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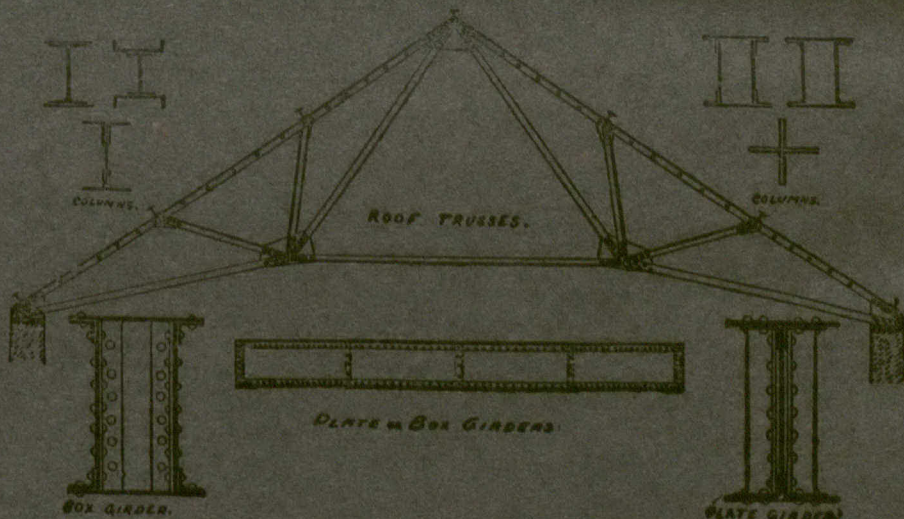
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ILLUSTRATIONS ON SHEETS.

Grant Hall, Queen's University, Kingston.—Symons & Rae, Architects, Toronto.
No. 152 Park Road, Rosedale.—Burke & Horwood, Architects, Toronto.
Hall, No. 123 St. George Street, Toronto.—Burke & Horwood, Architects, Toronto.
Public Comfort Station, Market Square, Hamilton.—James Balfour, Architect.

ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Statue of Queen Victoria.—George Frampton, R. A., Sculptor.
Memorial to Canadians who fell in the war in South Africa.—W. S. Allward, Sculptor, Toronto.

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A Provincial Association of Builders.

The recent annual meeting of the Toronto Builders' Exchange placed itself on record as being in favour of the formation of a Central or Provincial Association. This is the best way to secure concerted action, and concerted action is necessary now-a-days.

Architects' Drawings.

The vexed question of who owns an architect's drawings is about to be settled for Englishmen by an appeal from the decision in the case of Gibbon v. Pease. This suit by a client, for the possession of the drawings upon the conclusion of the work, was decided in favor of the client, Gibbon, on the precedent of a case, Ebdy v. McGowan, in which an architect, suing for 2½ per cent. on work not carried out, was obliged to give up his drawings as a condition of getting the fee. The situation in Gibbon v. Pease is different, for here the work was completed. The client got his building to his satisfaction, but demanded the drawings too. The judge declined to hear the evidence of architects on the side of the defendant; saying that the case was settled by the judgment in Ebdy v. McGowan.

The weak point in the case, on the side of architects, is the custom, acquiesced in apparently by the profession, that, when a building is not carried out, the drawings should be given up, in order that the client may have something for his money. The client has as a matter of fact got something for his money. He has

got accurate knowledge of how much it would cost him to build. If it is this knowledge which causes him to desist from his purpose, its value to him is measured by the extent to which he saves himself from embarrassment by so desisting. He has probably got the worth of his money.

The proposal to give him drawings, in order to give him money's worth, brings out clearly, what the courts seem to find it so hard to understand, the real nature of an architect's drawings; that is to say the fact that they are not an end in themselves, and have no use in themselves apart from their end, which is the erection of a building. The building is the end. This is what the owner invites the architect to produce for him, and its production is what he pays the architect for. One stage in the production of a building is the estimation of its cost. For this, if the owner pays a fee, he gets in return the knowledge which he wants and which is therefore of value to him. What further value does he get by having the drawings handed over to him? None whatever (they are not works of art), none whatever—*unless he means to use them to produce a house.* It is the client's right to use the drawings which is granted when he is given possession of them. This is the implication and in the implication is implied a recognition of the true nature of an architect's drawings—that they are but means to the production of a building.

But has the client a right to use an architect's drawings apart from the architect and against the wishes of the ar-

chitect? Is the law then to be invoked to enable clients to cheat their architects; to enable anyone, who has once deceived an architect into making drawings for the purpose of erecting a house, to bone the drawings and walk off with them, under the protection of the police? If the entire profession cries out upon this as an unbearable situation, there is surely something in what lawyers call the 'logic of the case' that deserves to be considered by the judges who have to decide this appeal. There is a phase of the injury that might be readjusted by a change in the scale of fees, taking account of occasions when an architect is willing to supply drawings only, for a fee suited to this condition; but the essence of the matter is deeper than this. As H. H. Richardson used to say, architecture is a plastic art; it is not possible to attain perfection in its execution merely by making drawings; the mental attitude of the best men towards their work is that of a sculptor towards his conception,* and, if it were possible to conceive of a state of affairs in which architects were prohibited from dealing with anything but drawings, such a state of affairs would mean that the profession would degenerate, until the architect, as we understand him at present, would cease to exist. The function of the profession in this case, would not be large enough for a man like Richardson. There is no question but that, difficult as it may be for the man of business to understand it, drawings are not the end for which an architect offers his services or for which, properly speaking, he is paid.

But, so long as a clear understanding in the matter is wanting, it is well for architects to remember that custom and precedent rule in a court of law only in the absence of definite contract; and if any one wishes to retain possession of his drawings under all circumstances, it is only necessary for him to express this wish to his client, in the beginning of their connection; either by a clause in his schedule of fees, or by letter, or even by word of mouth which is witnessed or provable.

**Site for Monument
to Canadians who fell
in South Africa.**

The only site suggested as yet for this memorial is the junction of Queen Street and Spadina Avenue. This seems far down town and yet not in the centre of life. There is danger of the monument being swamped by warehouses which, apart from the depressing influence of their scale upon a refined piece of work like this memorial, imply a neighbourhood where it would be little seen. The warehouse district is a dull district. It is desirable to keep away from it, and as, in Toronto, this district, as it grows, must back up town because of the lake, it is wise to keep well up town in choosing a site for this monument.

The natural background, for anything of a classic character in white stone, is a mass of foliage; and, in the case of this particular monument, the long vertical lines would compose well with the rounded forms of trees. The avenue or park seem for this reason to be indicated, and should form the ground of an alternative

* (Compare the proposal of the President of the American Institute of Architects to study the alterations in the front of the capitol at Washington by means of a full size model in stone.)

proposal. Indeed the avenue is particularly adapted to give a full view of a lofty monument; and its own effect would be greatly enhanced if such an object closed its vista. But in this case it would be necessary to move to some other site the bronze statue of Sir John Macdonald, which, as compared, in colour and size, with this memorial, occupies, in a futile manner, the effective position in the vista. Another appropriate site is that occupied by the band stand in the centre of the park. This is, however, rooted to the ground by drains from the lavatories underneath it.

There are in fact no sites pressing to be filled that are not filled. We must look about for a site. If we look not only about but ahead, it will be seen that this monument is the very thing we want for the diagonal avenue that is to be cut from Queen Street to the north-west part of the city. The monument needs a conspicuous site with a length of open approach on either side of it. The avenue needs a conspicuous object to interrupt its vista and give value to its extent of view. The monument wants an island to stand on and the avenue, being yet undefined, affords an opportunity for making it exactly as required, and itself needs a motive of this kind to vary its line. It will take some time to complete the monument, and in the meantime the plan of the avenue, which, with other improvements to Toronto, is in the air and is coming, may be fixed; and the establishment of a site for the monument on its course will be an encouraging starting point in its construction. It would be as well for this reason not to settle too hastily upon a site for the monument. The question of its design is not affected. That is fixed, and there is no use to fix the site until the work is done and it is necessary to set it up. By then the place for it to fill may be more obvious.

EIGHTEEN CLUB EXHIBITION.

The annual exhibition of the Eighteen Club of Toronto will be held in the gallery of the Ontario Society of Artists, 165 King St. W. from January 28th to February 11th. There will be a number of drawings by architects of New York and Philadelphia. Among these are 8 drawings by Mr. Wilson Eyre, 3 by Messrs. Butler & Rodman, 5 drawings of the Ansonia Hotel by Messrs. Duboy & Jellate, and Messrs. Stoughton & Stoughton's drawings for the Soldiers and Sailors Monument. There are also 6 water colour drawings by Messrs. Renwick, Aspinwall & Owen, 12 sketches made in Italy by Mr. Birch B. Long, some landscapes by Mr. D. F. Pentecost, and 35 drawings by Messrs. Talmér & Hornbostel which are intended to be sent later to the Paris Salon.

The gallery will be open to the public during the day without charge, throughout the exhibition.

The club will give a smoking Concert on an evening not yet . . .

A new saviour of his country has arisen in the United States in the person of Mr. Edmund Beall, of Alton, Ill., who has built a row of flats, which he calls 'The Stork's Nest,' and announces that he wants as tenants none but married couples with plenty of children. He does not absolutely bar bachelors and spinsters from renting rooms in his building, but declares that it is useless for them to take them if they object to children. As a consequence, it is said, a dozen cities have sent to Mr. Beall invitations to invest his capital with them.

LESSONS FROM THE BALTIMORE FIRE.

SECOND ARTICLE.

HOW FIRE ATTACKS.

EXPLOSION.—The first warning of the Baltimore fire was an automatic alarm from the basement of the Hurst Building to a station two blocks away. No fire was visible above the basement when the firemen got there, and no smoke or heat was apparent; but they found fire in the basement which increased rapidly and spread up the shaft of the passenger elevator. In seven minutes from the time the automatic alarm registered there was a violent explosion, apparently coming from the upper floors. This blew out the windows of the Hurst building, and many others in neighboring buildings. In a moment the entire building was seen to be ablaze. Flames came from all the windows and, extending across the street, "ignited several buildings."

The occupants of the building say that there was no gasoline in it, and, though the building was piped for gas, there was none used. "The most plausible theory," according to the Special Committee of the National Fire Protection Association, "is that the smoke and gases from a smouldering fire ascended the central elevator and stair opening, accumulated in the upper portion of the building, and were finally exploded when reached by the flames." Prof. Norton says it is well known that "the products of distillation in a slow fire smouldering for some time before becoming rapid in its spread may, when united with air, become explosive." The contact of air with this smoky mixture causes an explosion known to the firemen as a "hot air" explosion.

It should be noticed—both as a defence of the automatic alarm system and as marking the length of time required for a smouldering fire to produce gas sufficient for such an explosion—that Mr. Sachs says a first alarm was sounded twenty-five minutes before the alarm which brought the firemen to the spot.

However that may be, or whatever the cause of the explosion, the immediate cause why the fire extended beyond the Hurst building, and why, when it did spread, it ignited several buildings at once—was explosion.

For this reason Mr. Sachs makes municipal limitation of the storage of highly inflammable or explosive substances one of the lessons to be derived from the fire. (There was indeed within twenty minutes after the firemen got there an explosion of gunpowder—60 pounds in a safe—at a hardware store across the way.) This, as well as Mr. Sachs' other connected proposition—that there should be a means of cutting off at short notice the gas, water and electric supply to blocks of buildings—is a civic matter, rather than a matter that concerns architectural practice, and is more easily dealt with than the mystery of explosive gases generated during the progress of the fire. Prof. Norton considers that sprinklers and ventilation and stops in vertical openings tend to minimize the danger from explosions of this kind. But a safe blow-off vertical seems safer, as an additional precaution, than to have the building so tightly closed up that, if the worst comes to the worst, it should be necessary for the exploded gases to find vent by breaking the windows and blowing the flames across the street to inlets into other buildings by means of broken windows provided by the same explosion. The provision, among the Conclusions of the

National Fire Protective Association's Committee, that stairs and elevators shall be enclosed in brick walled shafts, with fire doors at the storey openings, and extending through the roof with a thin glass skylight at top, seems to partly meet this provision. That is to say, as far as it is necessary to leave a skylight of weak resistance at the head of the stair and elevator well, for the chance of communication being established between the building and this channel, so far the well may become a channel for the outlet of explosive gases. It would be met at the cost of leaving one vulnerable spot in every roof, at the thin glass skylight. This is, however, not properly an entrance to the floor area of the building, but only to a fire-proof tube which runs past the floors.

ORDINARY MODES OF ATTACK.—If not "violently scattered as by an explosion," Prof. Norton says, "fire spreads through a district by the carrying of sparks, by the direct contact of flame, and by radiation across open-spaces." Protection against these dangers involves, besides considerations of material already spoken of, considerations of planning and construction which, as expressed in the reports under review, are here brought together under the head of

PROTECTION CONSTRUCTION.—EXTERIOR.

OPENINGS.—It is obvious that all surfaces must be equally fire resisting if fire is to be kept out of a building. For this purpose (considered alone) all openings should be as small as possible. The monumental buildings exposed to the fire—the Court House and City Hall, "heavy stone buildings with comparatively few openings"—came off well. "Offering a small area for the entrance of fire and non-inflammable exterior, these buildings withstood great heat, with no damage except from the spalling of the stone and charring of window frames." The fire was not driven towards these buildings with the same fury as urged it towards some of the steel-frame buildings, but there was sufficient exposure to "demonstrate the effectiveness of a minimum window area in reducing the danger of ignition."

But the conditions are usually not a minimum of light, but a maximum. Then there must be adequate protection, and the question is what is adequate. There are three modes of protection:—Wired glass, shutters and the water curtain; which latter must be taken into account, as, though not constructional, it modifies the occasion for construction. Does a building with a water curtain require also wired glass and fireproof shutters? If the water curtain is sure to work and to work as long as it is wanted, there is strong evidence in favor of its effectiveness to be extracted from the experience in the Toronto fire; but where it is not supplied from a separate service, as it is proposed to do in London and New York, the Toronto fire also furnishes warning that, in a conflagration, draughts on the pressure of the water system are so great that water may fail to reach the height necessary to supply the water curtain of a high building. In any case wired glass and shutters have a function to keep fire in as well as out. They have the pressure of heat and perhaps of explosion to withstand. It may be possible to make a path of least resistance towards the sky for the issue of explosive gases, but hardly, one would think unless the windows are prepared for a greater resistance. There must clearly be constructional protection for windows as well as the protection of a water curtain.

The available means is wired glass set in metal frames. But wired glass did not stand in all cases in the Baltimore fire. The melting point of glass was reached. Capt. Sewell "saw a good deal of melted glass" and the investigating committee of the National Fire Protection Association report that "wired glass melted in a number of instances."

For perfect protection it is necessary to supplement wired glass with shutters perfectly made. Of "tinned and sheet-iron shutters" Prof. Norton reports that "few or none withstood the enormous volume of flame and hot gases." The shutters themselves, of whatever kind, would probably be a loss. Metal shutters, hung in the ordinary way, Capt. Sewell condemns because they "warp and twist and then they do not fit closely enough." "Wooden shutters covered with sheet metal would probably do no better, because the wood would char by destructive distillation and destroy the hold of the screws or other means used for fastening on the hardware. But, if carefully made, shutters would probably prevent the fire from entering the building. Capt. Sewell suggests rolling shutters because, being hung from the top, they "suffer none but tensile stresses when hot." Shutters of this kind at Baltimore, "made up of several sheets of light, corrugated iron rivetted together along horizontal lines," were too light. "Probably," he thinks, "a rolling shutter made of heavy interlocking slats, or slats fastened together with heavy links, would be better. Still better would be one or two sheets of metal stiffened round the edges, properly hung, and sliding in the window frame just like the sash; this would necessitate a specially designed frame with a high boxed head, to permit of sliding the shutters up so as to clear the opening; but, with walls of proper thickness, it could readily be provided. That part of the frame carrying the shutters should be of metal and pocketed into the brickwork, with a little room for expansion."

The structure of the window itself is of great importance. Mullions of every sort are condemned, as a disadvantage to any window opening, and dangerous if they carry weights. Capt. Sewell says:—"It is much better to have all window openings single, and no light piers of any sort in the outer walls, whether they are classed as mullions or not."

SPANDREL BEAMS.—Intimately connected with the defence of openings is the protection of the beams which carry the curtain wall from storey to storey and make another series of vulnerable points on the exterior. The safety of the window frames affects their safety, and the expansion of cast iron mullions attached to these beams, when running over large windows, caused many in the Baltimore fire to fail and upset a portion of the wall they carried.

Spandrel beams should have a clear carry, with no destructible mullions or light piers between the windows below; and the fire protection of the beams should be adequate i. e. should (as defined in portions of the reports reviewed last month as referring to materials) be thick enough not to heat the exposed flange through and so make a breaking strain at its junction with the cool and unexpanded web.

CONTINUOUS EXTERIOR WALLS.—Capt. Sewell suggests a more thorough way of avoiding this source of danger. He says:—"The exterior walls of many of the so-called fire-proof buildings ought to be taken down; all of them are more seriously damaged than

appears, except upon close inspection. I believe better results would be obtained by building the exterior walls continuously from the foundation up, anchoring them carefully to the steel frame to prevent buckling. The beams carrying the walls are often so near the surface, especially when they act as lintels, that in long-continued fire they get hot enough to expand and bend; this will wreck the wall if nothing else does. If the weight of brickwork is assumed at 125 lb. per cub. ft., and its safe-working load at 20 tons per sq. ft., a wall of uniform thickness and 320 ft. high will be safe under its own weight as far as crushing is concerned. With a very moderate increase of thickness near the bottom, and thorough anchorage to the steel frame at all points, a self-supporting brick wall is entirely practicable for any steel-frame building. Its only drawback is the time required to build it, for it could not be started on a number of levels at the same time. This, however, would probably result in better work. The modern building erected in record-breaking time, is never a model of workmanship, and often it contains defects that reduce the factor of safety almost to unity. The standard of work that prevails in these hastily-erected structures would not be tolerated for a moment in general engineering works."

FIRE-WALLS.—Mr. Sachs alludes with satisfaction to the "appreciation of the party-wall question" in London as one reason for thinking such a fire as the Baltimore fire unlikely to occur in London.

ROOFS.—Capt. Sewell says:—"So far as I was able to determine, both slate and tile roofs kept out the fire, with some damage to themselves." He adds later:—"Nothing combustible should be used in the roof finish."

INTERIOR.

LIMITATION OF FLOOR AREAS.—BRICK PARTITIONS.

The Committee of the National Fire Protection Association says:—"The large areas now so common, and particularly in those buildings having unenclosed vertical openings, undoubtedly furnish conditions which render even the most approved methods of fire-resistive construction now in use of doubtful value." It concludes:—"Buildings of considerable area and having large quantities of combustible contents should be subdivided by substantial brick fire walls sufficient to form a positive barrier to the spread of fire." There is no getting away from the conclusion of all the reports that the only proper material for this purpose is brick. Capt. Sewell says:—"The only successful partitions were brick walls. All other partitions of all sorts were a total failure." The other reports are as strong.

The brick wall should be well founded. There seems to be no certainty of stability short of a foundation on the ground.

VERTICAL OPENINGS ENCLOSED.—The Committee of the National Fire Protection Association is strong on this point. They say:—"Vertical openings extending throughout buildings, as for stairs and elevators, rapidly communicate fire to all storeys. With buildings of considerable height or combustible contents this is likely to result in fire conditions beyond Fire Department control. All such floor openings should be enclosed in brick walled shafts, crowned by a thin glass skylight and extending through the roof, and with fire doors at openings to storeys.

The report appeals for the protection of openings in buildings of ordinary construction as well as in those of

fire-resistive construction. It thinks also that existing buildings should be altered to meet this requirement and that municipal building laws and insurance discrimination should be evoked to this end.

STAIR CONSTRUCTION.—The Committee of the National Fire Protection Association makes the conclusion:—“Stair treads should preferably be of iron or its equivalent. If slate or marble treads are used they should be supported by a metal plate underneath. Where slate or marble has been used in the Baltimore buildings it was the rule to find the entire stair treads and landings gone. It is very important to make the stairway safe for use by firemen after it has been exposed to heat.

Prof. Norton says:—“Cast-iron stair frames and rails stood remarkably well in most instances.

DESIGN OF COLUMNS.—The Committee of the National Fire Protection Association concludes:—“To resist distortion, steel columns should be designed so as to practically equalize the transverse strength of the material in all directions from the axis of the column.”

The behaviour of two steel columns in the fire illustrates this. The box column shown in Fig. 1, having

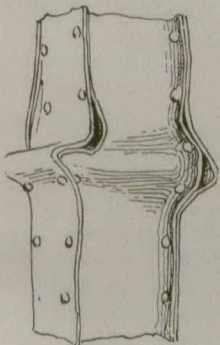


FIG. 1.

lost its fire protective covering, buckled thus, but maintained its vertical position. The result was a settlement of about 4 inches in the floor above. A column in another building, (Fig. 2) which was made of channel irons, and was susceptible of buckling in two directions especially,



FIG. 2.

buckled in the shape of the letter S and brought down the roof.

ALL STRUCTURAL METAL WORK SHOULD BE PROTECTED.—The committee of the National Fire Protection Association says:—“The practice of leaving steel-work unprotected in blind attics has prevailed to some extent in the past, although its fallacy has been frequently demonstrated.” Unprotected cast iron columns in the basement and on the ground floor caused the collapse of the National Mechanics Bank Building in Baltimore.

FLOORING.—The committee of the National Fire Protection Association says:—“The desirability of minimizing the amount of combustible material in floors was very clearly demonstrated in this fire, the wood floors and nailing strips being practically all consumed.” The committee therefore concludes: “Floor surfaces should be of non-combustible material.”

TRIM.—Capt. Sewell’s definition of a fireproof building includes “incombustible trim.”

PIPES IN COLUMN COVERINGS.—Pipes and conduits running inside of the protective covering of columns have been accused of buckling and thus causing the failure of the column covering. Capt. Sewell finds more evidence in favor of the column covering having failed first, but admits that the subsequent buckling of the pipes inside must have aggravated the failure of the covering.

In any case one would think, there is danger in this practice because of the admission of a second set of workmen, who have no responsibility for the proper covering of columns, to place work behind it, not only

while the building is in progress, but, in case of alterations and repairs, afterwards, when a rupture of the completeness of the fireproofing may be imperfectly restored.

THE VALUE OF FIREPROOFING.

Capt. Sewell estimates the cost of repairs to the fireproof buildings injured in the Baltimore fire, as not less than 60 per cent. of their original value. He calculates further that if all the improvements in fireproofing were introduced at once, they would increase the cost of fireproof buildings about 15 per cent. This additional cost does not of course guarantee against repairs, more or less costly, in case of exposure to fire. It is not possible to construct a building that will not be damaged by fire. A fire outside may be kept from entering the building, but at the cost of damage to wall surfaces, destruction of architectural finish, and probably such injury to the window shutters that they would have to be renewed. A fire inside may burn itself out without much injury to the actual structure but everything in the way of finish, whether combustible or not, would disappear. The Committee of the National Fire Protection Association calculates on the destruction in a fire of “all ornamentation, such as marble, metal grill work, plaster, and other less durable materials. “In brief” they say “it may be expected that, in fires of great severity, the steel frame, its protective coverings, the walls and floor arches alone will remain, and even these will be more or less damaged according to the character of the construction and materials used.”

The question is how far the estimate of 60 per cent. reconstruction, in case of fire, can be reduced by accepting the additional cost of 15 per cent. for new precautions in building. Capt. Sewell’s tabulated estimate of the cost of restoring the fireproof buildings at Baltimore will give some basis for calculation. His estimate (including the cost of removing debris) is as follows:—

	Per cent.
Steel frame.....	10
Outer walls.....	50
Floor systems.....	50
Partitions.....	90
Column coverings.....	100
Mechanical equipment.....	100
Trim and finish.....	100
Office furniture.....	100
Contents of vaults.....	25

If the steel frame can be completely protected and the 10 per cent. estimate of moderate damage applied to the outer walls, floor systems, partitions and column coverings (made fire resisting by the additional expenditure proposed), the percentage of cost of reconstruction will be found to be reduced nearly 30 per cent.

“It seems apparent,” Prof. Norton sums up, “that, with care, steel frame buildings can be so constructed as to stand the destruction of their contents without injury to the steel and probably without danger to the protecting material or floor arches; that, with shutters and wired glass, the burning of more combustible neighbors may be expected to cause little permanent injury to the structure proper; and that a district composed wholly of such buildings would be reasonably immune from danger or conflagration.”

Capt. Sewell proposes, in order to define *fireproof*, that “to deserve this name, a building should be able

to come through not only one but a number of fires with no damage except the loss of combustible contents, cracked glass, loss of paint and plaster, damage to marble finish, and possible warping of exposed metal work, such as lighting fixtures, elevator enclosures, balustrades, &c." What, in his opinion, this involves in the way of construction is already contained sufficiently here and in the portion of this article previously published.

It will be noticed that while there is hope held out to the building owner of great reduction in damage there is little offered to the tenant. The vigorous combustion within the building, which is the source all this anxiety with regard to the structure, is to be fed by the tenant's stuff. His interest ought to centre upon two main points. External imperviousness in general, but especially adequate window protection, and on the inside sub-division of areas. This is the most important point to be considered on the inside, both for owner and tenant. It is obvious to anyone entering a building with large undivided areas that there must be great destruction if fire once gets a foothold there; and, when the building is a large departmental store, great destruction would include great destruction of life.

"The contents of a fire-resistive building, without proper sub-division and no adequate protection against exposing fires, are scarcely any safer as regards destruction by fire," says the National Fire Protection Association's Committee, "than if contained in a building of ordinary construction."

MUNICIPAL CONSIDERATIONS.

It would be a mistake to leave the subject without noting some additional lessons drawn from this fire, by Mr. Sachs, which have not been otherwise incorporated in this review, as being outside the province of architects and builders. They are brief and may be quoted in full:

"The necessity in great mercantile centres of supplementing the ordinary water supply with a special (unfiltered) water supply for fire purposes worked from stationary pumps.

The necessity of very strictly limiting the storage of highly inflammable and explosive substances in densely populated areas, and severe penalising of any default in this direction.

The necessity of making certain building regulations retrospective for existing old buildings, the owners of such old buildings, however, being given a reasonable time for making such improvements.

The necessity of fire brigades having a reserve equipment of portable steam fire engines of great power.

The necessity of officers in charge of brigades having a technical, i.e., either constructional or engineering education of a high standard.

The necessity of fire brigades being supplied with charts of congested districts and suitable miniature plans of all large buildings, these sectional plans to be carried to fires on the appliances serving such districts, as also upon the vehicles used by the respective districts or divisional-officers.

The necessity of developing suburban volunteer and private factory fire brigades to serve as auxiliaries to the professional brigades, when great emergencies occur.

The necessity of the brigades of large centres to have an agreed basis regarding re-inforcement from

neighbouring districts in cases of great emergency, which arrangement should include for the provision of standard couplings, or where such couplings are not possible, for standard connecting pieces."

PREVENTION OF HOT AIR EXPLOSIONS.

In reply to an enquiry from the Editor of the Canadian Architect and Builder whether he could suggest any feasible way of providing a safe outlet for explosive gases generated by a smouldering fire Mr. Charles Baillargé writes as follows:

QUEBEC, January 9, 1905.

DEAR SIR,—In answer to yours of the 8th inst. The vertical shaft is no doubt the best solution. No necessity for a separate shaft from each floor or story which in the upper stories would aggregate too great a floor area otherwise utilizable. Say a single shaft of some 10 to 20 ft. area in cross section (3 × 3 to 4 × 4 or 5) reaching from ceiling of basement or sub-basement, up to, through and to several feet above roof to avoid encumbrance by snow, and allow of play of wind or of ambient air on all sides. This shaft must have an opening into it at ceiling level of each floor.

Where the building to be protected is cut up into rooms and passages leading thereto, and as a passage or corridor ceiling need not be as high or lofty as the adjoining apartments, space is afforded along and under such corridor ceilings for horizontal conduits reaching in different directions to stairways, etc., to cause the gases from any point remote from the shaft to reach the same.

But there would be no tendency by smoke or gases to reach or flow towards shaft unless a draught be created therein by artificial or other means. To do this automatically without the use of, as they call it in French an *appel*, the top of the shaft above roof should be fitted with a system of sufficiently overlapping louvres to exclude snow and rain and cold, which, when shut close or the louvres in contact, would not join within an eighth of an inch or so, or in a way to allow enough air to pass out at all times to secure an initial draught capable of enticing the gases to be expelled to follow the route towards the exit. When once such an initial draught had caused the heated air to be expelled to take the proper direction to reach the outlet, once the tendency established to flow in that direction, the accumulating pressure from beneath the louvres would force them wide or wider open to their full extent to allow of free exit, the louvres being laid at such an angle or so loaded or arranged as to allow of their automatically closing again when the outward rush of air were at an end. However, in addition to the above mentioned precaution of an initial draught constantly at hand, where there is no one in building to do the needful, there should be from the louvres downwards a rope (a wire one in case of a hempen one being destroyed by fire) which from each, every or any of the floors or stories could be used to force the louvres open as soon as possible after the beginning of the fire.

It is a prevalent mistake to suppose that heated air or fire passing up an elevator or shaft of any kind has a tendency, when an exit is afforded from above, to pass out laterally into the rooms or passages adjoining, or surrounding the well-hole or shaft, and set fire to the several stories on their way upwards.

If you will look at your own or any other cooking stove, you will see that even when the fire or stove door is open and the pot holes open or uncovered, the flame from the burning wood or coal does not exhibit the least tendency to pass out laterally through the fire door or even vertically through the pot holes; but, on the contrary, seems to and does actually hug the under surface or the flue on its way to the outlet into the stove pipe, at the rear of the stove.

Look also at any old, broken and perforated stove pipe with holes in it as big as you please and you see the fire or flames rushing through it towards the open air without the least tendency to escape laterally through the holes in the pipe or flue.

However, to make assurance doubly sure, while doors in elevators should be shut to confine the heated columns of upward rushing gases and prevent the adjoining outer wood work from catching fire, while drawing smoke, etc., from the several stories towards and into the elevator or other shaft, said door should have open panels filled in with metallic gauze or open wire work of which the meshes like those in the "Davy" or miners safety

lamp, while admitting air from without inwards, is at the same time preventive of the exit of flame in the opposite direction, the heat of the flame being taken up by the wire and leaving the flame too cold to ignite the explosive gases on the outside.

As to the proposed thin glass roof enclosure to top of elevator, which it is supposed would burst open on the ascent of a heated column of air or gases from below; I do not see that this would act as supposed, because there would be no tendency of the gases to rise in a shaft of any kind unless there were provided at top thereof some initial draught to cause the gases to be got rid of, to pass upwards. Close the roof opening in a chimney flue and immediately all tendency of the flue to draw the smoke towards it would entirely cease.

And again, however unresisting the glass roofing; what assurance would there be of a sufficient stress being brought to bear against it to cause it to yield, and during the delay in doing so, the heated air and explosive air would be passing out laterally from the elevator into the adjoining rooms and passages on the several stories of the building.

Walls surrounding elevators should no doubt be built of say 8 inch brick work or of 6 inch concrete reinforced by steel.

The shaft proposed should also be built of brickwork or concrete, and to avoid projecting too far into corridors, might, in a series of adjoining stores or tenements, be made to answer, each shaft for two adjoining buildings where the party wall between the latter would take up say a foot of their depth or thickness and leave only some 12 to 18 inches to project into a corridor, like an ordinary chimney breast.

The horizontal flues leading to the shaft should be of terracotta, burnt clay or earthenware pipe as used for drainage and the initial bell end of same opening into stairways, etc. be closed with ornamental wire or open metallic ware and thus rendered inoffensive to the sight.

C. BAILLARGE.

INSURANCE INSTITUTE OF TORONTO.

At a meeting of this institute, held in St. George's Hall, on the evening of January 24th, Mr. Edmund Burke, President of the Ontario Association of Architects, read a paper on "Building Construction," giving an account of the conditions of plan and construction necessary to make a building fire-proof, and of the best methods and materials in use at present.

The contents of the paper will appear in a future number of this journal.

THE TORONTO BEAUX ARTS CLUB.

The architectural students of Toronto have recently started a club which they have called the Beaux Arts. This name, as applied to a club, has, in consequence of the influence which has been exerted by the Ecole des Beaux Arts at Paris upon American architecture, come, on this continent, to be associated especially with high architectural aims.

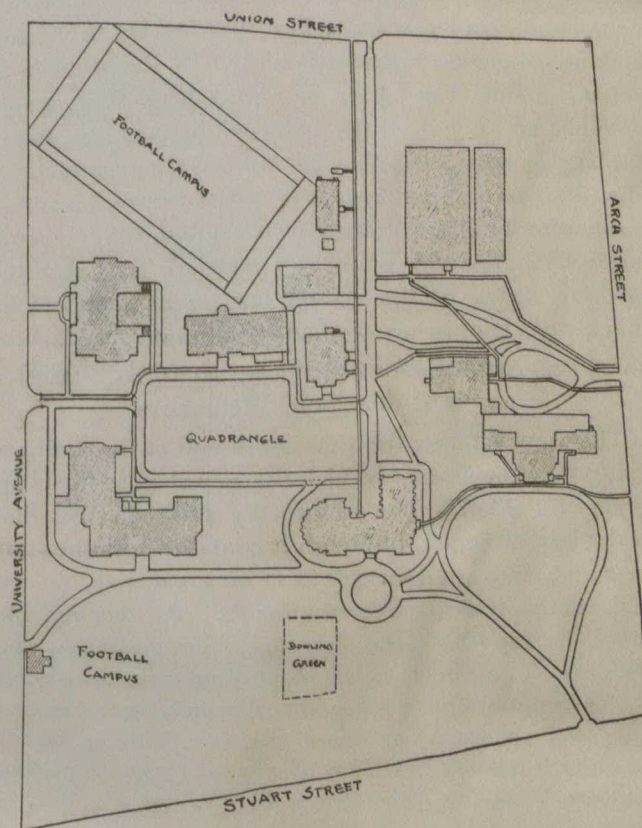
It may safely be said that upon no less ground than this will the club succeed, but, with this to animate them, the smallness of the number of students required by the profession in Toronto is not a bar to success, but may be its real groundwork, if there is a leading spirit of the right sort among them or they come under the right influence from without, and, being few, work well together.

The officers elected at the meeting for organization were: Hon. President, Frank Darling; Hon. Vice-Presidents, C. H. Acton Bond, W. A. Langton; President, S. Ashton Pentecost; First Vice-President, W. B. Van Egmond; Second Vice-President, Franklin E. Belfry; Secretary-Treasurer, L. McGill Allan; Executive Committee, Clarence Thetford, W. J. Abra, Sidney Paton.

OUR ILLUSTRATIONS.

GRANT HALL, QUEEN'S UNIVERSITY, KINGSTON.--MESSRS. SYMONS AND RAE, ARCHITECTS, TORONTO.

This hall was, as shown by the plan, an addition to the Arts' Building, and, as the name implies, a Memorial to Principal Grant. Its position in the general scheme is shown in the annexed block plan and in the bird's eye view (drawn by a member of the



faculty of Queen's) which is reproduced in one of the illustration sheets.

It is evident that the memorial to Principal Grant is as conspicuously predominant as he was. The Campanile, which is over 200 feet high, is not only the central object of the University group of buildings but forms the main or University avenue entrance.

The group, in one style and of one material, has a harmony, as shown by the bird's eye view, which throws a side-light upon the mess being made, by indifference to harmony, in the far greater opportunity that is offered by the University of Toronto. In plan the memorial building is a galleried hall. The hall seats 700, the gallery 550. The space under the gallery is reserved for an ambulatory and is intended to be the University Hall of Fame, devoted to the reception of memorial tablets, paintings and sculpture. The wide roof is gathered up, at the exposed end into the presentable form of a gable with supporting pavilions, by projecting the body of the hall a little on the end and the ante-rooms on the sides.

In style the later French Romanesque has been followed and all features and details have been studied from some model of that period. The treatment is therefore (as may be seen) scholarly, but, as the newspaper report of the opening describes it "free from churchiness." In other words it is not a slavish copy, (for the originals were churches), but a practical application of the style to modern uses.

NO. 152 PARK ROAD, ROSEDALE. MESSRS. BURKE & HORWOOD, ARCHITECTS.

This a good typical example of the popular Toronto *multum in parvo* plan. The drawing room is on the front, which is the east; but the dining room is contrived to get a look towards the east too. The dining room in summer can be thrown open to the verandah; one of those provisions by which we are coming to make a luxury of heat. The reception room is evidently capable of similar treatment on a smaller scale. The interlocking front and back stairs are an ingenious solution of the problem of getting a fine front stair, a roomy back stair, a side entrance and a way to the cellar, all in an extent, taken the largest way, of 17 feet 6 inches on the ground floor. The kitchen and pantry are another case of compression without omission; and the route to the dining room through the pantry could not interfere less with the working space of the pantry nor, while wonderfully short, does it open up any line of sight into the kitchen.

HALL, NO. 123 ST. GEORGE STREET, TORONTO. MESSRS. BURKE & HORWOOD, ARCHITECTS.

The view is taken from the north end of the hall, at the foot of the stair, of which the newel post just appears on the left. The noteworthy point in this hall is the way in which, although it contains both the staircase and the front door and is of no great size, it yet makes a central space for the house. By keeping like functions together—the entrance, the staircase, and the way of approach to the front door from the kitchen—the designers have left a space which is associated only with the group of living rooms. The space absolutely free from intrusion by any one not concerned with the rooms appears to be 8' 6" x 14' 0"; but, as the public end of the drawing room requires no greater conclusion than this, it has wide doors or none, and the hall and drawing room reciprocate by the axial arrangement of window and fire-place to add to each other's space and attractions.

STATUE OF QUEEN VICTORIA. GEORGE FRAMPTON R. A. SCULPTOR.

This statue, which stands in the Parliament grounds, Winnipeg, is of bronze upon a pedestal of Tyndall limestone in stones of great dimensions. The pedestal is 13 ft. high and 12 ft. square at the base. It is an excellent pedestal too, but fills the eye a little too much in the view, for the statue itself is of almost equal height. It is said to measure 12 ft.

There is no reason why the Queen should be always represented young as if she were an abstraction. A good historical memorial might be made of her as she was, old but with a sane and wholesome personality. Mr. Frampton has preferred to represent not only age but failing health. The contrast between the feeble woman and the extent of power symbolized by the orb and sceptre she holds has, no doubt, poetry in it; but it is a poetry of the sentimental kind, more suited to a sketch than to a monument.

MEMORIAL TO CANADIANS WHO FELL IN THE WAR IN SOUTH AFRICA.—W.S. ALLWARD, SCULPTOR, TORONTO.

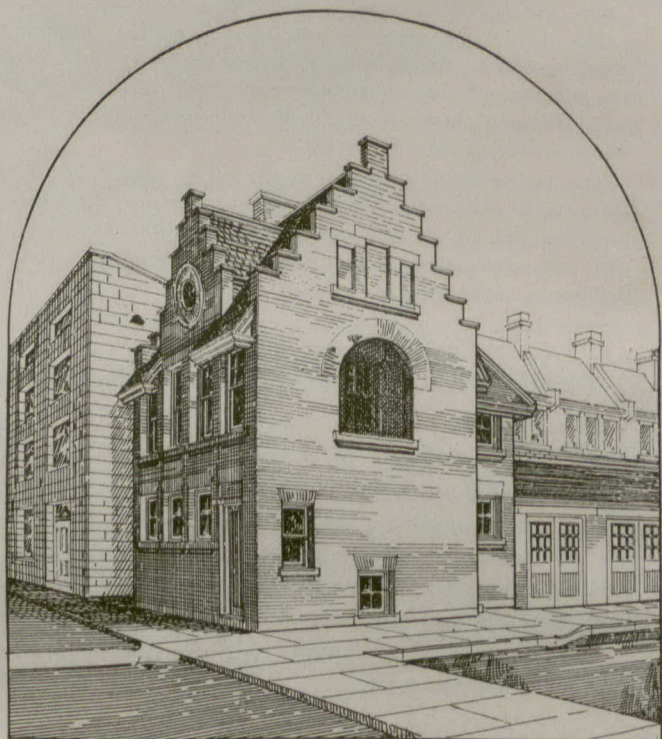
The idea of this memorial originated in the volunteer regiments of Toronto, and the monument will be erected in Toronto, but it is intended as a memorial to all Canadians who fell in the war. The design was procured by a competition open to the world. There

were 34 designs submitted, of which one at least came from France.

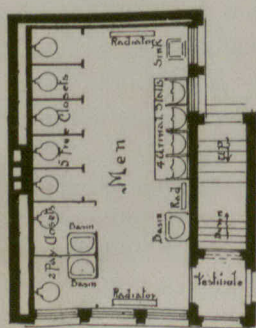
The material of the memorial will be gray granite and standard bronze. The total height is 70 feet including the crowning figure, which is between 9 and 10 feet high. The figures at the base (representing Canada sending her sons to the front,) are on the same scale, as may be seen by comparison with the figure of a spectator on the right, which is inserted in the model in order to give the scale of the human figure. The question of a site for this monument is discussed in our editorial columns.

PUBLIC COMFORT STATION, MARKET SQUARE, HAMILTON, ONT., JAMES BALFOUR, ARCHITECT.

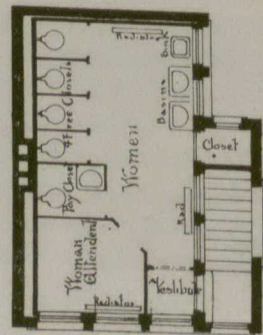
This Hamilton building gives a suggestion that might well be followed in other towns. Buildings of one type, simple but recognizable, placed as far as possible in similar situations, would be a great im-



North West View



First Floor Plan



Second Floor Plan

provement to a town. They should include arrangements for washing that would not be repellant, accessible upon payment of a small charge. Clean towels in sealed paper wrappers, soap in the form of powder, (discharged from a hopper by pressing a button,) are already in use in some places; and there is no reason why the basin should be anything but a catch-basin, under a tap made to run a small stream of combined hot and cold water.

MONTREAL NOTES.

THE PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

Since the beginning of the current session the P. Q. A. A. has been installed in its new lodgings in 5 Beaver Hall Square. The floors are standing the traffic very well, even at this advanced period of the session showing very little signs of wear and tear. For this result, of course, some thanks are due to those of the profession who sit at home and with luminous intelligence regret that the meetings of the Association are not more numerously attended and more successful.

The new rooms have not been selected primarily with a view to a large increase in the attendance at the functions—the meeting room being in fact somewhat smaller than that in the former premises. So far, however, its capacity has not been strained, the rooms seem suitable and are both quieter and more central than the others.

The first lecture of the session was delivered on the 20th December last when Prof. P. E. Nobbs of McGill University discoursed upon Gothic Carpentry and Joinery. The lecture which was delivered in a pleasantly enthusiastic and informal manner was such as would have proved very valuable to a younger class than were represented in the audience and one would suggest that on such occasions it would be a good thing to send notices to the draughtsmen in the various offices inviting them. As it is these modest youths will tell you either that they are unaware of these meetings or that they are not members of the Society and do not feel that their presence is at all called for—*Experto crede*. It would be well at any rate to put their thirst for instruction to a fair test.

In the matter of private letter writing it is often remarked that it is easier to write once a week than once a month. In regard to Societies something of the same kind holds good. It is easier to meet once a week than once a month. The dates are easier to keep in view. The more continuous is easier than the more intermittent habit and the frequency of a function lessens its stiffness and formality. In a profession with so many sides to it and with so many by-paths full of interest as architecture has, there should be scope enough for weekly meetings all through the winter. In attending these the man whose forte lies in shaping the outward form of things must inevitably learn much from him whose enthusiasm leads him rather to solve the inner mysteries of construction and he whose joy is in matters of cost and points of law may give and receive much in conversation with him to whom these things are distressing questions. There is a great deal of benefit to be derived from the frequent free informal discussion of things. It establishes contact between members of the profession making *esprit de corps* a possibility. Men express their best thoughts with more freedom when not boxed up and required to speak on oath. In such discussion only can one realise what are the subjects which are most widely occupying men's minds and on these occasions talent and enthusiasm too modest to assert themselves at more formal times blossom out to the light of day.

We suggest something of this kind in connection with the P.Q.A.A. in order to increase its usefulness, but knowing well that much has already been done. The society is now organized. That is to say its necessary organs are all there properly developed to be of use but some vitalizing is required in order that the society may go on a stage farther and become as a body a real influence in the province. The spirit of this age demands that every industry profession or science that is to be efficiently carried on must form central rallying points where knowledge widely spread and loosely known and understood amongst the people may be brought together to be compared and made to yield up its secrets and its laws. An architectural association should be the headquarters for architectural reference where an architect in search of information could obtain it or at least the clue to help him to it. For this purpose of course an excellent library would be necessary, kept constantly up to date. But what is of much greater importance is that the library should be easily accessible and actually well patronized. It should be within the duties and power of an architectural association to gather reliable data and statistics on such matters as strength of materials—being placed on the market and largely employed by architects—the comparative efficiency of ventilating systems, and the circumstances affecting the acoustic properties of buildings. Collected information on many subjects of this kind would enable the profession to settle scientifically with certainty

questions which at present are arranged by rule of thumb with a hit or a miss as a result.

Perhaps the most important function, however, of the Architectural Association of the future is acquiring the confidence and respect of the public. This can only be done by the profession studying in its corporate capacity the desires and needs of the public. There ought to be a large scale plan of each city in the Province upon the table of the Association and members should discuss in front of these their schemes and dreams for the improvement thereof not as an amusement merely, but with the intention to have the thing done.

It was, if we remember rightly, a saying of Gladstone's that a statesman's duty was to take a people's dim aspirations and give them back to them in concrete form. Great writers are often described as expressing what everyone has thought. All have thought just so but only one has succeeded in clothing the thought in adequate expression. Similarly it is the duty of architects by studying and comparing ideas to perceive what the people want and by the exercise of their imaginative and inventive faculties to give it to them in tangible form. In thoroughly and constantly threshing out questions of municipal improvement there lies a duty which Architectural Associations owe to their townsmen and in doing which they will earn their gratitude and confidence. But this end must naturally be a long way from a society whose members are barely acquainted with one another and are satisfied each to work in his own little hole and corner.

The beneficial influence that a strong association can exercise directly on the educational standard of its members is very obvious. The P.Q.A.A. is effectively organized; we should like to see it more thoroughly vitalized and so get to work.

CONCORDIA SALUS.

BUILDING IN MONTREAL.

A correspondent writes from Montreal as follows:—

Building operations have been very good in Montreal in 1904, and the following figures will give you an idea of what was done.

1903—1010 permits amounting to \$4,094,596

1904—1335 permits amounting to 4,352,287

There have been erected in 1904—1151 dwellings, 41 stores, 17 warehouses, 12 factories, 2 churches, 2 schools, 5 hospitals, 1 brewery, 3 office buildings, 2 flat buildings, 22 stables and 127 sheds. Repairs to 578 dwellings, 162 stores, 3 theatres, 12 warehouses, 28 factories, 2 churches, 1 hospital, 11 stables and 27 sheds.

Besides the above, 96 fire escapes have been erected, 443 permits for storage of combustibles and 415 permits for motors have been granted.

The revenue of the Department of Building Inspection in 1904 was as follows:

Building permits \$3,304.50

Water used for building purposes. 3,691.59

Permits for dangerous industries. 2,173.00

Permits for motors and engines 2,130.00

Total \$11,299.09

This is about \$3,500 more than in the year 1903.

The expenses of the department in 1904, for salaries and contingencies, were \$5,550, less than half of the amount of the revenue. Five years ago the expenses were \$3,500 and the revenue \$350.

PINK A RESTFUL COLOUR.

In the decoration of the stations of the New York subway, it appears that the schemes most restful to the eye are those which are based on pink and salmon tones. The American Architect, reflecting upon this unexpected result, finds that after all it agrees with nature more distinctly than does the theory (proceeding from the abundance of green in the world) that green is the most restful colour to the eye. "To rest the tired eye," the writer in the American Architect points out, "one naturally drops the eye lid. . . Opaque as the eyelid is, it is still translucent, and as it is permeated with blood-vessels it would seem that the sense of color that the eye derives through the closed lid must be that of pink, very low in the scale. Turn to nature again and we find that the blush-rose and the garden pink are amongst the most restful members of the whole garden flora. But there are pinks and pinks, and anything verging on the mauves should be eschewed, while a pink that belongs to the salmon family may, on the testimony of the subway decorations, be safely adopted."

ONTARIO ASSOCIATION OF ARCHITECTS

ANNUAL MEETING.

THE Association met for its 17th annual meeting, in the Association Rooms, 96 King St. W., Toronto, at 2.30 in the afternoon of Jan. 17.

The following members were present: Messrs. Bishop, Burke, Colwell, Currie, Denison, Edwards, Fairbairn, Gemmell, Gordon, Gray, W. R. Gregg, A. H. Gregg, Hall, Helliwell, Kennedy, Langton, H. E. Moore, Munro, Pearson, Siddall, Simpson, Symons, Townsend, Wickson, Wright and Woolnough.

There were also about twelve students present, and several other visitors came to hear the papers relating to the Improvement of Cities.

After reading the minutes, the President, Mr. John Gemmell, read the following address:—

Members of the Ontario Association of Architects:

We are here assembled to hold the Seventeenth Annual Convention of the Association. That we have preserved our corporate existence for so long a period is a matter for mutual congratulations, and this vitality we trust is evidence that ours is a necessary institution, working for good in stimulating a friendly rivalry among members and enhancing the Architectural profession in the estimation of the community.

That a number of architects of recognized ability have withheld their support from the association, is an attitude on their part very much to be deplored and calculated to retard realization of the plans we may entertain in common for the advancement of Architecture.

As difference of opinion upon the wisdom of Legislation, restricting the use of the term architect, is given as the cause of this divergence of view, I would say that this is no longer looked upon as the aim of the association, but that the evolution by emulation and training of a higher type of Architect may be the distinguishing mark of Members of the Association.

Is it not only too apparent that the standard of Architecture is endangered by the democracy of our age which may be working out the happiness of the greatest number, but which fosters a self-sufficiency impatient of higher culture and alien to an aristocracy of art making only for a dead level of creature comforts, should this not urge upon us who know and cherish higher ideals to range with unbroken front, that the forces working for the higher education of our future Architects may no longer be weakened by division.

If there ever was a time for those trained in a proper way in Architecture to stand united it is now which are days of superficial culture by inadequately equipped Technical and Correspondence Schools. Do not most modern manufacturers and alas! much of the building vividly portray that little knowledge of art which is more hopeless than the natural instincts of the savage.

Lastly I would mention as one of the stoniest incentives to combined association a phase of building operations recently introduced here—the letting of contracts to Building Companies who undertake everything including the preparation of plans. How they have persuaded business men to enter into such an arrangement where self-interest holds all the cards—I do not know. The issue, however, to us is that, were the practice to become universal, we should indeed be deposed from our honorable judicial estate and reduced to the position of draughtsmen, not that valued assistant kindred intelligence, but the servant of unappreciative Commercialism.

The outside members will pardon reference to our vivid local experience—the great Toronto fire. To a year that commenced auspiciously, was added its burdens so that 1904 brought perhaps the greatest material prosperity Toronto architects have ever experienced.

The only drag on progress was that the supply of materials became inadequate, prices rose and labor made its customary blunder, wasting months of valuable time. I say blunder because we now see labor of all kinds being paid more than the strike demands, although the workmen were defeated.

The fire has been called a calamity but there is evident on the part of all a desire to make sweet use of the adversity.

To those who remember the disagreeable picture that the rears of the warehouses on the south side of Front St. presented toward the Bay—it will be easy to imagine how much the appearance of the city will be enhanced if our architects do their very best in designing the great warehouses which are to face the south on the high level of the north side of Front St., with an uninterrupted view from the water, except by a Grand Union Railway Station in its proper position as the gateway of the city.

And in the matter of the destroyed buildings, were they not largely those of a smaller city than Toronto has become; They called for continuous expenditure in the endeavor to keep suitable, for factory and warehouse, structures which were inadequate, as evidenced by the restorations already accomplished, which are in all cases much more commodious and intended for warehousing greater loads of merchandise. And also in the separation of factory and warehouse, the former being built further from the centres where land values permit the exercise of some benevolence toward the army of workers—more light, ventilation and healthful surroundings—and which incidentally should help

in the equalization of street car traffic—one of our acute grievances.

Of the new City By-Laws which the fire so quickly brought into the arena, there has been and still is difference of opinion, and although that of the architects seems to be settling down to a conclusion that they are all right, self-interest may have something to do with this complacency. There is internal evidence that the By-Laws are not an adaptation but a transcript of those of a much larger city than Toronto, and without the scourge of the fire would have been more difficult of inception, leaving room therefore for argument that when conditions have somewhat subsided from our present triumphal march, they may be found too strenuous for our normal condition. And that for buildings up to say four storeys, consistent with public safety, it should have been acknowledged, that we are still in the tenting stage and it is a waste of our resources to absorb so much material in comparatively low buildings that in a few years will give place to the permanent structures.

The subject of civic improvement bulks largely in our proceedings this year. Associations such as ours should help in directing the steps necessary to redeem our cities from the defects inherent in their growth from small places—the discomforts of clothing we have outgrown.

What difficulties of traffic would be solved if our Yonge street were 100 feet wide? How little in cost this would have meant, when not so long ago it was cut through the farms.

But regrets are vain if they lead not to repentance and good works. Have our recent steps towards civic improvement been altogether for the best?

The cost of the library site and the Garrison Common Park—will it produce the best results in this respect? The special reproach of Toronto's plan is that it is absolutely of the gridiron type. We have in its business centres, no circles, public squares or rounded corners; our poverty in these is not now so apparent with our low buildings, but with the higher buildings of the future will be intolerable.

If not therefore too late, should we not urge upon the public and the authorities to make the necessity for a library site provide a public square. If say our unique Queen's Park Avenue could be prolonged south and a square secured opposite Osgoode Hall for the library, would not a most important civic improvement be accomplished, for which we would gladly sacrifice the inaccessible Garrison Park.

The public library to fulfil its mission should be down town—a counter-attraction to the saloon and the theatres, encouraging a taste for reading in those who have not libraries and a place of recreation for hours that can be spared from business.

As between the up-town sites, one must wonder at the preference given to the Perkins lot, for although it costs more it is upon an ordinary thoroughfare which will be built up on the south side, and the future building will appear to be a mere adjunct to the educational institutions there, while the other site fronts on an avenue, in which we are justified in taking pride, being a well-kept avenue of trees—two hundred and fifty feet wide and nearly running the length of the city from north to south.

Our Registrar fearing that there is more business on the agenda than the time allotted for its disposal, has repeatedly counselled me to be brief; therefore, expressing the hope that certain matters which have engaged the attention of the Council may be taken up before this Convention closes, I will conclude, Gentlemen, by thanking you for the honor done me in my election to the office of president for the past year.

Some comment was caused by the passage where, in speaking of Toronto affairs, the President said that the purchase money for the Garrison Common would have been better expended in clearing a site at the bottom of Queen's Avenue for the new Public Library. Mr. A. Denison pointed out that the old cry for the preservation of the water front was being met by the purchase of the Garrison Common and there ought to be no complaint made about that purchase, particularly as if it were not purchased there would be great danger of its being occupied by the cattle market.

Mr. H. Simpson said that the cattle market already threatened to be an injury to property in the west, as as there was talk of extending it to King St.

Mr. Burke pointed out that this discussion emphasized the need for a plan of the city; a plan with proposed improvements, so that changes and growth in the city may be made, not in a haphazard way, but all tending together to the gradual production of an approved scheme.

Mr. A. H. Gregg thought Mr. Burke ought to embody his views in the form of a resolution. A plan, among other advantages, would help us to recognize the chances for beauty that we have already created. In the matter of a library site there had not been sufficient weight given to that on the Queen St. Avenue. This avenue, a unique feature in a city rather desolate of such features, and having the Parliament Buildings as a focussing point, is a splendid opportunity for a line of magnificent buildings on either side. There are

Osgoode Hall and the Armories to begin with. We need to have such opportunities marked down to be reserved for appropriate use.

Mr. H. Rutgers Marshall:—Although I am a guest, may I be allowed to say just a word? (Applause.) I wish merely to tell you of my experience in one particular. I have had a great deal to do, for the last 15 years, with the organization of societies in New York, which look to the betterment of New York in an artistic way. There is one thing that has come out clearly and distinctly, and that is that nothing happens unless the architects start it. The other societies of artists are timid. Everything that has been done in New York has been done under the leadership of the Architects. It is, if I may be allowed to express an opinion, for this body to initiate. You cannot afford to wait for the other bodies. Any movement of this kind must start among the Architects.

The Registrar suggested that as this subject was to be brought very prominently before the Convention, it would be better, instead of spending time in its discussion now, to appoint a committee consisting of Mr. Burke and two others who, after hearing the proceedings of the Convention, should draft a resolution on the subject. The President named Messrs. Burke, Langton and Denison to be such a committee.

THE REPORTS of Officers and Committees were then presented.

THE REGISTRAR, Mr. W. R. Gregg, read his report as follows:—

REGISTRAR'S REPORT FOR 1904.

MEMBERSHIP.—The Association has a total membership of 64 of which 3 are honorary members, 33 regular members reside in Toronto and 28 in other places.

Two of the original members have died, Mr Joseph Connolly, Hon. Past President and Mr. Peter Brass.

STUDENTS.—Six students filed articles in 1904, of which five are students in Toronto offices and one elsewhere.

Examinations were held in April. Two students passed the first examination and one was allowed a supplemental; two passed the second examination and one was allowed a supplemental.

THE COUNCIL.—The Council has met seven times since last annual meeting, with an average attendance of seven.

MONTHLY MEETINGS.—One monthly meeting was held in March at which Prof. Wright read a paper on Statics and a joint meeting with the Engineers' Club held in June discussed the Lessons of the Toronto Fire. The attendance of members in both cases was small.

GUILD PRIZE FUND.—The Guild fund is now in hand in the form of a \$400.00 Debenture of the Canada Permanent and Western Canada Mortgage Corporation bearing interest at 4%.

A motion of Council provides that this fund shall only be used to acknowledge and award special proficiency in architecture of Students who have passed the final examination with special credit and whose work and attainments in architecture the Examining Board considers should be suitably acknowledged by the Council.

R.I.B.A.—Examinations by the Royal Institute of British Architects were not held in Canada in 1904 as no candidates had offered themselves. The provision is still in force for holding these Examinations each year.

PROCEEDINGS.—The fourth Volume of Proceedings was published in April and 1,200 copies printed and distributed. Exchanges are received from societies in Canada, United States, Great Britain, Australia, Italy, Germany and France.

CIVIC IMPROVEMENT.—The American League for Civic Improvement and the American Park and Outdoor Art Association have united to form the American Civic Association and our Association having been a member of the former becomes affiliated with this large organization. We will have the opportunity of welcoming the President of the American Civic Association to-day.

THE TREASURER'S REPORT, read by Mr. Henry Simpson, the Treasurer, was as follows:—

TREASURERS' REPORT, JANUARY 17TH, 1905.

EXPENDITURES.

Printing.....	\$370.10
Banquet expenses	222.32
Convention expenses.....	83.80
Stationery.....	95.70
W. R. Gregg's petty cash and educational expenses.....	138.17
Engineers Club.....	33.30
Registrar.....	200.00
Rent.....	150.00
Gas.....	8.16
Insurance.....	8.51
Bank.....	30

Advertising agents.....	307.80
Membership American Civic Association.....	2.00
Canada Permanent Mortgage Co.....	60.74
Balance on hand.....	\$1,680.96
	504.86
	\$2,185.82

RECEIPTS.

Members fees.....	\$270.00
Examination fees.....	70.00
Filing articles.....	30.00
Advertisements.....	987.20
Sale of Magazines.....	10.60
W. R. Gregg.....	12.37
Eighteen Club, class expenses.....	28.01
Interest on bank balance 1904.....	22.03
	\$1,430.21
Bank balance from 1903.....	755.71
	\$2,185.82

The deficit gave rise to some discussion as to its cause, which resulted in the appointment of a Committee consisting of Messrs. Gordon, Denison and Mark Hall to consider how to reduce expenditure by an equivalent amount during the present financial year.

THE REPORT OF THE JOINT EDUCATIONAL COMMITTEE (of the Association and Eighteen Club) read by Mr. A. H. Gregg, chairman, was as follows:—

REPORT OF THE JOINT EDUCATIONAL COMMITTEE.

The Joint Educational Committee have much pleasure in reporting that the work done by the students' classes during the last year has been most satisfactory. Continuing the methods which have been followed by the Committee during the past three seasons, mathematical classes have been held at the rooms of the Association under the tuition of Mr. A. H. Harkness, B. A.; and classes in design have been conducted at the rooms of the Central Ontario School of Art. This latter class has been in charge of a special Committee appointed by the Eighteen Club and composed of Messrs. Bond, Howland, Rae, Horwood, Sproat and McGiffin. The class is conducted on methods similar to those adopted at the École des Beaux Arts, problems in design been given the student and worked out under the supervision of the visiting architects forming the Committee. As regards attendance, there are twenty-nine students in the classes this year as compared with twenty-two last year. The majority of these attend both the mathematical and studio classes. Although the students pay a fee of \$5.00 covering tuition in both departments, it has not been possible to conduct the classes without a deficit, but by arrangement with the Eighteen Club, one-half of this deficit is paid by our Association, the other half being paid by the Eighteen Club. The deficit last year amounted to \$99.82. On the whole, the Committee considers these classes are doing splendid work and the enthusiasm of the students is most marked, and should result in a high standard of education among the younger members of the profession.

A. H. GREGG, Chairman.

THE COMMITTEE ON MUNICIPAL BUILDING BY-LAWS was represented by Mr. A. F. Wickson, who stated that the enactment of building laws for Toronto, that are considered very good laws, has relieved the committee of the chief responsibility that was put upon it when it was appointed.

THE LEGISLATIVE COMMITTEE reported by Mr. W. L. Symons one act which was without issue. They were called upon to give their assistance in drawing up terms of arbitration between contractors and their employees. The Toronto fire changed the situation so that negotiations, interrupted by that event, have not been resumed; but the committee possesses the conclusions it reached and hopes to bring them into use later.

THE TORONTO CHAPTER report was read by Mr. Herbert E. Moore. The report is as follows:—

TORONTO CHAPTER OF THE O.A.A.

The officers of the Toronto Chapter beg to report to the Ontario Association of Architects, in convention assembled as follows:

Mr. President and Gentlemen:

In representing the report of our Chapter for the year 1904, it is a pleasure to be able to inform you of the activity and progress of this branch of the parent body.

The number of meetings held during the year was 27, with a gross attendance of 225, and an average attendance of 8.3.

The officers were all re-elected at the annual meeting in April last, as follows: Chairman, Mr. Edmund Burke; Secretary, Mr. Herbert E. Moore; Treasurer, Mr. A. H. Gregg.

As in previous years the meetings have been usually in the form of weekly luncheons on Tuesdays in the rooms of the Association, and several special or emergency meetings have

been held to deal with matters of pressing import, chiefly during the midsummer months when luncheons are not held.

The customary method of each member paying for his lunch each day has been changed to the establishment of a lunch fund covering the cost to the end of the year and subscribed to by members who so desire. The expense of the luncheon has thus been reduced nearly 50% to those who attend regularly. Members not subscribing to this fund are expected to pay the usual or former charge. The charge appears to be popular, and, so far, has worked satisfactorily.

Some of the subjects discussed during the year were as follows:

REVISION OF THE CITY BY-LAWS.

This important work was carried along from the previous year.

Notwithstanding the fact that the matter was several times brought before the City Authorities no progress was made and our draft laws, finally submitted by Mr. Wickson by instruction from the Council, in conjunction with the late Commissioner Coatsworth, were pigeon-holed.

The terrible conflagration on the 19th of April last, in the wholesale district, at last awakened the City Authorities and stung them in action.

The newly appointed City Architect hastily prepared an entirely new code, based largely on that of a large American city.

Some of the requirements appeared to be altogether too drastic and expensive for a city of the size of Toronto, and the Chapter courteously invited the city architect to a friendly conference to discuss the points complained of. The invitation was ignored, and finally the Board of Control appointed a small committee from the Association and the Architectural Eighteen Club to meet the City Architect and two other architects. Several meetings were held resulting in some amelioration of the requirements which were chiefly obnoxious, and permits were issued after some exasperating delays.

After reaching a certain point in the review of the by-laws, the City Architect fell ill and no other meetings were held.

One other very drastic and expensive requirement, that calling for metal frames and wired glass in addition to sprinkler protection or fireproof shutters, caused excessive dissatisfaction on the part of numerous merchants. They, with the help of some of the architects, succeeded in obtaining an amendment which permits the use of any one of the three above methods of protection.

A number of minor objectionable requirements are still incorporated in the by-laws, although it may be said that the by-laws are in the main acceptable, and it is hoped, that, as the office of the City Architect reaches more perfect organization, the obtaining of permits to build will not be so difficult or tedious.

ELEVATORS.

The question of revised by-laws governing the installation of elevators was taken up by the chapter in conjunction with Mr. Jas. T. Burke, Government Factory Inspector, and representatives of the various elevator companies.

The object was to eliminate certain obsolete requirements in the present law and add such provisions as were necessary to improve the construction and safety of such apparatus.

A committee from the various bodies prepared and submitted such amendments to representatives of the Government and they have since been incorporated in the laws of the province.

AMENDED FORM OF CONTRACT.

A committee of the chapter had a conference with representatives of the Builders Exchange regarding the wording of the insurance clause in the model contract. The clause was amended removing the objections, and the model forms are now printed as amended.

ARBITRATION.

Mr. Symons introduced a scheme of arbitration for the prevention of strikes between the contractors and their employees.

A conference was held with the representatives of the Builders Exchange and the labour unions. The unions gave practically unanimous consent to the details of the scheme, and while the individual members of the Exchange appeared to also desire some method of avoiding the oft recurring strike, no decided action was taken, and with the rush of work this summer and the laborers strike, it was deemed advisable to let the question rest for a time.

In connection with the foregoing, the chapter disclaimed any authority or desire to dictate, acting simply as a medium, and merely presented the scheme as a possible solution of an always difficult problem.

STRIKE OF THE BUILDERS LABORERS.

In this matter, after discussing the question pro and con, it was decided to adopt a policy of strict non-interference while willing at all times to further any proper scheme looking toward a satisfactory settlement.

CIVIC IMPROVEMENTS.

The question of civic improvements was discussed on several occasions. The chapter hopes to keep the question alive during the coming year.

Many important public buildings are projected and sites and thoroughfares will be affected by the march of progress.

It is felt more than ever that the city cannot too soon secure a comprehensive scheme of civic improvements which may be developed year by year as funds permit.

DUTY ON FOREIGN PLANS.

It having been brought to the notice of the Chapter that the

method of valuing foreign plans has relapsed to the former practice of valuing drawings simply as the work of a draughtsman and consequent admission to the country at an absurdly low valuation, a committee was appointed to bring before the proper authorities the fact that a great injustice was being done to the architects of the Dominion, and to secure a return to the former method of basing the value on the regular architect's percentage or fee on the estimated cost of the buildings to be erected.

EDUCATION.

The work done in studio and mathematical classes conducted by a committee of the Eighteen Club and Toronto members of the association, has, on the part of the association, entered into the discussion at the weekly lunch of the Chapter.

REVIEW.

It will thus be seen on reviewing the work of the year that the Chapter has been actively engaged in promoting the interests of architecture and art, and that it has aimed to assist in movements of a public nature looking to that end.

It is hoped that the coming year will see still greater enthusiasm and activity on the part of the members, and that they will feel it incumbent upon them to miss no opportunity of meeting their fellow members for friendly discussion of topics of mutual interest.

We cannot afford, in the light of the advance of all movements towards the bringing closer together of mutual interests, to do otherwise.

(Signed,)

EDMUND BURKE, Chairman.
H. E. MOORE, Secretary.

THE REPORT OF THE LIBRARY COMMITTEE, read by Mr. A. H. Gregg, chairman, was as follows:

REPORT OF LIBRARY COMMITTEE.

On behalf of the Library Committee, I beg to report that there were seventy-seven lendings during the year 1904, showing an increase over the preceding year. The majority of these books were borrowed by students, and, while the number of lendings is not large, still it represents a large amount of studying which is being done by the younger members of the profession. The only books which have been added to the library during the year are, Merrill's "Stones for Building and Decoration," which was presented to the Association by Professor Babcock, and Mitchell's "Brickwork and Masonry." These books are missing from the shelves, viz: Berg's "Safe Building," Brandon's "Analysis of Gothic Architecture," and Mitchell's "Advanced Building Construction," and the borrowers are requested to return these at their earliest convenience.

A. H. GREGG,
Chairman Library Committee.

THE REPORT OF THE EDITING COMMITTEE, read by Mr. Grant Helliwell, chairman, was as follows:

REPORT OF EDITING COMMITTEE.

The duties of the Editing Committee, for the past year, have consisted in revising and correcting the reports and discussions of the annual meeting of 1904, and of the banquet at the King Edward Hotel at the conclusion of that convention. The result of their work appears in the printed proceedings of the association, copies of which were sent to all the members.

GRANT HELLIWELL,
Chairman of Committee.

THE REPORT OF THE PUBLISHING COMMITTEE read by Mr. A. F. Wickson, was as follows:

REPORT OF PUBLISHING COMMITTEE.

4th Volume of Proceedings.

Contracts for a limited number of advertisements on the covers and advertising pages of the proposed volume were secured from representative business and artistic firms.

The proceedings of the Convention having been received from the Editing Committee, an issue of twelve hundred volumes was printed, bound and placed in the hands of the Registrar for distribution.

STATEMENT.

Contracts for advertising.....	\$1,024.00
Printing and binding.....	\$275.00
Agents commission collection.....	281.25
Still due.....	31.00
Balance to credit.....	436.75

\$1,024.00 \$1,024.00

Supplementary to above we desire to state that contracts have been secured for the advertising spaces of volume 5, 1905, amounting to \$1,027.00 and as these are largely renewals we can hope that our patrons endorse our proceedings as a desirable medium for advertising.

Your obedient servants,

John Gemmill.
A. Frank Wickson.

A LECTURE by Mr. Horace McFarland, President of the American Civic Association, concluded the proceedings of the meeting on this day.

(The second days proceedings will appear in the February number of this journal.)

FROM THE
BUILDING OF THE BARN

BY ERNEST CROSBY.

There is a clamor of hammers striking nails into resounding wood, and of trowels clinking against stone, here where they are building the great stone barn.

It is the joyful noise of creation.

They are in haste to close it in, so that it may be launched in time to carry in its hold the ripening harvest of hay, and rye, and wheat, in another fortnight.

Though the carpenters are still at work within, and the masons finishing the east wall, yet the slaters have already half covered the long gable.

The roof-timbers stand out like the ribs of a ship, with keel turned skyward, destined, we hope, to sail down the years-to-come for a century or two, and to bear many an annual cargo of corn on its way from meadow to kitchen and manger.

Who knows but that under more brotherly skies it may become a communal barn, the centre of some better kind of great ranch-family.

The carpenters are flooring the main deck of the great farm-ship.

Half a dozen of them, on their knees, are driving long wire nails into the smooth white boards.

Their left hands are full of nails, and they thrust them into the pockets of their aprons for more.

It takes four or five strokes of the hammer to send the nail home, and each series of strokes forms a little musical motif of itself in the rising scale, with a dull thud at the end like a hand muffling the chords of an instrument.

The hollow roof, partly open to the sky, reverberates every note.

Two men are planing and sawing boards to proper dimensions on a pair of wooden horses, and the overseer is balancing himself on the bare beams and measuring the space with a footrule.

The hoarse drone of the saw grows lower and lower, until the end of each board drops, splintered at the corner, on to the floor.

At the end of the barn we see the masons at work near the top of the narrowing wall, on a scaffold raised inside the building.

They stand in relief against the sky, like a frieze.

A cart, laden with rough stone, is backed up beneath them, and the teamster, standing on the load, lifts a stone with difficulty, and hands it up to two of the masons.

A workman brings mortar and cement by the hodful up an inclined plane.

There are two other masons engaged in laying stone: One is a good-looking youngster just free from his apprenticeship, and evidently proud of his craft; His cap is jauntily tipped over his curly hair, and he has stuck a geranium in the buttonhole of his waistcoat; He looks as if he were thinking of the village girls, but not enough to interfere with his work, and he taps his trowel against the stone, harder and more frequently than is necessary, as he slashes the mortar into the crevices.

The master mason is setting a large stone at the corner, aligning it with a cord stretched along the wall above it, with blows from the handle of his tool; while he bends over and looks down the

precipice outside, and then scrapes off the oozy, bulging line of mortar and deposits it on top of the stone, the back of his head nearly touching the eaves.

We must go outside to watch the slaters on the roof.

There are three of them up there, with their tools playing their own kind of music on the thin slate.

The little grey-bearded Scotchman moves up and down, sitting and kneeling from gutter to ridge, like a kobold.

Two boys bring the slate up a long ladder from the ground, piling it on their left shoulders, and mounting slowly round by round.

The old man takes it from them, weighs each slate in his hand; giving it a finishing touch at the edges with his slate-hammer, and then, knocking two holes in it with the sharp butt-end for the fastenings, he passes it on to his companions.

The Craftsman.

UNDERGROUND MUNICIPAL STRUCTURES.

Professor A. Prescott Folwell, in a paper read before the American Society of Municipal Improvements, speaks of the loss by leakage from buried gas and water mains and the waste of money involved in perpetually digging after them, taking up for the purpose good pavement which can never be so good again, no matter how carefully it is relaid. Having taken account of the evil he proceeds to speak of the remedy.

"The only solution," he says "which can be adopted as satisfactory will be one in which the paving will never need to be torn up until worn out; in which all pipes, wires, etc., can be laid without interfering with the paving and be readily inspected at any time, this being true of service pipes and wires as well as mains. The paving can be preserved by not permitting either private corporations or city departments to lay any mains under the streets, but compelling them to purchase right of way along private property, or else reserve strips of public property—such as alleys or strips between the sidewalk and the street (the latter of which would be interfered with by shade trees)—under which all such would be laid. But the other disadvantages are not remedied in this way. To meet them all a general conduit seems to be the only solution, with small branch conduits for the service lines. It seems probable that the model city of the future will have such conduits, throughout its business section at least, where pavements are most expensive and such structures most numerous. In them would be placed the small sewers of the separate system, water, gas and steam-heating mains, while in the walls of hollow tile could be run the telegraph, telephone and other wires. St. Paul already has something similar to this in its sandstone sewer tunnels, as has Paris in its sewers. Nottingham and St. Helens, England, comparatively small cities, have had such conduits for several years. In Chicago 60 miles of tunnels for wires have been built, the trunk tunnels $12\frac{2}{3} \times 14$ feet, the branches 6.5×7 feet. If a private company can do this for its own wires only, it would seem to be more practicable financially when all the above can be provided for. The advantage of such a conduit is not confined to the annual savings if the structures it contains can be originally laid in it, thus saving the excavating and repaving, which would otherwise be necessary. This would amount to not less than 75 cents a foot for each structure, or \$3 a foot for four—as sewer, water, gas and steam. (In the centers of the larger cities the number of the various pipes, etc., would be several times this.) An electrical conduit in a business section costs \$2 to \$4 a foot or more (26 cents per duct foot on an average.) Therefore, even in a city of small size—say 25,000 to \$60,000—the saving of \$5 to \$10 on construction would be effected. The loss of 22.5 to 45 cents per foot capitalized at 4 per cent. would give \$5.56 to \$11.25 per foot,

or a total of say \$10.50 to \$21.00 per foot. The conduit offers other advantages besides these financial ones; such as facility of inspection of all pipes, etc., and exact knowledge of the location and condition of each service connection. Also freedom from freezing of water mains, and ease of thawing if frozen.

The weak point in this argument, and probably one of the principal reasons why more cities have not built these conduits, is that before they are really necessary several of the pipes have already been laid in different parts of the street, and instead of saving much of the cost of laying, the use of the conduit requires the relaying of all of them, or of all but one, around which one the conduit may be built. But in spite of this it would seem as though some such a contrivance is a necessity if we are to construct and maintain good paving, and that the time is coming when any city which can afford a brick, asphalt or modern wood-block pavement must afford to first place under it a conduit which will preserve it from premature disfigurement, deterioration and renewal."

PROTECTIVE POWER OF PAINTS.

The apparently capricious variation noticeable in the durability of paint when employed as a protection to structural work, has opened a door to much that approaches quackery on the part of advertising manufacturers, and some empiricism on the part of most engineers.

How widely paints which have approximately the same composition may vary in protecting life, is well illustrated by the behaviour of two ordinary diluted oxide of iron paints used for iron bridge protection on the Philadelphia and Reading Railway, U.S.A.

The first afforded a fair protection for about three years, but during the fourth year it was completely penetrated, and the surface covered had become so badly corroded that the paint could with ease be de-

tached. The second paint—employed side by side with the first—had at least double this life; at the end of the fourth year, still in excellent condition, it showed no single spot of rust and the metal covered was clean and bright.

Now both paints were about identical in composition, inasmuch as each consisted of 22 per cent. sesquioxide of iron and 78 per cent. of inert "fillers": although in the first these fillers were represented by 14 clay and 64 hydrated calcium sulphate while in the second only 11 per cent. hydrated calcium sulphate was to be found.

Now, of course, calcium sulphate is slightly soluble in water, and it has been supposed that this explained its unsuitability for use as a "filler" in outdoor paint: but even supposing its solubility to have an appreciable effect, Mr. Robert Job, by his careful investigation detailed in the July issue of the "Franklin Journal," has clearly proved that there exists a far more important factor—one amply sufficient to explain all the noticed difference.

The average diameter of the solid particles in the first paint was about .008 inch, while in the second it was only .0004. Thus the average volume of a particle in the first was about 8,000 times greater than in the second! Obviously, therefore, when the coarse particles of the first were scattered at intervals over any surface and connected by films of clear oil, the finer particles of the second were almost in contact and, indeed, several layers deep. In the first case the weathering effect had to penetrate but transversely through a single oil film to obtain free access to the "protected" surface: while in the second, the oil films had to be attacked at their edges and pursued through the interstices of the piled particles before even an indirect approach through capillary passages could be obtained.

The importance of fineness in the grinding of paints

Milton

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The third edition of the Canadian Contractor's Hand-Book is now on sale. The book has been revised and enlarged to upwards of two hundred pages, and the title changed to the Canadian Contractor's Hand-Book and Estimator. Considerable matter bearing on the cost of performing various kinds of work having been added.

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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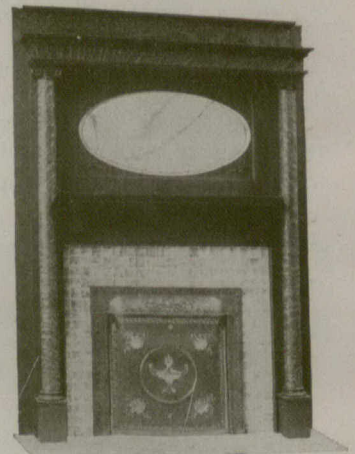
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has long been recognised, but this has formerly been considered mostly in connection with "body" and economy in spreading over a given surface. What Mr. Job has shown, is that fineness in grain is the one grand dominant factor in the life of oil paints.

Plaster of Paris, being a crystalline substance, must always remain granular—can scarcely be reduced to the plastic condition of fine clay; and although it *can* be ground to a fineness suitable for good paint, the cost of the process is almost prohibitive. The best of all cheap fillers would be calcium carbonate, if it were inert. For American Paris white is of extreme fineness and forms a beautiful smooth-flowing paint; but it will not stand acid fumes.

The best method is to leave the choice of a filler to the manufacturer, merely stipulating that it shall be an inert substance and that the paint shall stand the following simple test.

Supposing the paste to contain 26 per cent. oil; $2\frac{1}{2}$ times its weight of pure raw linseed oil is added. After thorough mixing, a few drops of this thin paint are placed upon a clean dry strip of glass, set upright in a temperature of 100° F. for one hour. At the end of the hour there should be no noticeable separation of pigment from oil and but a slight difference in colour between the top and bottom of the streak.—Indian Engineering.

PRESERVATION OF STONE.

In a letter in the Times of the 15th inst., Mr. Thackeray Turner, Secretary to the Society for the Protection of Ancient Buildings, draws attention to the

decay of the stonework of many of our ancient buildings, and concludes (we think rightly) that more damage is done by the corrosive gases and vapours evolved from burning coal than by rains, winds, and frosts acting in the absence of coal smoke. To arrest this decay Mr. Turner and his committee advocate the use of lime-wash, the lime-wash to be repeatedly applied to the face of the stone. For reasons which are obvious to all who have any chemical knowledge, lime-wash is very inferior to baryta-wash as a preservation for calcareous stones, and we think the process adopted by Professor A. H. Church for preserving decayed stonework in the Chapter House, Westminster Abbey, is much preferable to that advocated by Mr. Turner. This process consists in first cleansing the surface of the stone with the aid of an air-blast, and then, by means of a pneumatic diffuser, injecting a saturated solution of barium hydrate into the pores of the stone. The injection is repeated several times. By the use of barium hydrate instead of calcium hydrate (lime-wash,) sulphate of barium instead of sulphate of lime is eventually formed in the pores of the stone for a distance of several inches from the surface. Since sulphate of barium is practically insoluble in rain water and in dilute acids, whereas sulphate of lime is distinctly soluble, the advantage of using baryta-wash instead of lime-wash is evident. Calcium sulphate has, moreover, a greater tendency to cause exfoliation of the stone. Those interested in the preservation of calcareous stones will find much valuable information in the reports of Professor Church on the treatment of the decayed stonework in the Chapter House, Westminster, Abbey, to the First Commissioner of H. M.'s Works, dated May 28, 1901, and November 18, 1903, respectively.—The Builder.

ONTARIO CLAYWORKER'S ASSOCIATION.

This Association held its third annual meeting on Dec. 7 and 8 last, at Waterloo, Ont. The president of the association, Mr. Byron E. Bechtel, of Waterloo, in his address to the Association dwelt upon the development of the Northwest, pointing out its future as a market for bricks. Discussions were upon the subjects of Machinery and Keeping it in Proper Order, and upon the question of Burning Bricks and How to Lower its Cost. A banquet was provided by Messrs. Bechtel Bros. Mr. Alexander Johnston is the secretary, and Mr. H. Janes the treasurer.

In French military stables 1,750 cubic feet per horse is allowed. In the royal stables of England 2,500 cubic feet per horse. In the stables of the Marlborough house 1,700 cubic feet. In English military stables the space ranges from 1,452 cubic feet to 2,284 cubic feet. In the Dublin barracks only 560 cubic feet per horse. In the stables of the London General Omnibus Company 820 cubic feet per horse. In large stables the ceiling height should not be less than thirteen feet and better fourteen or fifteen feet.

The third Annual Social evening of the Master Painters and Decorators Association of Toronto was held at the Temple Building on Thursday, January 19. The members of the Association with their friends assembled to the number of about 200 in the large banqueting hall on the 6th floor. Mr. W. J. Bolas, vice-president officiated in the absence of the President, Mr. Frank McCausland. Several representatives of the Hamilton Master Painters and Decorators' Association were present. A very enjoyable programme of music followed the banquet.

AN ABSOLUTELY FIRE-PROOF WINDOW

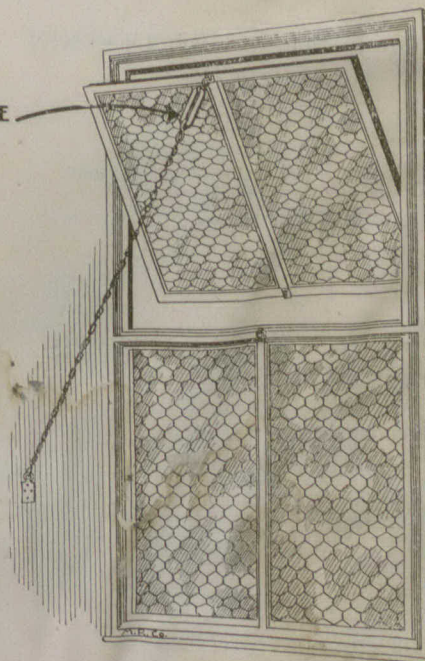
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ADVERTISEMENTS.

Prices for advertisements will be sent promptly on application. Orders for advertisements should reach the office of publication not later than the 12th, and change of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of value to the persons in whose interest this journal is published are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

Subscribers who may change their address should give prompt notice of same. In doing so, give both old and new address. Notify the publishers of any irregularity in delivery.

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We regret to have to record the death, on January 23rd, from typhoid-pneumonia, of Mr. James Milner Crysler, of the firm of Messrs. Sproatt, Rolph & Crysler, Winnipeg.

Mr. William T. Williams, architect, of Detroit, has opened an office in Medicine Hat, Assinaboia.

Mr. S. M. Brookfield has decided to withdraw from the building and contracting business which he has carried on extensively in Halifax, and which his father founded. He will finish the contracts he has on hand, and will hereafter devote his attention to the dry dock of which he is manager and to important investments that he has made. He did all the important work for the Imperial Government.

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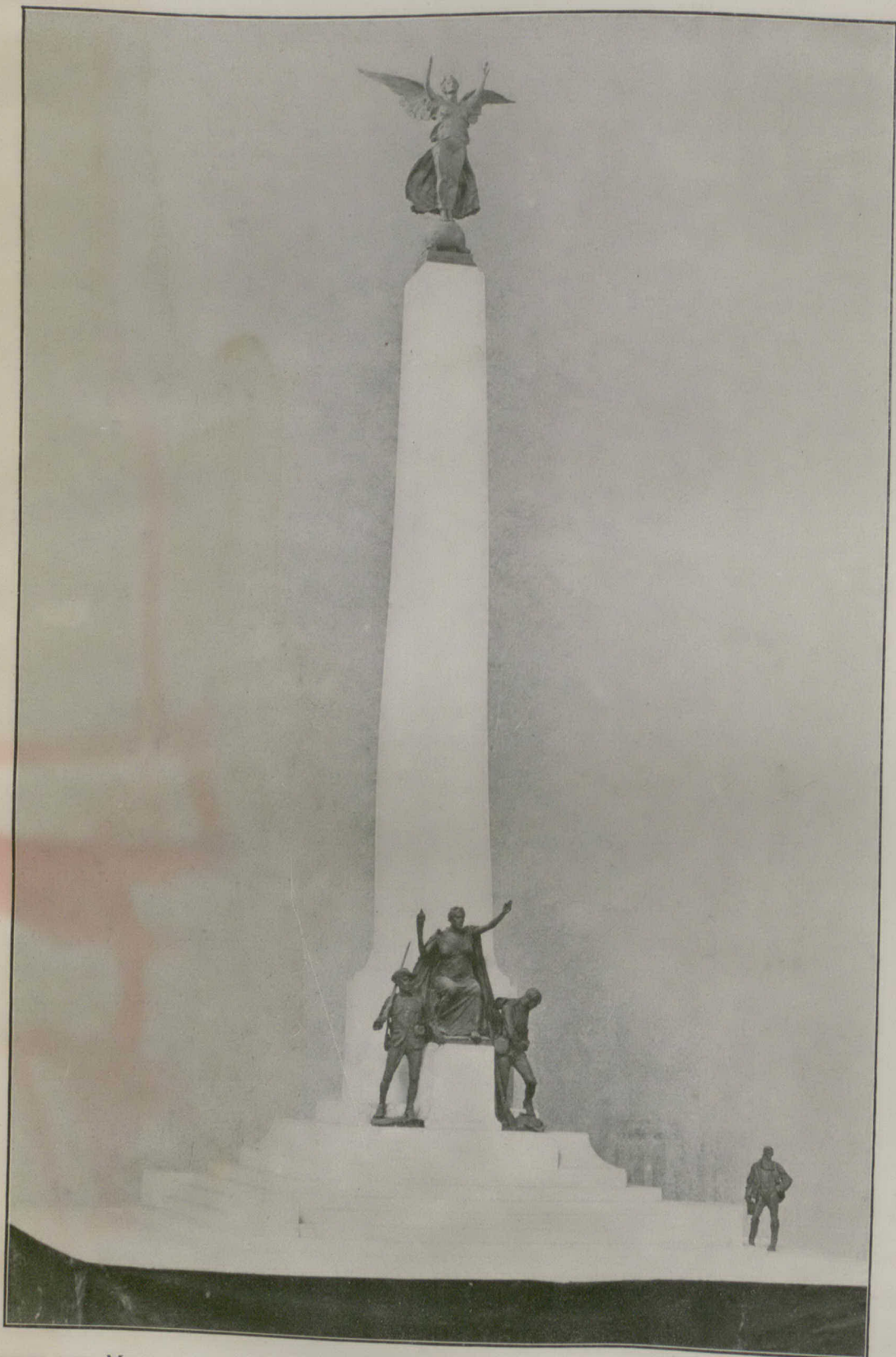
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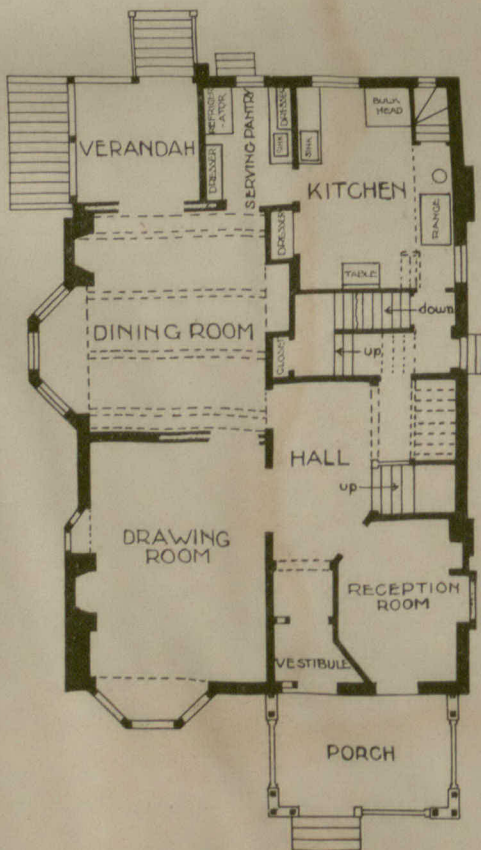


SKETCH FOR MEMORIAL TO CANADIAN SOLDIERS WHO FELL IN THE WAR IN SOUTH AFRICA.

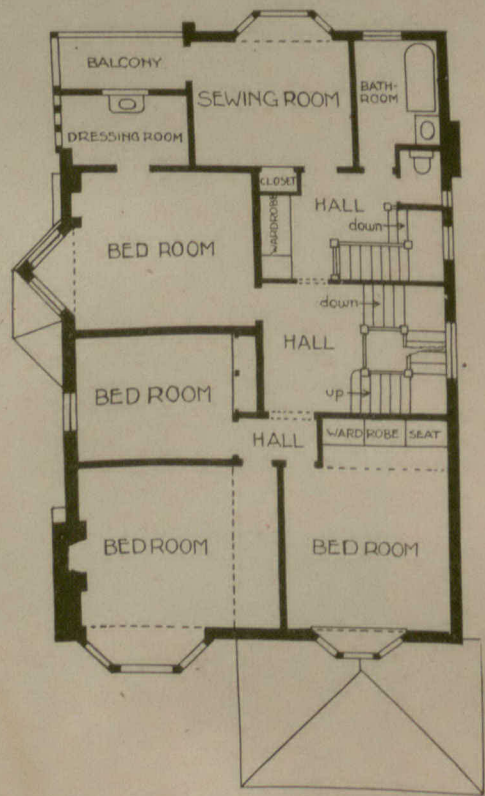
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VIEW FROM SOUTH-EAST.



GROUND FLOOR PLAN.



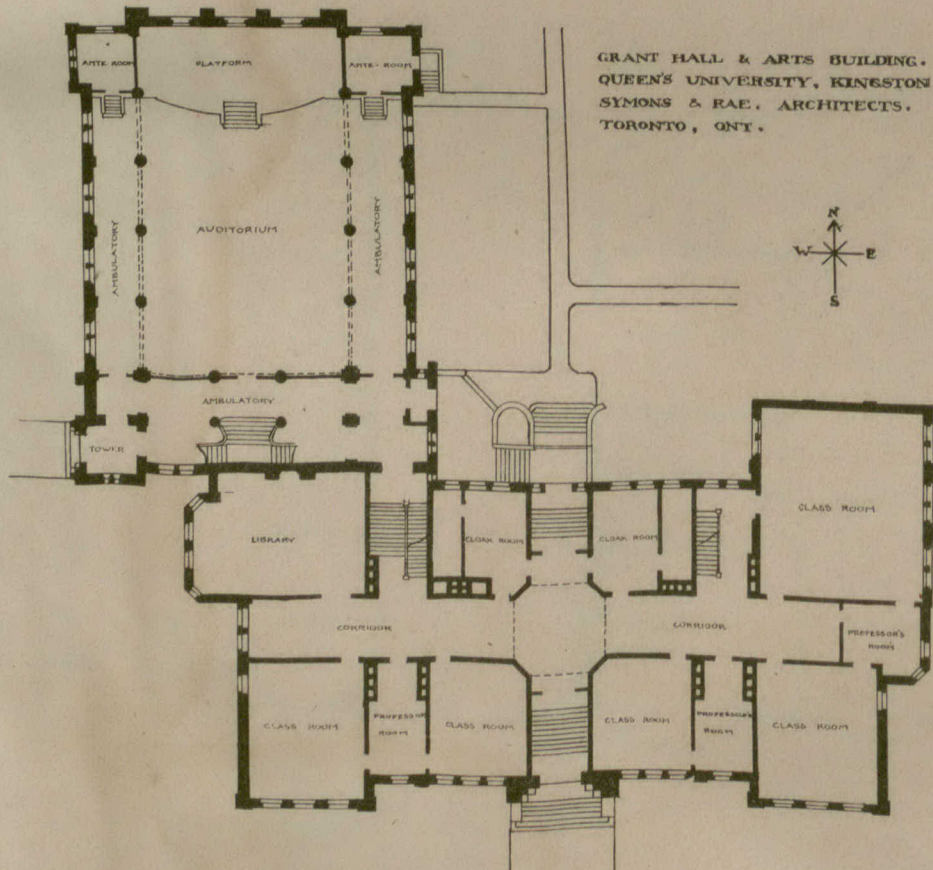
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No. 152 Park Road, Rosedale, Toronto.

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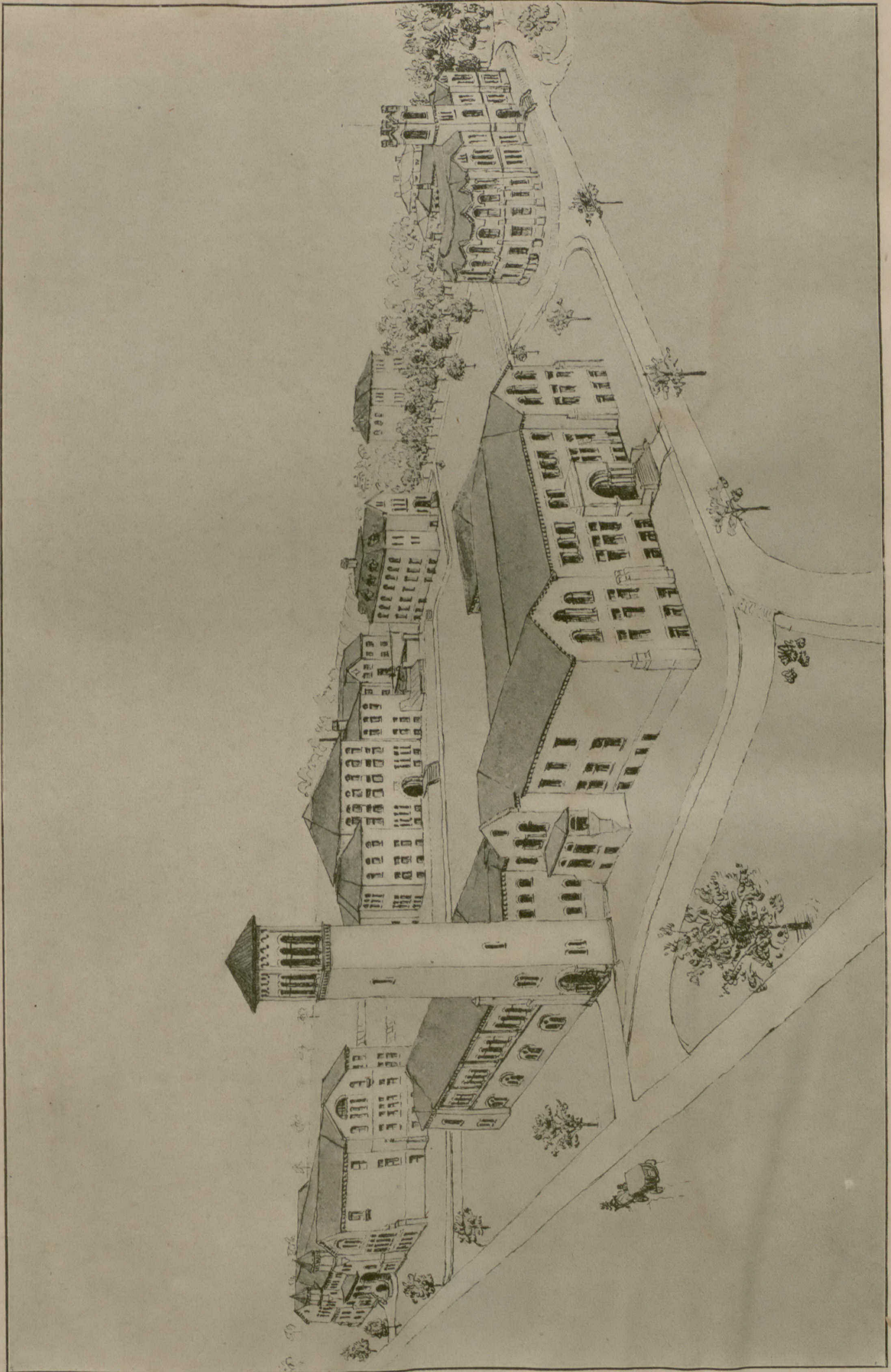


VIEW OF GRANT HALL FROM THE EAST.



PLAN OF ARTS BUILDING AND GRANT HALL, QUEEN'S UNIVERSITY, KINGSTON.

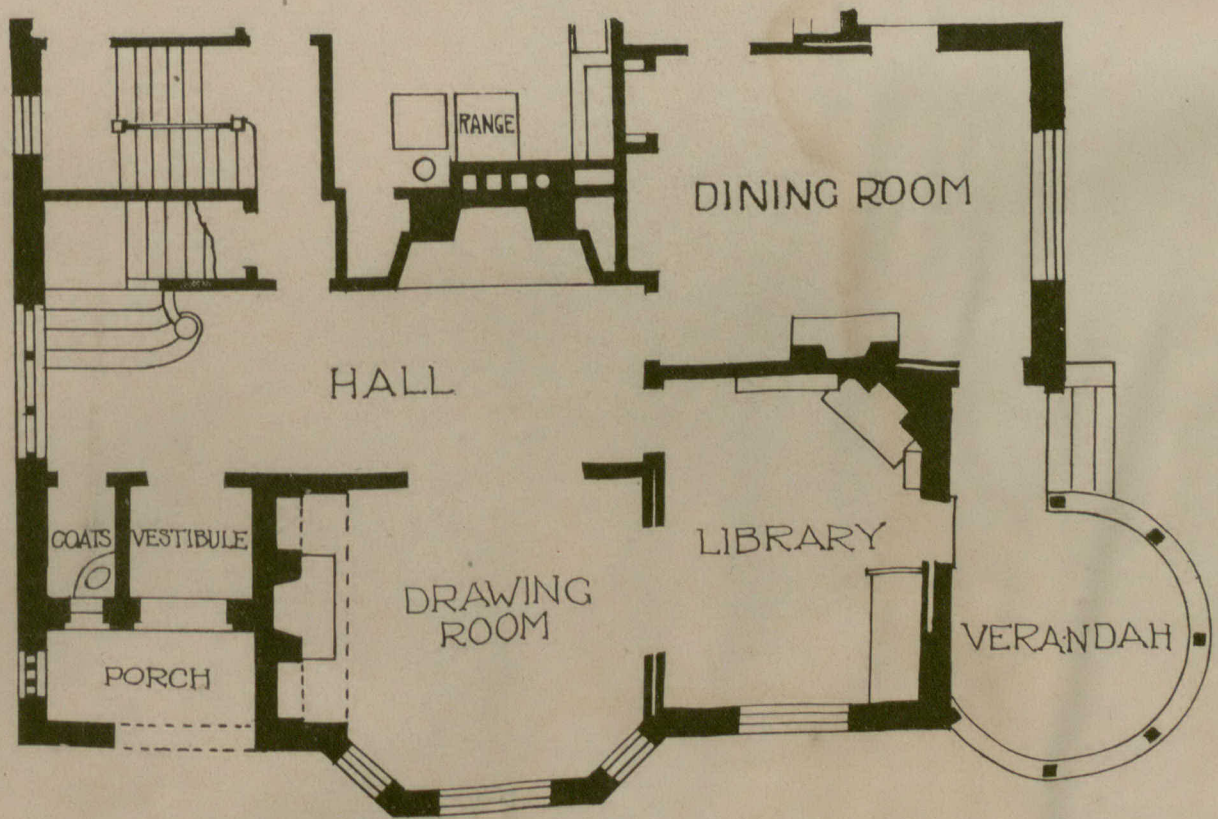
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BIRD'S EYE VIEW OF QUEEN'S UNIVERSITY, KINGSTON.



VIEW OF HALL.



PLAN OF HALL.

No. 123 St. George Street, Toronto.

Messrs. Burke & Horwood, Architects.



STATUE OF QUEEN VICTORIA IN THE PARLIAMENT GROUNDS, WINNIPEG.
GEORGE FRAMPTON, R.A., SCULPTOR.

PAGES

MISSING