is tied hard and fast by a written contract. In the name of common sense therefore, why should not all architects be compelled to enter into a written contract with their clients so that all possible future difficulties would be removed at the outset. It may be that the neglect arises from the feeling that it might be awkward to place the question of commission before the client at the outset, and hope that he will take this for granted and that matters, in this respect, will run along their own smooth course. No one is compelled to work for three or four per cent., even although such amount be stipulated in the tariff. Suppose you are offered work at 3 per cent. would you accept it? (Let us hope not.) Then on what different basis are you when the legal tariff places the commission at 3 per cent. It merely amounts to this, that it is your duty to yourself and to the profession, to inform your client, that where such a clause becomes operative, that you require a written agreement for the full professional charge. Surely you are not going to allow the law to dictate the value of your services. You are the best judge as to what your services are worth, and tariff or no tariff, your self respect should be the best judge as to what commission would remunerate you for the services rendered. Do not suppose for a moment that even if the legal tariff was satisfactory that the problem would be solved. There is nothing to hinder an architect working for less; it is purely a matter of conscience; you cannot make men honorable by law and you cannot lay down by statute that no man shall be allowed to work for less than the stipulated amount. It is purely a question of labour and hire. On the other hand, it is the duty of everyone in the profession to get a higher remuneration wherever possible and if the services justify it, and no stumbling block whatever will be put in the way of an architect who desires to obtain a higher remuneration for his work.

The tariff as passed by the Lieutenant-Governor-in-Council is the minimum where no written agreement has been entered into. Every servant is worthy of his hire, and if law places the minimum on any particular services, there must be some higher rate. It is therefore the duty of those who feel themselves capable of giving more than the average return, to endeavor to get a higher remuneration.

We hear much of the desired amendments to our legal tariff along certain lines, but I go further and say, that it is the duty of our Association to raise the minimum wherever possible and wherever justifiable, especially when we consider the extraordinary complexity and the knowledge required in our professional work in these later days; the tariff which was formed years ago when architectural work was of a simpler nature, is at present entirely inadequate.

A careful watch has always been kept over the interests of members in the legislature and elsewhere, and occasions have arisen when, without the help of an Association such as this, all efforts to safeguard our interests would be abortive.

Attempts have been made to reduce the period of responsibility of contractors to four years and to leave the responsibility upon architects according to the original ten year term. This was successfully frustrated.

In a case that has recently been decided in the Court of Appeals, our profession has been put under an undoubted disadvantage, and efforts are now being made with a view to having the Civil Code amended both in regard to the term of prescription for any accident that may occur within ten years and also with a view to separating the responsibility attached to architects from that of the contractors.

Efforts have also been made to foster and encourage mutual

intercourse, and with that end in view monthly meetings have been established, where discussions take place on subjects pertaining to our profession, and if the members would only realize the benefit that would accrue to them by taking part in these meetings, a better attendance would reward our efforts.

These meetings are bound to establish a friendly spirit of good will and toleration. Such a spirit is a necessity; without it our Association would be useless and but for it alone, our existence is justified.

Such is a very superficial resume of the work undertaken and accomplished during the past five and a half years. It is not all that might be desired by any means, but I have endeavored to look at the question from an unbiased point of view, and, while pointing out the good work that has been done, I am not in the least backward in acknowledging its imperfections and shortcomings.

We have been criticised on more than one occasion and on several counts. I do not question the right of any member to criticise the acts of the Association or the Council, for such criticism carried out along certain lines would result in much good. Destructional criticism is at all times beneficial, for it not only points out the evil but it comes forward with a remedy. Destructional criticism can be used to advantage, for if it does not point out the way to go, it at least shows up to disadvantage the way travelled, but what I object to is that system of criticism of the negative type that stands aloof and simply says that the Association has done nothing and that no good can be got out of it. These critics cannot evade their responsibility; they have no right to sit on the fence and arbitrarily say that we have done nothing, for if such be the case, then they are as much responsible as any member of Council, for it implies that they knew what to do under the circumstances but refrained from tendering their services. The Association at all times welcomes the member who is willing to take his share of the work, and the pity is, that there are so few who seem to realize their responsibility in the matter. The mere fact of having a Council does not remove this responsibility from the shoulders of the members, and the Council have at all times welcomed suggestions and well directed criticisms on the work.

To the criticisms that have been applied to the tariff, I have already referred, and to those who question the actions of the Association, with respect to illegal practice, I would remark, that it is not the first duty of the Association to prosecute such offenders. If such was the reason of our existence, I would heartily say "Perish the Association." It is necessary for every city to have its system of police, yet the mere necessity for having this protection is not the cause of its being. Police are necessary for the holding in check of law breakers, but the duty of the citizen is to keep the law and to foster and conserve its best interests, and so it is with our Association. Legal proceedings are an unfortunate necessity, but by no means of first importance, and in our zeal for the welfare of our Association, we should not let this phase of the question blind us to our higher duty—to safeguard the public interests as pertaining to our work, to raise the dignity and standard of our profession and to foster that "Esprit de corps" without which our efforts would be abortive and valueless. Did we obtain the charter in order to prohibit certain individuals from practicing or to obtain a tariff satisfactory to all minds? If such was the idea of the founders, why was it not expressed? It was not expressed, simply because such matters were recognized as mere incidents. The organizers of the Association had a higher idea of their responsibility and in the fulfilment of that responsibility, they had to sink everything that appeared personal or mercenary. What does the preamble of the charter of the Association say? "Whereas it is deemed expedient for the protection of the public interests in the erection of public and private buildings—and to insure a standard of efficiency in the persons practicing the profession of Architecture." Analyze this clause and we find that the charter was granted, first, because it was deemed expedient for the protection of public interests; secondly, to establish a standard of efficiency, or in other words a recognition of the necessity for professional education; and thirdly, with the object of advancing the art of architecture. And again the Association was incorporated, according to the second clause of the preamble, for the object of the "acquisition and interchange of professional knowledge amongst its members, and more particularly the acquisition of that species of knowledge which shall promote the artistic, scientific and practical efficiency of the profession of architecture." In the face of such high and dignified ideals, does not the criticism of mere incidents seem trivial, and the laying of emphasis on such questions as tariff and legal proceedings, appear selfish and mercenary?

Do not misunderstand me—I do not say that we should not prosecute persons practicing illegally, or that we should not make a serious endeavor to amend our tariff, but I do say that such questions are not of the vital importance some would have us think, and, I am sometimes afraid, that in laying too great stress on these questions, we may lose sight of greater opportunities to do good, and in the effort to catch the shadow, lose hold altogether of the substance.

In my remarks on the work accomplished, I suggested the lines along which the future work lies. We cannot and must not remain stationary; we must go forward accepting our self imposed responsibilities with feelings of thankfulness and in the full realization of our duty; seize hold of the opportunity given us to advance the interests of our profession in this fair Dominion as a whole, and in the section known as the Province of Quebec in particular. But this can only be done by and with the help of every individual member of the Association. But how can this

be done? By the fostering of that "Esprit de corps" which is a primary necessity, where persons are brought together to act collectively for a given purpose, and I think that you will all grant there is room for improvement in this respect.

This will hardly be disputed by anyone, on the general aspect of the question at any rate, although at the same time it is gratifying to acknowledge instances are by no means uncommon where we have received nothing but the most considerate treatment at the hands of our confreres. Yet we must admit that these instances are far too uncommon, and where it ought to be the rule it is more often the exception. It is not where we have direct intercourse with one another that the want of "Esprit de corps" is most felt, for then our self respect compels us to act so that our motives are not open to question, but it is on occasions where our actions may remain undiscovered; when nothing but brotherly consideration and common fairness should determine our course, and when the hope of personal advantage must be weighed in the balance against our duty to our confrere, it is then that we deplore the dearth of that spirit which ought to imbue the disciples of that world-old profession, which is our's by adoption. The want of brotherly feeling is in evidence on all hands. We see it in the petty jealousy which questions the public encomiums bestowed upon a confrere. We see it in the refusal to acknowledge any good work done unless it is done by ourselves. We see it in the willingness to accept work at any commission so long as we can prevent it entering another office, and we see it in the avidity with which we rush to throw our services at the feet of any one whom rumour credits with the intention to build. How can we expect sincere individual effort for the advancement of our profession and art under such circumstances? We are arrayed one against another instead of working hand in hand. Still I do not consider the solution a helpless one—far from it.

There are many reasons to which we can ascribe the present condition of affairs and without going into them all, may I touch on a few.

And the first is, that we are Colonists. Now I do not use this word in any depreciatory manner, but merely to describe the conditions and circumstances under which we undoubtedly labour. I mean by this, that we belong to a country comparatively in its infancy, whose population is composed of people gathered from the four winds of heaven or of descendants of those who only a generation or two ago, made this the land of their adoption. We have consequently not yet reached the period when our people shall be knit together by the kindly hands of time and when a common tradition shall obliterate our kaleidoscopic origin. We may point to our profession in the countries of Europe, and lament the want of a similar "Esprit de corps" in our own midst, but that condition was not gained in a year, neither in one hundred and fifty years. The follower of our profession in Europe can pride himself on the fact that he is walking, humbly it may be in the footsteps of the Masters, whose names and works are held in world-wide reverence. He is imbued with that spirit of tradition which defies the most common-place object; while we may only look back a few years to the time when the Chief's wigwam was the Parthenon of the land, or to more recent times when the standard bearer of our profession went around with his T-square made plan in one hand and his kit of tools in the other.

Again, these are the days when the spirit of personal aggrandisement permeates every action. We will never return to the days when the personal gratification, engendered by love of our art, shall be considered full value for the labour expended. Who among us to-day would be willing to give our labour for the mere pittance often grudgingly given to the old masters? It is well to recognize the fact that the world is a very poor respecter of persons, and that the "survival of the fittest" is the gospel proclaimed day after day from the house tops. In this struggle for existence, we must not be surprised therefore, if, in some instances the corners of the finer qualities of mankind become ragged; but, recognizing the force of circumstances, let us stand shoulder to shoulder, giving mutual assistance and presenting a solid front to the varied influences that in many ways threaten the very foundation of our profession.

As a remedy for the present condition of affairs, time alone will be the great antidote.

True, much can be hoped from some of the influences which can be brought into play if we only take advantage of them. One I would mention is, such schools as McGill, where, under the influences of the broadmindedness of its professors, a band of young men is being trained up under the same masters, under the same influences and in the same professional atmosphere, and, it is but natural to expect that when they take their place in the ranks of practicing architects, that their treatment towards one another and to their profession, shall be governed by that brotherly spirit which at all times is to be found amongst students having a common Alma Mater.

The second, is that power which is lying dormant in our Association, and it lies dormant purely through the indifference of the individual members.

If this Association will only use its inherent power to establish a proper "Esprit de corps" among the members, it will have justified the fact of its being. That it has the power to do so is apparent to those who are accustomed to meet here though solely on business matters. But as an Association merely, we will be powerless; it requires the assistance of every individual member, who should, in the full realization of the noble profession to which he belongs and which contains on its roll, names that stand out as beacon lights, illuminating the surrounding darkness of doubt and superstition, sink every feeling that does not redound to the glory and advancement of our profession.

BY THE WAY.

The selfishness of human nature has been exemplified by many Baltimore property owners who, taking advantage of the demand for accommodation created by the recent fire, have raised rents to double and treble what they were formerly receiving. Short term tenants were given the alternative of paying the exorbitant rates or finding new quarters.

* * *

The difference between a municipal official who is alive to his duties and one who looks upon his position as a sinecure, is well illustrated by the results of a recent change of superintendents of buildings for the Borough of Manhattan. The new superintendent reports:—"When I assumed office there were pending, exclusive of fire escapes and unsafe building cases, over 4,000 violations. During the present quarter, 2,167 new cases have been filed, 5,237 cases have been dismissed, and 757 cases sent to the corporation counsel for prosecution, leaving pending in this office 605 violations, 500 fire cases, and 735 unsafe building cases. Cases in which the time given by the building code to the owner to comply with the law has not yet expired, and they constitute the ordinary current business of this bureau, which is receiving our daily attention."

* * *

A case was heard before Mr. Justice Gibson recently in which Robert J. Dalzell sued Miss Florence O'Mahony to recover 140l. 16s. 9., balance due for work done and materials supplied to her for building purposes. The plaintiff is a merchant residing at Killorquin, County Kerry, and the defendant resides at Beau-

fort, near Killarney. She by her defence denied liability, and counter claimed for 63l., and pleaded that the balance had been fully discharged, but lodged 51l. in court. It appeared that the defendant was her own contractor and clerk of works, and that she had obtained part of the materials for the building of her house from the defendant. He advised her against using a certain description of slate for the roof, but she disregarded his advice and followed her own will, and when it turned out a failure in the hands of slaters not used to it, she shifted the blame on the plaintiff. She had the house reslated, and, then counter claimed for the cost, 63l. A large quantity of the correspondence which had passed between the parties was read, among which was a post card which the defendant addressed to the plaintiff, which was in the following terms: "Deluge recommenced; mastic cement not had time evidently to harden before the rain came, and the last rain has made it as soft as putty, and is calmly soaking through. I foresee we shall spend the winter in macintoshes, come down to breakfast under umbrellas, and keep a lifeboat attached to the pump instead of a fire hose. I shall expect you to supply all the above gratis."

Mr. Justice Gibson found for the plaintiff for 124l. 17s. 9d., and allowed the defendant 10l. on her counter claim—The Architect.

Mr. John Clare, of the firm of Clare Bros. & Co., Preston, Ont., died suddenly on the 21st inst. from a stroke of apoplexy. Mr. Clare, who was 56 years of age, was very highly esteemed in the community where he lived.

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NOTES.

In a recent lecture on geology in Glasgow, Mr. A. McWilliam, A.R.S.M., stated that granite consisted mainly of two minerals, quartz (hardness proportionately 6) and felspar (hardness 7), whilst the hardness of a best-quality Sheffield pocket-knife blade was 6½. The wearing powers of granite would therefore be readily understood. Pure clay with less than about 2 per cent. of potash and soda was a fireclay; if white, a china clay or a pipeclay; while containing 5 per cent. of oxides of iron and generally a fair amount of potash and soda it became an ordinary red brick clay.

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A NEW FLOORING MATERIAL.

Mr. Henry M. Morgan, United States Consul at Lucerne, Switzerland, writes: Architect Siegward, of Lucerne, has patented a new system of a concrete flooring, consisting of hollow tubes of mortar and iron. It is fireproof, and will, I believe, be of considerable interest to builders in the United States.

It is claimed that this system is an improvement on the inventions of Monnier, Hennebique, Koener, and others. It consists in manufacturing, in a factory, the mortar into hollow beams for forming a floor or roof ready for delivery to the builder—one which can be laid together on the supporting walls without planking. By this means one floor after another can be laid in a very short time, and the floor so laid can be used to work upon at once without scaffolding.

This appears to me as a great advantage compared to the usual devices of stone, plaster, etc., which are dependent largely upon temperature and weather, and

in all cases must be left for some days to dry before they can be walked upon.

One advantage claimed for the Siegward system is that no workmen are required other than the ordinary laborers. Another fact which should be considered is that armored beams which are made in the building can only be depended upon for uniformity when the mortar is mixed in exactly the same proportions and when it is not influenced by shocks, frost, or rain during the time of setting. When this is done in the factory it is far easier to secure uniformity and protect the beams against weather conditions.

The beams manufactured at Lucerne have a uniform breadth of 25 centimeters (9.84 inches) and are manufactured in five sizes, viz.: 9, 12, 15, 18 and 21 centimeters (3.5, 4.7, 5.9, 7.08 and 8.36 inches) high, according to the length of span and load. The size of the iron rods in the beams is between 5 and 10 millimeters (1.96 and 3.9 inches,) and generally six such rods are used in each beam. Two of these rods are

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The price of the third edition, mailed free, is \$1.00 to subscribers of the CANADIAN ARCHITECT AND BUILDER, and \$1.50 to non-subscribers. Order from the publishers,

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laid parallel with the under border of the beam, and the other four are bent upward into the form of a knot at the ends in order to strengthen their holding power. The proportion of cement with coarse sand is 1 to 4. Though the beams are made hollow, they have the same supporting power as though they were solid, with a great reduction of weight. This is an important factor where freight charges are to be considered. The beams, being hollow, offer also more favorable conditions for heating. The sides are ridged, so that the cement for joining them together can enter into the vacant spaces and thus form a solid mass. The laying together of the beams is done exactly as with wooden beams.

The beams are supplied in different lengths. In Lucerne they are made up to 5.5 meters (18 feet) long; in Italy and Germany, up to 6.5 meters (21.3 feet) long; and in Russia, up to 7.5 meters (24.6 feet) long. They can be used, in addition to floors, for terraces, roofs, staircase supports, and for walls where there is side pressure, as, for instance, in coal bunkers, warehouses, etc. It has been demonstrated that with a load from four to five times as great as the normal the beams have only bent to the extent of 1 or 2 millimeters (0.0394 and 0.0788 inch). The chief advantages claimed for these beams are: Great supporting power and security from fire; they come dry and hard from the factory and can, therefore, be used at once as floors for working on; greater facility and speed in building is secured by their use; freedom from excess of heat and cold by reason of their being hollow; thickness of completed floors is reduced by their use; the beams can be used as a heating floor by sending warm air through them.

The manufacture of the beams as practiced in the Siegwart Beam Factory in Lucerne, Switzerland, and in other European countries is very simple. They are

manufactured in layers of 2.5 meters (8 feet) breadth and not singly. The hollow spaces are formed by means of iron molds, around which the cement is laid and the iron rods placed in position. These iron molds are constructed so that they can be reduced in size by the turning of a screw and withdrawn when the cement has become hard. The beams are cut, before the cement has set, by means of a patent cutting machine, which can be placed in any position. Six to eight hours after laying the beams the iron molds can be withdrawn, but they are generally left to harden for four to six days before they are separated. After two to three weeks they are ready for delivery.

There are already a large number of buildings, both public and private, in Switzerland in which the Siegwart beams have been employed, and in all the buildings now in course of construction in Lucerne they are being used. At present there are three factories in Germany, three in Russia and one in Italy occupied in manufacturing beams under the Siegwart patent.

MECHANICS' LIEN LAW.

At the recent session of the Legislature of British Columbia the addition of a number of sections relating to costs was made to the Mechanics' Lien Act of that province. The limit of fees in money or stamps payable to any judge or officer in any action brought to realize a lien is placed at \$1 on every \$100 of the claim up to \$1,000, and this is only payable by persons other than wage-earners. The costs to the plaintiff in any action must not exceed 25 per cent. of the amount of judgment, besides actual disbursements. Where the costs are awarded against the plaintiff such costs must not exceed 25 per cent. of the claim of the plaintiff besides actual disbursements. Where the less expensive course is not taken by a plaintiff the costs allowed to the solicitor must in no case exceed what would have been incurred had the least expensive course been taken. To the costs of discharging or vacating a lien a reasonable amount of costs for drawing and registering a lien may be allowed, in addition to the costs of an action. Costs not otherwise provided for are left to the discretion of the judge or officer to whom application is made.

PERSONAL.

Mr. J. A. Pearson, architect, of Toronto, has recently returned from a visit to Europe.

Mr. A. J. Rattray has recently commenced architectural practice in Toronto, his office being in the Canada Permanent Building.

NOTES.

A striking feature of the new cathedral at Liverpool, England, will be the height of the vaulting of the nave and choir. Measured in the barrel vaulting it will be 116 feet, and in the high transepts 140 feet. No cathedral in the country approaches its height. The nearest is Westminster, the nave of which has a height of 102 feet, while York measures 99 feet; then Salisbury 84 and Lincoln 82. Chester reaches only 78. The "whispering gallery" of St. Paul's Cathedral is 100 feet from the floor.

Incombustible paint for woodwork is prepared by mixing together in a fine powder 20 per cent. pulverized glass, 20 per cent. porcelain, 20 per cent. stone (silicious), 20 per cent. calcium lime. Then mix these compounds with 30 per cent. of silicate of soda. The lime gives unctuousity to the mixture, and by partially combining with the soluble glass, makes a more intimate mixture. Other proportions of the several ingredients can be used, but the percentage of silicate of soda and lime should remain as above. The mixture is applied to the surface in the same manner as ordinary paint. The first coat sets immediately, and the second may be given from six to twelve hours afterwards. Two coats are usually sufficient.

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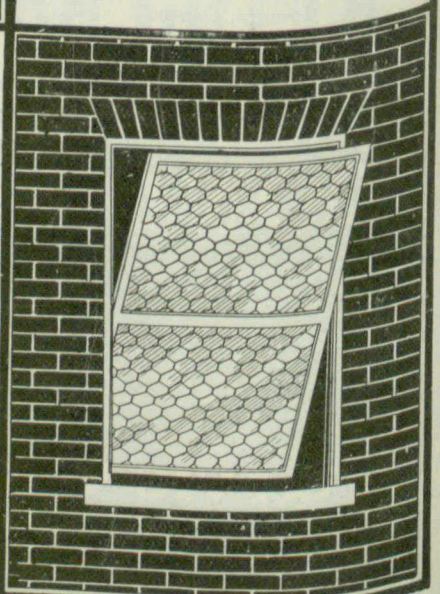
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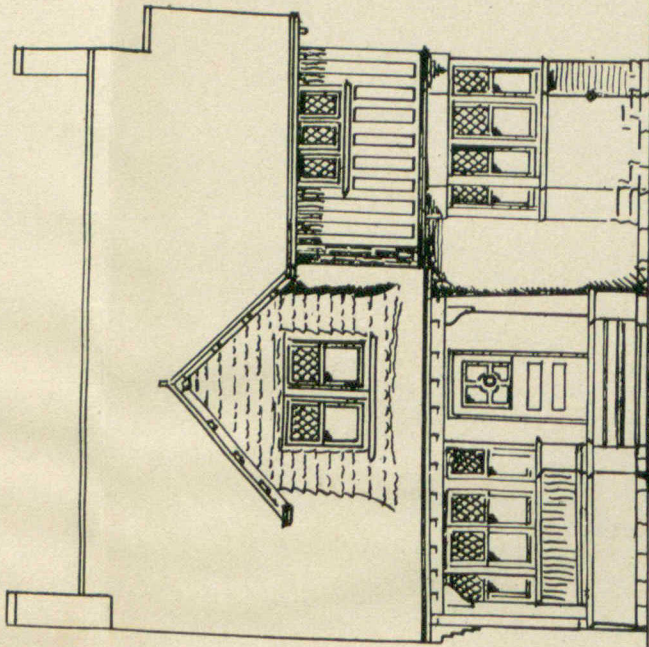
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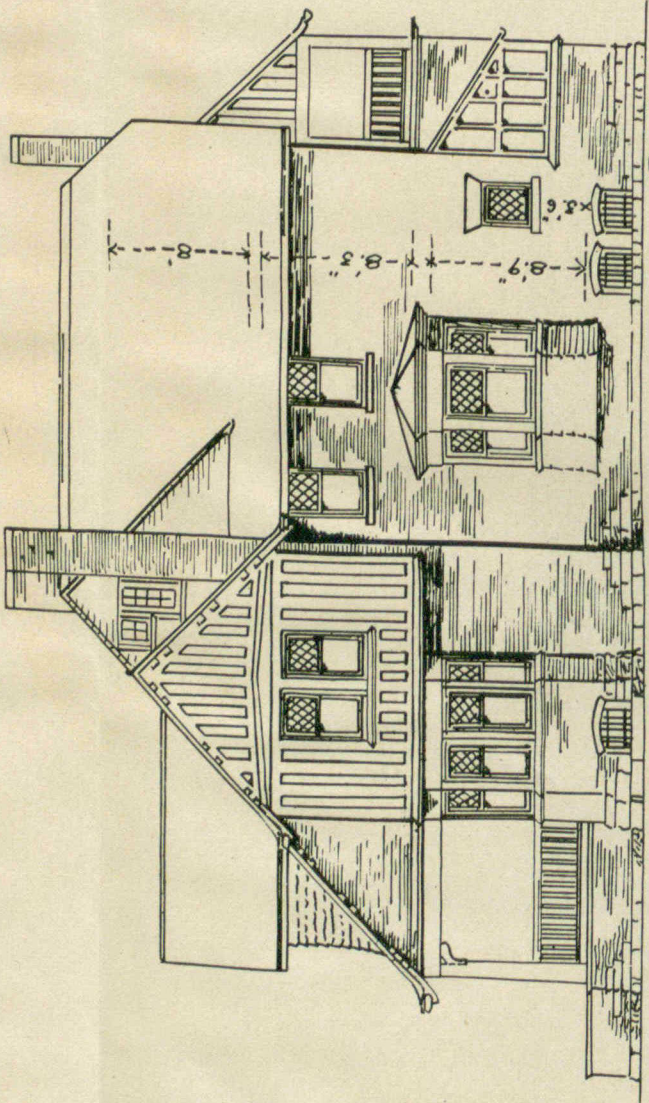


House in Delaware Av. Toronto.



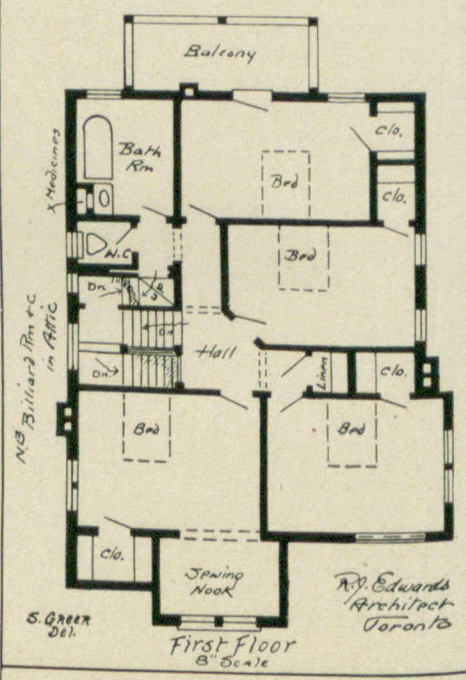
Front Elevation
8" Scale
S. Greer Del.
R. J. Edwards
Architect
Toronto.

House in Delaware Av. Toronto.

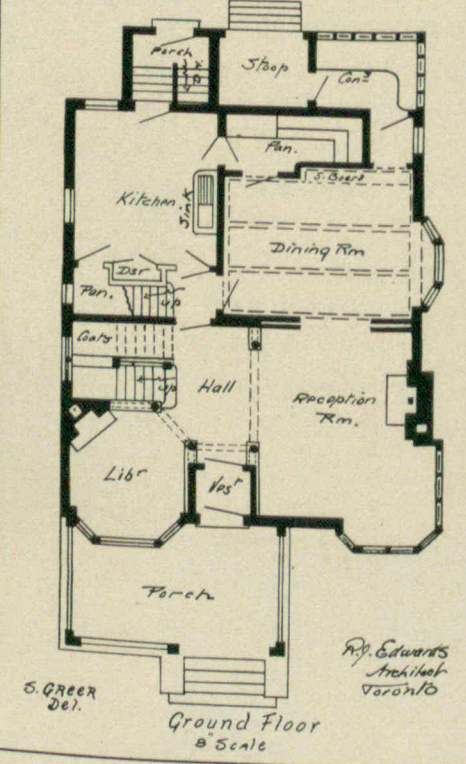


South Elevation
8" Scale
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R. J. Edwards
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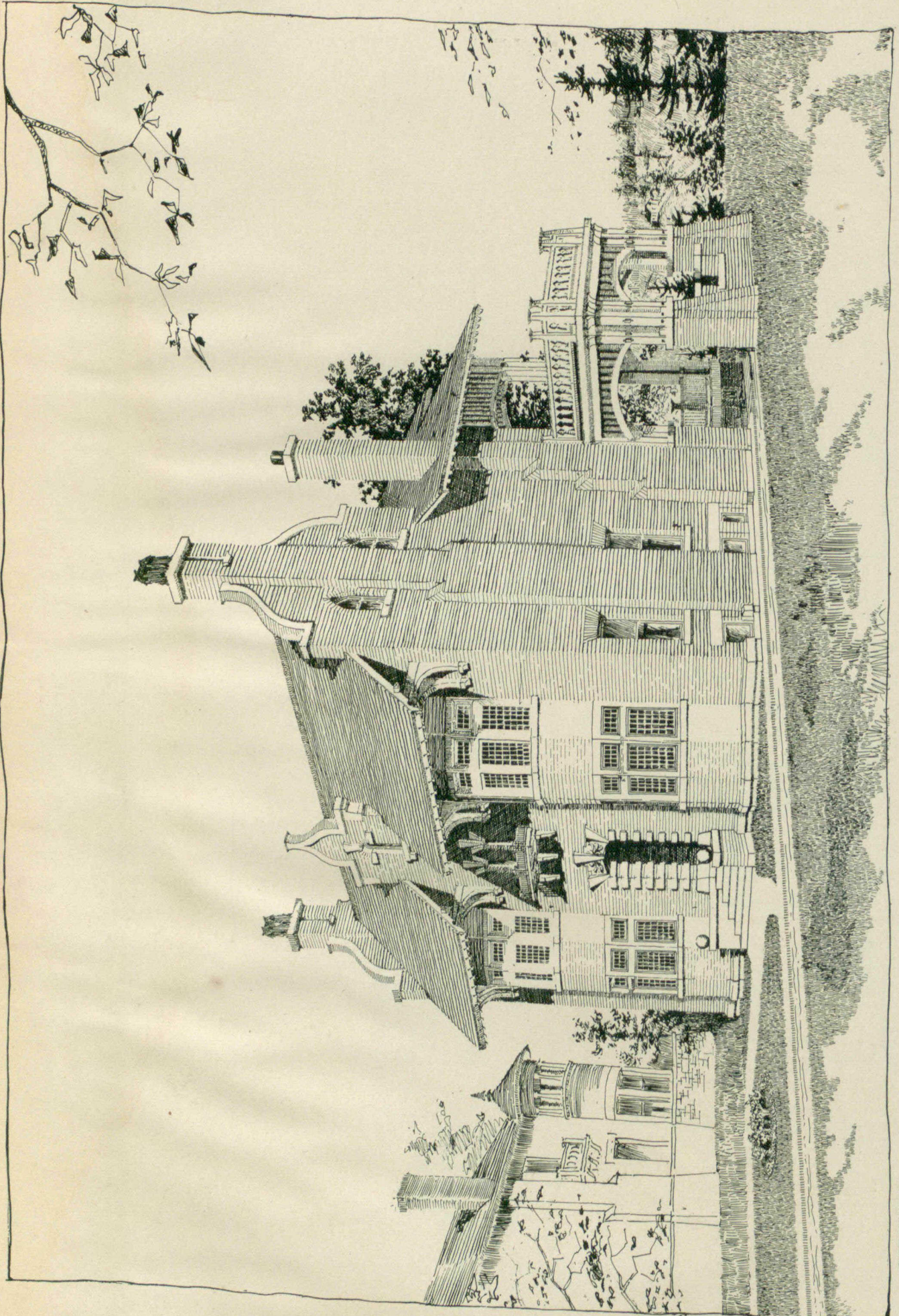
House in Delaware Av. Toronto.



House in Delaware Av. Toronto.

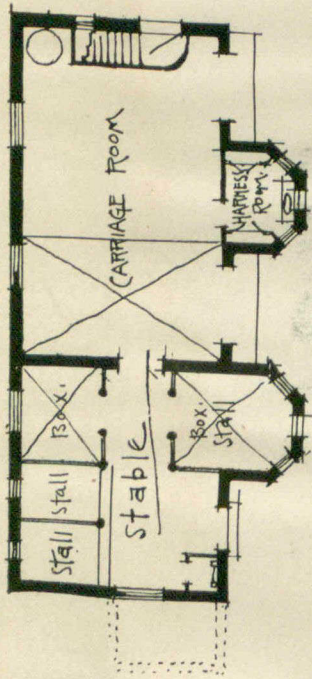


HOUSE IN DELAWARE AVENUE, TORONTO—R. J. EDWARDS, ARCHITECT

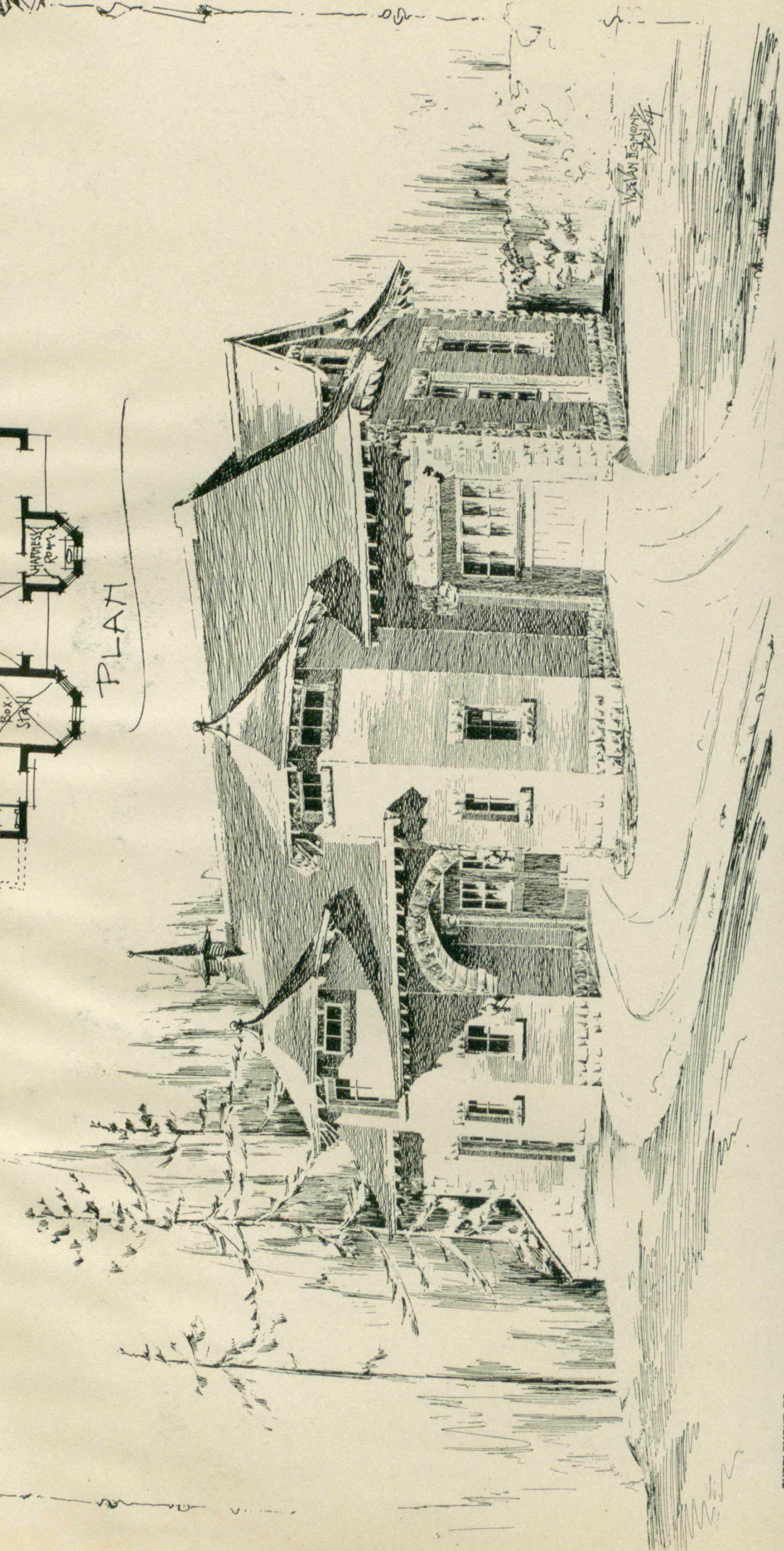


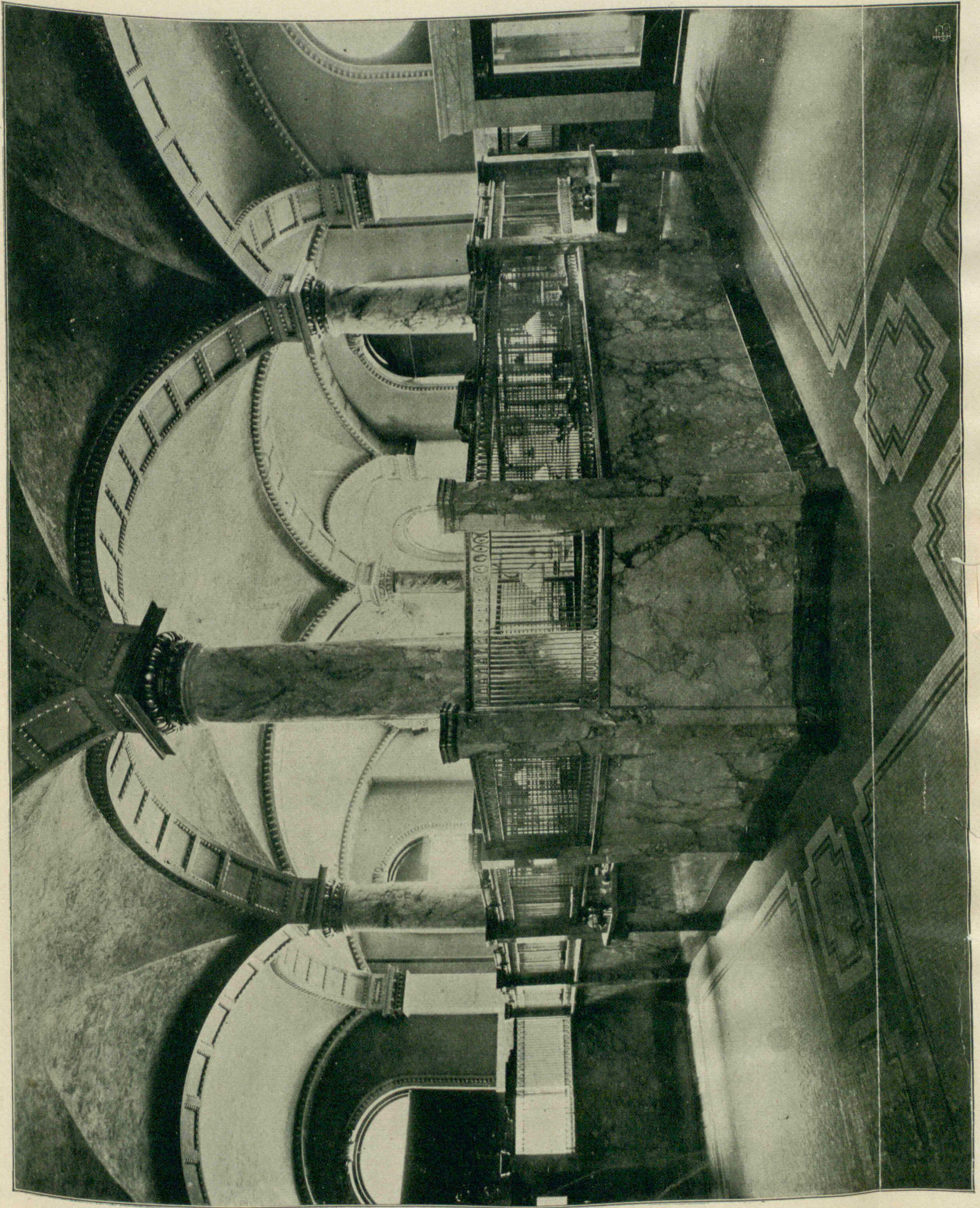
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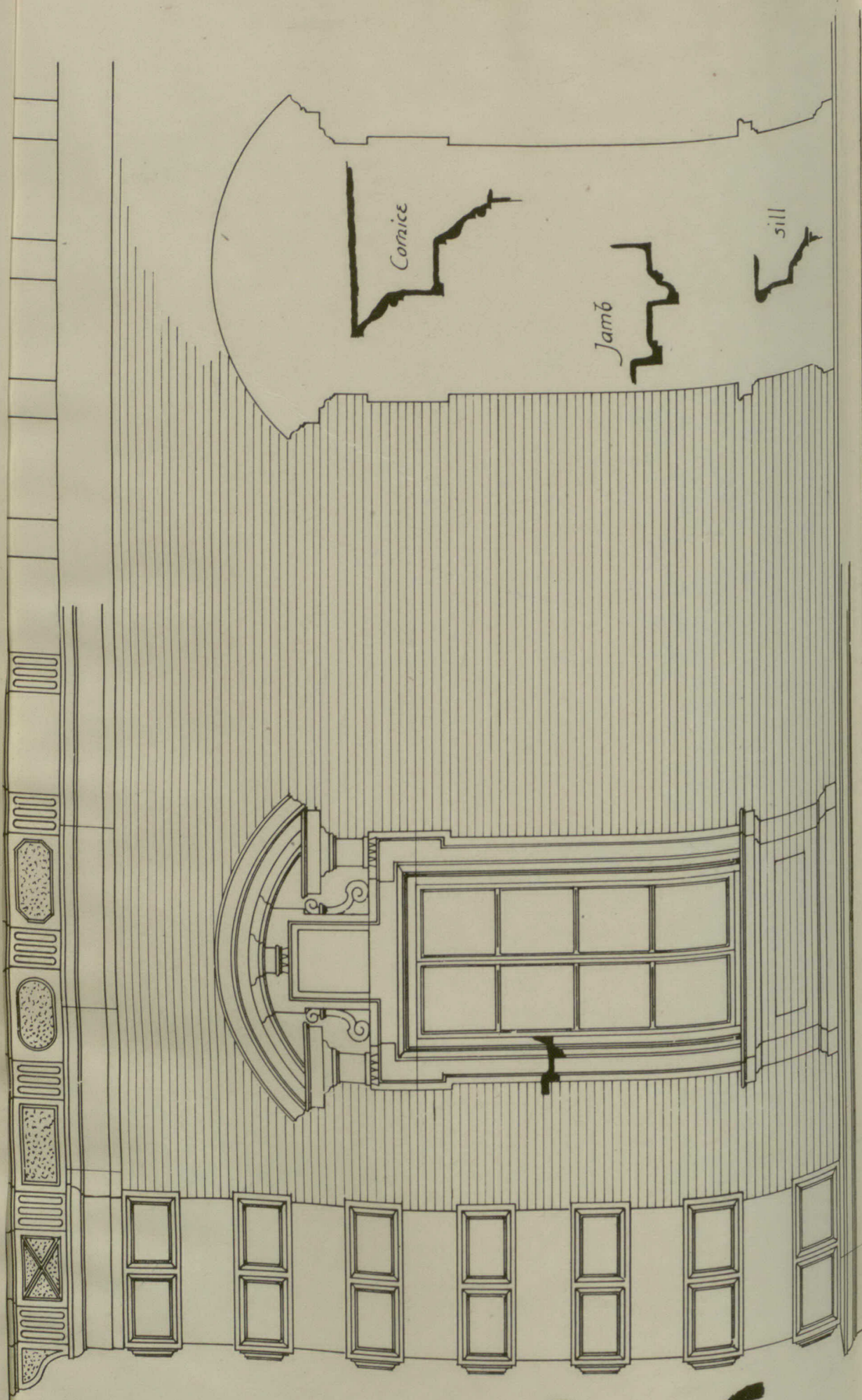
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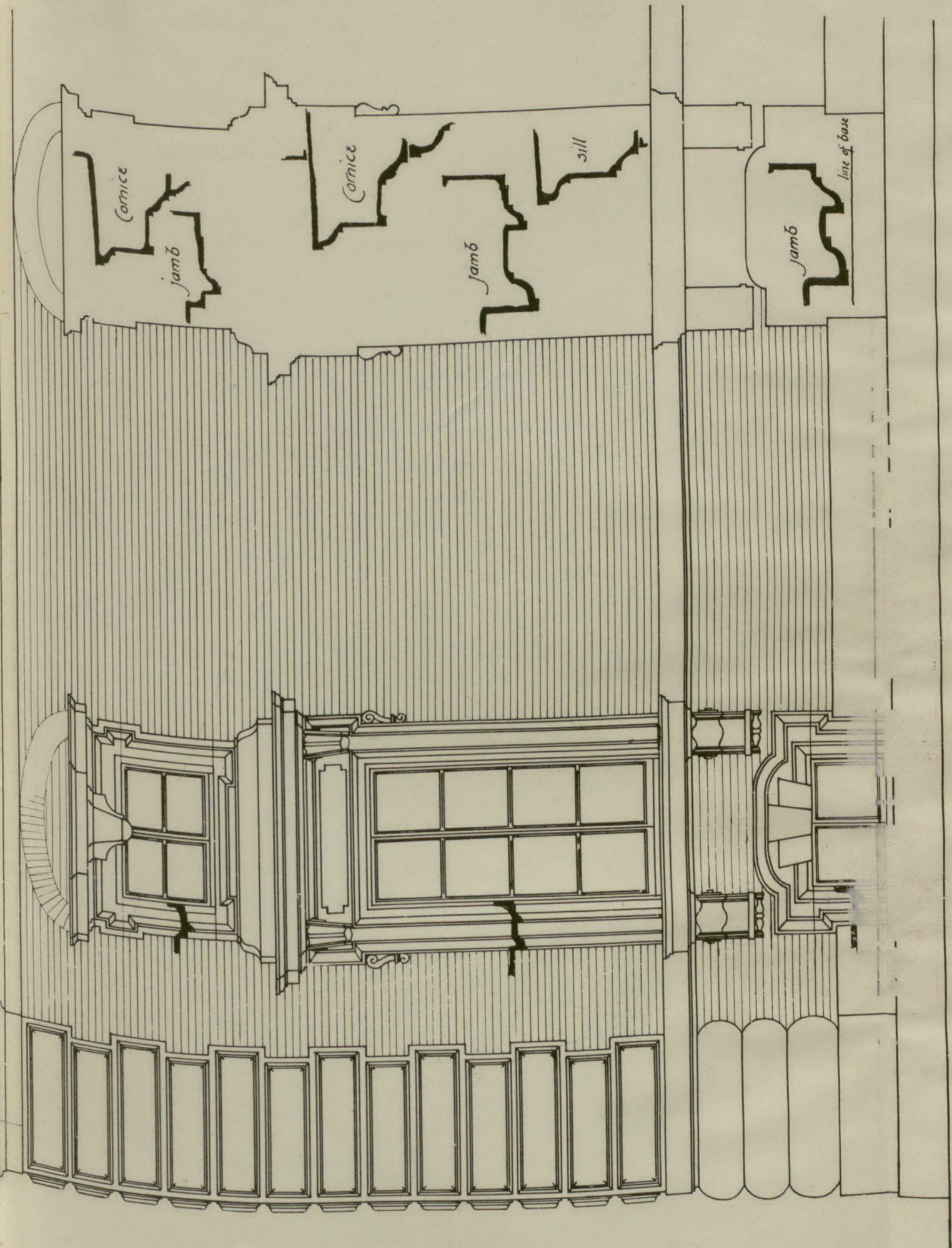
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PORTION OF MAIN FACADE, PALAZZO DI BRERA, MILAN.
MEASURED AND DRAWN BY MR. CECIL BURGESS.

ARBITRATION OF TRADE DISPUTES.

A conference of representatives of the Ontario Association of Architects, the Architectural Eighteen Club, the Builders' Exchange and the Trades and Labor Council of Toronto, was held a few days ago in the rooms of the Ontario Association of Architects to consider whether an agreement might be reached in which matters under dispute between contractors and workmen might be adjusted by a board of arbitrators and strikes in the building trades avoided. The conference was of a very friendly character, and resulted in the ratification by the persons present of a form of agreement submitted by Mr. W. L. Symons, President of the Ontario Association of Architects. Copies of this agreement will be submitted to the Builders'

Exchange and the Trades and Labor Council for further consideration and approval.

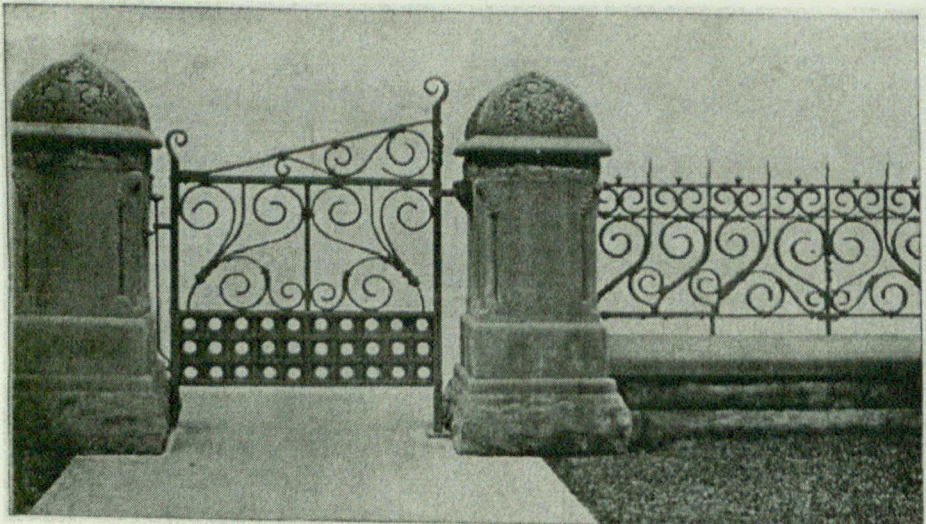
NOTES.

Mr. E. Rodgers, Building Inspector of Winnipeg, reports that up to the end of March, there were 127 permits granted for the erection of 215 buildings, at a total estimated cost of almost three-quarters of a million dollars, or to be exact, \$719,000. In comparison with the same period of last year, the increase in the number of permits is 9; in buildings, 2; in expenditure, \$102,580.

The Western Architect states that machine window glass is reaching the market and elicits most contradictory reports. Some lots are reported as very straight and clear, but thin; while others are said to be thin and anything but straight. A very high authority in the glass trade expresses entire confidence in the ultimate success of the process, and says that the thinness is now being remedied.

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NOTES.

The twin central towers on the Machinery Palace at the World's Fair are 265 feet high.

The carpenters and joiners of Quebec, are demanding an eight hour day and 25 cents per hour.

Building permits to the value of \$300,000 have been issued in Vancouver this year. An active season is looked for, the Building Inspectors estimate being an expenditure of \$2,000,000 as compared with \$1,500,000 last year. A large sum will be spent on the construction of houses, the demand for which greatly exceeds the supply.

One of the twelve massive bronze cornices which are being made for Senator William A. Clark's \$5,000,000 residence in New York City, and two bronze statues for the same structure, have reached the World's Fair for exhibition. The cornices are thirteen feet high and eight feet in width. The style of architecture is Louis XVI. The value of the twelve pieces is \$100,000. The statues are two striking pieces in bronze by George Gray Barham and are entitled "God Pan" and "The Hower." Each is cast in a single piece.

BUSINESS NOTES.

The Richter Manufacturing Company, of Tenafly, N.J., manufacturers of burlaps, propose to establish a branch factory in Canada.

The Canadian Commercial agent at Sydney reports that in the Australian markets there should be a good opening for heating apparatus. He thinks that in churches, schools and shops beyond the coast line a manufacturer would find a good trade if considerable capital were forthcoming to ensure an ultimately profitable business.

From the British Clayworker it is learned that Messrs. James Buchanan and Son, brick machinery manufacturers, of Liverpool, have received an important order for the entire plant and machinery and other accessories, for a new and large brick works for Canada. The machinery is intended to treat shales, fire-clay, also surface clay, for making common, buff, red-facing bricks, also machine and hand-made fire-bricks on four different processes, to suit the different materials.



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