

**PAGES**

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—THE—  
**CANADIAN ARCHITECT AND BUILDER,**  
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(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD).

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TO ADVERTISERS.

For the benefit of Advertisers, a copy of this Journal is mailed each week to persons mentioned in the CONTRACT RECORD'S reports as intending to build, with a request to consult our advertisement pages and write advertisers for material, machinery, etc.

THE building season of 1895, about to open, promises to be one of much greater activity in Ontario at least than that of 1894. The recent extensive fires will create a considerable local demand for labor and material in Toronto. This will apply in a lesser degree to London, Halifax and other places. The number and extent of new building enterprises seem also to be on a more promising scale than last year. We therefore bespeak for architects, builders and supply firms the enjoyment of more satisfactory conditions than those which have fallen to their lot of late.

EVER since the Ontario Legislative buildings rose to public view, there has been but one opinion expressed by capable judges concerning their outward appearance, viz., that it displays not a single interesting feature. Occupation of the legislative chamber has demonstrated the fact that its acoustic properties are also of the worst possible character. A daily paper affirms that "The members can't hear each other on the floor of the House, the press is at a great disadvantage for the same reason, while as far as the visitors in the galleries are concerned they might as well be at a pantomime." It seems pertinent to enquire what advantage has accrued to any Canadian interest from the employment of an American architect in the erection of these buildings over the heads of capable home talent.

In the paper on "English Methods," by Mr. Frank Baker, A. R. I. B. A., presented to the O. A. A. at its last meeting and printed in the present number, the author says: "The system of carrying all soil pipes on the outside of outside walls is a good one, and though it is said that our severe climate prevents us from adopting this principle here, it is likely that we will come to it in some form eventually. Perhaps a well ventilated brick flue might be constructed to contain these pipes, but something ought to be done to get them outside of the building." We are heartily in accord with this view. In spite of all the precautions that can be exercised, there exists an element of danger to the inmates of a dwelling in which the drainage system forms part of the interior construction of the building. The method of carrying drains outside the walls of dwellings has been followed to a considerable degree of late, and it would add materially to the security of human life if means could be devised whereby the soil pipe would likewise be relegated to the outside of the building.

ABOUT two years ago the Council of London, Eng., decided to abandon the system of submitting to tender the public works of the municipality, and to have them carried out under the immediate supervision of its own officials. By this means it was claimed there would be saved to the citizens the contractors' enormous profits. The experiment, which has been watched with world-wide interest by municipal bodies and public contractors, seems to have proved a dismal failure. In the case of several costly public improvements carried out under the new method, the cost is shown to have exceeded the estimate of the city officials by 20 per cent., or in round figures £7,200. A quarter of a million pounds has been invested in buildings and contracting plant, which will be practically lost should a return

to the former system be found advisable, as seems probable. Sir John Hutton, chairman of the Works Department, expresses the opinion that the workmen may not be disposed to do as good work for the Council as for a contractor. It will be remembered that not long ago the City Council of Toronto tried the same experiment, and with the same result. In both cases, the desire to curry favor with the trades unions seems to have been the actuating motive.

A RECENT and instructive experience with a steam heating plant is reported in connection with one of the Toronto public school buildings. Last summer the Bolton avenue school, a two-storey building, was enlarged to contain sixteen class rooms, instead of twelve. This was done by adding a third storey, making an increase of fifty per cent. in the space to be heated. The apparatus formerly consisted of one boiler and plain coils of steam pipes—the usual pressure of steam running at six to eight pounds gauge—and all worked well. For the new storey the old mains and returns were enlarged where necessary, and new extensions put in, with cast iron radiators. With the advent of cold weather it was found impossible to make the apparatus do its work, as the water backed out of the boiler into the returns before sufficient pressure could be obtained to make a circulation. Up to this time there had never been a check valve on the return connection with the boiler, and Mr. Bishop, Superintendent of Buildings and architect for the School Board, was of the opinion that to provide one would overcome the difficulty. The contractor for alterations to the plant and others having extended experience with steam apparatus differed from him, thinking this would have no appreciable effect and that another boiler of the same capacity as the one in use would be found necessary. The check valve was put in at a cost of about twenty-five dollars, and the system worked as perfectly as ever, satisfactorily warming the whole building even during the extremely cold weather which prevailed at times during the past winter. The amount of fuel consumed is about fifteen per cent. more than formerly, with a corresponding increase in the steam pressure required. An additional boiler would have cost nearly one thousand dollars, with an annual cost of at least one hundred dollars more for fuel than the present arrangement. In the building referred to there are 268,000 cubic feet of space with 2,200 sq. feet of window glass. The heating is entirely by direct radiation and the boiler heating surface is one-tenth the radiating surface, a proportion allowed for ordinary buildings by Baldwin, the eminent authority on steam heating. These facts show a rather wide difference of opinion among people who ought to know the requirements, and that the subject of apparatus for heating or ventilating is one with which architects should be thoroughly familiar.

#### BUILDING CONSTRUCTION IN ITS RELATION TO FIRE PROTECTION.

THE large fire which caused such destruction to buildings in one of the principal parts of Toronto last month, made reasonably clear that the series of conflagrations by which Toronto has been visited of late were due to incendiarism. It can hardly be conceived in the light of the immunity which the city enjoyed for so many years, that three such conflagrations should take place within so short a period from accidental causes. It has been the subject of comment that in each instance the fires originated in buildings situated in the very heart of the business district of the city, where there was a reasonable certainty of their being rebuilt. It is to be hoped that the reward of \$1,000 offered by the Underwriters' Association for the conviction of the incendiaries will have the desired result.

The rapid destruction of Mr. Robert Simpson's new departmental store building, an illustration of which appeared in the January number of the CANADIAN ARCHITECT AND BUILDER, and which was among the first of the buildings erected on the modern iron construction principle, not only demonstrated the insufficiency of the city's fire equipment, but what is more important, the fact, that so long as the prevailing methods of building are allowed to continue, the most effective fire extinguishing appliances will be of little avail in preventing the spread of fire when once it shall have obtained hold upon a building. If a merchant wants a building put up with the greatest amount of floor space and with street fronts almost entirely of plate glass, his architect may advise him of the danger to which

it will be exposed from fire, and that it will also be a menace to the safety of surrounding buildings, but if the proprietor refuse to go to the expense of making the building fire-proof and be willing to assume the risk of having it destroyed, the architect can do no other than carry out his wishes. It is here that the law should step in and prevent the erection of structures of such a character. Since the recent fire, a clause has been discovered in the existing building by-law of the city, limiting the floor areas of buildings and providing other safeguards against fire. Strange to say, this clause has been more honoured in the breach than in the observance. It reads as follows :

"No block of warehouses or storehouses or other buildings (except churches, public halls and opera houses) shall contain more than forty squares of building on the ground floor thereof, including internal and external and half the party walls belonging thereto, unless such building be separated and divided by party walls into divisions of not more than forty squares of building as aforesaid, unless the permission of the City Council shall be first obtained. No block of warehouse or other buildings shall communicate with any other block of warehouses or other buildings through a party wall, nor shall any stable communicate with any other stable through a party wall, unless the door case and sill of every such communication be of stone or wood covered with tin, and unless there be to every such communication a door of two thicknesses of wood covered on both sides with tin. No timber bond or lintel shall be laid into the brick work of any wall in any such building nearer than eighteen inches to the opening of such communication, unless the door case and sill of every such communication be of stone or of wood cased with tin."

The committee, consisting of Messrs. H. B. Gordon, W. L. Symons, W. R. Gregg, Edmund Burke, D. B. Dick, B. Jarvis, J. A. Pearson, Mark Hall, E. J. Lennox and Geo. Miller, appointed by the Ontario Association of Architects to recommend to the City Council needed amendments to the city building by-law, have lost no time in dealing with the subject. Since their appointment the committee have held eight meetings, at which the building ordinances of London, Eng., New York, Chicago, St. Louis and a number of other cities, have been carefully considered, together with other data bearing on the subject in hand. As the result of their deliberations the committee have framed a by-law which will be recommended to the City Council at an early date. In view, however, of the unusual circumstances at present prevailing in the city, and the urgent necessity for immediate legislation to prevent the erection of buildings constructed in a manner similar to those recently destroyed, the committee have recommended that the following provisions be at once incorporated into the existing by-law :

**FIRE-PROOF BUILDINGS.**—Every building hereafter erected, which belongs to the public building class or the hotel class, the highest occupied floor of which exceeds 50 feet in height from the average ground line; and every building hereafter erected belonging to any other class, the highest occupied floor of which exceeds 70 feet in height from the average ground line, shall be built fire-proof; that is to say :

It shall be constructed with walls of brick, stone or terra-cotta, or other hard, incombustible materials. No wooden beams, lintels, bond timber or wood strips shall be built in walls.

The floors and roofs shall be constructed of brick or terra-cotta arches or other hard, incombustible material, and the supporting beams shall be of steel or iron, all properly cased with non-combustible material.

The stairs and staircase landings shall be built of hard, incombustible materials.

No woodwork or other inflammable material shall be used, excepting the floor boards, the doors and windows and their frames, and the trims, casings and interior finish, when filled solid at the back with fire-proof material. The exposed parts of all constructional steel and iron work, supporting walls, floors, roof or stairs, shall be efficiently protected with at least 2 inches of porous terra-cotta; or, where such is not feasible, with wire lath and plastering of sufficient thickness.

No existing non-fire-proof building shall be converted to the purposes of a building of the public building or hotel classes, the highest occupied floor of which exceeds 50 feet from the average ground line, and no existing non-fireproof building shall be increased in height to exceed the limits set forth in this section for new buildings of the same class.

But nothing in this section shall prevent the erection of what are known as grain elevators as usually constructed, provided they are erected on the water front in isolated localities, and under such conditions as the Inspector of Buildings may deem prudent.

**ELEVATORS.**—Where elevators are enclosed in shafts, all the enclosing walls must be built of brick or terra-cotta or other incombustible material.

In all buildings of the manufactory class that are more than 2 stories in height above basement, and in all buildings of the store and warehouse class that are more than 3 stories in height above basement, the elevators must be enclosed in shafts built of brick or terra-cotta, and extending at least 3 feet above roof, and covered with a light glass sky light or easily broken covering; and all the doorways opening into such shafts shall be closed by iron doors, or else by doors of two thicknesses of solid boards covered all over with asbestos and sheet metal.

Where elevator shafts cannot conveniently run to top story and from thence out to roof, the top of shaft must be covered with a fire-proof ceiling.

Where elevators are open, the guide posts and corner posts must be of iron, and any enclosing screens must be of incombustible material. No woodwork of any kind, other than strips on cage guide posts, shall be carried from floor to floor.

**FLOOR AREA.**—No building hereafter erected (except public audience rooms) shall have on any floor thereof more than 4,000 square feet of floor area undivided by division walls. Nor shall the undivided floor area of any floor in any existing building (except public audience rooms) be increased so as to contain more than 4,000 square feet.

Division walls to divide the floor area of a building into spaces of not more than 4,000 square feet must be of stone, brick or terra-cotta.

## MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)  
 MASTER PLUMBERS' ASSOCIATION OF MONTREAL.

THE Master Plumbers' Association held their first annual banquet at the Queen's Hotel on Monday, the 25th February. Over a hundred and fifty guests sat down at the tables, and amongst those who occupied seats of honor on the right and left of the President, Mr. Joseph Lamarche, were Acting Mayor Leclerc; Aldermen Beausoleil, Hurtubise, Grothé and Jacques; ex-Alderman Clendinneng; Mr. J. E. Doré, Sanitary Engineer; Messrs. T. J. Clark, Jas. Robertson, W. Robertson and Lieut.-Col. Massey. The first toast proposed by the President was that of Her Majesty the Queen, after which Mr. John Date proposed The Right Hon. the Earl of Aberdeen. The next, The President of the United States, was responded to by ex-Alderman Clendinneng.

The corporation of Montreal having been honored, Alderman Beausoleil, the Chairman of the Health Committee, was the first to respond. "If plumbing work is well done," he said, "it is a public boon, but if badly done it is a public menace." As member of the Health Committee he had great pleasure in assisting at the passage of the Sanitary By-Law recently passed.

Acting Mayor Leclerc addressed a few words of greeting to the Association, and then came one of the happiest speeches of the evening, from Mr. J. W. Hughes, who gave "Our Guests." Mr. S. C. Stevenson, Secretary of the Council of Arts and Manufactures, also spoke, and entered into details concerning the work of the Council of Arts and Manufactures, in so far as the plumbing trade is concerned. Mr. McLaren and Lieut.-Col. Massey also spoke, as did ex-Ald. Clendinneng, wishing success to the Association. Songs and recitations then became the order of the evening.

The Committee deserving credit for this most successful banquet was composed of Messrs. Joseph Lamarche, J. C. Jacotel, Joseph Thibault, W. A. Stephenson and Fred. Hortan.

## THE PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

The report of the examiners on the examination for admission as students and members of the above Association held in Quebec in January last, and recommending that Messrs. E. B. Staveley, D. O. Turgeon and Louis Bélanger be accepted as student associates, and Mr. Caetan Dufort as member, was adopted at the last Council meeting of the Association, held on the 12th March.

The Committee appointed by the Association to revise the Montreal building by-laws, as requested by the Fire Committee of this city, have completed their task, and the new by-laws, as drawn up by the Association, are now in the hands of the civic authorities. The work has been found very onerous, the Committee having held semi-weekly meetings for the purpose for the last ten months. The by-law comprises one hundred and forty-one type-written pages of foolscap size.

At the request of the Ontario Association of Architects several members of this Association are preparing to send drawings for their approaching exhibition. All drawings will have to be delivered at the store of Messrs. W. Scott & Sons, 1739 Notre Dame street, not later than the 1st April at noon.

## MONTREAL STREET RAILWAY BUILDING.

The Grand Jurors of the Court of Assize have brought in a verdict of "Not Guilty" in the case of Messrs. E. C. Hopkins, A. Gravel and Foreman McLaughlin, accused of criminal negligence in connection with the Street Railway building. Mr. G. T. Hammond, architect, of Cleveland, Ohio, has now charge of the building, the interior of which he intends to completely tear down, and have rebuilt ready for occupancy by the end of next autumn.

## CUSTOMS DUTY ON ARCHITECTURAL PLANS.

IN order to insure uniformity in the collection of duty on architects' plans imported into Canada for use in the erection of buildings therein, the Controller of Customs has, under the provisions of sub-section 2 of section 65 of the Customs Act, determined the value of duty of such plans to be as follows:

Each set of original drawings or single set of blue prints of same, if brought into Canada as a substitute for the original drawings, 2 per cent. of the estimated cost of the building to be erected thereon.

Same, if accompanied by details, 3 per cent. of such estimated cost.

Details, or blue print of same, if imported separately, 1 per cent. of the estimated cost of such detail.

When additional sets of blue prints of the same set of drawings are imported, such additional sets of blue prints are to be valued for duty at \$5 per set in addition to the value of the original drawings, or first set of blue prints imported in lieu thereof, as above.

At the recent annual meeting of the Toronto Radiator Mfg. Co., the reports presented by the Secretary and Manager, Mr. John Taylor, were of a most satisfactory character. The Company have established agencies as follows: Canada—Montreal, Que.; Quebec, Que.; St. John, N.B.; Hamilton, Ont.; Winnipeg, Man.; Victoria, B. C. Foreign—London, Eng.; Edinburgh, Scotland; Glasgow, Scotland; Belfast, Ireland; Antwerp, Belgium; Hamburg and Berlin, Germany; Auckland, N. Z. The directors and officers of the Company were re-elected as follows:—Joseph Wright, President; David Carlisle, Vice-President; F. W. Doty; John M. Taylor, Secretary-Treasurer and General Manager.

Door or other openings through division walls must not exceed in their united width one-third the length of wall.

All openings through division or party walls shall have tight-fitting doors and frames of iron; or else, if of wood, constructed of two thicknesses of solid boards, and covered with asbestos and sheet metal.

Each section of floor area divided from the rest of building by division walls and fire-resisting doors shall have a separate stair and exit to street.

All fire-proof buildings, built as described for fire-proof buildings under section . . . . . of this by-law, shall be exempt from the restrictions as to floor area.

PROTECTING STRUCTURAL IRON WORK.—All metal columns and beams supporting walls, except first floor and basement columns on street fronts shall be efficiently protected by non-combustible materials.

There is a misconception on the part of the public as to what constitutes a fire-proof building. The opinion is held that buildings such as the Simpson and McKinnon buildings recently destroyed, constructed with iron supports, were intended to be fire-proof. This is altogether an error. It was perfectly well understood by the architects of these buildings that the safety of these structures was in no way enhanced, but rather endangered, by the use of an unprotected iron frame work. The advantage sought to be gained by the use of this method of construction was rather in the direction of securing larger floor and light areas. As was pointed out in an article on this subject in the CANADIAN ARCHITECT AND BUILDER for January, iron should not be used for the support of a building unless covered with fire proof material such as porous terra-cotta, and it is hoped that the proposed new building ordinance of the city will render this imperative.

A provision which would to a considerable extent enhance the safety of buildings from injury by fire originating on adjoining premises, would be one which would compel the owners of business buildings to protect with iron shutters the windows in the rear walls abutting on adjoining property. Two of the greatest sources of danger are windows and elevator shafts. The windows are broken by the heat, thus setting in motion currents of air by which the flames from burning buildings adjoining are sucked in through the openings, carrying with them destruction to the interior of the building. It is too much to require owners of office and other business buildings to disfigure them by placing iron shutters on the windows of the principal street elevations, but no such objection could be urged as regards the protection of windows on rear walls.

Yet another valuable protection, to our mind, would be moveable iron floors in elevator shafts, which should be employed at night to shut off each flat of the building. One of the recommendations of the committee of the O. A. A. is, that such shafts should be lined with fire-proof material and should have fire-proof doors at the entrances on each flat; that the shaft should extend three feet above the roof and be covered with glass, which would be easily broken by heat. This provision is a wise one as far as it goes, its object being to confine the fire to the shaft and prevent its spread laterally throughout the building. There is danger, however, that combustible material would be carried through the top of the shaft to the roof of the building and to buildings adjoining. Such a provision as we have mentioned would act as a more complete safeguard, tending to prevent the fire from extending beyond a single flat where, thus confined, it could effectually be dealt with by the firemen.

Some attention should be given to the construction of floors in a manner that would offer greater resistance to fire. The plastering of ceilings is quite a protection to the under side of the floor, and if floors were lined with asbestos or laid in mortar, a much longer time would be required for them to burn out.

## ONTARIO LAND SURVEYORS.

THE annual meeting of the Ontario Land Surveyors' Association held in Toronto a fortnight ago, was one of much interest. Papers were read on "Good Streets," by H. J. Brown, of Berlin, Ont.; "Highway Bridges," by Peter S. Gibson, of Willowdale, Ont., and on "Mining," by J. D. Evans, of Trenton, Ont. The proceedings terminated as usual with a banquet. The following gentlemen were nominated for the Council of Management, the election to be by ballot of all the members of the society in the Province:—P. S. Gibson, Willowdale; Jas. Dickson, Reeve of Fenelon Falls; A. Nieven, F. B. Speight, Toronto; Geo. Ross, Welland; J. D. Evans, Trenton; Wm. M. Davis, Woodstock; Harry Brown, Toronto; T. H. Jones, Brantford, and F. S. Foster, Toronto; Auditors, H. B. Proudfoot and W. A. Brown, Toronto.

## ILLUSTRATIONS.

PORTA DELL PALLIO.—SKETCH BY EUSTACE G. BIRD.

THIS gate built in 1520 A.D. is the west entrance to the city of Verona, in Northern Italy, and is an instance of San Micheli's wonderful ingenuity and taste in the mode of displaying pure and beautiful architecture with the requisites called for in fortifications. San Micheli devoted himself with great ardour to the practice of military architecture. The genius of this architect was of a very high order; his works are conspicuous for excellent construction as they are for convenience, unity, harmony, and simplicity, which threw into shade the minor abuses occasionally found in them—and our advice to the student would be to study his works with diligence.

"STOKESAY CASTLE"—THE GATEHOUSE.

Stokesay is an almost unique specimen of a mansion of the thirteenth century, fortified subsequently to the erection of the domestic portion of it. It combines in itself associations not only of the peaceful daily life of its inmates, but of that eventful time when this border land was the scene of forays and bloodshed, and happily preserved with very little alteration through the chances and changes which have levelled so many other similar structures of that early date. It presents many features of curious interest for the architect, the archæologist and historian, and the artist finds a gem of color and combination with a perfect setting.

The castle is situated on the left bank of the Onny, in the County of Shropshire, and within ten miles of the famous and better known stronghold of Ludlow. To the east rises a steep hill, on the summit of which can be traced the remains of a British camp—its sides clothed with firs; to the west a corresponding cliff, the lower slopes covered with hollies of great age and the ridge of rugged limestone. This was the site selected for the home of one of those lords of the Marches, who in the time of the first Edward held this border land under the stern feudal rule, and who had frequently to repel the attacks of the as yet unconquered Welsh.

The first objects which arrest attention on first seeing the Castle are the gatehouse and the moat; the latter surrounds the whole building and has a depth of about six feet and an average breadth of twenty-two feet. It is now used as a garden, and was once much deeper, being fed from a small stream coming down from the neighboring hills. The gatehouse, which has probably replaced the original drawbridge, is a fine example of a Tudor "black and white" building. Its timbers hoary with age, and stained by the rains of 300 years, have toned a silvery gray and are still in excellent preservation, and in many parts are richly carved, but in one or two instances have been cut away for new work of an order that is more useful than ornamental; and in cutting some of the main timbers, when the ugly chimney was erected to a more modern kitchen range, that side of the gatehouse has sunk, and the whole of the lower half was replastered upon the timbers which correspond with the other side. Over the ample archway which runs through the centre are displayed on the arch beam "The Rose" in a shield with lion paws as supporters, and flanked with rude carving foliated in low relief. On the opposite side, corresponding, are

the figures of Adam and Eve, the serpent and the forbidden fruit. Two quaint figures surmount the pilasters—a man and a woman in dress of the fashion of the times—probably the founder and his wife, while at each corner of the house are massive oaken corbels, the carving being very bold and masterly, each of the four being of a different design, the one I have shown being the most perfect. The timber work of the upper story has been much cut away for windows, but the blank plaster panels have not been filled with timber struts, but left purposely blank, either to be filled with ornamental plaster or as window spaces that were not required, and afterwards lath and plastered.

In the last century this gatehouse was often the resort of an outlaw, who successfully eluded capture by secreting himself in a small room entered by a trap door, but there is nothing of special interest in the interior, as it has been much modernized and is now occupied by a caretaker.

A door of great size, made ball-proof by two layers of oak plank laid over each other at right angles and clamped with large headed iron nails, and pierced for firearms, remains as a relic of the civil wars. The hinges and other iron work appear to be of earlier date, and were probably taken from other parts of the castle.

Crossing the court-yard we have the heart-shaped tower, unique in itself; on the left a banqueting hall with its chased beams and windows of early English tracery; the priests' rooms and deep well in the North tower, having an overhanging half timber story over the moat. The solar is a splendidly panelled room with a grand fire place, and there are some good carved square pews in the church close by that reminds one of an elaborate horse-box.

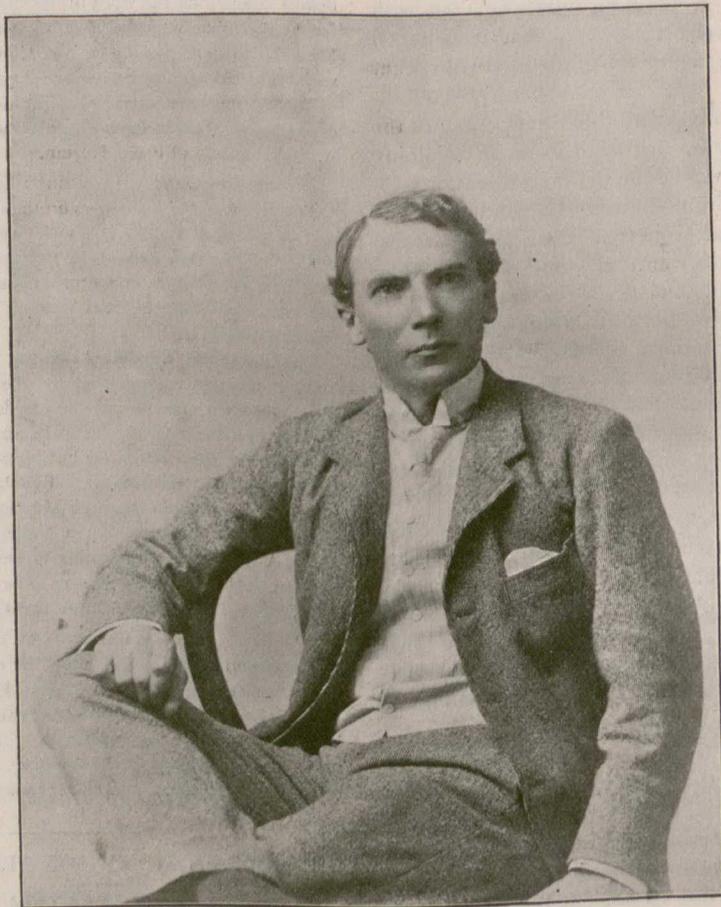
From the date of Domesday to 1241, with the exception of two intervals of forfeiture, the de Lacys held this and other manors. About 1115 the de Sais were enfeoffed at Stoke by de Lacy—hence the name Stoke Say. Their ancestor, Picot de Sai, or Sez, a place in Normandy, fought at Hastings under William 1st. Five of the family are mentioned in connection with the manor. In 1240 the line of de Lacy died,

when it passed through a daughter to John de Verdon, who died in 1274; then to Lawrence de Ludlow, again to the Verdens, Mainwarings and Cravens. Sir W. Croft was slain here in 1645. It now belongs to Dent Allcroft, Esq., who lives near.

After the civil war, Stokesay was ordered to be "slighted," or rendered incapable of defence, but in this instance only the battlements of the northern tower were removed and the rest left intact. It was at one time used as outbuildings to the neighboring farm house. Lord Craven carried out necessary repairs for its preservation, and Mr. Allcroft at considerable expense has just put it into an excellent state of repair, but has allowed nothing to be removed or destroyed, and thus is handed down to us a relic of the past, little known by architects, except in the immediate counties, so I trust this slight description will prove of interest to our brethren across the pond.—ED. SWALES.

RESIDENCE AT VANCOUVER, B. C., FOR CAPT. R. ARCHIBALD.  
—R. MACKAY FRIPP, F.R.I.B.A., ARCHITECT.

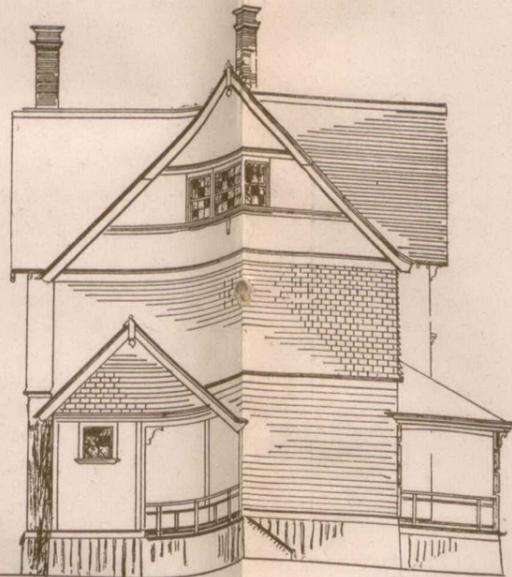
Valuable stone quarries are reported to have been discovered at St. Raymond, Que.



MR. FRANK DARLING,  
President of the Ontario Association of Architects.



WEST ELEVATION



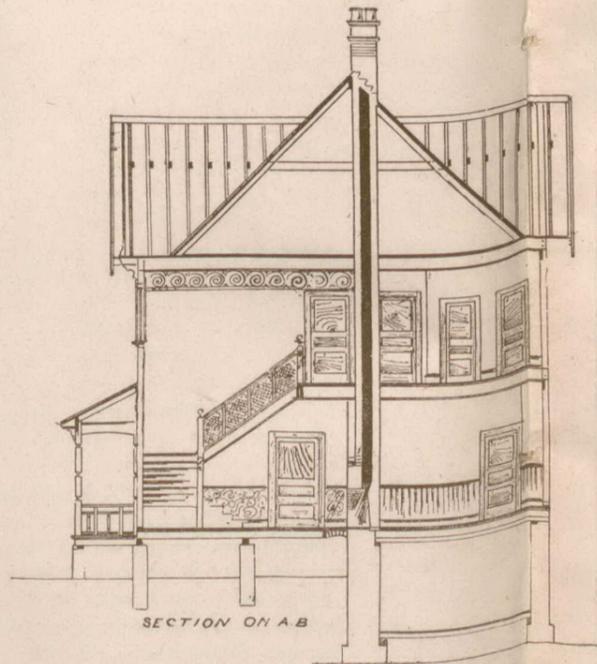
NORTH ELEVATION



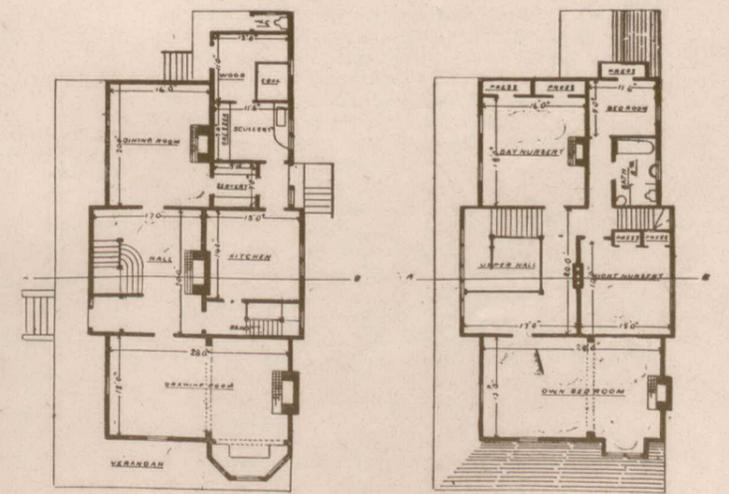
EAST ELEVATION



FRONT ELEVATION



SECTION ON A.B



SECOND FLOOR PLAN

FIRST FLOOR PLAN

SCALE 1/4" = 1'-0" FOR PLANS

RESIDENCE AT VANCOUVER, B.C., FOR CAPTAIN R. ARCHIBALD.  
 R. MACKEY FRIPP, F.R.I.B.A., ARCHITECT, VANCOUVER.

## THE LONDON COMPETITION.

WE desire to draw attention to the unfairness of the conditions under which competitive plans are invited for the re-building of Dundas street Methodist church, London, Ont. These conditions are as follows:

"The trustees do not bind these ves to accept any plan, but should they select one, and desire to use the same without employing the architect of such plan, he shall provide all necessary specifications and working drawings for the sum of \$400—four hundred dollars.

"First drawings and estimates to be delivered to the Secretary in London on or before the 21st day of March, 1895, and completed specifications and working drawings to be ready for inspection and use of contractors on or before the 11th day of April, 1895.

"The architect to state in writing what percentage on his estimate he will charge to personally superintend the erection and completion of the work, and should the trustees engage him for such service, then the aforesaid \$400 will not be paid for plans, it being agreed that the percentage named by the architect includes plans, specifications and superintendence of the work.

"Architects preparing plans will please withhold their names from said plans, and instead of name put thereon a distinctive mark, advising us under separate sealed cover what mark they will use.

"Kindly advise if you will submit plans.

Among the principal objections to these conditions, the following may be cited: (1) They do not guarantee that the best plans will be accepted; (2) Only one per cent. is offered for working plans and specifications, instead of 2½ per cent.; (3) Cheap work is invited by requesting architects to state *what they will charge* for doing the work where there is only one possible percentage which can be charged by respectable architects. We cannot see how any self-respecting architect can consent to enter a competition under such conditions as these.

## TORONTO BUILDERS' EXCHANGE.

IN recognition of his valuable services as President of the Exchange, Mr. William Pears was recently presented with the following address: "In accordance with the unanimous vote of the Builders' Exchange, as expressed at the annual meeting held on January 21st, it is requested that you accept the accompanying cigar-case as a slight expression of the friendship and good feeling entertained towards you by your fellow-members. During your two terms of office as president of the Exchange, no effort was wanting on your part to promote the efficiency and usefulness of this association, and it is hoped that the accompanying memento may express in some degree the appreciation of your fellow-members. With best wishes for the welfare of yourself and family, we remain, yours truly, John B. Vick, Geo. Oakley, C. S. Boon, on behalf of the Exchange."

## PERSONAL.

Mr. R. Mackay Fripp, F. R. I. B. A., of Vancouver, B. C., passed through Toronto last month en route for Europe.

Mr. Geo. A. Clare, of the firm of Clare Bros., of Preston, Ont., has been honored with the Conservative nomination for the House of Commons, for the South Riding of Waterloo, Ont.

Mr. W. W. Summers, one of the oldest contractors in Hamilton, and well known in Masonic circles, died in that city last month. Mr. Summers was born in Hadleigh, Essex county, England, on January 2, 1822. He came to Hamilton in 1854 to superintend the erection of the Anglo-American Hotel, now the Wesleyan Ladies' College.

Intelligence comes from British Columbia of the death at the Jubilee Hospital in Victoria, of Mr. Frederick Toms, the well-known Ottawa contractor. Mr. Toms was attacked by bronchial pneumonia soon after his arrival on the coast, whither he went for the purpose of erecting the new Government building at Victoria. When the gravity of his condition became apparent he abandoned his contract, which was taken over by Messrs. Elford & Smith, of Victoria. Mr. Toms was a native of Newfoundland, and had been engaged on a number of very important works, making his headquarters at Ottawa, where his interment took place.

The news of the death of Mr. N. B. Dick, architect, which occurred at his home in Toronto, last week, came as a sad surprise to his many acquaintances. His death resulted from consumption induced by a severe cold contracted a year ago. Mr. Norman Bethune Dick was born in Toronto in April, 1860, and was the son of the late captain James Dick. He began his architectural education in the office of Messrs. Smith & Gemmill, of Toronto, and after leaving them went to Cleveland and spent considerable time there and in some neighboring cities. On his return to Canada he settled temporarily in Kingston, but subsequently went to St. John, New Brunswick, where the great fire afforded a splendid opening for one in his profession. He commenced practice in Toronto in 1879, and soon enjoyed a quiet but good and steady business, and in 1890 formed a partnership with Mr. A. Frank Wickson. Among the buildings erected by Mr. Dick were the Granite Rink, the Victoria Club House and Rink on Huron street, the Academy of Music, on King street. Mr. Dick was ardently interested in yachting, and has held the position of rear commodore in the Royal Canadian Yacht Club; he was one of the owners of the racing yacht "Zelma." He was one of the original members of the Toronto Architectural Guild, which preceded the formation of the Ontario Association of Architects.

The large Portland cement works erected by the C.P.R. at Vancouver, B.C., have been put in operation under the management of Mr. S. Warsup, late Assistant Superintendent of Messrs. Francis, Sons & Co., of London, Eng. These works have a capacity of 600 barrels per week. All necessary ingredients are obtained in the Province, limestone being procured from Texada Island and clay from Wharnock.

## STAFF.

BY W. J. HYNES.

THERE is probably none of the various departments necessary to the completion of our buildings so neglected and misunderstood as plastering. Amongst the many branches of the trade that require a better understanding on the part of architects, is staff.

Staff is a compound principally of plaster of Paris in which a large amount of strong fibre has been incorporated before setting, rendering the resulting cast very strong so that it will stand much rough usage; it may be sawed, nailed and handled much the same as wood. For many years English and European decorators have used similar compositions. Fibrous plaster, plaster and canvas, and like compounds have been used extensively in interiors. They have met with favor because artistic light in weight, easily secured and lasting.

Staff was first used as a temporary decorative material in the Paris Exhibition, where its use was confined to foliations and statuary. The success attending it there led to its adoption at the World's Fair, as the cheapest and best material for mouldings, reliefs, statuary columns—in fact the entire covering of all buildings, inside and outside, was staff, except the larger plain surfaces which were lathed and plastered.

To its use may be largely attributed the architectural and artistic success of the Fair. For the first time in their experience, architects found themselves free to design with practically no limitations. That this liberty was not abused, we have their work as evidence.

As at present composed, staff should not be used for any exterior work, unless for temporary purposes. Plaster of Paris, its principal component part, will not stand the action of frost, nor weather, unless protected by paint or other insoluble washes. At the World's Fair its use on exteriors was justified by the requirements, and the fact that it stood so well the winter of 1892-'93 is greatly in its favor, but there is nothing to justify its application outside on permanent structures.

These objections do not hold against its use on interior work. All that is necessary is a proper understanding of the material and its manner of application. To this end it must be understood that staff work is always cast in moulds. These moulds are made from different materials, as required by the character of the work to be reproduced. A free architectural design will require wood moulds for plain mouldings; plaster-piece-moulds for more intricate designs; white foliations and plastic designs are best reproduced by gelatine moulds which give a faithful copy of the modeller's work to the minutest detail, with all the necessary under-cuts and treatment.

When staff is being cast from the moulds the plaster composition is poured into them in a fluid state, and before this sets the fibre is incorporated. The cast, which results, is very strong, the fibre holding the various parts together even after fracture; it requires a saw to cut it, and nails can be driven into it freely. This admits of it being fixed by nails and screws to the joist, studs, brackets and grounds prepared by the carpenter, and the result is security such as cannot be obtained by the old lath and plaster work. As a covering for wood or iron work there is much to commend this material. Settlements and shrinkage cannot dislodge it when securely nailed. If not fire proof, it certainly is not inflammable, and is also a very poor conductor of heat. These qualities have led to many forms of plaster board, grooved plaster slabs, and other compounds similar to staff for lathing. Sections from three to four feet square are also made for ceiling covering, either plain or decorated, and can be panelled with mouldings or finished plain as may be desired. A staff cornice for an ordinary room does not compel the designer to confine himself to the outline of the angle; the thickness of material is not a consideration; it allows the greatest liberty. It is needless to enlarge upon the possibilities. The World's Columbian Exhibition furnished an object lesson that ought to be remembered.

Staff, like all other materials, has its place, and good sense will dictate its use; it is a covering and decorating material stronger and more lasting than plastering. In addition to this it is most suitable for decorating wood-work, running ornaments, capitals for columns, panels for pilasters, terminals for exposed construction trusses, brackets—in fact any decorations required.

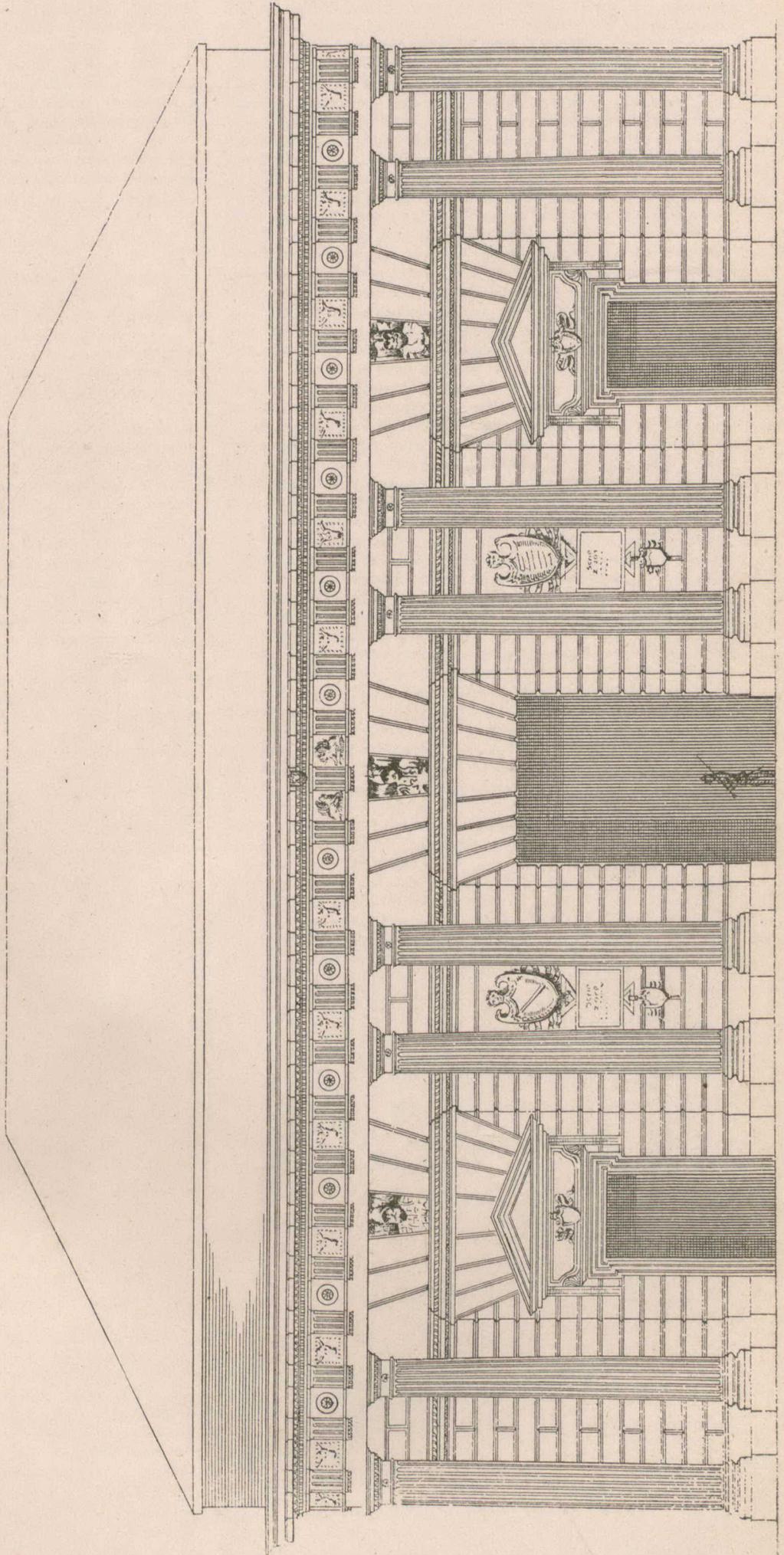
One of the strongest recommendations this material has is its low cost. While the first cost of models in plaster are equal to carving in wood, staff reproductions are cheap; if enough are required from one design, a very low price can be secured.

The facility with which staff can be reproduced in almost any size or design, the faithfulness with which the artist modeller's treatment can be duplicated, are factors that will in time work a great change in the architectural treatment of interiors. Relief work and mouldings will replace the flat surfaces which are now so common. The architect will have an opportunity of stamping his individuality upon interiors, instead of this work being left as now to the modern decorator and his wall paper. A building may have a permanent character all its own, interiorly as well as exteriorly, and not to be subject to whimsical changes of style. This will call for careful study of interior architecture and cannot fail to have a good effect.



PORTA PELL PALLIO OF THE WALLS OF  
VERONA, ITALY, BY SAN MICHELI, 1520 A.D.

ELEVATION OF APPROACH, MEASURED & DRAWN ON SPOT BY  
EUSTACE G. BIRK ARCHT.



not to cut rates, and Toronto has a Guild which, it is reported, requires a similar qualification for membership. This, however, governs only a few, and a movement which will cover the whole field is sadly needed. What is an architect to do, when one would be or erstwhile client, after another says, "Well, I should like to have you do my work, but Mr. ——— offers to do it for one and one half per cent., and unless you can meet that I will employ him?" In England capitalists realize that it is false economy to employ a cheap rate architect, and fortunately many of our capitalists do the same, but the evil is a full fledged one and will be difficult to correct.

In addition to the Royal Institute, London has an Architectural Association, and those students who are members of this have an opportunity of visiting works of importance, in company with competent lecturers, and many other advantages in preparing themselves for practice.

In conclusion, I cannot do better than to recommend every architectural student to include in his career a course of study in England of English methods; very few of them have been mentioned in this meagre paper.

#### POINTS ON ACOUSTICS.\*

By DAVID GUNN BAXTER.

ACOUSTICS, the science of sound and hearing, it is to be regretted, is but dimly understood. We are groping around in the dark, following a will-o'-the-wisp that we seem seldom able to catch, and when we do catch it, it appears more by chance than by a previous certainty of scientific fact.

Instead of using acoustical science as the primary basis in constructing the design of a public speaking place, we too often leave it to a mere secondary place, letting it take care of itself, and apologizing for bad acoustics by an artistically proportioned or decorated interior.

In this paper I shall not delve into theory, but rather glean over some of the principal points in practice. In designing a church, theatre or public hall, the first consideration should be proportion, length and breadth, with galleries, to seat our required audience, and proportionate height of ceiling to accommodate all. Saunders' experiments give as a result that an ordinary speaker, in the open air on a still day, may be heard distinctly 92 feet in front, 75 on each side and 31 behind. Wren, however, claims less—his observations giving 50 feet in front, 30 on each side and 20 behind. It will thus be seen that the circumscribed area will seat, roughly, about 1000 people. This area being enclosed, and galleries inserted, as many as 2000 persons might be accommodated; and allowing for conduction and retention of the sound waves, we might increase the area to accommodate 4000 or more.

Large buildings may roughly be divided into two classes—1st, those in which the audience hears by direct radiation only, such as theatres or music halls, when high shallow rooms are advisable; 2nd, those in which the audience hears by conducted radiation, such as cathedrals or other large churches without galleries, when long low buildings are best. In either construction it is bad policy to have the auditorium contain any more air than is absolutely necessary. The more air there be, the more vocal exertion necessary to set it in vibration, and for ventilation have good quick circulation, preferably from the speaker to the rear, or what is still better, use the "plenum" system, which is exceptionally good, on account of the heavier sound wave produced in the slightly condensed air.

In designing an auditorium to seat a given number of persons, a certain floor area is required, but how to divide this required area into main floor and galleries, to come within a proper proportioned width and length, and what shall be the contour and height of ceiling, are indeed vexed questions, calling for a great deal of personal observation and ingenuity; bounded by no iron rules, governed by few fixed laws, affected by the restrictions of site and finances, these limitations, together with the whims and caprices of the proprietors, makes the problem to the architect indeed a difficult one.

For lecture and school rooms a height of 2, depth of 3 and breadth of 4, has proven extremely satisfactory, the speaker being on the longest axis. For small churches, court or other rooms, where the speaker is on the shortest axis, a height of 1, width of 2 and depth of 3, has proven good.

On account of the nodal points established by the columns in nave and aisle churches, a length of 4 to 5, width of 2, and height of 1 to 1½, works well; this is for cubical contents, but on account of the lower ceiling in the aisles, the nave ceiling may be greatly increased in height over the above proportions. On account of limitations of site, no definite rules can be given for theatres; generally speaking a height of 3, breadth of 4 and length of 5, is satisfactory. Many successful Chicago theatres are of this proportion.

In all buildings for public speaking, except perhaps cathedral churches, floors should be constructed on the isocoustic curve plan, straight slopes being as bad for sighting as a level floor, and if anything, worse for the passage of the sound curves.

Ceilings greatly affect sound; where flat, they should never join the walls at right angles, but in sweeping curves or coves, and are best lightly paneled; skylights, if introduced, should have a sash at the ceiling line to cut off the contained air, which, starting in a sympathetic vibration of its own, would cause an echo, or if not, would form an eddy, much to the detriment of the free passage of the sound. If possible, it is well to bring down the ceiling on a regular curve or jogging slope, as low as possible above and behind the speaker. This considerably reduces the volume of air to be set in motion, eliminates all chance of echo caused by the eddying of sound vibrations at this point, and directs the waves out into the hall. In theatres, a line should be drawn from the top of the proscenium arch to the top of head room over the highest gallery at the rear wall, and the ceiling kept on

this line—of course not a straight slope; cut the ceiling up into steppings, coves and panels. This helps artistically, and also breaks up the continuous reverberation which would cause echo from the rear wall. It is also advisable to have theatre ceilings follow the curve of the proscenium arch for some little distance out, at least as far as the last box. Vaulted ceiling churches are exceptionally good for speaking in. The ceiling breaks up continuous vibration and the columns help to direct the sound forward, by forming nodal points on which the sound curves turn.

Walls have no mean part to play in the acoustical properties of rooms. They should always be broken with slightly projecting pilasters or shallow recesses. In theatres it is advisable to draw in the walls at the boxes, at an angle of say 45 degrees or even longer; this contraction at the proscenium, together with the sloping ceiling, gives the interior a speaking trumpet or funnel shape, which is extremely easy to speak in. Like the expansion of the circles produced on still water by the dropping of a pebble, so also do sound waves expand as they recede from the speaker. In addition to this, all air space is cut off where it is not required and where lines of sight die out; the less air to be set in motion the easier it must be on the speaker.

Galleries are never good when of excessive projection; the greater the projection the higher they should be. The ceiling underneath and the floor below should on section be shaped like a wedge, not generally as is the case, small end out and big end in, but with wide end out and narrow end in, thus counteracting the absorption of sound by the soft clothing of the audience, and the gradual lessening of power in the sound as it recedes from its source. Besides, this shape is a great gain in structural strength, the only objection being, of course, ventilation, which is extremely hard to perfect in this construction, especially if the gallery be low.

The proper location for the choir in non-ritualistic churches is hard to arrive at, and varies with whims of the proprietors altogether too much. In front and below the preacher is not admissible for several reasons. They should not be behind him and on nearly the same level, for a great deal of effect is lost from the discourse by the preacher being surrounded by a halo of beaming femininity; therefore I incline to believe that a choir is better when raised up above the speaker's head and placed in a groined recess. This form raises up the volume of choir sound above the heads of the congregation, and there being a recess, the tendency would be for the sound to travel in a greater volume and farther ahead.

In designing ritualistic churches, care should be taken that the chancel arch does not project more than a few inches on each side of the walls on the chancel side. If the chancel width be contracted very much at this point, the sound therefrom will be greatly muffled and appear flat and dead.

The orchestra in theatres should receive careful consideration. Around it resonant materials should be used, and the shape must be such that the sound will be directed up and out over the audience.

All buildings present obstacles and auxiliaries to the passage of sound and the direction of it properly over the audience. In designing, auxiliaries can often be introduced, but as they are of doubtful result—doubt, not only as to their proper working, but that they will not prove formidable obstructions—it is advisable to discard all experiments thereon and confine our attention to the elimination of as many obstacles as possible.

A great deal might be said about what materials are best to use on the surface of our work, and what are not. Thin pine boards in long lengths are exceedingly good; or in plaster work, I know of nothing better than 'Adamant,' on account of its extreme hardness and uniform elasticity. Any soft covering is never good, as it deadens sound by absorption. Walls and ceilings vibrate in unison with the vocal chords of the speaker, and any lining which is resonant and elastic enough to keep up a sympathetic vibration throughout the entire wall or ceiling length is only admissible for use, preference being given to such materials as are capable of sustaining or augmenting the vibrations. Again, in rooms where an echo is perceptible, while the room contains its full capacity of auditors, a judicious use of drapery or curtains will generally remove it. If these be not admissible, then some soft surface covering, over that part or surface which causes the trouble, will have the desired effect.

In rooms where the acoustical properties are poor, to improve them resonant materials for walls and ceilings are usually good in result; often only a sounding board behind and above the speaker will have the desired effect, or it may be necessary to change the shape and contour of the walls and ceiling.

#### PUBLICATIONS.

General Lord Wolseley makes a most important contribution to the literature of the China-Japan war in an article for the February Cosmopolitan.

Toronto Saturday Night has grown to be more than a society paper, as that term is generally understood. As a literary, artistic and social weekly, it occupies with credit a unique position amongst Canadian publications.

The 1895 Catalogue of the Toronto Steel Clad Bath Co. contains descriptions and illustrations of the various styles and sizes of baths manufactured by the Company, and numerous testimonials. The artistic appearance of the catalogue is worthy of mention.

There has reached our table in pamphlet form a copy of a paper on "Hudson Bay—Proposed Utilization of its Land and Water Resources," by Chas. Baillarge, architect and C. E., President of the Province of Quebec Association of Architects, read before the Literary and Historical Society of Quebec on the 7th inst. The paper sketches briefly the size, climate and resources of Hudson's Bay, and prognosticates that before the end of the century railway communication will have been established between Quebec and this northern territory by the extension of the Lake St. John and Temiscamingue roads. A colonization scheme for Hudson Bay is also outlined. The paper will well repay perusal.

\*Paper read before the Ontario Association of Architects.

A CHAPTER FROM MY NOTE BOOK.—BUILDING  
METHODS IN ROME. \*

By M. B. AYLSWORTH.

This audience being composed of architects, the object of these cursory notes shall not be to treat of architectural styles, their origin, development or peculiarities, that subject having become threadbare. Familiarity may not necessarily have bred contempt in the minds of all, or any, but too much devotion to such study may have wrought some evil, which might here be hinted at.

Ancient architects designed the grandest and most beautiful of buildings, fitted in all parts for their intended purpose, using the best materials to be obtained and suited to the climate and other local conditions, without thinking of, or publishing the name or style of order. Classification has been the work of later students, many of whom have noted the peculiar or pleasing forms, while missing altogether the spirit of the designer.

Through superficial study of such classification the laity have become familiar with the names thus applied, and this little knowledge has endangered and retarded the development of true architecture from the Renaissance until now. The modern architect, expecting to be asked to name the style of his design, and not having the boldness to say he disregarded ancient styles, must adopt one of them, and probably disfigure the building by the incongruous or needless use of certain features, or their imitation in perishable material.

Without this supposed necessity, out of our modern requirements, resources and limitations might be evolved suitable, durable and pleasing buildings of a style that in succeeding ages might also be dignified by an appropriate name. As it is, how may this age expect to be known or described, when in turn it shall be referred to as ancient? Will there be any remains of it whatever 2,000 years hence?

Building methods, though always affecting the development of true style, have not always been so fully described as the finished form, and some of these methods, observed during a visit to the "Eternal City," will now be referred to.

During the early ages, known as the time of the kings, the building materials seem to have been wood and the volcanic rock of the neighborhood, called Tufa. Of the former nothing has survived, though Egyptian wood much older is plentiful. Of stone structures without mortar, there are portions of the walls of Romulus, the Mamertime prison, cloaca maxima, and other remains.

In later periods, probably through expeditions from the east, the properties of clay and cements became known. There are now, and have been for ages, extensive brick yards in the suburbs of the city, mostly the property of His Holiness the Pope. There is also in the vicinity a reddish clay called Pozzolani, which, mixed with common lime mortar, makes it hydraulic and very strong. The great strength of this mortar, after use in brickwork, further led to the use of concrete, out of which grew the peculiar Roman methods of walling and vaulting still in use. This was their own, and only invention, but was one of very great importance.

The Romans became a conquering nation, and amongst the spoils of war great numbers of beautiful columns and sculptures in the rich marbles, porphyry, alabaster, &c., were brought to Rome, with architects, sculptors and artisans as slaves to set them up. Through the use of these, applied to their rude buildings, arose the Roman style of applying architectural forms having no relation whatever to the construction of the building. From the interior use of these columns came the basilica, and finally the cathedral. The earliest dome covers the lower dungeon of the Mamertime prison. This is not a true arched vault, but is formed by the rapidly oversailing stone courses of the sides, until they meet to form the floor above. In this dungeon St. Peter caused water to spring out of the solid rock, so he might baptize his jailor. The spring is still flowing, whether St. Peter was ever in Rome or not. The cloaca maxima is probably of later construction, and is a circular tunnel of true arched stonework. All later vaulting is either of brick ribs on edge and keyed, or brick simply bedded flat in cement, or they are formed entirely of concrete, in which gravel, broken stone or brick and even lumps of clay are used. Over church naves and similar structures, the form is semi-circular, but over ordinary rooms is elliptical, often very flat and thin, wasting no height. The haunches are always levelled up at the same time, and when all has set with the walls, it is like a solid stone. That grandest of domes the Pantheon, is merely the largest example of what was, and still is, in one form or other, the common ceiling of all ordinary rooms. It is a solid mass of concrete, tapering from a great thickness at the springing, to a comparatively thin shell at the top, and contrary to the general rule as domes are built, is flatter outside than inside. The walls of the building therefore, 20 ft. thick and also of concrete, have to sustain no outward thrust, though the span is 143 feet. These walls appear as if of well laid brickwork, an unusual sight in Rome, but this is merely for the most part a facing of brick, laid or built up along with and to retain the concrete until set. To form the better bond with the concrete, the inner brick are wedge shaped. This brick face was again covered with stucco and marble veneer, and finished with marble pilasters, cornices, balustrade and statuary, now all removed, though the massive stone portico remains, with its granite columns 40 feet high. The outside of the dome was covered with gilded tile, carried away some 1200 years ago and sometime since replaced by lead. The inside with its deeply coffered soffit, was enriched with heavy bronze plating, removed and recast, first into cannon and afterwards into the canopy, 90 feet high, over the high altar in St. Peter's. This great building has but one entrance and no windows yet is flooded with light from the circular opening in the centre of the top, 30 feet in diameter, though appearing from below not one third of that. Storm and sunshine falling through for 19 centuries, have wrought no more damage than would a single year in our climate and buildings.

Rome has no doubt passed through many building booms, and is still disfigured by many evidences of the last one, some years ago. Dozens, if not hundreds of large buildings, 4 to 7 stories high were erected, many of them still unfinished, though not perishing as they would here. These contain a great many rooms, usually surrounding a square central

court, and in the case of chapels, have arcaded galleries from which the several lower stories are entered. The court is not roofed over, but is nicely paved and opposite the main entrance has always a fountain, cascade or grotto, with more or less sculpture and foliage about it, and the water flowing perpetually. The ground floor rooms opening to the street, which may be very wide or as narrow as 4 feet are rented for stores, workshops, tenements, stables, &c., the upper portions as hotels, flats, &c., and even in palaces, the second story is generally rented as tenements; the palace proper, with its higher ceilings and magnificent rooms, beginning with the third story.

In Italy no building operations have ever been carried on except by the state, the church or the nobility—the great unwashed being retainers or tenants, paying rent or not. The present nation is composed of a great many former principalities, duchies, &c., each with its royal family, and when united, some 25 years ago, from one of these was selected an hereditary king. In all these cases the title descends to all members of the family at their birth. Hence the frequent mention of princes and palaces. The only other buildings are monasteries, tombs and theatres—churches and chapels being nearly always an adjunct to the palace or monastery.

These buildings, which might be residence, museum, store or factory, are fireproof, and should be inexpensive, being constructed entirely of the commonest brickwork, with all ceilings flat vaulted in brick or concrete, the haunches levelled up to form floors of cement, tile, marble or mosaic. The mosaic floors in many museums and palaces of to day have been removed from the more ancient homes of the Caesars, and with their rich and everlasting colors blending like brushwork, no more beautiful or durable flooring can be imagined.

Balconies, theatre galleries, &c., are formed by very flat and thin arches of rudest brickwork, or of concrete, springing from light iron beams, projecting or supported. Pilasters, pedestals, brackets, cornices, &c., are also roughly formed in brickwork, the whole afterwards to be completed in stucco, adding also to their strength. After the raw brickwork has stood for a year or more to settle and season, may be for centuries, the frames are set in openings and the finishing commenced. These frames may be of pine or of marble, and may have marble or stucco architrave finish, oftener plastered jambs without casing, and never is any wood used for casings or base, floors, partitions or stairs. The effect of lines of moldings for casings, base and room cornices, in common buildings will be produced later by shading in distemper, as part of the decoration.

Though the roughest of pine is used for doors, sash and blinds, their joiner work is excellent. Inside and outside shutters are used, and casement sash in all cases. All are heavy, fit perfectly, and the hardware is of the best and most durable description. Doors of very great age may be seen, of cedar and walnut still in the raw state, with panels, 2 feet wide and without sign of shrinkage. They are not exposed to furnace heat, they are in a dry climate and uniform temperature. Large doors or gates entering the court are made in pairs, very heavy, and are thickly studded with large pyramidal headed wrought iron nails. Such doors always stand open during the day. Just at this door or passage is the office of the porter, a person always in demand, and indispensable to the stranger. In all royal palaces he is a most imposing and gorgeous flunkey, selected for his great stature, good looks and stock of ready information. He is robed in scarlet with gold lace and cocked hat, yet accepts a tip of half a lire or ten cents more thankfully than a dollar would be taken here.

Church doors are nearly always open, but are provided with a heavy padded leather hanging, to shut out street sounds and avoid the constant banging. A lower corner of this will be lifted aside by one of the beggars always at hand, who will very gratefully accept the smallest copper coin. Visitors walk about freely inspecting every part of the interior, while mass may be going on at any number of the altars, or they may be conducted by an entertaining sacristan, priest or monk to the more sacred or interesting places and objects; tip from 10 cents to a dollar.

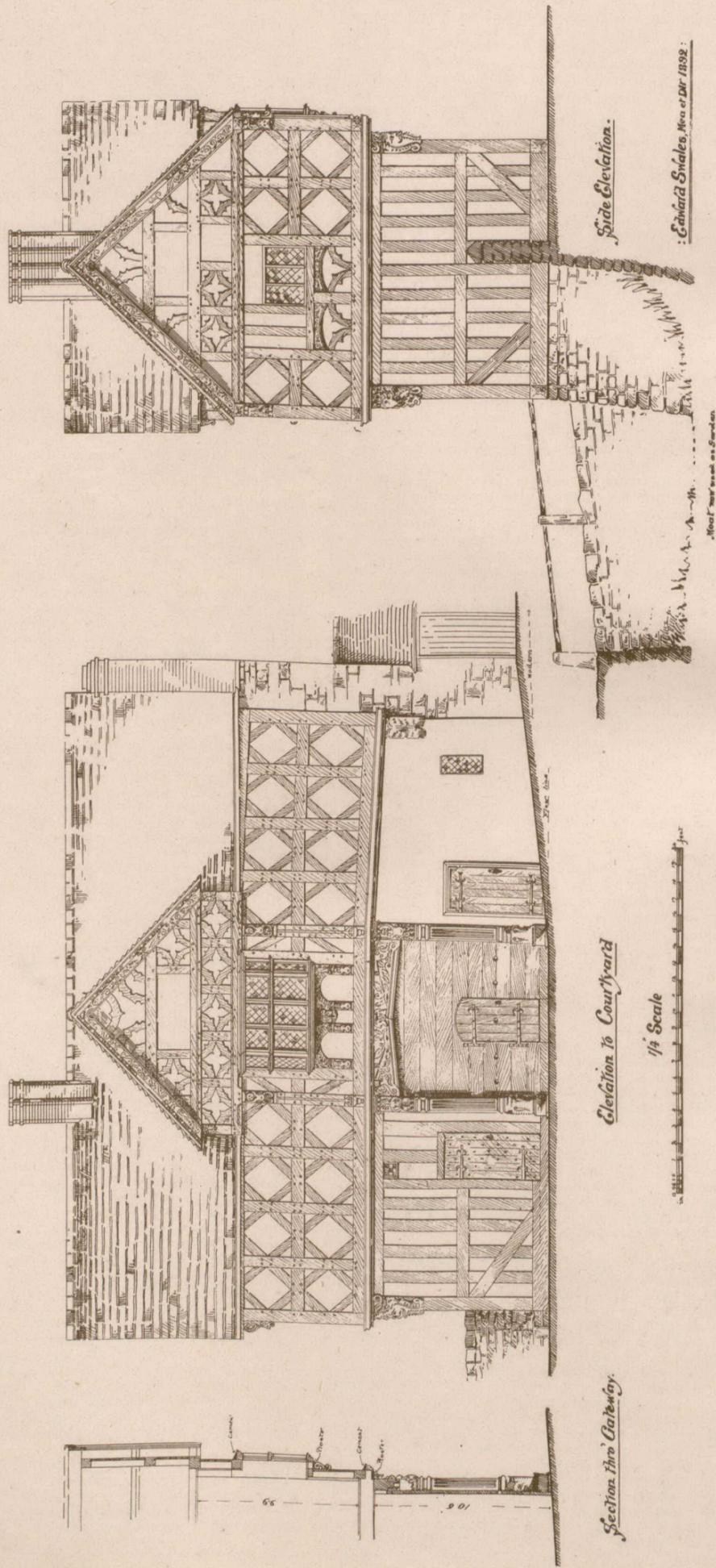
The exterior of buildings, generally will receive a finish of stucco, grey or colored, or of marble or a combination of both, forming pilasters, brackets, balconies, cornices, &c., to represent cut stone. In Rome the object is not to deceive, but if it were it would be most thoroughly accomplished. In that climate everything is durable. The traveller going from Paris to Rome would suppose the latter to be built of stone, while going from Rome to Paris he would suspect the use of stucco, and would be mistaken in both instances. The new "Banco Romano," however, directly in front of my hotel, was being built of stone as if in Paris. The building was quite sound, even if the institution was rotten! Indeed this street, "Via Nazionale," has been engineered on Napoleon's idea. It is a new street in an air line from the modern railway station just inside the walls, direct to the ancient heart of the city, cutting down hills, levelling up valleys, hiding ancient ruins and slicing off palaces, gardens, &c., doing much more damage, in the opinion of the antiquary, than can be made up for by the magnificence of this modern innovation.

Roofs are in many cases left flat, and finished in cement, the same as floors, often supporting a considerable depth of soil, with orange and other trees, gardens, pavilions, statuary, &c. Lead is used on domes and similar structures, but the almost universal roof covering, from the palace or basilica down to the farm outbuilding on 4 poles, is the common pan tile, laid to about a quarter pitch. Such roofs have wood and iron framing, and this is about the only timber used in buildings. In such cities fires are of very rare occurrence. Only in a basilica could great damage be done, while in ordinary buildings the roof might burn off without in the least disturbing the inmates below.

Coffer ceilings are to be found only in basilicas or other very large halls extending up to the roof, as when a court may be roofed over. In such cases very heavy masses of enriched wood or stucco moldings are used, colored and gilded, and the panels filled with fresco paintings. To see and study these comfortably mirrors are used. All interiors are more or less enriched with modelled stucco, gilding, glazed porcelain, mosaic, precious marbles and real or imitation fresco. America affords no opportunity of enjoying the glorious effects of fresco. Our buildings have many windows but scanty light. Roman buildings, such as churches, art galleries, &c., have no windows as prominent features,

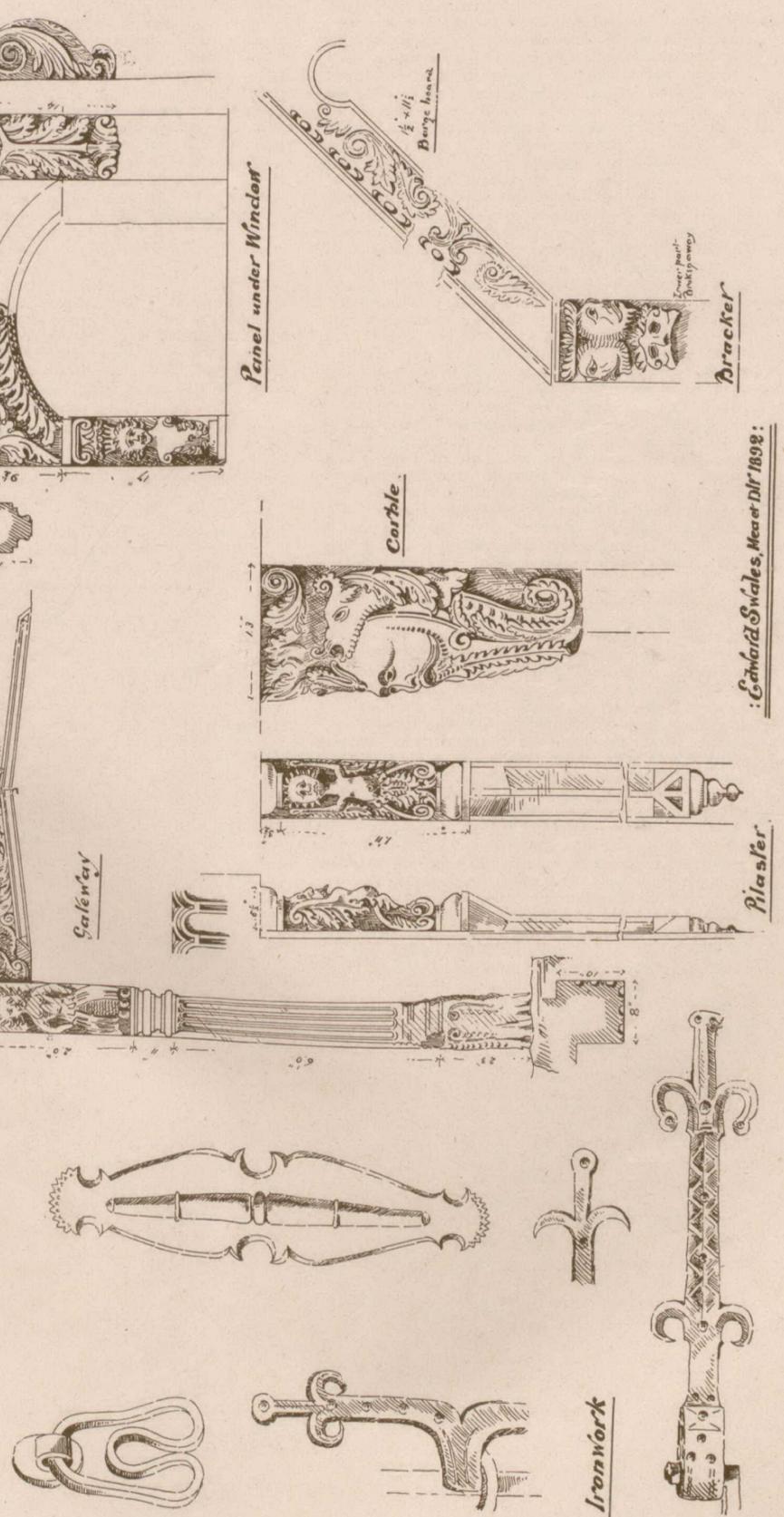
\*Paper read at the fifth annual convention of the Ontario Association of Architects.

Gatehouse, Stokesay Castle, Salop.



Gatehouse, Stokesay Castle, Salop.

: Details :



yet are flooded with light, and this is partly due to the reflecting properties of fresco. Where dust and smoke, flies and cobwebs are such disfiguring agents as with us, it is difficult to understand how those wonderful inspirations of the grand old masters can have been preserved so many centuries beautiful and perfect, while the great quantities of such work is incredible.

In our business and similar buildings large spaces are covered and built over by the use of iron columns and beams, whereas, the Roman builders use large square brick piers and elliptic arches, from which spring the vaulting. The brickwork is always covered. A very few recent examples of excellent pressed brickwork may be seen, but its foreign extraction and aspect are painfully apparent. Stores usually consist of one or more cavern like rooms, with arched opening toward the street, the plate glass of doors, etc., held by the slenderest lines of wood or metal, more like show case construction. Rome has, however, one large departmental store block, with light all around, of modern design, but of Roman construction. Stairs, when not marble or other stone, are built of brick and finished in stucco to look like marble or alabaster, with balustrade in same finish or of iron.

Rome having a church for each day in the year, and a few to spare, and all of the same faith, not much church building is now in progress, though perhaps not one of these can be said to be completed. Work may be going on continuously, as for instance the mosaic in St. Peter's, or may be resumed at intervals of possibly a few centuries. They are mostly built in the manner described, of raw brick work, with barrel vaulted nave and transepts, with central dome, cross vaulted aisles and the whole buttressed by dome covered chapels. The interior, and especially the chapels, may have received the most extravagant finish and decoration, in numerous instances costing millions of dollars, while the exterior remains raw brickwork, apparently a ruin, though many have at some period had stucco or stone fronts added as a veneer, by Michael Angelo or others of the old masters.

St. Peter's dome consists of an inner and outer shell of brick and concrete, the ascent being between them by steps of brick formed on the inner shell, even the lantern being similar. The ball on top and supporting the cross, is of copper over an iron frame, and into it may ascend comfortably 12 men at the same time. The ascent to the main roof is by a brick paved spiral incline, so easy and roomy that in a similar ascent in the tower of St. Marks, Venice, Bonaparte and two of his officers rode their horses to the top. It has been stated in print that on the roof of St. Peter's is a village of several hundred workmen, with their families and even domestic animals, gardens, &c. This is not true, though there might be plenty of room. In the vatican palace adjoining there is ample room for the 600 Swiss guards still maintained by the Pontiff, besides other hundreds of his subjects still remaining faithful. In St. Peter's the great number of large altar pictures, once frescoes, have been carefully removed and pieced together again in frames, to enrich other churches and museums, while their places have been as gradually filled in with the same pictures reproduced in everlasting mosaic, of which the greatest production is carried on within the vatican. The great dome and its lantern are now also entirely lined with mosaic. The tombs of many of the popes in St. Peter's are magnificent groups of sculpture, but Pius IX at his death directed that his body be laid in a lower chapel of St. Lorenzo, outside the walls of Rome and leading down into the catacombs. He desired no monument, but to be interred in the simplest manner, just facing the tomb of St. Stephen. His wishes were carried out, but are now being disobeyed in this manner. The whole interior of the large apartment is being lined with mosaic, in which is interwoven the coats of arms of all the Bishops in the world, a most elaborate work and costing over a million dollars. In speaking of the richness of these churches it is to be remembered that the interiors are referred to, and particularly their chapels and altars, where are to be found many of the masterpieces and richest gems, gathered into Rome during all ages and from all quarters of the globe.

The largest churches are generally basilica in form, with a great variety of columns, &c., from ancient temples. The most beautiful is St. Paul's, outside the walls. Its flooring and rows of immense columns are of highly polished marbles. The ceiling of the nave is in coffered, decorated and gilded panelling, while the triforium bears large medallions of the whole long list of Popes down to date. Here are also the most beautiful cloisters of the Roman church. Though stained glass is not usually a prominent feature there, this church sustained the loss of half a million dollars worth of it, caused by the explosion of a powder mill in the vicinity a few years ago. In St. Peter's are placed twelve beautiful columns from Solomon's temple, and from their form are modelled what are called easter candlesticks. The past and present, pagan and Christian, are so visibly blended everywhere there, that nothing need be doubted. Why spoil the charm? The citizens of Trastevere, a certain quarter of Rome, claim to be the pure and undefiled descendants of one of the prehistoric tribes. On certain opposite street corners are situated exact pairs of churches. Several churches are closed except on the festival of the patron saint. In the city are no less than 80 churches dedicated to Santa Marie.

There are now at least a dozen Protestant church communities, only one having a building deserving notice, the English church, a design by Mr. Street. These are but little known to the Romans, and probably few would know whether the term referred to Christian or pagan! though there is a Protestant cemetery also.

One ancient tomb, known to be 1900 years old, is a perfectly preserved pyramid of white marble, externally, at least, 116 feet high. The greatest of the Egyptian obelisks are set up in the various squares, the largest 104 feet high, or with its pedestal 153 feet, and first erected 34 centuries ago.

There is usually little or no provision for warming buildings, except that supplied by fire places, and as foreigners demand fires, stoves of the most useless character are set up in their rooms, and frequently may be seen small smoke pipes carried through the outer walls in rows at each story. The better houses of course have stationary cooking ranges and more or less plumbing. Instead of the American self-feeder may be seen specimens of what are known as Dutch stoves, very high and built of decorated, glazed porcelain. A fire started in one to-day might begin to warm through before next week. For warming the hands and for cooking purposes, the portable brasier is common. Hundreds of

tenements have never had a fire in them for any purpose. A brasier of coals on a tripod, in the street serves to do the cooking for a neighborhood.

The fuel is generally charcoal, or mulberry twigs, cut off with the silk cocoons, dried, and sold in bundles like sheaves of grain. An amusing sight on a country road, is a load of these bundles, looking like a load of hay, moving along with no visible team or waggon, but on close inspection may be seen the slender legs of a donkey on whose back the load is bound.

Hot baths are not so frequently required in so clean a climate, and are an expensive luxury, demanded only by the foreigner. Hot tea or coffee is hardly known amongst people where wine is the common poor man's family beverage. It might be here remarked that the license system so requisite among better regulated people, like ourselves, is unknown in those benighted countries. Wine and oil, staple articles, and forming the stock of certain shops, are sold as freely as tea and butter with us. There is no saloon or hotel bar, no treating, and though everybody drinks there is absolutely no drunkenness.

Plumbing appliances are scarce and crude, water even not being supplied into all residences—in fact it is little used except by foreigners. On the other hand, there is most extravagant abundance for fountains and cascades, perpetually flowing, and mainly through the ancient aqueducts. There being no expensive pumping plant to maintain, there are no water rates. With no frontage tax, a prince may have a street front all around his house. There being no money in supplying water to citizens, and no further power being in demand for fleeing visitors, the aqueduct promoters retired in disgust and gave up the ghost some time ago. Happy citizens.

Neatly built and well kept public conveniences, attended by females, are to be found in all public squares, parks, &c. But one very frequent convenience for men only, and to which the fastidious foreigner does not soon become acclimated, is the immodest urinal. It is a V shaped vertical niche of polished marble, perhaps 6" deep, in the walls of buildings of any kind, on the street line, not so common on the principal streets, but generally just within the entrance to all minor streets. To the ordinary Roman it makes no difference how crowded may be the sidewalk, he exercises his privilege with a clear conscience. It is a most sanitary contrivance, being always exposed, and perpetually flushed by aqueduct water. In Naples a more offensive practice is commonly indulged in by numbers of men along the curb, any time after sunset—all filth of course being removed before sunrise and the pavement flushed.

Whatever may have been the case formerly, no city could have cleaner or better paved streets, lanes, squares, &c., than the Rome of to-day—the commonest pavement being a mosaic of small, square, fine grained stones, tooth shaped, and driven down level in coarse sand. They wear to a smooth slightly convex surface and are easily removed or reset. Everywhere this is kept perfectly clean, and stands well the traffic which is seldom heavier than carriages or omnibuses. The sewerage system is as complete as in any modern city, the "cloaca maxima" of antiquity still serving as one of the trunk sewers, and all entering into the clay colored Tiber. At London the Thames embankment of granite is a great work, but equally so, and some higher, is that of white marble lining both banks of the Tiber, with its white marble classic balustrade and frequent steps down to boat landings. The railway merely enters the city and backs out again to the switch, burrowing diagonally under the walls into a fine large station facing a beautiful public square. No nuisance is permitted from smoke, whistles, dangerous tracks, unsightly sheds, &c. The railway there does not "own the earth," but is owned and well managed by the state. Facing the station on the other side of the square, are the extensive ruins of the Baths of Diocletian, out of which have been partitioned a monastery, hospital, college, museum, a large portion of the public square and two churches, one of which was the work of Michael Angelo, who utilized the ancient granite columns as they stood, 40 feet in height.

It seems strange in this age that any city should depend on defensive walls, yet such would seem to be the case with nearly all Mediterranean cities. It is hard to realize that these peaceable, kind and courteous Italians, who became a free and united nation only 25 years ago, have scarcely ever known peace during the past 25 centuries.

In all the Mediterranean countries nearly every elevation of rock, hill or mountain has its pinnacle of ruined castle, fortress or monastery. In certain cases these have continued to be inhabited within their enclosing walls, which seem to have been built to keep the houses from falling over the cliff, but probably to make it interesting for a surprise party of the neighbors. As population increased, and spread out over the plain below, new and more extended walls were built, and thus grew up walled cities, nearly all retaining the monastery within the citadel on the highest point. In one place, Orvieto for instance, as approached by rail from either direction on the plain, nothing of the city can be seen but the ancient grey stone walls, crowning the escarpment of the rock, several hundred feet above. Leaving the train and station, instead of taking a cab or bus, the traveller enters the car of an inclined railway, or "funiculaire," and is shot up through the rock tunnel under the walls and landed in a public square, then taking a cab to his hotel. Here "no architect need apply," for though "all alive," there has been no new building done for 500 years. The object of a visit here is their wonderful old cathedral, an example of early Italian gothic, the west front of which is said to be the grandest polychrome in existence, and in the blaze of the setting sun is certainly a most gorgeous spectacle.

The oldest walls of Rome, built of Tufa, without mortar, enclosed a square on the Palatine Hill. Its founder, Romulus, was nurtured by a she wolf, in a cave, still shown in this same hill. A bronze image of the wolf, partly corroded away, was found at a later date in this cave, and is preserved in the Capitoline museum, in corroboration of the legend. In later times each of the seven hills was enclosed by its separate wall, and finally all became incorporated as a happy family, within one enclosure. Portions of the ancient walls still remain. The present walls, built of stone, concrete and brick, and dating back some fifteen centuries, are about 50 feet high, 12 miles in extent, and entered through 12 gates, a few others having been walled up. The population, said at certain periods to have been two and a half millions, is now

about 350,000, or double that of Toronto. Considerable of the area is at present without buildings showing above the surface, while on the campagna, outside the walls, and without the aid of the local improvement humbug, speculative builders have ventured largely and lost all.

It is difficult to explain how the ground level has varied so much at different periods, and how so much of art and architecture has been unearthed in recent times, but there the facts are apparent, and explanations must be made to fit. The pavement of the forum and "sacra via" are some 40 feet below the level of the streets surrounding the excavations. In many cases comparatively ancient buildings stand over others that form a sort of basement, and even others as sub-basement. In the grounds of the modern residence of a prominent photographer, one can descend through three stories of an ancient palace, and this portion of the city, until recently, had been for centuries a public common. Vast stores of ancient art have, at various times, been dug up, and no doubt many times more still remain buried, to recover which would necessitate the destruction of the present city. The work of excavation is for the present at an end, and so is this paper.

### THE ÆSTHETIC UNITY OF THE FINE ARTS—MORE ESPECIALLY IN RELATION TO ARCHITECTURE.\*

BY HAMILTON MACCARTHY, R.C.A.

It is only necessary to preface my remarks by saying that I address you as an artist to artists, in the broadest and most catholic sense of the term: fellow-worshippers at the shrine of the beautiful in nature, who feel their dearest ambition is to capture a ray of her glory, and crystallize it into some form of art, which may reflect its refining influence for the good and happiness of mankind, and be an incentive to virtue and noble deeds!

In speaking of architecture, it is not merely in its constructive sense of building, but the conception and creation of such edifices as claim to possess elements of grace and beauty, dignity and attractiveness, which should elevate the soul of the beholder and be a joy forever.

God created man in his own image—body, soul and spirit—and the first mental activities the primitive creature put forth were to build his rude habitation, carve ornaments on the door sills, color them with rude pigments, and chant his dirge or war song. This imitative activity was the Genesis of the arts of design: painting, architecture and sculpture, together with poetry and music—making the five sister muses of form, proportion, color, melody and rhythm—the media by and through which the good and beautiful commune with the soul of man and satisfy his intellectual cravings. And are not these faculties intimately connected and associated with each other in their highest aesthetic fulfillment by some hidden mystery, not yet revealed—the principle underlying each being one and the same?

An apt figure of the five sister arts, their intimate relationship and interdependence, suggests itself to the mind in the structure and vocal organs of the human body:

1st. The skeleton—that wonderful mechanical arrangement upon which all other parts depend, combining, as it does, economy, lightness, strength and ingenuity, suggesting the building or architecture:—

2ndly. The outer covering, i.e., the muscles, giving the contour of form beauty and motion, expressed in sculpture:—

3rdly. The color and texture of the features and the skin, represented in painting:—

4thly and 5thly. Speech and vocal sound; the organs of poetry and music.

Here, then, is the perfect model, set up by the Divine Architect, the synthesis of the fine arts, comprehending or embracing color, texture, form, harmony, melody, rhythm and proportion—a living expression of the beautiful in mind and matter.

In the language of the immortal bard: "What a piece of work is man!—how noble in reason! how infinite in faculties! in form and moving how express and admirable! in action how like an angel! In apprehension, how like a god!—the paragon of animals."

Before leaving the masterpiece of creation, as the type or ideal model of beauty, examine for a moment his component parts: The osseous structure called the skeleton, marvel of economy and strength for the burden imposed upon it; the cranium, with its dome and arching brow, exquisite precision of sutures that join the skull; the vertebrae, ribs, pelvis, condyles of the limb bones, with their perfect ball-socket joints. Here is fitness and utility, though not necessarily beauty; yet models for the builder and mechanic in this age of steel.

It is when we consider the myology or muscles that life and beauty are apparent, and both architect and sculptor have been inspired with the perfection of form for their models. The design of the Greek and Roman mouldings is evidently inspired from the profile of the face, mouth and chin; the gently expanding and tapering columns from the limbs; the groining of the ear, chiselling of nose and nostrils, have also influenced design in architectural forms. In woman, though less powerful than man in structure, the still more graceful curves of form present a veritable incarnation of unspeakable loveliness. Thus we see form in its highest type, which receives its consummation in its texture or outer covering, the skin, the human epidermis, as seen on the cheek of a beautiful woman, combining and blending, as the painter learns, every delicate and luscious tint with the bloom and down of touch—a setting indeed for that incomparable jewel of all, the eye—the soul's window. In color and texture added to form, we reach the absolute—the highest aesthetic ideal of beauty. This trinity in unity, of color, texture, form (form including proportion), constitutes the essential and inseparable elements which the master builder has incorporated, and shows the relation and dependence of each upon the other, to express a perfect *ensemble*, each of the links being a *sine qua non* to the success of the whole; and without which neither the sculptor, painter, architect nor poet, can create his airy palaces or portray his themes of lore.

Bulwer well appreciated this unity in the elements of the beautiful in Claude Melnotte's description of the home to which he would take his bride could love fulfil its prayers.—"A palace lifting to eternal summers; its marble walls from out a glossy bower of coolest foliage; musical with birds, whose songs should syllable thy name, \* \* \* while the perfumed lights stole through the mists of alabaster lamps, and every air is heavy with the sighs of orange groves, and music from sweet lutes, and murmurs from low fountains that gush forth in the midst of roses!"

What is the principle in design that predominates in the human form and runs all through nature? It is a succession of curved lines of varying length, entirely free from harshness, producing to the senses a feeling of blending, melody, buoyancy and harmony.

Beauty's wave in human form,  
In rose or lily, bird—  
In womanhood transcends all things,  
'Twas always so, I've heard!  
'Twas so in ancient days, when Art  
Sat graceful on her throne,  
And gave her sons that curious line,  
True artists love to own.

—Extract.

\*Paper read at the fifth annual convention of the Ontario Association of Architects.

The religion of the ancients required a habitation in which to worship their deities and store their *lares* and *penates*, and from the four walls of mud and wood, or brick or stone, grew the temple. Ornament, columns and capitals, were added; then the gable broke the monotony of the horizontal. Color followed. The beauty of texture was absent, till marble or an imitation filled the want. Still life was not there—human life. At length the sculptor's chisel and painter's brush filled the pediment with the deed of heroism, and enriched the walls with polychrome. Finally the temple became a work of symmetry, power and beauty; every member was studied with regard to optical value and refinement—carving, gildings and tinting drank in the glorious hues of the prism, which shone refulgent upon its harmonious proportions.

The life of action and deed of valour were implanted there in the metopes and friezes. The magnificent *Quadriga* and *Acroterion* statues adorned the angles. *Caryatidae* took the place of columns; finally the temple became clothed with the matchless genius of *Phidias* and *Apelles*—fit habitation indeed for the crowning glory within, the shrine of the god *Zeus* or *Athene* in *Chryselephantine*. Gold, ivory and precious stones; what would *Homer* have said had he seen these wonderful achievements in Art.

It was centuries before, he sang of the god:

"He said and nodded with his shadowy brows;  
Waved on the immortal head the ambrosial locks,  
And all Olympus trembled at his nod."

Remember, it was not the intrinsic value of the material that made the masterpiece. Its value lay in its incomparable embodiment of benign beauty and sublime expression. The genius of *Phidias*, appreciating the importance of aesthetic unity, at once saw that even marble failed, beautiful as it was, to fulfil the highest ideal of texture as representing the flesh, and so chose ivory—which of all material bears the closest resemblance to the human epidermis. White marble is beautiful when fresh from the chisel, but without great care soils and loses its appearance, till old age or time has turned it into the color of ivory, like the *Venus de Milo* in her hallowed shrine in the *Louvre*, or the memorials of old-gold hue such as are seen in *Westminster Abbey*, or the *Elgin* marbles from the *Parthenon* and now in the *British museum*—the latter cut 438 B.C.

The true artist or dilettanti, who has drank the nectar from those gods of form and beauty, *Phidias*, *Myron*, *Scopas*, *Polycleitus*, *Praxiteles*, and others of the age of *Pericles*, can only contemplate their works with wonder and fascination at the supreme mastery gained by these sculptors of the human form over their art, yet mingled with regret that so few examples have escaped the hands of the iconoclast and the ravages of war.

We who have worshipped at the feet of *Hermes*, *Aphodite*, the *Discobolus*, the *Gladiator* or the *Illiisus*, or the other masterpieces that adorn the *Parthenon*, feel that this is not the occasion to enter upon the various merits of the works of those great artists. They have been of incalculable value to art and history. They tell the story of their age. We acknowledge them to be the absolute and immutable standards of physical beauty; the ideals for the artists and dilettanti of the world.

The pediment of sculpture expresses at once grandeur, power and life, and it is to be regretted that architects of the Victorian era have not been more inspired with the use and possibilities of statuary—the most profound and longest enduring form of Art—especially in connection with public buildings and monuments, in which the nation's history should be indelibly written.

And how have we of the 18th and 19th centuries treated the classic orders? These forms of architecture have been largely used for public buildings, both in Great Britain and America, but what relation have they borne to their ancient prototypes? Where are the sculptured pediment, frieze and metopes of beauty and action, once instinct with life and imagery?—the tinted walls and colored story? They have departed; the sheen of the rainbow has gone from the classic mouldings; texture of marble, mosaics, encaustic and polychrome, all omitted; *Phidias* and *Apelles* are banished; the temple has fallen. The diadem has been torn from her brow, the jewel from her breast—the robe of beauty replaced by sackcloth and ashes. The skeleton alone, in dingy gray or blackened stone, is all that remains to us moderns to help us to imagine we are beholding a noble Greek or Roman columnar edifice, and to enthuse about. Surely an anachronism in art!

With the extravagance and luxury of Imperial Rome, the purity and beauty of Greek sculpture were lost, and with Rome's final destruction all art was extinguished, except that of the monks.

From the Byzantine and the *Basilica* evolved the Gothic, an entirely new departure. No doubt the minaret was the progenitor or archetype of the spire and tower; but the principle underlying this remarkable revolution from an aesthetic point of view was the overthrow of the rectangular in art. The temple, shorn of its sculpture and color, is heavy, uninteresting and depressing, and its minor ornaments, though chaste, are monotonous and severe.

Both in plan and elevation, the disposition of the masses of material in the Gothic, being modelled more after nature's ideal of form, is a blending of harmonious lines pleasing to the eye. There's nothing in nature suggestive of the rectangular. The luxuriant plant-life ornament of the early English; the clustered columns; trefoil tracery; graceful arches and groined chapels; those lofty spires seemed to break through the burden of earthly cares, and carry up with them like incense the prayers of the Christian in worship of the true God to the very feet of heaven. "Lift up your heads, oh ye gates! and the glory shall come in." This was the spiritual significance of the Gothic; and it became clothed with at least earthly glory.

Color and texture were added to form. Marbles of every tint, mural paintings, mosaics, the sculptured niche and statues—everything that wealth and art could bestow to render the habitation of God a dream of heavenly beauty. "Gloria in Excelsis Deo."

In the revival of art and learning in Italy, sculpture and painting again took their place as a power in the world. Aesthetic unity and harmony of design were insured and rendered more potent by the fact that in so many instances, painting, sculpture and architecture were combined in the work of the same artist.

The Florentines were quick to appreciate and express their joy on the dawn of renewed artistic life. When *Cimabue* first taught the world to paint anew, Florence proclaimed a public holiday in honor of his masterpiece, for *S. Maria Novella*. *Nicola Persano*, *Giotto*, *Brunelleschi*, *Donatello*, *Della Robbia*, *Ghiberti* and other architects, painters and sculptors—the progenitors of the Renaissance—brought their genius and devotion to bring about the fuller perfection which culminated in *Raphael*, *Correggio*, *Da Vinci* and *Michael Angelo*—the four pillars or archangels of that great epoch of art—and terminated in *Celini*, *Tintoretto*, *Titian* and *Paul Veronese*, masterful exemplars of the mundane magnificence of Venice.

The Italian revival affected the purity of Hellenic form, but it accomplished something greater:—it portrayed not merely the perfection of sensuous beauty in the form, or sublime grandeur of the gods—the teachings of Christ were expressed in human sympathy and love, devotion and adoration, at the gift of God in his son, and the struggles and throes through which man is passing to attain eternal life. What a joyous note of hope,

of harmony, of sentiment, of love and adoration was theirs—Persano, Giotto, Donatello, Della Robbia, Ghiberti!

Religious faith was the stimulus which inspired their genius and devotion. How much is art indebted to these sculptors of the early Renaissance!

In the conception of a noble edifice, the architect has crossed the border line of a mere building—i.e., a huge cube with holes to admit light and entrance—and entered the domain of the painter and sculptor. Form, in its first stage, viz., the handling and arranging into harmony of the gross masses or masonry, so as to bring about the greatest effect of beauty and proportion; realizing a noble outline or form in the gross. The carver must now join him in decorative enrichments to make the work interesting and repay closer inspection—form in detail or abstract; still only ornament. The sculptor then takes him to a higher plane, with emblematic or symbolic figures, in *basso* or *alto* *relievo*, or round attached form in transition, in which the walls gently breathe the story or mind of the building, its history or purpose. No form of art is more profound, than these children of the mist emerging from fancy into reality—form in the first stage of statuary.

Every building of importance should be treated in this way, and would therefore be an object lesson and work of interest forever, not only to those who see it many times—perhaps every day of their lives—but also to the stranger; the most emphatic record of civic or national achievements, events or progress.

The Reformation gave the death knell to sculpture and ornamentation for a time in Protestant countries, till a church became bereft of all beauty. The Gothic was treated similarly to the Classic—shorn of its art—the shell only remaining, and all art suffered in consequence.

How sad it is to look upon our cathedrals in brick—not in form, but, alas, in texture and color. It is only during the last quarter of this century that we are beginning to awake from this iconoclastic superstition and believe that we can worship God "in spirit and in truth," and at the same time beautify his house with tinted walls and stained glass, and other decorations.

Freedom and toleration are the spirit of the age, and the impulse in art is to discover something new and best adapted to our surroundings. In architecture we are in a state of transition, if not of chaos, and in danger of degenerating into confusion and ugliness. It is this critical stage that affords the opportunity for our architects to create a style that, while retaining all that is beautiful in the heritage of the past, will meet the requirements of the climate, and be distinctly national in character, ornament and expression.

Form is the first element of the beautiful in aesthetics, and influences everything we see and hear in nature and art, from the throat of a nightingale or a Patti, the melody of a Stradivarius, to the acoustics of a building, and should be the object of study from the lowest step to the highest pinnacle of a structure. In a wider sense it also affects the laying out of streets, parks, squares and gardens; the selection of a site, the raised plateau or eminence, grandeur upon which important edifices may be erected; the fountain, steps and terraced walk, with sculptured vases and ideal statuary, such as we see at the Crystal Palace, Versailles, the Tuilleries Gardens or in Edinburgh. All are form, perceptible to sight and touch, and instinct with life and power to give us joy and elevate our souls, improve our manners and relieve our daily burthens.

The modern Romanesque does not impress you with a sense of grandeur or beauty. Its basket-work ornament, unlike the longer and more graceful Gothic plant life, is indefinite and confusing, and with the horrible heads of animals called "grotesque," is barbarous. It no doubt originated in the early stages of inability to imitate life better. It is unfit for a woman to look upon, and should be banished from the front, or any part of a building where the lesson of beauty should be presented. There is a place for the conventional—but as little of it as possible. The lamp of truth in art has been extinguished so many times by wars and puritanism, that form still goes on crutches in the respect of carving and sculpture.

Foliage, fruit, flowers and other imitations of organic objects, should keep as close to nature as possible, to be of interest, due regard being paid to the nature of the material employed. Organic nature should be more largely drawn from for objects of ornament, and executed in the fulness of its natural beauty. The divine sculptor has furnished us with many noble and beautiful examples for imitation, to wit—the lion, the tiger, the horse, the ox, the ram, the hound, the deer and gazelle; the eagle, the swan, the dove and other birds; the dolphin, the nutilus, and other denizens of the deep. Many of these are symbolic; all are grand or beautiful, and as ornament in appropriate positions, would be of far greater interest than conventional scrolls, and serve to remind us of the wonders of nature.

The higher stages of sculpture proper, viz., figure subjects in relief and the statue, or group in the round form, may be termed the "lamp of life," and provision should be made for each of these forms in every building which claims to be a work of architecture. The relief has been described as the shibboleth or watchword of art, and has a philosophy peculiarly its own. It is specially adapted for emblematic figures, filling spaces in the architecture, and for special subjects in the history of the institution to which the building is dedicated, on the exterior or in positions where painting is undesirable.

The entrance and inner halls, vestibule and staircase, are suitable for natural or emblematic statuary, brackets for busts, and niches for statues of the genus loci, founder or benefactor, care being taken by the architect that light is provided at a suitable angle for both night and day.

The highest stage of sculpture has no necessary connection with a building, unless from local circumstances. It is reached in either the group or solitary figure, expressing an abstract motif, an emotion or passion, or any of the higher attributes of our being, or the elements of nature which may bear personification, or in national monuments where philanthropy, statesmanship or patriotism are commemorated.

The next important member of the aesthetic trinity is color, and when we consider the share this element occupies in the book of nature—how generously the Almighty has decked his creatures—whether our wondering upturned eyes gaze into the infinite azure of the brave overhanging firmament, fretted with golden fire; the jasper of the vasty deep; the carnation of the rose; the pallor or orange of the lily—each with its spiritual significance and relation to form and sound—we recognize at once the length and depth and breadth of his boundless generosity in this particular gift, and we marvel how it can be possible that in the 19th century, man should, even in his most joyous and festive moments, clothe himself in black from head to foot—a color that is always alluded to in terms of horror and associated with our worst enemy, and one that is the least seen in nature's kaleidescopes.

Color is nature's life and light and joy-giver, and when its presence is withheld from us, our spirits are in like measure depressed. To speak of her riches requires the rhapsody of the poet; to comprehend her glory, the eye and wings of the eagle, to carry us to the floor of heaven. The painter is privileged to penetrate her hidden mysteries and capture the fleeting subtleties of her ever-changing moods.

In architecture, the scheme of color decoration should receive the most careful consideration, and be in relation and conjunction with the carving and ornament in form. In all important buildings spaces should be provided in the halls, staircase and ceilings, arches and domes, for special frescoes by artists of ability, affording opportunity for tableaux of prominent inci-

dents or scenes in the life of the country, in alliance with the objects of the building. By this means the skill of our eminent painters could be utilized for the education, happiness and intellectual enjoyment of the people. Stained glass, mosaic, furnishing and lighting, should all be included in the one scheme of design, and require the same mind and care in their use—the cardinal virtue of all decoration being strictly observed, viz., the securing of cluster and space, and repose, so essential in art.

In order to effect a complete aesthetic harmony, texture—its substance, or rather, material—has to be considered, which, of course, is involved so largely in color that the one can hardly be discussed without the other, bearing, as it does, the same relation to form as form does to sound. The ancients saw the importance of producing color and texture, and where costly marbles could not be procured, the artificial substitute approaching as nearly as possible to the semi-transparent beauty of marble was provided. Stone is the next best material, especially for carving, but cannot be relied upon to stand climatic influences, besides not fulfilling the highest aesthetic requirements. Brick, as it has been used, is an abomination, but we are glad to see improvements taking place in its manufacture. Greater size and neutrality of color, combined with a soft or egg-shell glaze, may render it much more acceptable. Under this head I may mention a material which, now existing, but not in general use, having all the beauty of texture and colors of marble, is not affected by climate.

In the brief remarks the present opportunity has afforded me, I have endeavored to show the important place *Form* occupies in the elements of the beautiful, especially in its pre-eminent phases of architecture and sculpture, and the influence it must have upon the dignity and attractiveness of a city of learning, art and culture, and as the medium of expression of a nation illustrious in noble deeds and beneficence; yet I feel the fringe only of the subject has been approached.

Before concluding this paper, I venture to call attention to two or three matters seriously affecting the beauty of our city, and which constitute an outrage to good taste and common sense:

1st. The dangerous and unsightly trolley, telephone and electric light poles, wires, &c., which should never have been erected in a city like Toronto.

2nd. The want of public squares, tastefully laid out. The objectionable mode of taxing lawns at the side of residences.

3rd. The disposition to build up our principal corners to an angle instead of to an octagon or circus.

4th. We are now erecting municipal buildings of a costly character, and if the system of building without regard to beauty is allowed to continue, the view as you ascend Bay street will be narrowed, and the Court House dwarfed by some enterprising merchants. Such a course would be worse than a blunder, and should not be allowed to take place at any price.

Many other points in connection with the aesthetic welfare of our city demand immediate attention. What is required to prevent future mistakes, and perhaps rectify past errors, is the appointment of some central authority, such as a City Architect or Minister of Public Works, to prevent the erection of unsightly buildings, and preserve important open places as gardens. Such a person or board of control should be appointed for their known taste and abilities, and they should be backed up by an association of dilettanti, both professional and lay, who would carefully guard the aesthetic interests of the city, and render it the pride of her inhabitants, the admiration of its visitors and the envy of other cities.

Brethren in Art—As the genii and guardians of the beautiful, in all that concerns the artistic progress of your country, and the cities in which you dwell, you are called upon to devote your talents, your love and your watchfulness to her service; to bind yourselves together in the Brotherhood of Art, for her defence; for the vanquishment of the Philistine and the Utilitarian; for the prevention of errors and incongruities, outrages to taste and beauty, frequently occurring, and which now threaten irreparable injury to the few remaining places of interest in this city; that you apply your genius to the development of a distinctly Canadian Architecture, suitable to the conditions of the country, and upon which shall be implanted in sculpture and painting, the romance and lore of her history, the valour of her sons, the beauty of her daughters and the industry and resources of her people, together with the picturesque grandeur of your scenery and skies—notes of harmony and patriotism, which shall shed lustre upon your country, inspire the poet, the musician and the historian, and earn for yourselves a niche in the eternal temple of fame.

#### DISCUSSION.

The President said he felt we all must have greatly enjoyed Mr. MacCarthy's admirable paper. He thought the range of subject matter in the papers read at the present convention showed the great scope of the architectural profession.

Mr. Aylsworth said no doubt the members were being educated as architects and artists, but something further was needed. He would ask, are the people at large being educated as fast as they might be to a higher degree of artistic taste? Until there prevailed a sentiment of patriotism among the people it was useless to look for the production of grand public buildings, nor without a national religious feeling could be expected noble temples such as were to be found in other lands. In his reading he had come across an extract which he would like to read. It would have been a source of great satisfaction could he have told the Convention that it emanated from the City Council of Toronto, but truth compelled him to say that it came from the archives of the city of Florence, and it was some 600 years old. It would explain to a certain extent how the durable and magnificent buildings which delighted the eye of the traveller in older lands than our own, came into existence. It was the decision of what in our days would be called the Council, after the destruction of one of the Florentine churches:

"Whereas, it is of the highest interest to a people of illustrious origin, so to proceed in their affairs that men may perceive from their external works that their designs were at once wise and magnanimous; it is therefore ordered that Arnolfo, Architect of our Commune, prepare a model or design for the rebuilding of Santa Reparata, with such supreme and lavish magnificence that neither the industry nor the capacity of man shall be able to devise anything more grand or more beautiful; inasmuch as the most judicious in this city have pronounced the opinion in public and private conferences that no work of the commune should be undertaken unless the design be to make it correspondent with a heart which is of the greatest nature, because composed of the spirit of many citizens united together in one single will."

## CORRESPONDENCE.

Letters are invited for this department on subjects relating to the building interests. To secure insertion, all communications must be accompanied by the name and address of the author, not necessarily for publication. The publisher will not assume responsibility for the opinions of correspondents.]

## EFFECT OF AMERICAN DRAINAGE WORKS ON CANADIAN INTERESTS.

QUEBEC, March 3rd, 1895.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—When I wrote you in January last, as to my surprise that our Dominion Parliament had allowed a franchise to be given by Congress without its consent, to rob our Canadian head waters of some  $3\frac{1}{2}$  per cent. to supplement the requirements of the Chicago drainage works on their way towards the Gulf of Mexico, I did not think that our winking at such a thing would embolden another company to so soon petition the United States Senate for an act of incorporation, with a \$100,000,000 capital, to again tap the lakes in one or more than one point for commercial purposes, running towards the Hudson and New York en route for the Atlantic.

Such, however, is the case. The bill is before the U. S. Senate, and will of course go through like the Chicago bill, if no stand be taken against its becoming law.

I showed how the present capacity of the Chicago outflow towards the Mississippi is, or will be, when the drainage works are completed in 1896, not less than 1-30 or  $3\frac{1}{3}$  per cent. of the feed waters of the St. Lawrence, and how this percentage may in a few years be increased to 10, if Chicago continues to grow as it has done during the past few years.

Now each of the proposed canals of the "American Maritime Canal Co." may take, not only 10 per cent. or twenty, of our waters, but even thirty, and three such tapplings would suffice to withdraw the whole of the water at present flowing over Niagara from Erie to Ontario—reducing the St. Lawrence below Niagara to the drainage of the valley of the Ontario and the water brought down by the Ottawa, the St. Maurice and other tributaries.

It may be, sir, that, as interested in Quebec, I am cutting my own throat in calling attention to this matter, as the less the flow the less the depth in Lake St. Peter, the better the excuse for ocean vessels not going to Montreal, and remaining here where we have the advantage of tide waters to cover the deficiency twice in every twenty-four hours; but, sir, I take a broader view of this matter, and look to the interests of Canada in general, of the Dominion at large, and I can conceive nothing more cool than for our neighbors beyond the line of 49, thus to attempt to rob us of our God-given patrimony, with our engineers, our legislature, looking on in utter indifference to an act of spoliation which certainly has no parallel among civilized nations.

C. BAILLARGÉ,

Member C. Ass. C. E., City Engineer, Quebec.

## DEPARTMENTAL STORE BUILDINGS.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—The attempts which are being made to stem the tide of modern progress in the direction of large departmental stores will be in vain, but in one way these stores as built or altered become a menace to the safety of the surrounding community, which should not be tolerated, and which it is in the power of the community to control.

Owing to the extensive floor areas demanded for attractive display or for easy supervision, and the heaps of inflammable goods and fixtures, they are peculiarly liable to a sort of galloping consumption which seems to be epidemic in Toronto this winter.

The destruction of the new Simpson building and the attendant losses to surrounding owners, besides the expense to the city generally, is not only to be lamented, but becomes an outrage that ought to be resented, because unnecessary and preventable.

In all municipal building regulations the danger of large undivided floor areas is recognized and prohibited. Our own building by-laws require brick party walls at certain distances, limiting the floor areas, but these commercial barons do not readily submit to such wholesome restriction. They build or alter their airy castles to suit their own ideas of trade,

their helpless neighbors, including the municipal burghers, meekly submitting just as to the warlike barons of old.

Now in no other class of buildings should these regulations be more strictly enforced. Let there be frequent party walls running from basement to roof, though having ample openings for display and circulation, readily closed by sliding or rolling fireproof doors. This need be no hardship, and trade would easily accommodate itself to such a requirement. Besides this, no building above the reach of water by the ordinary appliances should be permitted, unless fire-proof or fire-resisting throughout. The slight additional cost would be little enough penalty for erecting such tasteless structures, so unsymmetrical, in our streets, and so damaging to their more modest competitors.

The Simpson building was the best representative of its class in the city, a style of temple expressly designed to meet the demands of the modern mammon worshipper—the greatest display in the slenderest building. The architect deserves credit for the triumph obtained for his employer—a strong building with the minimum of space occupied by supports, and faultless in exterior detail.

But such a building is neither fire-proof nor fire-resisting; it assists the spread of the flames, it is dangerous to firemen, to inmates and to surrounding property. The new building was not only an unbroken space, but the walls of the older portions were removed to extend the view. What happened here is most likely to happen at different points in the city. Such a fire may prove a great advertisement to the large store, but no such good luck to the neighboring small fry, who are more likely to be injured by its competition and ruined by its destruction.

In all probability the phoenix will rise, a greater menace than before. If there were no remedy there might be some virtue in a calm resignation; or even if there were only the expensive method of fire-proofing, the choice of the cheaper method might be excusable. But there are a number of building methods, inexpensive, yet far superior to that now becoming so popular. The party wall of the Buntin Reid building, in stopping our second great fire, gave proof of its utility and economy. Floors and roofs might quite easily be made fire-proof at a moderate cost in more than one manner.

For the present a hint only is thrown out, but in a later issue may be given some description, showing that we need not suffer so extensively from fire if we choose to resist it.

Yours, &c.,

M. B. AYLESWORTH.

## TORONTO MASTER PLUMBERS' ASSOCIATION.

FOLLOWING are the officers elect of the above Association for the ensuing year: President, Thos. Cook; first vice-president, W. J. Burroughes; second vice-president, Geo. Guest; secretary, J. K. Alison; treasurer, A. Fiddes; sergeant-at-arms, Walter J. Garratt. A Sanitary Committee was appointed; likewise a Committee to endeavor to secure a reduction of the license fee from \$10 to \$1 per annum.

## Ontario Association of Architects

It is intended, as agreed at the recent Convention of the Association, to give a diploma to students who have already passed and to those who will hereafter pass the final examination of the Association. In order that a design may be obtained suitable for the purpose and worthy of the Association, members and students are asked to offer drawings. They should be prepared for photographic reproduction. The design to occupy a space 8 inches vertical by 14 inches horizontal, with a three inch margin all round in addition. The verbal matter is to be as follows:—

## THE ONTARIO ASSOCIATION OF ARCHITECTS.

This is to certify that . . . . . has passed the qualifying examinations required by the Ontario Architects' Act and is entitled to be enrolled as a member of the Ontario Association of Architects, and thereafter to practice as an architect in the Province of Ontario.

Dated at Toronto this . . . . . day of . . . . . 18 . . . . .

. . . . . President.  
. . . . . Registrar.

There must be space at the bottom for the seal of the Association, which is  $2\frac{1}{2}$  inches in diameter, to be set on the left of the signatures of the President and Registrar.

Drawings are requested to be sent to W. A. Langton, Registrar, Canada Life Building, Toronto, not later than May 1st next.

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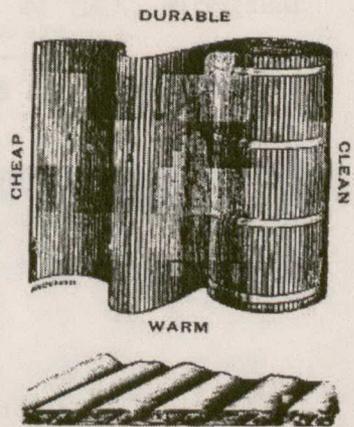
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