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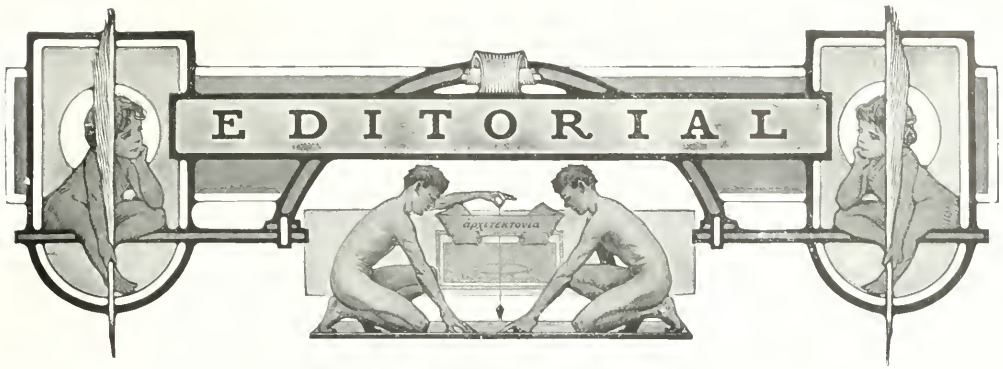


¶ Fees for architects—Is the principle underlying the remuneration of architects wrong, or should he be paid for knowledge and experience?

FOR SOME TIME the architects have been discussing the present method of charging for their services. It is a condition unsatisfactory to the profession at large and in a few instances has become a personal matter with the individual himself. Quite a number of prominent architects have, through their artistic temperament and practical ability, reached a position enabling them to demand whatever fee they deem advisable. Others equally as capable must content themselves with a certain fixed amount similar to that demanded by the incompetent designer. Consequently the question arises: shall the architect, similar to members of other professions, be paid for his training and true worth or held to a slavish pittance hardly worth his best and conscientious efforts when times are good and insufficient to meet the actual cost of maintaining his office when reverses set in? If it is decided to let experience and ability set the standard the question arises, how can this be accomplished? At present we discountenance the architect who accepts work at a reduced figure. Assemblies and conventions have passed by-laws regulating a minimum fee and condemning the practice for a less profit. Yet in spite of this a large amount of building is being done by men who have compromised themselves and their profession by cutting the standard charge. In a recent address before the Vancouver architects, J. L. Putnam expressed the idea that a safe rule for minimum charge would be to add two or three per cent. above the actual cost, said sum to become the architect's bonus. As to the size of the fees, he believes that it depends upon ethical points underlying the practice of architecture: we should have a proper appreciation of our profession and command the respect of our clients; there should be a strict and unselfish co-operation among the various members; a disciplinary measure should be administered to the member who violates the obligations established. It is to be hoped that the chaotic condition will soon disappear and each architect will feel that his remuneration warrants his very best efforts.

¶ Enormous loss by fires in Canada—Comparison with European countries—Causes for such a contrast with remedies to counteract same.

OFFICIAL REPORTS present interesting and surprising data in regard to fires. The average annual cost per capita is $3.07 in the Dominion of Canada, and $3 in the United States; a startling fact when we realize that it is only 33 cents per capita in European countries. This waste may be appreciated all the more if we consider that our loss on this continent is $500 per minute. Franklin H. Wentworth, secretary of the National Fire Protection Association, speaking on this subject at the Canadian Manufacturers' meeting in Toronto, pictured our people as a race of spenders, wasteful in everything and extremely careless to the destructive effects of fire. Among the various causes for large conflagrations may be cited the inflammable material scattered throughout factories and other buildings; the flimsy construction of walls and open stairways; wooden structures, etc. The members of the N.F.P.A. are to be highly commended for their consistent efforts in eliminating this needless and bitter loss. They endeavor to make the business man see the wisdom of segregating all loose material in special rooms; they encourage the building of fireproof walls and doors; they emphasize the need of enclosing the stair halls and elevator shafts. At present they have one hundred and sixty newspapers using their monthly bulletins. They are entering a strenuous campaign against the dangerous manner of celebrations and encouraging the use of asbestos in Christmas decorations. Thirty of the United States have a Fire Protection Day to teach the grown-up people as well as the children the ordinary caution necessary for their own safety. It is very evident that if we are to prevent the people of Canada from paying for the enormous losses by fire we must all become active. The citizen must feel that his careless use of the match which lights everywhere is responsible for part of the high cost of living. The builder and contractor must finish each structure with every thought of future conflagrations. The architect must impress his client with the absolute need of fireproof buildings, equipped with the sprinkler system and all safety devices known to the profession.

The housing problem—Evils attached thereto, together with a means of eradicating same for the betterment of everybody concerned.

"A FEW MONTHS AGO a gentleman was showing me over the beautiful residential district of an attractively small city. After an hour or two of this I said, 'Now let me see how the other half lives.' 'The other half?'he replied; 'why, there isn't any to speak of. I don't believe we have got a tenement house in this whole town.' I have no doubt he was right, but for all that in ten minutes we were in a quarter of the city which in some respects was as wretched and miserable as the heart of the tenement house district in New York or Boston. We stood in front of a row of five small, low, two-story wooden buildings, neatly painted a bright yellow and altogether not a bad looking collection of dwellings, but going behind them, there was a different scene. These five houses held about forty people. The only water supply for them all was a single hydrant in the yard, the only convenience for the disposal of waste was beside the hydrant and naturally the yard was swimming with slops and dish-water; the only toilets were two or three open privies also in the yard, and in fact the ordinary requirements for decent living were all in the yard, and, as nearly always happens in such cases, the conditions were indescribably filthy."

Such is the condition of small cities cited by Elmer S. Forbes, chairman of the Housing Committee of Massachusetts Civic League. This is a phase of the housing problem pertaining to our Provinces as well as the States, and as such merits careful consideration. Too often is the housing reform movement connected with the tenement districts. It is time for us to realize the need of a strenuous reform in the unhealthy and sordid surroundings of our small homes and emulate the wholesome and artistic treatment encouraged throughout the various sections of England.

The essentials of better living are within the reach of all. There is no need of the miserable housing conditions which exist throughout the Dominion; there is plenty of room, fresh air and incentives to make our dwellings devoid of dirt and disease. The landlord must see to it that the back of his speculative building is sanitary in every respect and capable of being made a haven of attractiveness to the tenants and not a breeder of sickness and crime.

Too often the dirt without is productive of similar conditions within. Is it any wonder that the places are overcrowded and unsanitary conditions exist when we see all about us the picture so forcibly stated by Mr. Forbes? If a large number of degenerates, ignorants or careless people continue to menace the health of our communities it behooves those in authority to take emphatic measures, and by doing so insure protection to others who are endeavoring to make their homes and surroundings beautiful and sanitary.

The existing evils can be easily remedied. Laws must be passed enabling the people in power to investigate and act accordingly. If necessary the amount of space for each person should be allotted; a minimum size of windows given to stated areas; sufficient fater supply to meet existing needs; and proper sewerage disposal. The fault does not rest upon the lack of inspectors and organizations interested in reform as much as it does upon their efficiency. The officials are amply able to handle the work if they are made to understand that the laws must be enforced. And it has been evidenced more than once that the people must act forcibly if they wish to eliminate unwholesome conditions.

Another danger pointed out is the wooden three or four family flats. This type of building is becoming well established in the States and is fast encroaching upon our own cities. The main objections to this offspring of real estate companies and unprincipled architects and builders, are the flimsy constructional features, the fire hazards and the loss in value of neighboring lots.

The following examples, culled from daily newspapers, are similar to many within the experience of everyone: "A citizen built a beautiful house within an area of 50,000 square feet of land—and presently found himself confronted by a garage." "A gentleman expended $17,000 on his place, and by and by a fellow citizen built a row of seven one-story shacks on the opposite side of the street. A third citizen whose property cost him $50,000, awakened one morning to find a Chinese laundry in the basement adjoining his own, and the selling price of his estate was reduced by an unscrupulous neighbor to $15,-000. A comfortable house was built on a generous lot and adorned with trees and shrubs. Shortly after a speculator planted a flimsy fire-trap of a three-decker within a few feet of the former's lot line, cutting off the sunlight and robbing the owner of half the savings of a lifetime."

The same unsanitary conditions exist in the city as are found in the small towns. Only the number of them in the cities augment the need of reform. It is necessary to change dark hallways and rooms for fresh air and sunlight; to furnish proper sanitation for wet and squalid yards; to eradicate the dirt and overcrowded quarters with cleanliness and freedom. The speculator must learn to consider the value of his tenants both as to their health and their need of ample protection from fire.

We heartily agree with the statement that the one way to correct this evil is to wipe out the distinction between tenement and private houses, bringing them all under one general housing law. This has been tried and found successful in every instance. It is time for our inspectors to weigh carefully the responsible position in which they are placed and see to it that the people as a whole are free from the carelessness of others. If they show their inability to cope with the situation then the citizens must bring about a condition whereby the laws will be administered to the total extinction of such existing evils.

PRINCE EDWARD HOTEL, BRANDON, MANITOBA.

PRATT & ROSS, ARCHITECTS.

ROTUNDA, PRINCE EDWARD HOTEL, BRANDON, MANITOBA.

PRATT & ROSS, ARCHITECTS.

Prince Edward Hotel, Brandon, Man.

PRATT & ROSS, Architects.

A MOST interesting problem had to be worked out in the planning of the Prince Edward Hotel. The general scheme included a terminal railway station approximately two hundred feet long in connection with the main structure. A solution was finally reached whereby the guests can enter the main rotunda through a rear entrance leading direct from the concourse.

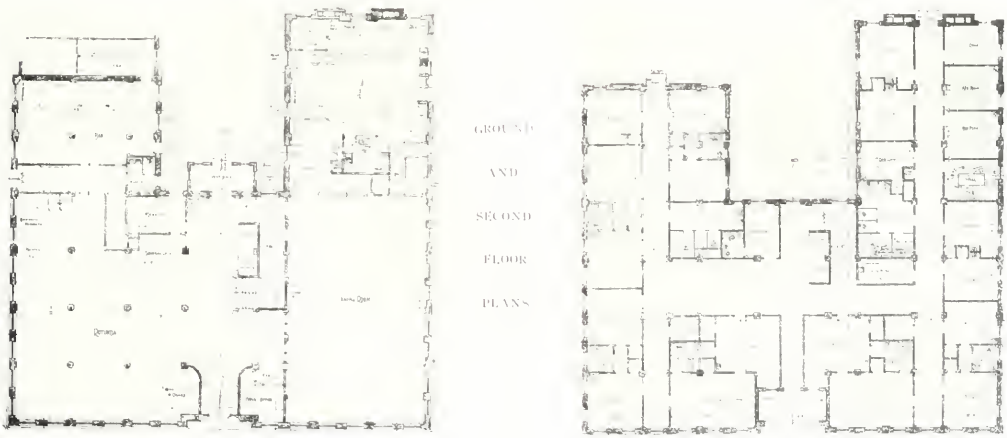
This building is typical of the high class work that is being done throughout the Western Provinces. It is built of reinforced concrete construction throughout, with exterior walls of Tyndall stone and Roman brick. There is a frontage of one hundred and twenty feet by one hundred, while the height is eighty-two feet, consisting of six stories and a basement.

Erected by the Canadian Northern Railway for the accommodation of travellers, especially salesmen, it is equipped with modern improvements and decorated in an especially attractive style. In the basement are located the billiard room, barber shop, public baths, lavatories, storeroom, laundry and machinery room. Provision is also made for a future grill room and cafe. On the ground floor adjoining the station is the barroom, finished in oak, with red tile floors. The rotunda is situated in the northeast corner of the hotel and fronts on the two streets. It is 76 by 62 feet and provides for the main office, manager's office, check room, news stand, telephone and telegraph offices. The rotunda is furnished with solid quarter-cut oak davenports, easy chairs, smoking chairs and smoker's tables, with a section set apart for writing tables. The draperies and lambrequins are of heavy Sundour fabric with applique trimming following the design of frieze decorations.

To the west of the rotunda is the main dining room, 39 by 63 feet, which is panelled in mahogany with hand painted wall decorations. This room is free from columns so as to give an unobstructed floor for assemblies. It is one of the best interiors in the West. The chairs are upholstered in a specially designed tapestry fabric; the electric ceiling fixtures are comprised of satin finish brass work and crystal drops; the draperies are made of heavy Sundour fabric with sun-proof lining; while the window is covered with French "filet" lace panels mounted on heavy quality serim. To the rear of the dining room is the kitchen, 35 x 39 feet, pantries, bake shop, etc. The private dining room is probably the most unique room in the house, being decorated and furnished in the Jacobean period. The woodwork is of early English oak and the hand painted panels depicting mounted knights of the Jacobean times. The fireplace, with carved woodwork, lends a cheerful aspect. The main stairway of marble treads is covered with Khorassam rugs to the floor above.

The drawing room on the first floor, 32 by 48 feet, is decorated and furnished in Adam's period. The furniture is of solid mahogany, comprising davenports, fireside chairs, reception chairs, mahogany pedestal lamps, consul tables, fireplace, electric fixtures. The over-curtains and lambrequins are of French pan mohair, lined with non-fading silk; the walls of this room are papered in silk of the same design as the draperies; the under-curtains are of point Venisse lace; while the rugs are of Royal Wilton. Adjoining the drawing room is the writing room, fitted with tables and desks, warm oriental rugs and window draperies of lace panel "filet." This room opens on to the front balcony.

One-half of the bedrooms, one hundred in number, are arranged en suite, supplied with private baths. The finish is in mahogany and fumed oak with floors of heavy Wilton carpet



BAR AND DRAWING ROOMS.

PRINCE EDWARD HOTEL, BRANDON, MANITOBA.

PRATT & ROSS, ARCHITECTS.

DINING ROOMS.

PRINCE EDWARD HOTEL, BRANDON, MANITOBA.

PRATT & ROSS, ARCHITECTS.

ROYAL SUITE

LADIES' WRITING ROOM.

ROYAL SUITE

PRIVATE BED ROOM.

PRINCE EDWARD HOTEL, BRANDON, MANITOBA.

PRATT & ROSS, ARCHITECTS.

Competitive Design for the City Hall, Moose Jaw, Sask.

C. H. BOYLES.

THE successful competitors for the City Hall at Moose Jaw have been announced. First prize, John D. Atchinson & Co., Winnipeg; second prize, Maw & Drewitt, Toronto; third prize, Sharp & Brown, Toronto; fourth prize, Charles S. Cobb, Toronto. The conditions of the programme are well presented and have obtained very satisfactory results. An unusual problem confronted the designer, who had to plan the building over the bed of an old stream which had been drained at some former period.

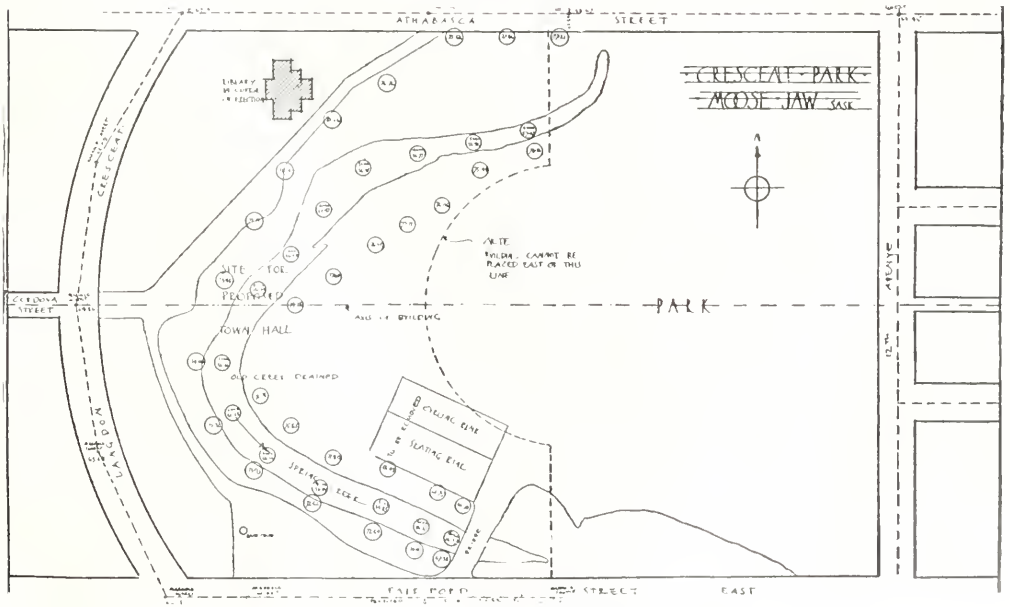
The accompanying illustrations show the manner in which each contestant analyzed the programme. The individual characteristics of each architectural firm has been given considerable freedom, although advised in the terms of the competition to present an exterior of a bold, practical and dignified treatment with a tower or dome to offset the level appearance of the surrounding country. Moose Jaw has a population of approximately 25,000, while the scheme called for accommodation to house a force necessary for 50,000 people. The competition was rightfully restricted to Canadian architects.

The work of the assessors, who are held responsible for the conditions of the programme, has been highly commendable. The board consisted of Harry H. Bamford, Moose Jaw; F. S. Baker Toronto, and P. E. Nobbs, Montreal.

The following conditions govern the erection of the building: The architect is to make such changes in his competition plan as shall be necessary to meet the views of the Building Committee, appointed by the promoters. The Building Committee may appoint a professional engineer to instal the power, mechanical equipment, heating, ventilating, illuminating, plumbing and other appliances.

The sum available for the building and the engineering (exclusive of furniture and architect's commissions) is $225,000. The building, including engineering, should cost about forty cents per cube foot.

BLOCK PLAN



GENERAL PLAN OF SITE FOR CITY HALL, MOOSE JAW, SASK.

WINNING DESIGN, CITY HALL, MOOSE JAW, SASK.

JOHN D. ATCHISON & CO., ARCHITECTS.

WINNING DESIGN,

CITY HALL,

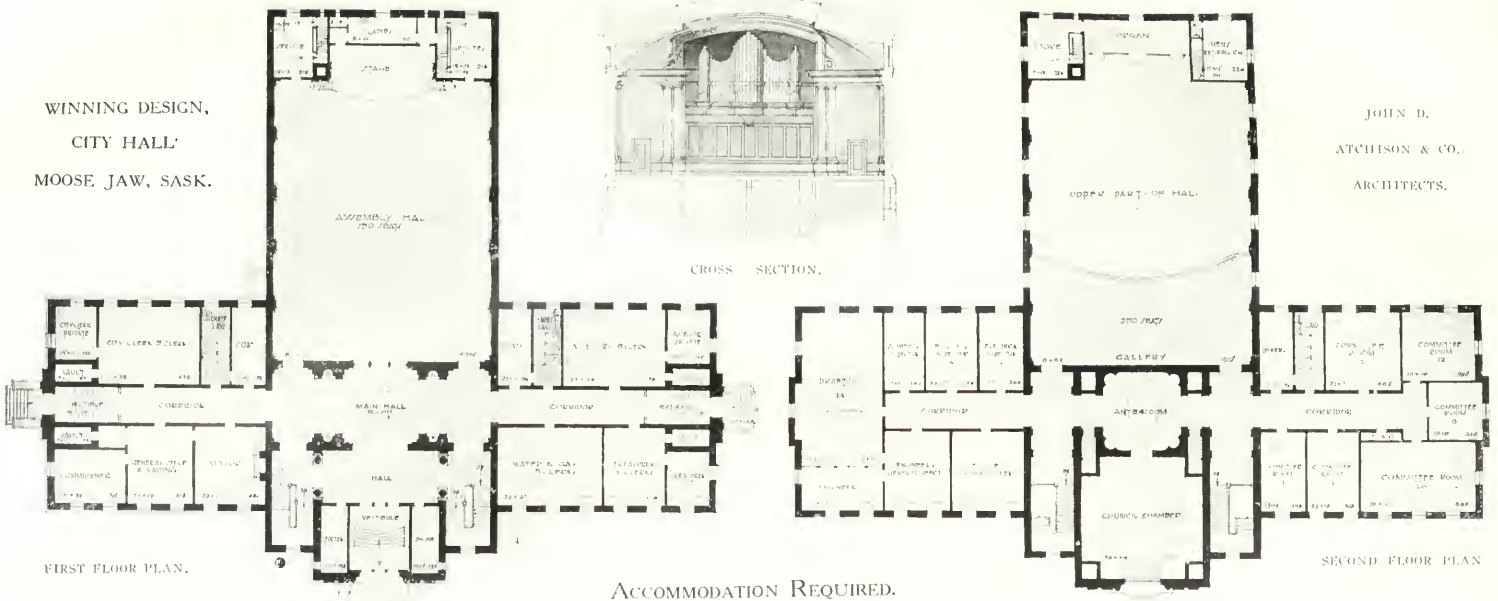
MOOSE JAW, SASK.

JOHN D.

ATCHISON & CO.,

ARCHITECTS.

CROSS SECTION.



FIRST FLOOR PLAN.

SECOND FLOOR PLAN

Preparation of Competitive Drawings.

Drawings Required: The following are the drawings required:

(*a*) Block plan 1 in. equal to 1-100 in. scale.

(*b*) Floor plans for each storey and a roof plan, 1 in. equal to 1-16 in. scale.

(*c*) Sufficient sections to clearly illustrate the scheme proposed, 1 in. equal to 1-16 in. scale.

(*d*) Elevations to illustrate the façades not shown on the perspective drawing, 1 in. equal to 1-16 in. scale.

(*e*) A perspective drawing showing a view of the proposed building from the south-west, set out to 1 in. equal to 1-8 in. scale with the horizon line 8 feet above the ground level.

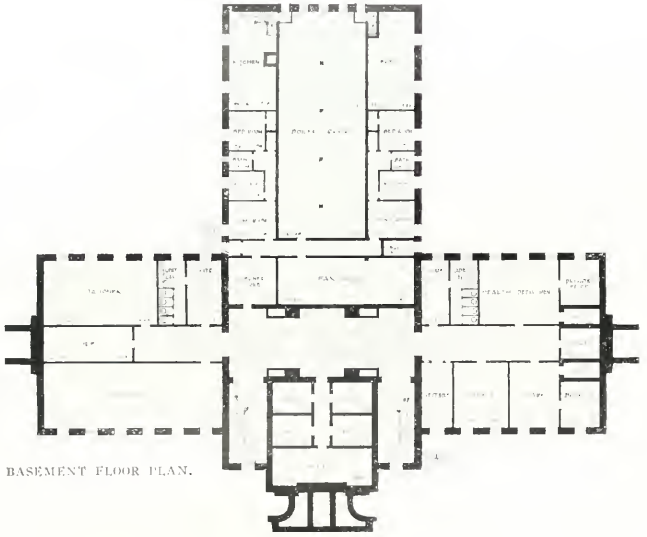
Accommodation Required.

Staff accommodation—	Chiefs.	Clerks.
Mayor's office	1	
Commissioners' offices	2	
General office and Waiting Room		1
City Clerk's office	1	
General office		4
Assessor's offices	1	5
Treasurer's offices	1	2
Water and Gas office		4
Engineer's offices	1	3
Engineer's draughting room		12
Electrical Inspectors		2
Building Inspectors		2
Plumbing Inspectors		2
Health Department	1	4
Park Superintendent	1	1
License Inspector		1

Council Chamber and Committee Rooms: Council chamber, 24 councillors, 6 press and 100 public, with ante-room adjoining; committee room, large, for 20 members; two committee rooms for 12 members; three committee rooms for 6 members; police commissioner's room for 5 members.

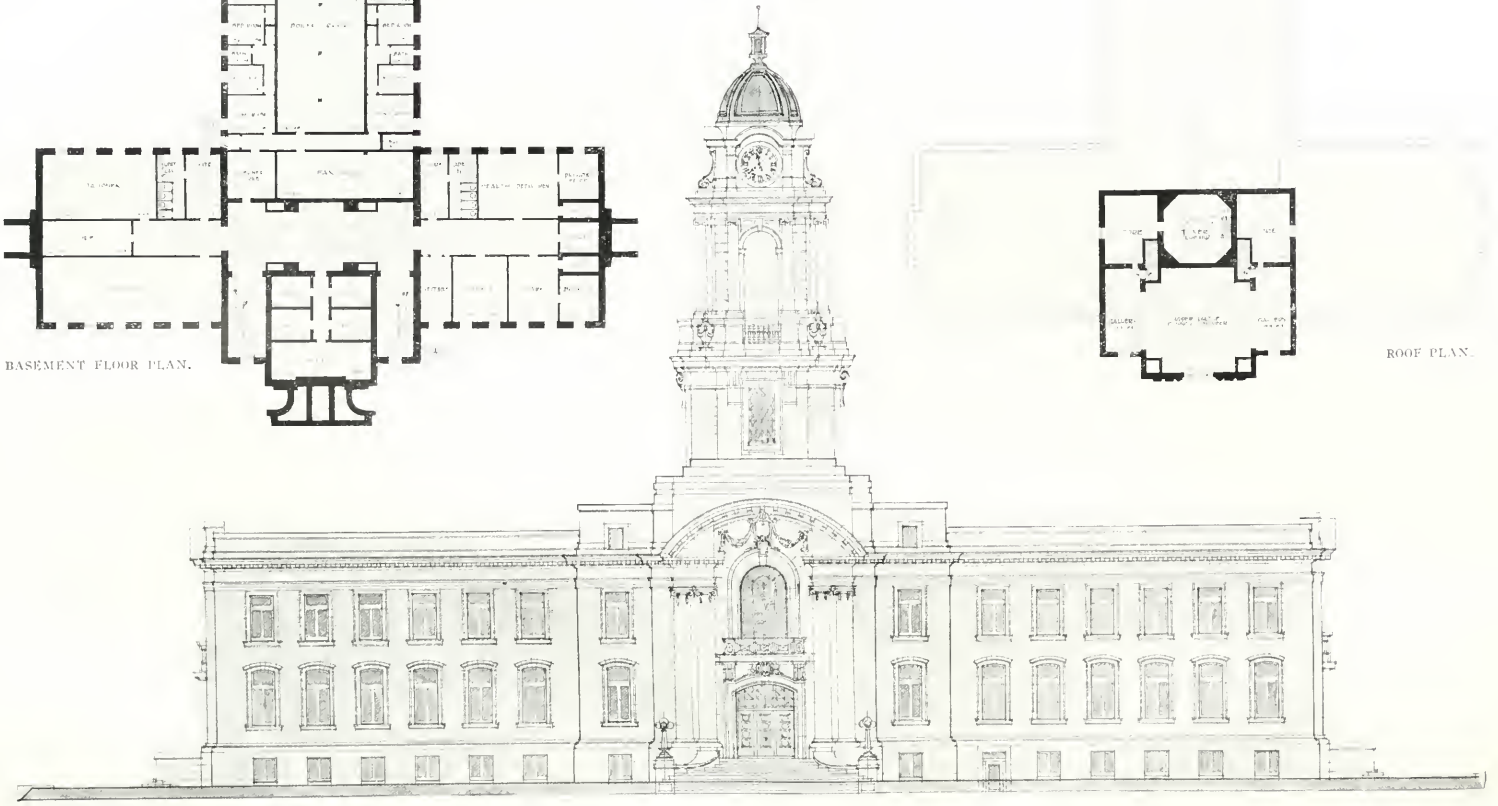
Public Hall: Hall for general purposes with flat floor platform and space for organ, to seat at least 750 on floor and at least 250 in galleries and having servery or occasional kitchen adjoining.

Incidental Requirements: Coat rooms, lavatories for officials, staff of both sexes and public of both sexes; vaults and storage for archives; boiler house, fan room, coal store, etc.; quarters for resident engineer; quarters for resident janitor; stationery stores; telephone exchange.



BASEMENT FLOOR PLAN.

ROOF PLAN.



FRONT ELEVATION.

CITY HALL, MOOSE JAW, SASK.

JOHN D. ATCHISON & CO., ARCHITECTS.

WINNING DESIGN.

CONDITIONS GOVERNING THE COMPETITION.

Rendering: The drawings shall be rendered as follows: All drawings shall be on white paper mounted on linen or calico. Each competitor's set of drawings is to be on sheets of uniform size with moderate margins. Two or more plans, sections or elevations, are preferred on one sheet for the convenience of the assessors. The plans and sections shall be rendered in India ink (black and watered) with walls blacked in solid. The elevations shall likewise be rendered in India ink, and watered ink; pencil and lamp black wash may be used at will to present work on different planes, openings, and the textures of materials in elevation and section drawings. The perspective drawing may be rendered in pen and ink, in pencil or in monochrome wash.

Statement of Cube: The competitors shall submit with drawings a brief, typewritten, unsigned statement of the cubic contents of the whole building, with explanations of the method followed in working out the cubic contents.

Name of Author: The drawings must have no mark, device, ornamental frame lines, handwriting or other means of identification of authorship. With each set of drawings there is to be enclosed a blank envelope containing the name of the author, together with a statement that the design and *all the drawings* have been prepared on his own premises under his personal supervision. These envelopes will not be opened till the award has been made.

The Site: The site is at the western end of a small public park and practically level, except for the old bed of a stream now drained. The building is to be placed with the main front and main entrance to the west.

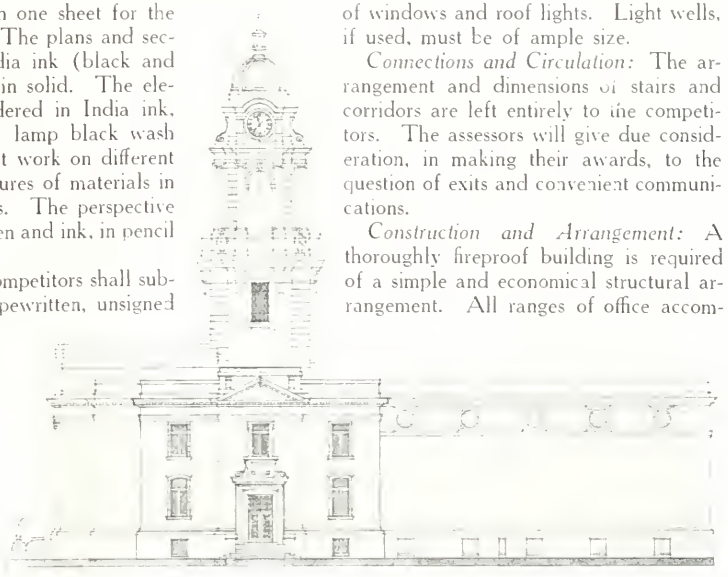
External Character: As the building will be exposed all round to viewpoints of equal importance, the treatment of the exterior is to be homogeneous in character on all sides. The funds at the disposal of the promoters will not admit of an extravagant type of architecture, and brick is recommended as the chief material on the façades. The building shall not exceed four storeys and a basement in height; and is to be so designed that the administrative offices can be extended in the future, without impairing the appearance of the building.

Disqualification: Any infringement of these regulations or disclosure of identity of authorship to the assessors, individually or collectively, shall be held sufficient ground for exclusion from the competition.

Natural Lighting: The assessors will give weight to the question of disposition and glass area of windows and roof lights. Light wells, if used, must be of ample size.

Connections and Circulation: The arrangement and dimensions of stairs and corridors are left entirely to the competitors. The assessors will give due consideration, in making their awards, to the question of exits and convenient communications.

Construction and Arrangement: A thoroughly fireproof building is required of a simple and economical structural arrangement. All ranges of office accommodation should be planned on the "unit system" so that partitions may be removed or altered in accordance with future re-arrangements independently of the main structure. Ventilation ducts should occur as far as possible in inner longitudinal walls.



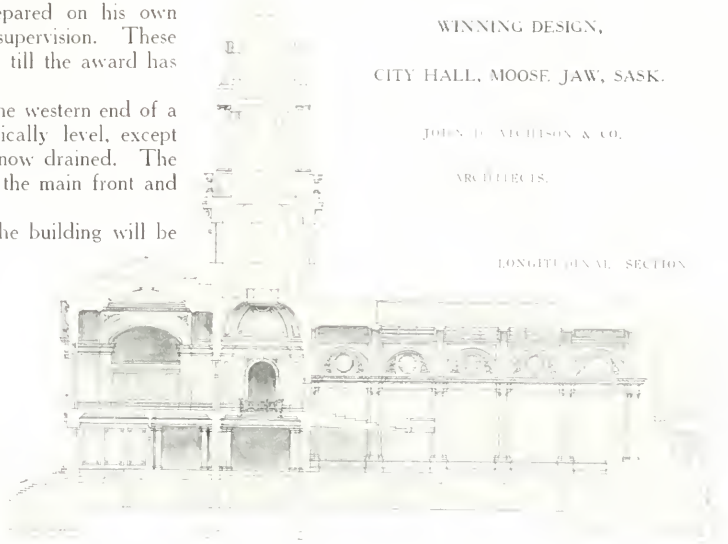
SIDE ELEVATION.

WINNING DESIGN,

CITY HALL, MOOSE JAW, SASK.

JOHN D. MCLEAN & CO.

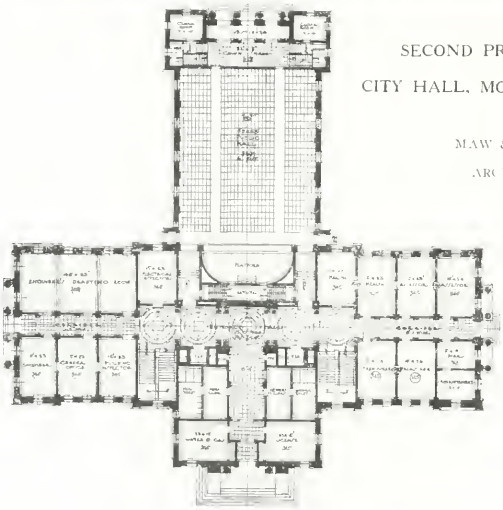
ARCHITECTS.



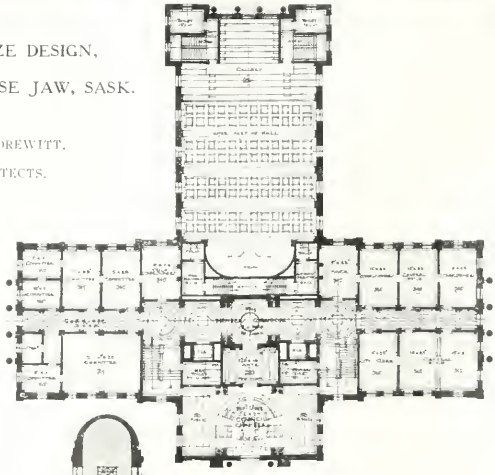
LONGITUDINAL SECTION.

SECOND PRIZE DESIGN,
CITY HALL, MOOSE JAW, SASK.

MAW & DREWITT,
ARCHITECTS.

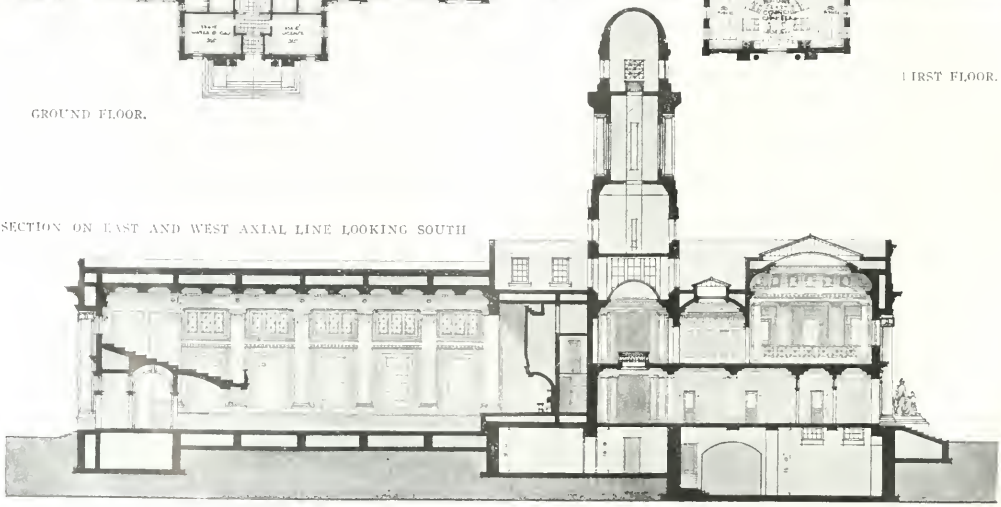


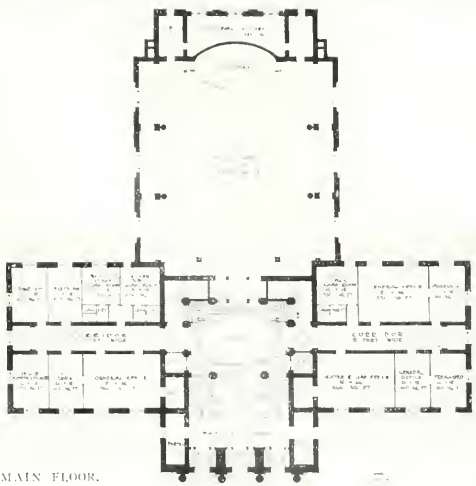
GROUND FLOOR.



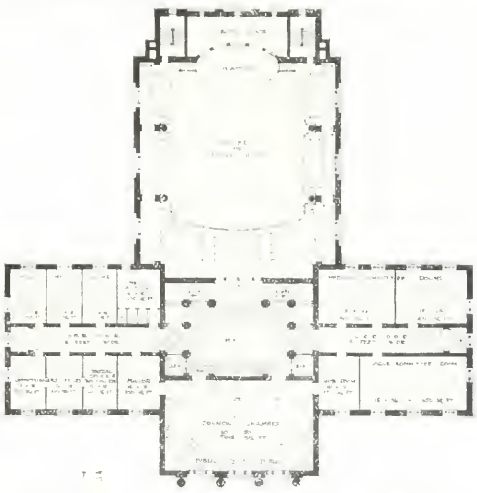
FIRST FLOOR.

SECTION ON EAST AND WEST AXIAL LINE LOOKING SOUTH

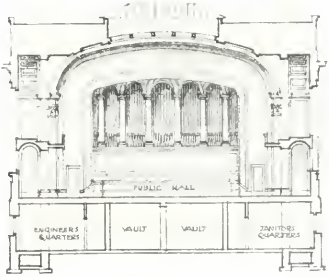




MAIN FLOOR.



FIRST FLOOR.



CROSS SECTION OF HALL.

THIRD PRIZE DESIGN,

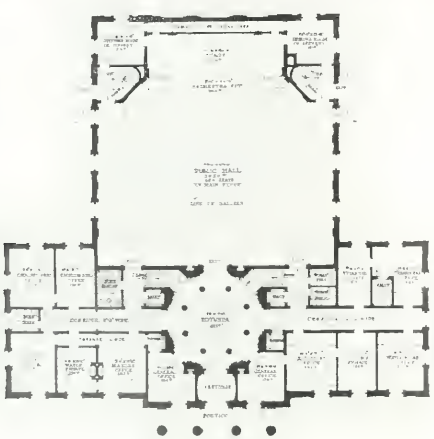
CITY HALL, MOOSE JAW, SASK.

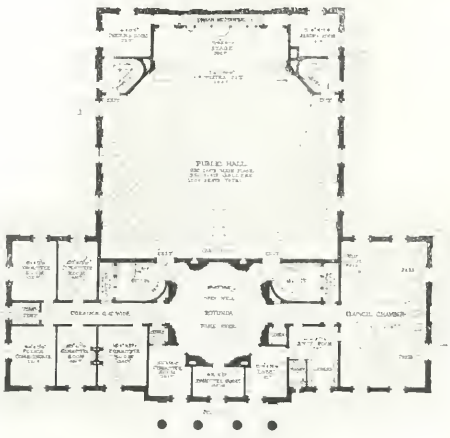
SHARP & BROWN,

ARCHITECTS.

The Architect's Services: After the plans have been finally accepted by the Building Committee, the architect shall prepare working drawings and specifications and shall supervise the construction of the building. Subject to the approval of the Building Committee, he shall have control of all matters of arrangement, design and execution.

Drawings and Specifications: All drawings and specifications as "instruments of service" shall remain the property of the architect, but one record copy on tracing linen of the contract drawings, together with a set of specifications, all amended to correspond with the work as carried out, shall be furnished to the promoters.





GROUND FLOOR PLAN. FOURTH PRIZE DESIGN, CITY HALL, MOOSE JAW, SASK. FIRST FLOOR PLAN.

CHARLES S. COBB, ARCHITECT.

New West End Y. M. C. A. Building Toronto

BURKE, HORWOOD & WHITE, Architects

THE Young Men's Christian Association buildings combine a large number of principles essential to the extended scope of their work. The men and boys must be made to feel they have a home in which are found the every-day advantages. Each year sees a great change in the equipment of these institutions. No building appeals to the young man unless it combines the elements of a social club, an athletic club, a school, a church, and a hotel.

The Y.M.C.A. must be furnished with the idea of attractiveness predominating. In addition special care should be taken to make the interior convenient and comfortable. There is no need for an extravagant and gaudy treatment, but all architectural work should bespeak the lofty ideals for which the association stands. It should satisfy the critical and attract those whose standard of true art is in need of education.

Considerable expense is attached to the working of the various departments. Naturally a certain revenue should be available in order not to hamper the work. This is accomplished by placing dormitories or living rooms in the upper stories. Not only is the matter of expense met, but the men are made to feel the homelike atmosphere so necessary in an institution that should appeal to our better nature.

Another feature entering into the erection of a Y.M.C.A. is the workmanship and quality of materials employed. A building of this kind undergoes exceptionally rough usage. In order to minimize the expense of maintenance the plan should involve the smallest amount of travel in the building, and be arranged so as to require a minimum force to operate successfully.

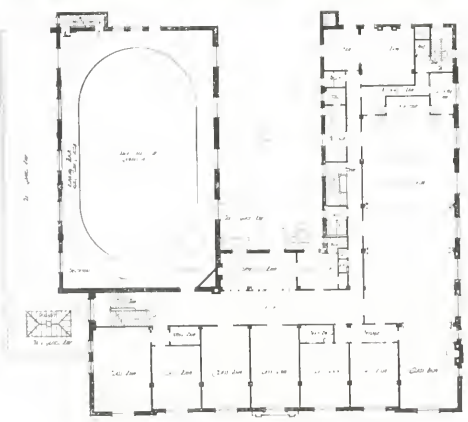
The West End Y.M.C.A. meets the requirements already stated. It has met the needs of the athlete, the student and the lodger. The building rises three stories above the basement and has a modified Colonial exterior. Exterior walls are of red brick laid up in white mortar joints, depending chiefly upon the color and execution for the general appearance. Indiana limestone is used for the trimmings.

Entering through a vestibule of marble steps and marble lined walls with mosaic borders, one comes into the main lobby. It extends the full length of the building and is quite impressive in its simple Colonial treatment with wooden columns and beamed ceiling. The woodwork is of quarter cut oak finished in fume color. A warm buff tone decorates the walls, while the ceiling is finished in an ivory tint.

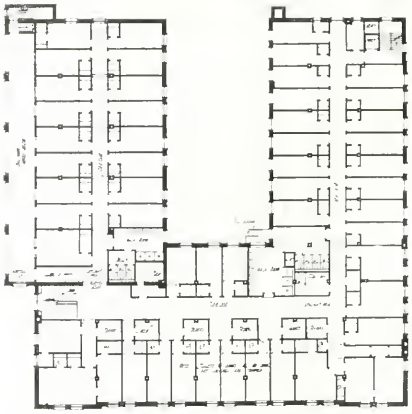
In the basement the walls are lined with buff pressed-face brick throughout and floors of maple. Accommodations have also been made for bowling alleys, swimming pool, locker rooms, etc. The pool itself is sixty by twenty feet, concrete construction, with tile floor and sides, lighted by means of a large skylight, and made sanitary by the introduction of a filtration system.

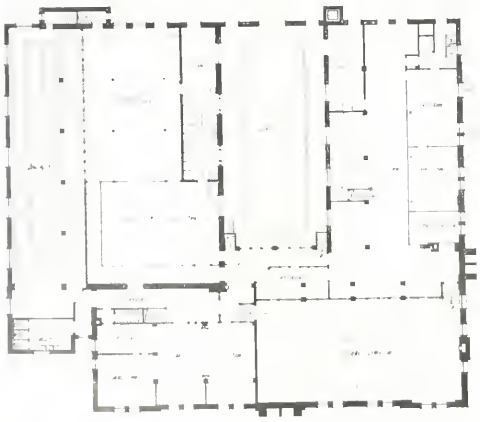
The building is located in close proximity to the college grounds and affords an excellent opportunity for students to obtain exceptionally good rooms and other advantages at a moderate cost. Such work cannot help but prove an incentive to both the architect and contractor, the former to present a building of character and refinement, the latter to build it with the best kind of construction obtainable.

GYMNASIUM



SECOND AND THIRD FLOOR PLANS.

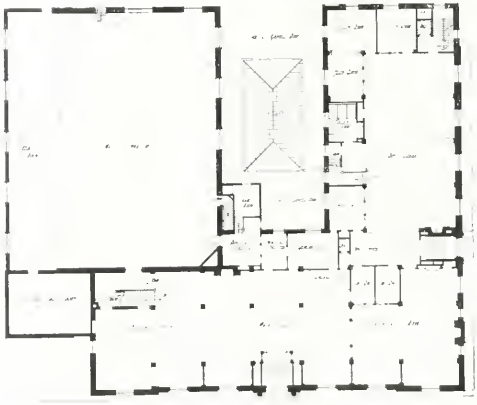




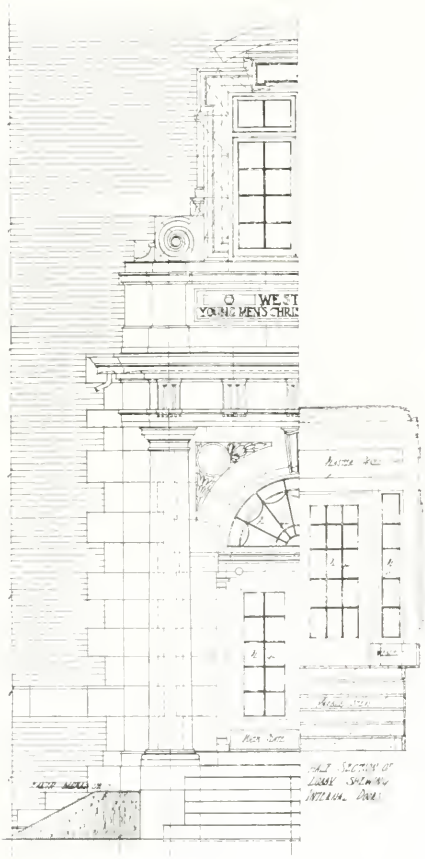
BASEMENT PLAN.

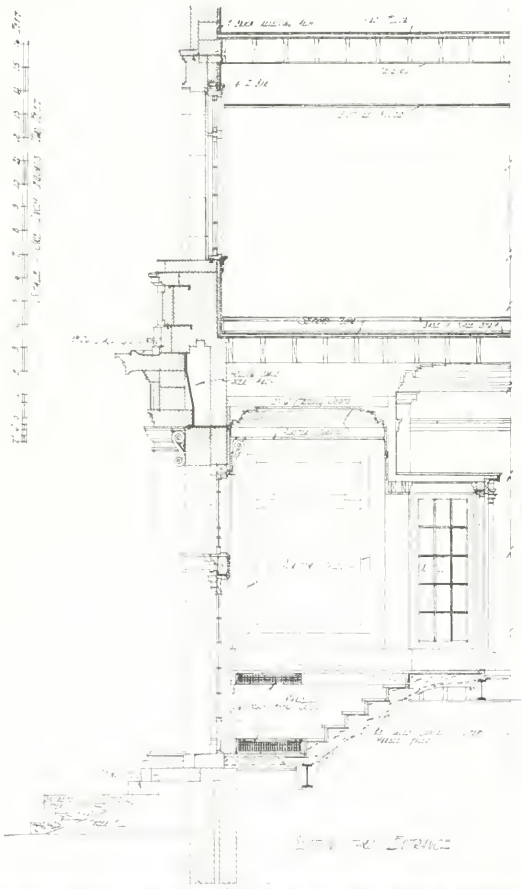
NEW WEST END Y.M.C.A., TORONTO.

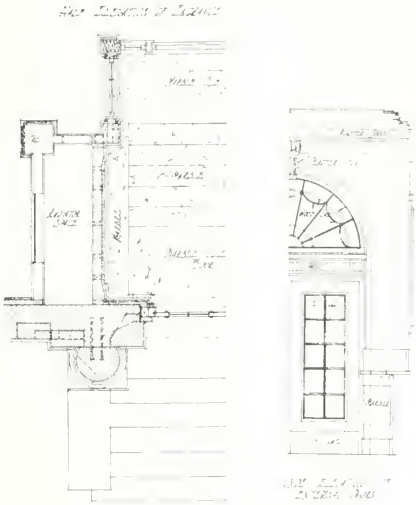
BURKE, HORWOOD & WHITE, ARCHITECTS.



FIRST FLOOR PLAN.



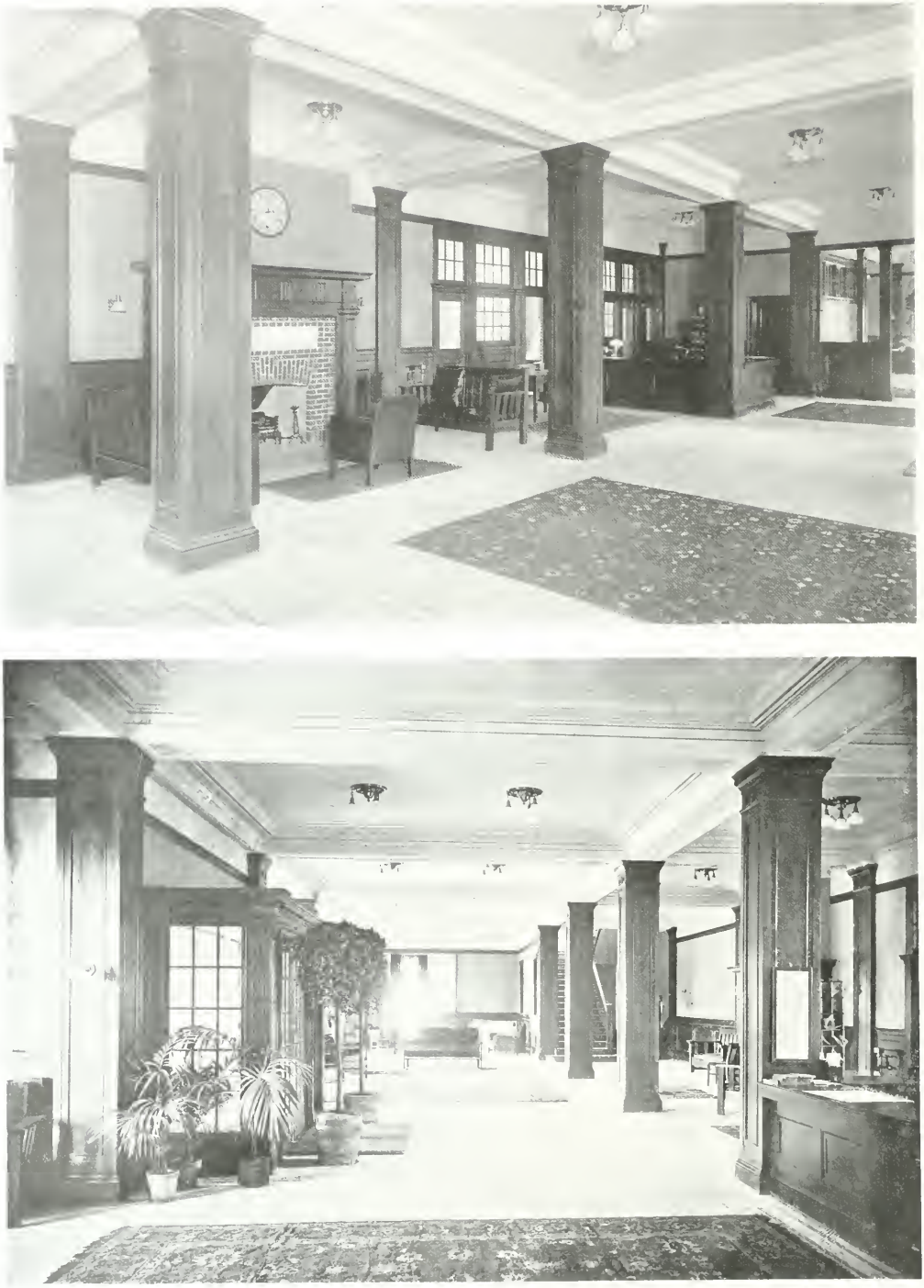




DETAIL OF ENTRANCE.

NEW WEST END Y.M.C.A., TORONTO.

BURKE, HORWOOD & WHITE, ARCHITECTS.



TWO VIEWS OF MAIN LOBBY.

NEW WEST END Y.M.C.A., TORONTO.

BURKE, HORWOOD & WHITE, ARCHITECTS.

TROPHY ROOM.

MEN'S LOBBY.

NEW WEST END Y.M.C.A., TORONTO.

BURKE, HORWOOD & WHITE, ARCHITECTS.

SWIMMING POOL.

BILLIARD ROOM.

SENIOR SHOWERS.

NEW

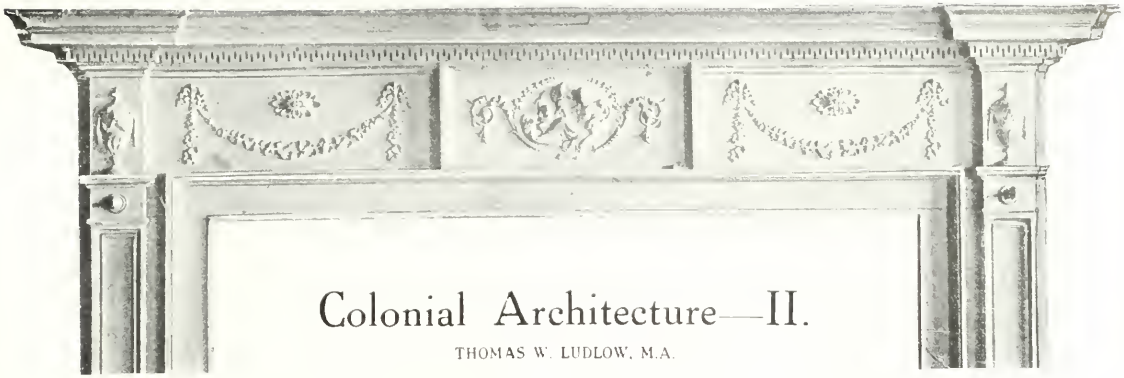
WEST END Y.M.C.A.,

TORONTO.

BURKE, HORWOOD & WHITE,

ARCHITECTS.

BOWLING ALLEY.



Colonial Architecture—II.

THOMAS W. LUDLOW, M.A.

THE SETTLERS in the Middle Provinces were the most tolerant of all the colonists, towards religious beliefs, as well as the most eclectic and cosmopolitan in all matters. They welcomed every style of architecture and every kind of building material—wood, stone, brick and stucco were alike equally used.

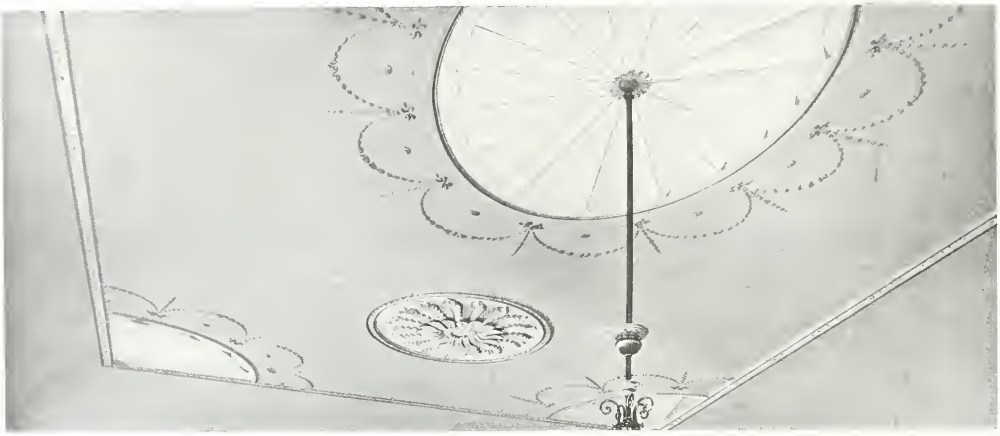
Prior to 1770, pure Palladian designs were very rare, although the details are all derived from classical sources. The buildings are lower than those in New England, and therefore, as the accommodations are about the same, they cover more ground. The plans, however, are similar and consist of a central stairhall running through the house, from front to back, with the rooms opening from it on either side. Few features are met here that are not to be found in the settlements to the north. The stepped gable, occurring but rarely in New England, is encountered frequently from the Hudson to the Susquehanna. The gambrel roof is a modification of that used by the New Englanders, and often includes two stories. The upper slope was greatly reduced in size and becomes quite insignificant in many cases. The long lower slope was gracefully curved, to soften its otherwise hard and angular outline. This treatment is also found on many gable roofs.

In the large northern cities—Boston, New York, Philadelphia, and Baltimore—there grew up a distinctive English type of urban residence, executed in red brick, laid in Flemish bond. The effect of these structures depends entirely upon their proportions, and the diversified color of the brick, which are very dark, or often blue for the headers, and the stretchers vary from a light red to buff. The ornamentation is centered in the doorway and crowning cornice, above which dormers appear against the sky. The storey heights are often marked on the façade by moulded brick string courses. The entrance was treated with delicacy, in a great variety of ways in which one or two orders, without a porch, were used. The door itself was framed by fan and sidelights, consisting of light cast-iron bar tracery, in various combinations of circles, segments and straight lines, with foliage at some of the intersections. This was a direct copy of the English method of lighting halls in city houses. There are still many fine examples in the older parts of these cities.

STAIR HALL, BENNETT HOUSE.

The southern colonies grew up under entirely different conditions from those in New England and the Middle States. In the south the colonists were not seeking refuge from political or religious oppression. They were cavaliers, sons of wealthy gentlemen, many of them noblemen by birth, who sought this new "paradise" in hope of finding gold, to escape debt, or some similar cause. Their belief was mainly that of the Church of England, and their political ideas were those of the Mother Country.

Brought up on vast estates at home, these gentlemen naturally settled on large tracts of land, and as the distances between these were great, and the only roads which existed were bridle-paths, each planter sought to have his estate on a river front, thus ensuring easy means of communication and commerce. So it is that the Severn in Maryland, Goose Creek in South Carolina, West River, the York, the Potomac, and especially the



DETAIL OF COLONIAL CEILING FOR DINING ROOM.

James, in Virginia, are famous for their almost palatial residences. Accustomed to luxury and refinement, the colonists immediately sought to reproduce like conditions in their new surroundings, and the manors of the James-Shirley, built 1700; Westover, in 1737; Carter's Grove, in 1737, and Brandon, in 1790, show how well they succeeded.

The contemporary English manor house was the inevitable model for these buildings. The house forms the centre of a symmetrical group of detached outhouses or wing pavilions. Whatever plans were drawn were doubtless brought from England. The divisions of space were extremely simple and the exterior was plain, square and massive. The openings are rather high and narrow, and are symmetrically placed. As a rule the house is two stories high above the cellar, and the wings or out-buildings one or one and a half. The roofs are bold and the chimney stacks are high. Small, dark red English brick, laid in Flemish bond, from three to four feet thick, were used on both the exterior and interior walls. In many cases the alternate exterior bricks were of deeper color, or sometimes even glazed. Flat arches with voussoirs, one brick and a half high, crown the openings and a moulded brick string course runs along at the second floor level. The cornice and the window and door frames are of wood, carved with a few simple mouldings.

INTERIOR DETAIL.

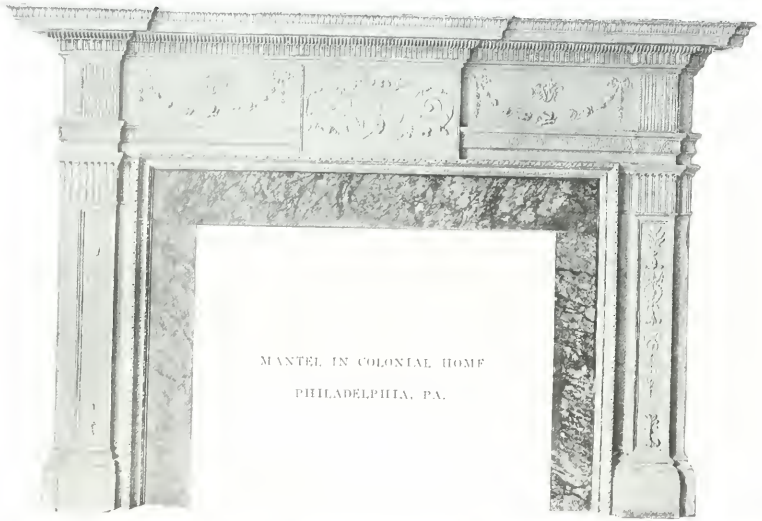
At Carter's Grove the old buildings flanking the mansion are one storey brick houses with high pitched slate roofs, pierced on each side by three dormer windows. From this grew the wing pavilion mansion. The outhouses were first connected with the main building by an open arcade as at Mount Vernon, in Westmoreland County, Va., and then joined to the mansion itself by closing the arches, as at Woodlawn, near Mount Vernon, in the same county. Thus the H or the E shaped plan was established, and it proved to be equally successful in the city as well as on larger country estates, as the Paca,

STAIR DETAIL.

THE [illegible] HOUSE, CHARLESTON, S.C.

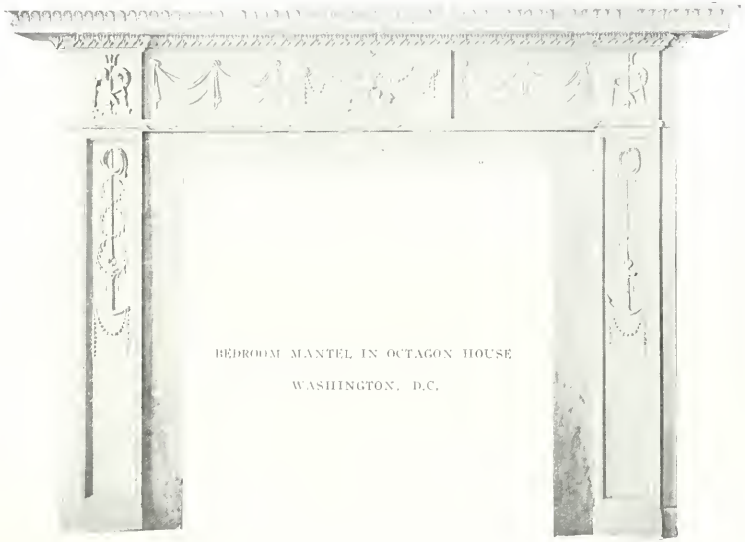
THE PACA HOUSE, ANNAPOLIS, M.D.

EXAMPLES OF EIGHTEENTH CENTURY COLONIAL ARCHITECTURE.



MANTEL IN COLONIAL HOME
PHILADELPHIA, PA.

MANTEL IN COLONIAL HOME
PHILADELPHIA, PA.



BEDROOM MANTEL IN OCTAGON HOUSE
WASHINGTON, D.C.

DINING ROOM MANTEL IN COLONIAL HOME
TRENTON, N.J.

DETAILS OF COLONIAL MANTELS.

DOORWAY WITH SIDE AND FAN LIGHTS.

DOORWAY WITH TWO FLANKING COLUMNS.

DOORWAY AT MANTON, R.I.

DOORWAY AT PROVIDENCE, R.I.

DETAILS OF COLONIAL ENTRANCES.

DETAIL OF MANTEL IN DINING ROOM.

Brice and Harwood houses in Annapolis show.

As a veranda was unknown in the English manor, it is an exception in those of Maryland and Virginia, so the doorway itself was the chief exterior feature. It was treated in a similar way to those in the North, two flanking pilasters or columns, carrying an entablature and pediment or hood, or, as in Annapolis, a small porch with free standing columns similar to those common in Connecticut. Side lights and fan lights were rarely used in the South, although transoms are very frequently encountered.

The Southern interiors show breadth, simplicity and elegance, the rooms are square and well proportioned as to height, and the halls, which are seldom less than one-third the total floor area, are large and imposing, running from the front to the rear of the house, as in the North. The details and finish show more solidity and formality than those of the New England and Middle Colonies. The staircases are of mahogany, or even in some cases stone. Many walls are panelled-wood to the ceiling, and the door and window trims are classical, but are at times weakened by French Rococo influences. The ceilings in the best examples are decorated with delicate plaster relief work. Niches, which are a common Northern feature, were rarely used, except as cupboards. Mantle-pieces in marble were quiet, simple and classic in design, while those in wood were slender and graceful,, decorated with hand-carved flutes and beads, with some delicately modelled design in putty on the prieze. In all there is a certain repose, and the decoration is focussed, leaving broad, plain surfaces; nothing is exaggerated and odd effects are not sought, thus the whole is restful and refined.

FRONT FACADE OF "WOODLANDS," PHILADELPHIA, PA.

CONSTRUCTION

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

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CURRENT TOPICS

MANY VILLAS, pensions, etc., throughout Italy which are out of range of any electric-lighting company are lighted by private acetylene-gas plants. The lighting systems and apparatus used are of Italian manufacture, coming from Milan and Turin. The claim made by a Milan manufacturer is that his apparatus will operate 20-candle-power lights at a cost of one cent per hour.

* * *

AN EXHIBITION HALL to cost $10,000,000, will soon be erected in Paris near the Military School in the Champ de Mars. The Grand Palais in the Champs Elysées is too small and has more demands upon it than it can meet, which facts have induced the Paris municipal council to consider the new Palais des Expositions. Its creation is largely the work of the Agriculture party in Parliament.

THE SUM OF $400,000 is being spent on the removal of the Luxembourg Museum from the present building to larger quarters in the old Seminary of St. Sulpice, close by. The change is being looked forward to with great satisfaction in art circles, since it will be possible to arrange the priceless art collections properly. The building which has been selected by the Government for the purpose, will provide three times the space for pictures that exists at present and five times the room now available for sculpture. It will also have several galleries for engravings, which hitherto have been altogether crowded out.

* * *

JOHN M. CARRERE, architect, made the statement shortly before his death, that no architect knew the first thing about acoustics. Unlimited money and the best talent have been lavished on public buildings which, when completed, proved to be failures, acoustically speaking, as for example, the Cathedral of St. John the Divine, the New Theatre, and Dr. Parkhurst's church in New York city. Various attempts have been made to deaden the echo, but even these methods of modifying a failure are still in an experimental stage.

* * *

WINNIPEG has elected as mayor for 1913, T. R. Deacon, manager of the Manitoba Bridge and Iron Works. Such a movement augers well for a progressive administration in civic affairs. The new mayor, who was elected by a large majority, is generally recognized as a type of business man best fitted to guide the city's affairs at this time—a period of extreme importance owing to impending consideration of public works of great scope and the very rapid growth of the city.

* * *

UNTIL RECENTLY it has been impossible to produce a concrete mixture that would not absorb moisture. While carrying on experiments with a view to obtaining a non-absorbent, dustless road material. L. W. Page, engineer, found that when a heavy, mineral residual oil was mixed with Portland cement paste, it entirely disappeared in the mixture and did not separate from the other ingredients after the cement had hardened

* * *

HAND-MADE BRICKS are being used in the restoration of the historical Tattershall Castle at Lincolnshire. These bricks are alike in color and size to those used during the fourteenth century. It is estimated that over one hundred thousand brick will be necessary to compete the work.

* * *

THE ARCHITECTURAL firm of Ross & MacFarlane, Montreal, has been dissolved. Mr. Ross will continue the practice of architecture at 1 Belmont street, while Mr. MacFarlane will open new offices in the new Birks Building in Phillips square.

Town Planning in Great Britain

THOMAS ADAMS *

I.—Building Development prior to 1909.

FROM 1875 to 1909 the control of building development in British cities, towns and urban and rural districts was chiefly exercised under local by-laws based on the Public Health Act of 1875 and subsequent amended Public Health Acts. These public general Acts have been supplemented in many towns and districts by local Acts to meet special local needs or conditions. Hence, although the control of sanitation and road and building construction has been carried out in the main on identical lines throughout the country, numerous authorities have from time to time secured for themselves special and exceptional powers. As a general rule, however, the development of land has been regulated by the model by-laws of the Local Government Board, based on the Public Health Acts. These have been prepared in two sets, applicable to urban and rural areas respectively.

But the very nature of a code of rules which have to be generally applied tends to stereotype development in accordance with the minimum standards laid down, and while preventing sanitary ill-doing below these standards they do not encourage sanitary well-doing above them. Under by-laws an owner of land who is engaged in developing his estate gets no advantage by improving on the least that is required of him, and local authorities possess no discretionary powers to vary the by-laws to meet special cases, however desirable this variation may be in the public interest.

For instance, under the by-laws the standard width of roads is the minimum prescribed, which is from 36 ft. to 45 ft. A case might arise in which an authority desired to have a 60 ft. street, but was willing to allow a smaller width than the minimum on some other purely residential streets if the owner of the land proposed to be developed gave the extra land and the additional cost required for the wider road, but naturally no such arrangement can be authorized under a code of rules applicable to general conditions.

In spite of these natural disadvantages the British by-laws have secured a very high standard of road construction, a comparatively satisfactory minimum of air space and very efficient control of sanitation. This is proved by the increasing improvement in the general public health, notwithstanding the expansion of cities and the depletion of rural districts, with the consequent increasing concentration of the population on the land.

But of course, the experience gained during the period in which by-laws have operated has taught certain lessons and has indicated along what lines further progress can be made. From the point of view of convenience of traffic the by-laws have not prevented main arterial roads being made too narrow for public requirements, and it is considered that they have not given local authorities sufficient control over the direction and situation of streets, or over the prevention of cul-de-sacs. From the point of view of health the fact that the by-laws have raised the cost of developing land by insisting on a fairly high standard of road construction and sanitation has tended to encourage rather than to discourage the concentration of dwellings on developed areas, with the resulting narrow frontages and deep back projections that shut out sun and air from parts of the houses. From the point of view of amenity, the absence of bargaining power on the part of the local authorities has prevented them from agreeing to the preservation of trees in streets, or from securing the provision of open spaces in exchange for giving up some lesser advantage. Some public men have urged that by-laws should be framed on more elastic lines to meet such special cases, but there are obvious difficulties in following this advice. From these observations it will be noticed that by-laws have operated in a very limited sense in controlling the planning of areas according to schemes agreed between the local authorities and owners.

II.—Garden Cities and Garden Suburbs.

Side by side with the experience of the limitations of by-law control a series of interesting and useful practical experiments have been in progress of development in England during the past ten years. Garden cities and suburbs are essentially an English creation, and the first important example of this method of development was the garden village of Bournville, established near Birmingham as the result of the enterprise of Mr. George Cadbury and his family. These schemes have been a growing force in Britain and have had a considerable influence in promoting town planning as it is understood in that country. One of the underlying principles of the movement was the predetermined planning of the sites proposed to be developed.

The establishment of garden cities, *i.e.*, towns of a self-contained character built up from the beginning in rural areas, was first advocated by Ebenezer Howard in his book called "To-morrow;" and as the outcome of this advocacy a first experiment is already well on its way to successful consummation at Letchworth, 34 miles from London. Its economic basis rests on taking advantage of the growing tendency of manufacturers to move out from crowded centres to rural and partly rural areas and to obtain the advantage of the resulting conversion of land having an agricultural value into land having a building value. The basis is sound if the conversion can

*Paper read at the recent international convention held in Berlin, Germany, by Mr. Adams, who is a member of the Government Board of England for the administration of the Town Planning Act

be made rapid enough to prevent too great a leakage of capital in loss of interest on the first cost of lands and works of development. Letchworth may have "hung fire" too long to be likely to succeed as well as its promoters anticipated, but it has overcome the preliminary difficulties necessarily associated with the beginnings of such an experiment, and has reasonable prospects of being a financial success. It has already succeeded in teaching public men in Europe and America many valuable lessons. More than a score of factories are now established in the new town, where every facility has had to be provided as the need for it arose, and over 7,000 people now inhabit an area which consisted of fields devoted solely to agricultural purposes about eight years ago. The Garden City movement is not a "back to the land" movement in the sense of inducing the people to return from town industries to agriculture. On the contrary it accepts the town, and all that pertains to it, as an inevitable growth, and having done so insists that in the interests of posterity that town conditions should not be, as they need not be, less healthy than country conditions.

One of the reasons advanced by Mr. Howard why new towns should be created in preference to improving old towns was that apart from the great advantage obtained in regard to the cost of sites, the planning of the areas could be arranged in advance to meet all future needs, thus avoiding the almost prohibitive costs which are necessarily incidental to schemes of reconstruction in the older centres. Another was the advantage of designating certain areas for works, other areas for residences, and others for agricultural purposes. A third was the understood rule that every house should have a garden of reasonable dimensions. In these three respects we shall see that the British Town Planning Act is based on principles similar to those which underlie the Garden City movement.

This wider spreading of the population has been rendered more feasible in recent years owing to the great improvement in the means of transit. One of the arguments used against it was that by widening the circumference of development the mileage and cost of travelling to and from the centre is increased, but this objection is not found to be a serious one in practice. The important point in connection with transport is the time spent in travelling between two given points rather than the distance between these points. In England we find that at certain secondary centres, ten, twenty or thirty miles from the principal centre, there is a proportionately quicker service of trains than at the nearer intermediary points, so that those living further away may spend least time in travelling. By creating secondary centres some distance from the town, arrangements can be made to have accelerated services of trains. Moreover, by moving both works and workers into garden cities the necessity for travelling is greatly lessened in some cases and entirely obviated in others, notably in the case of those earning least wages.

Apart from these facts, the proper planning of areas tends to fill up the sites more evenly and less in straggling groups with intervening areas undeveloped, and as the circumference enlarges the population accommodated between two given points in the radia become proportionately greater. Therefore on the whole a more healthy and at the same time a more scientific distribution of the population should not add materially to the cost of travelling in time or in money.

The Garden Suburb movement is distinct from the Garden City movement in that it has for its object the better housing of the people in the suburbs of existing towns. In this respect it is more closely identified with town planning than the Garden City. In the respect that it is purely residential in character the Garden Suburb is, however, less like what an average town planning scheme will be than a "Garden City" scheme. The Hampstead Garden Suburb is the most successful example of the garden suburb created by private enterprise before the Town Planning Act came into force. Now that this Act exists local authorities can obtain all the advantages offered by the private garden suburb under a town planning scheme. Coterminous with the early stages of development of garden cities and suburbs, at a time when the need was felt for more elastic and comprehensive powers than were possible under a code of by-laws, public notice was drawn to the example of Germany and Sweden in matters connected with the planning of cities. "The Example of Germany," a book written by Mr. T. C. Horsfall, took a considerable part in attracting public notice to this aspect of the question, and since its publication there has been a constant stream of visitors to Germany to inspect some of its beautiful cities.

Although Britain has no doubt profited by Germany's example, yet, in view of the difference between German and British conditions, the British Planning Act has of necessity had to be cast in a very different mould to the Prussian Act of 1875. The former goes much further in dealing with undeveloped areas, but is probably much more limited in its scope in dealing with areas already built upon.

The Act of 1909.

Part II. of the Housing, Town Planning, etc., Act, 1909, was thus placed on the statute book after a period of thirty-four years' experience of the by-laws, after some lessons had been derived from the Garden City movement, and after attention was drawn to the examples set by other countries, including Germany.

Town conditions in Britain are peculiar in that the natural tendency is for the population to spread over wider areas than in Continental cities. The same urban population covers larger areas in England than is the case in Germany, and therefore in proportion to the increase of population a greater acreage is covered every year by houses. In a speech delivered by Mr. John Burns, President of the Local Government Board in England, to whose statesman-

ship the Housing and Town Planning Act is due, he said that in every fifteen years 500,000 acres of land was converted from use as agricultural land and used for new houses, railways, factories and workshops. The town planning part of the Act of 1909 has for its chief aim the controlling of this new development in order to secure the objects of convenience, amenity and proper sanitation in connection with it. It is not concerned with the acceleration of development, but merely with its proper control in the public interest. For this purpose local authorities may either promote schemes themselves, or adopt schemes of owners, dealing with land which must either be "in course of development" or "likely to be used for building purposes." The Act provides that the latter description may include land proposed to be used as open spaces, roads, etc., but only allows the inclusion of land already built upon, or that which is comprised in existing open spaces if these are so situate to the remainder of the area that in the opinion of the Local Government Board they ought to be included. Buildings may not therefore be included for any purposeso lely connected with themselves, but only for some purpose connected with a scheme as a whole, or with that part of it which deals with an undeveloped area.

But buildings may be demolished or altered if this is necessary to carry a scheme into effect. In Britain we look to our Housing Acts to control the sanitary condition of existing property, and Part I. of the Act of 1909 added considerably to the powers of local authorities in this respect. The town planning part of the Act does not overlap with these powers and, I have already pointed out, is primarily concerned with proposed and not with existing development.

A local authority has to make out a *prima facie* case to the Local Government Board before it can embark on the preparation or adoption of a scheme. This case rests on the suitability of the land proposed to be planned, its likelihood to be used for building purposes, and whether any object of the Act is to be served by preparing a scheme. It is important to note as justification for this preliminary step that the consent of the Board carries with it the power to control any development within the area of the proposed scheme while it is being prepared. After the application of an authority is sent to the Board, or after such other time as the Board may fix for the purpose, no person is entitled to obtain compensation on account of any building erected on, or contract made or other thing done with respect to land included in a scheme.

An important provision in the Act is that it enables local authorities to include in their schemes land "in the neighborhood" of their areas as well as within their own boundaries, if they satisfy the Local Government Board that such land should be included. Therefore the ordinary artificial boundaries of towns and districts do not necessarily apply to the areas of town planning schemes, and in the absence of co-operation between two authorities one may be able to make out a case for including part of the area of the other. While this power is given the Act appears to contemplate and provide for a large measure of co-operation between different local bodies and between these bodies and the owners of land. Every person interested has to be notified at each stage of the scheme, and statutory conferences have to be held with a view to encouraging co-operative action.

A town planning scheme may go so far as to include provisions for suspending enactments contained in public general Acts, but whereas in nearly every case the approval of the Local Government Board is sufficient to make a scheme operative, in the case of suspension of enactments a draft has to be laid before Parliament, which has a right to object to the scheme.

Section 58 of the Act, dealing with compensation, is of exceptional interest. Any person whose property is injuriously affected *by the making of a town planning scheme* is entitled to compensation if he makes a claim. The words in italics should be noted, as they lay the basis of any claim which is made. This section includes the limitation as to work done after the application is made to the Local Government Board.

The Act is probably unique in providing for recovery by the authority of half of any increase in the value of property which is due to the "making of the scheme." In both cases the question of depreciation or appreciation of the value of property as a result of the scheme being made has to be settled by a single arbitrator appointed by the Local Government Board, unless the parties agree on some other method.

There are two important respects in which claims for compensation are excluded. One is that no claim Construction Adams Town planning four can be made in respect of provisions included in a scheme when they are such as would have been enforceable if they had been contained in local by-laws. Anything which may therefore be determined as reasonable and proper in a by-law may apparently be included in a scheme without compensation having to be paid, even if injury is caused. The second respect is more important still, as it suggests certain positive directions in which town planning schemes may go further than the by-laws in controlling buildings within the area of a scheme. I shall quote it in full:

"Property shall not be deemed to be injuriously affected by reason of the making of any provisions inserted in a town planning scheme, which, with a view to securing the amenity of the area included in the scheme or any part thereof, prescribe the space about buildings or limit the number of buildings to be erected, or prescribe the height and character of buildings, and which the Local Government Board, having regard to the nature and situation of the land affected by the provisions, consider reasonable for the purpose."

This sub-section speaks for itself and indicates the

wide scope and great possibilities of the Act if wisely applied.

Provision is made in the Act for revoking schemes by approval of the Local Government Board, for compulsory purchase of land and for action of the Board in cases of proved default.

When a scheme is approved by the Local Government Board it has effect as an Act of Parliament. The Board has prepared a set of Procedure Regulations which have to be conformed to in the various stages of preparation, and has also power to prepare, but has not yet prepared, a general set of provisions for carrying out the objects of the scheme.

Theab ove is a brief *résumé* of the most important powers conferred by the Act of 1909 in regard to town planning. They show a great advance on the powers hitherto possessed by public bodies in Britain in connection with the development of land. Added to the increased powers granted by housing legislation, they should do much to help in solving the evils associated at all times with the disorderly and unscientific growth of towns. Local authorities are now able to exercise foresight in determining the position and width of main arterial roads in the suburbs of our towns before development takes place; they are now encouraged to exercise judgment in regard to the lay-out of their suburban areas, because they are asked to initiate schemes and not merely to see that they conform to general regulations, and they are able to take a more active interest in the amenities of their district, because an Act of Parliament enables them to protect them. At every stage in connection with town planning schemes co-operation is suggested, and by these schemes new forces will be set at work to stimulate co-operation between all parties interested in the development of building land. The proper planning of land development and the preservation of amenities are as desirablein the interests of private owners as in the interests of the general community from an economical point of view, and from the point of view of public health, who can defend the enormous waste of vitality and happiness which is caused every day by the disorder, the congestion, the overcrowding, and the shutting out of the beauties of nature from the homes of the people, which have together been the result of the haphazard growth of towns in the past.

Practical Working of the Act.

I have only space for brief reference to the working of the Act. For practical purposes it has only been in operation for little over a year. During that time it is estimated that about 100 authorities in England have taken preliminary steps with a view to eventually securing the consent of the Local Government Board to the preparation of schemes. The Board has held twenty inquiries into schemes, and has consented to the preparation of seventeen. Two inquiries have also been held in Scotland by the Scottish Local Government Board. Other applications are being received, and the general indications are that the Act will be very widely applied in the course of a very few years. I am debarred, by reason of my official position, from dealing with this part of the subject as fully as I think it should be dealt with at your congress; but I trust that on the next occasion when you meet and when town planning has made more substantial progress, you will have the working of Part II. of the Act of 1909 more fully dealt with by another.

Town planning is a subject in regard to which Germany and Great Britain may learn from one another, and profit by each other's example. In both countries we want to proceed with some caution, after careful research and tried experience, but none the less boldly after having convinced ourselves what are the right lines along which to build up the cities of the future. The city is more than ever becoming the nursery in which civilized races are reared, and those of us who love our respective countries and desire their future welfare, can put our minds and hands to no better task than that of devising means and carrying out schemes to improve the health conditions in which our children have to live.

THE COMMITTEE on Town Planning, in reporting to the forty-sixth annual convention of the American Institute of Architects, recently held in Washington, D.C., said:

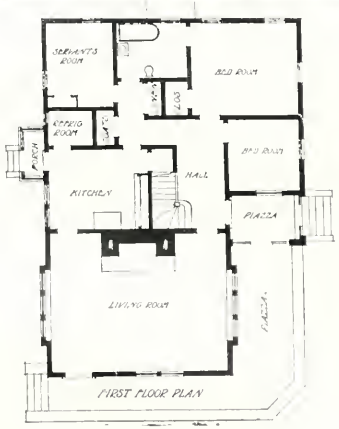
It is gratifying to note the continued interest and the growing appreciation of the value of town planning. During the past year many cities in the United States and Canada have turned their attention to the subject, some are taking active steps to improve their water fronts, solve the railroad problem or to plan civic centres. Others are turning their attention to suburban development and in a few more ambitious instances comprehensive plans are being prepared for the growth and development of the entire city.

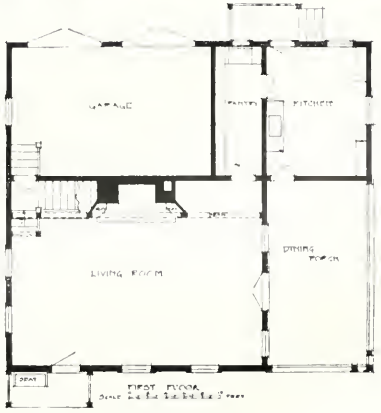
The activity in the various societies and civic bodies continues and lectures on city planning and meetings devoted to the subject are on the increase. The result of these activities has been to interest the city authorities themselves and it is encouraging to note that in numerous cases the local city governments have espoused the idea, and recognizing the value of technical advice have appointed expert advisers to guide them in the development of their cities.

Much interest has been shown in the Town Planning Act now in force in England and it seemed possible that this Act or a modification of it might serve as a basis for a similar law that would be suitable to American cities. After consideration, however, this did not appear feasible. The English town planning law provides for a central body possessing absolute power who can criticize and control the plans for all English cities which must be presented to it for its approval. This does not appear to be possible in our country. The conditions, not only in different states, but in different cities, vary so greatly that we believe it would not be well to attempt to frame a general law.

BUNGALOW AT BAR HARBOR, ME.
CHARLES B. PERKINS, ARCHITECT.
(From The Brickbuilder.)

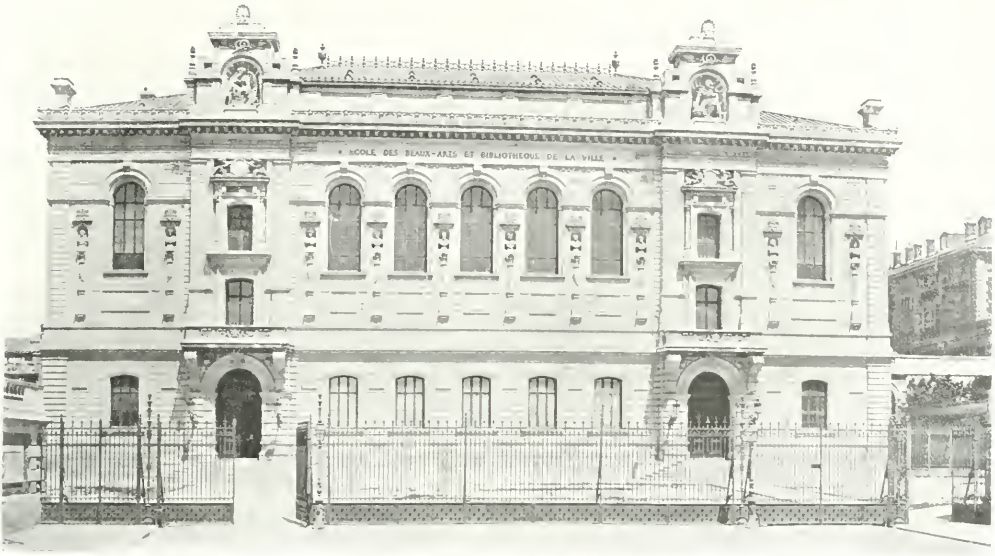
RESIDENCE AT RAVINA, ILL.
LAWRENCE BUCK, ARCHITECT.
(From The Western Architect.)





TWO EXAMPLES OF AMERICAN DOMESTIC WORK.

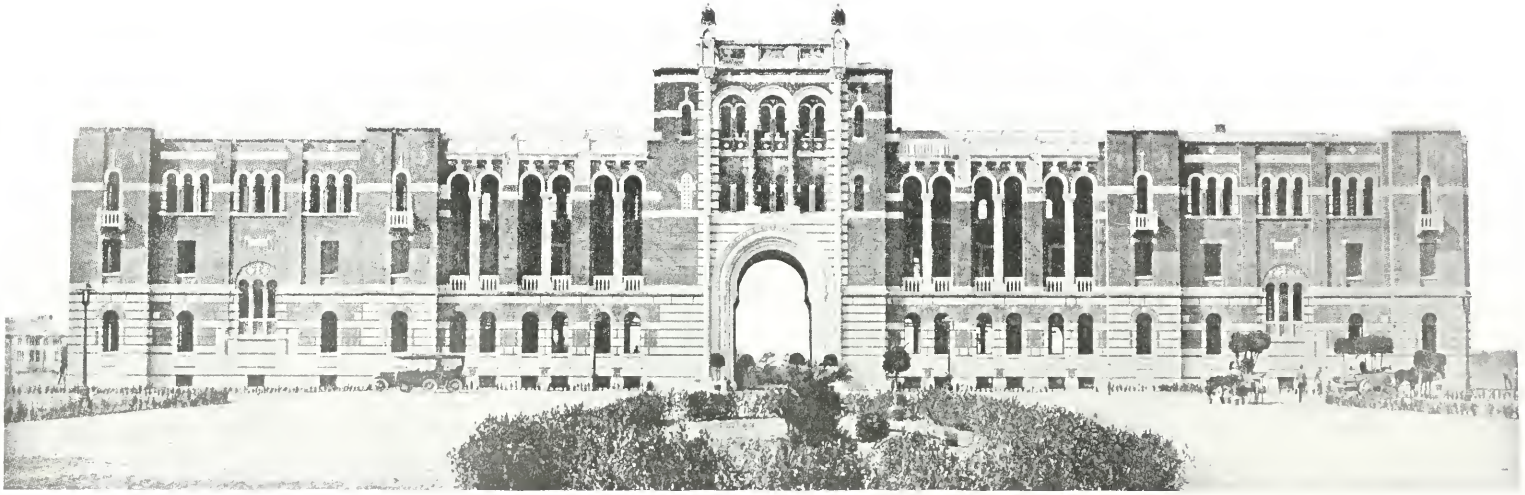
CONSTRUCTION will illustrate each month examples of modern work which is being erected in the architectural field of other countries. The aim is to present the manner in which problems similar to all parts of the world are being worked out. It is done in the spirit of helpfulness and may suggest ideas in design and planning which can be advantageously adopted.



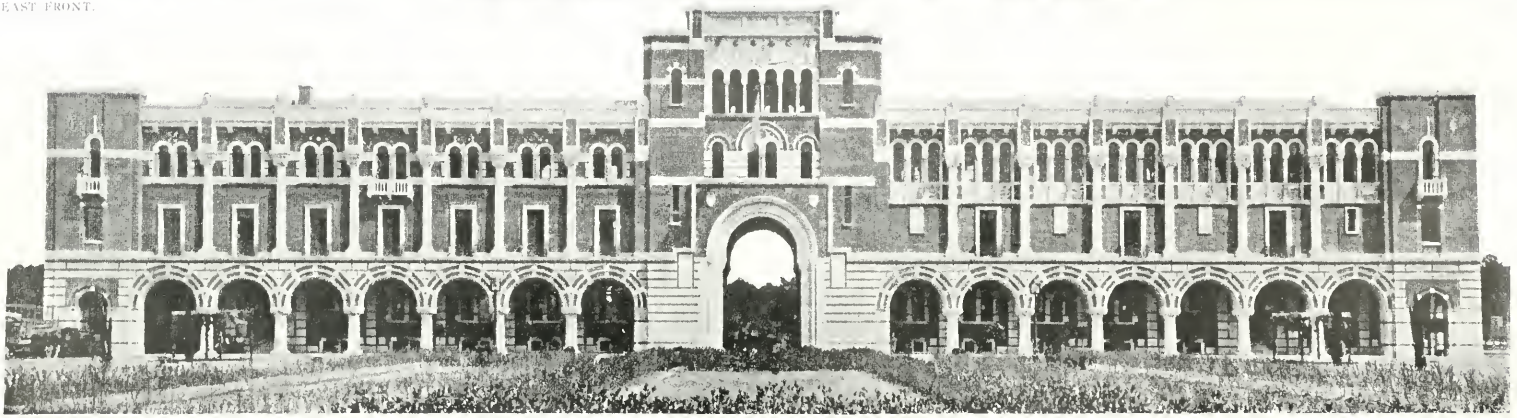
ECOLE DES BEAUX ARTS ET BIBLIOTHEQUE DE LA VILLE, MAUBEUGE.

LA PLACE DE L'HOTEL DE VILLE, LAON.

TWO EXAMPLES OF FRENCH WORK.



EAST FRONT.



WEST FRONT.

ADMINISTRATION BUILDING,

From The American Architect.

WILLIAM M. RICE INSTITUTE, HOUSTON, TEXAS.

CRAM, GOODHUE & FERGUSON, ARCHITECTS.

HEAD OF GREAT STAIR.
From Connell Ltd.

UPPER PORTION OF GREAT STAIR.

GROUND FLOOR PLAN
FIRST FLOOR PLAN.

DETAILS OF GREAT STAIR, CARLTON HOUSE, ENGLAND.

CALENDARS for 1913 have been received from the B. Greening Wire Company at Hamilton, and Goldie & McCulloch Company at Galt. These calendars show considerable taste in arrangement and will prove a valuable feature for office use on account of their artistic merit and pleasing appearance.

* * *

ESTIMATING for Reinforced Concrete Work is the title of a handbook for measuring and pricing reinforced concrete. It was compiled by T. E. Coleman for the use of engineers, architects and estimators. The items and prices are based on the average cost of materials and labor in the London district. The work contains 154 pp., bound in cloth, price 4s. net, postage 4d. extra. B. T. Batsford, 94 High Holborn, London, publishers.

* * *

PUMP MANUFACTURERS have been repeatedly asked to supply a pump with electric motor drive for returning the condensation from radiation placed below the water line of the boiler. Attention has been turned towards the centrifugal or turbine pump for this service, as there is so little expense attached to both the first cost and the upkeep. The problem has been successfully met in the "Economy" Automatic Condensation Pump and Receiver, manufactured by Thomas & Smith, Inc., of Chicago, Illinois.

* * *

THE ENGLISH SYSTEM of destroying combustible refuse by high temperature destructors has been adopted in every quarter of the world. One of the very few destructors which have met with marked success in practical use is the Sterling, designed by Messrs. Hughes & Sterling, of London. For this continent, the Griscom-Russell Company enjoys full rights under the Sterling patents. Designs, specifications and estimates for Sterling Destructors of any desired capacity, and calculated to deal with any description of municipal and trade waste, will be furnished upon request.

* * *

THE Canadian H. W. Johns-Manville Co., Limited, Toronto, has recently secured contracts for rectifying the acoustical defects in two of Toronto's most imposing edifices. The faulty acoustical properties in the Legislative Chamber of the Government Buildings, Queen's Park, have long been a source of annoyance to our Parliamentarians. The handsome appointments in the auditorium of Knox Church, Spadina Avenue, have also been quite marred by a perceptible reverberation, which has entailed hardship upon both speakers and hearers. The process to be employed absorbs all excess of reverberation and eliminates all curtain wires or parabolic sounding boards.

ONE OF THE MOST important developments of the year in the hardware and metal trades was recently announced upon the consolidation of the Metal Shingle and Siding Co. and A. B. Ormsby Co., together with the Canadian interests of the U.S. Metal Products Co. of New York. The Metal Shingle and Siding Co. are familiarly known to the trade in all parts of Canada as being manufacturers of herringbone lath, metal roofings, sidings, ceilings, portable steel garages, steel buildings, and other lines of sheet metal building goods. A. B. Ormsby Co. have specialized in the manufacture of fireproof doors and windows, skylights, ventilators, factory sash, etc. The U.S. Metal Products Co. are large manufacturers in the United States of sheet steel fireproofing materials.

* * *

A REORGANIZATION was effected January 1st of the Gutta Percha and Rubber Manufacturing Company of Toronto, Limited. The directors of the main company working in various parts of Canada through the subsidiary branches, the Winnipeg Rubber Company, Limited, and the Vancouver Rubber Company, Limited, decided to operate all the branches under one name. To this end, application was made for a Dominion charter under the name "Gutta Percha and Rubber, Limited," with an authorized capital of $6,000,000. The new company is controlled by the same interests and under the same management as the old. It has acquired all the trade marks, patents, properties and good will of the old company, and, as heretofore, will be an entirely independent concern without connection or affiliation with any other company in or out of Canada.

* * *

OF THE MANY modern improvements that have done much to remove the feeling of dissatisfaction with farm and country life by giving residents in such parts conveniences which they formerly lacked, none is of more importance than the water supply system. By such installation the comforts and sanitary advantages of the city home are made possible, including the hot water tank for kitchen and laundry, a direct pipe line to dairy and barn, and what is still more essential, the modern bath room with its tub, water closet and basin. At the present time a most reliable and efficient system of this kind is being installed in Canada by the Canadian Fairbanks Company. This system consists of an air-compressor which may be driven by a small gasoline engine or electric motor, an air-tight steel tank for air storage, and an auto-pneumatic pump for each source of water supply. One of the advantages of this system lies in the fact that the air storage tank can be located wherever convenient since the compressed air can be piped from any distance.

CONSTRUCTION

VOL. VI NO. 2

CONTENTS FOR FEBRUARY, 1913

Full Page Illustrations

H. GAGNIER, Limited, Publishers
GRAPHIC ARTS BUILDING, TORONTO, CANADA
BRANCH OFFICES :
MONTREAL WINNIPEG CHICAGO NEW YORK LONDON, ENG.

RITZ-CARLTON HOTEL, MONTREAL, CAN.

¶ *The Balkan war—Its sympathetic side—The disastrous results to the political situation as well as in the field of art.*

THE HEARTFELT SYMPATHIES of all thinking people must be with the Balkan nations in the present struggle of the Cross against the Crescent. It is a contest waged in the interest of right, of freedom from massacre and oppression. For many centuries the cruelty of the Turks has been the shame of all European countries. And what could be more of a reprimand to these powerful Christian nations than the clean cut victories of Bulgaria, Servia and Greece? Their efforts should instill into these supposedly enlightened nations traits of justice and honor instead of their present jealous and covetous natures. Aside from the cause of right and ultimate beneficial results there is great danger ahead. It is in the realm of art where this fear lies. The Turks have religiously guarded their sacred architecture. In one instance they destroyed many holy relics for fear of Christian contamination, at another time through superstitious sentiment they filled in their finest example of gateways, leaving only traces of its former grandeur. In the event of the Turks' religious zeal running rampant through the encroachment of Christian nations, we may look for nothing less than a wholesale destruction of art. Little else could be expected than a complete demolition of mosques, palaces, etc. The finest example of Christian architecture to-day is judged to be St. Sophia, and reports have it that this wonderful structure is undermined. How much truth is attached to this we do not know, but it is an established fact that the Turks will never allow a foreign creed to defile the inner sanctum of their religious edifices. What a loss to the world if this centre of Byzantine art should become a memory of the past—if its ancient ruins of Constantine the Great; its relics of the glorious reign of Justinian; its vast creations under Mohammed II.; its splendor of Suleiman the Great; all should perish with the elimination of the Turkish power in Europe? No more will their faith in Mohammed enable them to regain their former glory—with all their sacred temples destroyed, their spirit cowed by the European display of strength, they will die, as they lived, inseparable from the glories of their religious beliefs.

¶ *The Balkan war—What interest it has to the architect—The tremendous cost to commercialism and to the fine arts.*

DOES THE BALKAN WAR and the ultimate result interest the Canadian architect? Most emphatically, yes. Aside from the loss of art, the world's progress in civilization and commercialism will be interrupted for centuries, should the present conflict terminate in a general European war. The Turks will undoubtedly be conquered, but will each Balkan nation be allowed to enjoy the fruits of their victory? What if Servia insists upon having a seaport and Austria refuses to entertain such a proposition? It would mean a conflict between them in which England, Russia and France would uphold Servia, while Germany and Italy would back up Austria's objections. Then what? A general financial demoralization throughout the world which would paralyze the growth of all nations. M. Jules Roche, after a thorough and analytical study of the expenses during the French war of 1870, estimates the maintainance of the armies representing the six nations for one month to approximate $5,400,000,000. Such an expense would mean the death of all commercial, industrial and financial interests. Shortly all means of subsistence would fail; the mills and factories would stop either from a dearth of laborers or a marketing field; food stuffs would soon be exhausted, with little hope of being able to import same. It is utterly impossible to calculate the tremendous effects such a war would have; but we are awake to this one fact —Architecture and Building would be dealt a terrific blow, from which not one of us would witness the recovery again to its present prosperous outlook. All building transactions would be interrupted, the many and large contracts awarded would be recalled and the unprecedented plans contemplated for the year 1913 would become our Castles in Spain. Picture for one moment all Europe and possibly Canada involved in such a warfare—think of the human lives sacrificed, the devastating inroads into the trade centres of the world, and the irreparable destruction to Fine Arts. The resulting panic would surpass all former ones and bring nothing but regret and hardship in its wake.

Canadian architecture ably presented to the English members of this profession in London Critics universally praise our high class work.

IT IS ENCOURAGING to read the editorial comments of the English press in their praise of the Canadian achievements in architecture. This wholesome criticism has been inspired through the efforts of F. S. Baker, F.R.I.B.A., who presented this subject recently before the Royal Institute of British Architects in London. The paper dilated on the better class of work being done from Halifax to Vancouver and was illustrated by lantern slides and photographs. Mr. Baker commented on the superiority of the work being done by local architects and showed conclusively the folly of having Canadian institutions designed and executed by foreign concerns. It is a high tribute to the architectural profession that the ex-president of the R.A.I.C., and one so eminently fitted for such a task, should lay aside his ever increasing business activities to present this phase of commercial life before the members of the R.I.B.A. It is a sacrifice deserving of sincere commendation and can only result in a better knowledge of the tremendous strides the Dominion of Canada is making in the world of art, as well as a more wholesome attitude towards our consistent efforts in creating an architectural style worthy of emulation.

City planning—The need of studied schemes for the improvement of national features—Work that is being done throughout Canada

NO OTHER MOVEMENT is progressing so rapidly as the beautifying of our cities and towns. It is demonstrated by the vast expense incurred in replanning and changing the existing conditions in our large cities; it is shown in the Town Planning Act passed by the Legislatures of the various provinces; it is revealed in the actions taken by our architectural associations; and it is being exemplified by our small villages which are earnestly considering their public growth and possibilities.

In Ottawa, Edward White, the British expert engaged by Rt. Hon. R. L. Borden, reports that for the best economic advantage of the Capital there should be a double line of buildings running east and west separated by a broad boulevard. At the centre should be a wide open square with the Supreme Court and Railway Commission occupying a prominent position encircled by an elaborate terrace.

In New Brunswick the Legislature passed an Act that all future developments in towns and cities are to be carried out under Government supervision. This regulation is a little too drastic, but may result in a sanitary and artistic treatment of many places which would otherwise adopt an unwholesome scheme.

At a recent meeting of the Alberta Association of Architects the members went on record as approving the work of the Provincial Town Planning Commission, which has for its object the betterment of conditions in the matter of housing, sanitation, traffic and the beautification of towns and cities.

Many other instances could be cited to show the general awakening of the people towards schemes of individuality and character. Plans are being prepared in the new cities of the West which show wide boulevards, parks, recreation grounds, monumental buildings and civic centres. It is an encouraging sign and full of great promise. Let the enthusiasm grow until every part of this great Dominion is released from the clutches of selfish commercialism and the people are privileged to enjoy the blessings of freedom and beauty.

Building statistics—The remarkable activity during the year nineteen hundred and twelve—Prospects for the present year phenomenal.

IT IS EXTREMELY GRATIFYING to see the remarkable record made in building permits for the year 1912. But our greatest pleasure comes from the character of the work, both in an artisitc sense and in the improved methods of construction.

The future outlook is exceedingly bright. Our population is having a surprising growth, which means, in itself, a continuation of the large building industries. We must house, we must school, we must provide for sickness, we must govern, we must live —all of which necessitates new structures. Unless some unforeseen calamity comes to us it is safe to predict that the combined total of building for the present year will be 50 per cent. increase over that of 1912.

The following table will be of general interest in reviewing the relative merits of the various cities as to their standing and actual increase in building lines:

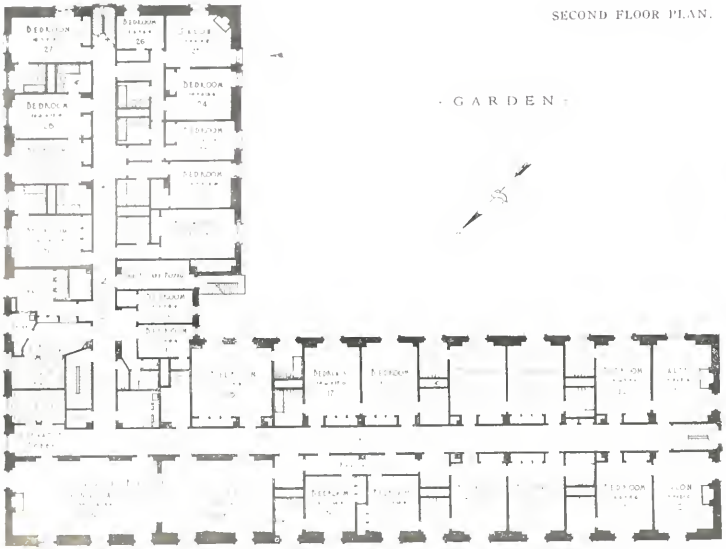
		Amount of building.	Increase. Percent.
1	Toronto	$27,401,761	12
2	Winnipeg	20,475,350	15
3	Calgary	20,394,220	58
4	Montreal	19,641,955	34
5	Vancouver	19,428,432	10
6	Edmonton	14,446,819	293
7	Victoria	8,208,155	103
8	Regina	8,047,309	57
9	Saskatoon	7,640,530	54
10	Hamilton	5,491,800	29
11	Moose Jaw	5,275,797	119
12	Fort William	4,211,285	37
13	Ottawa	3,261,850	20
14	Point Grey	3,004,815	—
15	Medicine Hat	2,836,239	281
16	Maisonneuve	2,685,828	124
17	South Vancouver	2,550,000	—
18	Port Arthur	2,494,179	318
19	Prince Albert	2,006,925	117
20	Westmount	1,824,369	27
21	New Westminster	1,634,518	45
22	Outremont	1,582,000	20
23	Lethbridge	1,358,240	31
24	St. Boniface	1,251,012	10
25	Brantford	1,167,105	90
26	Brandon	1,166,214	13
27	London	1,136,108	9
28	Windsor	1,098,063	48

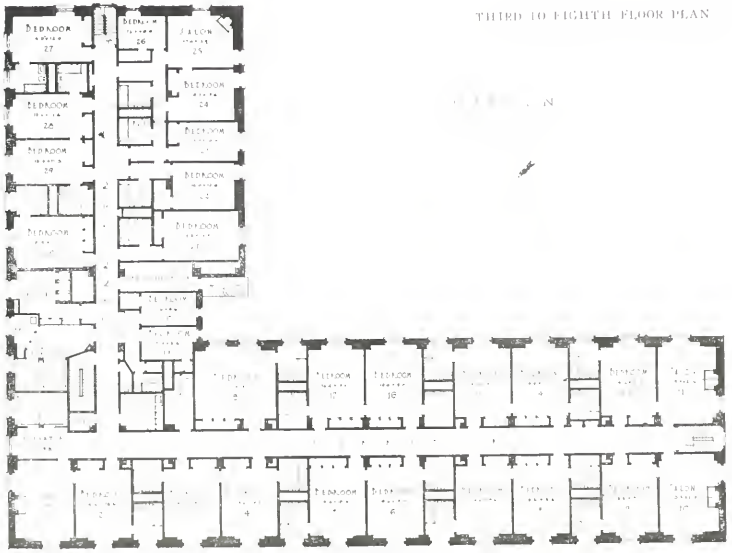
GROUND FLOOR PLAN.

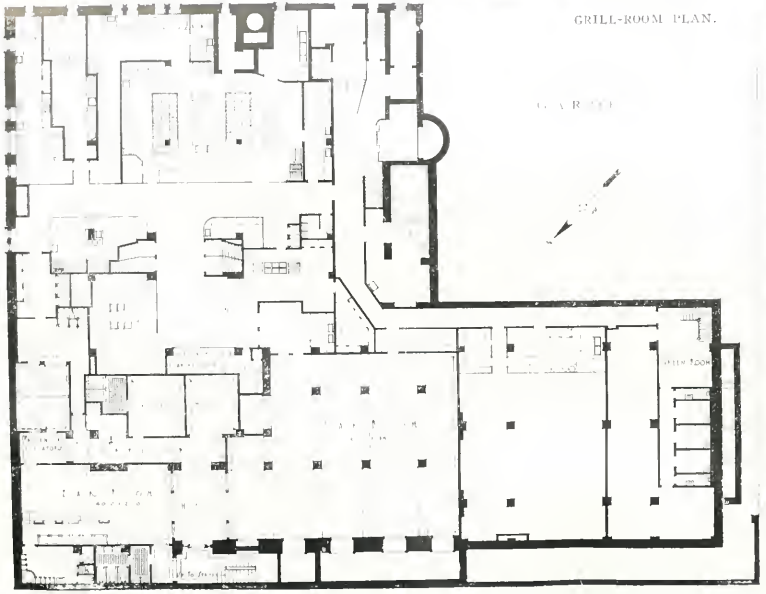
VIEW FROM SHERBROOKE STREET

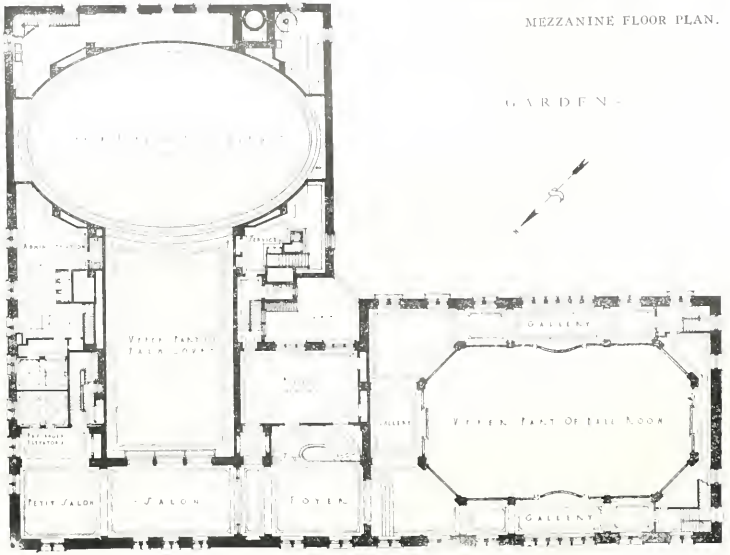
RITZ-CARLTON HOTEL,

MONTREAL, QUE.









PLANS OF THE RITZ-CARLTON HOTEL, MONTREAL.

BALCONY IN PALM COURT. OPENING FROM SALON.

The Ritz-Carlton Hotel, Montreal, Can.

THE RITZ-CARLTON HOTEL at Montreal is one more link in the marvelous growth of a creation started through the ingenuity of a Swiss farmer. M. Cæsar Ritz has demonstrated the advisability of a unity of purpose developed in a practical and artistic manner. From the common life of a peasant he has risen to the summit of success and will live as an example most worthy of emulation.

It might be well to consider for a moment the traits which forced such recognition from the whole civilized world. He had a clear insight into the centralizing of interests; he was imbued with a desire to make his finished product one harmonious whole; he grasped the advisability of eliminating the mercenary impressions; he sensed in a remarkable degree the purity of color, form and taste. In fact each succeeding hotel is only a broader development of the ideas he incorporated in his first large enterprise —the Ritz Hotel at Paris, 1897. From that time on the growth has been truly marvelous, and to-day there are eighteen hostelries built and several in course of construction.

The finality of an undertaking is what makes the original thought worthy of consideration. Unquestionably the fundamental principles were all that the critic could expect—what, then, are the practical applications which give each hotel the stamp of general approval. A careful study of one will furnish you with the reason for the high standing of all.

In the first place the planning is carefully studied with a view of best suiting the needs of the community in which the hotel is to be erected. Then the architectural treatment both upon the exterior and upon the interior is considered. In every instance the possibilities of the site, the general surroundings, the vistas, the character of buildings near by, etc.—all weigh in the style adopted and the materials used. The impressions obtained from the exterior necessarily must be maintained upon the interior. After the decorative features are arranged attention is given to the furnishings. In addition to perfect harmony in color and design, they must invariably have the quality of comfort. When all is complete in the way of equipment then the features essential to the preservation of its highly established reputation, viz., cooking and service, are standardized.

The citizens of Montreal may, and in fact do, feel that in their new hotel they have the finest and most artistic building of its character in the Dominion of Canada. They realize that the standard already established has been raised a trifle higher in this resultant of genius, through a broad experience with all phases of the work and a studied handling of the æsthetic capabilities. And it is safe to assume that they will be able to claim such a distinction as long as the hotel is under the advisement of M. Rudolph Bischoff, the present manager. With his careful attention to the minutest details of all departments, his strict disciplinary tactics prevalent throughout the complete working corps, and his keen and hospitable interest in every guest—these qualities will foster the existing atmosphere of charm and comfort. In this way the harmonious blending of the æsthetic and the practical will continue to live, while time will only strengthen and enhance in every respect the praiseworthy features of the present edifice.

The hotel is situated at the corner of Sherbrooke and Drummond streets in the centre of a rich residential district—a guarantee in itself that the environs will maintain its setting of wealth and dignity for many years to come. The site commands a superb view in every direction. To the north rises the stately and far-famed Mount Royal; to the east the many attractive features of the city with the Belle Isle Mountains forming a suitable background many miles away, and to the south the valley of the St. Lawrence, the Victoria Bridge, the Green and Adirondack Mountains. Surrounded by a forest of trees and a stretch of wealthy homes in all directions, it is still within a few hundred yards of the business section. Removed from the constant noise of endless

GRAND BALL ROOM.

traffic, it furnishes quiet and comfort, exceptional qualities to be found in the most modern and up-to-date hotels of our cities.

Externally the general appearance is a masterpiece of refinement and dignity. The terra cotta trimmings at the window openings and elsewhere are in perfect harmony with the limestone which gives the structure a feeling of solidity and strength. Rising majestically for eleven stories, the internal treatment is expressed by means of the horizontal courses. The base consisting of the ground and mezzanine floor plans, the narrow frieze between the two cornices denoting the first or servants' dormitory floor, and the shaft and cornice indicating the living quarters for guests. The three top stories and cornice are rich in ornamentation and demonstrate the artistic and practical use of terra cotta. It is well to notice the natural blending of the terra cotta with the stone and how much the former material expresses the latter. The balustrade at the top rests upon an extremely high base which permits of its architectural merits being enjoyed from the street below. The balconies give the desired break in the two central divisions and lend an additional value to the decorative treatment. The marquise acts as a vestibule, having the part adjoining the building encased in metal, painted white, one end of which is used for the telephone booth, while the other permits of a direct entrance from the street to the grill or oak room below.

Upon entering the office lobby the first impression is that of quiet dignity. Instead of gazing into an obtrusive and mercenary office desk and the accompanying lobby of bustle and smoke, one catches a glimpse through an artistic glass treatment of doors into the palm court and old rose dining hall beyond. The lobby has a marble floor the coldness of which is relieved by heavy oriental rugs; the walls are covered with imitation Caen stone above a warm Hauteville marble wainscot which is also used for the office counter and openings. In addition to the vista towards the main dining room there is one equally charming looking through the foyer to the ball room. Here is demonstrated one of the traits already mentioned as being characteristic of the Ritz hotels. All mercenary suggestions are removed by placing the office in the corner, readily accessible to the main entrance, elevators, etc., and at the same time in an inconspicuous location. Careful attention has been paid to the individual features; the partitions separating the palm room from the lobby, also the foyer, are made of clear glass panels furnishing an unobstructed view; the elevators are screened by mirror doors; the office enclosed in an ornamental screen; and the heating and ventilating hidden at the windows by a marble enclosure flush with the walls. Little touches of comfort are added by easy chairs, palm boxes, and small ornate tables.

Directly opposite the main entrance to the lobby is the light and cheerful opening into the palm court. This room inspires one with a feeling of restfulness and deep content, making the entry into the dining

PETIT SALON

room beyond a matter of ease and grace, a feature often objectionable on account of opening directly from the lobby. The court is made quite inviting by means of a number of small Antoinette tables where tea is served. The decorative scheme is very happy. The heavy soft Wilton carpet, the tables and wicker furniture and the clusters of palms form the rich green coloring in striking contrast to the French Hauteville marble wainscot and deep cream walls above. The six gold candelabra and sixteen wall brackets containing one hundred and fifty candle lights together with the concealed lighting in the cornice, flood the place with a powerful glow of subdued radiance. At the far end broad steps lead to the landing on the same level as the floor of the dining room, which raised portion is admirably suited to the needs of the orchestra. An iron balustrade in black and old gold similar to that of the main stairway encloses the platform. A large open fireplace adds still more cheer to the attractiveness, while the delicately molded ornament of the walls and cornice reveal the cleverness of the designer in uniting the architecture with the furnishings in making a harmonious treatment of the many and varied parts.

Opening from the palm court is the oval dining room or restaurant with three large window treatments. The room is seventy-eight by fifty-six feet and capable of accommodating two hundred and fifty guests. It is decorated in the Adams style and contains a slightly domed ceiling with elaborately moulded details in very low classic reliefs. The lighting comes effectively from a myriad of lights hidden behind the ornate cornice and reflected from the curved surface above. The eye is led from the white duresco ceiling to the floor by the entrance design and window openings, which are also finished in a very light tone. Between these prominent features are delicate cream panels admirably adapted as a setting for the graceful wall lights in dull gold.

While the upper part of the dining hall is kept in a light tone which has the tendency of making the room seem much larger, the lower part is more cozy through the use of old rose effects. The heavy super Wilton carpet is in two shades of old rose, the lighter harmonizing with the silk tapestry upholstering of the chairs. The curtains are of heavy rose silk hung by shaped pelmets with applique of the hotel crest in the centre. At one end the windows extend to the floor and open upon the ball room terrace which overlooks the Dutch garden. This garden will be used for summer parties and is accessible from the terrace by means of steps and balustrade, recalling to mind the old approaches of famous chateaux.

From the entrance lobby one passes through the foyer into the grand ball room, ninety by forty feet and capable of accommodating four hundred. Here are held receptions, concerts, banquets, and all other social functions. The character of the design is in perfect harmony with the other parts already described and is finished with duresco plaster and wood work in white relieved by the gilded metal work and curtains. The ornament is of extremely

PALM COURT

RITZ-CARLTON HOTEL, MONTREAL, CAN.

PALM COURT.

DETAIL OF BALL ROOM.

RITZ-CARLTON HOTEL, MONTREAL, CAN.

ENTRANCE FOYER.

rich low relief work in striking contrast and at the same time maintaining a unison with the plain vaulting above, which is interrupted by a delicately moulded course forming a centre panel. Within are two elaborate patterns which form the setting of electric crystal ceiling fixtures of cut glass and metal finished in dull gilt. The balcony extends around the room and affords an opportunity for the architect to make his work of unusual interest. The various widths of the bays necessitated different curves which break the monotonous effect so often obtained in equal divisions. This feature, together with the low relief of the design and the upward tendency, gives the room an unusually large appearance. From the piers of the balcony hang electric lights encased in etched alabaster glass globes and finished in dull gilt; the hanging brackets have the same metal work with crystal beaded bowls. The curtains are of French gray moire silk, extremely heavy, and of same material as the upholstering work and the covering of the balcony rail. A spring floor has been laid of quartered oak; all furniture is of mahogany. An independent entrance from Sherbrooke street gives access to the ball room from the foyer without having to pass through the entrance lobby.

The foyer is the connecting link between the ball room and main lobby. The main stairs lead to the foyer above, which opens into the salon, smoking room, and balcony of ball room. At a landing half way up the stairs is the entrance to the manager's office, directly over the ladies' dressing parlor. The floor of the foyer is laid in light gray marble squares; the walls consist of a wainscot of French Hauteville marble with imitation Caen stone extending up through to the ceiling on the next floor; the steps are of marble similar to the wainscot with an iron railing in black and gold.

The oak room presents one of the most attractive features. Upon entering from the corridor, which is accessible from the main office and from the vestibule, a remarkable effect of daylight is present. This transformation from the subdued lighting to the more glorious spectacle of covered day is caused by a superb method of indirect lighting. The myriad of lights are well hidden behind the upper members of the cornice, encircling the walls and surrounding the seven piers. The room lends itself to this treatment by having a simple but very ornate design. The wainscot of quarter-sawed oak is finished in its natural tone, extending within two feet of the ceiling and highly panelled. The furnishings consist of fifty tables accommodating one hundred and sixty hungry mortals: chairs upholstered to match the rich green effect of the heavy Wilton carpet with the wood in perfect harmony to the wainscot. The only features breaking the continuity of the wall surface consist of entrances from the lobby and serving room, opening for cashier's quarters and four small sterilizing rooms which are finished in white enameled tile. The wall brackets are of antique silver. Directly across the

RESTAURANT OR MAIN DINING ROOM.

entrance hall is the bar, designed similarly to the oak room, excepting a nine-inch square tile floor with wide tinted jointing and wicker furniture.

Located over the manager's office on the mezzanine floor is the smoking room, the walls of which are in buff plaster with panel mouldings and cornice in natural oak. The carpet and upholstery are a myrtle green, producing a pleasing appearance. Passing from here through the foyer, we come to the salon and petit salon, known as the blue room. Here is found a radical departure from the general tone of the whole decorative scheme. The floor is covered with a rich deep blue super-Wilton carpet; portiers, table covers and upholstering of dark blue repp, and walls of bluish gray tone. There is no jarring note to the whole scheme, the elevator opening having mirror doors and the wood work of a light gray matching the tint on the walls. The electric standards, brackets and hanging fixtures are of antique silver and alabaster. From the balcony of this room is obtained a most interesting view among the bevy of ferns, along the delicately creamed ornamented walls, over the small shaded candle lights, and through the elaborate partition of slender columnettes with some three hundred and fifty opaque glass, into the charming old rose dining hall.

The first floor is practically the servants' dormitory, and provides for the help's bed rooms, sewing rooms, dining rooms, dressing rooms, supply rooms and lounge. Arrangements are also made for the guests' barber shop and hair-dressing parlors with gray and white mosaic floor, marble wainscot, stands and bowls, and mahogany woodwork.

All above the first floor are bed rooms for the use of guests, with the vice-regal suite on the second. There are twenty-seven suites, one hundred and sixty-four double bed rooms and seventeen single rooms. The salons of the suites have silk armure curtains, Chesterfield sofas, mahogany tables, writing desks, chairs, commode, etc., and washable plaster walls. In the bedrooms are brass beds, mahogany furniture, chintz portiers and plaster walls with very delicate panel mouldings. It is safe to say that this is one more feature emanating from the first principles laid down by M. Ritz. Every room is exceptionally large with a built-in wardrobe, portable electric light standards and trunk stand.

Adhering strictly to the attractive and cleanly policy maintained throughout all departments, the kitchen walls and partitions are built of white glazed tile and floors of nine-inch square tile. Connecting the kitchen with all floors are electrical dumb waiters equipped with special heating apparatus underneath, for the purpose of keeping meals served to the various floors warm. Corresponding lifts without the heaters administer to the cold storage needs. All liquors, etc., are served from a special bar attached to this department. Considerable marble is used, especially in the oyster bar and places demanding unusual cleanliness.

BAR

FOYER

OAK ROOM.

RITZ-CARLTON HOTEL,

MONTREAL, CAN.

SUITE SALON

The cellar floor provides for a service dining room, refrigerating plant, trunk rooms, wine room, elevator motor room, filter space, lockers, help's barber and tailor shops, blower room and switch board room. In the refrigerating plant are two twenty-five ton ice machines, one of which is held in reserve, the other being operated from exhaust steam at a very low pressure. There are also fifty cold storage boxes cooled with brine. One high pressure system operates the cold storage boxes located on each floor, another of low pressure takes care of the basement, kitchen and butcher shop. All ice is made from filtered water. Four filters of two hundred gallons capacity, with coagulating tank for feeding the alum solution, purify all cold water used throughout the building. The filters consist of an eight-inch layer of screened gravel over specially equipped strainers, all of which is directly beneath three feet of filtering sand.

Three floors underneath level of main entrance is located boiler room containing three boilers of seven hundred and fifty horsepower, coal bunkers, elevator space, vacuum cleaners and tanks, thermostatic pumps, twenty thousand gallon suction tank operated by two air compressors, pit for oil buffers and hot water tanks. All toilet and bath rooms are supplied with hot water by means of the thermostatic system. Two heaters operated from exhaust steam at about four pounds pressure supply three thousand gallons of hot water per hour from 50 to 160 F., one supplying every need below the ground floor, the other everything above. All lower sewerage is taken care of by means of automatic compressed air cast-iron ejecters with a capacity of two hundred and fifty gallons each at a pressure of thirty pounds.

In the sub-basement are found four fresh air fans of the multi-vane type. One supplies all the basement and service quarters, another the ball room, oak room, bar and smoking room; the third is a general supply fan providing for rest of building, including the palm court, lobby, main dining room, etc.; the last or rotating fan with fresh air connections to the wine cellar and grill room, the latter having an exhaust into the service dining room. Fresh air intakes are supplied with air filters consisting of steel frames and galvanized wire netting covered with cheese cloth. A fresh air supply fan with independent exhaust fan at roof is arranged for the kitchen and boiler room with adjustable iron swivel ducts. Bath and toilet rooms have a fifteen horsepower exhaust; ball room has two forty-two inch exhaust fans; all other rooms to the first floor have a sixty horsepower motor capable of discharging ninety thousand cubic feet of air per minute.

The radiator system consists of seven hundred vertical sectional patterns with thermograde valves and auto valves which prevent all escape of steam.

The corridors throughout are finished with cement floors having marble borders and base, duresco ceilings and walls, heavy Wilton carpets of tan shade with dark borders. Elevator doors into each corridor are made of the double process chipped wire glass excepting at basement, ground and mezzanine floors, where are installed mirror doors.

BED ROOM

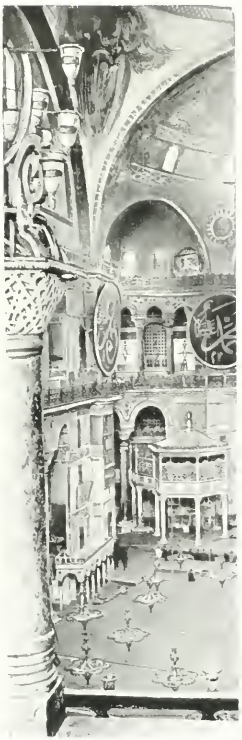
The building is fireproof throughout, with all floors laid in cement and all partitions of gypsum blocking and metal furring. The approximate cost of entire building is $2,000,000.

Among the contractors who materially assisted in the equipment and finish of the hotel are R. De Vigan & Co., of Montreal, makers of artificial Caen stone cement; the Lautz Company of Toronto, dealers in foreign and domestic marble; Otis-Fensom Elevator Co. of Hamilton, Ont., makers of elevators; William Rutherford & Sons Co. of Montreal, wholesale and retail dealers in all branches of millwork; and J. & J. Taylor, Ltd., of Toronto, manufacturers of safes. Architects, Warren & Wetmore.

The other hotels erected by the Ritz-Carlton Hotel Co. are located in London, Paris, Madrid, Lucerne, Naples, Rome and Evian-les-Bains, in Europe; New York, Philadelphia, and Montreal, in North America; Sao Paulo, Rio de Janeiro, Guaruja, and Buenos Aires, in South America. Restaurants of this company are established on the S.S. "Amerika," S.S. "Kaiserin Auguste Victoria" and S.S. "Imperator" of the Hamburg-American liners.

BED ROOM.

MOSQUE OF SANTA SOPHIA, CONSTANTINOPLE.



European Turkey—I.

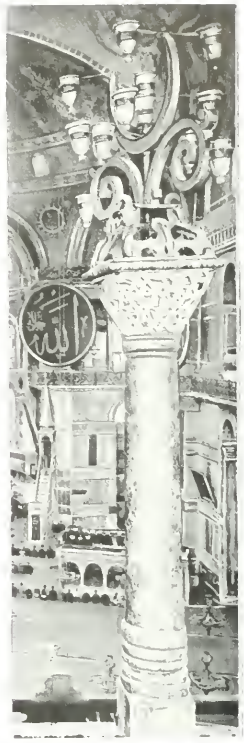
Constantinople

F. R. MAJOR

Awake! for Morning in the Bowl
of Night
Has flung the Stone that puts the
Stars to Flight:
And lo! the Hunter of the
East has caught
The Sultan's Turret in a Noose
of Light.

The Rubaiyat of Omar Khayyam

The Crescent, taken by the Mohammedans from the Christian Byzantine Empire, had already been taken by Christianity from Paganism. Constantinople first assumed the Crescent in 339 B.C. The attack of Philip, of Macedon, which was made on a dreary winter's night, was revealed by the howling of the dogs and shortly after by a meteor which lit up the Macedonian army. Saved by this miracle, the citizens erected a statute to Hecate the Torch-bearer and struck coins bearing her emblem, the crescent moon.



MILITARY FEUDALISM of European Turkey is at an end. The revolution of the Bulgarians, Serbs, and Greeks has protested emphatically against the many centuries of oppression and suffering. As the Balkan races fell in the fourteenth century through a divided interest, so have they failed to escape the cruelty of the Moslems for these hundreds of years. But at last driven to the extreme limit of endurance, they have formed a solid front and practically expelled the Turk from European shores. Will it be permanent? Or is it only momentary—for how often have they been driven to their very thresholds only to emerge again and again mightier than before.

The Turk possesses a remarkable amount of inactivity. We can scarcely attribute this to laziness even though one obtains this impression to a remarkable degree. Fine looking and well proportioned, they have a marked capacity for military discipline, hardships and privations in spite of their indolent disposition. Some one has said that this static condition of inactivity of the race is due to the fact that the Turk is too proud to be a laborer; too stupid to engage in any calling requiring unusual ingenuity and inventiveness, and that his religion inculcates a fatalism which is hostile to effort. His whole teaching has been to enjoy the rights of oppressing Christians, for in doing so he is carrying out the will of God. In religious matters, therefore, he is cruel, intolerant and vindictive, while his sympathies for music, drama and art are highly cultured.

To-day Constantinople has practically a million and a half people, a third of whom are Turks, a fifth Greeks, and a like number of Armenians. The remaining consist of Jews, Bulgarians, Persians, Kurds, Gypsies, etc. The city itself is extremely dirty and alive with the repulsive diseases like scrofula and leprosy. The picturesqueness of its background and the charm of its architecture and customs hide so much of the objectionable. The streets are narrow, extremely crooked, and badly paved, but in spite of all this they are extremely attractive with the various types of nationalities and their variegated costumes. Imagine a congested scene of peddlers hawking their wares, slaves carrying all sorts of merchandise from baskets of fruit to pianos, women mysteriously veiled, pilgrims, donkeys, dogs, etc., etc.

In order to imagine ourselves in the midst of this, let's have Mark Twain tell us of a Constantinople street scene: "It was an eternal circus. People were thicker than bees in those narrow streets, and the men were dressed in all the outrageous, outlandish, idolatrous, extravagant, thunder-and-lightning costumes that ever a tailor with the delirium and seven devils could conceive of. There was no freak in dress too crazy to be indulged in; no absurdity too absurd to be tolerated; no frenzy in ragged diabolism too fantastic to be attempted. No two men were dressed alike. It was a wild masquerade of all the imaginable costumes—every struggling throng in every street was a dissolving view of

CONSTANTINOPLE, SHOWING MOSQUES OF ST. SOPHIA AND AHMED.

stunning contrasts. Some patriarchs wore awful turbans, but the grand mass of the infidel horde wore the fiery red skull-cap they call a fez. All the remainder of the raiment they indulged in was utterly indescribable. The shops are mere hen-coops, mere boxes, bath-rooms, closets—anything you please to call them—on the first floor. The Turks sit cross-legged in them and work, and smoke long pipes, and smell like—like Turks. That covers the ground. Crowding the narrow streets in front of them are beggars who beg forever, yet never collect anything; vagabonds driving laden asses; porters carrying dry goods boxes as large as cottages on their backs; peddlers of grapes, hot corn, pumpkin seeds, and a hundred other things, yelling like fiends; and sleeping happily, comfortably, serenely, among the hurrying feet, are the famed dogs of Constantinople."

FIFTH MILITARY GATE.

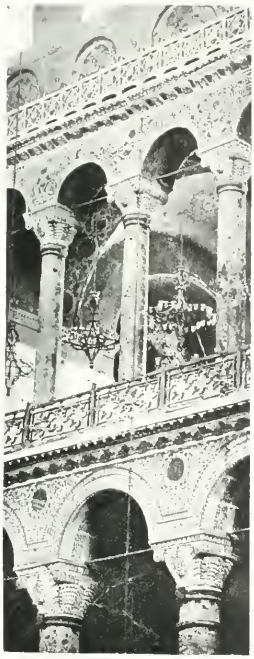
It is difficult to picture such a remarkable change from the splendor of this city during the reigns of Constantine the Great, Justinian I., Mohammed II., and Suleiman the Great. Conquered, pillaged and burnt for centuries, she was rebuilt by these various rulers, who endeavored to make it the most magnificent metropolis in the world. And each one succeeded in his one supreme effort, bringing materials from all parts of the world which would adorn and beautify. No labor or expense was considered too great in restoring the old edifices and in erecting new ones. As a result of their enthusiasm and self glorification there are to-day three hundred and seventy-nine mosques, palaces costing as high as thirty million dollars, and fountains that vie in ornamentation and richness to the most elaborate in existence.

COLUMN OF CONSTANTINE.

In reviewing the growth of these remarkable structures, together with their architectural properties, we must constantly keep in mind the conditions under which they developed. Strange as it may seem, the Delphic oracle told the Greeks in the

CONSTANTINOPLE, SULEIMAN MOSQUE IN FOREGROUND.

eighth century B.C. to "Build ye opposite to the City of the Blind." Faithful to the command the galleys of the Hellenic race swept past the site of their blind forerunners and landed on the peninsula destined to become one of the most illustrious places in history. The "City of the Blind" was undoubtedly Chalcedon on the Asiatic shore opposite, which was founded six hundred and fifty-seven years before the Christian era. Byzantium, so called, arose on the seven hills commanding a beautiful view of the Bosphorus. And from her first settlement down to the present era this illustrious haven of political and commercial advantages has gone through a continuation of sieges and warfare unequalled in the history of the world and which exemplify the remarkable recuperating powers of her people.



GALLERIES OF ST. SOPHIA.

One hundred years after the foundation of Constantinople there were two hundred and fifty large public buildings. The city had few rivals and readily became the terminus of the chief routes of the empire, with an annual revenue of $20,000,000. She boasted of the strongest fortress, the best equipped naval station, the greatest arsenal, in addition to being the centre of education and the Mecca for religion. Situated "at the meeting of two seas and two continents, like a diamond between sapphires and emeralds," it developed into a commercial focus. All this in spite of wars, the ravages of ferocious hordes, and internal strife. In 148 B.C. Byzantium became a Roman ally and was exceptionally rich in works of art. Through all her vicissitudes she religiously guarded the monumental structures as well as her other artistic treasures. The decision to take sides with the Syrian general in 170 A.D. led the Romans to sack the city and foolishly destroy her splendid fortifications. The alternate cruelties of the Romans and barbarians continued; captured by Darius; burned by the Persians; besieged by Philip of Macedon; destroyed by Septimus Severus —it managed to exist until Constantine the Great, ruler of the Roman empire, changed the name of

THE GOLDEN GATE.

an indestructible monument to the living character of the great emperor who had inscribed on the base, "O Christ, Ruler and Lord of the world, to Thee I consecrate this obedient city and the sceptre and power of Rome! Guard Thy city! Guard it from every harm!"

The palace of Belisarius near the Adrianople gate is among the few ancient edifices remaining. Stripped of its outer coverings, it is still most impressive and contains several examples of delicate carvings most exquisite in design. There is much to admire and study in this one massive example of Byzantine architecture which still exists. The underground palace and the cistern of Binbirdirek are attributed to the skill of Constantine. The former rests on three hundred and thirty-six white pillars with Corinthian capitals. The latter, called the "Thousand and one Pillars," is arranged so that the pillars form aisles beneath the overhead arches. Monograms of Constantine the Great are to be seen upon the bricks built into the arches as well as into the shafts of the columns.

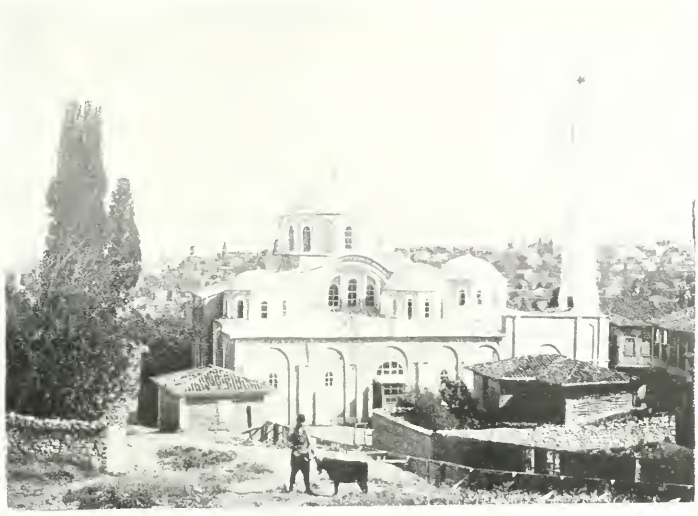
THE TOWER OF GALATA.

The rulers succeeding Constantine down to Justinian I. did little to advance the realm of architecture. Valens is noted for the aqueduct, parts of which are still in use, although it presents little else than a picturesque ruin with its Gothic arches covered with vines. Theodosius I. celebrated his victories with a memorial hall graced with delicately carved columns. Arcadius lives through the splendor of his court. Theodosius II., 408-451, designed the Golden Gate after the Triumphal Gate of Rome. It was an entry for all conquerors who were to be honored for victories both at home and abroad. The Turks living under a tradition that by means of this gateway some Christian monarch would conquer Turkey, had it walled up. A few columns of a greenish tint and massive towers are still in evidence. Anastasius built the great wall extending from the Sea of Marmora to the Black Sea and which became a vital factor in the safety of the city afterwards.

SARCOPHAGUS OF ALEXANDER THE GREAT.

Under the reign of Justinian I., A.D. 527-565, his government extended over Italy, Illyricum, Africa, islands of the Mediterranean and part of Spain; the legal reforms were far-reaching in their scope; churches, basilicas, monasteries, fortresses, hospitals arose everywhere. The greatest monument was the Church of the Divine Wisdom, which is considered the most perfect specimen of a Christian Temple. In Anthemius of Tralles he had one of the world's greatest architects. Two hundred fortresses and military towers were built in the Balkan provinces alone. The long wall of Anastasius was repaired, the summer palace of Heraeum erected

ENTRANCE OF THE OLD SERAGLIO



ANCIENT GREEK CHURCH OF KHARIA.

Byzantium to Constantinople and made her the capital of the civilized world, 330 A.D.

According to St. Augustine: "Throned in the Hippodrome, ever to be the centre of Byzantine life, Constantine gave thanks to God for the birth of this fair city, the daughter, as it were, of Rome herself." The new emperor aimed to make his capital the grandest city ever known and succeeded to no small degree in carrying out his chief desire. Magnificent edifices, theatres, baths, palaces, and churches arose as if by magic. Adorned as they were by the treasures from Rome, Syracuse, Athens, Delphi and Antioch, they represented the artistic creations of all nations. Private houses sprung up all over the city, while fountains, aqueducts and porticos showed the prosperous state of affairs existing at that time.

But how little remains of the Hippodrome in the great forum of Constantine which held one hundred and twenty thousand people. Here were proclaimed the emperors, awards bestowed upon the victorious leaders, criminals and heretics punished, and sportive festivals inaugurated to feed the brutal desires of the populace. Now one finds only the Serpent Column, the Egyptian obelisk and the burnt pillar. The Serpent Column belonged to Greece over twenty-three hundred years ago and commemorated the final defeat of Xerxes. It is the greatest metal relic of ancient history, wound around by three serpents on whose coils are inscribed the cities which participated in the battle of victory. The heads were destroyed by a subsequent conqueror.

The syenite obelisk, sixty feet high, was brought from Heliopolis by Theodosius, and contains bas-reliefs depicting scenes in the Hippodrome during the fourth century. The Latin inscription tells of the difficulty in raising the column with its marble and granite base:

"To raise this four square pillar
to its height,
And fix it steady on its solid
base,
Great Theodosius tried, but
tried in vain.
In two and thirty days, by Proclus' skill,
The toilsome work, with great applause, was done."

The column of Constantine the Great was raised by him on the spot where his tent stood during the siege of Byzantium. It originally consisted of ten drums of porphyry, each one of which were ten feet high and eleven feet in diameter. The joints were concealed by bronze laurel wreaths. A white marble pedestal held the column topped by a statue of Constantine himself by Phidias. Injured by an earthquake in 1012, numerous fires and a collapse during the reign of Comneus, it now presents a wrecked appearance. This "burnt column" is the source of legends and superstitious beliefs and exists

with magnificent gardens and the old Byzantine palace restored. The old Byzantine church founded by Justinian possesses a spirit and action in the decorations unusual in works of that period. It contains some remarkable mosaics and frescoes of the fourteenth century.

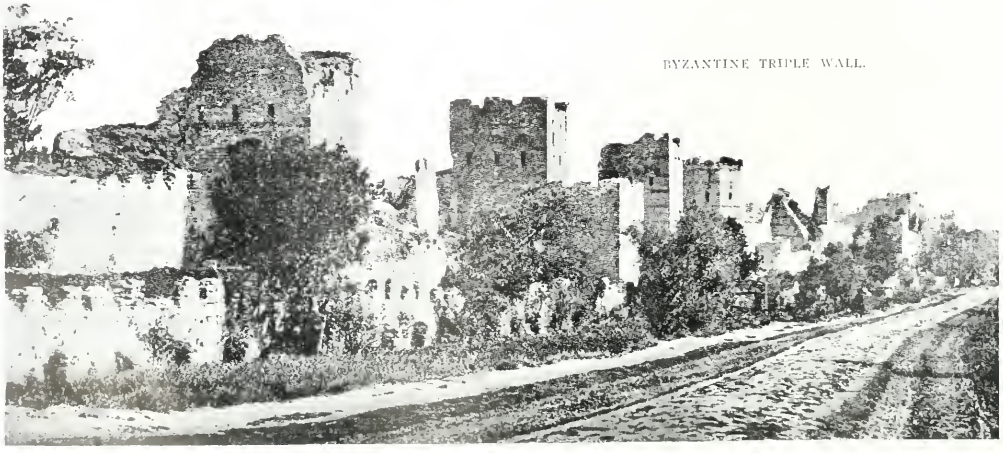
Although San Sophia was founded by Constantine the Great and rebuilt by Theodosius, considerable credit must be given Justinian I. for this magnificent temple, so much of which still remains. It is hard to realize the historical and religious importance of this edifice which caused Justinian to exclaim, "God be praised, who has esteemed me worthy to complete this work! O Solomon, I have even surpassed thee!" Four white minarets added by Mohammed II., 1453, rise above the white and rose-colored walls. Upon the interior one hundred and seven gigantic and beautiful pillars of green marble and red porphyry support the four arches which in turn uphold the illustrious dome with its forty windows. These marble columns were imported from Phrygia, Egypt, Rome, Athens, the Cyclades and elsewhere. In its entirety it is a temple of marble, metals, ivory, pearls and cedar gathered from the entire world and stands a living monument to the skill and artistic nature of its creators. The previous conflagrations persuaded Justinian to use little wood. He enriched the walls with mosaics; made the doors of silver gilt, ivory, amber and cedar; laid the pavement in marble so veined as to present the appearance of water flowing through. Enormous green disks with pious inscriptions in gold are hung to the upper gallery, while the cartouches lower down are of porphyry bearing the names of Allah, the Prophet and his Caliphs. Ferguson says: "The eye wanders upwards from the large arcades of the ground floor to the smaller arches of the galleries, and thence to the smaller semi-domes. These lead the eye to the larger, and the whole culminates in the great central roof. Nothing, probably, so artistic has been done on the same scale before or since. So far as the interior is concerned, no Gothic architect ever rose to the conception of a hall one hundred feet wide, two hundred and fifty feet in length and one hundred and eighty feet high, and none ever disposed each part more artistically to obtain the effect he desired to produce. In fact, compare it as we may with any other buildings of its class, the verdict, internally at least, is that San Sophia is the most perfect and most beautiful church which has yet been erected by any Christian people."

MARBLE TOWER BY THE PROPONTIS.

The tower of Galata is a hollow cylinder with walls twelve feet in thickness and stairway leading to the top. This white fortification was built by a Christian emperor and originally had a large cross at the summit which was destroyed by Mohammed II., who in turn crowned the apex with a tapering cone.

Among the many interesting treasures found in the Imperial Museum of Antiquities is the sarcophagus of Alexander. This is one of the finest examples in the museum and considered to be the best relic of ancient art. Among other works found here are the tomb of Tabnith, various inscriptions, a head of Minerva, Byzantine and Persian pottery and glass.

The triple wall will be discussed in next article.



BYZANTINE TRIPLE WALL.

In connection with the foregoing article it might be well to mention certain books bearing on the life, customs and characters of the Turks, dealing particularly with life in Constantinople. Some of these from an architectural standpoint are very valuable, and any or all of them would make excellent works of reference in connection with Turkish life.

The first, "The Thousand and One Churches," by Sir W. M. Ramsay and Miss Gertrude M. Bell, contains hundreds of illustrations dealing with ancient churches and buildings throughout the Turkish peninsula. In some instances ground plans and details are also given. When the author visited the thousand and one churches, along with the late Sir Charles Wilson, in 1882, he hoped that some attention might be given to these ruins, which are perhaps the most interesting in Asia Minor for church antiquities. He had not the knowledge of architecture, however, needed for the task, and therefore did not re-visit the spot. Some years later Sir William Ramsay sent a letter to the Athenæum in reference to a proposed trip which attracted the attention of a Miss Bell, who, being very much interested in the architectural features, arranged to join Sir William Ramsay and his wife in making the tour. The result is very gratifying, particularly from an architectural standpoint, and the book will prove of extreme value to every lover of art. The work contains 580 pages, and, as has been before mentioned, is profusely illustrated. The price is $3.00, postpaid.

The next book to be mentioned is "The Sultan and His Subjects," by Richard Davey. This work embodies the results of an earnest attempt to set forth the chief characteristics of those heterogeneous nationalities which, in process of time, and by virtue of conquest, have fallen under the dominion of Islam. The work deals with the Ottoman and Christian subjects of the Sultan generally, but chiefly with the Turks of Constantinople. The book gives an intimate knowledge of the life and manners of the Turks, and of the Eastern Christians, and of their religious and political views.

To show the interest of the volume a few of the chapter headings may be quoted: "A Saunter by the Walls of Constantinople," "Round and About Stambul," "In the By-ways of Modern Stambul," "In the Hareem," "The Sultan's Court and Hareem," "Brief History of Reform in Turkey," "Sancta Sophia," the last named chapter being an important one from an architectural standpoint. The price of this book is $1.50, postpaid. The volume contains over 500 pages.

A third book to be reviewed is "The Revolution in Constantinople and Turkey," a diary, by Sir W. M. Ramsay, with episodes and photographs by Lady Ramsay. Sir William Ramsay, when taking the train for Constantinople, resolved to take a record of what he saw and heard in events that seemed likely to be historical, and day by day, in train or steamer, cab or club, the diary was written. It was reproduced in this volume, improved in expression, but unchanged in meaning. This work was written in 1909, and of course primarily referred to the revolution which was taking place at that time in Constantinople. On account of the present condition in Turkey this volume has a great historical significance. The revolution was a phase of the long conflict which has been waged throughout historical memory between Asia and Europe. It resulted in introducing European science and order into Turkey, and was essentially patriotic. Sir William Ramsay at the time of writing had a very strong belief in the true patriotism and noble purpose of the many leading young Turks, and of the movement generally. Now that the young Turk party is particularly in the ascendancy in Constantinople this volume is of very particular interest.

A very interesting feature of Sir William's experiences in Turkey was that in connection with the transaction of business. He states that there is no country where business is done with so little loss of time, although, as he says, there is infinite delay if you try to obtain from the Turks what they do not wish to give. If you go direct to the Turkish official, he says, and deal straight with him, and make him feel sure you have no hidden motive, things often arrange themselves in a few minutes, but our Western red-tape and unreal forms are an abomination to him, and he loves to foil official requests, which he believes to be all deceptive, a belief in which he is too often justified. This work contains some 34 very interesting illustrations of life in Turkey, and is published at $3.00 net postpaid.

A very interesting volume is that entitled "Turkey and the Balkan States, Described by Great Writers," by E. Singleton. In this volume has been gathered together what has been said by the great writers, in connection with Turkey and the Balkan States. It makes a most interesting collection for general reading.

A beautifully illustrated work is that by F. G. Aflalo, entitled "Rebuilding the Crescent." This contains 24 illustrations taken from photographs and a map. The price is $3.00.

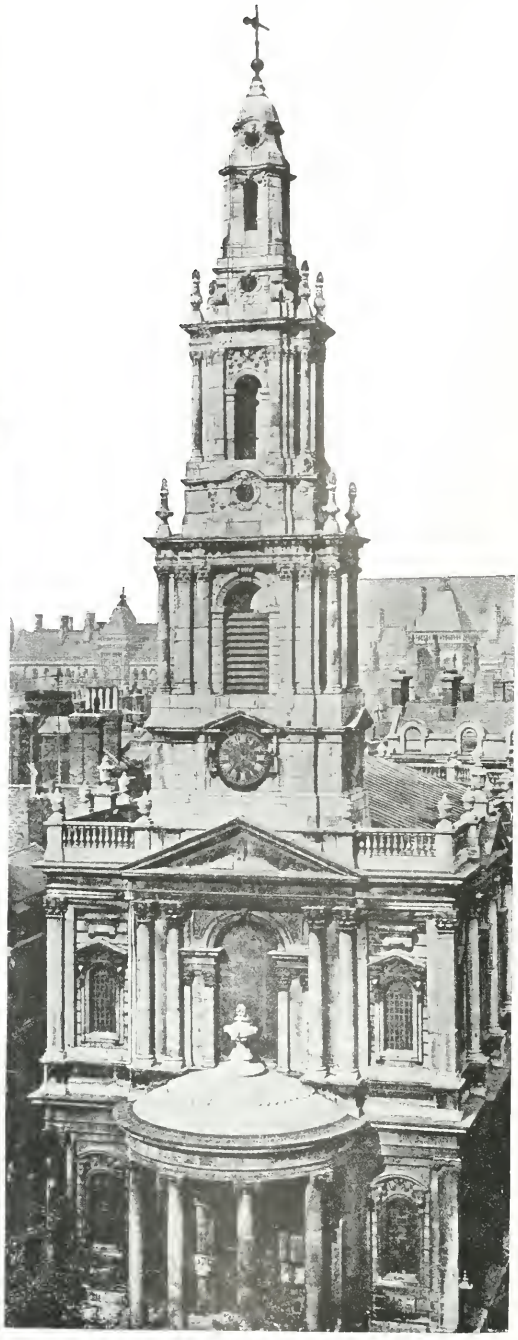
A book rather intimate with court life in Turkey is entitled "In the Palaces of the Sultan," by Ira Seamour Dodd. The price is $4.00.

A book which gives a good idea of domestic life in Turkey, is one written by L. M. J. Garnet, and is titled "Home Life in Turkey." The price is $1.75. "Behind Turkish Lattices," by H. D. Jenkins, is a volume which gives intimate descriptions of Turkish home life also.

Sir W. M. Ramsay, in his "Impressions of Turkey During Twelve Years Wandering," gives his reminiscences of life as he has seen it in various parts of the Turkish empire during his many and varied journeys. The price of this book is $1.75.

Any or all of the above mentioned books can be ordered from William Briggs, publisher, 29-37 Richmond street west, Toronto.

ST. PAUL'S, NEW YORK.



ST. MARY-LE-STRAND, LONDON.

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CHRIST CHURCH,
PHILADELPHIA.

DETAILS OF

SPIRES ON COLONIAL CHURCHES.

ST. MICHAEL'S CHURCH,
CHARLESTON, S.C.

Colonial Architecture—III.

THOMAS W. LUDLOW, M.A.

THE first places of public worship to be built in the colonies were plain and severe in the extreme. In the natural reaction which always follows such a course, buildings which were unmistakably churches began to be erected, copying closely the type established by Wren. These are oblong in plan with four or six round-headed windows on each side, a pediment with a bulls-eye window at either end, a tower with a graceful tapering spire more slender, perhaps, than its London prototype rising through the roof, and in New England two front doors recalling the quaint social custom of seating the men and women on opposite sides. Their details are rather free in their classic treatment. In the smaller towns and villages these structures are usually of wood, clapboarded or shingled, while in the cities they are more substantially built of brick or stone.

The towers are their most prominent features and, like Wren's, the scheme is simple; a square base above which are several contracting, usually octagonal stories terminating in a steep spire. The lower stories are treated with orders, cornices, pediments, balustrades and large scrolls used with much variety, though often rather awkwardly.

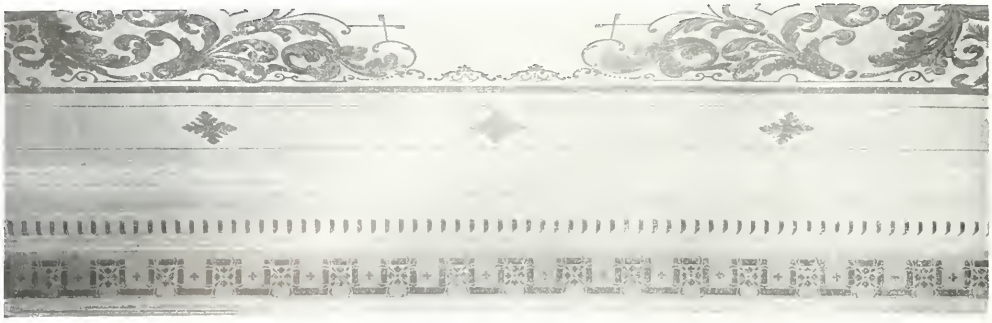
The interiors also closely follow English models and show the system adopted by Wren and his successors of the column carrying an ugly and irrelevant fragment of entablature, which serves as the impost of the arch. On the whole the interior details are more correct than those on the exterior, because the amateur architect, who always designed these structures, was assisted in the execution by the mechanics. "Indeed it is noticeable throughout the whole colonial period, at least the politically colonial period, that the carpenters were much better trained than the stonecutters, and the woodwork habitually betrays the result of this superior training, being at once more correct in design and very much more accurate in detail than the stonework, in the comparatively few instances in which classic detail was attempted in stone."*

Christ Church, at Philadelphia, was built between 1727-31, with the tower completed in 1754 from a design drawn by Dr. John Kearsbey, a physician. It is a plain, pleasing brick structure with a not ungraceful wooden spire without orders; the chancel has a square end in which there is a very effective Palladian window. At the end of erection it was by far the finest building in the colonies.

The life of the Southern planter was more devoted to luxury and ease than to any especial religious zeal; consequently he built but few churches of any note. The best two examples are both in Charleston, St. Michael's and St. Philip's. St. Michael's,

*Montgomery Schuyler, "A History of Colonial Architecture."

1755 CUPOLAS, PENNSYLVANIA HOSPITAL, PHILADELPHIA 1796



CORNICE DETAIL, VESTIBULE, CITY HALL, NEW YORK CITY.

the larger and more pretentious of the two, was commenced in 1752 from a set of plans drawn presumably by James Gibbs and brought over for the purpose. The South Carolina "Gazette" of February 22, 1752, says in describing the proposed edifice: "It was to be erected from designs drawn by Mr. Gibson, an Englishman." The addition of the "son" on the end of the name can readily be accounted for by an editorial error, as no eighteenth century architect by the name of Gibson has been handed down to posterity. The church is 130 feet long by 60 feet wide, having a square tower and steeple 168 feet high rising from separate foundations. A beautiful portico with four colossal Doric columns, supporting a pediment, projects from beyond the tower. Although older than St. Michael's, having been built in 1733, St. Philip's is very similar, although the tower is not quite so high or so slender and the details are coarser, points naturally expected on earlier buildings.

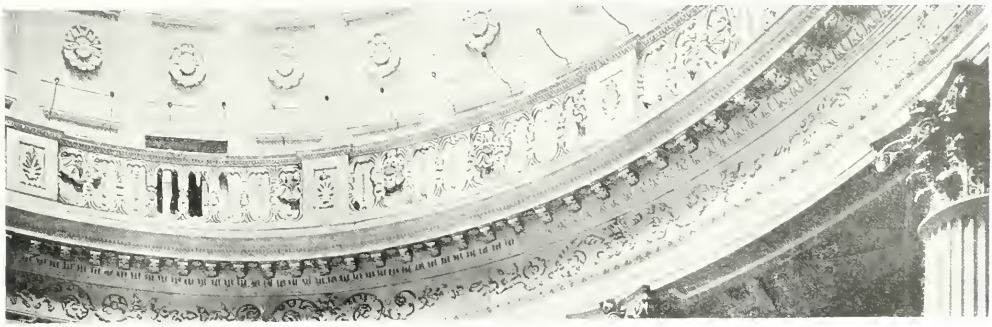
DETAIL OF CHRIST CHURCH, PHILADELPHIA.

New York can still boast of two ecclesiastical structures of colonial times, the chapels of St. Paul's and of St. John's, Varrick street, belonging to Trinity parish. Both of the Trinity chapels are of the Wren type. The older one, St. Paul's, was built from 1764-66 by McBean, a Scotchman, supposed to have been a pupil or assistant of Gibbs from the strong resemblance between the interior of this chapel and St. Martin's-in-the-Fields. The other, St. John's, by John McComb, was built from 1803-7. The chancel and choir are very effective, the architecture of each being distinctly marked. The towers of these chapels are quite similar, being slender and graceful compositions. That of St. Paul's is the most pleasing, as it is the more slender and tapering. The porches of these churches differ greatly, the little two-columned entrance to St. Paul's is just as insignificant as the high Corinthian portico of St. John's is colossal and overpowering.

The public buildings prior to the Revolution are, with few exceptions, of little interest, owing, no doubt, to the poverty of the colonies, to the difficulty of obtaining sufficient grants from the Crown, and to the speed with which they necessarily had to be built to fulfil their especial requirements.

In the post-revolutionary structures the classical spirit predominates, and a reflection of the more refined qualities of the Louis XVI. are to be seen. This is perhaps illustrated in the New York City Hall as well as in any other structure.

John McComb, mentioned above in connection with St. John's Chapel, and the architect credited with the design of the City Hall—1803-12—was an ardent admirer of Sir William Chambers and the Adams, the influence of whom is to be seen in this great work: the former in its monumental design and the mechanical perfection of the work, and the latter in the delicacy of its ornament and the lack of depth and breadth of the reveal. In plan the building consists of a central pavilion, two wings, and a pavilion at each end. It is two stories high, raised



BALCONY IN ROTUNDA, CITY HALL, NEW YORK CITY.

on a rusticated basement and is marble on three sides. It was building from 1803-12.

The first educated American to devote himself to the profession of architecture was Charles Bulfinch, born in Boston in 1763. After his graduation from Harvard in 1781 he spent three years studying in Europe, and on his return entered seriously upon his career. In 1795 he was appointed architect to the new Massachusetts State House, which, with the exception of the Federal Capital at Washington, was the most monumental building then projected in the States. In general composition it is very successful and consists of two stories above a rusticated basement. The flatness of the wings, the slight reveal in the openings and the treatment of the details are purely colonial, while the arrangement of the centre, where a colonnade is superimposed above an arcade for the first time in America, is distinctly French and recalls some of Mansard's work at Versailles. Another innovation is the placing of the pediment on the sub-structure of the dome instead of over the colonnade, by this means an awkward juncture between the base of the dome and its supporting mass is skilfully overcome. The general excellence of this structure is remarkable considering the date of its erection, and it remains to-day a dignified and creditable public building. It is still worthy of the position it holds as the inspiration for classical domed state capitals many of which have since been built.

In this new country, where everything was at first struggling for existence, the influence of Jacobean architecture was barely felt, but later as the people gained in strength and numbers the Renaissance was becoming stronger in England. Inigo Jones returned from his studies in Italy full of enthusiasm for Palladio's work and at once found favor for his classical designs. This movement, now fairly begun in the mother country, was carried to its height and continued throughout the eighteenth century by a brilliant group of men like Wren, Vanbrugh, Hawksmore, Gibbs, Campbell, Taylor, the Adams, Chambers and others. The influence of these men was felt over a large sphere and the work of the contemporary amateur and carpenter architects in the colonies reflected their ideas, while striving to live up to and improve upon their standard. Therefore the richest and most interesting period of colonial architecture is included between the lives of Wren and Chambers.

Many of the architectural folios then published found their way across the Atlantic, and it is to them that the graceful, well studied work of the period is largely due. Classical details were used by every carpenter with beautiful results without a too superstitious reverence for the rules in the Italian textbook. As far as it is possible to ascertain, the names of the books in common use, together with the author's name, during the colonial period were as follows: Robert and James Adam: "Works in Architecture," three parts, 125 plates, London, 1773-1822. A. and R. Banjamin: "The American Builders' Companion," 44 plates, Boston, Mass.,

DETAIL OF CHRIST CHURCH, PHILADELPHIA.

1806. Asher Benjamin: "The Rudiments of Architecture," Boston, Mass., 1814; "A Handbook of Architecture," Boston, Mass., 1834; "The Country Builder's Assistant," Greenfield, Mass., 1796. C. Campbell: "Vitruvius Britanicus," London, 1715-25; "The Builder's Dictionary, or Gentlemen's and Architects' Companion," 33 plates, London, 1734. James Gibbs: "Rules for Drawing the Several Parts of Architecture," London, 1753. Inigo Jones: "Designs Consisting of Plans and Elevations for Public and Private Buildings," London, 1770, published by Wm. Kent. Inigo Jones and others: Designs published by Isaac Ware, London, 1756. Batty Langley: "The City and County Builder's and Workman's Treasury of Designs," 200 plates, London, 1756. B. and T. Langley: "Builders' Jewel," London, 1763. Thomas Langley: "Builders' Jewel." James Norman: "The Town and Country Builders' Assistant," etc., 59 plates, Boston, England, 1786. William Paine: "The Practical Builder or Workman's General Assistant," 83 plates, Boston, England, 1792. Sir John Sloane: "Sketches in Architecture," 52 plates, London, 1793. A. Swan: "The British Architect o' Builders' Treasury of Staircases," etc., 60 plates, London, 1745. Isaac Ware: "A Complete Body of Architecture," London, 1756.

INDEPENDENCE HALL, PHILADELPHIA.

On account of the triple association with architect, contractor and carpenter, which every builder had with each house, there are but few instances where names have been preserved, either by tradition or in old records. The few names that do remain, given in the following list, are either those of amateurs or men of late date, when architecture was beginning to be recognized as a profession: John Allys (1666-1700), churches at West Springfield, Hatfield and Hadley, Mass.; John Ames (1814), churches at Ashfield and Northboro, Mass.; Asher Benjamin (1790), Carew and Alexander houses at Springfield, Hollister house at Greenfield, West Church at Boston, Colton house at Agawam—all in Massachusetts; Peter Banner (1810), Park Street Church at Boston, Mass.; Joseph Brown (1775), First Baptist Church and Providence Bank, Providence, R.I.; Chas. Bulfinch (1790-1835), State houses at Boston, Mass., and Augusta, Me, court houses at Worcester and Cambridge, Mass., State prison at

ENTRANCE TO VESTIBULE, CITY HALL, NEW YORK CITY.

Charleston, Mass., Massachusetts General Hospital at Boston, Mass., University Hall at Cambridge, Mass., New North Church at Boston, Mass., meeting-houses at Pittsfield, Weymouth, Trenton and Lancaster, Mass., at Peterboro', N.H., and many other buildings not now standing, associated with the National Capitol from 1817; Joseph Clarke (1772-1785), State house, Annapolis, Md.; Isaac Damson (1804), First Church at Northampton, First Church at Springfield, church in Pittsfield, court houses in Pittsfield and Lennox, North Church in Ware—all in Massachusetts, bridges across the

ROTUNDA, CITY HALL, NEW YORK CITY.

Connecticut River at Charlestown, N.H., Springfield and Chicope, Mass., and the Penobscot, Hudson and Ohio Rivers; Duff (1744), McDowell Hall, Annapolis, Md.; John Elderkin (1660), First Church and parsonage, New London, Conn.; James Gibbs (1714-1754), St. Michael's Church, Charleston, S.C.; John Greene (1814), First Congregational, Episcopal and First Universalist Churches, Providence, R.I.; Geo. Hadfield (1795), Federal Capitol, Washington, D.C.; Stephen Hallet (1793), Federal Capitol, Washington, D.C.; Andrew Hamilton (1735), Independence Hall, Philadelphia, Pa.; Peter Harrison (1760), Christ Church at Cambridge, Mass., town market, Redwood library and Jewish synagogue at Newport, R.I.; Davis Hadley (1812), North Church, New Haven, Conn.; James Hoban (1794-1831), Federal Capitol and White House at Washington, D.C., State Capitol at Columbia, S.C.; Philip Hooker (1813), Boys Academy, Albany, N.Y.; James Hyde (1835-1840), rebuilding St. Philip's Church, Charleston, S.C.; A. Insti (1750), decorative iron work in Charleston, S.C.; Thomas Jefferson (1817), University of Virginia, Monticello and Farmington, near Charlotteville, Va.; Ebenezer Johnson (1815), United Church, New Haven, Conn.; Dr. John Kearsbey (1727), St. Bartholomew's and Christ Church, Philadelphia, Pa.; B. H. Latrobe (1803), Federal Capitol, and east portico, St. Paul's Chapel, at New York city; Richard Mundy (1783), town hall, Newport, R.I.; McBean (1764), St. Paul's Chapel, New York, N.Y.; John McComb (1803-1815), St. Paul's Chapel and City Hall, New York, N.Y.; Samuel McIntyre (1805-1820), South Church and several houses, Salem, Mass.; Edward Pell (1721), North Church, Hanover street, Boston, Mass.; Samuel Rhodes (1770), Pennsylvania Hospital, Philadelphia, Pa.; John Smibert (1742), Faneuil Hall, Boston, Mass.; Robert Smith, Carpenter Hall, Philadelphia, Pa.; William Spratz (1776-1778), Deming house, Litchfield, Conn., and Cowles house, Farmington, Conn.; Dr. Wm. Thornton (1793-1800), the Federal Capitol and the Tayloe house, Washington, D.C.; "Woodlawn," near Mount Vernon, Westmoreland county, Va., and the Philadelphia Library, Philadelphia, Pa.; Robert Twelves (1730), South Church, Boston, Mass.; George Washington (1793), additions, wings and outbuildings at "Mount Vernon," Westmoreland county, Va.; Diedrick Werner (1750), decorative ironwork in and out of Charleston, S.C.; Judah Woodruff (1769-90), Gay house, Congregational church, Cowles house, Hooker house, Whiteman house, Norton house—all in Farmington, Conn.; Sir Christopher Wren (1665-1728), court house and first buildings of William and Mary College, Williamsburgh, Va.

PENNSYLVANIA HOSPITAL, PHILADELPHIA

STATE HOUSE, BOSTON.

CONSTRUCTION

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Vol. 6 Toronto, February, 1913 No. 2

CURRENT TOPICS

PLANS for a $3,500,000 penitentiary at Joliet, Ill., have been prepared by W. C. Zimmerman. The main features of this structure will be: Sunshine in every cell; constant supervision of prisoners from one central point; circular cellhouses connecting with a general dining hall; outside cells for each prisoner with separate heating and ventilation arrangements, assuring the maximum effect for the health of the inmates; connection of all buildings within the walls by corridors.

* * *

GERMANY has found concrete a worthy material for steam and hot-water radiators. The hygienic quality is the one commanding marked attention among architects and builders. Of a porous nature, they furnish moisture as well as heat to the air, at the same time heating more quickly and cooling more slowly than radiators of other substances. Special gypsum moulds or iron castings receive the necessary mixture of cement and sand, making a wall thickness of approximately 3/8 inch thick. The radiators can be made in all possible forms and shapes.

C. L. MORGAN, R.I.B.A., of London, will open offices for the practice of architecture in the Davis Chambers, 615 Hastings street west, Vancouver.

* * *

A MONUMENT to General Wolfe will be erected by the Battlefield Commission to replace the one which now stands on the Plains of Abraham at Quebec.

* * *

D. W. F. NICHOLS and J. Pender West have formed a co-partnership for the practice of architecture under the firm name of Nichols & Pender West. Their new offices are at 911 Somerset building, Winnipeg.

* * *

BERTRAND & CHAMBERLAIN, architects, have opened an office in the Walter Scott building, Moose Jaw. Their present work consists of the Moose Jaw Engineering Works, Ltd., the Metal Securities and the proposed Citizens Hotel.

* * *

THE CITY HALL Committee of the London, Ont., council have decided to purchase immediately the property selected for the new Federal Square scheme. An expenditure of $250,000 will be necessary for a large part of the block bounded by Dundas, Waterloo, King and Wellington streets. The work is progressing rapidly and augurs well for the civic improvement of this city.

* * *

GEORGE A. ROSS, A.R.I.B.A., of the architectural firm of Ross & MacFarlane, recently dissolved, and Robert H. Macdonald have formed a co-partnership under the firm name of Ross & Macdonald. Their new address will be Beaver Hall Hill, Montreal. A considerable amount of the more important work of the firm now dissolved will be carried to completion by Ross & Macdonald.

* * *

AT THE ANNUAL meeting of the Quebec Association of Architects, held recently, the following officers were elected for the ensuing year: President, J. E. P. Dussault; first vice-president, W. F. Maxwell; second vice-president, Jos. Perrault; secretary, J. E. Vanier, and treasurer, Hugh Vallance. An interesting survey of the year's work was given by Mr. Dussault, president of the Quebec City Section.

* * *

IN THE INAUGURAL address of Mayor Euler, Berlin, Ont., a progressive policy was urged in regard to civic improvements. The new mayor cited the necessity of planning for a city of fifty thousand people; recommended a city planning organization; the completion of the tuberculosis sanitarium, a new city hall, public comfort conveniences and permanent road improvements along the leading streets.

Wind Pressure on Buildings

ALBERT SMITH, M.W.S.E.*

IT IS, OBVIOUSLY, of the first importance to base practical assumptions upon experiments performed in the open air,—that is, in an air channel of infinite cross section,—and upon such a number of models as to show the influence of the shape of the building upon the distribution of the pressure.

In the fall of 1911 the writer laid out the plans for the model building shown in Plate III. and the pressure-reading apparatus shown in Plate I. It will be noted that the model building has three different roof slopes, auxiliary base sections which give three height variations, and is built in two length sections, giving three different lengths of model. In all, then, there were twenty-seven different models used. While the range of three variations is not a large one it was expected that the variations of distribution due to shape would be fairly regular, and that three would suffice.

It was regarded as certain that the maximum wind effects would be found at the middle of the longitudinal dimension of each model, and it was accordingly determined to test three points in each wall and each roof-slope at this section. Some of the

PLATE I.

models with 5 ft. and 6 ft. height of wall were tested at four and five points in the wall.

Small holes were bored in the wall and roof, and a brass nozzle was screwed into each hole, flush with the outside surface. On the inside end of each of these nozzles was attached a piece of 3/8 in. rubber tubing. These rubber tubes led, by means of a glass tube, through a rubber stopper into the air contained above the surface of the liquid in the bottles. (See Plate I.) By means of a rubber tube syphon, the liquid in the bottle was connected with the liquid in the glass tube shown in front of the scale. When the air pressure inside the bottles was the same as the air pressure in the end of the long glass tube, that is the air pressure inside the building, the level of liquid was the same in the bottle as in the tube. If, however, during a wind, either pressure or suction was produced at the end of the brass nozzle in the wall, that pressure would be communicated to the surface of the liquid in the bottle. The level of the liquid in the long tube would then either rise or fall, and the amount of this rise or fall would be proportional to the amount of the pressure or suction exerted.

Seventeen such bottles and tubes were provided for originally, but only sixteen were installed. The tubes were placed in a vertical rack and were spaced accurately on 1/2 in. centers. The bottles were seated on sixteen small steps whose height varied by 1/2 in. Four were placed in one row, so that the end steps, shown in Plate I., have a 2 in. difference in height.

The heights of the ends of the tube rack were controlled by two horizontal levers whose positions were adjusted by means of the turnbuckle shown above the center of the rack. It is needless to say that great care was used to make the respective arms of these levers exactly equal. The liquid was then introduced into the bottles and syphons until the upper edges of the meniscuses of the liquid in the tubes were all brought exactly on the vertical line marked zero. (See Plate I.) The line of the meniscuses in the tubes should then remain vertical for any slope of the tubes produced by the turnbuckle. In practice it was found that this was the case, except for slopes very near the horizontal. All the readings were taken with a slope of 0.024 in 1, but the turnbuckle adjustment was used in order to be able to take readings in a 40 or 50 mile wind, if one should occur. The line of meniscuses was very nearly vertical for a slope as small as 0.01 in 1, but no attempt was made to utilize a wind requiring such delicacy.

While the apparatus was being set up, and during the first tests, there was some danger from frost, so that the tube rack had to be very carefully adjusted for level. This also made it necessary to use a liquid with a low freezing point. The liquid used was the water from the West Lafayette water works system, mixed with alcohol in the proportions of two to one.

The intensity of the pressure indicated by any given reading was determined as follows: Calling the fall of the liquid in the bottle H_1, and the rise in the tube H, and the scale length for 1 lb. pressure L, difference of level for 1 lb. per sq. ft. $= 12/62.5 \times 0.95 = 0.202$ in. where 0.95 is the specific gravity of the alcohol and water mixture.

$$\frac{L \times 0.21^2 \times \pi}{4} = \frac{H \times 2.1^2 \times \pi}{4} \quad \text{or } H = 0.01\, L$$

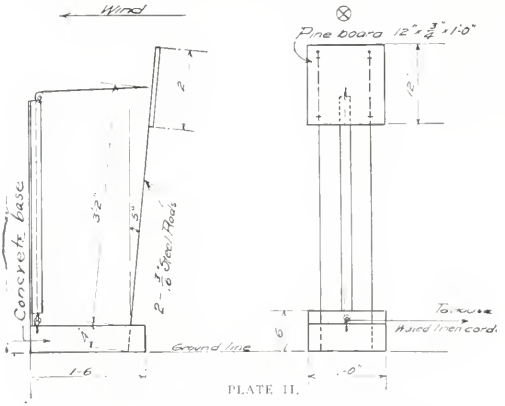
where 0.21 is the diameter of the tube, and 2.1 is the diameter of the bottle. $0.202 = L \times \tan \text{slope} + 0.01\, L$. $\tan \text{slope} = (0.202/L) - 0.01$. The

*Paper read before the Western Society of [illegible] by Albert Smith, Professor [illegible] Engineering, Purdue University. Similar tests [illegible] Washington University, St. Louis.

probable useful slope was estimated to be such that 1 lb. =8 in., giving tan slope=0.202 8=0.01 =0.015. With the tubes inclined at this slope, pressures could be read directly on a scale laid out to 8 in.=1 lb. per sq. ft.

When the first readings were being taken, it was demonstrated that with a slope of 0.015 the readings for some points of the model would not lie within the visible part of the tube during a wind exceeding 20 miles per hour. The tubes were accordingly adjusted to a slope of 0.024, but no second scale having been provided, the readings were taken with the 8 in. scale.

The original plan was for an apparatus without errors, which should show the true pressures at each point in the model by reading on the pasteboard scale behind the tubes. It was found, however, that the instrument, when put together as well as seemed possible at the time, contained tubes and bottles of varying diameter, and that some of the tubes were curved in the vertical plane. Since a correction was necessary for each reading before the results were diagrammed, it was thought just as well to let the observations taken with the 8 in. scale stand without repetition, and to take the rest of the observations with the same scale. The correction factors are discussed under the heading "Correction of Data."



Anemometer for indicating actual wind pressure

The Pressure Indicator.

On the sample records will be noticed a narrow horizontal scale, above the tube scale, and in front of this scale will be seen a small triangular pointer. This scale gives pressure in pounds per square foot on a thin plate exposed at the end of the building. The pointer is carried on a thread running over pulleys at either end of the tube rack. At the left end the thread, after passing over the pulley, carries a small counterweight. At the right end the thread is carried around pulleys, out of the house, to the pressure indicator. The pressure indicator itself is shown on Plate II. Two 3/16 in. steel rods were imbedded in a heavy concrete base. A pine board whose area was 144 sq. in. for moderate winds (72 sq. in. for high winds), was attached to the upper ends of these rods. This target was so placed as to be at about the average height of the exposed surface of the models. From the target a thread led over a pulley down a covered channel and into the house. On a very still day the indicator was calibrated by hanging weights varying from 0.1 lb. to 1 lb., on a thread running from the target over a special pulley set up for the purpose. This latter pulley was about 3 in. in diameter to reduce the friction to a small quantity. A great many trials were made, going up and coming down the scale, to determine the scale length for 1 lb. pressure, and the resulting determination is believed to be without any appreciable error. This contrivance undoubtedly has some inertia, and will read too low at the beginning of its motion, a fault which it shares with the tube indicators, but it will also read too high at the end of its motion, which the other will not do.

The pressure indicator was designed to furnish a comparison of thin plate wind force with the forces on the building surfaces at the same instant. There are three conditions which tend to vitiate its showings: (a) The velocity of the wind which hits the target is greater than the velocity which is producing forces on the model. A large object produces such an increase of wind velocity around its edges that a small target exposed quite near to the large one will have a much greater unit force. (b) Since the size of the model varies very greatly the ratio of these velocities cannot be constant. (c) A very slight deviation of the angle of incidence of the wind from the normal to the side of the building produces a very large change in the amount, velocity, and direction of the air flowing around the ends of the building, and hence on the target unit-force. It was not possible to be sure that the wind during a test was not as much as 10° away from the normal, though with care we could be fairly sure that it was not more. From the results of Stanton's and Duchemin's tests on inclined plates, we are justified in inferring that the pressures on the buildings are not appreciably affected by a small variation in the direction of the wind, but increased or diminished amounts of air striking the target will evidently greatly affect the pressure-indicator readings.

The obvious remedy for these defects would be to remove the target to such a distance that the eddy around the end of the building would not affect it. It is not certain, however, how far out from the building the pressures during a gust may be regarded as uniform.

In future tests it will be necessary to get thin plate pressures some distance in front of the building by means of an observer stationed in a pit. The observations on thin plate pressure taken during these tests are, perhaps, interesting, but quite valueless for comparison with the building forces.

Records.

The original records consist of photographs taken of the instrument within the building while the wind was blowing. To make this possible the liquid was colored with a small quantity of safranin. After

some trials, the least quantity which would make a clear photograph was determined, and it was found that this mixture did not stain the tubes badly during the tests. The rise of the liquid in the tubes was observed to lag somewhat behind the variations of the wind intensity, due to the damping effect of the water column. Care was taken in selecting the instant for exploding the flash light after the rapid increase of velocity of the gust had ceased, and before the correspondingly rapid decrease had begun. The pressure indicator, whose reading appears in the horizontal scale above the tube rack in all the records, which was quite sensitive to changes of velocity in the wind, furnished an excellent guide as to the proper time to set off the flash. This condition existed when both the pressure indicator and the meniscuses of the liquid columns were as nearly as possible at rest. In all cases two photographs were taken of each model shape. This was done to guard against a failure of the camera, and to furnish a check record of each shape with a wind of different intensity. Altogether, for ten of the twenty-seven model shapes there is only one good photographic observation. The intention of repeating these observations afterward was given up, because on comparing the duplicates in the other seventeen cases, it was found that the relative lengths of the tube readings remained almost exactly the same, even where the difference in wind velocity was large. After this comparison, if two photographs were of equal clearness the one taken with the greater wind velocity was used, and no use was made of the other, although it was preserved in the records of the tests.

Exposure of the Models.

The models were placed near the north edge of a large level field of the farm of the Purdue School of Agriculture. The nearest fence to the south or west was about 500 yards away. A quarter of a mile to the south is a railroad cut about 40 ft. deep and about 200 yards wide. At a distance of a quarter of a mile there were a few bushes, and the nearest trees were half a mile away. The country stretches off to the southwest and to the west in a level plane, broken only by the railway cut and a few small swales, until the nearest hill, about 50 yards high, is reached at a distance of about two miles. All the tests were taken with south and southwest winds, and for these winds the exposure seems as nearly perfect as it is possible to get in this part of the country. In a level plane of very great extent, it is probable that the diameter of the whorls of the wind would be much greater than here, and its structure, for limited areas, much more nearly uniform.

Construction of the Models.

Five members of the class of 1912 in the School of Civil Engineering of Purdue University, O. L. Canfield, D. C. Hayne, D. H. Miles, G. D. Miller, and C. W. Neu, selected the taking of these observations and reporting upon the same as a thesis assignment for the B.S. degree. These men constructed the model shown on Plate III. The covering material was of plaster board, except for the additional base sections, which were made of 1½ in. planks to secure stiffness. The plaster board was used in order to make the models light and easy to turn in a direction normal to the wind, and to make the changes from one to another shape of model easy. The lack of stiffness of the plaster board made it difficult to handle, and in spite of very thorough painting, inside and out, its lack of durability added greatly to the difficulty of the last tests, so that some other material will certainly be used for further tests. The problem in the framing of the models was to construct them so as to facilitate the change from one shape to another, while a high wind was blowing. Two boxes were first made, 6 ft. x 10 ft. and 6 ft. x 5 ft., both 4 ft. high, and open top and bottom. Four gables were made for each different slope, and one peak strut for the 10 ft. and one for the 5 ft. house. The gables fitted into seats at each end of each box, and were latched in place. The ridges were socketed into the gables, and were also latched. Both the 5 ft. and the 10 ft. roofs were made in four pieces each. Two pieces, 30 in. wide, came down on either side from the ridge, and below them, on either side, were the pieces which varied with the different roof slopes. In the 10 ft. house an intermediate truss was found necessary to prevent the covering from bulging. To exclude the rain and to secure reasonable air tightness at that point, the peak was covered with thin sheet lead, which was readily shaped to fit in place, and whose weight prevented the lifting of the roof at the peak, during any wind which was tested. One small door was made at the end of each house. The 15 ft. house, for which tests are shown, was secured by putting the 5 ft. and the 10 ft. house together. When this was done an open gable was put in instead of the two closed gables which would come together, thus securing uniformity of pressure conditions throughout the inside. When the first trial readings were taken, the amount of the suction on the lee wall was so much smaller than the pressure on the windward wall, that we began to search for an error. We finally decided that the building not being air tight, having indeed some very considerable cracks, the escape of the air at the ends of the building was causing the inside pressure to be unduly low, thus diminishing the suction observed on the lee wall. If the ends and roof were absolutely air tight, and the openings in the windward and leeward sides were equal, the inside pressure should be a mean between the pressure and suction on the walls. The ends of a building whose side is normal to the wind receive suction over their entire area, so the suction area of any building is very much greater than its pressure area. This fact tends, obviously, to make the inside pressure less than the mean between wall pressures and suctions. While no attempt was made to make the models absolutely air tight, the large cracks were

stuffed up, and openings between the bottom of the building and the ground, due to slight inequalities of the ground, were filled with earth. The effect of this was to markedly increase the amount of the suctions. Openings were then made in both windward and leeward walls whose total area was 27 sq. in. The effect of these was to still further increase the suctions in comparison with the pressures. (See

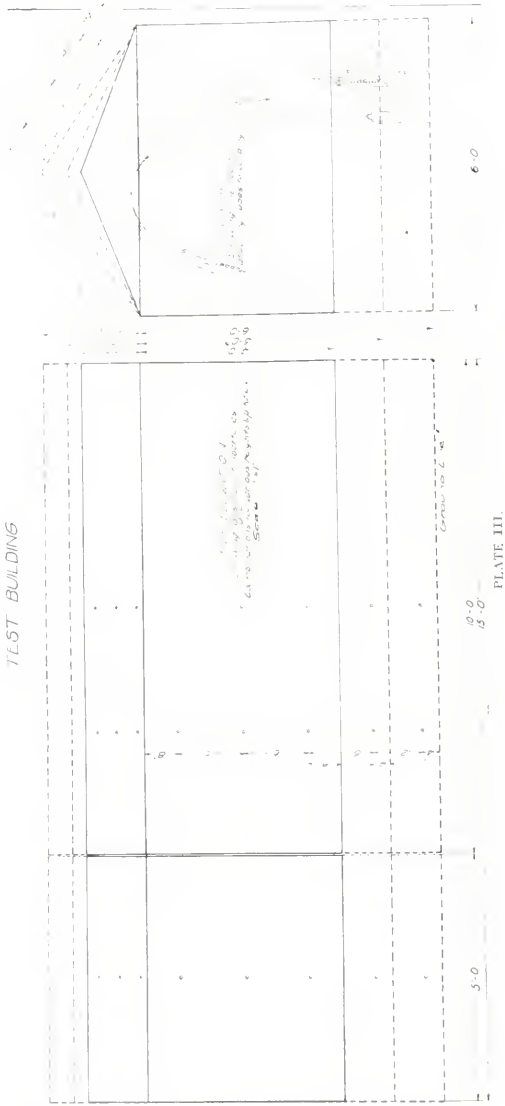


PLATE III.

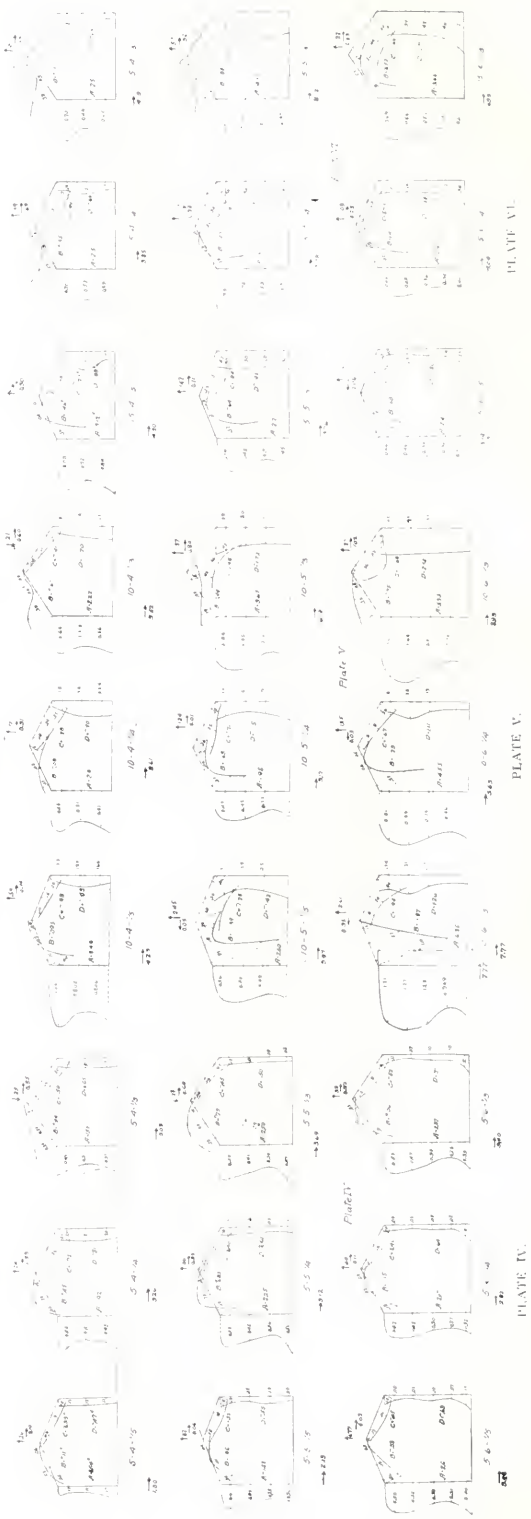


Plate IX. The same plate also shows the effect of closing these openings on either side. Since our models were shorter in relation to their width and height than the ordinary building, it seemed best to approximate the conditions of a long closed building by leaving these openings in the walls, and thus secure more leakage through the walls than through the ends. No attempt was made to simulate the

conditions of the buildings with louvres or open ventilator windows. A trial was made of the effect of opening the door in the end, during which the pressures were very greatly increased and the suctions nearly disappeared. The area of the door was about 15 per cent. of the area of one end. It is planned to make further tests under these conditions later.

Correction of Data.

There were two sources of measurable errors, for which correction factors were computed and applied. The error due to the change in the scale was combined with the error due to variation in the *diameter* of the tubes and bottles. The factors are given in the table following.

The glass tubes used in these experiments were the ordinary glass tubes supplied to chemical laboratories, and these were found to have not only variation of diameter but *curvature* as well. These sources of error were partially removed by selection, and that due to curvature was finally computed for each tube and each reading thereof, and the corrections applied to the data. The method of computation was as follows: Assuming the curve of the tube to be a parabola, we call the error in rise in the tube above zero point X, the reading in inches R, and the curvature ordinate at the middle C. We have, then, $X=R^2C\ 116.6$, where 116.6 is the square of the half length of the tubes, 10.8 in. Since the total difference in level for 1 in. reading is, theoretically, 0.034 in., the percentage of error will be $X\ 0.034\ R$, or, Error factor $=R^2C\ 116.6\times 0.034\ R=RC\ 116.6\times 0.034$. For a reading of one-tenth on the scale, and a curvature ordinate of 0.01 in. at center, this gives 0.002. For curvature ordinates of 0.02 in., 0.03 in., 0.04 in., 0.05 in., we have factors of 0.004, 0.006, 0.008, 0.010, respectively. For any tube, then, the proper factor multiplied by any number of tenths read, will give the correction to be applied to the diagram.

Table No. 1.—Correction Factors.

Tube. No.	Curvature.	Diameter and Scale.
1	+0.0012N	1.42
2	+0.0022N	1.26
3	—0.0008N	1.35
4	—0.0028N	1.36
5	+0.0012N	1.26
6	—0.0018N	1.26
7	+0.0003N	1.29
8	+0.0024N	1.28
9	+0.0004N	1.29
10	+0.0020N	1.31
11	—0.0052N	1.23
12	+0.0050N	1.17
13	—0.0054N	1.26
14	+0.0020N	1.33
15	—0.0030N	1.29
16	+0.0024N	1.29

In the above table, the middle column gives the correction factor for curvature of the tubes. N is the number of tenths read on the scale. For small readings the value of these factors were all very small. The largest correction applied was about 3 per cent. The correction factors for the varying diameters and for the changed scale, were computed as follows: $L\times D_2^2\times\pi\ 4=H_1\times D_1^2\times\pi\ 4$ where L is the length on scale for 1 lb. force, H_1 the drop of the liquid in the bottle for the reading L, and D_2 and D_1 the diameters of tube and bottle respectively. Then $H_1=LD_2^2\ D_1^2$ and, since the difference in height for 1 lb. force is 0.202 in., and the tangent of the tube slope is 0.024, $L\times 0.024+LD_2^2\ D_1^2=0.202$ in.

Solving for L and dividing 8 in. by the result, we have the correction formula: Factor $=0.95+39.6D_2^2\ D_1^2$.

From this formula the values in the third column of the table above were derived.

Pressure Diagrams.

The corrected pressure readings were then laid out to a scale of 1 in.—½ lb. on diagrams of the models on Plates IV., V. and VI. Pressures were shown on the diagrams outside the building and suctions inside. The corrected force observation is marked at the point at which it was laid out.

Lines were then drawn connecting the ends of the force ordinates, and, beyond, to the edges of the different surfaces. The areas of the surfaces included by the different curves were then computed, giving the forces on a mid-section of each model 1 ft. in length. The total horizontal force on the 1 ft. section was then computed and noted below the diagram. Also the total horizontal and vertical forces on each roof were computed and noted above the diagram.

Accuracy of Observations.

The adjustment of the liquid to the zero point of the tube, which was accomplished by the addition or subtraction of liquid at the open end of the tube, was made within 0.01 lb. on the reading scale. This setting was found to endure from day to day when the apparatus was undisturbed, although moving the house and instrument often made it necessary to make new settings. The third hole in the bottle stoppers was opened after each series of observations, to check the return to zero. The percentage of error, from error in setting to zero might be very large in the case of small readings, but it is to be noted that the effect on the pressure area determinations is quite small.

A rather indeterminate error, which is believed, however, to be of small amount, in the relative values, comes into the readings from the lag of the instrument. Due to skin friction, friction of flow in the tubes, and the length of air column over which air pressure is carried, the instrument requires an appreciable interval of time to register pressures. This time interval was approximated as follows: The wall tube was disconnected, the position of the liquid in the tube changed five divisions on the scale by blowing and by sucking at the wall end, and the time of return noted. At the end of five seconds the meniscus had returned to 0.15; at the end of ten seconds to 0.05; at the end of fifteen seconds to

0.02; and at the end of twenty seconds to 0.01. The remainder of the return occupied more than a minute. If moved a lesser distance, the return in the same time was, of course, closer, and for a larger movement, farther away. If it had been possible to close the third holes in all the bottles simultaneously, just as a gust was reaching its maximum intensity, a correction could have been figured for the reading of each tube, and applied to the diagrams. This, however, did not seem to be practicable in this instrument.

It appears quite certain that the error of registration of tubes moving different distances is not proportional, but, due to the care taken to obtain readings after the gust had reached its maximum, the observers are confident that the error from this cause is within 2 or 3 per cent.

Another possibility of error comes into the pressure area determinations. It is obvious that between any two readings on the same surface the true pressure ordinates would have for their locus a smooth curve. There are many places, however, in which the curves might be laid out in a different manner from that used. At the top of the windward wall, for example, the readings give no clue of the rounded corner of the pressure area shown. It is certain,

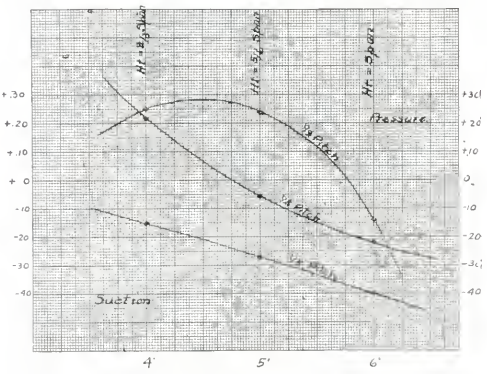


PLATE VII.

Amount of force on windward roof in terms of per cent. of unit pressure on both walls.

however, that on roofs where the lowest reading is a large suction, this suction continues down to the edge of the roof and is probably, as shown, even larger at the edge. Now this suction is due to the velocity head of the air, and it follows that the upper horizontal laminæ of the air in front of the wall have their pressure diminished by their nearness to this air current. It may be that the pressure passes through zero a little below the top of the wall, though the writer preferred the assumption illustrated. In a similar manner it was decided to curve the upper ends of the windward roof curve, when the leeward roof had forces of the opposite sign. Where the curves are irregular, as in some of the leeward walls, there is some chance for varying curves, but these variations of the curve give areas very little different from the ones shown.

It is to be noted that the lag error is almost entirely eliminated from the small readings, while on the other hand the percentage value of errors in area determinations will be smallest in the large readings.

Considering these various sources of error, the writer feels justified in claiming for the corrected force ordinates a relative accuracy such that they are within 3 per cent. of the truth, and for the pressure area determinations a final accuracy such that, when stated in terms of percentage of total horizontal force, they are not more than 2 per cent. away from the truth.

Since no use has been made of the absolute pressure amounts, although the observed data have been corrected to make them absolutely, as well as relatively, true, no discussion of accuracy in that respect is necessary.

Table II.—Tabulation of Pressure Area Relations.

Length.	Height.	Pitch.	Total Horizontal.	Windward Wall. Per Cent. of Total.	Leeward Wall. Per Cent. of Total.	Roof Horizontal. Per Cent. of Total.	Roof Vertical. Per Cent. of Total. +Up.
5 ft.	4 ft.	1/3	1.30	49	36	15	21
		1/1	3.26	59	28	13	07
		3/1	3.03	51	22	28	—26
	5 ft.	1/3	2.13	71	26	03	39
		1/1	3.12	72	17	11	02
		3/1	3.69	68	14	18	—08
	6 ft.	1/3	3.26	80	19	01	24
		1/1	2.82	73	23	04	17
		3/1	3.40	70	21	09	11
10 ft.	4 ft.	1/3	4.23	81	15	03	13
		1/1	3.61	67	24	09	21
		3/1	3.52	63	20	17	—06
	5 ft.	1/3	3.97	65	36	—01	61
		1/1	3.12	63	37	00	40
		3/1	6.19	59	28	13	22
	6 ft.	1/3	7.77	88	17	—05	33
		1/1	5.63	81	19	00	22
		3/1	8.93	60	29	11	03
15 ft.	4 ft.	1/3	4.30	73	20	07	37
		1/1	3.85	65	17	18	10
		3/1	4.19	60	15	25	02
	5 ft.	1/3	3.76	59	38	03	39
		1/1	5.78	64	30	06	19
		3/1	8.12	56	28	16	07
	6 ft.	1/3	3.14	77	25	—02	36
		1/1	4.04	60	34	06	27
		3/1	6.99	52	39	09	26

Comparison of Data.

Table II. shows the effect on each portion of the surface in terms of percentage of total horizontal force on the building.

Table III. shows the total vertical effect on the roof, in terms of percentage of total horizontal force on the building. It is especially interesting to note that this may be, for some shapes, as much as 61 per cent. of the total horizontal force.

Table IV. gives the total force on leeward wall in terms of percentage of total force on both walls. Both in this table and in Table III. the three vertical columns under each pitch are for the 5, 10 and 15 ft. lengths of building, respectively.

Windward Roof.—The ratio of unit pressures

on the windward roof to the sum of the unit pressures on both walls was computed for the 15 ft. model. The result is shown graphically in Plate VII.

Table III.—Vertical Uplift in Percentage of Total Horizontal Force.

Wall Height.	½ Pitch.			¼ Pitch.			⅛ Pitch		
4 ft.	21	13	37	7	21	10	—26	—8	2
5 ft.	39	61	39	2	40	19	—8	22	7
6 ft.	24	34	36	17	22	27	11	3	26

From the table above, the average of the 1 5 pitch figures is 30 per cent., of the 1 4 pitch, 17 per cent., and of the 1 3 pitch, .03 per cent.

Increases of height and length both tend to increase the amount of the vertical force.

Table IV.—Force on Lee Wall in Percentage of Total Force on Walls.

Wall Height.	½ Pitch.			¼ Pitch.			⅛ Pitch		
4 ft.	42	16	18	32	26	21	30	24	20
5 ft.	27	36	39	19	37	32	17	32	33
6 ft.	19	16	24	24	19	36	23	32	44

Plate VIII. shows graphically the change in lee wall percentages for different heights of wall for the three pitches. Only the 15 ft. model observations were used in this plate. The curves for the 10 ft. length resemble these, although the points of maximum percentage are moved to the left, and are in the same order as to pitch. In the 5 ft. length of model the curves do not agree with each other so well or resemble so closely the curves of the 15 ft. model observations. The shape of these curves is given them arbitrarily, as the three points given by the observations do not completely locate them. There are some general conclusions which the pressure diagrams enable one to draw, and which guided the writer in making these curves.

(a) The increase of height of wall tends to decrease relatively the average amount of pressure on the windward wall. The decrease of wall height, while the roof height remains unchanged, tends to produce pressure on the windward roof. The pressures then do not pass through zero at the top of the wall, but at a point some distance up the roof, and the average on the wall is increased.

(b) The increase of height tends to increase relatively the average amount of suction on the leeward wall. The direction of the filaments, as the air leaves the leeward slope, is evidently an important factor in determining the suction on the leeward wall. The more nearly horizontal the direction of these, the greater will be the leeward wall suction. But the longer the roof, in relation to the height, the more nearly will the air filaments at the leeward eave be brought parallel to it. Turning these filaments into a direction parallel to the surface of the ground, develops a higher absolute pressure and therefore a lower suction, than when the filaments are more nearly horizontal. Where, then, the roof is long in comparison with the height, or, the span being constant, where the height is small in comparison with the span, the leeward suctions will be relatively small.

(c) The relative amount of the air flowing around the end of the building increases as the height increases. When the building is short in comparison with its height, the flow of air around its ends has more influence upon the relative amounts of the pressures and suctions than the flow over the top. On a thin plate exposed in an air current, the maximum pressure is found on the windward side midway between two edges around which free flow takes place, and the minimum suction will be found on the leeward side directly opposite the same spot or line. As the amount of the end flow increases, the tendency of the leeward suction at the middle section to become a minimum, as also the tendency of the

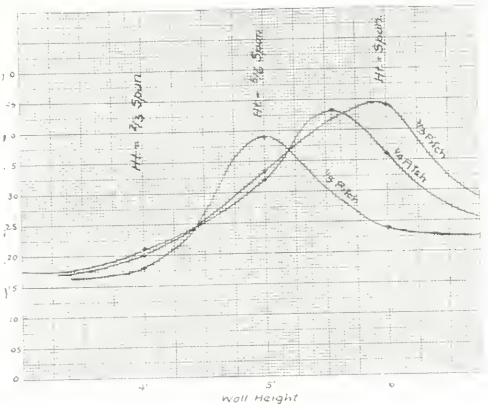
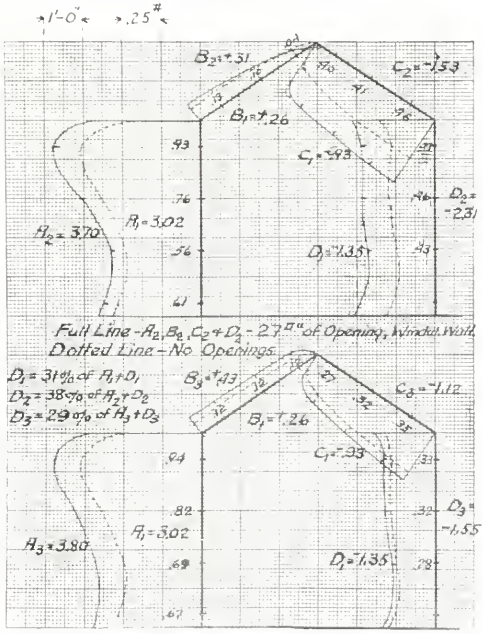


PLATE VIII.

Variation of lee wall suction, 15 ft. house.



Full line, A3, B3, C and D3—27" of opening, lee wall
Dotted line, no openings.

PLATE IX.

Effect of openings in walls 15 ft. length, 5 ft. height, ½ pitch.

windward pressures to become a maximum, increases.

The effect of (a) is probably not very large. But from (b) we have the relative amounts of the leeward suctions steadily increasing as the height increases. The limit of the ratio will be the ratio of lee suctions on a very long thin plate with one edge resting on the surface of the ground. We have no test data on this case, but these tests seem to indicate that this limit is very nearly 50 per cent. As the height increases, however, the influence of the end flow on pressures and suctions at a middle section steadily increases, finally overcoming the tendency of the lee pressures to increase, and actually causing them to diminish. They will then continue to diminish until, the confined edge of the building becoming very small in comparison with its height, it approaches as a limit the ratio of suction for a long rectangular plate in air, which, as shown by Stanton, is about 35 per cent. In the smaller pitches of roofs the maximum percentage of the leeward wall suctions will be arrived at more rapidly, throwing the points of maximum curve ordinates on Plate VIII. to the *left*, for low pitches.

In view of these results, the ordinary methods of assuming wind loads on mill buildings ought to be somewhat revised. For the case of roof trusses on masonry walls, or on steel bents with long diagonals, a suction effect in the neighborhood of 0.4 of the unit wind pressure should be placed on the leeward roof of all closed buildings, and a pressure or suction derived from the curves drawn from the observations, placed on the windward roof. The resulting stresses will not only be different in amount from those computed on the present basis, but will in many members, differ as to sign. Wind loads on purlins might in most cases be entirely omitted, and where considered they might be made much less than at present. The necessity for secure anchorage, not only to prevent sliding, but to prevent actual uplift, is strongly confirmed by these tests.

In buildings with knee-braced bents, in addition to the preceding points, the suctions on the leeward wall should be considered. Approximate curves might be made for each pitch and for each height ratio, and the leeward wall unit derived therefrom in any given case. This, beside being troublesome to the computer, still leaves his results inaccurate, since if the pressures on the two walls be unequal the points of contraflexure will be actually at different heights, though in view of the labor otherwise involved, he must consider them to be at the same height.

Where there is an opening as great as 2 per cent. or 3 per cent. of the outside surface, the suctions will be seriously reduced or augmented, according to which side the openings are on. If on both sides, the pressures and suctions will not be seriously affected, except locally, unless the openings are very much greater than this.

IT IS HOPED the efforts of R. G. Halford, secretary of the Manitoba Association of Architects, in behalf of the establishment of an architectural course at the University of Manitoba will be more than successful. Mr. Halford, in communicating with the proper officials, pointed out that a thorough education is becoming essential for the practice of architecture, and that it is impossible for intending architects to obtain the necessary training by working in an office. The only means at present for a Western Canadian to obtain this education is by attending a University in Eastern Canada or the United States. The matter has been favorably received by the faculty and augurs well for the future development of the draftsmen in that section of the Dominion.

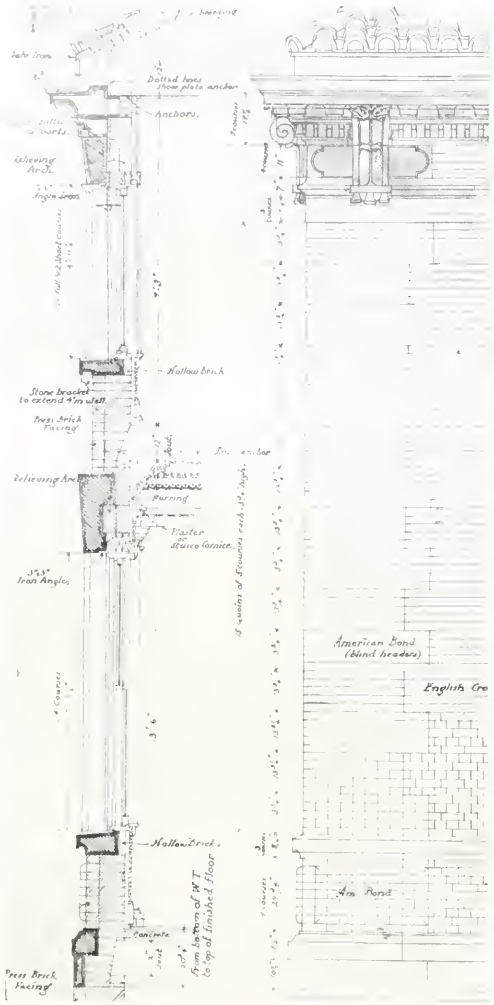
ALBERTA Architects' Association at its annual convention in Edmonton, January 23 to 25, elected the following officers: President, R. W. Lines, Edmonton; honorary president, G. M. Lang, Calgary; first vice-president, James Henderson, Edmonton; second vice-president, J. J. O'Gara, Edmonton; secretary, W. D. Cromarty, Edmonton; treasurer, G. H. McDonald, Edmonton; council—R. P. Blakey, C. Lionel Gibbs, R. P. Barnes, Edmonton, and George Fordyce and W. S. Major, Calgary. G. M. Lang, retiring president, said that the membership now consisted of 67 with seven student associates. Thirty-one applications were received during the year and 17 were admitted to membership. In conclusion, after speaking of the success in handling the year book, he finished by saying: "An epoch was marked during the year just passed when affiliation with the University of Alberta was consummated, this puts the association upon the same basis as the medical, legal, dental and land surveyors bodies and at the same time the association has lost none of its rights and privileges, in fact, they have really been extended, for under the agreement with the university the association has representation on the university senate, and names, in conjunction with the president of the university, the examiners for papers set in our examination."

THE FIRST ANNUAL banquet of the Vancouver chapter of the B.C. Society of Architects was held at the University Club's quarters, January 23. Some sixty members and guests were present. G. A. Birkenhead, responding to the toast on Vancouver, spoke in high terms of the great building progress of the city and stated that the work done and being done by the architects was and would be a great credit to the Terminal City. Mayor Baxter, in response, talked on the enormous possibilities of Vancouver and advised the architects to stand together in the work of beautifying the city. It would be a great work to build up Vancouver to what she would some day become. Other toasts eliciting interesting and eloquent responses, helped to make the gathering a really delightful one.

MAIN STAIRWAY.
GREAT TERRACE.

IFORD MANOR, BRADFORD-ON-AVON, ENGLAND.

From Architectural Review,
London, Eng.



EXTERIOR DETAIL.

VIEW OF OFFICE.

BERRY
BROTHERS'
BUILDING,
DETROIT, MICH.

GEORGE D. MASON,
ARCHITECT.

VIEW OF LOBBY.

L'OPERA COMIQUE, PARIS.

THE FOLLOWING CODE of ethics was endorsed at a recent meeting of the Vancouver Chapter of the B.C. architects. They are intended to assist their members in relation to each other, to builders and to contractors, they may perhaps be of interest to other members of the profession.

1. An architect is both an artist and a practitioner. His functions are to conceive and study the composition of an edifice, to direct and superintend the execution, to verify and regulate all accounts of expenses.

2. His is a liberal and not a commercial profession. This profession is incompatible with that of contractor, manufacturer, or furnisher of materials or objects employed in the construction. No member should enter into partnership in any form or degree with any builder, contractor or manufacturer. A member having any ownership in any building material, device or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership. He is remunerated solely by fees paid by his clients.

3. The architect, being neither a mercantile nor a business agent, shall have nothing to do with operations giving allowances, deductions or commissions. He should not be a party to a building contract except as owner. He shall abstain from making, from personal motives, any advertisement or offer of services by means of newspapers, circulars, signs, prospectus or other means of publicity usual in commercial professions. He may, however, have his card with his name, profession, office hours, and title, if any.

4. He shall abstain from seeking employment or clients by means of concessions, commissions, deductions on his fees, or other advantages offered to third parties, such as manager, business men or proprietor's agents, and avoid in general all acts which require secrecy from present or future clients. No member should offer drawings or other services (on approval) and without any pecuniary compensation.

5. He shall abstain from plagiarism from his fellow-members and from disregard for those delicate rules of conscience imposed upon artists worthy of the name in their intercourse with others. He must not seek to acquire the position or patronage enjoyed by a brother architect. If he should be appointed to such a position or patronage after the death, the resignation or revocation of a fellow member, the new architect shall consider himself the guardian of the honor and the interest of his late confrere. A member should not criticize in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal. A member should not furnish designs in competition for private work or for public work unless for proper compensation and unless a competent professional adviser is employed to draw up the "condition" and assist in the award.

6. He shall recognize the quality and give the title of fellow member to every architect exercising honorably his profession.

7. When an architect employs, as draughtsmen or clerks, young men who are at the same time students, he shall give them the benefit of his experience and treat them with all the consideration due to the confraternity.

8. The architect owes to his clients the help of his knowledge and experience in the study of the projects submitted to him in the direction and superintendence of his work, and all proper and needed advice. All his attention and skill must be devoted to the interests confided to him.

9. Nevertheless, the architect shall not help operations which would conflict with the rights of other parties, even if asked to do so by a client. Neither shall he lend a hand to operations of such a nature as to implicate him, or a third party, or which might be the cause of accident. In such a case he must tell his client that it is impossible to acquiesce in his demands. He must not guarantee an estimate or contract by personal bond.

10. He is remunerated by his client, and by his client only, by means of fees. He must, therefore, not only refuse any remuneration whatsoever from contractors, dealers, sellers or buyers of land or building, having contracted or being supposed to contract with his client, but, moreover, when the remuneration for his work is left over to a third party he must accept only the fees paid by his client, who can be refunded by those whom it may concern.

11. The architect must declare himself competent to act as expert in any affair in which his client is interested. He shall do the same if he has already given an option concerning the contestation.

12. When he is appointed as expert by his client, for instance, in a question of insurance, valuation, etc., he is no longer the mandatory of his client, he is only an expert. When he acts as arbitrator, his obligations are the same.

13. The architect shall endeavor to ensure harmony, cordiality and honorable conduct amongst all persons occupied in the work under his supervision.

14. Towards the contractors or dealers the architect shall refrain from accepting any deduction, commission, or present, whether in money or kind, whether these contractors or dealers be employed by him or not.

15. When the architect has as client a contractor or dealer he is still in this case remunerated merely by fees.

16. The architect who becomes contractor, contractor's clerk, quantity clerk, or clerk of works, loses his title of architect. He does not lose it by working for another architect.

17. The schedule of charges of the B.C. Society of Architects represents minimum rates for full and competent services.

18. It is not derogatory to the profession of an architect to sign his buildings in an unostentatious manner, similar to that adopted by artists and sculptors.

CONSTRUCTION

VOL. VI NO. 3

CONTENTS FOR MARCH, 1913

Full Page Illustrations

H. GAGNIER, Limited, Publishers
GRAPHIC ARTS BUILDING, TORONTO, CANADA
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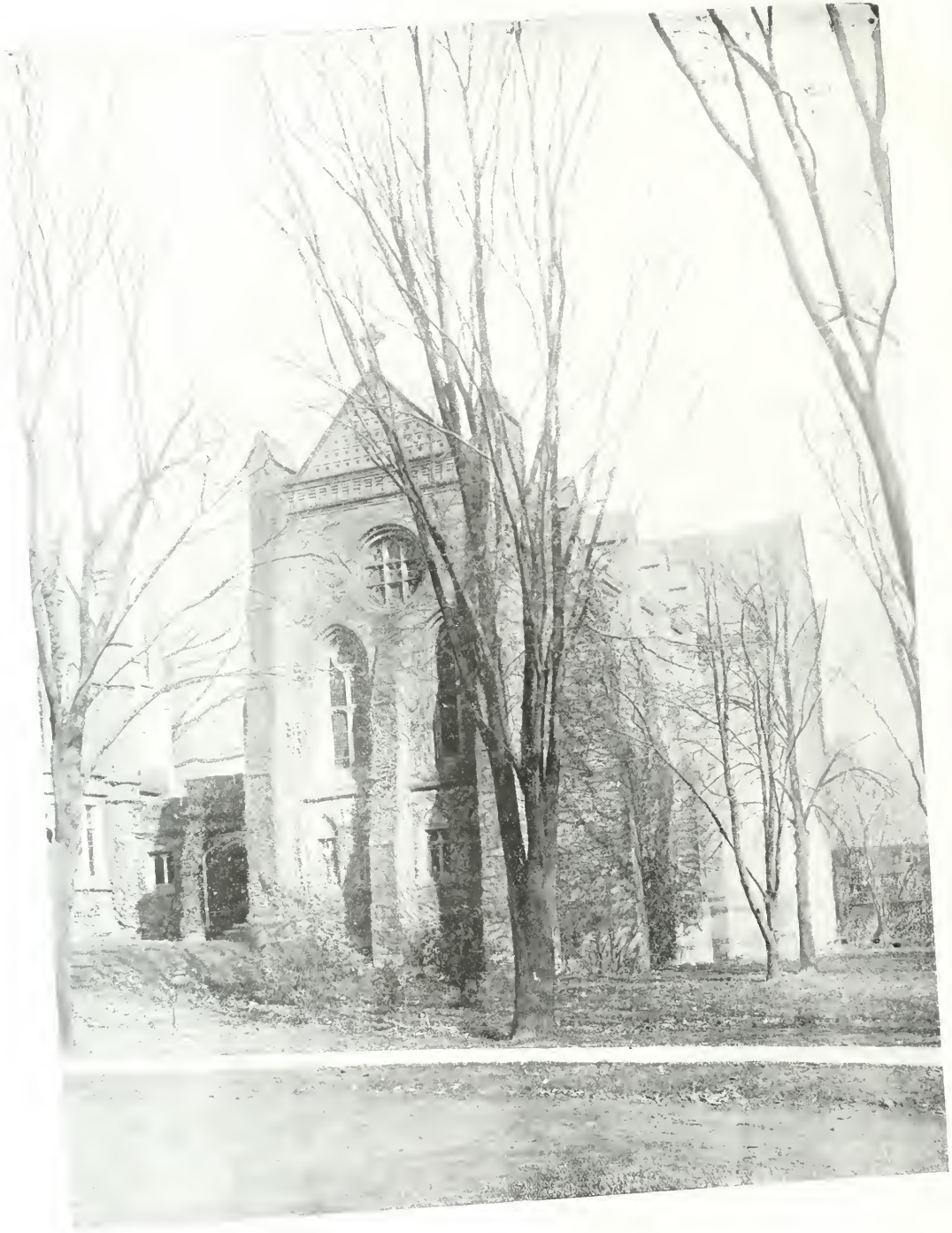


CHAPEL, TRINITY COLLEGE,
TORONTO, ONTARIO.

DARLING & PEARSON, ARCHITECTS.

¶ *Canada's need of large technical schools—Rapid strides in other countries reveal their keen insight into the essentials of sane progress.*

THE LAMENTABLE FACT in connection with the phenomenal record of the Dominion's progress is our inability to grasp the existing need of proper educational facilities. Grant that we have a number of excellent universities and are planning to erect another upon the western coast. Give due credit to the admirable work of the technical institutions in Nova Scotia, Winnipeg, and Toronto. Add to these the powerful influence of the high school. Still we are woefully lacking in facilities for industrial and technical training. In an inventive age which is fundamentally an epoch of skill in the furtherance of all branches of trade-work, the innate tendencies of the boys and girls should be allowed to grow. To do this they must absorb daily the rudiments that combine to make of their natural ability a progressive and successful termination. The thought that for one to be properly educated he must limit his efforts to a classical preparation is fast losing vogue. Education gives the power to grasp the problem, analyze the causes and results, and produce a thoughtful and forceful expression of its present and future possibilities. And while it is not necessary to attend the various colleges and schools to attain this, there is no denying the fact that such institutions are worthy factors in training our youth to think along lines most conducive to their own individual success. Up to the present the chief function of our high school has been to prepare for further work in a collegiate line, but now the thought is to centre these efforts in a direction most beneficial to the student's future work. The high schools and collegiates should enlarge still more their present scope on manual training and mechanical arts. New institutions must also be erected with the prime motive of training the young to grasp the fundamental principles of the various arts, enabling them to choose their future work knowingly and wisely. In doing this no detraction will be made from a sound literary training, and the boy and girl will be thoroughly imbued with the positive qualities essential to a mastery of the actual duties of life.

¶ *The tremendous handicap which confronts our draftsmen—The lack of a united effort to better conditions—Need of an awakening.*

IT IS LITTLE CREDIT to the patrons of architecture to have it said, "the architects have to rely upon the British Isles and the United States for skilled assistants." Such an emphatic statement emanating from one so well known in the architectural world of Canada is worthy of analysis. If the architecture of to-day is being done by Canadian architects there should be little reason for a dearth in local draftsmen. But the truth is only too evident and the conditions demand prompt attention. By examining the preparation afforded to foreign students the reason for their superiority is quite evident. They have at their command the proper facilities for advance study and criticism. When our best architects volunteer to devote an evening or two each week to atelier work; when we have sufficient travelling scholarships to benefit the large number of fellows eager to equip themselves to the best advantage; when we find in every city of prominence replicas of ancient art—then and not till then can we hope to successfully compete with the States and European countries. Each phase of this preparatory work is of vital importance and should be taken up by competent men through the proper channels. What could be of more lasting benefit to the progress of architecture than a series of casts properly housed and located in the different provinces? These collections could be purchased abroad for nominal sums from manufacturers who have a standing reputation for the quality and character of their work. Accessible to the student, and general public as well, there would soon develop a keen desire to emulate the purity, chasteness and freedom, so characteristic of the better architecture in the past. It would be hard to estimate the value of direct study from orders, various motives, and graphic expressions of past masters through a representative collection of the world's best work. These would furnish a grasp of the fundamental principles and enable the draftsmen to appreciate his first trip abroad and know what to study as well as how to grasp the big truths so often lost in the study of detail.

¶ The skyscraper—Its merit is bitterly discussed in every city throughout the Dominion—Final action taken by Toronto City Council.

SHALL WE or shall we not change the character of our cities through the erection of skyscrapers? This question is a vital one and is being hotly discussed by the various members of the architectural and building associations as well as in the council chambers. In some localities where the tall building has already made its debut the problem is: Will we permit structures of over twenty stories? In other places it becomes a question of fixing a standard height which will adequately provide for all future contingencies.

Referring to the height of new buildings to be erected in Montreal, N. Cauchon is quoted as saying: "In Europe there are many cities in which the height of buildings is limited. The law in many cases in Europe is that no building may be any more than one and a half times as high as the street in front of it is wide. If this were introduced on Sparks street, it would limit the buildings to 99 feet high. There is no building on Sparks street yet that is very much more than this height, so that if it were introduced now, the ones already built would not have any advantage over the ones that would be built when the law became effective. It seems to me that this is high enough. The European cities, however, require that the light in the back be sufficient and the higher the building the more space must be allowed for sunlight for the windows facing the back. It is all a question of light. By the present artificial ventilation systems the offices on every floor secure good fresh air no matter how high the building may be, but the sunlight cannot be distributed by any such system. And sunlight is a necessity from a sanitary standpoint."

At a recent meeting held in Hamilton, Ont., Chief TenEyck spoke of the dangers ahead if some action were not taken in regard to tall structures. In closing Mr. TenEyck recommended that a by-law be passed restricting the height of buildings to not more than eight stories, or one hundred feet high. He considered any building higher than that a menace from a fire standpoint, as well as to the safety of the occupants in the upper stories in the event of a fire in same.

The resolution recently offered by G. T. Somers against the frequent disregard by the City Council of the by-law limiting the height of buildings in Toronto has been presented to the Council. It reads as follows: "The Council of the Board of Trade regrets exceedingly the frequent setting aside of the city by-law limiting the height of buildings in Toronto to ten stories, or one hundred and twenty-eight feet, and would strongly urge upon the city authorities the need for strict enforcement of such limitation, because, in the opinion of this Council, the steadily-increasing height of skyscrapers constitutes a serious menace to the public health, especially of those whose work must be done in the lower stories away from the sunlight; it also adds unnecessarily to the already great congestion in the narrow downtown streets and unduly concentrates land values at or near a few leading corners, this concentration of values, in turn, making necessary still higher structures to meet the increasing ground rents. It is further resolved that a committee of the Board of Trade Council be authorized to wait on the City Council."

The Municipal Improvement Association of Toronto at a special meeting passed the following resolution: "Resolved, that we (the Council of the Municipal Improvement Association) place ourselves on record in favor of limiting the height of the main portion of any building to twice the width of the street, but that we are not opposed to a portion of the building rising higher, providing that the upper stories above the main portion are set back sufficient distance to allow light and air to circulate freely; that a copy of this resolution shall be sent to the members of the City Council with a request that the opinions of all other municipal and ratepayers' associations should be secured before definite action is taken by the civic authorities; that this is a question which affects the health and other interests of the whole business community, and involves points on which the advice of town-planning transportation, and civic health experts might reasonably be sought."

The Civic Property Committee in Toronto, after a long debate, carried the following motion: "That in the district now served by the high-pressure system buildings may be erected to the height of 250 feet.

The above resolutions are indicative of the great divergence of opinion in regard to the tall building in Toronto. Many prominent organizations have acted upon the matter and tried to affect the final action of the City Council. The Civic Guild emphasized the fact that all newspapers with the exception of one advocate high buildings and credits the popular tendency towards sky-scrapers to the fact that they will make Toronto look metropolitan.

Mr. Lawson Purdy, president of the Department of Taxes and Assessments, New York City, severely arraigned the skyscraper before the Canadian Club and the City Council of Toronto. His services were evidently secured to influence the council in their final decision, but, like all other emphatic protests, failed in its mission. Mr. Purdy stated that the large majority of the 50,000 applications for reduction in assessment passed upon by his department were attributable to the cutting off of light and air by neighboring buildings. He claims that no recent tall building in New York is practical from an economic standpoint; that the appearance of the metropolis has been ruined; that the value of adjacent properties has been reduced, and that the health of the citizens is being impaired.

The "Imp of Perverse" has done its work. The City Council of Toronto passed the recommendation that the Guardian Realty Co. be permitted to erect a new 20-story building, 259 feet high, at the corner of King and Yonge streets.

Recent Buildings, Toronto

"IN their appreciation of the value of the natural characteristics of wood, marble, stone, brick and terra cotta, in their subservience to some definite purpose in the mind of the architect, they suggest an evolution in building which does not at present exist in the Old Country." Such is the comment of a well known English artist on Canadian art. And it is an era of creation carrying into operation a marked trend towards a more artistic and practical architecture.

One of the phases of the much debated skyscraper question is its artistic merit. Some enthusiastic supporters of the tall building go so far as to claim that the low commercial structure cannot be made attractive. While their live interest in the subject is admirable, few will agree with them on this point. In every city a large number of structures ranging from five to ten stories in height are being erected which evidence the falsity of such an argument. They not only furnish the facilities by which active business concerns can economically handle their work, but also show a skill in designing which merits considerable encouragement.

Canadian architecture must stand for the highest perfection of building construction. The height or length of the structure itself is of little import so long as the artistic, practical and sanitary principles are maintained. The smallest building imaginable can be designed in beauty, harmony and proportion.

The accompanying illustrations take up examples in Toronto where the fundamental idea was to house the business concerns in an attractive manner. How successfully this has been done may be left to the reproductions and the reader's artistic taste. The limitations naturally met with have been studied and every utilitarian motive kept constantly in mind. A feature worthy of mention is the harmonious blending of the various materials which enter into the construction of the buildings. The change from stone to brick, or from marble to terra cotta, has been skillfully executed—resulting in expressions logically and esthetically.

BOWLES BUILDING, TORONTO.

A brief description of each building is given, stating the constructional features.

Bowles Building.—The exterior presents a very clean and attractive appearance in its treatment of old ivory matt glazed terra cotta with green and old rose decorations in conjunction with tapestry brick. The character of the interior is expressed by the general outward effect and furnishes a type of building both decorative in its motive and of a practical nature.

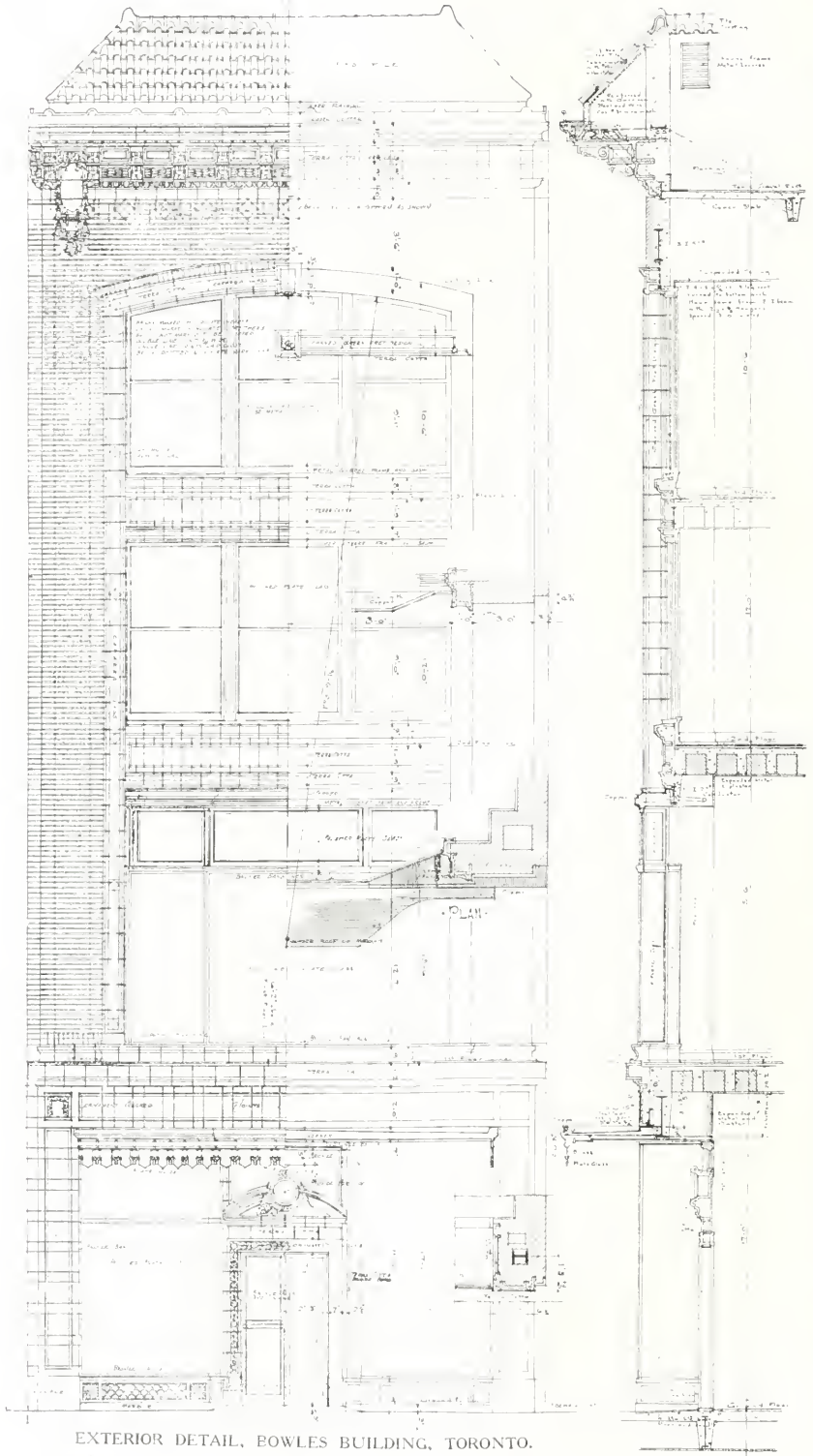
The restaurant is finished in an Italian marble wainscot ten feet high, with white glazed tile covering the remaining wall surfaces and cambered ceiling. The floor is also of tile, while the counters and serving table are of Italian marble and Carrara glass.

Originally the third floor was designed for a store, but has been changed to a billiard parlor. Above the wainscot is a frieze of painted burlap with appropriate stenciled designs. In the basement is a second pool room, finished throughout with light fumed oak, which wood is also used in the pool tables and seats. The fireplace is constructed of tapestry brick; the floor of cork tiling.

The barber shop and lobby in the basement are treated with Italian marble and white tile, while the bake shop and work room are finished in white enameled brick. A complete ventilating system has been installed with an air washer for moistening and purifying the incoming air.

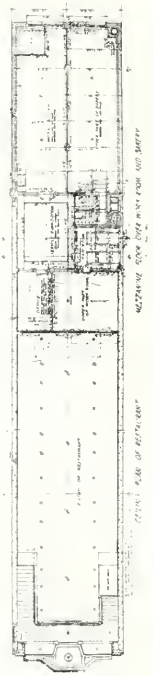
Reinforced concrete is used in the basement; brick in walls above grade line; reinforced concrete and hollow tile in all floors. The foundations are sunk thirty-two feet to solid rock. An approximate cost per cubic foot of the building is 40 cents.

Williams Building.—Rising ten stories above the ground, this building presents a unique solution to the tall, narrow business structure. Twenty-three feet six inches includes the entire width, while the heights of the various upper floors are ten feet eight inches in order to conform to the building law limiting the height to five times the width. The full depth is one hundred feet.

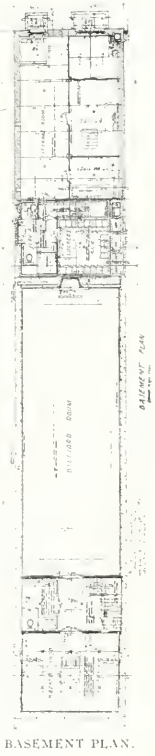


EXTERIOR DETAIL, BOWLES BUILDING, TORONTO.

HARRIS & MURRITT AND H. E. HAND, ASSOCIATE ARCHITECTS.

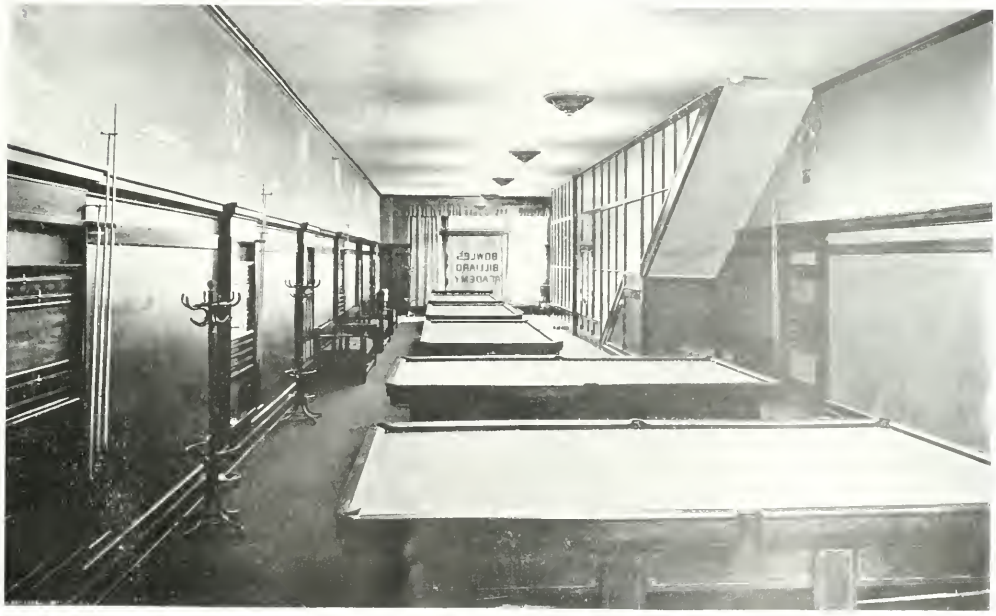


MEZZANINE PLAN.



BASEMENT PLAN.

POOL ROOM



BILLIARD PARLOR

BOWLES BUILDING, TORONTO.

HARRIS & MERRITT AND H. F. HAND, ASSOCIATE ARCHITECTS.

The exterior presents a frame of light glazed terra cotta encasing a metal treatment of windows and cement advertising spandrels. The walls of concrete vary in width from twenty-two inches at the basement to fourteen at the top story. In order to economize space the building was designed as "skeleton construction," considering three feet of the wall as column and the adjoining three feet as spandrel treatment. In doing this the architects escaped the law demanding similar walls to be thirty-two inches at the first floor.

All floors are of reinforced concrete with a top covering of terrazzo, made to carry a live load of one hundred and twenty-five pounds per square foot. A wind pressure of thirty pounds has been allowed on wall surfaces. The footings extend forty feet below street level to rock bottom, with piers two feet three inches by four feet six inches for each column.

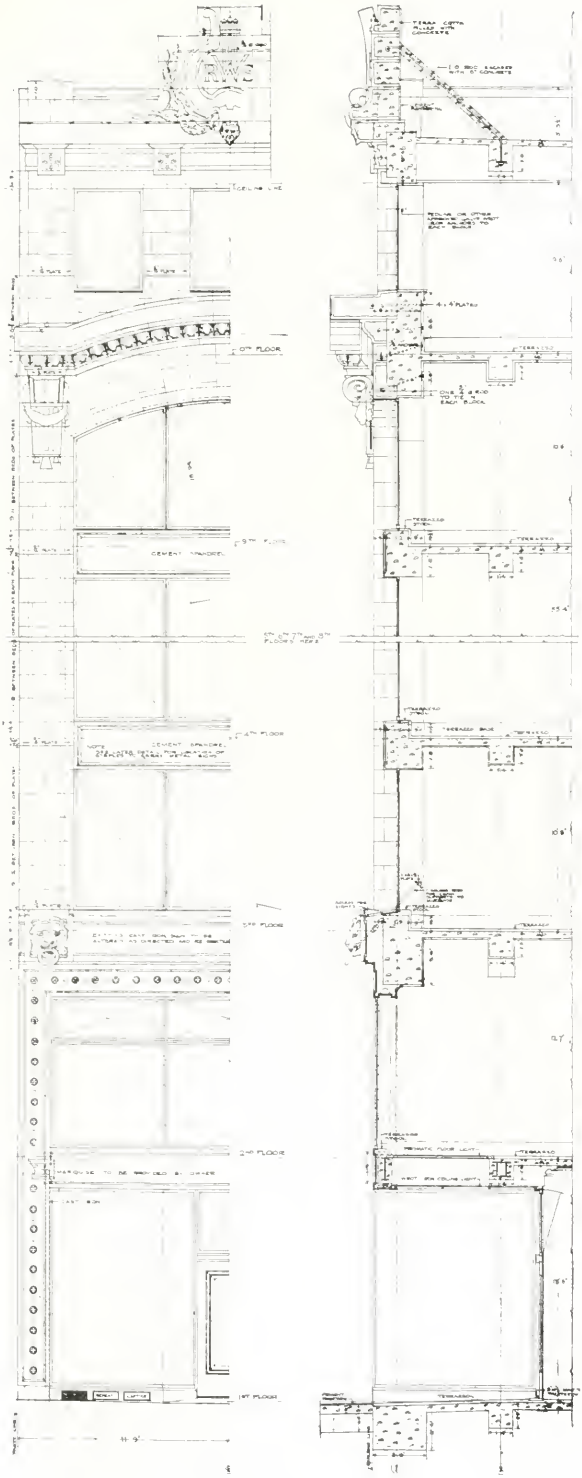
Macmillan Building.—Located on a street of churches, with shade trees, the design lends itself to the artistic nature of the surroundings, and at the same time maintains a proper feeling of the practical nature for which it was built. It consists of five stories with a high basement, the first treated in Ohio blue stone, the remaining portion in stone and cherry toned brick with white joints. Upon the interior the vestibule is of marble, the inner hall of red brick with mahogany finish.

The building is planned so as to have unobstructed light on all four façades, arranged by reserving a certain portion of land on each side. Casement windows are employed in the front—all other windows having metal frames and sashes. The roof provides for a skylight of ample proportions. Mill construction is used throughout, the floors having four-inch Georgia pine and one-inch maple, with a safe load of 150 pounds.

LUNCH ROOM, BOWLES BUILDING, TORONTO.

Special attention has been given to the shipping arrangements, all of which is handled from the freight elevator into a paved court. The heating is by steam, the boilers being located in an area built beneath a lane, separating this feature from the basement proper. Cost of structure, 11 cents per cubic foot.

Tremont House.—The exterior of the building is finished to the first floor in polished Crotch island



EXTERIOR DETAIL AND SECTION.

WILLIAMS BUILDING,

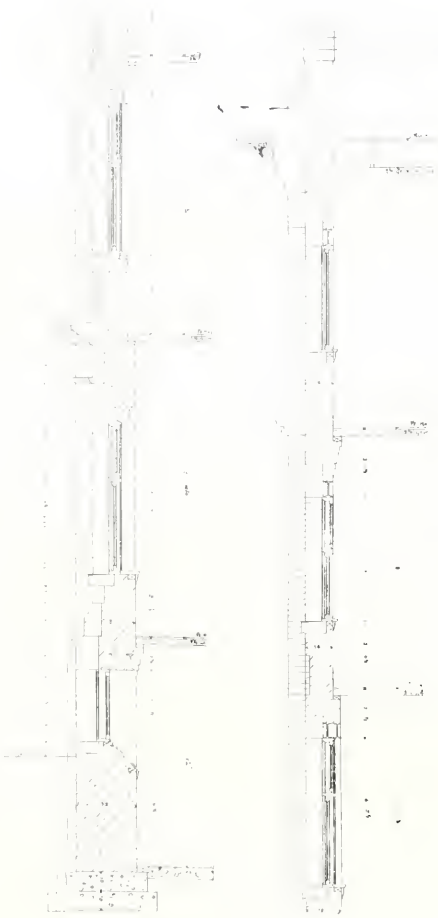
TORONTO, ONT.

CHAPMAN & McGILLIN,

ARCHITECTS.

MAIN FLOOR.

BASEMENT.

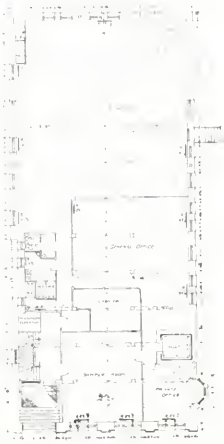


SECTIONAL DETAIL.

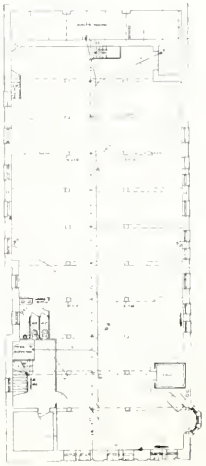
MAIN FACADE.

MACMILLAN BUILDING, TORONTO.

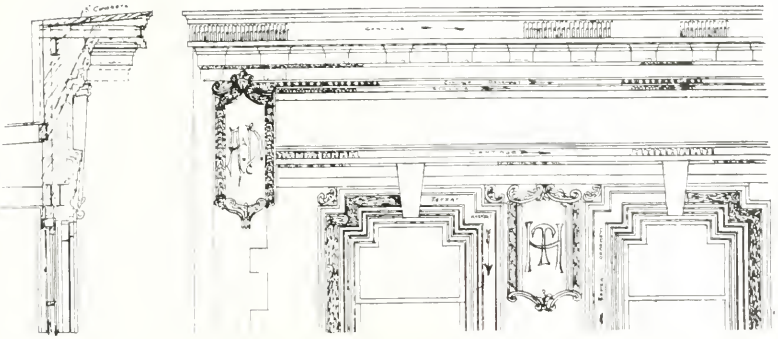
DENISON & STEPHENSON, ARCHITECTS.

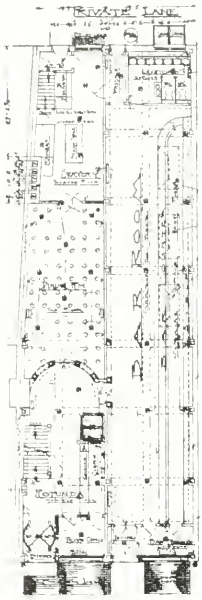


GROUND FLOOR PLAN.



BASEMENT PLAN.





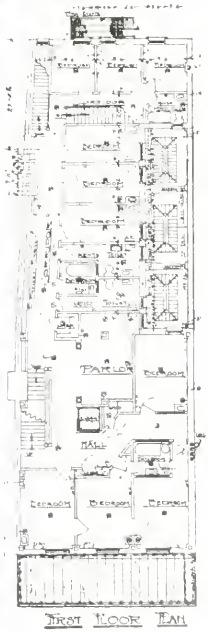
GROUND FLOOR PLAN

TREMONT HOUSE,

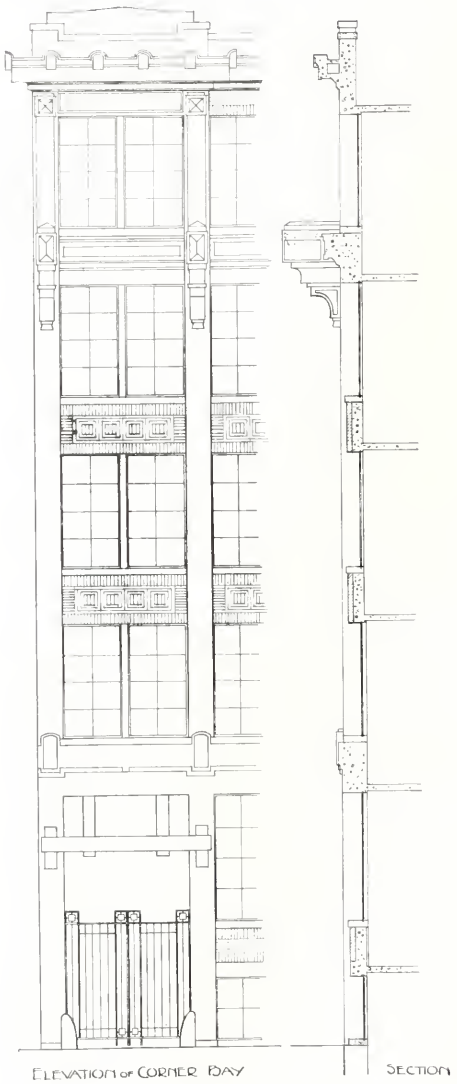
TORONTO.

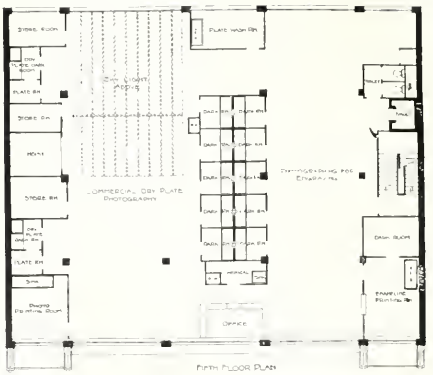
J. WILSON GRAY,

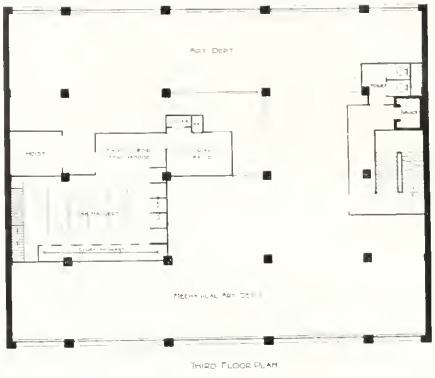
ARCHITECT.

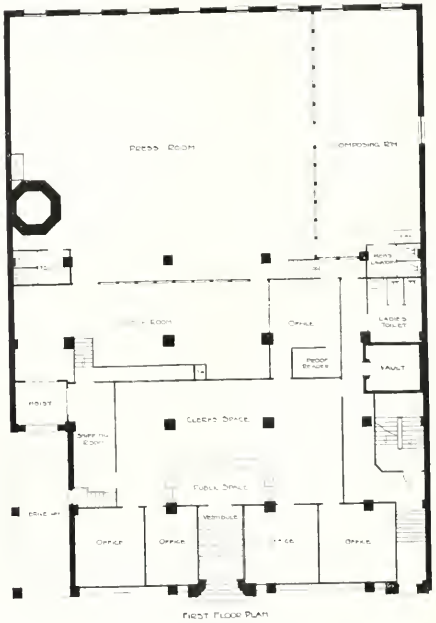


FIRST FLOOR PLAN









BRIGDEN BUILDING, TORONTO.

BOND & SMITH, ARCHITECTS.

PRESS ROOM
PHOTOGRAPHIC ROOM.

BRIGDEN BUILDING, TORONTO.
BOND & SMITH, ARCHITECTS.

granite with white glazed terra cotta above. This structure is an excellent example of the economical arrangement so necessary in business sections. A glance at the first floor reveals a symmetrical division on one side of which is the office, dining room and servery, on the other a bar room extending the full depth.

The walls of the office are finished in Royal-vein white marble, with base and trimmings of Dominion blue and mahogany woodwork. In the dining room is a quartered oak treatment after Louis XVI. style. Mahogany is also employed in the barber shop, bar room and lavatories; quartered oak throughout the upper floors.

The building is of steel construction, brick walls, white glazed terra cotta used from top to bottom. terra cotta floors, and concrete roof. Total cost of structure alone, $100,000.

Brigden Building.—The entire structure is of reinforced concrete and brick, with concrete roof and floors, steel sash and fire doors. There are five stories in addition to the basement and a printing department built in the rear. The printing plant is 65 x 75 feet, divided into two sections by a glass partition. All lighting in this department comes from a skylight tipped to the east, giving an even distribution of light throughout the room.

One of the prominent features in the design is the lighting arrangement, the front and rear being practically one solid window. Whatever artificial lighting is necessary is by the indirect system, while the power is derived from individual motors attached to each piece of machinery.

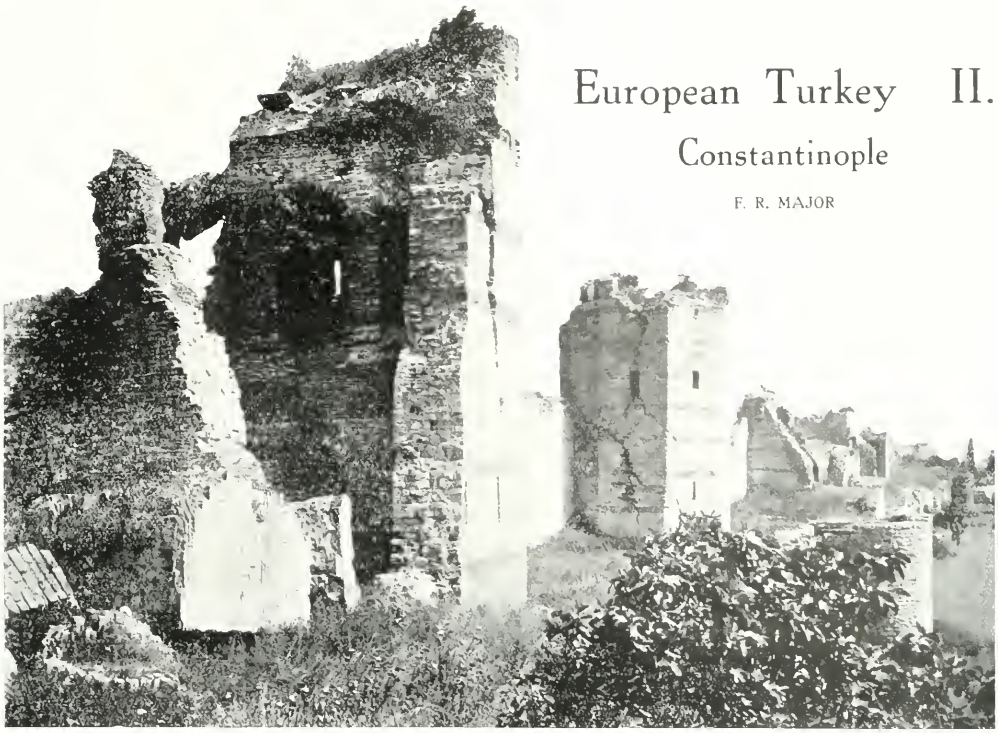
The exterior treatment consists of an outer coating of white portland cement and white silica sand rubbed down with a carborundum block. A little touch of color is introduced at the floor levels by means of panels in tapestry brick.

The building is fireproof throughout and heated by a vacuum steam system. The cost of building approximates 16 cents per cubic foot, which includes the special plumbing, acid sinks, etc.

The time has arrived when architects, engineers and builders must put forth an honest effort in complying with the universal demand for ornate structures. The client wishes it, the general appearance of the city demands it—so the profession should bend every effort to produce the desired result. The buildings shown herewith present an honest effort upon the part of the designer to raise the standard of commercial architecture in all its phases, and it is to be hoped that each one responsible for a continuation of the standard already set will hold themselves ready to instill into their work a character which will prove creditable to their profession.

Canada is growing rapidly and needs to consider carefully the type of edifices it is erecting. Every structure built or being built has an influence upon future development as well as standing for the best taste and skill of our architects and engineers. There is no need of adverse criticism for what has been done, but architecture must better itself and this can only be accomplished by insisting on pure design. The buildings shown herewith present an honest effort upon the part of the designer to raise the standard of commercial architecture in all its phases.

OFFICE, BRIGDEN BUILDING, TORONTO.



European Turkey II.

Constantinople

F. R. MAJOR

TO THE READER full of admiration for relics of strength and duration nothing will bring deeper pleasure than a visit to the old Theodosian wall depicted above. This barrier, which meant the preservation of the city for so many centuries, may even yet add one more victory to its slow ebbing life. Of one hundred and sixteen fighting towers, only half remain, and these are little more than illustrious ruins.

The crumbling walls were conceived by Constantine the Great. In 413 Anthemius, the Prefect and military reformer, finding the fortifications inadequate for the city's protection, erected the first great Theodosian rampart. It extended more than a mile beyond the wall already existing and prevailed against many savage onslaughts. After the disastrous effects of an earthquake which destroyed fifty-seven towers, the threatened attack by Attila, "Scourge of God," influenced the citizens to restore the walls. The remarkable undertaking was accomplished in sixty days. In succeeding years the work was enlarged to four successive lines of defence. The first part consisted of a moat sixty feet wide, backed by a solid stone breastwork for archers. Adjoining this was a forty-foot esplanade protected by a wall thirty feet high and seven feet thick containing loop-holes. This section was buttressed by one hundred towers thirty-five feet high. The inner and higher esplanade was sixty feet wide, with the first great wall rising some forty-five feet higher. With fifteen feet of solid thickness and protected by ninety-seven flanking towers sixty feet high, this wall reached to the Blackernae Hill, from which point a single wall extended to the Golden Horn.

To our mutual friend Mark Twain these walls mean nothing but useless enclosures to a city of little beauty and a people of filth and uncleanliness. To others they stand as monuments of a people whose bravery was their religion, whose character became known through illustrious works of art, and whose habits in their golden era could stand the light of publicity fully as well as ours in this braggadocio age. For eight centuries the city of Constantinople was guarded from attack and successfully withstood the terrific onslaughts of the savage Huns, Slavs and Saracens. We somehow feel that their great vitality will respond once more to the glorious height of their ancient victories.

From Justinian down to the sack and destruction of Constantinople—1204—the empire was continually engaged in warfare, endeavoring to hold itself together and at the same time prevent the Vandals, Goths, Saracens, Persians, Slavs and Russians from capturing the city. For centuries art received little encouragement on account of the continued struggle for existence. The strength of the Eastern Empire grew less and less through misgovernment. The capital itself was fast degenerating and regarded

CASTLE OF ROUMELIA.

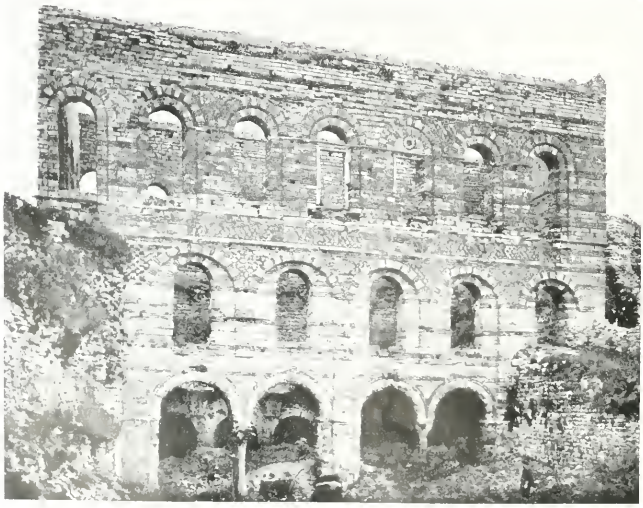
with little pride and affection. But all of this became changed. During the tenth, eleventh and twelfth centuries the splendor of Constantinople was beyond comprehension. Customs duties amounted to twenty thousand pieces of silver daily and the rulers accumulated large fortunes in spite of the maintenance of armies, cost of wars, building of the city, games for the populace, luxury of the court and expenditures on ecclesiastical edifices.

The imperial palace became more magnificent under each succeeding sovereign. Its gardens descended by many terraces to the shore of the sea, affording a suitable setting to its three stately domes. The roof of gilded brass was supported by pillars of Italian marble and walls incrusted with colored marble mixed with Oriental alabaster. The palace contained five churches, while "its endless courts, corridors and apartments, finished in mosaics composed of precious stones and marbles from all quarters of the globe, were spacious enough to contain the multitude of splendid paintings, statues, vases and magnificent trophies, of an inconceivable variety, which had been gathered from all the known countries of the globe."

The fivefold creed of Mohammedanism—confession of the unity of God; prayers at stated times; almsgiving; observance of the fast of Ramazan; the festival of Mecca—brought about a great change in ecclesiastical architecture. Besides appropriating for their own use the large number of Christian churches already existing, they erected hundreds of mosques, many of which were structures of great magnificence. Of the churches erected before the

ST. IRENE, AN OLD METROPOLITAN CHURCH.

Justinian age, only one example remains. St. John Studios, built in 463 A.D., is a three aisled basilica having an over all dimension of 125 by 85 feet. The gallery is supported by a range of classical columns, while the upper portion of the church consists of a series of arches with little resemblance to the classical features below.



PALACE OF THE BLACKERNAE.

During the Justinian age places of worship sprang up in all quarters of the metropolis, but were gradually lost on account of the combustible materials entering into their construction. The Church of Sergius and Bacchus remains, however, due to the elimination of wood, etc., and furnishes an example of considerable merit both in its design and proportional qualities.

Santa Irene, formerly the metropolitan church, has been converted into a Turkish armory. This building was rebuilt in its present state by Leo the Isaurian, 718 A.D., and furnishes the first complete form of introducing the dome lighting by means of a perpendicular drum. Probably the finest example of a small church is that of Theotokos, 37 by 45 feet. It is the most com-

plete structure of its kind, possessing many details of great beauty and perfection.

The remarkable rise of the Ottoman Turks is augmented by the fact that they were little more than wandering pastoral tribes at the beginning of the thirteenth century. From central Asia they migrated into Asia Minor during the following century and encroached upon the territories of Bulgaria and Servia under the leadership of Murad I., 1359-1389. Henceforth all attempts to besiege Constantinople were fruitless until Mohammed II., 1451-1481, became ruler for the third time. Secretive, ambitious, crafty, and wide awake was Mohammed. When asked as to his plan of attack, he answered, "If a hair of my beard knew, I would pluck it out and burn it." He aspired to the domains of western Rome long before he felt certain of possessing their eastern territories; he tactfully held aloof the Hungarians and other powerful nations by peaceful

PIGEON COURT, MOSQUE OF SULTAN BAYEZID.

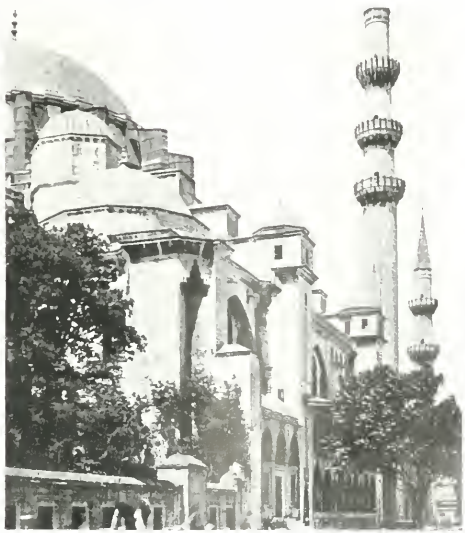
FOUNTAIN OF SULTAN AHMED III.

negotiations; he was the first man to prove the efficiency of cannon against the fortified city. It might be of interest to note that the guns used in this attack threw stones weighing twelve hundred pounds.

What a marked contrast between the besieged and the besieger. Mohammed in making his speech before the final assault swore "by God, by the four thousand prophets, by Mohammed, by the soul of his father and by his children," that the soldiers should have the city for three days in which to pillage, destroy and kill. On the other hand, Emperor Constantine and the people marched in solemn procession to S. Sophia and here the emperor bade his people fight as became the descendants of the heroes of Greece and Rome. This was the last Christian service in the historic church called Hagio Sophia.

As a result of this siege the wealth of the richest capital in the world was looted; the city was depopulated, thousands being killed and some fifty thousand reduced to slavery. Then the organizing genius of Mohammed stood out. He offered free homes to all former inhabitants who would return; he transplanted colonies from the neighboring islands; he cemented the good will of his officers by distributing among them the wives and daughters of the nobles of the empire. He recaptured Servia and Bosnia, annexed Asiatic domains, established a suzerainty over Crimea and placed the Ægean islands under his rule.

Mohammed II., in beginning the conquest of Constantinople, erected the castle of Roumelia, the walls of which were thirty feet in thickness and



DETAIL, MOSQUE OF SULTIMAN THE MAGNIFICENT.

GATE OF SERAS KIERAT.

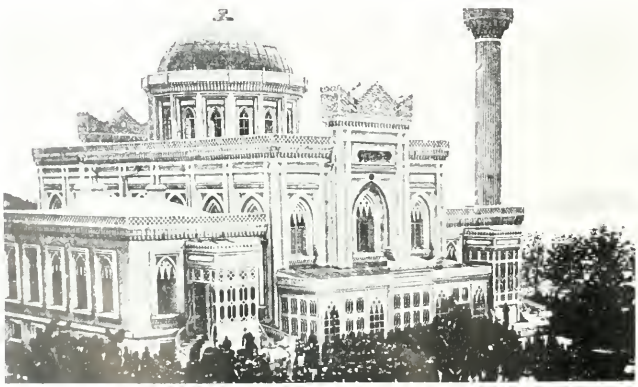
contained altars, pillars, etc., of Christian churches. On extended ground which was christened Seraglio Point he built his famous palace of Cheregan, and surrounded the much mutilated S. Sophia with groves, fountains, etc. His greatest glory in the field of art was his magnificent mosque erected by the great Greek architect Christodoulos. Unfortunately this structure has lost its original character. Within the mosque are the tombs of the emperor and his family, without are the signs of what must have been the resultant of a deep thinker and humane character—eight academies, a bath, hospital, diet-house and caravansary. The tomb of Mohammed II. occupies a position in the turbeh of Sultan Ahmed and is surrounded by a mother-of-pearl railing at the head of which hangs his enormous turban.

DETAIL, MOSQUE OF SULEIMAN THE MAGNIFICENT.

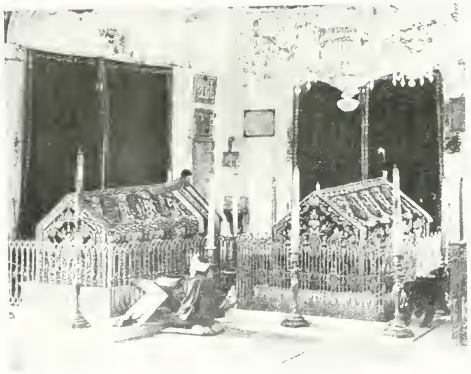
Between Mohammed II. and Suleiman the Great, 1520-1566, ruled two sultans noted for their civic improvements. Bayezid II. erected the Mosque of the Pigeons, so named from the existing legend that in the course of building an old woman brought the sultan a pair of pigeons as her free-will offering. The kindness of such gratitude brought forth the decree that the pigeons and their offspring should be regarded as sacred. The court has a charming portico with marble pointed arches in red and white supported by monolith columns, ten of which are verd antique, four of jasper and six of granite. Selim I. proved to be one of the greatest Ottoman rulers, annexing Persia, Syria and Egypt to his domains, and bringing the sacred banner and relics of the prophets from Cairo to S. Sophia.

Suleiman the Great, 1520-1556, has given to posterity a regime of splendor surpassing in many ways the Justinian ers. Constantinople was not only embellished, but nearly every city in the empire felt the influence of his artistic temperament. The great aqueduct and arsenal of the capital were paralleled by the restoration of the aqueducts of Mecca and the construction of the Tschekmedji bridge.

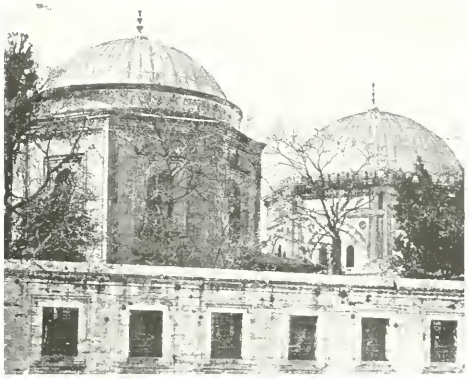
The Suleimanyeh is the most artistic mosque in Constantinople. The building still maintains its original character both as to the constructive features as well as the treatment of its detail. The mosque was designed by Sinan, the most celebrated Otto-



THE SELAMLIK.



TOMBS OF MAHMUD II. AND ABDUL AZIZ.



TOMBS OF SULTAN SULEIMAN AND SULTANA ROXALANA.

man architect, and comprised a court, fountains, colonnades, twenty-three small domes and four exquisite minarets with accompanying galleries. In plan the main structure covers practically fifty thousand square feet with a forecourt 150 by 190 feet surrounded by an arcade. The dome, 86 feet inside diameter and 156 feet in height, rests on four monolithic columns of ancient fame. Upon the interior are splendid examples of colored glass from the manufactory of Ibrahim, painted in a design with the name of God set in an appropriate bevy of flowers. The screen of windows under the great lateral arches of the dome are borne by monolithic shafts of porphyry, 28 feet in height, with base and capital of 35 feet. The mosque with its forecourt is surrounded by a still larger court having ten gates and arranged in conjunction with four academies, three schools, a hospital, kitchen for feeding the poor, school of medicine, library and a house of refuge for strangers. It is surely a pity that such a monumental structure should suffer from the quality of materials with which it is constructed. The walls are covered with stucco, the dome with lead, and the masonry abutments with metal

ENTRANCE TO VALIDE MOSQUE.

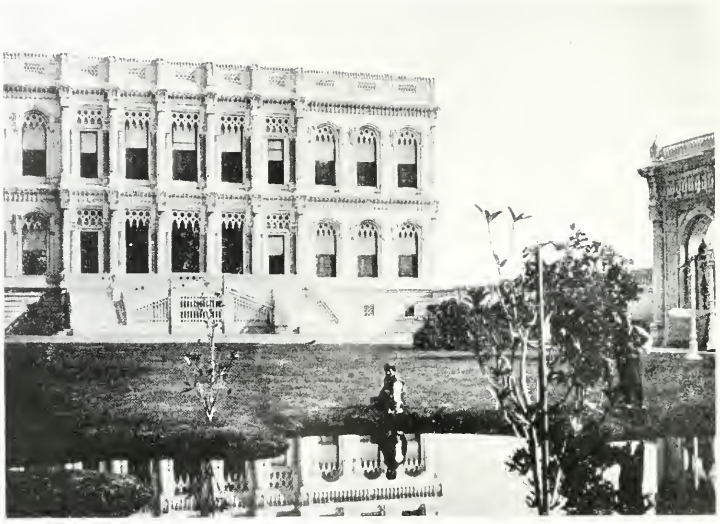
The tomb of Suleiman is pleasing and artistic; octagonal in shape, with a fluted roof. Too small to be grand, it is of unusual merit and contains exquisite marble of various colors carefully elaborated. Upon the interior walls are painted designs of delicate lace-like arabesques. The costly decorations of the biers, mother-of-pearl work, shawls, turbans and aigrettes to be found in his resting place are only symbolical of his work and its accomplishments. What greater homage could be paid so great an empire builder?

The "turbeh" of Mahmud II. is perhaps the most splendid as well as the last tomb erected for a sultan. Built of white marble, it presents an interesting study with the gilt grated windows, while the cupola

THE MOSQUE OF SULTAN AHMED.

DETAIL, THE SUBLIME PORTE.

is just as attractive with its stalactites of gold and delicate cornices. The biers themselves are covered with richly embroidered velvet and protected by means of railings designed in mother-of-pearl.



PALACE OF TCHERAGAN—NEW PARLIAMENT HOUSE.

Unquestionably the mosque next in importance to that of the Suleimanyeh is the one erected by Sultan Ahmed I., 1608. Not willing to limit his ambition to the usual number of minarets of two or four, Ahmed insisted on having six, but was forced to discontinue his work on the ground of sacrilege. It seems that the sacred temple at Mecca possessed a like number and naturally the sultan was committing a crime which even his unlimited power could not carry through. History tells us that he completed the six minarets after he added the seventh to the mosque at Mecca. The plan measures 235 by 210 feet. The great criticism to this work is the mechanical arrangement, the plan being square and the design upon all sides practically alike. The redeeming qualities are the six minarets and the effect of the smaller domes and semi-domes leading up to the centre in an imposing manner. Quite impressive also is the fine interior, with its stone roof supported by four large fluted piers.

ENTRANCE TO POST OFFICE.

Hundreds of fountains are to be found in Constantinople. This is due to the prominent part water plays in the religious life of the Turk. In addition to the fountains in every mosque there are a large number of public drinking places, the most beautiful of which is that of Sultan Ahmed III. The exterior decorations are in arabesque and gold, while the interior consists of a dead gold with pencillings, traceries and panels of roses and stars delicately carved.

"La Sublime Porte"—the lofty gate—is the title given to the Sultan's Government from their extreme fondness for gateways and their skill in erecting them, both as to numbers and artistic merit. The variegated marble gate of Seras Kievat is exceptionally rich in ornamentation. Another monumental entrance flanked by fountains and marble pillars leads to the Sublime Porte, a large modern palace in the Italian style.

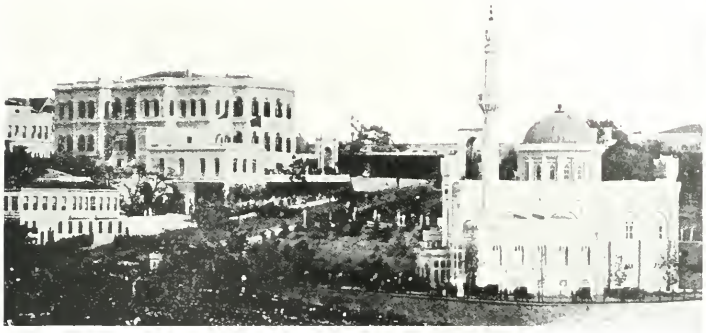
Many and varied are the palaces of Constantinople. The favorite residence of the Commenian emperors was the palace of the Blackernae, the ruins of which are quite picturesque. The Seraglio is of the greatest interest and consists of a community of buildings decorated in various tiles, arabesques, bronze, ivory, mother-of-pearl, and gold. At the occupation of Constantinople the Turkish conqueror

IMPERIAL MUSEUM AT STAMBOUL.

occupied the old palace. The new one was started in 1468 and became the home of the sultans for three centuries. A battlemented wall of square towers separates it from Stambul, enclosing terraces of beautiful gardens. Next to the Seraglio in importance is the Dolma Baghtcheh, with its picturesque setting enclosed by two richly decorated gates. It lies north of the Golden Horn and presents a varied architecture which detracts from the general appearance. The interior is finished in carved doors of mahogany; gorgeously frescoed Parian marble bathrooms; malachite fireplaces; mirrors one hundred feet square; costly bronzes, etc.

DOMA BOGHTCHEH—THE SULTAN'S PALACE

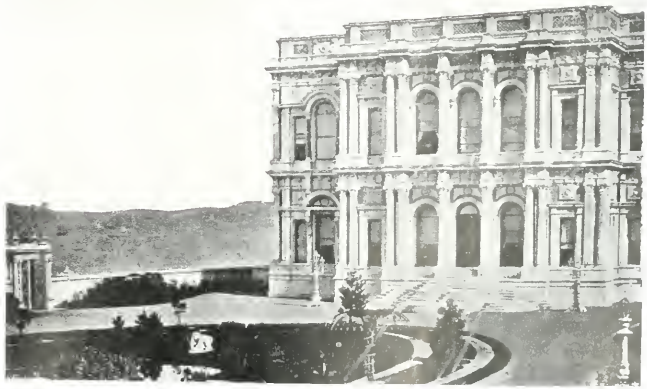
Just beyond is the palace of Beylerbey, erected in 1865. Upon the interior of this marble structure is one great hall of columns with a decorative marble staircase. Numerous gardens and kiosks surround the palace which gives approach to the Bosphorus by means of marble steps and quay.

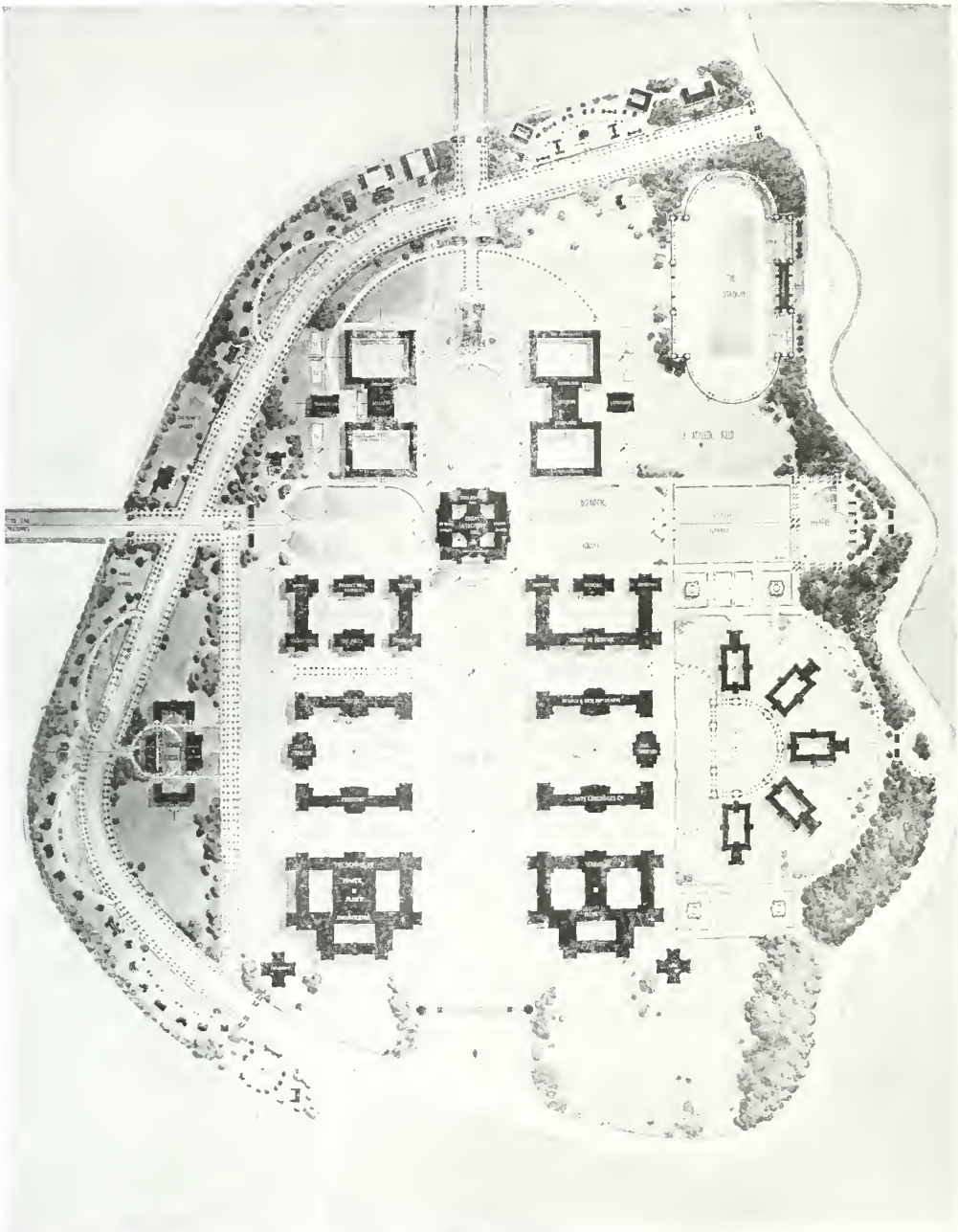


YILDIZ KIOSK AND MAMIDIEH JAM MOSQUE.

The palace of Tcheragan cost $30,000,000 and is built with the best of marble. We are left, however, to dream of its sumptuous interior as nothing remains of the decorations and furnishings which cost millions. Erected by the Sultan Abdul-Aziz, according to Edmondo de Amicis, it reminded one of the Alhambra, barren and endless are the rooms, and nothing to evidence its former beauty but the charming vistas over the water. A palace but not a palace is the Yildiz Kiosk—built and rebuilt for the past thirty years—it resembles a veritable city.

Little can be said of the modern architecture, one or two views being shown to illustrate its character. Many of the more recent mosques have features of architectural interest and picture to us in a realistic manner their religious nature.





BLOCK PLAN

COMPETITION FOR UNIVERSITY BUILDINGS, PROVINCE OF BRITISH COLUMBIA.

FIRST PRIZE DESIGN BY SHARPE & THOMPSON, ARCHITECTS.

Key to plan:—Surrounding and facing the great campus are seven groups. Beginning at left is the engineering school with the philosophy building near by; second group, science quadrangle composed of physics, museum and chemistry; third group, agriculture, finance, arts and pedagogy; building at end of campus for the administration; fifth group, dentistry, medicine and pharmacy; sixth group, arts quadrangle composed of biology, library and languages; seventh group is the school of mines with the law department near by. To the right of the arts quadrangle is the theological group of five buildings. To the left of the science quadrangle is the women's college. In the rear of the administration building are two large dormitories facing a central square with the chapel at the end. The students' club lies to left of dormitory group and the gymnasium to the right. Public gardens, faculty accommodations, men's club, etc., are placed along the driveway to the left of the general scheme. On the right is Marine Drive, skirting the edge of the cliff.

New University Buildings, Province of British Columbia

C. H. BOYLES

THE LARGE NUMBER of competitive designs submitted for the proposed University buildings at Point Grey, Vancouver, reveal the capabilities of Canadian architects to handle comprehensively problems of this nature. Each scheme is highly commendable and the only regret lies in the fact that space will not permit of showing other plans in addition to the winners. The completed work will call for an expenditure of $10,000,000.

It is a worthy tribute to the advanced standard of architecture that the nineteen plans submitted drew forth the unstinted praise of the assessors. The committee of award consisted of the Minister of Education, Hon. Dr. H. E. Young; F. L. Carter-Cotton, Chancellor of the University; W. Douglas Caroe, of London, England; A. Arthur Cox, of Vancouver, and Samuel Maclure of Victoria, distinguished members of the architectural profession, co-operating with and assisted by the Provincial Minister of Public Works, Hon. Thomas Taylor.

The committee in making its report spoke of the marked influence for good upon busy centres which the establishment of universities exercise. In reaching a decision they weighed the importance of the design in its relation to the site, inasmuch as it will remain a standard of the present architectural taste in British Columbia for years to come. They allowed no consideration to enter into their final choice other than the merits of the design.

The programme in dealing with the site laid particular stress on the excellent views it commanded and advised the competitors to keep this fact constantly in mind. The committee felt that the proper vistas had been laid down upon the site-plan, which gave in full measure the levels and gradients. In justice to the architects not receiving prizes, it may be gratifying for them to know that several of the most elaborate drawings submitted received an H. C. through their failure to grasp the essentials of the treatment desired.

Among other features which influenced the final decision of the jury was the suggestion that one of the three distinctive styles—late Tudor, Elizabethan, or Scotch Baronial—should permeate the whole design. One competitor was thrown out by producing a classical scheme of grandiose and palatial character.

The reason for the choice of Sharpe & Thompson is given in the words of the report:

"After mature deliberation, we conclude that No. XVI. has best succeeded in laying down a well devised and workable plan suitable to the site. There is much to be said in commendation of the straightforward and direct scheme which the author has devised. The buildings fit themselves naturally and in a simple and well-balanced manner upon the site, and culminate in the dominating block of the administrative group, which forms a feature seen from all points of the compass.

VIEW OF THE GREAT CAMPUS. SHARPE & THOMPSON, ARCHITECTS.

BLOCK PLAN.

COMPETITION FOR UNIVERSITY BUILDINGS, PROVINCE OF BRITISH COLUMBIA.

SECOND PRIZE DESIGN BY DOUGLAS SCOTT BOW, ARCHITECT.

Key to Plan—1, Administration, Chapel and Assembly Halls; 2, Dormitories; 3, Students' Club; 4, Faculty Club; 5, Naval Architecture; 6, Pedagogy and Philosophy; 7, Theology; 8, Fine Arts and Law; 9, Pharmacy and Dentistry; 10, Physiology; 11, Anatomy; 12 Surgery and Hospital; 13, Finance; 14, Mining; 15, Engineering; 16, Gymnasium; 17, Chemistry; 18, Medicine; 19, Museum; 20 and 21, Arts; 22, Library; 23, Conservatory; 24, Power House; 25, Physics; 26, Agriculture; 27, Women's College; 28, Faculty Residences.

Second Prize Design.—The committee of award in presenting their report placed Douglas Scott Bow second and gave the following reason: "We think that No. XVIII. deserves to be placed second in order of merit. This scheme is also well laid out on the site, but has defects, to which we refer more particularly in our detailed remarks. The requirements generally are not so successfully met in some particulars, although in others there are effective points The style adopted is Scotch Baronial, without some of its defects, but in other respects the treatment is somewhat hard and mechanical, and the author has missed some of the opportunities which the style affords in dealing sympathetically with the materials of stone and rough cast adopted by him. There is, however, a distinctive character of unity and some dignity in the whole architectural scheme. The estimate of cost is satisfactorily stated."

Mr. Bow, in presenting his report, states that the site has been carefully studied and the natural contours of the land govern the general lay-out of the buildings. The ground rising gently from north to south along the line of vista is taken as the main axis of the scheme. The athletic fields are excavated, the terracing for spectators being on solid ground, while the excavated earth will go to maintain the general level along the main central avenue. Otherwise the natural surface will remain unaltered.

The buildings presently proposed are shown where they can be erected almost entirely on the natural surface of the ground, which enables them to be placed where they will of themselves look like a finished unit; where their working arrangements will in no sense be impaired by future building operations; and which permits of the more uneven portions of the site being made up at the present time so that they will become eventually suitable for building purposes.

The Marine Drive in considered as forming the main approach, and at its juncture with the University Boulevard at the north end, is placed the grand entrance. A broad flight of steps, architecturally treated, approach a spacious and monumental forecourt intended to accommodate such social functions as alumni gatherings, etc.

A broad central avenue planted with trees is entered from the forecourt and terminates at the Administrative Terrace, with the administrative buildings and lofty tower forming the culminating and central point of interest in the scheme. The natural rise of the ground introduces flights of steps which tend to enhance the dominating effect of the administrative group. As a result the view from the south is vastly improved and a promenade or balustraded terrace is planned with staircase towers furnishing access to the gardens. The gardens are informal, to furnish a marked contrast to the severe lines of the main scheme.

There are two important entrances to the Administration Terrace which pass through the gardens, convenient for general purposes as well as for access to the assembly halls by the public. Separate entrances from the University Boulevard are shown in connection with the athletic field and the women's club.

Point Grey Boulevard, North and South Boulevards, where they enter University Boulevard, are designed to centre on the points of motif of the buildings closing the vistas along these routes, while the quieter streets to the city are concentrated on the two students' entrances which give access to the main cross arteries.

The ground being practically level, lends itself to a geometric treatment, and while this has been generally adopted, the outlying buildings are disposed to artistically emphasize the irregular rounded outline of the site.

The general requirements are carefully adhered to and the various buildings planned to coincide. The cost of the proposed structures will be, when fully equipped, $1,400,000. The style is Scotch Baronial, and will be built of brick and rough cast with stone trimmings and slate roofs. This style seems most in keeping with the surrounds and lends itself to a broad, simple and inexpensive treatment.

The main effect is produced by the long lines of the parapet and the dramatic concentration of the motifs and ornament at the central points of interest, and by emphasizing the forecourt, central avenue, and administration.

The various groups of buildings will have a gently varied skyline and simple detail.

The main motive of the design is to centre on the richer buildings, such as the library and museum, with their towers, and on the administration tower, visible both from the city and the sea, and which will be shown with a Scotch crown.

CHEMISTRY DEPARTMENT

POWER HOUSE AGRICULTURE DEPARTMENT

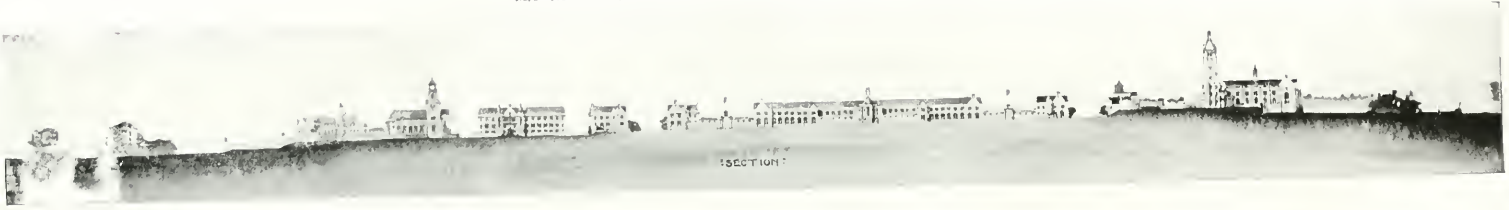
SECTION.

PERSPECTIVE.

COMPETITION FOR UNIVERSITY BUILDINGS, PROVINCE OF BRITISH COLUMBIA.

NORTH VIEW.

SECOND PRIZE DESIGN BY DOUGLAS SCOTT BOW, ARCHITECT.



SECTION.

Third Prize Design.—The assessors in awarding third place to Philip J. Turner, said: We place No. XIX. third in order of merit. Mr. Turner's grasp of the conditions are taken from his report: The opportunity of initiating a scheme for a university such as contemplated is of such a rarity and affords such scope that every effort should be made to design a plan worthy of the magnificent subject, expressive of its purpose, and not merely an architectural composition. As laid down, the main prospect from ships entering the harbor, and from the principal land approach, embraces the great lawn placed axially on the main vista, flanked and framed by two avenues lined on both sides with the principal university buildings gradually rising in gradient, and converging, thereby increasing the perspective of the culminating group, which comprises the Administrative Block, Library, and Museum, the whole expressive of one great idea, on simple lines easy of comprehension, convenient of arrangement and a landmark for all time.

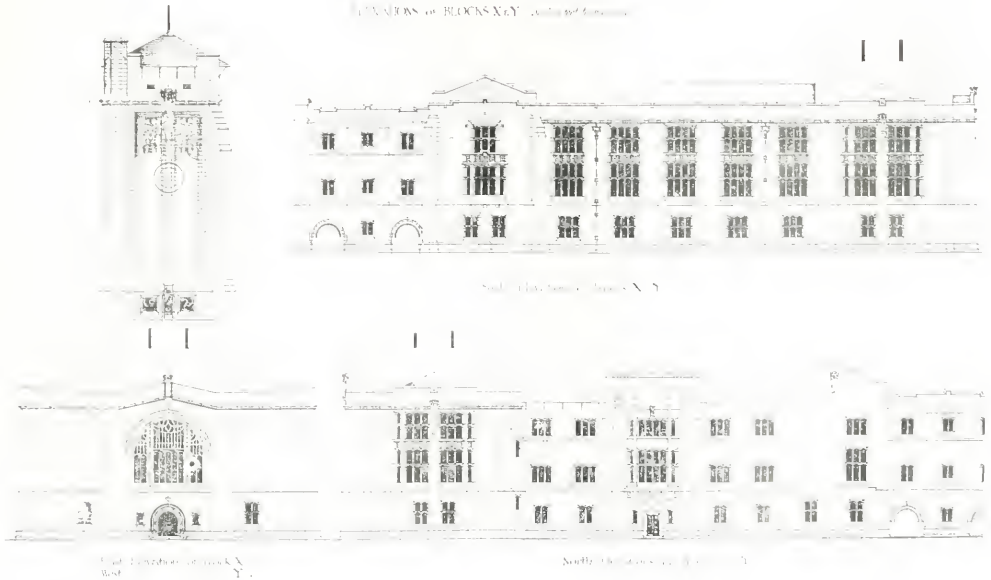
In presenting this scheme for consideration by your assessor the following points are considered of special importance, and in fact constitute the basis of the argument from which the plan was evolved: (1) Selection of main axis for the whole scheme; (2) that the scheme should generally represent a university rather than an architectural composition; (3) that there should be a convenient grouping of the various sections without undue crowding or prevention of possible future extension; (4) that the purpose of the several sections should be clearly defined; (5) that the grouping of inter-departmental blocks be concentrated in their allocation, with subdivision in each department by means of isolated staircases and sanitary annexes, thereby facilitating extension as required; (6) that the lay-out should be adapted to the contours of the ground with a view to incorporate the natural beauty of the site with the scheme as a whole; (7) easy gradients of roads.

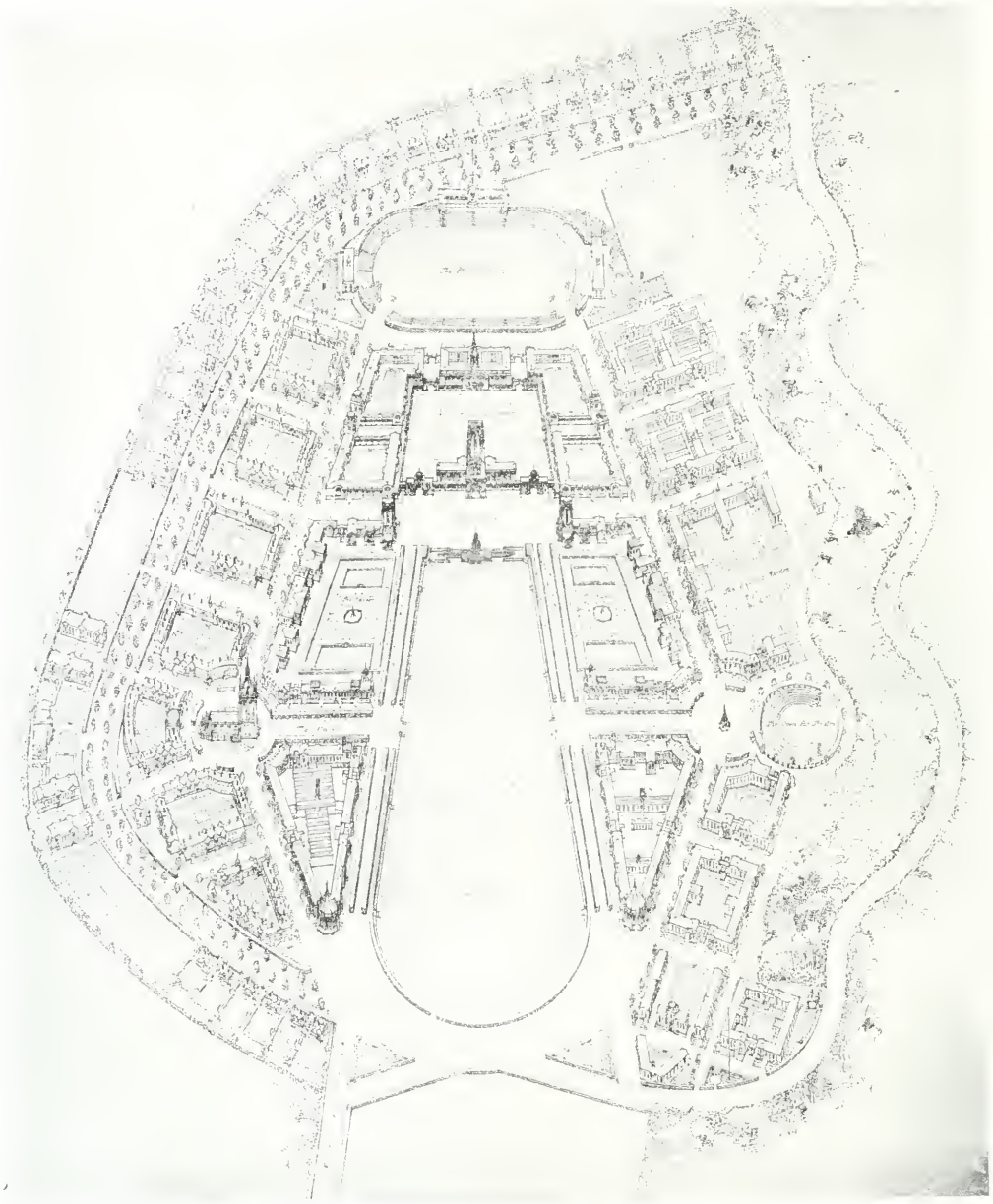
In conclusion the following points are invited particular attention to: (1) That the great lawn axial on main vista from the sea and main approach with the east and west avenues and formal gardens off same on either side culminate in the administrative buildings and Theological Square on the highest portion of the site; (2) that the main axis of the medicine group is north and south; (3) that the gymnasiu mand athletic ground is isolated, yet still in touch; (4) that the sanitary blocks and staircases are detached from the buildings on a definite scheme of arrangement to be followed throughout.

In planning the buildings authorized to be erected simplicity of arrangement has been the key-note, bearing in mind the purposes for which the buildings have to be used. The dormitory buildings have been planned in isolated blocks arranged in the form of a quadrangle on the principle of the Universities of Oxford and Cambridge with detached commons. The lavatories and baths for each house are arranged in the basement.

The power house authorized for the buildings to be erected has not been drawn to 1-16th scale, as it is felt that it being placed in the centre of the future engineering building it would be a better arrangement to have a temporary structure to accommodate the plant required and to house the temporary engineering shops of the School of Engineering until this block has been authorized.

The architectural treatment of the buildings shewn is in the characteristic English traditional form of building developed from the old universities and public schools.



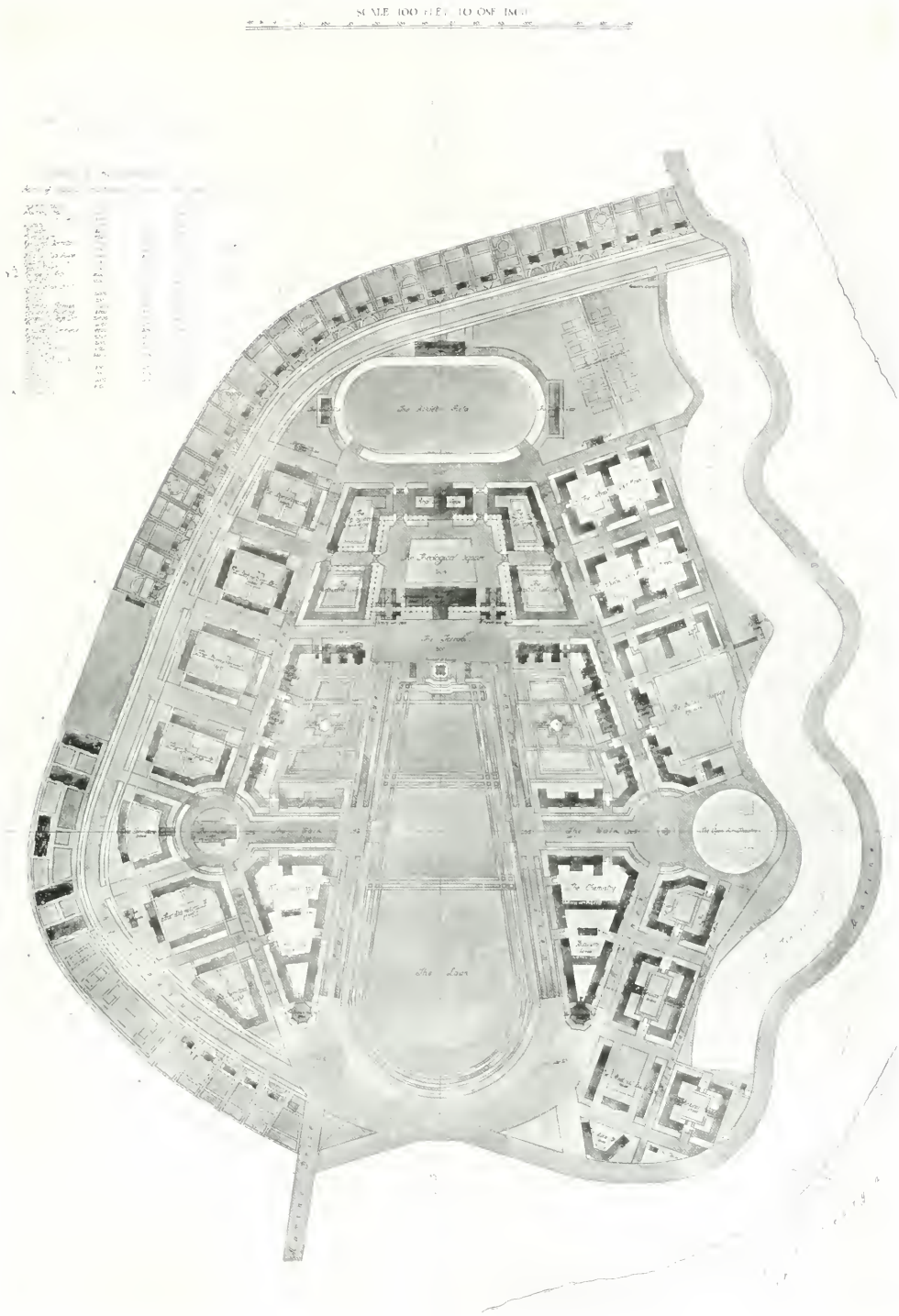


PERSPECTIVE.

COMPETITION FOR UNIVERSITY BUILDINGS, PROVINCE OF BRITISH COLUMBIA.

THIRD PRIZE DESIGN BY PHILIP J. TURNER, ARCHITECT.

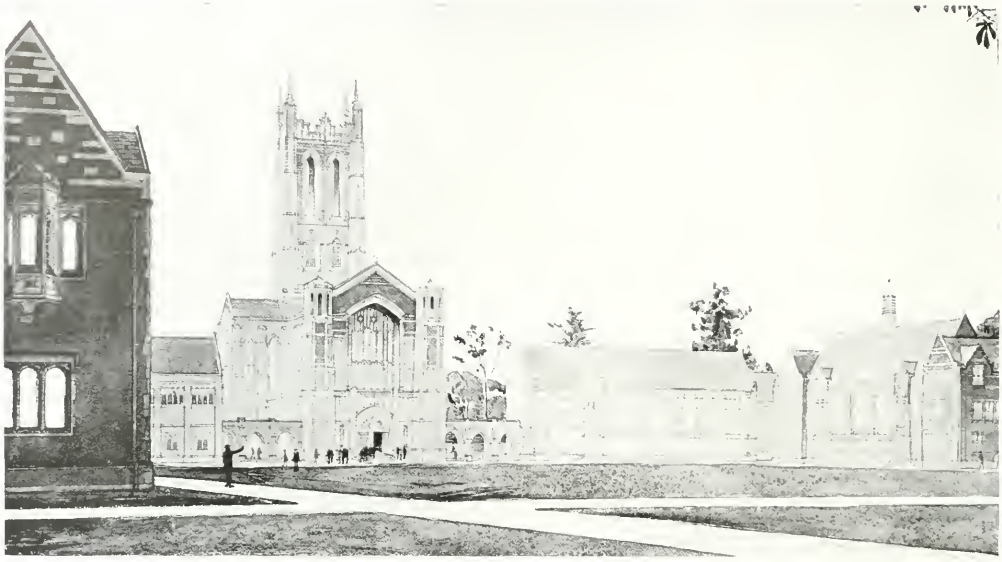
Key to Plan and Perspective:—Facing the lawn and terrace is the Administrative Building with the library and museum on either side forming the Northern Enclosure of the Theological square. The remaining sides of the Square beginning on the East are occupied by the Methodist, Presbyterian, Anglican, Roman Catholic and Baptist Colleges, following in consecutive order. To the left of the central portion called "The Lawn," and facing East Avenue are two groups, the first one consisting of the Engineering department, the second pertaining to Arts and Science. To the right of the open centre are the Chemistry and Philosophical groups, outside of which are the Medical, Botanical and School of Mines. The Medical department occupies the territory North of the open air theatre, while the Botanical and School of Mines lie between the theatre and the athletic field. Facing University Avenue and extending from the Northern end of campus to the athletic field are a series of dormitory buildings. The Chapel to the left forms a balance to the open air theatre. Accommodations for Faculty houses and Women's College lie to the east.



BLOCK PLAN.

COMPETITION FOR UNIVERSITY BUILDINGS, PROVINCE OF BRITISH COLUMBIA.

THIRD PRIZE DESIGN BY PHILIP J. TURNER, ARCHITECT.



VIEW FROM NORTH-EAST, SHOWING CHAPEL, LIBRARY, ETC.

Fourth Prize Design.—The committee gave the fourth place to Symons & Rae for the following reason: "We place No. XX. fourth in order of merit, on the ground that the author has shown in his detail an appreciation of collegiate work of quiet character."

In brief the conditions of the programme as analyzed by Messrs. Symons & Rae and incorporated in their report, indicate that the lines marked vista should be made the principal thoroughfares and that the important buildings should be grouped along these lines. Another conclusion is that there should be open views from the grounds along the vista lines. With these fundamental principles in mind particular attention has been paid to the general effect of the buildings from the ground.

A second scheme was presented which preserves the same vista lines but considers the effective placing of the buildings as viewed from the water approach and the Marine Drive. Accordingly the westerly portion of the ground is utilized for the important structures.

Particular attention is called to the fact that in one plan the power house is located on the cliff. From the economical viewpoint this is of advantage as coal and supplies may be brought direct by water.

The entry system has been adopted for the dormitory groups in that it is more suitable for male students than the corridor plan. By such an arrangement connections between the various entries are made in the basement only. Each entry or group of six double suites is supplied with one toilet-and-bathroom.

The design suggests the use of red brick and stone for the erection of the principal buildings, but in case variety is desired plaster on brick may be employed with stone dressings. The latter style is to finish some of the less monumental structures.

Thinking it may prove of interest, we are showing in this number several pages of university plans from work being done in the States. Several illustrate new schemes, while others depict a transformation of the old campus grounds.

COLLEGE OF ARTS AND DORMITORY FROM THE SOUTH-WEST.

BLOCK PLAN.

COMPETITION FOR UNIVERSITY BUILDINGS, PROVINCE OF BRITISH COLUMBIA.

FOURTH PRIZE DESIGN BY SYMONS & RAE, ARCHITECTS.

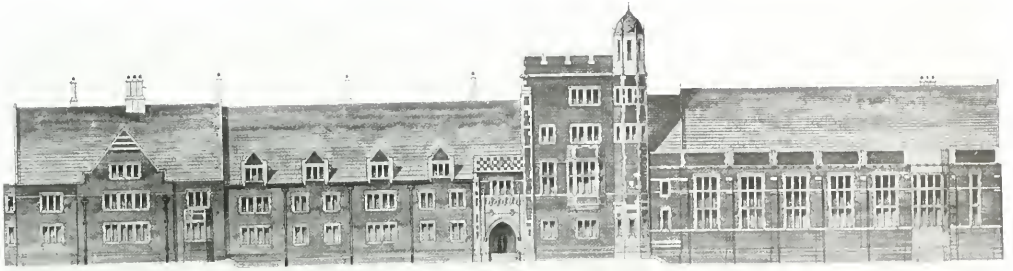
Key to Plan.—1, Administration and Assembly Halls; 2, Library, Chapel and Museum; 3, College of Arts; 4, Medical group; 5, Pharmacy; 6, Dentistry; 7, Power House; 8, Women's College; 9, School of Mines; 10, Chemistry; 11, Faculty Club; 12, Law; 13, Agriculture; 14, Finance; 15, Fine Arts; 16, Biology; 17, Philosophy; 18, Engineering School; 19, Physics; 20, Pedagogy; 21, Theology Buildings surrounding square; 22, Dormitories surrounding square and located to west of it. University Boulevard and marine drive enclose the general scheme.

COMPETITION FOR UNIVERSITY BUILDINGS,

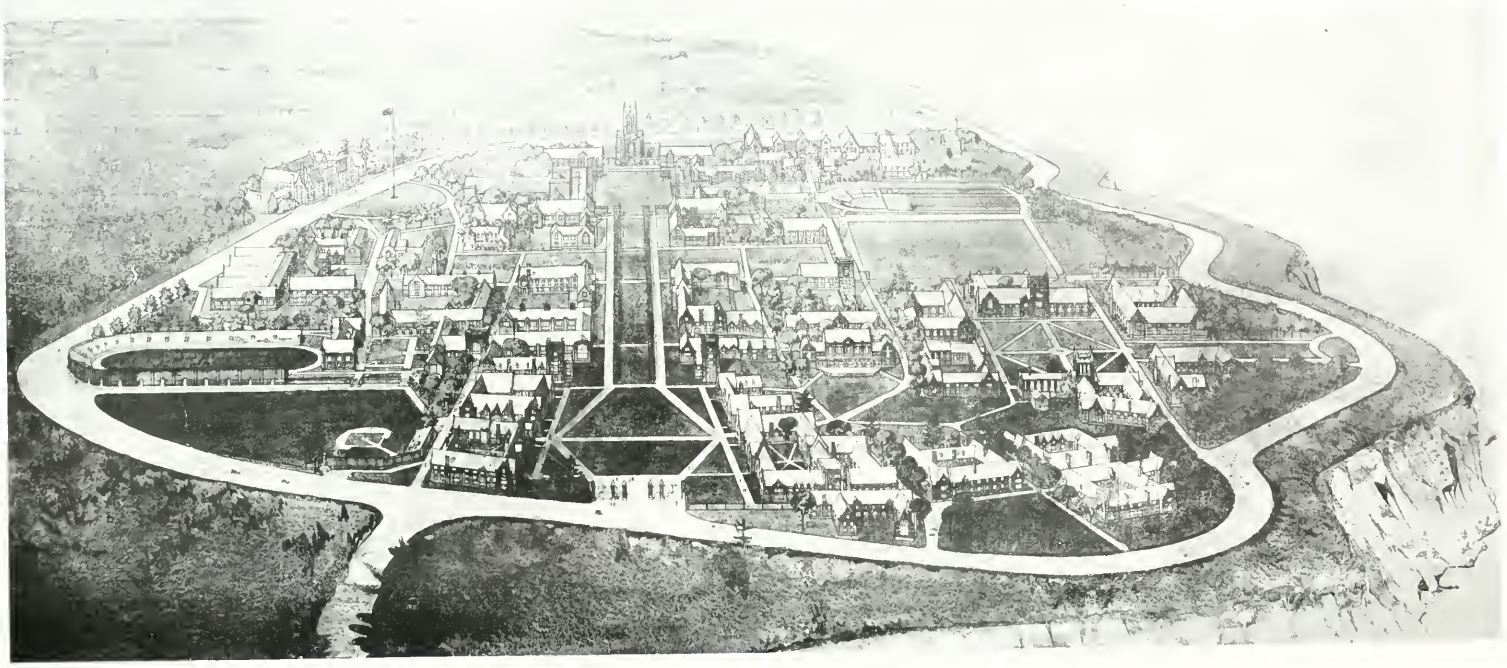
PROVINCE OF BRITISH COLUMBIA.

FOURTH PRIZE DESIGN, BY SYMONS & RAE, ARCHITECTS.

PERSPECTIVE.



NORTH ELEVATION OF DORMITORY GROUP.



CONSTRUCTION

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

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CONTRIBUTIONS—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and duly returned.

Entered as Second Class Matter in the Post Office at Toronto, Canada.

Vol. 6 Toronto, March, 1913 No. 3

CURRENT TOPICS

TWO COMPETENT architectural draftsmen are wanted by Stewart & Witten, architects, Hamilton, Ont. Kindly state experience and salary.

* * *

MODERN SHOW CASE lighting is receiving more and more attention from the merchants as a wholesome means of advertising. William S. Kilmer gives the following points as essentials for the progressive business man: First, the system must give an illumination in the interior of the case which is approximately double that of the general illumination of the store interior; second, the light must be of such a quantity and quality that the goods are shown in their true color and style; third, the interior temperature of the case must not be raised to any appreciable extent, and any increase, however small, must be evenly distributed, as a glass case which is warm in spots is very liable to crack with the first cold draft which strikes the exterior; fourth, the unit of light must be neat and inconspicuous, and permit an easy and thorough cleaning of the case; fifth, general efficiency,

Canadian Architecture*

THE PAPER read before the Royal Institute of British Architects, London, January 20, by F. S. Baker, F.R.I.B.A., was listened to with unusual interest. The members were agreeably surprised at the rapid progress of architecture as depicted by the speaker. Mr. Baker gave his subject life in showing the various types of commercial and domestic buildings by means of lantern slides and photographs. It has given us a better value of the artistic character which is permeating every branch of construction throughout the Provinces, and we feel that the basic principles of true art are being applied in a thoroughly wholesome and practical manner.

The former part of Mr. Baker's address dealt with the general conditions which surround the architectural profession in Canada. The following extracts, taken from the paper, may be of interest to the readers of "Construction" as a summary of many phases already appreciated, but which may never have been considered in their vital importance to the future development of the Dominion's commercial growth.

After an expression of appreciation for the honor bestowed upon him by the Institute, Mr. Baker said: As in England, the system of "pupilage," but without fees, is the most common commencement for the would-be architect. In four of the Provinces—Quebec, Manitoba, Saskatchewan, and Alberta—the title architect is protected by law, and no one may call himself an architect unless he has complied with the law, and qualified by passing certain examinations prescribed by the Act. A fifth Province—Ontario—also has an Act, but, owing to the insertion of the word "Registered" before "architect" by the Government of the day, it has no effect, and anyone who pleases may call himself "architect." The remaining Provinces are all organizing with a view to obtaining legislation similar to that in force in the four Provinces above named. In all of these four Provinces the degree of Associate R.I.B.A. is accepted as a satisfactory qualification for admission to membership at present, and here I may say that the Royal Institute of British Architects is held in very high esteem throughout the Dominion. The universities of these Provinces, including Ontario, have special courses in architecture, and issue degrees.

Owing to the fact that in Canada the builder takes out his own quantities, drawings have to be made very complete, and this has tended to raise the quality of draughtsmanship throughout the country, and, incidentally, gives the student a chance to learn details of the work which an English student does not come in contact with. If this can be said in favor of the lack of quantities, the opposite must be said in the difficulties occasioned the practising architect in dealing with builders, owing to the lack of the system in vogue in England.

At present there are no travelling scholarships in

*From our London correspondent.

architecture, and the necessity for these is becoming more and more apparent. Private "ateliers," in which practising architects of the younger school mostly are patrons, are available for the students in many of the large towns during the winter.

It has been said that "the next fifty years will decide the character and type of Canadian architecture," but, having regard to the extreme youth of the country, such an event would seem to be most unfortunate, and I for one would like to feel that the students of fifty years hence will have something to strive for in creating a greater excellence than the art will then have reached in Canada. It should be said, however, that the Classic orders are fairly well understood, the value of proportion appreciated, and the application of ornament and mouldings handled in a conservative way.

Mr. Baker showed how the extreme changes in the climatical conditions necessitate careful precautions in all branches of the building trades. In referring to the natural products, the vast resources of the Provinces were brought vividly to our attention and considerable emphasis was laid on the fact that Canada would soon be able to supply all her needs in this direction. The reference to marbles, stones, etc., was as follows:

Splendid marbles are now procurable suitable for almost any purpose, and I will not be surprised if when these quarries are fully opened marbles will be found which equal any which have been produced on the continent of Europe. In the eastern part of the country very fine granite is obtained, and also in Central Ontario. Good limestones are quarried in the Eastern Provinces, and throughout Ontario, and the West in many parts.

The Portland cement produced in Canada is excellent; everywhere fine grit sand is obtainable, and good limes are burnt in nearly all districts. Canadian bricks are well known for their excellence, but the production of terra-cotta, other than hollow blocks, for fireproof construction work, is limited. Steel sections are rolled from Canadian ore in nearly all the large centres. Castings in metal of good quality are easily obtainable. Canadian woods are well known; white pine, red pine, and spruce, white and red oak, birch, maple, walnut, cherry, butternut, white-wood, and cedar are the commonest varieties. Wood of all kinds is becoming more and more difficult to obtain, and the price is advancing, with the result that what is known as "fireproof construction" is becoming more and more popular. Sheet metal, galvanized iron, and copper are almost entirely imported. Sheet lead is, of course, scarcely used for flashing purposes, owing to the large range of temperature which prevails. Paints and oils are produced on a large scale, and of excellent quality, but the high grades of glass are as yet mostly imported. Sanitary pipes and fittings, as well as fixtures, are manufactured, but a large quantity is also imported. Gas and electric pipe, fittings, and fixtures, with all kinds of glassware, are made in most localities.

Considerable interest was shown to Mr. Baker's answer of the article on "Imperialism and Architecture."* He referred to the statement that U.S. American "ideals and methods of expression" are being appropriated by Canadians and granted that the Canadian architects have been experimenting along U.S. American lines in the designs of all classes of buildings. Mr. Baker qualified this point with the following comment: "I can say definitely, however, that American ideals and methods of expression are not being adopted any more than those of any other country, except in so far as they apply more conveniently to conditions in Canada. In the matter of design, I believe I am right in saying that the British influence is much the strongest one affecting Canadian architects, who, generally speaking, are strong Imperialists." As for the fact that "in Vancouver, Toronto and Montreal, the largest and handsomest buildings are the works of American architects" it was forcibly denied. The statement brought forth the following comment: "I know of only two large buildings in Montreal which have been erected in the last twenty years under U.S. American architects. In Toronto, strange as it may seem, the Anglican Cathedral of St. Alban is the only building I know of which is in the hands of a U.S. American architect. Winnipeg has one bank and one railway terminal designed by New York architects. Vancouver may have a building which has been designed by a U.S. American architect, but I am not aware of its identity. There is no reciprocity between the architects of the United States and Canada, and both are subjected to practically prohibitive Customs tariffs. In the above I do not include architects who have permanent offices in Canada as well as in New York; but if they were included, and I say it with all modesty, the works of Canadian architects far away surpass those few buildings which have been erected by foreign architects. Canadian statesmen, benefiting by past experiences of Great Britain and other nations, have taken precautions which make it practically impossible for foreigners to exploit the opportunities which Canada presents in any way except that which will most benefit Canada. Thus it is that many manufacturers of building materials residing in foreign countries and wishing to avail themselves of the Canadian market have found it desirable to establish a factory in Canada."

Reference was then made to the work already done in the field of architecture. Among other notable structures were described the Federal Government Buildings at Ottawa, and those which house the Legislatures in each Province; the Provincial buildings at Victoria, city halls, post offices, court houses, public libraries, hospitals, art galleries, churches, etc.

The following types of buildings were then taken up, which demonstrate clearly the rapid progress that is being made in the various phases of commercial life.

*Printed in "Construction," November, 1912.

Canadian shops are, generally speaking, of a fairly high class, and show a good deal of skill in their planning and arrangement. In contra-distinction to the English custom, the authorities in Canada permit huge shops to be erected as one room to each floor, and the effect of this in the large stores, with their wealth of stock, is bewildering. The newest of these shops are, of course, of fireproof construction and are fitted with automatic sprinkler installations, and every other known precaution against fire is taken.

The wholesale warehouse is a very distinct type of building, and is usually a fine structure. Lately these have been built of fireproof construction, reinforced concrete, or steel frame with tile or concrete casing. Most of them are fitted with automatic sprinkler installations and every other known method of preventing fire. In this way the cost of insurance on buildings and their contents has been reduced to a nominal sum, even in the most congested districts of the large cities.

Perhaps the most ornamental buildings throughout Canada are the banks and their branches. There are some thirty chartered banks in Canada, and many of these have upwards of 300 branches each. The designing of these banks has brought out perhaps more good architecture than any other type of building in the country, as so much work of a high class is involved.

The author also referred to Canadian office buildings, railway stations, hotels, houses, theatres, educational buildings, and dwellings of the people. The dwellings of the people are most creditable. Although Canada is a wood country, wooden houses do not predominate; they are mostly of brick or stucco. Many of those which are apparently brick have a wood frame, with a brick veneering of the thickness of half a brick, and this type of house is a wholesome and satisfactory one.

This report would not be complete without the valuable discussions entered into by the members present which are presented herewith, in which a high Imperial note is evidenced.

The President, Mr. Reginald Blomfield, A.R.A., said they had had a most vivid and interesting paper from Mr. Baker, and were fortunate in having present two distinguished gentlemen whom he would call upon to propose and second a vote of thanks. One was Mr. Herbert Baker, who had a brilliant reputation in South Africa in virtue of his distinguished work, and who had also had the courage and the generosity to establish a Studentship at the British School at Rome for the future South African architect. They had also with them Mr. J. G. Colmer, a very distinguished Canadian, who had done a great deal for Canada in this country. He would therefore call upon Mr. Herbert Baker to propose a vote of thanks, and Mr. Colmer to second it.

Mr. Herbert Baker (F.) replied that it had given him very great pleasure to be present to hear the most interesting lecture just delivered to them, as well as to propose a vote of thanks to his namesake from across the seas. Mr. Baker had shown most ably how very progressive Canadians were in their architecture. But this was only to be expected by those who knew how very up-to-date, energetic and progressive Canadians were, and how they had as their immediate neighbors the most energetic of all nations, who had shown, particularly in their architecture, such Titanic powers. But he was glad to hear from Mr. Baker that the Canadians had no more intention of being swallowed by these Titanic neighbors in their architecture than in their nationality. He was one of those who thought that the principle "Art for Art's sake" was a very dangerous one; it might take them along the "primrose path of dalliance," but would not carry them far up the "steep and thorny road to heaven." And that heaven or ideal before them was to interpret or give expression to the highest national feelings of their race and nationality. And if Imperial Federation should ever become a real fact—and Canada had recently shown by her great gift of Dreadnoughts how very earnestly she was striving to this end—then architects all over the Empire must be prepared by study to give expression to those ideals. If they were to have the same unity in their architecture as they hoped soon to have in their federation of nations, it did not mean that either in politics or in architecture they must give up their separate national individuality; indeed that would be quite impossible. Climatic reasons alone forbade. He did not think that it was generally sufficiently realized in this northern climate how great the effect of climate was upon architecture. He did not think that sufficient importance had been given to it in the text-books. They knew the saying of Italians that "only dogs and Englishmen walk in the sun." He thought that in the books one reads on architecture the authors had not got beyond "the walking in the sun" stage; they looked upon the sun as simply a thing of enjoyment, and did not realize that most southern nations had worshipped the mid-day sun as an evil deity. When one lived and worked under a semi-tropical sun one realized the dominant influences it had had upon architecture. To his mind, Gothic architecture was not developed so much as text-books made out through the special characteristics or the "crusading spirit" of northern nations, although these no doubt had a large effect, but also entirely by the demand for letting sun and warmth into buildings. So that the effect of climate, particularly in the southern dominions—perhaps less in Canada—together with the special needs and individuality of the people, would give a distinctness and individuality to its architecture. The question was how best to get this Imperial unity and spirit into our architecture. He thought it could be done largely in two ways; first, through their Mother Institute, which had come to be the real mother to nurture all its children; and, secondly, through the British School at Rome. He should like Mr. Baker to take back to Canada an

idea of the value of that school. Some four or five architectural students from South Africa had been receiving the advice and hospitality of the school. Any British subject who was a genuine student of art could be made a member of the school, but although there had been four or five South African students there, there had been no Canadians; and he hoped Mr. Baker would take back this fact and explain it to his brother-architects in Canada. The best way was to get at the students, and he should like to see scholars from all parts of the Empire coming to study in Europe—they must often come to the Old World—under the direction of the Mother Institute and of the allied British Schools at Rome and Athens. And it would be good for all architects, young and old, to pay a pilgrimage every few years to St. Paul's, and then to the Pantheon, to stand under those majestic domes, so as to adjust their sense of scale. He hoped, therefore, that Mr. Baker would take back this message, and that in a few years they should hear of Canada making a present to the Mother Country of three fine young architectural student Dreadnoughts!

Mr. J. G. Colmer, C.M.G., in seconding the vote of thanks, said he had no hesitation in expressing his satisfaction at the piece of work which had been presented to them that evening by Mr. Baker. It gave a very admirable illustration of what architecture had done and was doing in Canada, and he believed it would give as much satisfaction in Canada as it had done in that room. Canada, it was true, was a very young country, but, as they had seen in Mr. Baker's illustrations, Canada had reason to be proud of its buildings. No one could go there and travel from east to west without being impressed with the character of the buildings, both public and private; they would be found to compare favorably with the buildings in towns and cities of similar size whether in the United States or in the United Kingdom, and that was saying a great deal for a country whose history was so recent as that of the Canadian Dominion. Mr. Baker had spoken of the opportunities for architects in Canada. That was a matter about which he had had some experience; he had known many young architects go from this country with letters of introduction, who had seemed to fall on their feet at once, and had not been long in making reputations for themselves and in making money, which was sometimes more favorably regarded even than reputation. What he liked in Canada was that there was no professional jealousy there. If a young architect went there he was welcomed, and given every assistance, counsel, and advice, and was regarded as an additional factor in helping the building-up of the country of which the Canadians were so proud. Mr. Baker had mentioned the absence of art galleries. That, unfortunately, was true, but in a young and vigorous community like Canada, where they were busily engaged in making money and developing their country, they had not so much time to devote to what they regarded as luxuries as people in older countries. But they had art galleries, and Mr. Baker would confirm him, that both in Montreal and Toronto, as well as in some of the other cities, there were magnificent collections of pictures held by private persons. Many masterpieces were now in Canada; and he should like to think that those pictures, being there, would not only remain there, but would increase in numbers, and that they would form by-and-by a splendid nucleus for a great art collection in Canada.

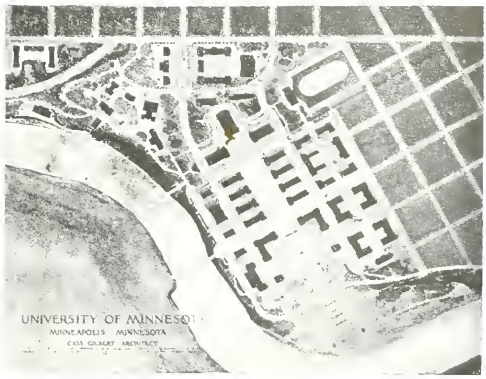
Mr. T. H. Mawson (Hon. A.): In the matter of work I may claim to be as much Canadian as an Englishman. I am, therefore, delighted to meet Mr. Baker on this side of the Atlantic, for I know from personal experience what a salutory influence his work, his enthusiasm, and, may I add, his personal charm exercise over the architecture of Canada. Great art, it is said, is only possible when great ideas are patent and the prevailing atmosphere. Our lecturer is a man of great ideas, and for this reason I regret that his overmastering modesty has led him to withhold views of his own work. Canada is truly a country of pulsating energy where men of vision, the true pioneers, are ever building castles in the air, whilst others are laying broad foundations upon which these dreams, materialized, may firmly and safely rest. Do you remember that fervently eloquent address which Mr. Forbes Robertson delivered some time ago before the London Society in which he mentioned the Artist Cardinal who had told him that Greece developed her highest forms of architecture in her colonies? History, he said, promised to repeat itself in *our* colonies. I think Mr. Robertson's statement was meant as a warning and yet as a hope. So far as Canada is concerned, there is great hope, but I am bound to confess that I detected in Mr. Baker's address a disturbing element when he spoke of preference for English ideals. I wonder if to-day, or the English traditions we so easily laid I misunderstood him? Does he mean the ideals of aside? I am sure that every Imperialist (if he be also a patriot) would desire, above all things, that Canadian architects should go for their inspiration to that which exhibits the most consummate skill in its planning, the most scientific form of construction, the ripest scholarship, and the highest imaginative qualities rythmically expressed. These are qualities which are not necessarily and wholly British possessions. Canadian architects are to be trusted, however, for every office of recognized standing possesses its well-selected and well-ordered library, housed in a separate room, which is the common room for principals and staff. Any office which centres round so much learning is sure to turn out excellent and inspiring work. Speaking as an onlooker and without that wide experience possessed by Mr. Baker, I should have thought the influence of the McKim and the Ecole des Beaux-Arts traditions were stronger than he seems to admit, and that the work of American architects, including the large number of railway stations designed by New York architects, and also the Gothic work of Cram and Ferguson, especially in the cathedrals at Halifax, Nova Scotia,

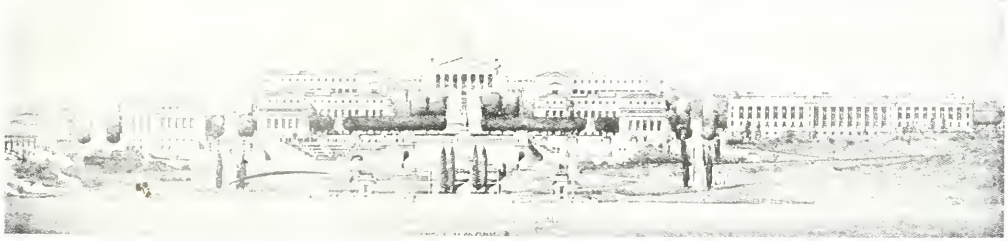
and at Toronto, were also strong influences. I admit, however, that it was a perfect joy to me to see our Collegiate Gothic handled in such a masterly way by firms like Sproatt & Rolph, of Toronto, and Brown & Vallance, of Montreal, in the Universities of Toronto and Saskatoon. Also to see the fine work of the brothers Maxwell at the Regina Parliament Buildings, and the fine domestic work being done by Mr. Baker himself and others, like Mr. Meredith of Ottawa, and Mr. McClure of Victoria, and our friend Mr. Lawrence Gotch in Calgary. Mr. Baker and I are mutual admirers of the strongest of all influences now operating in Canada. I mean the work of that delightful man and great artist, Mr. Frank Darling, of Toronto, one of whose banks has been shown on the screen and met with your applause. It is by work of this high excellence that Canadian architects are wresting commissions from American competitors; and, may I add, it is by ability to do equally good work that young English architects will find a foothold in the Dominion of Canada. Just one word about the craftsmanship of Canada. I do not know any country where one can see such perfectly beautiful brickwork or where patent stone is treated in such an honest and inoffensive way. Woodwork is most excellent; half-timber work, however, has never seemed to me to reach the quality of English work, but this is probably more the fault of the architect than the craftsman. I think metal casements are rapidly coming into use in Canada; in fact I know of one firm alone who have paid an English firm $78,000 for casements alone during the last three years. Westmoreland slate is beginning to be used and should eventually oust the American slates. Much of the metal-work is charming, both in design and craftsmanship; sanitary fittings, central heating and vacuum cleaners, and every domestic labor-saving appliance has reached a higher degree of excellence than at home. Garden design, "the greater perfection," as Lord Bacon says, is little understood; but now that Canada has grown "to the age of civility and elegance," the art of garden-making will soon take its place and give the ideal setting to many truly ideal homes. Mr. Baker says that everywhere in Canada great interest is being taken in city planning. I, together with my friends Mr. Unwin and Mr. Vivian, have had some little share in fomenting an anxiety for civic betterment, and I am, therefore, delighted to be able to confirm this statement; and let me say in this connection that the Dominion owes a great debt in this matter to the influence and active support given to the movement by the late Governor-General, Earl Grey. They are also most fortunate in having in H.R.H. Field-Marshal the Duke of Connaught another Governor-General who is deeply interested in city planning and everything which has to do with the development of a national and characteristic architecture. May I, in conclusion, suggest that this Institute might organize a trip to Canada? They would find true British hospitality and much to encourage them. In short, the trip would prove the most perfect mental tonic.

The President said they had had a most interesting paper from Mr. Baker, and were very grateful to him for having crossed the Atlantic to tell them about the architecture of their kinsmen beyond the seas. It was clear from his account of what was being done in Canada that their colleagues there were addressing themselves to the problem of architecture in a very practical and strenuous spirit; they were going into the essentials of the matter. In their banks, their public buildings, their hospitals, they were determined to have something which would answer the purpose, and that, after all, was what architects had to strive for, whether in the old countries or in the new. He gathered from what Mr. Mawson had said that Mr Baker was himself responsible for some beautiful buildings which his modesty prevented him from showing illustrations of. There was of course a point at which such a country as Canada, with all its splendid promises, must be, to use a vulgar phrase, "hung up" because it had not the tradition of architecture, and it was there that we of the Old Country might be able to help. Of course, we ourselves were rather like the Prodigal Son; we had had not only one tradition, but several, and we have squandered them all. And now our business was to build up this tradition of architecture. But even though we were prodigals and bankrupts, and several other things, we could not escape the consciousness of a great historic past in architecture. It was in that consciousness that the hope of the future of architecture in this country rested; and he was sanguine enough to think that that hope was not without foundation. Mr. Baker had said many things which they had listened to with great interest, and some which they all welcomed very heartily. He told them —and Mr. Herbert Baker of South Africa had confirmed him on the point—that their Institute was regarded with very high esteem, and even affection, in those two great countries, Canada and South Africa. That was very welcome to them, because the Institute had to weather many storms, and might have to weather many more; but this loyalty of far-away countries, from those who were gone from them and were practising architecture across the seas, was one of the most encouraging things he knew. Mr. Baker also told them that in his opinion the most predominant influence in Canadian architecture was the British influence. That, again, was very encouraging. It was very significant that both Mr. Baker and Mr. Nobbs, the Professor of McGill University, should have urged the same appeal for some collections of replicas and reproductions of the best work that had been done in this country in the past, something such as they had in the Trocadero in Paris of the great French works. That was a very important appeal. We had the Architectural Museum at Tufton street, but every one would admit that that was inadequate, and he

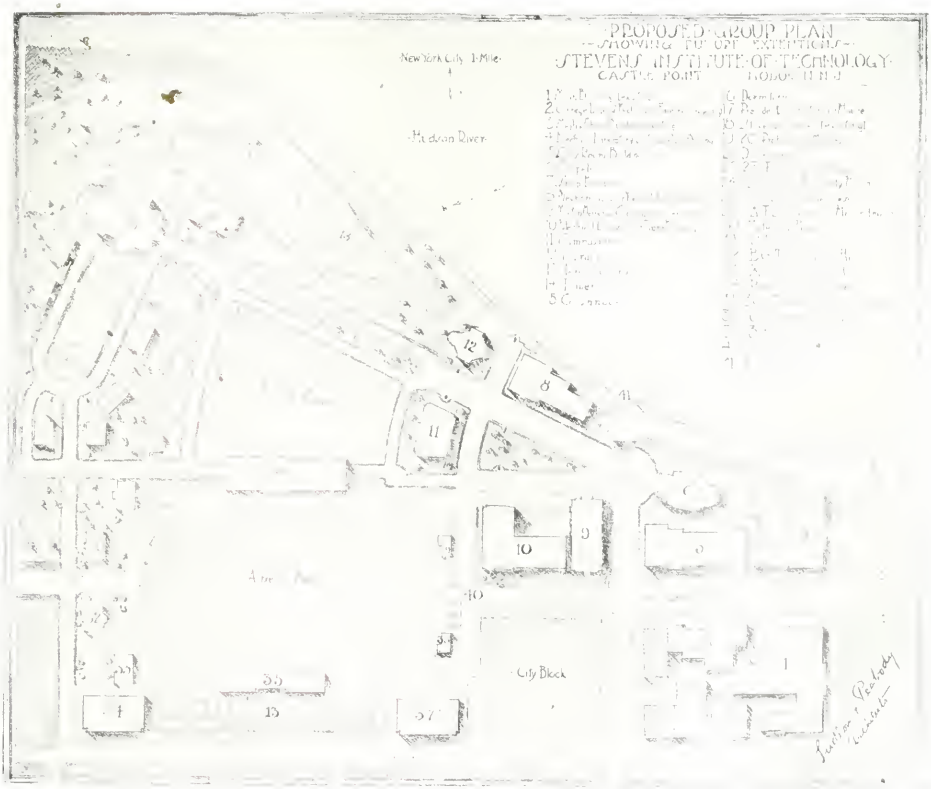
thought we should do what we could in our own way to help this appeal. Mr. Herbert Baker had pointed out the splendid patriotism and genuine feeling in Canada with regard to the Mother Country This was more than we thought possible a few years back, but now it was a magnificent fact, and they should do what they could to help in this matter, and he hoped the appeal would not pass unheeded at Whitehall. They had heard Mr. Baker throw out certain speculations as to the future of Canadian architecture during the next twenty years. He regretted to say that he differed from one of the speakers; he did not think the path indicated by that speaker was one he should hope to see in the future architecture of one great member of this Empire. He thought the neighbors of the great Dominion had possibly over-reached themselves, and had fallen a little too impetuously into the net of modern French architecture, because, he need hardly point out, modern French architecture was not the same thing as old French architecture. It was a very different thing, although he should be the last to disparage the work of his colleagues and friends across the Channel, some of whom did splendid work. But the modern vernacular of French architecture was not a thing to be adopted as the basis of a great tradition. They hoped that the future architecture of Canada would be founded upon an old tradition; whether French or English was for their colleagues in Canada to determine. If they followed those lines, he did not think they would have any difficulty, with their great ability and force of character and splendid possibilities, in establishing a great tradition of architecture. He did not doubt that that tradition would be perfectly elastic and adaptable to all the requirements of modern civilization. And he would draw Mr. Baker's attention once more, as Mr. Herbert Baker had done, to the Imperial aspect of the case—viz., to the new British School at Rome. It was one of the most important departures in architectural tuition in the last fifty years, because if properly handled much might come out of it, and they should hope to see some brilliant young Canadians at work there.

Mr. F. S. Baker, in reply, said: I thank you for Canada and for myself for the kind and hearty reception which you have given my paper. If I have been able to tell you anything about the country which is so far away from you, and which probably thinks more about you at home here than you have time to think of it, I shall feel very glad I commend it to your study, because it is a large district, and there is no doubt its development will go along the lines that the people who go to live there outline for it. It has been most interesting for me to-night to meet Mr. Herbert Baker from South Africa. I am sorry I cannot claim him as a kinsman, but I feel very proud that a man of the name of Baker should be such a distinguished gentleman. He comes direct from Rome, where he has been closely in touch with the new British School of Architecture, and I shall certainly make it my duty, on going back to Canada, to bring full particulars of the scholarships and the opportunities presented by that school to the members and students of the profession in Canada. You must realize that our students are few in number, and are not well off; and it is not easy for them to contemplate the spending of a few years in Rome. Most of them are boys who are making their own way, and are not the sons of rich men. I am afraid the sons of rich men in Canada look for some easier work. What Mr. Baker said about climatic conditions is true. It would be absurd, for instance, to see a delicate Spanish cornice hanging with great icicles or piled up with snow; and there are many things possible in Spain and South Africa which would not be possible in Canada. And I think that is what most impressed Mr. Richardson after his studies in France and Spain, namely, the necessity of using materials in America in a way suitable to the climate. That is why we have those unusual works which were designed by him. Mr. Mawson spoke of the McKim, Meade & White office and its effect on Canadians. But whilst the highest tribute must be paid to them individually and as a firm for the wonderful buildings which they have produced, there is not in Canada a feeling that the school of McKim, Meade & White is an altogether desirable one. There is certainly there—and our president's remarks have brought it to my attention—very clearly the desire to follow the tradition that goes back beyond any result which McKim, Meade & White have attained. There is arising now in Canada a collegiate Gothic architecture—and there are some photographs amongst those I brought over which show its commencement, and I hope indicate a good future for it—which undoubtedly is based upon the sound tradition of perhaps the best period of English architecture. I think many Canadians accept the idea that not only in architecture, but in almost everything, England has experimented, and finally arrived at a conclusion which might be called a conservative conclusion, and having tried all, has adopted that which seemed best to her. We have undoubtedly some good private art collections, but they are not available for the student, and I do not hesitate to say that adequate buildings will be forthcoming when the collections can be obtained. I think we have to look to England for assistance in obtaining those collections. The Ecole des Beaux-Arts has been spoken of to-night as if Canadians were strongly influenced by it. I think it is largely owing to the work of Professor Nobbs that that school, the excellence of which is universally accepted, is not held in higher esteem in Canada in its results than is the sound training obtainable in England. It is recognized that whilst the old French work was magnificent, the modern French work is not so much to be admired, nor are, in my humble opinion, the modern French methods of draughtsmanship. Something straightforward, something plain and useful and sensible ,is what the Canadian is always looking for. If he can get the direct result in a direct way, that will convey without loss of art the correct idea to his critic, that is what he wants.





UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN. CASS GILBERT, ARCHITECT.

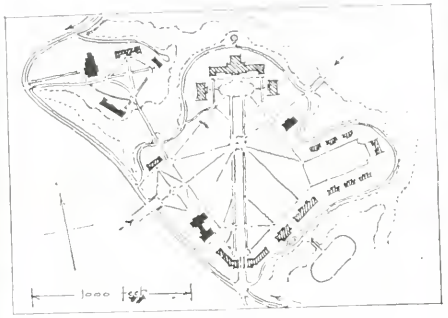


RECENT AMERICAN COLLEGE PLANS.

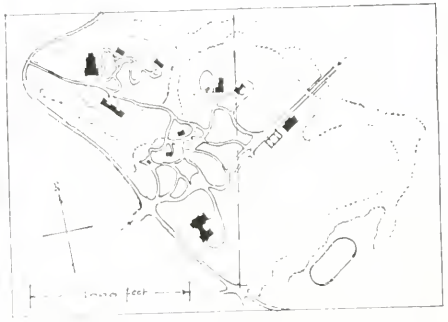
(From the [illegible])

WESTERN UNIVERSITY OF PENNSYLVANIA, PITTSBURGH.

PALMER & HORNBOSTLE, ARCHITECTS.



PLAN OF EXISTING BUILDINGS.



PROPOSED PLAN.

LAKE FOREST UNIVERSITY, ILLINOIS.

MORRIS & MANNING, ARCHITECTS.

PRINCETON UNIVERSITY, PRINCETON, N.J.

RALPH ADAMS CRAM, ARCHITECT.

Future buildings dark, showing development on original central axis, with groups and quadrangles to right and left. An irregular campus with present lines of circulation retained.

PIEDMONT COLLEGE, DEMOREST, GA.

BEVERLY S. KING, ARCHITECT.

RECENT AMERICAN GROUP PLANS.

(From The Brickbuilder.)

ROLLINS COLLEGE, WINTER PARK, FLORIDA.

WHITFIELD & KING, ARCHITECTS.

GEORGE PEABODY COLLEGE, NASHVILLE, TENN.
LUDLOW & PEABODY, ARCHITECTS.

PLAN OF EXISTING BUILDINGS. HAMPTON INSTITUTE, GEORGIA. PROPOSED ALTERATIONS.
CHARLES S. PEABODY, ARCHITECT.

Plans in solid black of proposed alteration to remain. Those hatched indicate future development.

(From The Brickbuilder.) NORTHWESTERN UNIVERSITY, SHORE OF LAKE MICHIGAN. [illegible]ER, HORNBOSTLE & JONES ARCHITECTS.

RECENT AMERICAN COLLEGE PLANS.

R. A. PAUL, C.E., of Toronto University, has been appointed manager of the Frid-Lewis Company's office at Saskatoon. Mr. Paul enters upon his new work with considerable experience, having been associated with the Everett Clark Co., of Chicago.

* * *

THE NEW SCHEDULE of fees for building permits at Regina have practically paid one-half the expenses of the building department. Up to July of last year a flat rate of fifty cents was charged for every permit. Since then the amount is based on the cost of the completed work: fifty cents for buildings costing $500 up to two dollars for a $5,000 structure, with ten cents added for every additional $1,000.

* * *

H. W. JOHNS-MANVILLE CO. announce the appointment of Mr. C. L. Wheeler as traveling representative in their Atlanta territory. Mr. Wheeler is an electrical engineer of practical experience and formerly covered the Southern States for various large electrical and jobbing concerns. He will devote his attention to the well-known electrical products of the Company, particularly "Noark" fuses, service boxes and protective devices, electric railway supplies, J-M fibre conduit, vulcabeston and other molded insulations, J-M electrotherm heating pad, Frink and J-M Linolite lighting systems, etc.

* * *

AT THE ANNUAL convention of the American Association of Manufacturers of Sand-Lime Products, held recently in Toronto, the following officers were elected: President, S. O. Goho, Harrisburg, Pa.; vice-president, F. B. Allan, Toronto; secretary, W. G. Plummer, jun., Buffalo; treasurer, John L. Jackson, Saginaw, Mich., and an executive of five officers representing the various divisions of the association: Canadian, G. Sylvester, Calgary; Western, E. G. Chapman, Minneapolis; Eastern, W. M. Birchfield, Rochester; Central, L. W. Penfield, Willoughby, Ohio; and Southern, H. H. Tift, Tifton, Ga.

* * *

THE RECENT CONVENTION of the Brandram-Henderson Company at Halifax was the most successful conference yet held between the heads of the firm and the travelling salesmen. The purpose of the gathering was more than realized. The views of the travelling men, together with the imported ideas of the firm, helped to unite the various forces which are already a unit in their organization. In addition to the banquet at the Halifax hotel the men were tendered a theatre party at the Academy of Music. Such conferences augur well for the well directed plans of the company and should prove a big incentive to the managers and salesmen alike.

THE VAST NUMBER of large commercial buildings contemplated for the coming year predicts unusual activity in all branches of building trades. Last year proved a record breaker, but from present indications every Canadian city will eclipse all former prosperity. Vancouver, in addition to completing the Vancouver Hotel, the new C.P.R. station and office buildings, will erect two first-class theatres costing $1,000,000, several factories approximately $100,000 each, swimming baths worth $125,000, new schools to the amount of $275,000. Winnipeg will have a new twelve-story office building to cost $900,000, new school buildings totaling a sum of $1,000,000, a Presbyterian church amounting to $175,000, and a steam heating plant for $4,000,000. Montreal will spend $4,000,000 for the amusement park on Back River, and a new building for the Sun Life worth $1,300,000. Toronto is to have the largest religious publishing house in the world in the new Methodist Book Room $1,000,000 structure, in addition to the twenty-story edifice for the new Royal Bank, which will reach the height of 250 feet and be the tallest building in Canada. Ottawa has a number of commercial structures in prospect, as well as a new Customs building, and a possibility of a competition being held for the Departmental buildings, besides important civic improvements. Victoria has contracts for several new office buildings averaging one-half a million, school buildings amounting to $260,000, and several large residences. Calgary will construct a number of large warehouses, a $500,000 theatre, filtration plant, water tower, office structures, etc., and witness the rebuilding of the meat packing plant recently destroyed by fire. Saskatoon has plans prepared for office buildings to house Isbester & Pretty, C. N. Express and Telegraph Co., G. W. Furniture Co., Sons of England lodge, and the Studebaker Co., a new $500,000 post-office, $90,000 concert hall, hospital, Catholic church, apartments averaging $75,000, and a concrete bridge costing $343,000.

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CONSTRUCTION

VOL. VI — NO. 4

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Full Page Illustrations

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GRAPHIC ARTS BUILDING, TORONTO, CANADA

BRANCH OFFICES:

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J. N. SEMMENS,
ASSOCIATE ARCHITECT

¶ *Canada in relation to atelier work—The great need of such advantages to men unable to benefit by a university course.*

Atelier work organized on a broad and sane basis is one of the crying needs in the architectural field of Canada. Surely the men prominent in the profession must give heed to this work. A personal sacrifice is not sufficient in itself, but a genuine enthusiasm must prompt their efforts. When this spirit prevails then the young draftsman will become imbued with a longing to study and emulate the best styles of architecture in all countries and of all ages. Canada like other nations has, and will continue to produce young men of exceptional talent who are not in a position to benefit from the various schools of architecture. They have exceptional ability and should have the same opportunities provided so extensively elsewhere. How often are draftsmen compelled to burden other responsibilities besides their own, and to deprive such persons of a chance to grow is unfair. He should be encouraged, helped and recognized for his worth. In analyzing the list of successful architects the world over we are forced to admit that a very large number never enjoyed the benefits of a university course. But they have had the careful attention of capable men either in the office where they worked or in some private club. The chief function of atelier work is to give the draftsman who cannot afford school instruction the proper grasp of good art and at the same time enable the student himself to further the principles already implanted by special teachers. It is indeed gratifying to see the class of work being done by the members of the ateliers in England, France and the States. The membership is open to everybody; the universities encourage their efforts, and the men highest in the realm of art are the patrons. Let such a condition prevail throughout our provinces and the future architecture will be after the designs of Canadian architects and there will be no further cause for complaint against our neighbors securing the best work throughout the Dominion.

¶ *The Lincoln Memorial—A bitter fight which resulted in a glorious victory for the artistic tastes of a commercial people.*

The commercialistic spirit so rampant in the States has finally succumbed to the true artistic sentiment of the people. For some time the House of Representatives has argued the best scheme for the proposed $2,000,000 memorial to the memory of Lincoln. One of the most ardently advocated plans was to build a boulevard connecting the Capital with Gettysburg. This would have overridden the comprehensive arrangement of L'Enfent and established a precedent most dangerous to the future development of the city along wholesome and æsthetic lines. And it is worthy of note that the House finally adopted by a vote of one hundred and fifty-three to thirty-one the design submitted by Henry Bacon for a Greek temple to be erected at the west end of the Mall on a line with the Capitol building and the Washington monument. This result was brought about by the insistent demand of more than thirty art associations who voiced the will of the people. The site of the memorial was selected by the Park Commission ten years ago, composed of such prominent men as Burnham, McKim, Olmsted and Saint-Gaudens. The structure is designed to surmount a series of terraces, of which the lowest will be circular in form, with a diameter of one thousand feet; while the topmost will be reached by thirteen steps typifying the original thirteen States. The memorial is to consist of a white marble colonnade of thirty-six columns, each forty feet in height, and six feet nine inches in diameter, enclosing the hall proper. In this selection sentiment has won and in its winning reveals the true nature of the people. Commercialism may dominate in certain projects, but when it comes to commemorate the qualities and character of a great man, or a lofty principle, then the finer instincts assert themselves. The work will stand as an everlasting tribute both to the memory of Lincoln as well as the æsthetic tastes of the vast majority who insisted on an appropriate memorial.

¶ *The Sphinx—An incredible claim to the discovery of a temple in its head—Time to discountenance such absurd theories.*

Considerable anxiety has been caused by the statements credited as coming from Prof. Reisner. In them he claims the discovery of a temple 24 by 64 feet in the head of the Sphinx. The absurdity of such a statement is quite evident when we take into consideration the fact that the Sphinx is 120 feet long and 60 feet high, and the head only 14 feet wide. Prof. Reisner would hardly stake his reputation upon such an impossibility. It is to be hoped the source of such rumors will soon be traced and proper means taken to prevent the rise of similar falsehoods coming from men of high authority. The desire of many people to eliminate all reverence for ancient and authenticated works of art is deplorable. They seem determined to discountenance every feature which has proven a valuable source of inspiration. To make the Sphinx of Gizeh a curious type of building with temples, banks or lodging quarters would please the dyspeptic critic and cast discredit on many venerated structures. All antiques are surrounded with mystery, but teeming with truths concerning the people who underwent so many sacrifices to make them possible. It hardly seems reasonable to find within this ageless wonder the tomb of the first king of Egypt when the inscriptions only relate back to the fourth dynasty. It is high time for the thinking people to accept the truth and refuse to entertain the sudden explosion of ridiculous theories.

¶ *The engineering mistakes in the modern commercial building—An existing need for a closer alliance between architect and engineer.*

Many irreparable and expensive blunders in commercial structures being erected demonstrate clearly the great need of a closer alliance between the architect and the consulting engineer. The architect's field is too broad, his work too demanding, and his responsibility too big, to permit of a comprehensive grasp of all the up-to-date theories necessary in the way of heating, ventilation, illumination, and sanitation. This is an age of specializing and the architecture of to-day is worthy of all the time and ability the members of the profession can muster. The expert advice of engineers is absolutely essential. No excuse, whatever, can be offered by any well-known firm of architects who allows a structure to be built whereby the various engineering problems are not as carefully studied as the design itself. Unsightly vistas of pipes, unsymmetrical treatment of ceilings, improper installation of heating and lighting fixtures, lack of proper ventilation; these and many others evidence the need of consultation at least, with men who have made these problems a matter of conscientious study. It will eliminate the disagreeable features which discountenance the architect and remain an eyesore to the owner; it will prove most economical to the client, and at the same time permit of the work being finished within the appointed time.

¶ *The sore need of economical homes to house the workingman—What has already been accomplished and what should be done.*

The question of housing the workingman is assuming large proportions. It is not so much a problem of room as cost. The sore need in practically every city is the comfortable and sanitary home which will allow of a reasonable rental. How many small houses are built every year which are beyond the reach of the average person simply on account of the materials entering into the construction, together with the low assessment of vacant land. The chief argument against wood has been the lasting qualities and continual expense of protecting same—now it is the rapid advance in price of lumber. Other materials must be employed which will be thoroughly sanitary and of a more economical nature.

Inquiries from various sources prompt us to mention the large number of cement houses which are being erected for approximately $1,800 with a monthly rent of $16 or $18. In this type the walls, partitions, floors, stairway and roofs are made of cement, while care is taken to have continuous air cavities, guarding against dampness and cold. Another plan is the erection of a series of buildings constructed with brick, roughcast, and shingle roofs. In order to reduce the expense to a minmium and furnish the man making from $15 to $18 a week an opportunity to occupy them, arrangements are being made to secure the necessary capital at an extremely low percent. It is hoped to make the rental of these houses from $15 to $20.

The Ontario Homes Association has enlisted the co-operation of Berlin's citizens to erect a series of homes in that city ranging from $1,800 to $3,000.

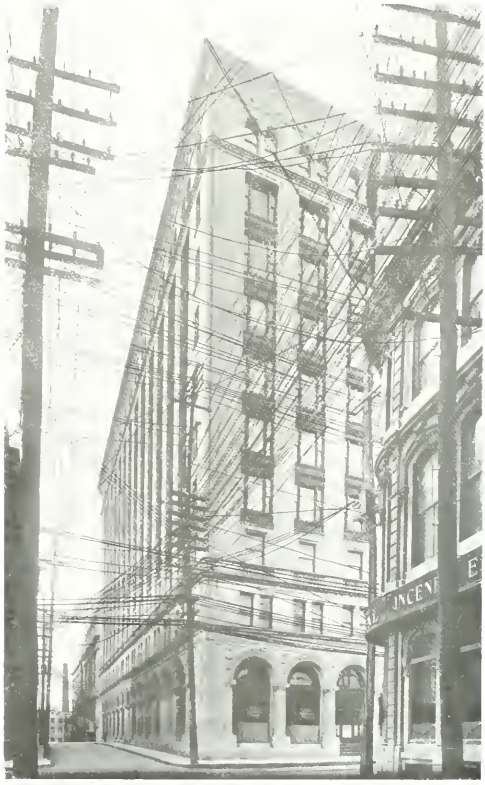
The Town Planning Association of Montreal has laid out schemes for several model towns on the outskirts of the city. Certain properties are to be handled by artists and architects on the most approved plans. Cottages will be erected on wide lots with ample room for gardens, etc., which will be rented or sold on easy instalments, the cost ranging from $1,000 to $2,500. The association is quite confident of the outcome, having studied similar conditions prevailing in Europe.

The nature of such a proposition makes it practically imperative for Government influence to be back of the project. Extensive areas of land, large quantities of material, capital at a very low rate of interest and the elimination of graft is the only remedy. The cities are sorely in need of improvement in this direction, and it is to be hoped that some carefully considered scheme will be evolved which will give to the workingman a home, sanitary in every respect, of an artistic taste and within the limit of his financial possibilities.

VIEW OF THE MAIN STREET, WINNIPEG.

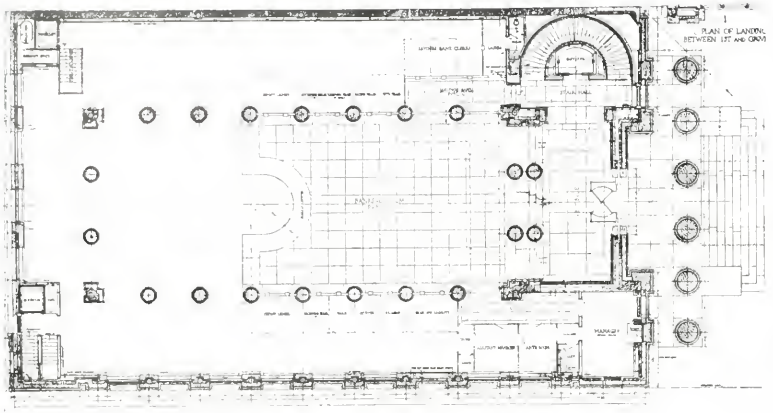
¶ *Our public thoroughfares in relation to their artistic merit as compared with the busy streets in the principal cities of other countries.*

THE QUESTION ARISES, can we afford to sacrifice the artistic value of our streets? The accompanying views are typical and tell better than words how deeply rooted the mercenary spirit is in Canada. The elimination of street wiring would not only enhance the value of our monumental centres, but would prove a proper incentive to the architect in making each succeeding structure a forward step in the realm of true art. It is encouraging to note that the Bell Telephone Company of Montreal is rapidly burying its wires in conduits and we hope that this spirit will prevail throughout the Provinces. Then our cities will compare favorably with the charm and wholesomeness of London and other cities which allow nothing to detract from their civic beauty.

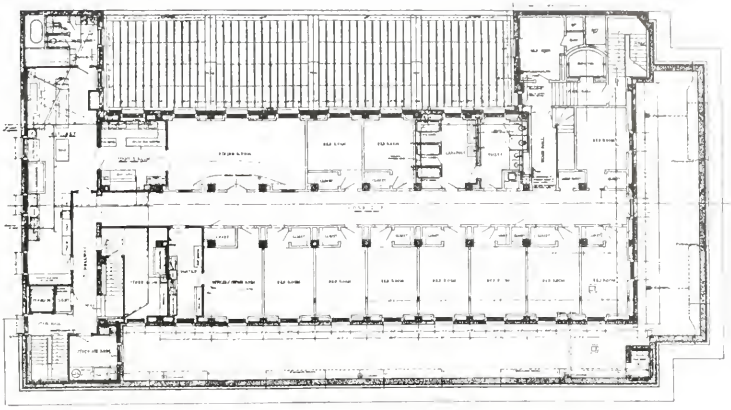


VIEW OF NOTRE DAME STREET, MONTREAL.

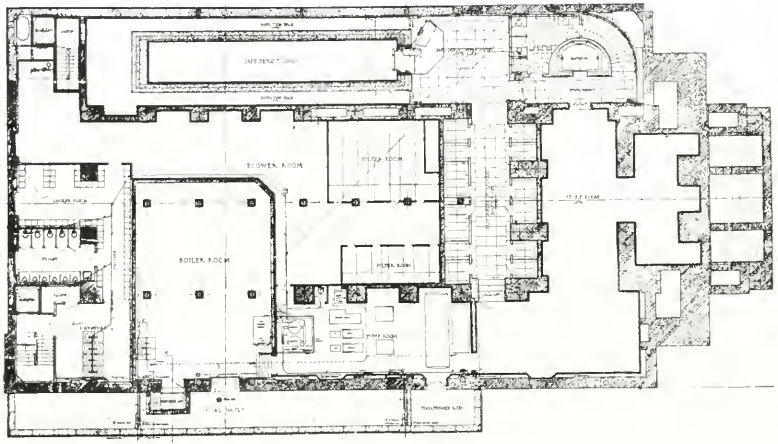
THE BANK AND ROYAL EXCHANGE SQUARE, LONDON.



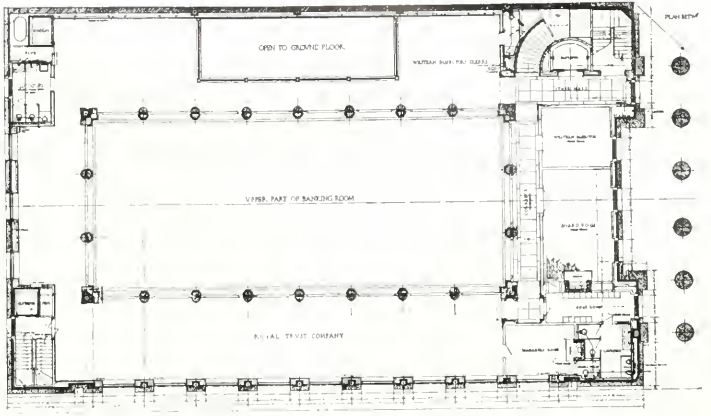
GROUND FLOOR PLAN.



SECOND FLOOR PLAN.



BASEMENT FLOOR PLAN



FIRST FLOOR PLAN.

BANK OF MONTREAL, WINNIPEG, MAN.

MCKIM, MEAD & WHITE, AND J. N. SEMMENS, ARCHITECTS

Two New Buildings, Winnipeg, Man.

THE progressive Western spirit is praiseworthy in that it possesses the true commercial spirit coupled with a just appreciation of the artistic. We find this exemplified in the Bank of Montreal and the Great West Life Assurance Company building, of Winnipeg.

During a recent visit to that city Leonard Stokes, R.I.B.A., of London, commented enthusiastically on the high standard set by Canadian architects. He spoke of their successful attempts to adopt pure design in relation to the practical local conditions. He felt that the commercial work was commendable and led us to feel that in this line of building we were far in advance of similar attempts in European countries.

The new building of the Winnipeg branch of the Bank of Montreal, is derived from purely classical models. The building is rectangular in plan, the exterior being built of a very white granite. The design consists of a Corinthian portico of six columns on the front, and a side treatment of Corinthian pilasters with windows between them, the whole being surmounted by an attic. Above and behind the attic rises a rectangular roof house in which the quarters of the staff are located, taking the place of the domical form so frequently adopted on square buildings.

DETAIL OF ENTRANCE PORTICO.

The property on which the building is placed is triangular and a study of the ground floor plan shows that the portico and steps were designed for the maximum amount of projection permissible within the property lines. By this treatment the building has been given the greatest possible prominence, throwing the triangular portion of the front part into sidewalk and street, thereby creating a public space, or square, at a busy part of the city. In this way the bank building becomes not only an incident in a long street, but one of the distinguishing features, or landmarks which help to divide a city into familiar districts.

The interior of the building is in the form of a basilica. The design consists of superimposed Ionic colonnades, the central or main portion of the room going through two stories with a gallery on all four sides, to be used by the Royal Trust Company. The entire banking room is treated in practically a monotone, with columns and side walls of light buff Botticino marble imported from Northern Italy; and ceiling painted with light colors in a classical manner. The use of one material gives the largest possible expression to the room, while the neutral buff tone of the marble is conducive to a warm, cheerful, sunny effect during the long Winnipeg winters.

In the basement are located extensive vaults, safe deposit, coupon and storage rooms, clerks' lavatories, boiler room, etc. Above the main banking room are two floors given up to quarters for the staff and janitor, with sitting rooms, bed and bath rooms, kitchen, lunch and dining rooms, conveniently arranged for serving all those connected with the bank.

The Great West Life Assurance Company's building is designed in Kootenay, B.C., marble, with cast iron window spandrils. Upon the interior the halls and corridors are finished in white Italian marble. The elevator fronts are bronze with polished wire glass. The wood finish throughout is quarter-cut oak with the exception of the boardroom, designed in mahogany. The building cost fifty cents per cubic foot.

The general effect of such structures can hardly be estimated. They are a source of pride to the people; a tribute to the spirit of architecture.

SAVINGS DEPARTMENT.

SAVINGS DEPARTMENT.

BANK OF MONTREAL, WINNIPEG, MANITOBA.

MCKIM, MEAD & WHITE, AND J. N. SEMMENS, ASSOCIATED, ARCHITECTS.

VIEW FROM GALLERY.

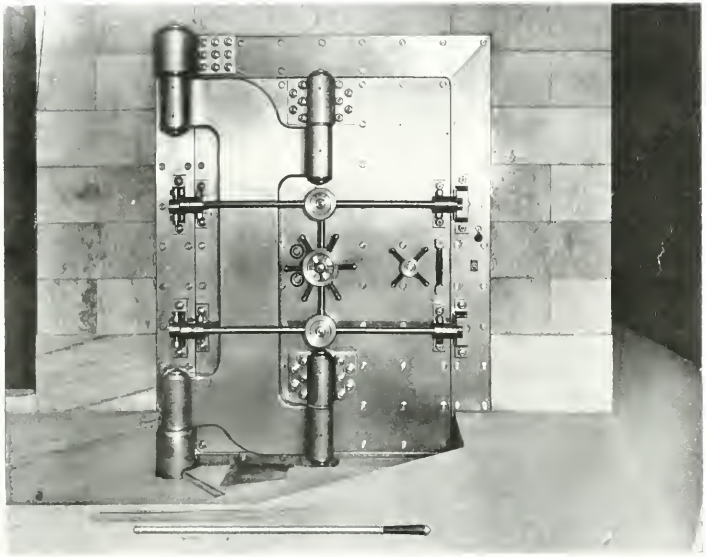
BANK OF MONTREAL, WINNIPEG, MANITOBA.

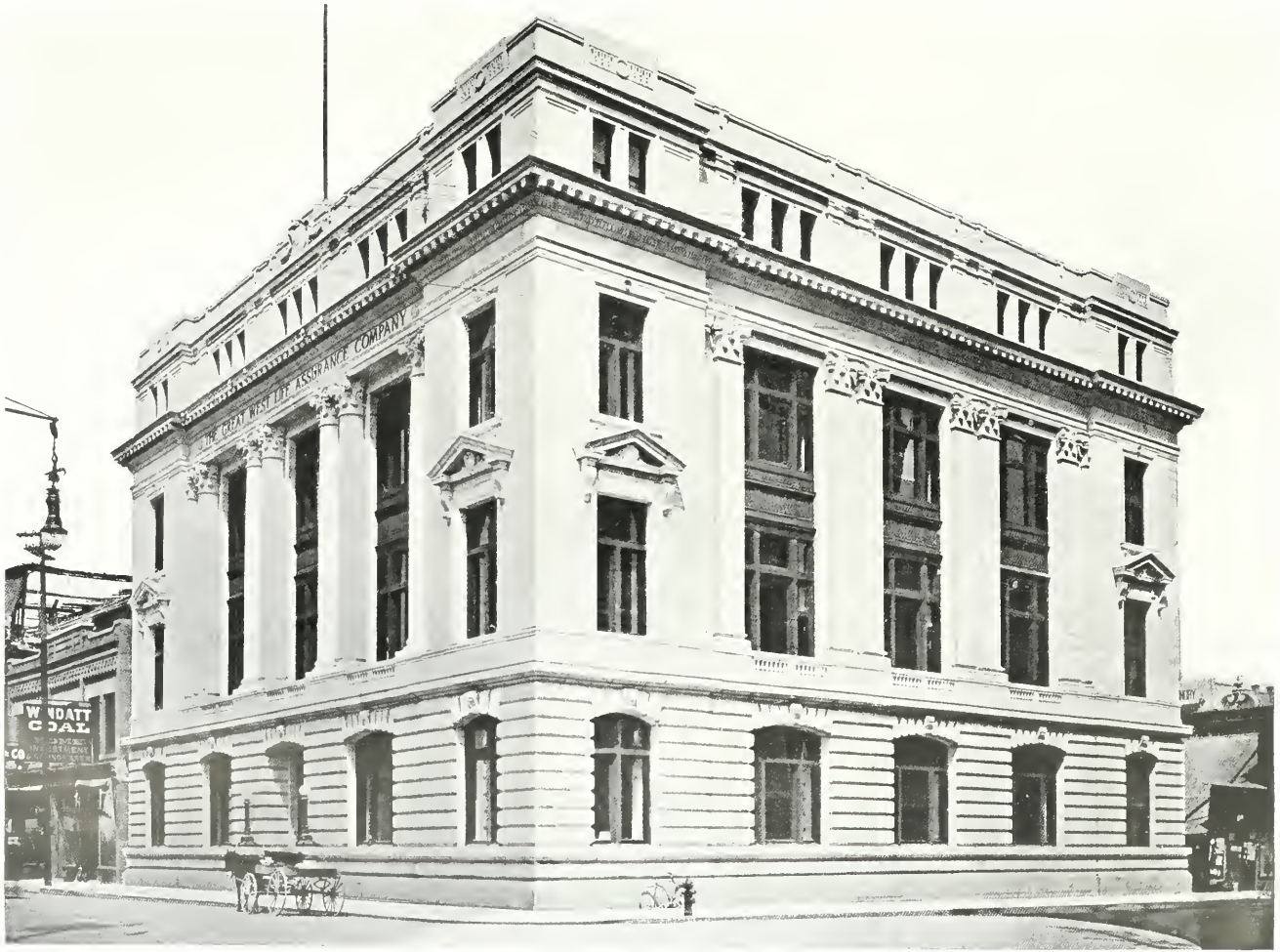
MCKIM, MEAD & WHITE, AND J. N. SEMMENS, ASSOCIATED, ARCHITECTS.

INTERIOR DETAILS.

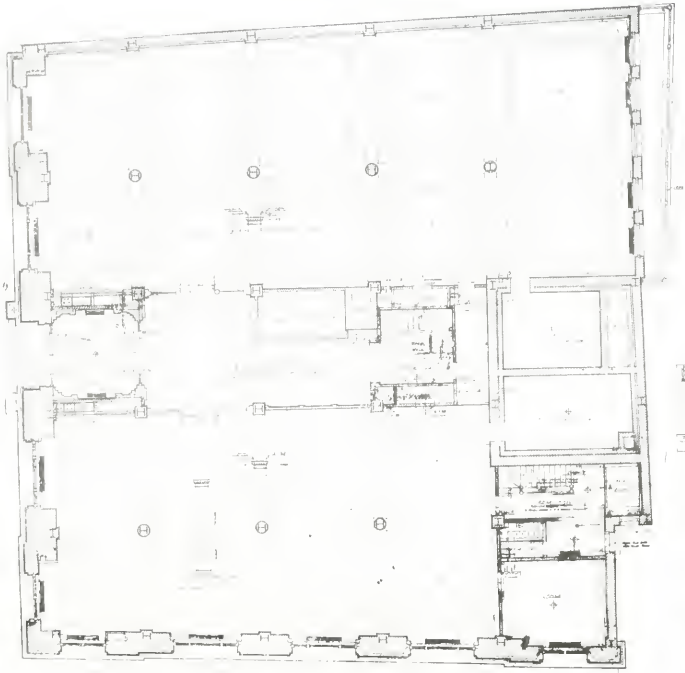
BANK OF MONTREAL, WINNIPEG, MANITOBA.

MCKIM, MEAD & WHITE, AND J. N. SEMMENS, ASSOCIATED, ARCHITECTS.

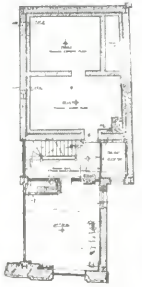




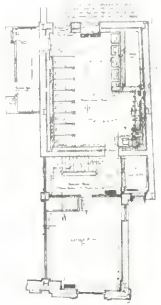
THE GREAT-WEST LIFE ASSURANCE COMPANY BUILDING, WINNIPEG, MANITOBA. JOHN D. ATCHISON, ARCHITECT



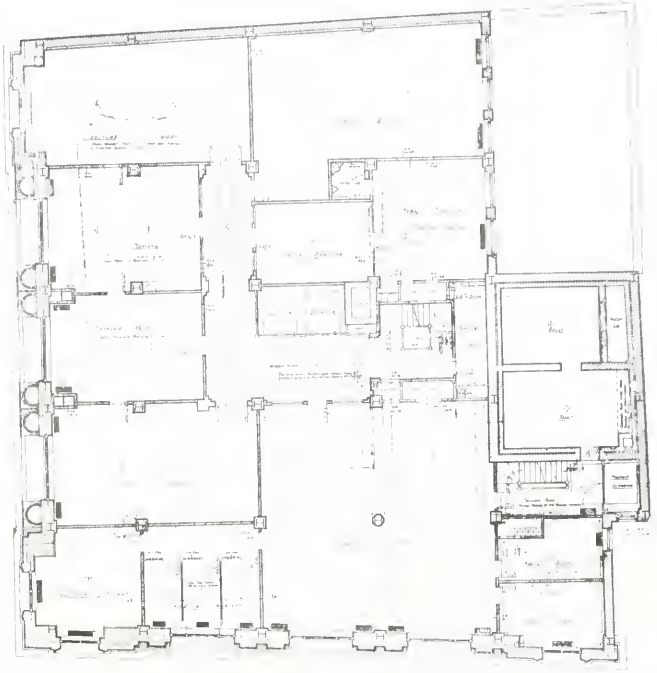
FIRST FLOOR PLAN.



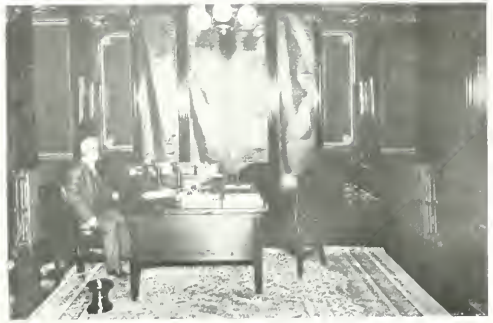
SECOND FLOOR
MEZZANINE



FIRST FLOOR
MEZZANINE



SECOND FLOOR PLAN



PRIVATE OFFICE.

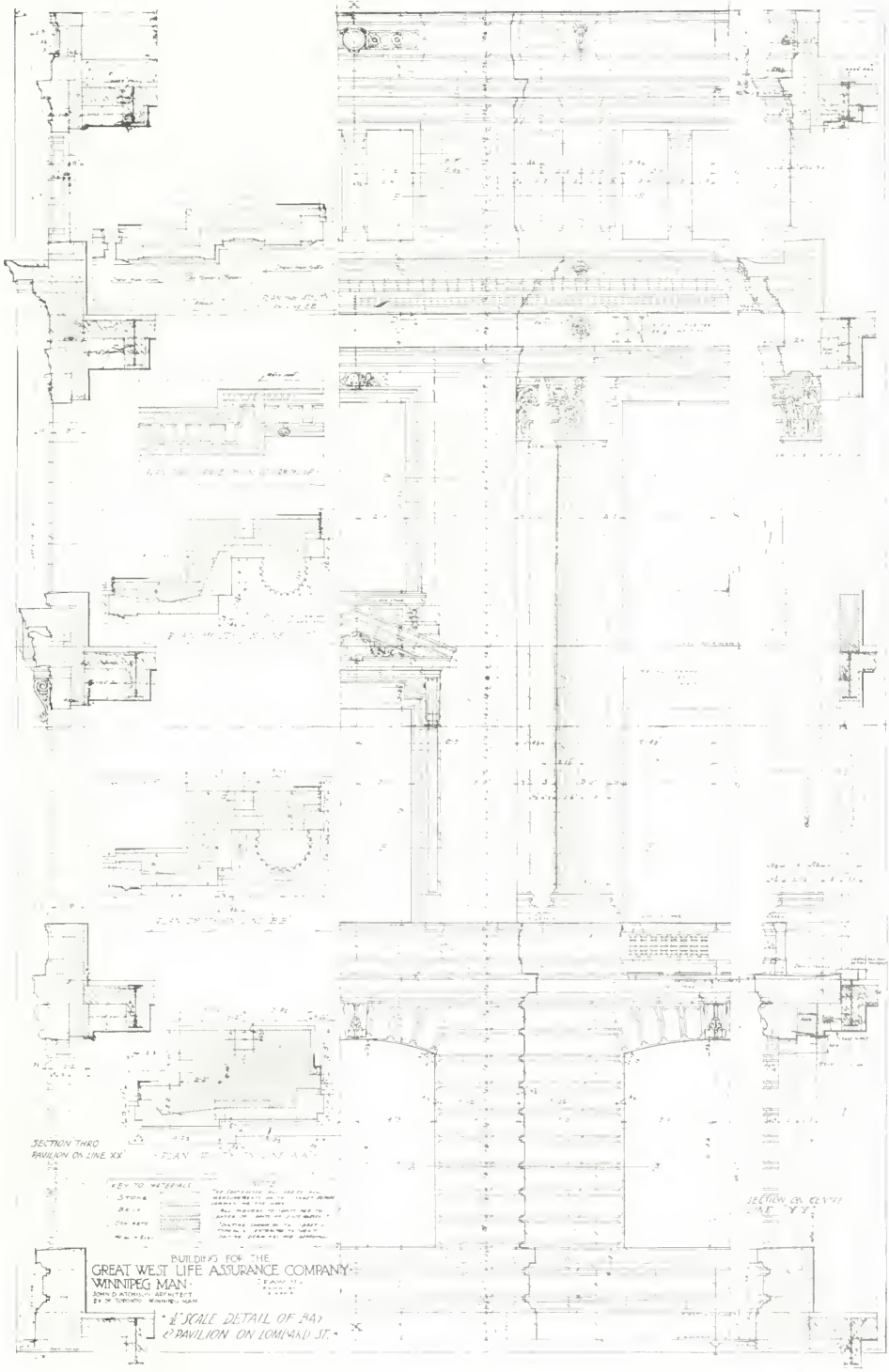
PLANS AND INTERIOR VIEWS,

GREAT WEST LIFE ASSURANCE COMPANY BUILDING,

WINNIPEG, MANITOBA.

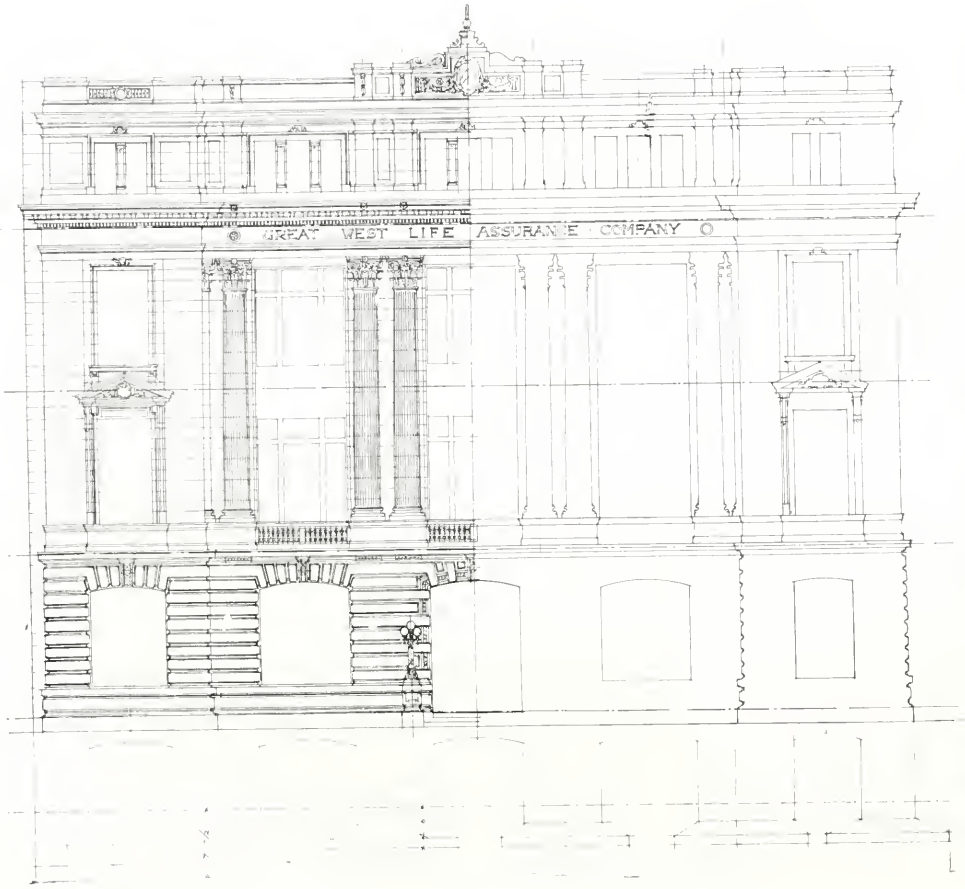
JOHN D. ATCHISON, ARCHITECT.

ANTE ROOM.

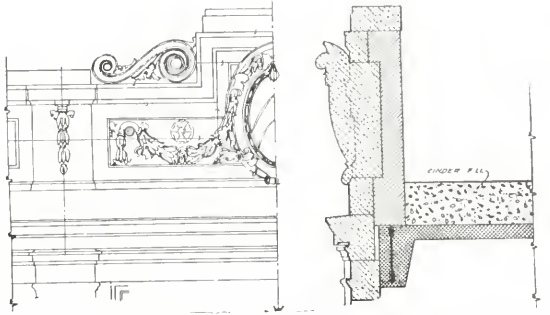


EXTERIOR DETAIL, GREAT WEST LIFE ASSURANCE COMPANY BUILDING, WINNIPEG, MANITOBA.

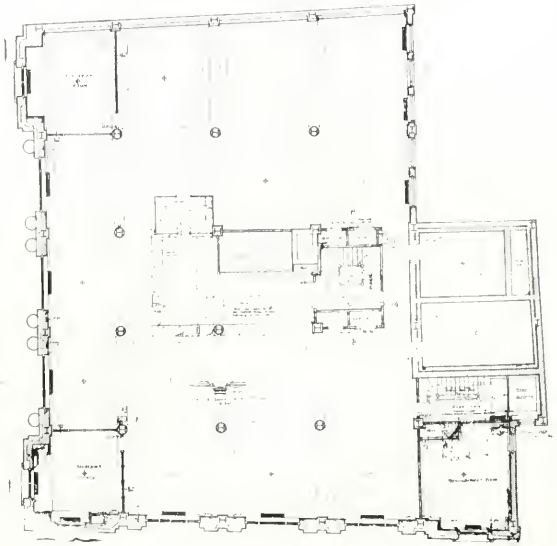
JOHN D. ATCHISON, ARCHITECT.



LOMBARD STREET ELEVATION.



ORNAMENT ABOVE FOURTH FLOOR OF CENTRE LINE.



THIRD FLOOR PLAN.

DETAILS AND PLANS, GREAT WEST LIFE ASSURANCE COMPANY BUILDING, WINNIPEG, MANITOBA.

JOHN D. ATCHISON, ARCHITECT.

BOARD ROOM,
MAIN OFFICE.

GREAT WEST LIFE ASSURANCE CO. BUILDING,
WINNIPEG, MANITOBA.

JOHN D. ATCHISON,
ARCHITECT.

HOSPITAL FOR THE INSANE,

BRANDON, MANITOBA.

V. W. HORWOOD,

PROVINCIAL ARCHITECT.

Hospital for the Insane, Brandon, Manitoba

M. V. HORWOOD, Provincial Architect

ON one of the Brandon hills stands the Hospital for the Insane, overlooking Brandon City, and the winding Assiniboine with the fertile fields below. Here the unfortunates of the West are cared for in the splendid institution provided for by the Provincial Government, at a cost of over one million dollars.

The group of buildings consists of the hospital proper, with executive and administration wings; and outside, the power house which supplies heat, light and power; the laundry building, abattoir, farm building, and root house. The farm is an immense one, supplying all the roots and meat, and the inmates, if their condition allows, are permitted to partake in the work of producing their food. The grounds around the building are being laid out as a park.

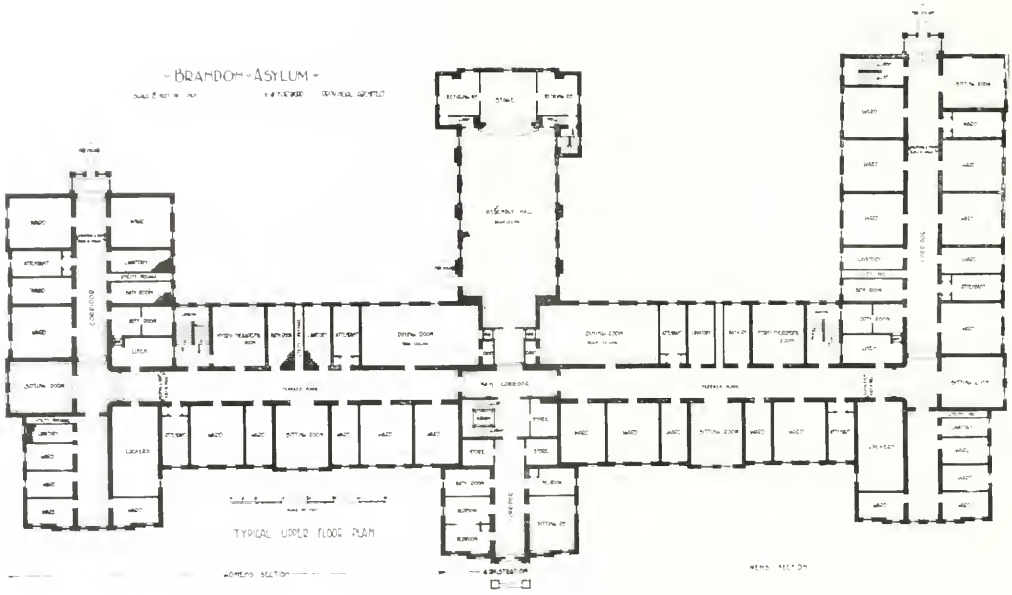
The building has a frontage of over four hundred feet, with wings extending back one hundred and fifty feet. The exterior is of rich red brick with buff Tyndal stone base and trim. It is of reinforced concrete construction and fireproof, the staircases being of steel and marble, the floors of terrazzo. Every precaution has been taken against sudden panic.

Entering the administrative portion by a flight of stone steps, you pass into a spacious entrance hall, from which access is gained to the general offices and consulting rooms, and thence to the heart of the building. From this central point run the corridors 12 feet wide, communicating with the several rooms, offices and wards. The elevators are conveniently placed in each division, and the dining rooms off each ward are served directly from the kitchen by electrical lifts. The assembly room is used as a recreation room and chapel, and no expense has been

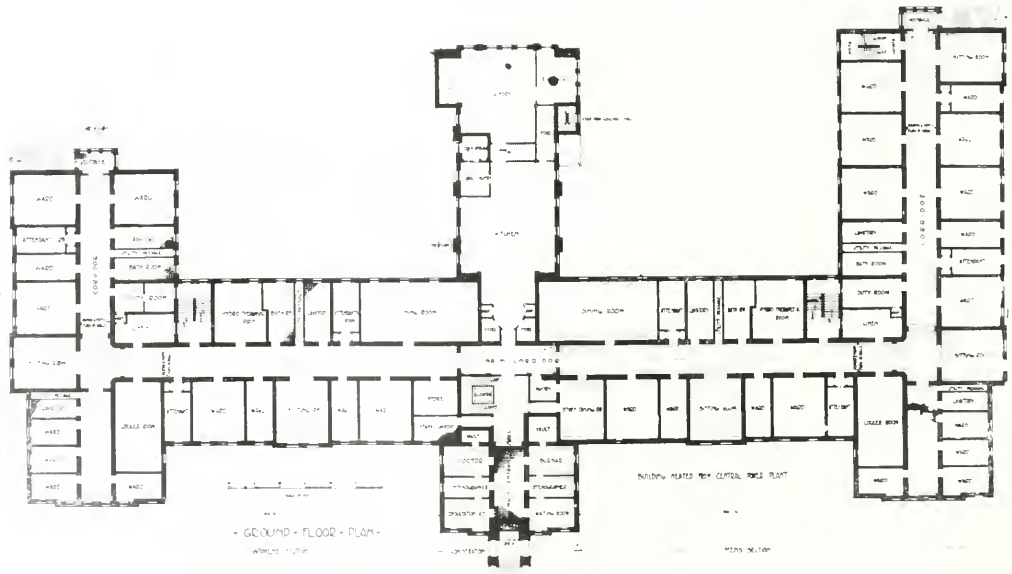
CORRIDOR

spared to make the lives of the unfortunate inmates bearable and conducive to their final recovery. The sanitary appliances throughout are of the most modern.

The building was carried out under the Provincial Architect, V. W. Horwood; the Minister of Public Works, Hon. C. H. Campbell; and Hon. G. R. Coldwell.



TYPICAL UPPER FLOOR PLAN.



GROUND FLOOR PLAN.

HOSPITAL FOR THE INSANE, BRANDON, MAN.

V. W. HORWOOD, PROVINCIAL ARCHITECT.

ASSEMBLY HALL.

SITTING ROOM.

CORRIDOR.

HOSPITAL FOR THE INSANE,

BRANDON, MAN.

W. W. HOPWOOD

PROVINCIAL ARCHITECT

POOL ROOM.

KITCHEN.

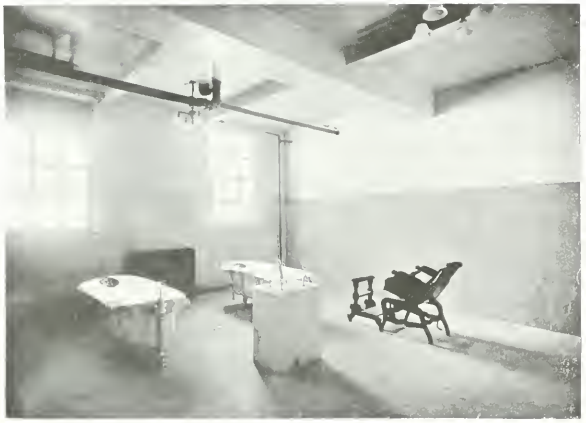
DINING ROOM.

HOSPITAL FOR THE INSANE,

BRANDON, MAN.

W. W. HORWOOD,

PROVINCIAL ARCHITECT.



HYDROTHERAPEUTIC ROOM.

MALE WARD.

NEW C.N.R. STATION, DAUPHIN, MANITOBA.

PRATT & ROSS, ARCHITECTS.

The building represents the outgrowth of Dauphin's phenomenal progress in the past few years. It is the third structure to be erected in fifteen years. The exterior is of red brick with stone trimmings. Upon the interior the finish is in oak and consists of a ground, first and attic floor plan. The superintendents office adjoins that of the chief clerks and staff, at the end of the corridor on the first floor, and at the opposite end are offices of ample room for the trainmaster, roadmaster and bridge-building supervisors. The office of the despatchers contains two sets of instruments. On the top floor are rooms for records and stationery.

The platforms are arranged for both roads. The main platform will be extended another 100 feet upon the removal of the old depot. Ample lighting has been installed with ten ornamental five-globe electric standards and candle power electric lamps all around the veranda.

The whole is fitted with steam heating and all the latest sanitary appliances, and offers accommodation that will be greatly appreciated by the travelling public. The cost of the completed structure was $50,000.

CONSTRUCTION

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FREDERICK REED, Editor

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CONTRIBUTIONS—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and duly returned

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Vol. 6 Toronto, April, 1913 No. 4

CURRENT TOPICS

HUGH STEWARD, architect, has entered into partnership with the firm of R. G. Bunyard, located at Moose Jaw, Sask.

* * *

EDMONTON will erect a ten-story office building for the Bank of British North America, fire stations amounting to $150,000, and new Sherman theatre for $270,000, G.T.P. Railway shops.

* * *

THE FOLLOWING Toronto architects have removed their offices: Sproatt & Rolph, from 90 Yonge street to 36 North street; Curry & Sparling from 90 Yonge street to 105 Bond street; Chapman & McGiffin from 59 Yonge street to the Tyrrell building, 95 King street east.

C. F. MARTIN has opened an office for the practice of architecture in the Tyrrell building, 95 King street east, Toronto.

* * *

THE SITE for the monument to his late Majesty King Edward VII. will be on the heights between Wellington street and the East Block, overlooking Confederation Square and the Rideau Canal, Ottawa. The monument will cost $40,000, and add greatly to the historical atmosphere of the square.

* * *

THE MOST STRIKING illuminated electric cross in the world will be erected in connection with St. Augustine's Seminary, situated at Scarborough Bluffs, Toronto. The cross will be 16 feet in height with a horizontal arm of 7 feet, containing 125 electric lights. The top of the perpendicular portion of the cross will be 480 feet above the lake and will be visible on a clear night from the Niagara side.

* * *

AN EXPLOSIVE of tremendous force made from liquid oxygen is the result of an experiment by Prof. Charles Nordnamm, of Paris. A new solution of economic lighting is assured by the result of this discovery. Tubes of neon containing the property of electric luminosity are provided which produce a soft red light. This new method is especially commended for the extremely low cost in manufacturing same.

* * *

THE PRESENT YEAR will undoubtedly prove a record year for Regina in the building field. Prospective structures to the amount of $12,000,000 are practically assured, which figure surpasses the total permits of last year by $4,000,000. The city council has passed an ordinance to the effect that the tallest building will be limited to ten stories. Such a move places a ban on the skyscraper and augurs well for the artistic appearance of the city.

* * *

FIFTY-NINE MODELS were submitted in the competition for the memorial to be erected at 106th street, Broadway and West End avenue, New York city, in honor of the late Mr. and Mrs. Isador Straus, who perished on the Titanic. The successful competitors are Augustus Lukeman, sculptor, and Evarts Tracy, architect. The design, which is to cost $20,000, will be in the form of a basin occupying the centre of a triangle on the south end of which will be a low pedestal four feet in height, with a reclining figure looking into the water. The rules for the competition specified that the fountain should present an object of beauty without containing an allegorical expression of any particular theme or subject. The committee in reaching its decision accepted the artist's suggestion of embodying in the park a scheme of peaceful contemplation over a sheet of water, leaving the meditative public to muse over the sacrifice made.

Competitive Design for the City Hall, Winnipeg, Man.

THE SUCCESSFUL competitors for the new City Hall at Winnipeg are as follows: First prize, Clemesha & Portnall, Regina; second prize, Woodman & Carey, Winnipeg; third prizes, Brown & Vallance of Montreal, Hugh G. Jones of Montreal, and John D .Atchison of Winnipeg. Leonard A. Stokes, F.R.I.B.A., in submitting his report, said:

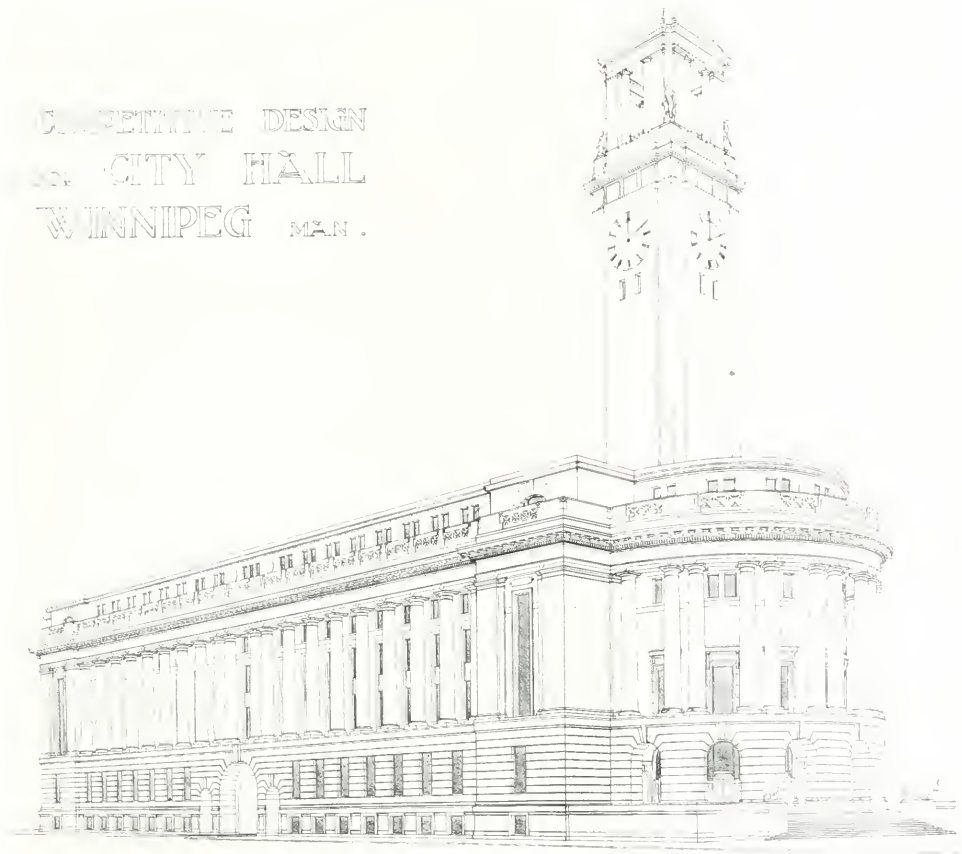
"It gives me much pleasure to be able to state that the response to your invitation to architects to submit designs for your new City Hall has been in every way satisfactory. Thirty-nine designs—many ot the most exceptional merit—having beer submitted in competition. After careful examination, I unhesitatingly place No. 18 first, as it is undoubtedly the best. No. 11 I place second, and Nos. 26, 30 and 34 the three designs coming next in merit, after the two above named awards have been made. The five prizes should therefore be awarded accordingly, and I feel confident that design No. 18, placed first, will make a handsome addition to the city architecturally, besides being in every way a well arranged and serviceable building."

The reports submitted with the various successful competitions are given, with the exception of the first, prize, which we were unable to secure.

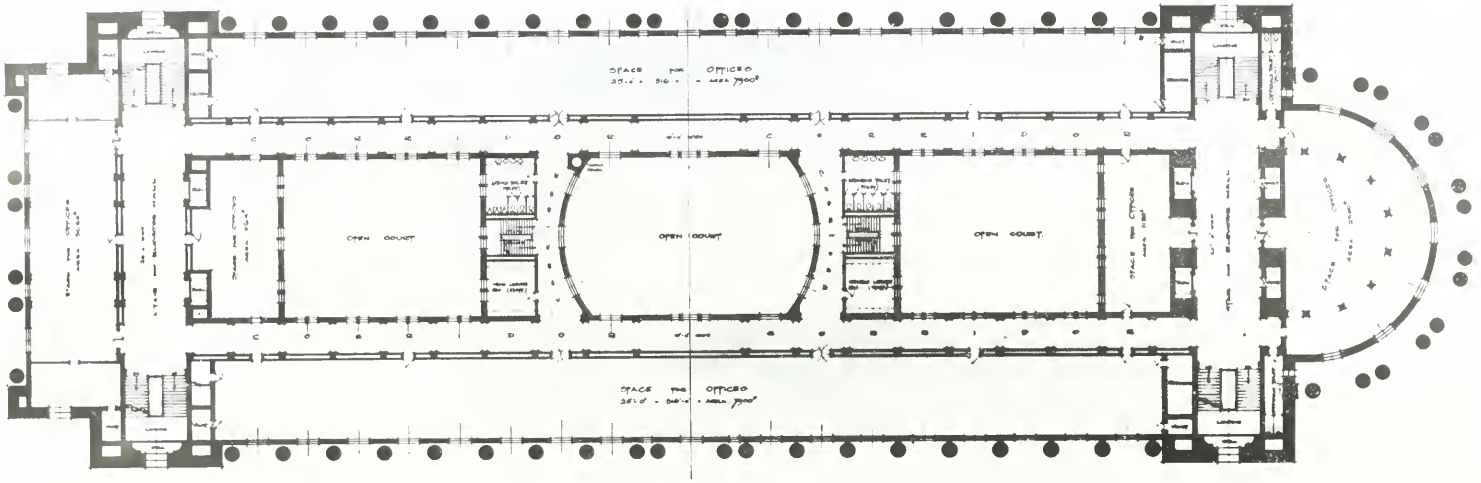
Second Prize Design—Woodman & Carey.

The style of the building is Greek Ionic, six stories in height, including basement. Economy in design being required by the conditions, it was therefore considered advisable to omit large open spaces which require height in proportion.

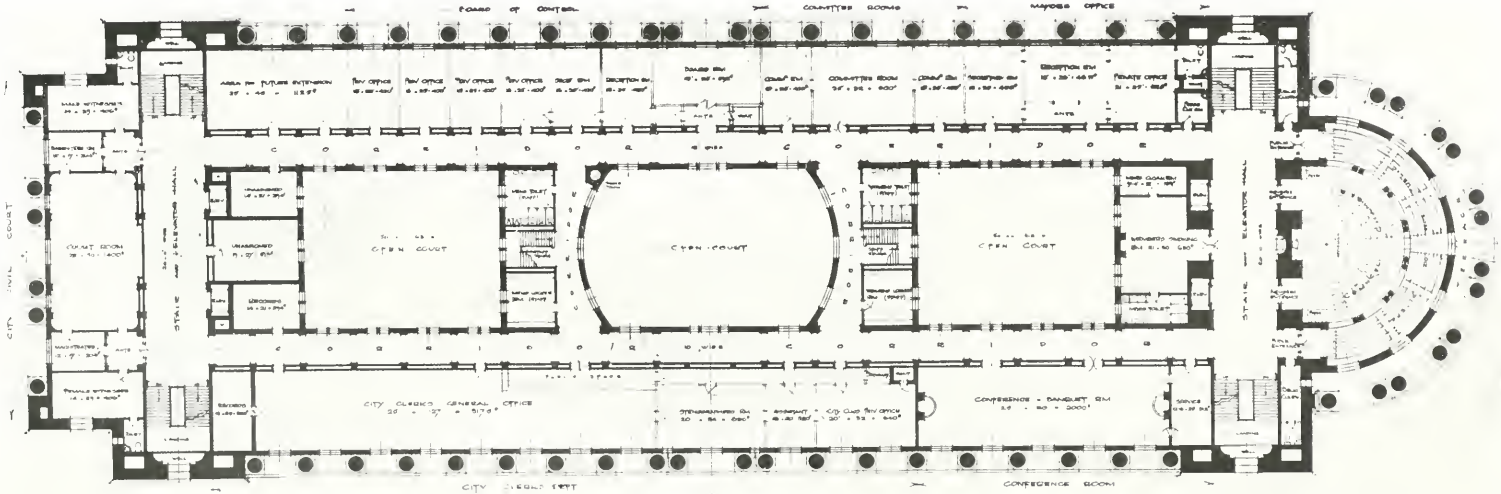
The council chamber is placed in the centre of the building with due regard to its importance, the main staircase leading directly to it, subsidiary staircases leading to the conference room and mayor's quarters, whilst all three are united by a spacious ante hall lighted overhead, also by direct light over the council



WINNING DESIGN, CITY HALL, WINNIPEG, MANITOBA.
CLEMESHA & PORTNALL, ARCHITECTS.



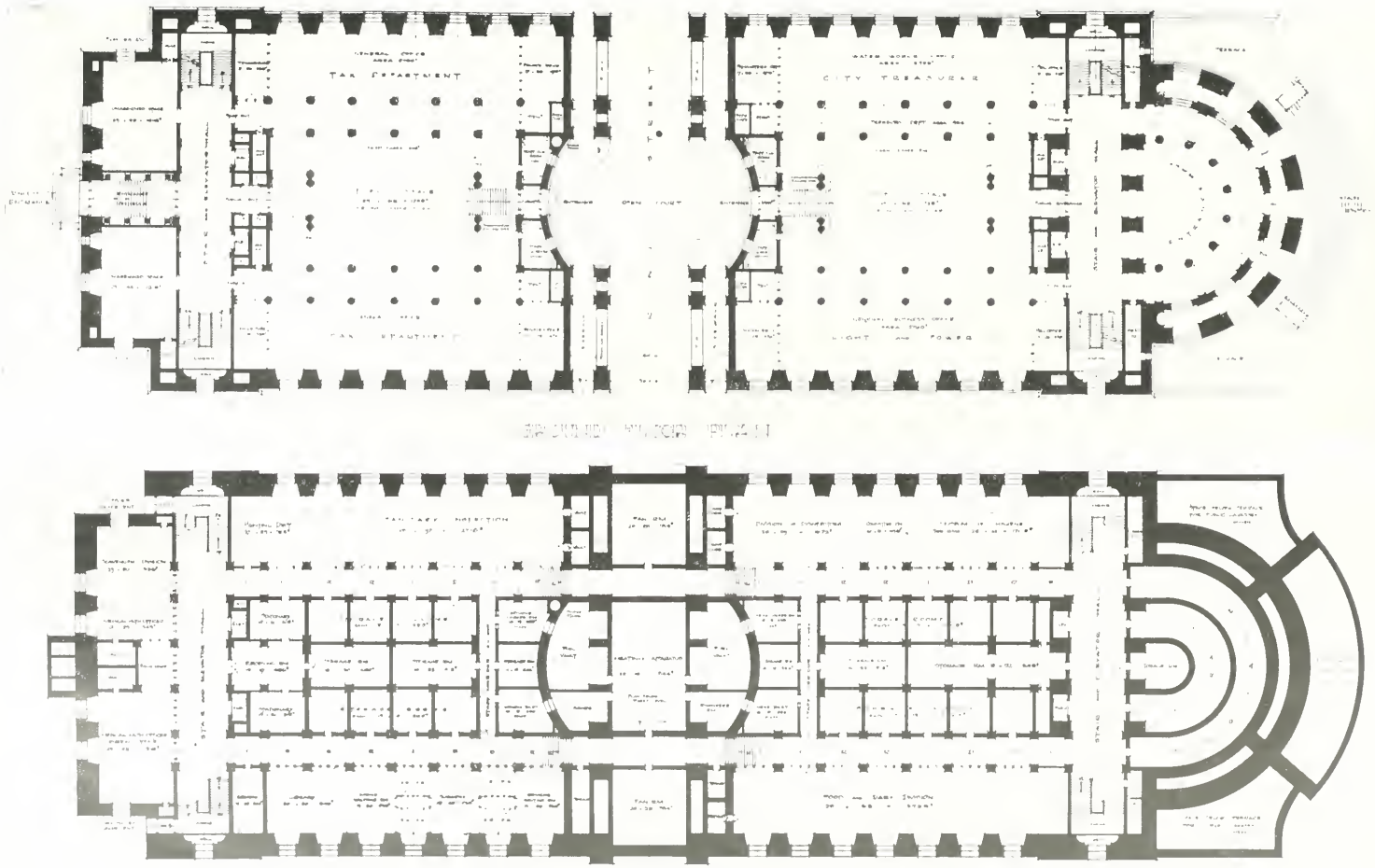
TYPICAL FLOOR PLAN



SECOND FLOOR PLAN

WINNING DESIGN, CITY HALL, WINNIPEG, MANITOBA.

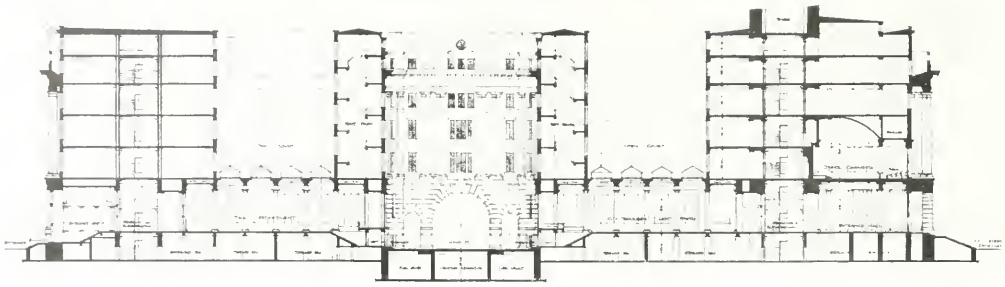
CLEMESHA & PORTNALL, ARCHITECTS.



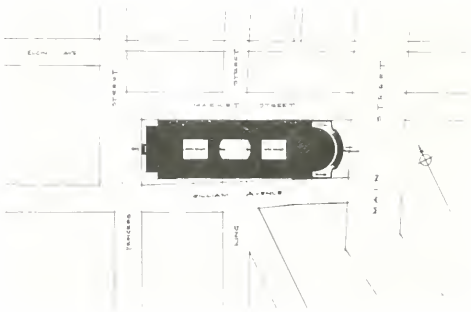
WINNING DESIGN, CITY HALL, WINNIPEG, MANITOBA.

CLEMENCEAU & PORTEAU, ARCHITECTS

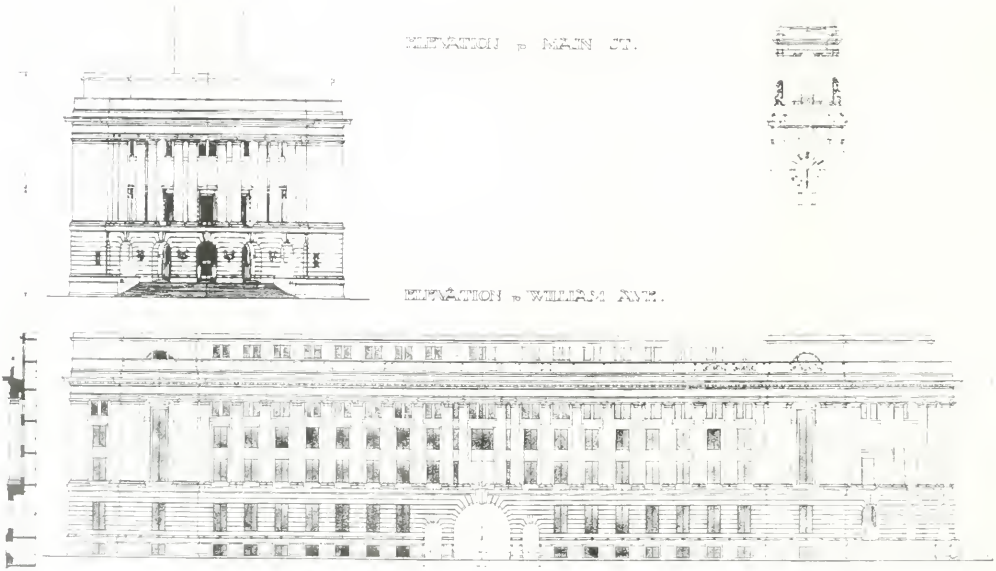
LONGITUDINAL SECTION



chamber. The city clerk is within easy access to the public, and at the same time adjoining the mayor's quarters.. The record room is on a mezzanine floor, convenient to the city clerk's office, and with direct access from that office. The board of control is planned on the south side of the building, the secretary of the board being placed immediately above the city clerk's office, adjoining the staircase. Committee rooms are conveniently located on the north side of the council chamber; a members' entrance and staircase being provided for the council, while staircases for public use lead directly to the galleries of the council chamber. Ample lavatories are provided throughout the building, all ventilated by air shafts, the foul air being withdrawn by mechanical means and fresh air forced in through air ducts which are carried along the main corridors, having inlets into all offices. The civil court and scavengers' department have outside entrances which have been considered advisable, at the same time both departments are within direct access to the main building. The engineer's department is placed in the west end of the building, with an easy access to the public.



The plan filing room, of fireproof construction, is immediately below the city engineer's office, with a separate staircase leading directly therefrom. The drafting rooms of this department are placed on the top floor above the main office, all of which have a north light. Freight elevators are located centrally in the building adjoining the large vaults and communicating with the



SECTION, BLOCK PLAN AND ELEVATIONS OF WINNING DESIGN.

receiving rooms, which open directly, at a convenient level, on to the roadway between the bridge.

The health department is arranged, as suggested, in the basement, which is three feet below the ground level, giving ample light to all departments. The animal room of the bacteriological department, planned at the west end of the front portion of the building adjoining the receiving room, is isolated, except to its immediate department. Provision for the heating plant has been made centrally adjoining King and Market streets, convenient for the delivery of fuel and disposal of ashes.

The building is to be of grey Kenora granite, or native stone. The decoration of the interior of the

SECOND PRIZE DESIGN, CITY HALL, WINNIPEG,
WOODMAN & CAREY, ARCHITECTS.

building will be of the simplest—color being employed in the Greek manner in many cases.

The spare room, which is distributed as seems advisable, in the entire building, amounts to 30,314 sq. ft., and is divided up as follows: Ground floor, 1,976; second floor, 1,456; third floor, 10,559; fourth floor, 15,880; basement, 443.

The cubic contents of the building are 4,785,852—the cost being two million three hundred and ninety-two thousand, nine hundred and twenty-six dollars.

Third Prize Design—Brown & Vallance.

In presenting the accompanying plans for your consideration, the following points might be drawn to your attention: First, that in only two cases are the areas less than given in the requirements; second, that all other areas somewhat exceed the requirements, but this excess has not been added to the additional space required for future extension; third, that the space asked for future extension is 30,098 square feet.

The following are the cubical contents, which have been taken in a liberal manner: Boiler room, coal storage, fan rooms in sub-basement, 78,000; basement, ground floor, first floor, second floor, third floor and fourth floor, 4,897,840; tower above roof, 221,056, making a total of 5,196,896 cubic feet. Allowing 78,000 cu. ft. at 25c., 4,897,840 cu. ft. at 50c., 22,056 cu. ft. at $1, $100,000 for extra finish in vestibules, halls, conference room and council chamber, and $200,000 for architects' and engineering fees, the total amounts to $2,989,476.00.

Third Prize Design—Hugh G. Jones.

The conditions of the programme indicate the following requirements, which we have endeavored to work out:

In plan it seems essential that the space for departments should be so disposed as to allow the maximum latitude for rearrangement of departments as conditions require, and that the principal department, such as the offices of the mayor, board of control, the council chamber and the conference chamber, should be placed so as to have a monumental approach. The general communication should be by

means of direct and well lighted corridors, with stairs and elevators to the ground level at each end, and for communication between floors; the public toilets convenient to these means of communication, and the soil stacks built in at alternative outside columns so as to allow department toilets and basins to be built in as required. The service elevators for the handling of material from the stationery room and vaults in the basement to the various departments should be at the centre of the building.

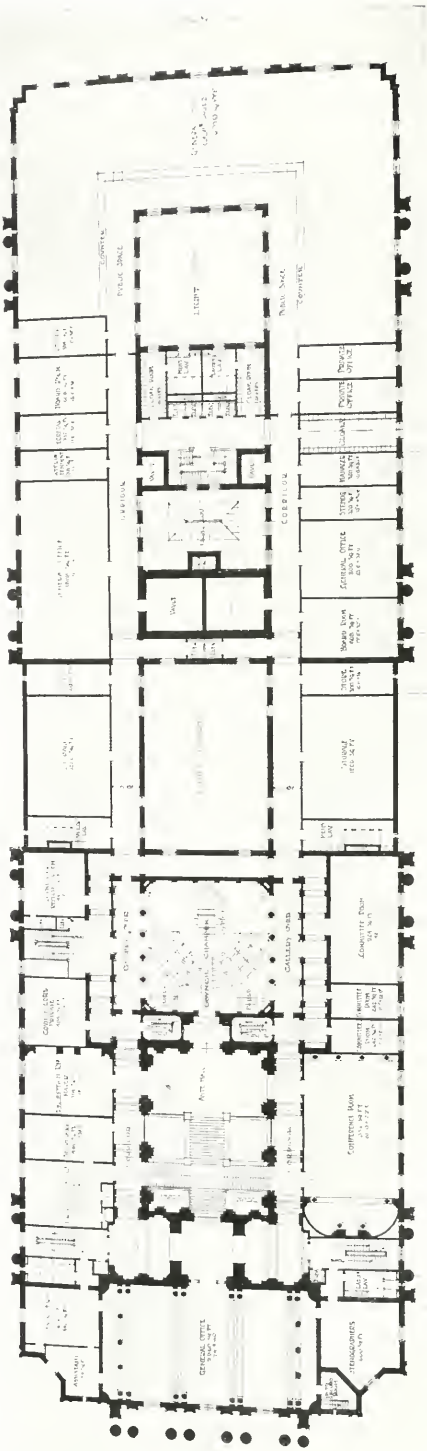
The exterior of the building should be arranged so as to get the maximum amount of light consistent with a dignified public monument. A pilaster treatment suggested itself, both because of the opportunity offered by the long frontage and as being the best means of obtaining a reasonable solidity of effect without loss of window area, also colonnades to be used only where the heavy reveal would not darken the interior. A tower should be placed so as to form a commanding feature on the axis of Main street, and in order to place the clock at a proper height.

In working out the above, the first question was whether to follow the lot lines on William street or to square the building. The latter course would unquestionably simplify the plan and be somewhat cheaper in construction. We, however, decided to follow the lot lines for the reason that to our mind a building in a central city block and following the lot line on one side and end, and touching the lot line at Main and William avenue, would not present an architectural appearance if the building were to be placed 10 feet away from the lot line at the corner of Princess street. Further, the space is desirable, although not absolutely necessary in the treasurer's and tax departments on the ground floor, rear of building.

The best solution would be the purchase by the city of sufficient ground to place the whole front of the building visibly on the axis of Main street, and allow the width of the City Hall site to be either increased at Main street frontage, or decreased at Princess street, and so as to form a square site with the building parallel with those on opposite sides of William and Market streets. In case the purchase of the extra ground is impracticable, the height of the building on the plot should be restricted so as to render it impossible to obstruct the view of the City Hall tower.

In this connection we are very firmly of the opinion that because of the narrow width of William avenue and Market street making impossible the view of the whole building except in very sharp perspective, any considerable projections of recesses in these elevations would result in the appearance of a series of separate buildings and a total loss of the dignity expected in a building of this character and possible through repetition of motive along a 500 ft. frontage.

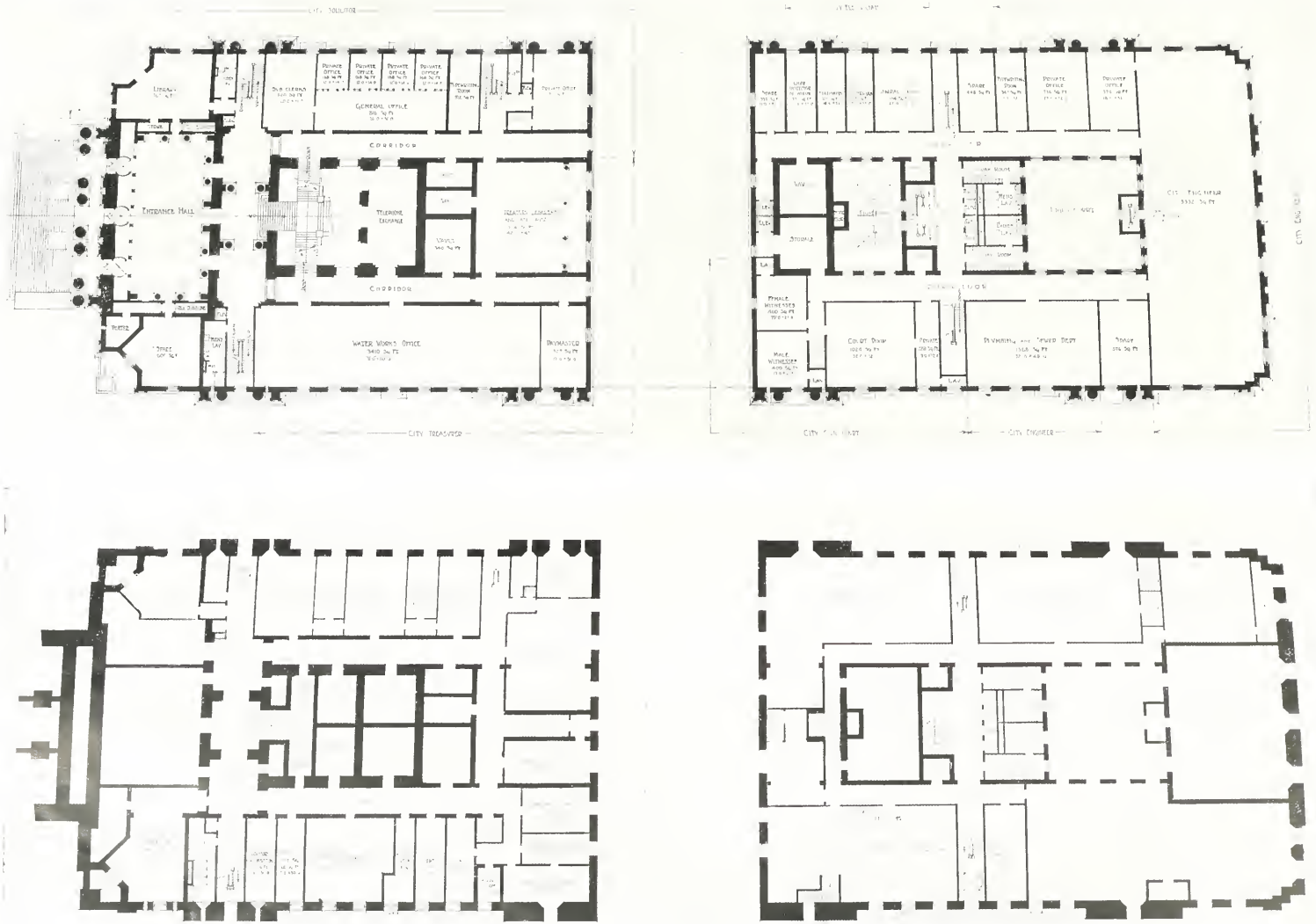
The offices of the mayor and board of control, also the council chamber and conference room, are all placed around the monumental rotunda and at a higher level so as to enjoy a degree of privacy. The



WOODMAN & CAREY, ARCHITECTS.

SECOND PRIZE DESIGN, CITY HALL, WINNIPEG.

FIRST FLOOR PLAN.

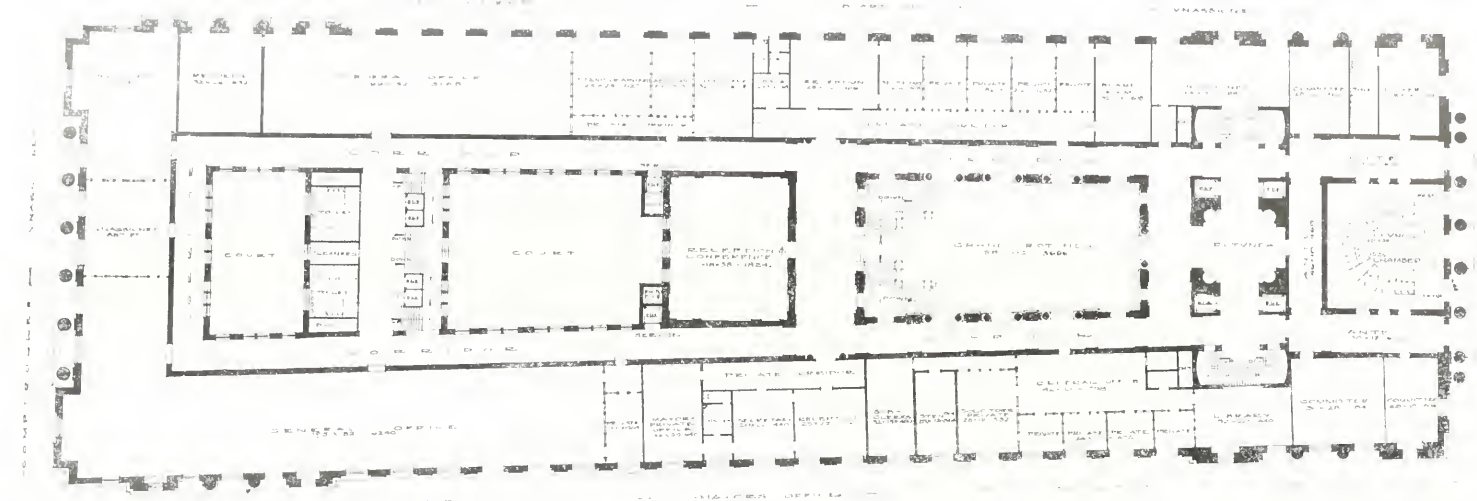


GROUND FLOOR PLAN.

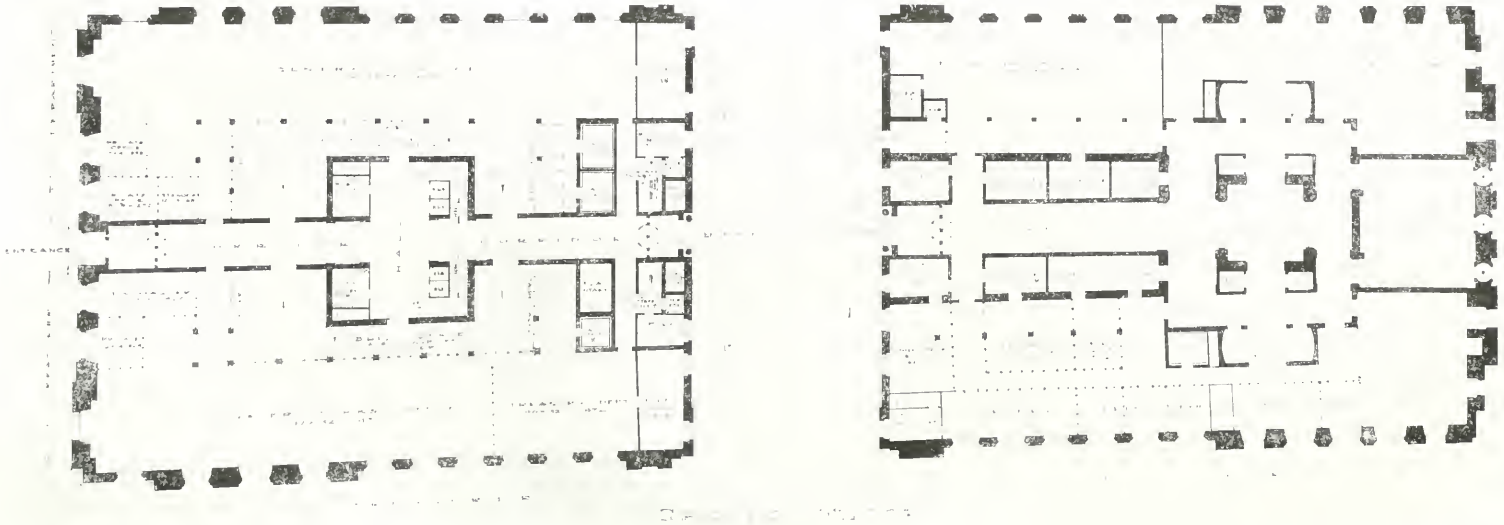
SECOND PRIZE DESIGN, CITY HALL, WINNIPEG, MAN.

WOODMAN & CAREY

CONSTRUCTION

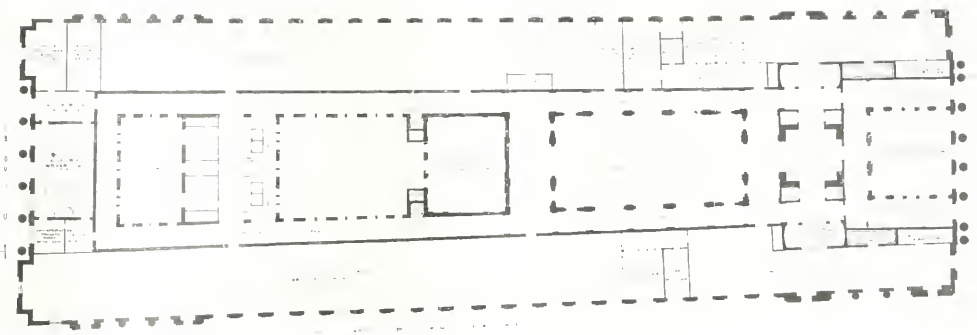


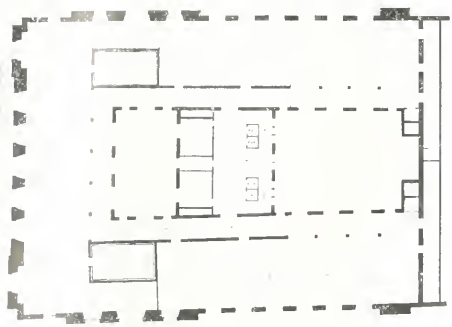
PRINCIPAL FLOOR

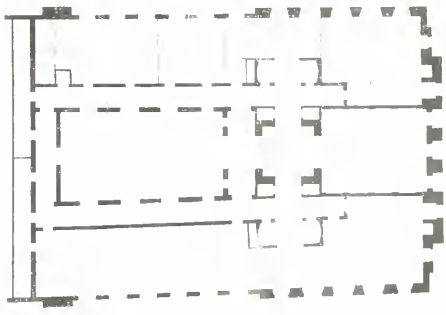


THIRD PRIZE DESIGN, CITY HALL, WINNIPEG, MAN.

BROWN & VALLANCE, ARCHITECTS



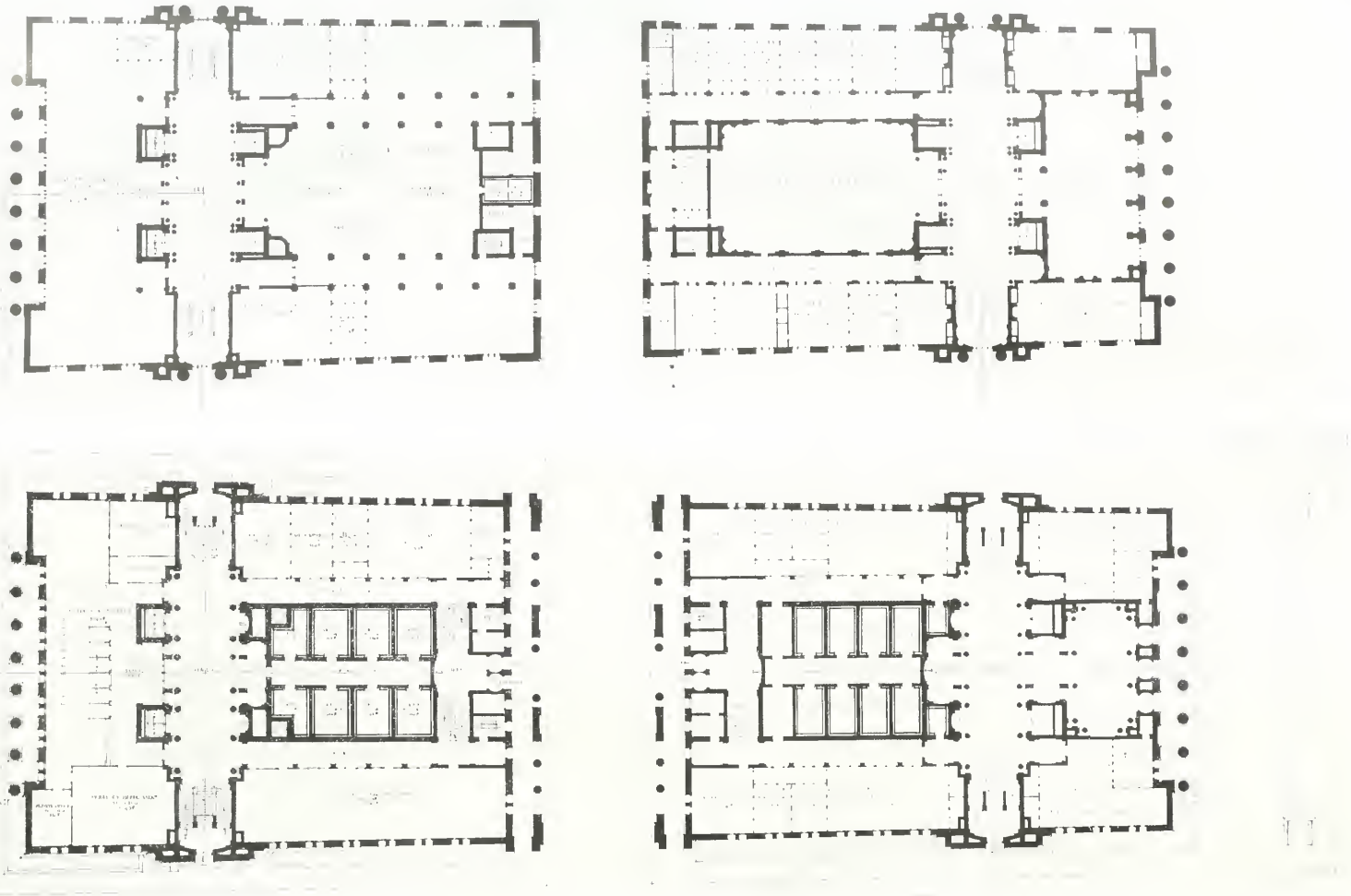




SECOND FLOOR
FIRST FLOOR

THIRD PRIZE DESIGN, CITY HALL, WINNIPEG, MAN.

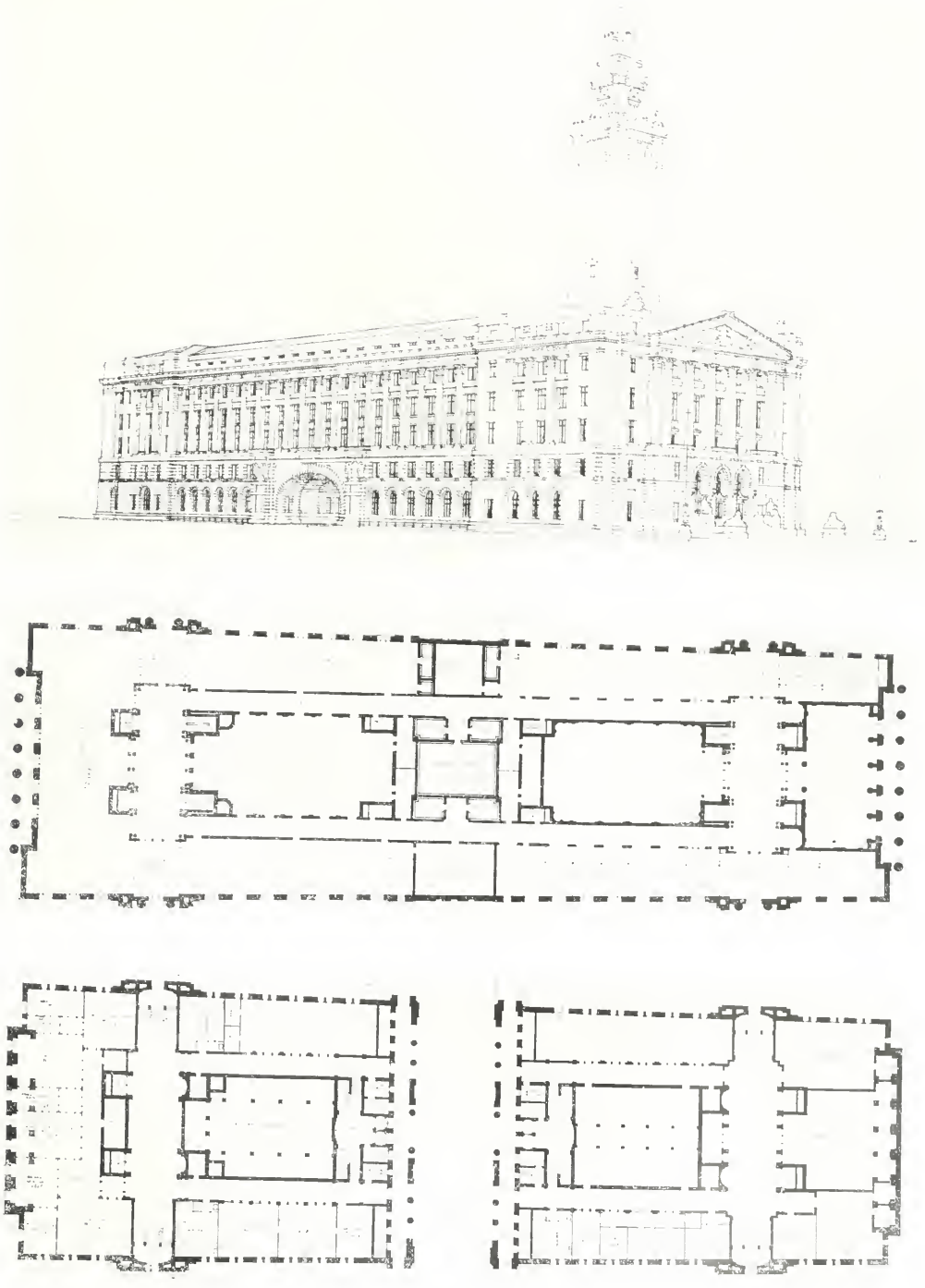
BROWN & VALLANCE
ARCHITECTS.



FIRST FLOOR PLAN.
GROUND FLOOR PLAN.

THIRD PRIZE DESIGN, CITY HALL, WINNIPEG, MANITOBA.

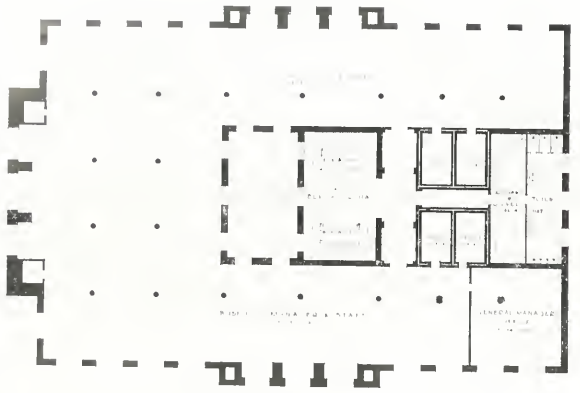
HUGH G. JONES,
ARCHITECT.

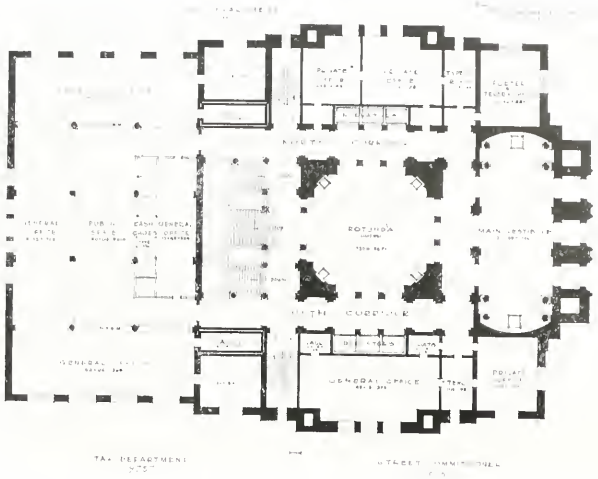


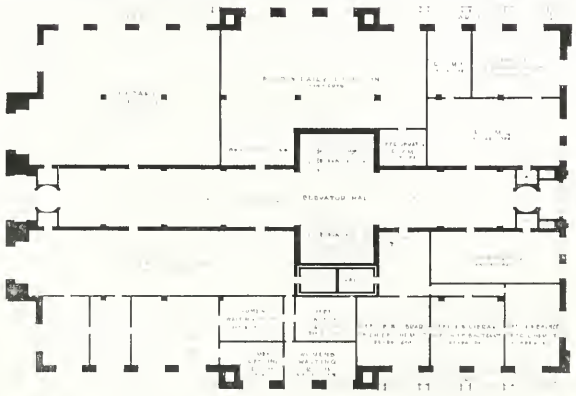
SECOND FLOOR.
BASEMENT FLOOR.

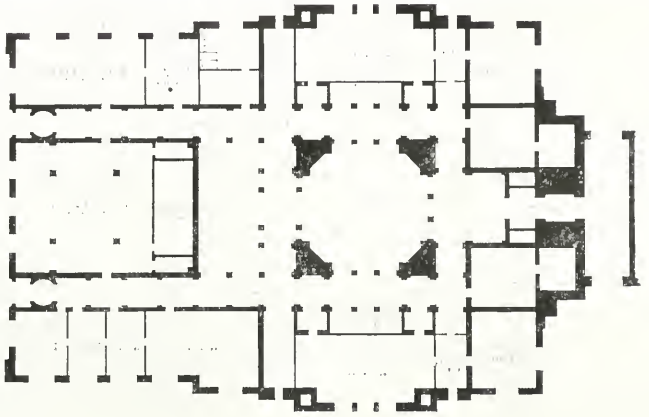
THIRD PRIZE DESIGN, CITY HALL, WINNIPEG, MANITOBA.

HUGH G. JONES
ARCHITECT





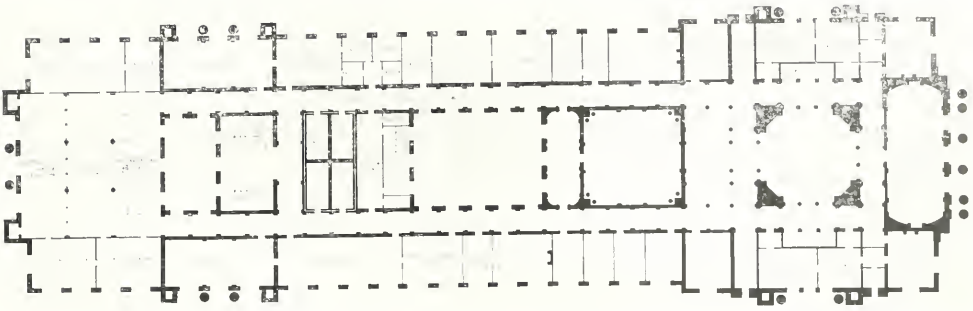


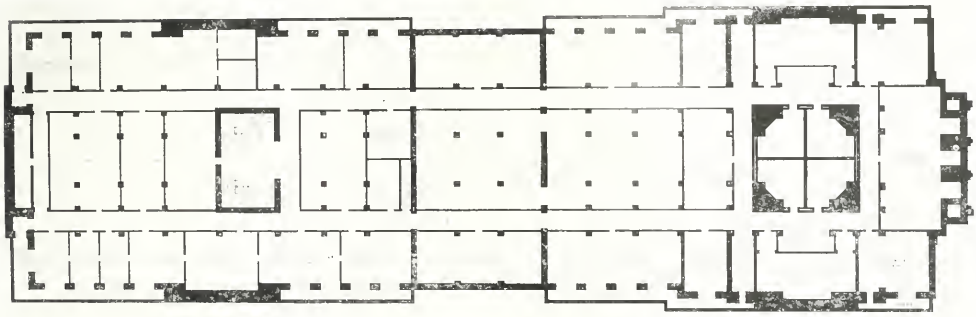


FIRST FLOOR PLAN.
GROUND FLOOR PLAN.

THIRD PRIZE DESIGN, CITY HALL, WINNIPEG, MAN.

JOHN D. ATCHISON,
ARCHITECT.





THIRD PRIZE DESIGN.
CITY HALL, WINNIPEG, MAN.
JOHN D. ATCHISON, ARCHITECT.

SECOND FLOOR
BASEMENT FLOOR
AND
PERSPECTIVE.

monumental staircases approaching these rooms are entirely independent of the elevator and staircase service intended for the ordinary transaction of business. Attention is called to the uninterrupted office space extending entirely around the building; this offers the maximum elasticity in the rearrangement of the departments.

In a general way the exterior is of light grey stone with a copper roof; the entrance halls and rotunda in light grey stone; the conference room, council chamber and court room in wood with very little ornament and a considerable amount of mural decoration. The price will allow considerable choice in the selection of materials and will require extended study to get the best results. There are 6,071,584 cu. ft. from basement floor to middle of roof, which, figured at 50 cents per cu. ft., gives $3,035,792. The tower at 35 cents amounts to $48,875.

THIRD PRIZE. SIDE ELEVATION. JOHN D. ATCHISON, ARCHITECT.

Third Prize Design—John D. Atchison.

The building shown is designed to cover the whole site available. The main idea of the design is to produce a City Hall which shall combine both monumental and modern commercial design in one building without losing any sense of dignity and harmony between the parts. The side elevation shown will explain this at once.

The approach to the main entrance floor is by an imposing flight of steps and leads through a spacious vestibule to the rotunda. From this rotunda direct access is obtained to the main staircase and to the elevators on each side in groups of three, which arrangement gives immediate service to any person requiring them. The main staircase runs from the ground floor to the second floor, and gives the necessary dignified and direct approach to the conference room, council chamber, and executive offices. The conference room is placed in a commanding position at the front of the building with balcony leading from same, and is given this prominence because it will be the room used for all civic receptions, and is of the first importance. The council chamber is on the same floor as the above with ante-room and gallery for public. It is monumental in design and surrounded by committee rooms and retiring rooms for the aldermen. The office of the mayor and board of control are also placed on this floor and with easy access to the conference room and council chamber. The plans explain fully the disposition of the remainder of the departments, but attention is called to the position of the tax department on the main entrance floor. It is located in an ideal position for the easy access of the public.

The rear portion of the building is treated as a modern office building. The entrance at both ends leads into a spacious central corridor from which stairs and elevators pass to all floors. It has been the endeavor to provide large open spaces for the big departments and this has been possible at the rear as shown on the plans.

If it is found necessary to build only a portion of the building at present, this rear portion is entire in itself and could be constructed independent of the remainder. An attic storey is provided which will accommodate the extra space required under the conditions. The plan of this is not shown.

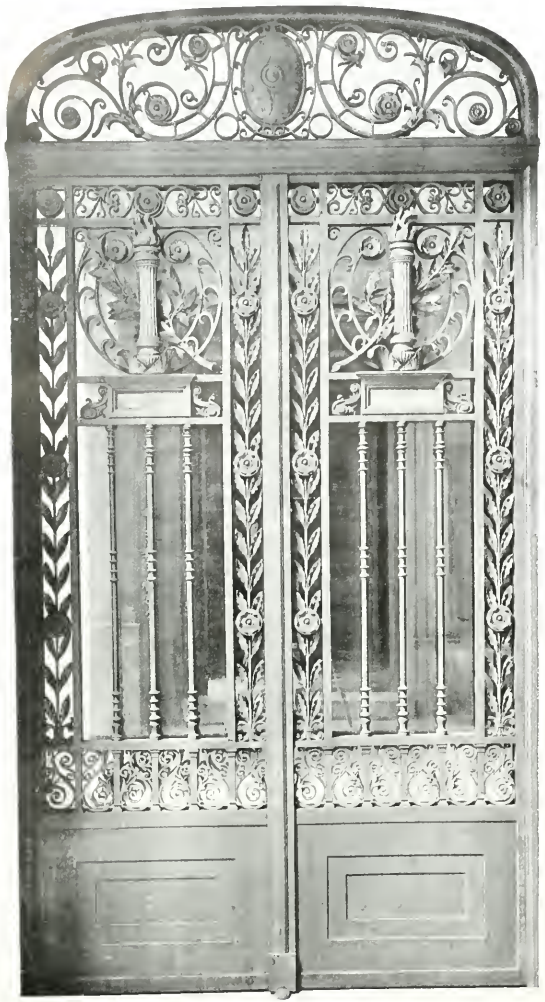
King street passes through the building and is made 60 ft. wide and unobstructed as required by the conditions. A light well is placed over the street which relieves it from becoming dark and objectionable. The tower is placed on the main axis of the front portion of the building and is carried to a height which will give it a commanding position over all buildings in the city.

The first story will be of dark grey granite and the upper stories of Manitoba limestone. The spandrils to windows on side elevations will be bronze. The cubic contents of the building is 5,933,000 feet, which at 50 cents a cubic foot amounts to $2,966,500.00.

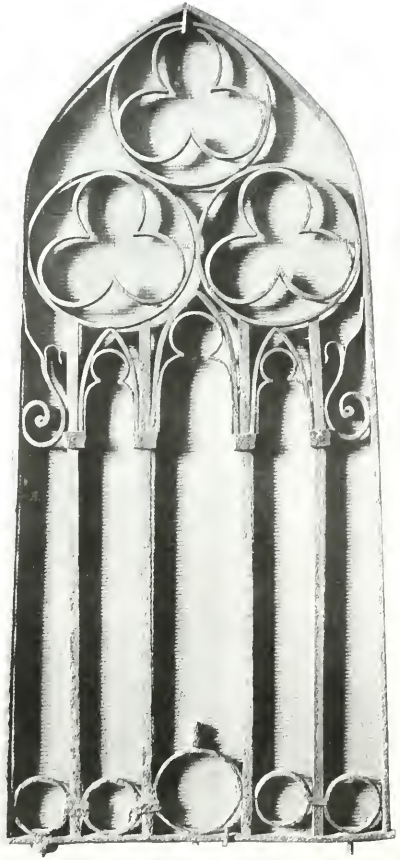
ENTRANCE TO THE COURT OF HONOR, COMPIEGNE.

ENTRANCE TO AN APPARTMENT, PARIS.

EXAMPLES OF IRON WORK, FRANCE.



EIGHTEENTH CENTURY.

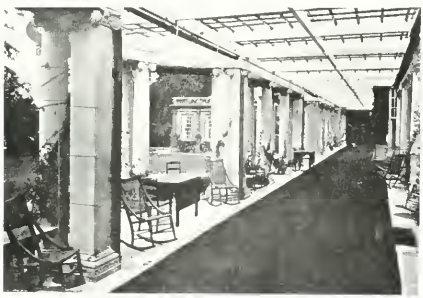


THIRTEENTH CENTURY.

EXAMPLES OF IRON WORK,

PARIS, FRANCE.

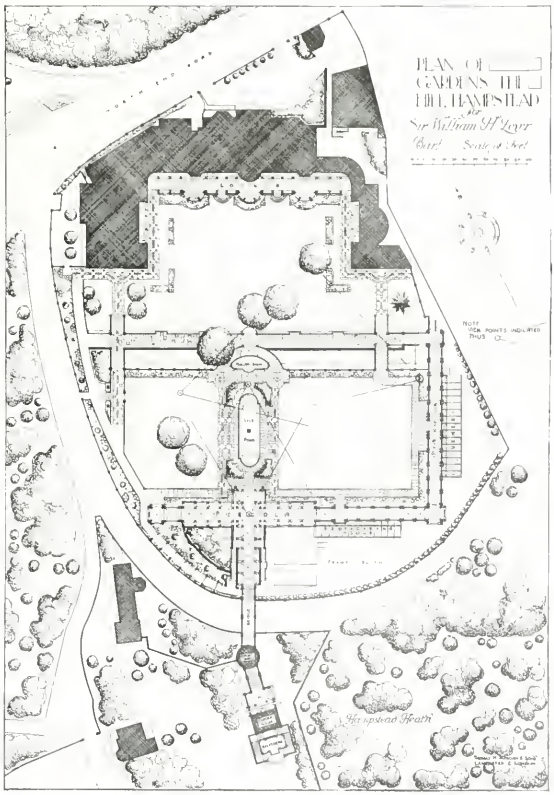
A MODERN ADAPTATION.



"THE HILL," HAMPSTEAD,

ENGLAND.

(From "The Art and Craft of Garden Making.")



THE GRANGE, WRAYSBURY.

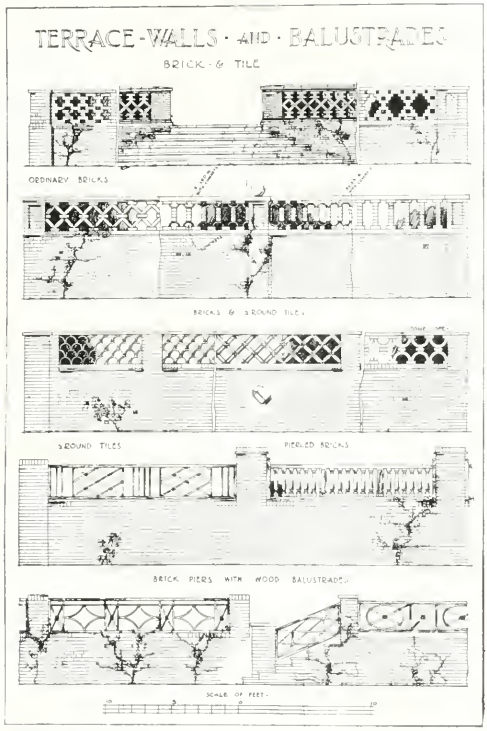
WYCH CROSS PLACE, SUSSEX.

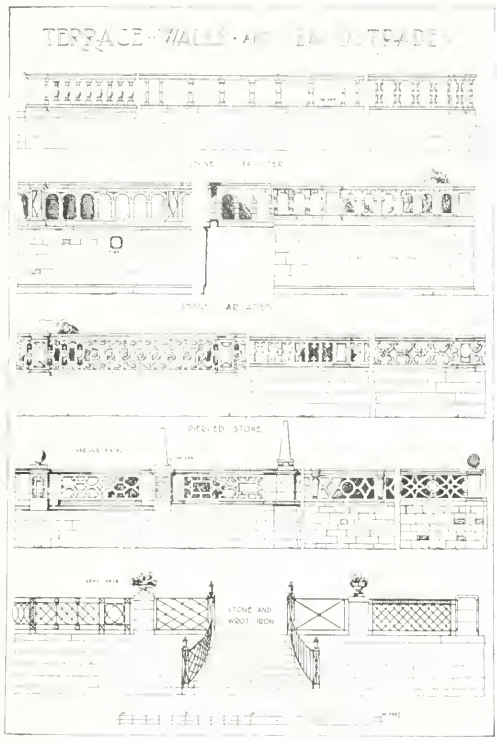
WRIGHTWICK MANOR.

BUNCHURCH LODGE.

GARDEN MAKING IN ENGLAND.

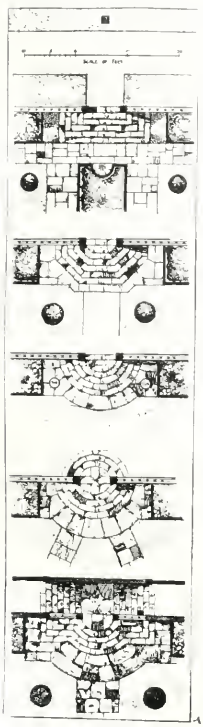
(From "The Art and Craft of Garden Making.")

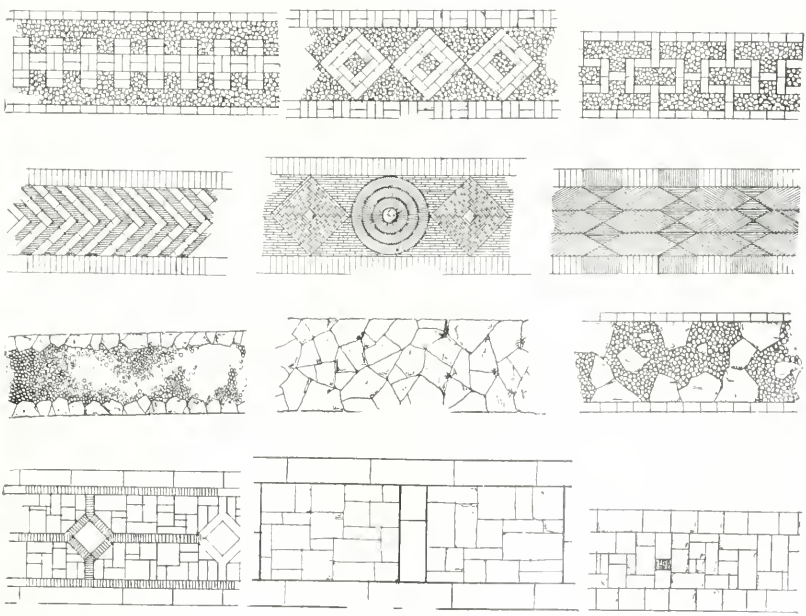




EXAMPLES OF BALUSTRADES, STEPS AND PAVED WALKS, ENGLAND.

(From "The Art and Craft of Garden Making.")





THE FOURTH EDITION of "The Art and Craft of Garden Making," by Thomas H. Mawson, shows a carefully compiled volume on the various features essential to modern gardens. The revision is far-reaching owing to the new conditions in every phase of the work. Mr. Mawson has grasped the spirit of change and presents forcibly and minutely the practical requirements accruing from this growing tendency in beautifying the general surroundings of the home. An example of the drastic revision is seen in the portions dealing with drives, entrances, lodges and carriage courts made necessary through the rapid progress of the motor car. A two-fold object has been kept in view by the author: the subjects are discussed so as to provide interesting consecutive reading, while each chapter deals with a special branch of garden making, complete in itself, giving the work some of the uses of a book of reference. The illustrations are especially attractive and made chiefly from photographs taken from the author's own work, introducing practical problems successfully solved. Several of the illustrations are shown in this number and will give the reader an idea of the artistic value running throughout the volume. The work is published by B. T. Batsford, 94 High Holborn, London. 404 pages, illustrated by 435 plans, sketches, and photographs, together with seven full page plates in color. Crown folio (15 ins. by 10 ins.), bound in art canvas, gilt. Price £2 10s. net ($12.15).

* * *

"HOW TO ESTIMATE" is the title of a very compact volume by J. T. Rea, dealing with the principles and practice of estimating in a logical and comprehensive manner. It covers a wide field and is indispensable to the builder, contractor, architect and surveyor as a handy reference for prices on all phases of building as well as a complete analysis of the methods for obtaining same. It explains the fundamental principles upon which all estimating is based in order to be of continued practical service even though the present values may change materially. The book is published by B. T. Batsford, 94 Hilborn, London. 530 pages, 400 illustrations. Fourth edition, revised and enlarged by 200 pages. Price, 7s. 6d. ($1.80).

* * *

A REPORT on the Building and Ornamental Stones of Canada, by Wm. A. Parks, B.A., Ph.D., has been issued recently from the Department of Mines under the direction of Eugene Haanel, Ph.D., Director of the Mines Branch. The volume deals with the chemical, physical and geological features of building stone; the methods of quarrying, testing, and preparing stone for the market; and a systematic description of the various stones found in the Ontario district south of the Ottawa and French rivers. This report is of extreme value to the architect and builder and can be secured from the Department of Mines, Ottawa.

AFTER A THOROUGH TEST of J-M asbestos roofing and a siding known as J-M Asbestoside, the Northern Electric Heat and Power Co., of South Porcupine, Canada, has adopted these materials in their rebuilding operations. A copy of a recently published booklet describing this remarkable roofing in detail will be forwarded by the H. W. Johns-Manville Co., New York, to anyone interested in difficult roofing problems.

* * *

AT THE BOARD MEETING of Oshawa Hospital, held recently, a deputation consisting of Drs. Kaiser, McKay, and Carmichael, waited upon the board with an offer of $10,000, from Mr. and Mrs. George H. Pedlar, to be used in the construction of a new surgical wing to the Oshawa Hospital, in connection with the proposed addition to the present building. This handsome donation was immediately accepted with the heartfelt thanks of the board. The surgical wing was presented by Mr. and Mrs. Pedlar as a memorial to their son, the late George H. Pedlar, jr., after consultation through Dr. Kaiser with the other doctors of the town, as to the type of equipment most urgently needed.

* * *

THE CITY OF MONTREAL has awarded to the John McDougall Caledonian Iron Works two twelve-million imperial gallon pumping units, at Company, Limited, of Montreal, the contract for a price of $50,046.00. The units consist of two 20-inch three-stage Worthington turbine pumps directly connected to 750 brake horsepower Browett-Lindley High Speed Engines, running at 350 r.p.m. and operating against a water pressure of 92 lbs. The three-stage pump of the John McDougall Company was selected as a type that already had given the city very satisfactory service for a number of years, operating 24 hours per day. This makes the thirteenth pumping unit furnished to the city of Montreal by this company and Henry R. Worthington, aggregating a total pumping capacity of over one hundred million imperial gallons.

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CONSTRUCTION

VOL. VI NO. 5

CONTENTS FOR MAY, 1913

Full Page Illustrations

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GRAPHIC ARTS BUILDING, TORONTO, CANADA

BRANCH OFFICES:

MONTREAL WINNIPEG VANCOUVER CHICAGO NEW YORK

U. S. POST OFFICE, NEW YORK CITY.

MCKIM, MEAD & WHITE, ARCHITECTS.

¶ *New Departmental Buildings at Ottawa—Advisability of competitions—The irreparable mistake of following the proposed scheme.*

ALL ARCHITECTS will commend the action of the Government in calling for general competitions for the new departmental buildings. Nothing has proven more of an eyesore than the Victoria Memorial Museum at Ottawa. In design, in plan and in construction it is lamentably weak. Our readers are too well aware of its faults to take space in mentioning them, but we feel that one example of this kind affords ample opportunity for our apologetic natures. It is only by allowing various architects to develop their ideas that we can arrive at a satisfactory solution. And it is more than gratifying to feel that a part of the Government officials, at least, are broad enough to realize what a terrible mistake it would be to have the new buildings erected by the same corps of artists who were responsible for the museum. Our commercial architecture in Ottawa is reaching a high standard and demonstrates the truthfulness of Leonard Stokes' statement that the Canadian commercial buildings are better, architecturally, than those in the old country. These same men can demonstrate their ability if allowed to execute their ideas already formulated in reference to the needs of the Government. The great demand for office room is felt in all departments, and as a consequence, the planning of new structures will soon become imperative. The location, size and style will have considerable to do with the future charm of the capital. Word comes that the Government will shortly call for a general competition of British and Canadian architects to submit plans based on the general design submitted by E. White. Is it possible that the men in charge of this work will allow the need of accommodations to blind them to every other consideration? Can they be so foolhardy as to accept a scheme which is absolutely incongruous to the design of the Parliament Buildings, the avenues which lead up to it and to the natural contour of the ground upon which it is to be located. Some potent influence must be brought to bear—and at once.

¶ *The replanning of Ottawa—Proposed scheme by E. White severely criticized by architects in general—A question of vital importance.*

THE CITY OF OTTAWA is scarcely aware of the momentous problem which is agitating the artistic sensibilities of Canadian people. It is not a question of whether the capital shall have a comprehensive plan for the beautification and future development of the city. This fact has already been settled. But the chief point to be considered is the selection of plans which will eradicate the blunders of the past and eliminate the possibility of future mistakes.

The city of Ottawa, destined to be the political centre of a great country has natural advantages over other capitals. Located on a high cliff overlooking the Ottawa River, it commands an impressive view of the distant Laurentian hills. At the present time there are two hundred and thirty-seven acres devoted to parks and playgrounds within the city limits and two thousand acres of natural park adjacent.

In view of the natural advantages and the wonderful possibilities presented, we must bend our efforts in a manner most worthy of our well known ability in matters of civic improvement. We cannot afford to consider the cost. This is the reason why neighboring cities are spending millions of dollars to obliterate the false ideas of narrow visioned men of yesterday. Surely we have learned this lesson already and why repeat the same absurdities condemned so harshly in those who failed to rectify the ignorant plans of their predecessors.

As N. Cauchon said in his lecture at Ottawa—summarized in another part of this issue: "Prominent architects who visit the city invariably express their regret that at the time when land was comparatively inexpensive this street (Metcalf) was not sufficiently widened to permit of proper treatment." Metcalf street, it is claimed, could have been made a wide avenue leading to the Houses of Parliament. The point arises, if it were possible at one time, cannot it be made practical now. It may mean the demolition of many buildings and at a great cost. But why hesitate, for these reasons? Ten years hence the

capital of Canada will be so important and the developed resources of this country so vast that the expenditure necessary to make such a radical change now will have been more than justified. Comparatively speaking, it will cost no more to make a wide approach to the Parliament Buildings now than it would have five years ago. But the rapid growth and the high class of buildings being erected in Ottawa to-day will exclude the possibility of such a change unless done in the very near future.

Several reasons have been offered why Edward White's plan for the replanning of Parliament Hill should not be accepted. Unquestionably the streets of the city should have been considered in relation to the proposed buildings. There is no point of interest at the head of any one approach and the commanding vistas, for which foreign cities are so famed, do not enter into the scheme at all. This, if nothing else, should be sufficient cause for its rejection. A second point was brought out by Frank W. Simon, a well known British architect, who said: "Ottawa is a most picturesquely situated place. Your present Parliament Buildings are wonderful, both as regards architecture and natural situation. I understand you are going to add new ones; I have, in fact, seen sketches of the proposed buildings and I am strongly of opinion that they should be designed in harmony with the present structures. As proposed, they would challenge these latter in a rather disastrous way. I do not, consequently, approve of Edward White's plans."

Leonard Stokes, in his recent visit to this country, while unwilling to comment on the proposed scheme for the new departmental buildings, said: "There should be a great deal of consideration before you take any step. The site the Government has taken north of Wellington street is a difficult one to deal with. You do not want to make another mistake."

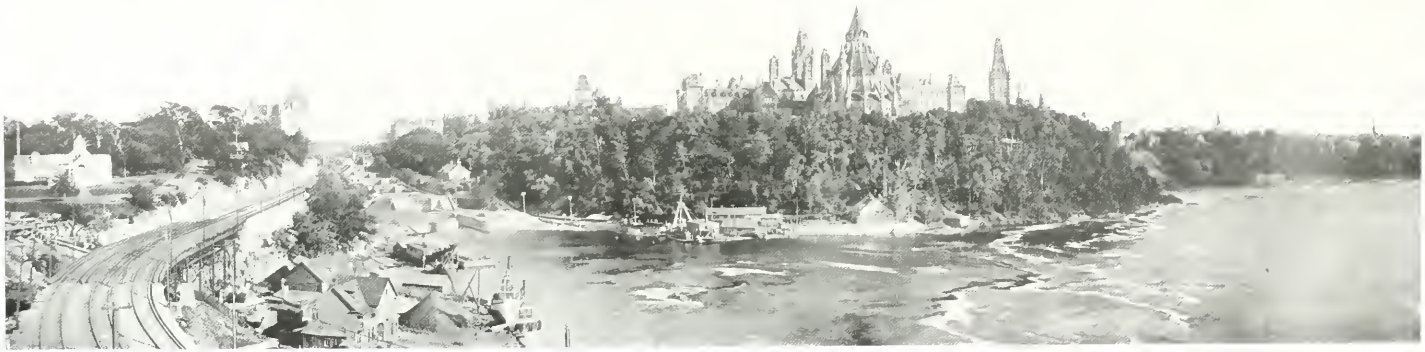
Mr. Stokes suggested the cutting away of the cliff around Parliament Hill and constructing at a lower level a large semi-circular building on it for departmental purposes. This structure would look out on the river and locks, extending from a point east of the East Block, following the side of the cliff around below the Parliamentary Library to the jog in the cliff near the West Block. The cliff could be cut back to a sufficient distance to allow for the width of the building as well as a roadway on the concave side of the semi-circular structure. The building would be connected with the Parliament Buildings by underground passages. There would be lots of light as all the windows look out onto an unobstructed view and the building would be long and narrow. It would also give an impressive effect to Parliament Hill, particularly when viewed from the river on the east or west sides, presenting a picture of the river, then the rugged cliff for a few feet, then the departmental building, and towering above it the present Parliament Buildings, all one grand series.

It is to be sincerely hoped that among all our representatives in Ottawa there are a few whose vision is keen enough and whose patriotism is so deeply rooted that they will make a decided stand for both a practical and artistic plan. We cannot afford to accept the first scheme proposed, especially if it contains little of commendation. Let the architects and others interested in civic improvement think seriously over this matter and after mature deliberation express yourself freely and forcibly. We need united action upon a question which means so much to every Canadian.

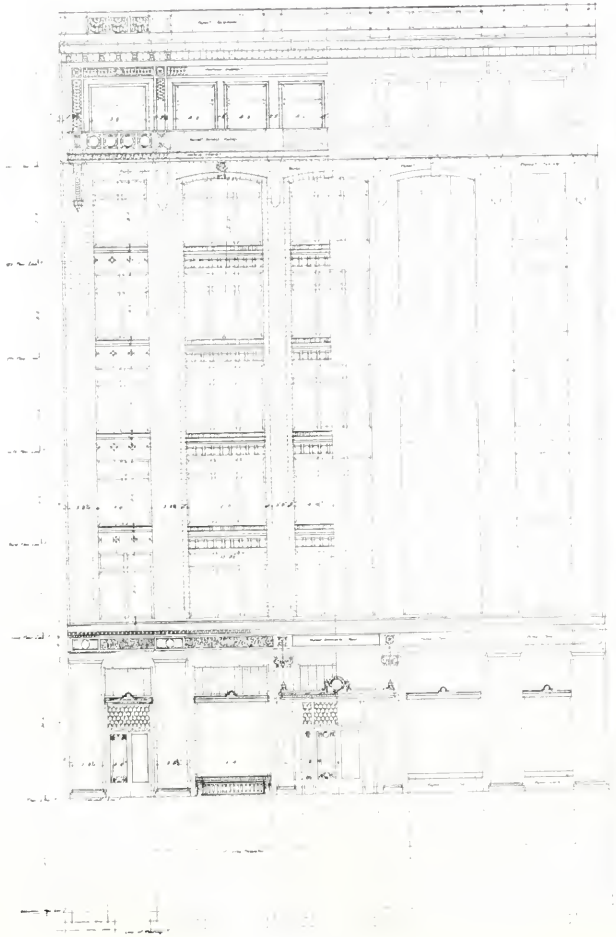
¶ *The atelier work—Its aid to the College graduate and the beginner—Essential to those lacking educational advantages.*

THE CRITICISM that the editorial on atelier work in the last issue is detrimental to the interests of the departments already established in the various colleges is unwarranted. The school has its own individual function and is worthy of the responsibilities placed therein. It lays the foundation for the student in his eagerness to grasp the essentials of modern work as based upon the architecture of former generations. It teaches him to concentrate his efforts on well known precedents of pure style and harmonious proportion. It gives him the power to grasp the problem intelligently, the ability to adapt pure and wholesome products of good art and the knowledge of how and where to locate the various examples which furnish the proper incentive in his work.

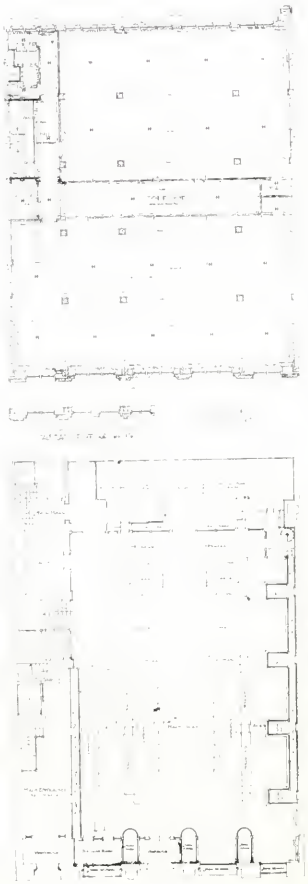
All this and more is derived from the careful and conscientious efforts of the college courses. But the atelier has its mission also. Here the student under the guidance of one or more practising architects of high standing can make himself more proficient in the use of his mechanical training. His work assumes the nature of a post-graduate course and broadens the theoretical into the practical. The student can apply himself to the advanced problems, while the young man who cannot avail himself of the preparatory work in college, is able to grasp the fundamental principles under the guidance of men who are well versed in the needs of the beginner and who are fully capable of criticizing in a wholesome practical manner. We do not wish to detract one iota from the university courses, in fact we strongly urge every young man to grasp the exceptional opportunities which such institutions extend. But in placing an H.C. upon the young man of ability simply because he is not in a position to enjoy these privileges is wrong and should not be countenanced. Were we to debar from the profession all those who never graduated from a school of architecture, there would be a dearth of good men to carry on the large amount of work which is being done throughout the Dominion. Since some of the largest offices debar the draftsman who has not a degree we feel that our readers would more than appreciate a statement from them as to how they justify their position.



THREE GENERAL VIEWS OF OTTAWA, ONTARIO.



DETAIL OF MAIN FACADE.



GROUND FLOOR PLAN.

MAIN FACADE.

BIRKS BUILDING, OTTAWA, ONT. WEEKS & KEEFER, ARCHITECTS.

STORE ROOM [illegible] BUILDING, OTTAWA

Two New Buildings, Ottawa, Ont.

FOR SOME YEARS the commercial side of architecture in Ottawa has been at a complete standstill. Few buildings were erected until recently which showed any marked advance, and consequently a false impression was given to the thousands who visit the capital city annually. It is encouraging to note the vast improvement in this direction during the last two or three years, and bespeaks a promising future.

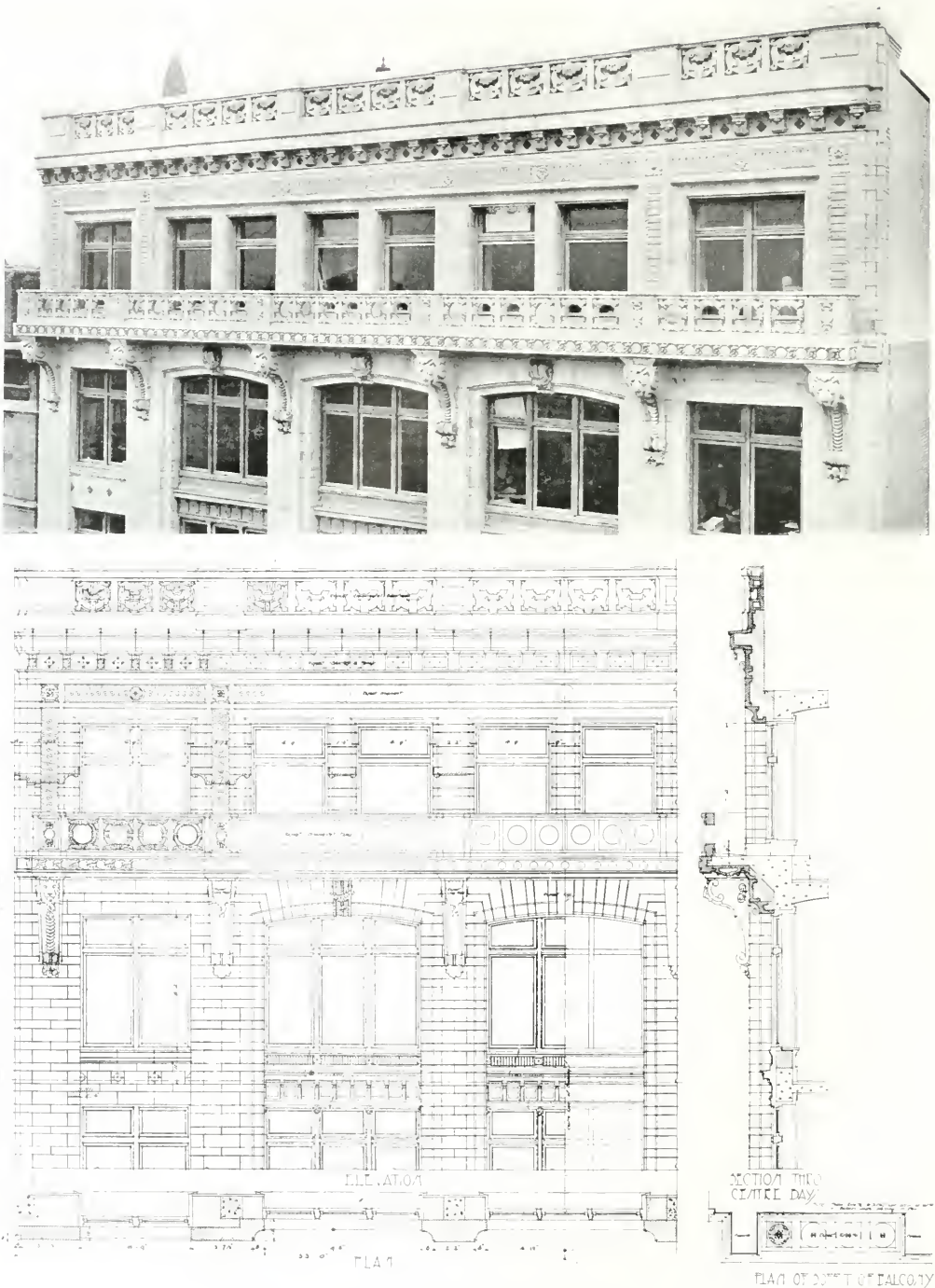
No city should receive more attention to the character of its buildings since the whole country is more or less measured by the artistic development of its capital. Ottawa is exceptionally favored in its natural surroundings and should allow of no new structure which might detract from the general artistic appearance of its streets. Once the atmosphere of beauty permeates throughout the city there will be little need of unfavorable comment.

The buildings illustrated in this number reveal the high standard set by the profession, while others in the course of erection plainly demonstrate that a decided step forward has been made along the lines of dignified and artistic architecture.

Birks Building, Ottawa.—The new Birks building is a reinforced concrete structure designed to accommodate the business of Messrs. Henry Birks & Sons, Limited, jewelers, who occupy the ground floor, basement and half of the second floor. All floors above the ground floor are devoted to office purposes. The facade of the building is of English terra cotta. Upon the interior the store is finished with moulded plaster ceilings supported by columns of Violet Breche marble, the slabs being 14 feet long in one piece; the floors are finished with marble mosaic, while all fixtures, counters, show cases, etc., are of mahogany. The heating is by the vapor system. All public corridors, toilets, etc., are finished in terrazzo and marble.

Canada Life Building, Ottawa.—The building for the Canada Life Company is a fireproof structure with reinforced concrete columns and slabs. The ground floor is occupied by the business offices of the Canada Life Assurance Company, the upper floors being subdivided for private offices. The entrance hall is panelled in Missisquoi marble with marble mosaic covering the entire ground floor. The walls of the business office are panelled with African mahogany, the ceiling beams and cornice being richly modelled in plaster. The front of the building is finished in English semi-glazed terra cotta, and was one of the first high buildings to be erected on Sparks street.

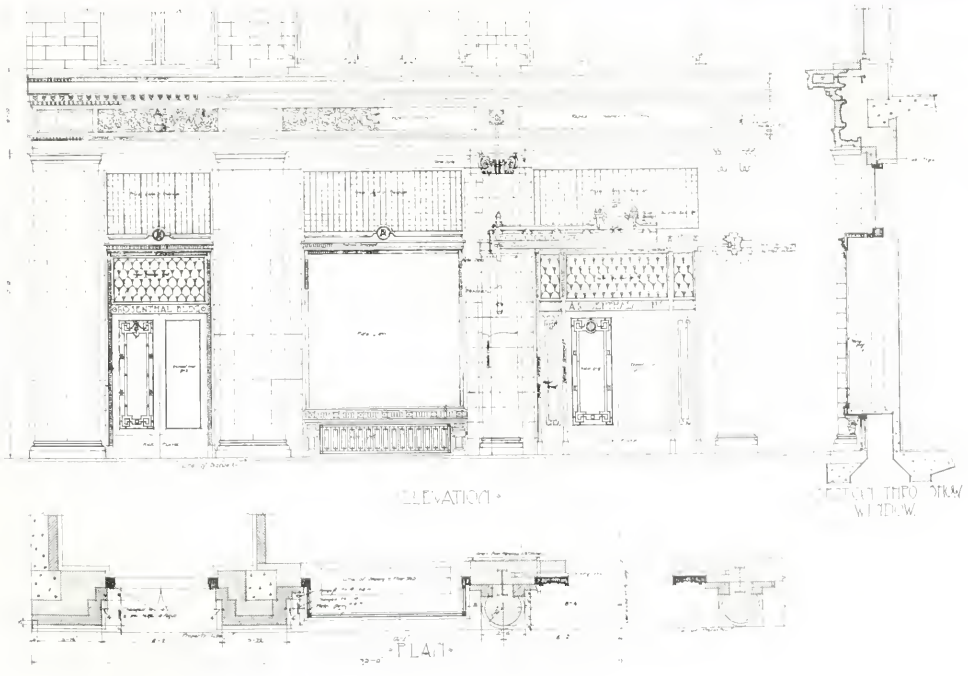
One is led to believe that the new impetus to building will bring about a wholesome atmosphere conducive to an artistic centre. It is already noticeable in the business sections, the hotel and apartment districts and throughout the home territory. With the proper selection of a design for the new departmental buildings, Ottawa will undoubtedly become one of the most beautiful capital cities of the world.



DETAIL OF CORNICE AND BALCONY.

BIRKS BUILDING, OTTAWA, ONTARIO.

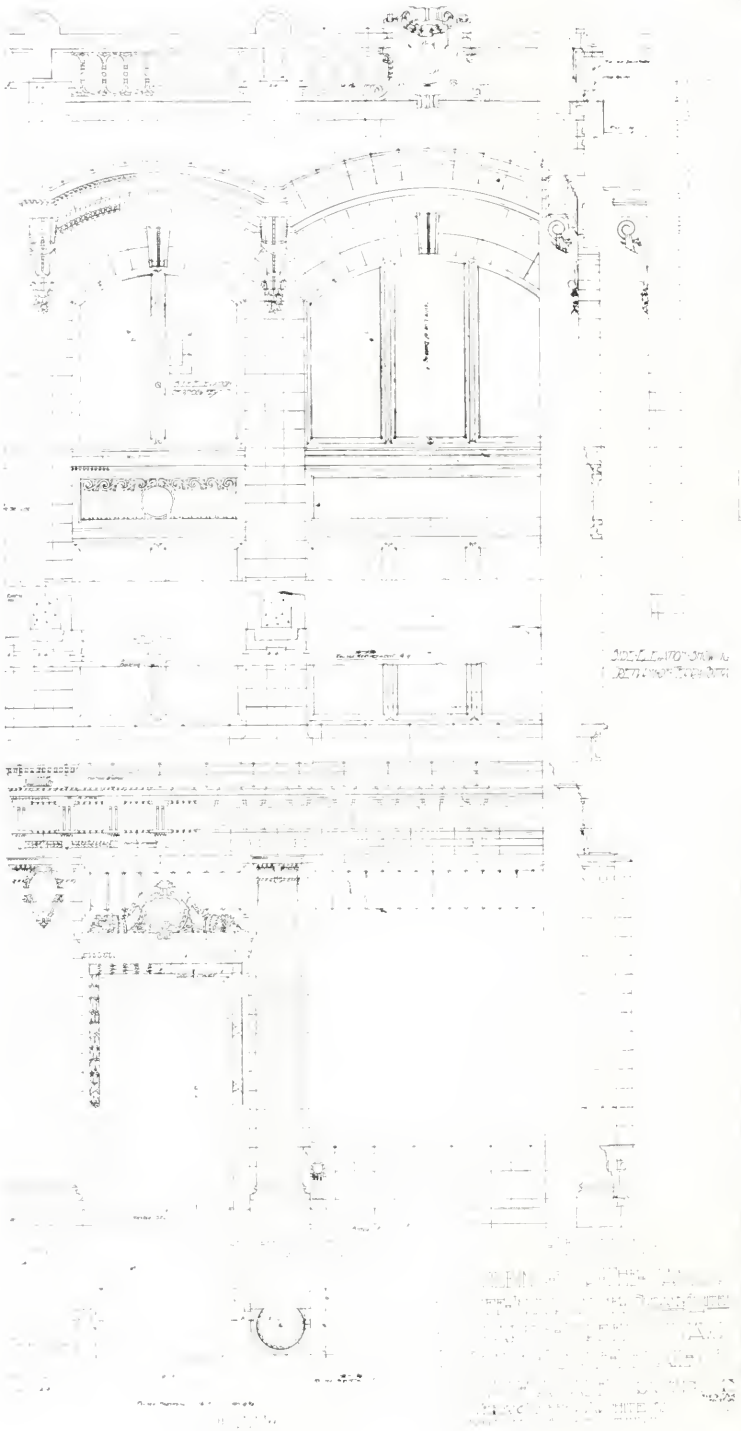
WEEKS & KEEFER, ARCHITECTS.

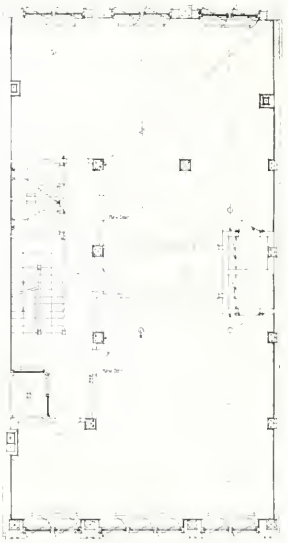


DETAIL OF FIRST STORY.

BIRKS BUILDING, OTTAWA, ONTARIO.

WEEKS & KEEFER, ARCHITECTS.



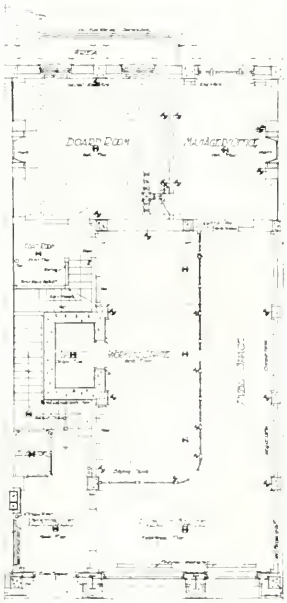


TYPICAL FLOOR PLAN.

CANADA LIFE ASSURANCE BUILDING,

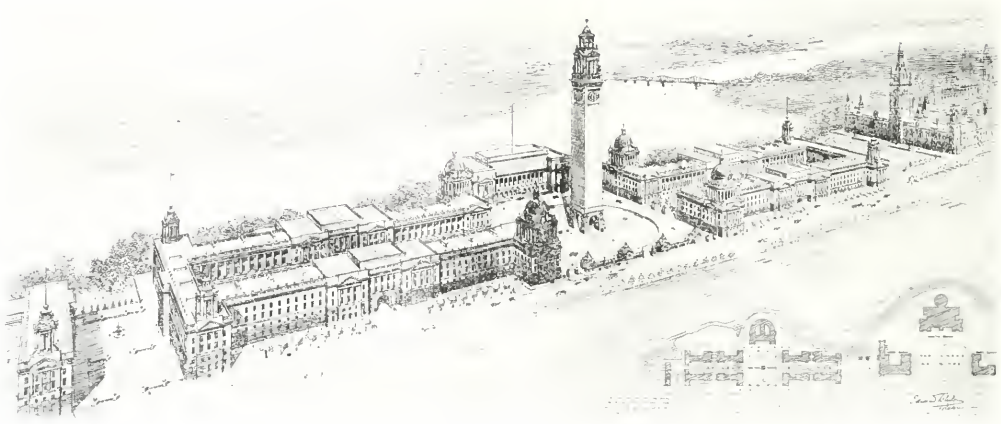
OTTAWA, ONT.

WEEKS & KEEFER, ARCHITECTS.



FIRST FLOOR PLAN.


CANADA LIFE
ASSURANCE
COMPANY,
OTTAWA, ONT.
WEEKS &
KEEFER,
ARCHITECTS.



PERSPECTIVE VIEW OF PROPOSED SCHEME, BY E. WHITE, ARCHITECT.

The Replanning of Ottawa

FOR some time the replanning of Ottawa has been the cause of a great deal of discussion and consideration by the people of the Federal Capital. Particularly has this been the case during the past year, since it became apparent that the Government must enter upon an extensive building programme if it is to cope with its great need of office accommodation. At present a great number of private buildings are rented to supply office space and this arrangement does not prove at all satisfactory because of the scattering of departments and branches thus necessitated over various portions of the city. The volume of Government business is rapidly increasing, due to the remarkable growth of the country.

Last year the Government expropriated a considerable tract of land west of Parliament Hill, the area extending from the cliffs which overlook the Ottawa River to Wellington street. It is somewhat less in width than the portion commonly known as Parliament Hill, which also stretches from Wellington street to the cliff. The new district extends along Wellington street approximately 1,700 feet.

How to best utilize this new area for departmental buildings is the question that has brought the discussion of replanning the city to an issue. N. Cauchon, of the engineering firm of Cauchon & Haycock, is preparing plans of the city and surrounding localities for the Government. The primary object is to provide a map for the guidance of the Provincial Railway and Municipal Board in passing upon plans of new subdivisions, as well as to form a groundwork for the future improvement of Ottawa and outskirts in keeping with the artistic and practical needs of our Capital City.

It is believed that when this new map has been submitted to the Government, steps will be taken to provide a commission with authority over the entire question of improving the layout of the city. It has been the cause of considerable regret that when the Houses of Parliament and the East and West Blocks were built no provision was made to have a wide central avenue leading through the city to them with ample provision for a monumental approach to the main building and Parliament Square. Excellent use is made of similar opportunities in other capital cities, but in Ottawa, Metcalf street, which could have formed such an approach, is slightly out of line. Prominent architects who visit the city invariably express their regret that at the time when land was comparatively inexpensive this street was not sufficienlty widened to permit of proper treatment

Mr. Cauchon recently gave a lecture before the Women's Art Association in which he advanced a scheme to provide against a similar mistake in the new group of departmental buildings. He suggested the widening of Lyon street, which parallels Metcalf street four blocks further west, into a broad boulevard running through a central portion of the city and having for its focal termination the main feature of the new departmental group. The treatment would be somewhat similar to the Champs Elysees in Paris, which forms an impressive vista from the Arc de Triomphe to the Louvre. The main feature in the departmental group would form a commanding position when looking up the widened Lyon street, which could be called the King's Way.

The Dominion Government recently engaged the services of Mr. E. White, of England, who—assisted by Sir Aston Webb—prepared a plan for the treatment of the lands recently expropriated. One of the accompanying illustrations shows their

SKETCH SHOWING EXISTING BUILDINGS.

plan as submitted to the Government—a view from the south. A second sketch shows the view from the Quebec side of the Ottawa River as the cliffs appear to-day, and a third as they would appear with the erection of the proposed buildings.

Mr. Cauchon, in discussing these plans, considered them to be wrong in principle. He argued that in the treatment of extending flat surfaces, long horizontal lines should not be used since they only tend to accentuate the flatness, but that vertical lines should predominate in the composition to balance the low effect of the natural conditions. He maintained that the proposed buildings are wrong also in plan because no advantage is taken of the city streets in order to provide focal points for the existing vistas.

He stated further that the plans were wrong in style, being a very modern Renaissance, and would not harmonize with the Gothic architecture of the Parliament Buildings, which naturally form the keynote to the whole composition. The central tower was also criticized as not being an integral part of the building and lacking ostensible function. He suggested a style of architecture that, while not necessarily of the Ogival Gothic which prevails in the main Parliament Buildings, would be of a transitional character naturally evolved from it. For example, he cites the early French Renaissance, which combined adaptability of plan and openings to modern needs. A tall building was recommended along Wellington street somewhat similar to the Chateau Laurier, roughly outlined in composition with towers facing the vistas and curtain walls between.

For the river elevation the idea was advanced to have a series of masonry terraces to the water's edge, the architectural lines of which should be carried around the face of the present promontory on which the existing Parliament Buildings are located. This irregular promontory would be cut back in order that the lower stories might not be foreshortened as they now appear when viewed from the opposite side of the river. Such a treatment with an embankment driveway along the water's edge would unite the present and the future buildings in one architectural composition with the river as the common plane. Mr. Cauchon explained how this was particularly desirable from the fact that the new buildings would be on a bench some 40 or 50 feet lower than the present buildings, and unless united to the former in a comprehensive composition would always appear as a disjointed grouping.

Mr. Cauchon said that the architects in all parts of the Dominion should take an even greater interest than heretofore in the Federal Government buildings. He urged that they express their views freely, in order that the public may become enlightened and co-operate with them in raising the artistic standard of our public buildings and make them representative of Canada's great growth. He strongly urged that the design of all great public buildings should be on a competitive basis, giving the public a chance to get the best and the architects an opportunity to produce structures of artistic and practical merit. It is only in the case of public buildings that there is an opportunity of designing idealistic work. With strong, wholesome criticism from the profession and united action on the part of all deeply interested, the development of Ottawa will be along wholesome and practical lines.

SKETCH SHOWING PROPOSED ADDITION.

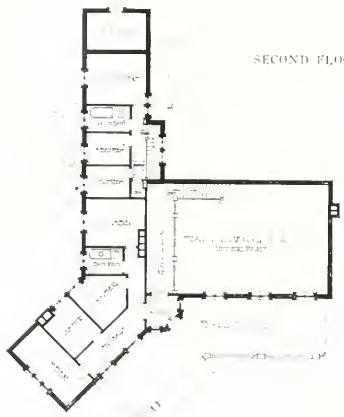
OTTAWA HUNT CLUB,
OTTAWA, ONTARIO.

WEEKS & KEEFER, ARCHITECTS.

Two Club Buildings, Ottawa, Ont.

CANADA'S WEALTH in natural sports has necessitated the construction of club buildings throughout the various provinces. The rapid growth in the cities has increased the number of such organizations and enriched the landscape with artistic and homelike buildings. Ottawa already possesses a number of attractive clubs, and is continually adding others, which are equipped in a thoroughly practical manner and whose architecture furnishes an expression of the spirit within. The examples illustrated here are representative of the vast improvement in this direction and augur well for the future position the Dominion may strive to hold in this phase of its life.

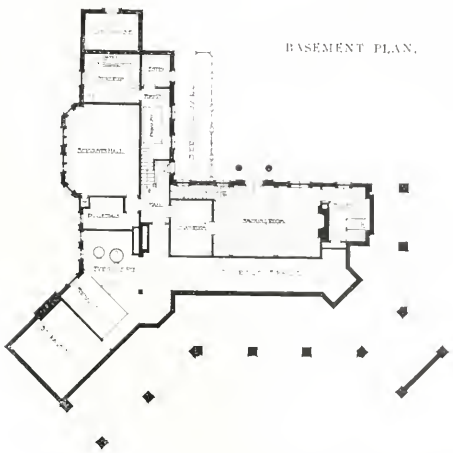
Hunt Club Building, Ottawa.—The building is located on a magnificent site on the Rideau River, about seven miles from Ottawa. The central feature of the club house is the large assembly hall, two stories in height, with easy connection to dining-room and service portion. The plan is of a "Y" type, giving a maximum amount of light to all parts of the building. The sleeping rooms for members are located above the dining-room, kitchen, pantries and servants' quarters being located in the rear wing. By taking advantage of differences in grade the smoking-room is located below the assembly hall, the floor being at the level of the stable yard in the rear. The building is of frame construction, the exterior being finished with cement stucco on metal lath. The overhanging roof of the verandah and porte cochere gives a very pleasing effect of shade.



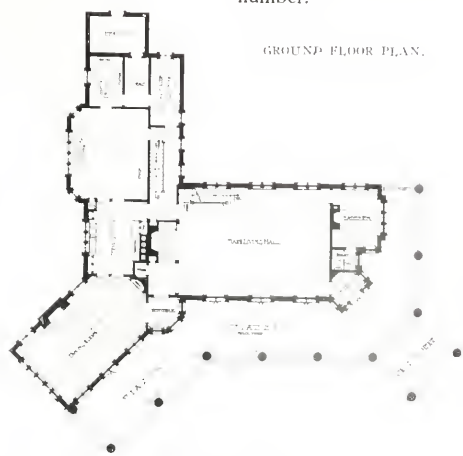
SECOND FLOOR PLAN.

The Royal Ottawa Golf Club.—The Royal Ottawa Golf Club is situated on the Aylmer Road about four miles from the city of Ottawa. The site is a commanding one, overlooking the links, the River, and in the distance the Laurentian Hills. The building is built of rough red brick with wide white joint, above which the finish is gray stucco. The roof is shingle, which have been allowed to weather to a warm gray tone. A broad verandah encircles the front wing of the building, while a dining verandah has been provided at the rear. The interior on the main floor has been devoted to the various club rooms and service, the upper floor being laid out for members' bedrooms and servants' quarters. Large fireplaces give a homelike appearance to the interior; the ceilings are beamed, and the walls panelled with open strap work. Large and numerous windows give an excellent view in all directions. The building is heated and extensively used in the winter as well as during the golf season.

A few club buildings recently erected in the States are shown in this number.

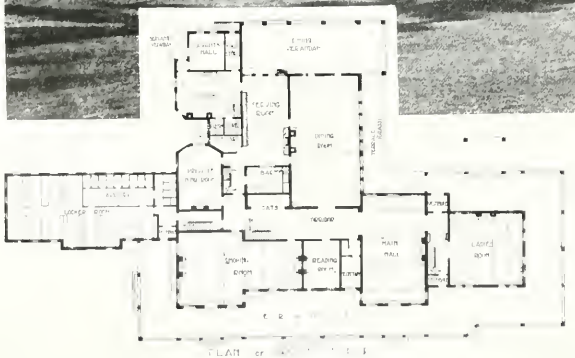


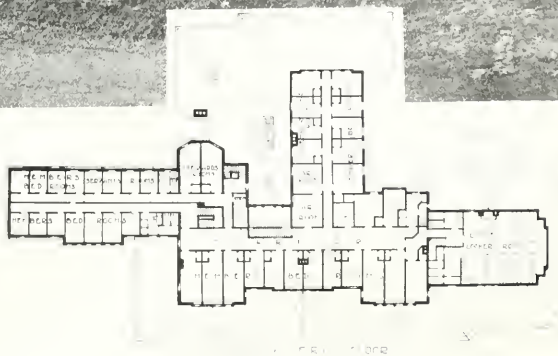
BASEMENT PLAN.



GROUND FLOOR PLAN.

PLANS OF OTTAWA HUNT CLUB, OTTAWA, ONT. WEEKS & KEEFER, ARCHITECTS.

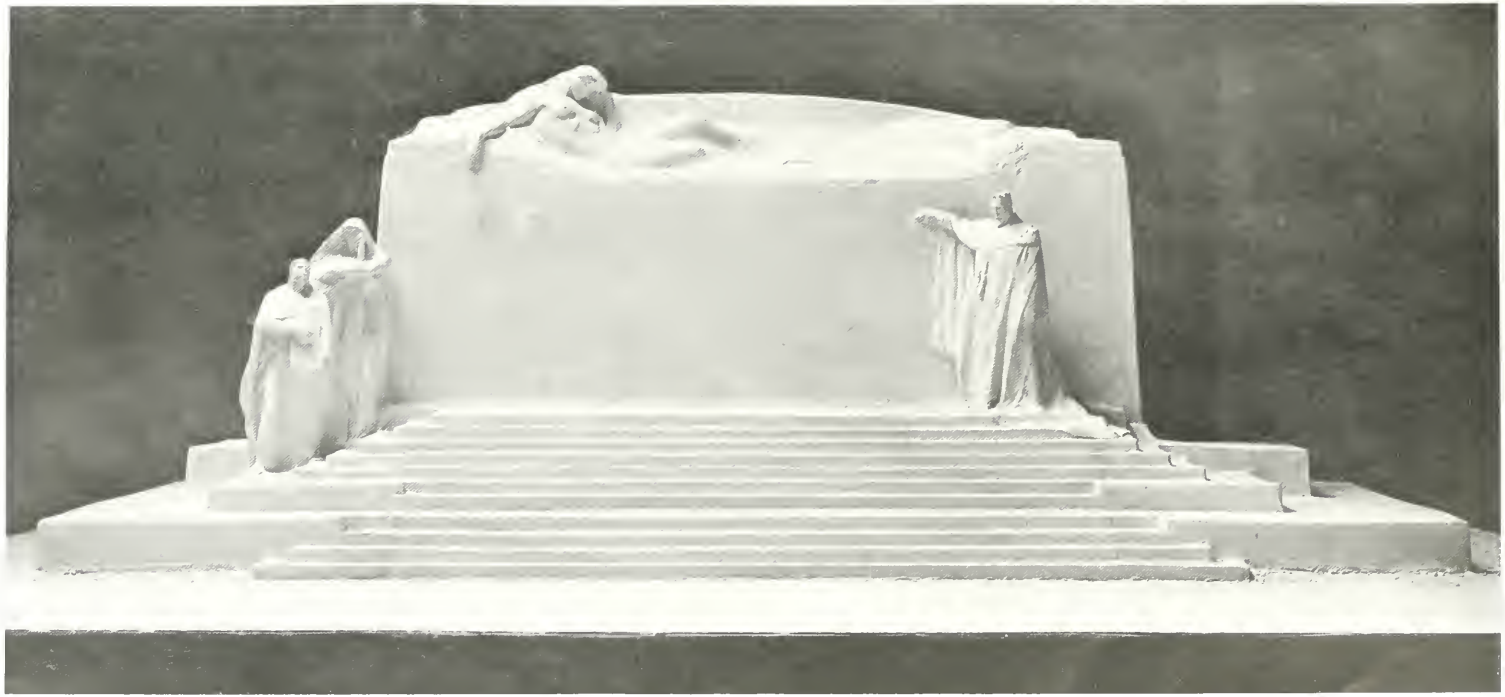




OTTAWA, ONT.

ROYAL GOLF CLUB.

HORWOOD, TAYLOR & HORWOOD,
ARCHITECTS.



MEMORIAL TO THE LATE KING EDWARD VII.

The above design has been accepted by the Federal Government as a fitting memorial to the late King Edward VII. The site for the monument is on the slope of Parliament Hill, Ottawa, and will be fifty-five feet long, the lower figures ten feet high and the reclining figure fifteen feet in length. Walter Allward, of Toronto, won the competition over some forty contestants, of which only five were Canadians. S. Nicholson Babb, London, was awarded second prize.

The motive of the design is that of the King as a Peacemaker, the King standing in meditation, over him the spirit of Peace, an heroic figure carved in the stone, dreaming of the past, while the symbol of War (the cannon) lies half buried at her feet.

On the steps at the base of the wall stands the figure of Justice, erect, strong and reliant, ready to help and support Knowledge (which is Truth), in her task of civilizing and enlightening the world. On the wall are the words: "Through Truth and Justice he strove that War might cease and Peace descend o'er all the earth."

Mr. Allward conceived the idea of placing the King against a simple background of stone, so that the full expression of this figure might carry at a distance, at the same time affording an opportunity for a pose, kingly and thoughtful. The contour of the monument is such that it does not compete with the various towers and turrets, at the same time it is sufficiently high and broad to be a dignified and impressive mass placed above the level of the small details of the bridge, traffic, etc. The various parts unite to form one complete ensemble of harmony and dignity.

WOMAN'S CHRISTIAN TEMPERANCE UNION BUILDING, TORONTO, ONT.

BURKE, HORWOOD & WHITE, ARCHITECTS.

W. C. T. U. Building, Toronto, Ont.

BURKE, HORWOOD & WHITE, Architects

THE ONE prevailing idea in planning this Woman's Christian Temperance Union was to furnish a thoroughly up-to-date home for girls. Lodging benefits, educational facilities and physical culture, all enter into one comprehensive scheme. The character of the work accomplished by this organization and the vast need for revenue necessitates a building that is inexpensive and at the same time practical and wholesomely designed. This has been accomplished in a large degree by making the motive a Georgian treatment depending upon the simplicity of line and color for the general effect—a worthy example to emulate.

The interior is of deep red brick laid in English bond with large white mortar joints. The entrance portico of wood is painted white and opens into a vestibule of marble steps and wainscot, and walls of tinted paneled plaster.

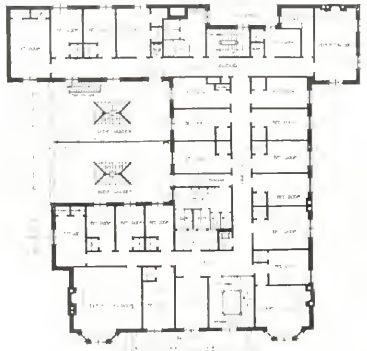
Upon the interior the basement walls are of brick with all woodwork in Georgia pine. Aside from the heating arrangements, this floor provides for the large gymnasium, shower baths and locker rooms.

On the main floor the corridor and dining-room are finished in oak, the lodge rooms in ash, and the reception room in mahoganized birch. The walls are finished in plaster possessing a champagne tint. Living quarters occupy the second and third floors with sitting rooms arranged for in the second story only.

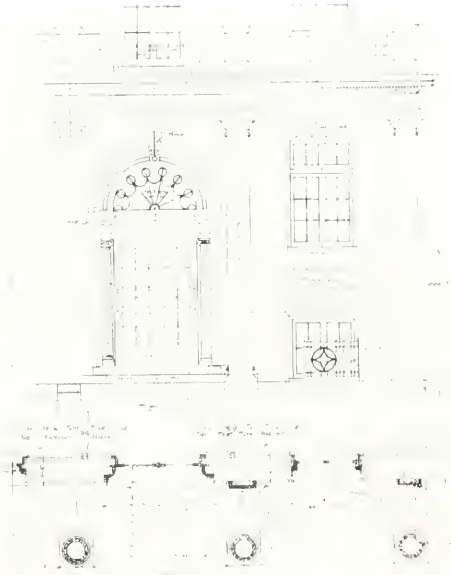
To the left of the entrance vestibule is the reception room, the administrative department directly opposite. One of the important features of the building is the large assembly hall, which can be divided into small lodge rooms by means of accordion doors. The cost of the completed structure was 16½ cents per cubic foot.

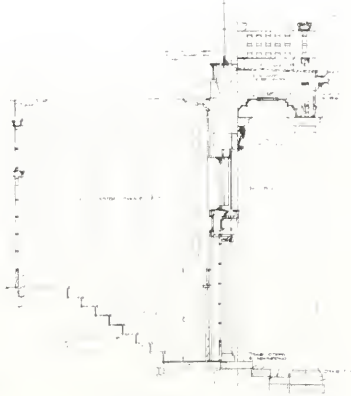
MAIN CORRIDOR.

FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

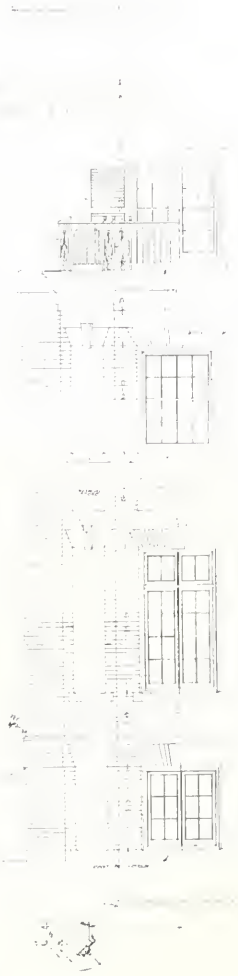




DETAIL OF MAIN ENTRANCE.

W.C.T.U. BUILDING,
TORONTO, ONT.

BURKE, HORWOOD & WHITE,
ARCHITECTS.



DETAIL OF BAY.

GYMNASIUM.

LODGE ROOM.

DINING ROOM.

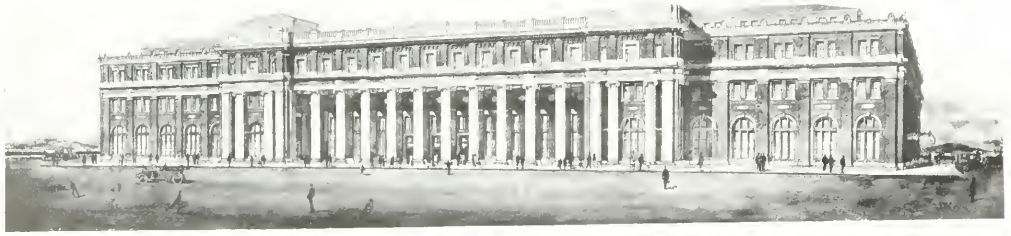
W.C.T.U. BUILDING,
TORONTO, ONT.

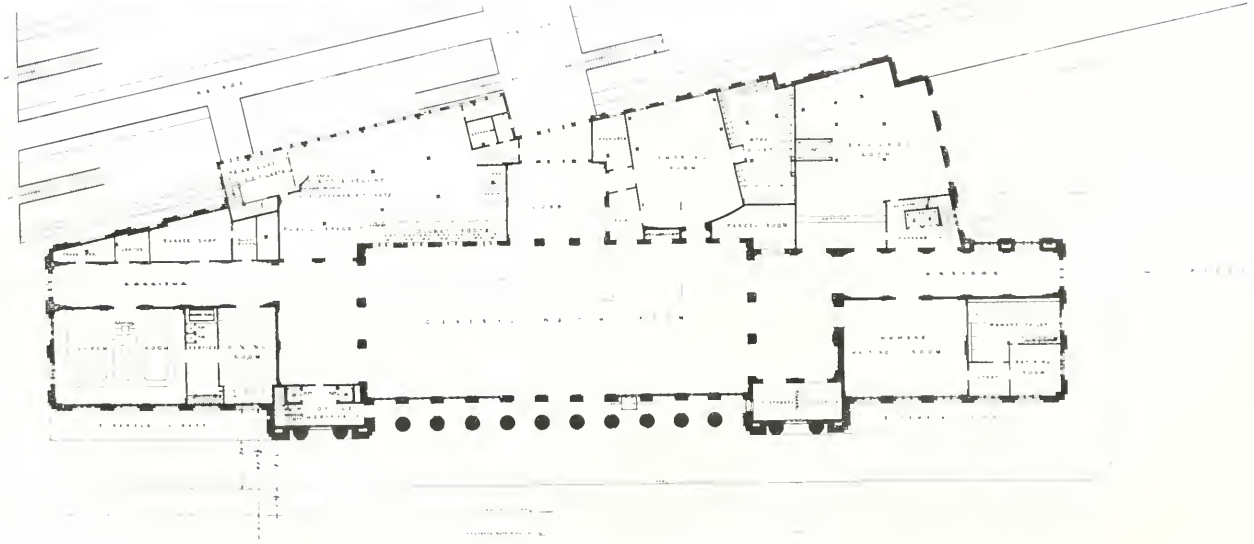
BURKE, HORWOOD & WHITE,
ARCHITECTS

RECEPTION ROOM.

The Canadian Pacific Railway, in order to cope with the ever increasing traffic as well as anticipating the future growth of the city, is erecting a new terminal at Vancouver. The company has already begun the erection of the additions to the Vancouver Hotel, which are costing $2,000,000, and the appropriation for the construction of the new station is just short of $1,250,000. The building will be erected adjoining the present site, extending some 400 feet on Cordova street. The design calls for a treatment of brick and limestone, with a granite base. The comfort of the passengers has been considered from every point of view, and when completed, it will be one of the most up-to-date terminals in the world.

C.P.R. STATION AT
VANCOUVER, B.C.





GROUND FLOOR. FIRST FLOOR.

ASSINIBOIA CLUB, REGINA, SASK.

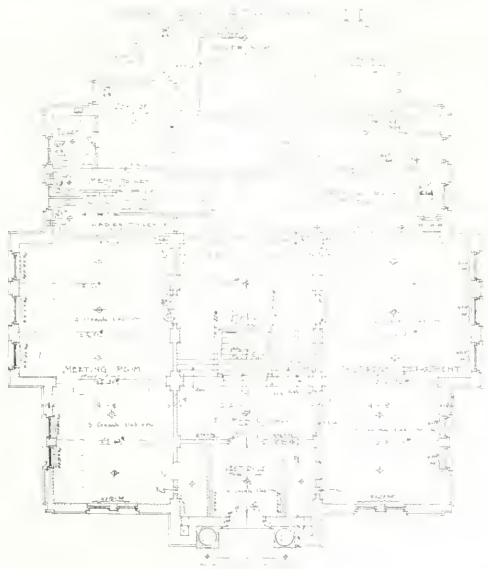
STOREY & VAN EGMOND, ARCHITECTS.

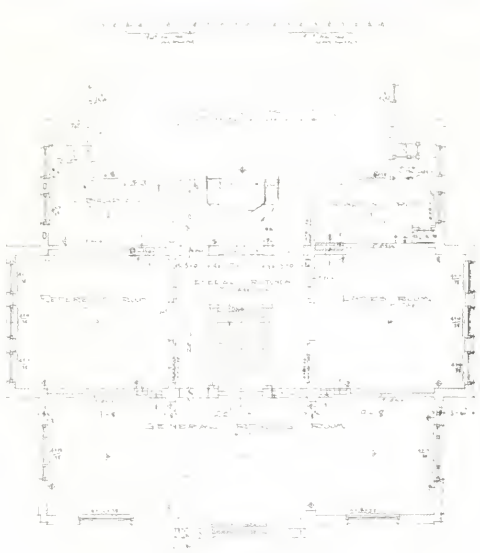
This club is recognized as one of the finest and best appointed clubs in Western Canada. The central feature of the ground floor plan is a circular rotunda giving access to the large lounge room, visitors' room, dining room, secretary's office, and ladies' department. The top floor is devoted to guests' bedrooms and the basement to help, stores, etc.

A principal feature in planning is the ladies' department on the ground floor, consisting of reception room, returning room and dining room, with separate ladies' entrance. Upon the interior the decoration is carried out in decorative plaster work, fumed oak finish, mosaic flooring, marble work, parquet flooring.

This building was erected at a cost of $65,000.00.

ROTUNDA, DINING ROOM AND BILLIARD HALL,
ASSINIBOIA CLUB, REGINA, SASK.
STOREY & VAN EGMOND, ARCHITECTS

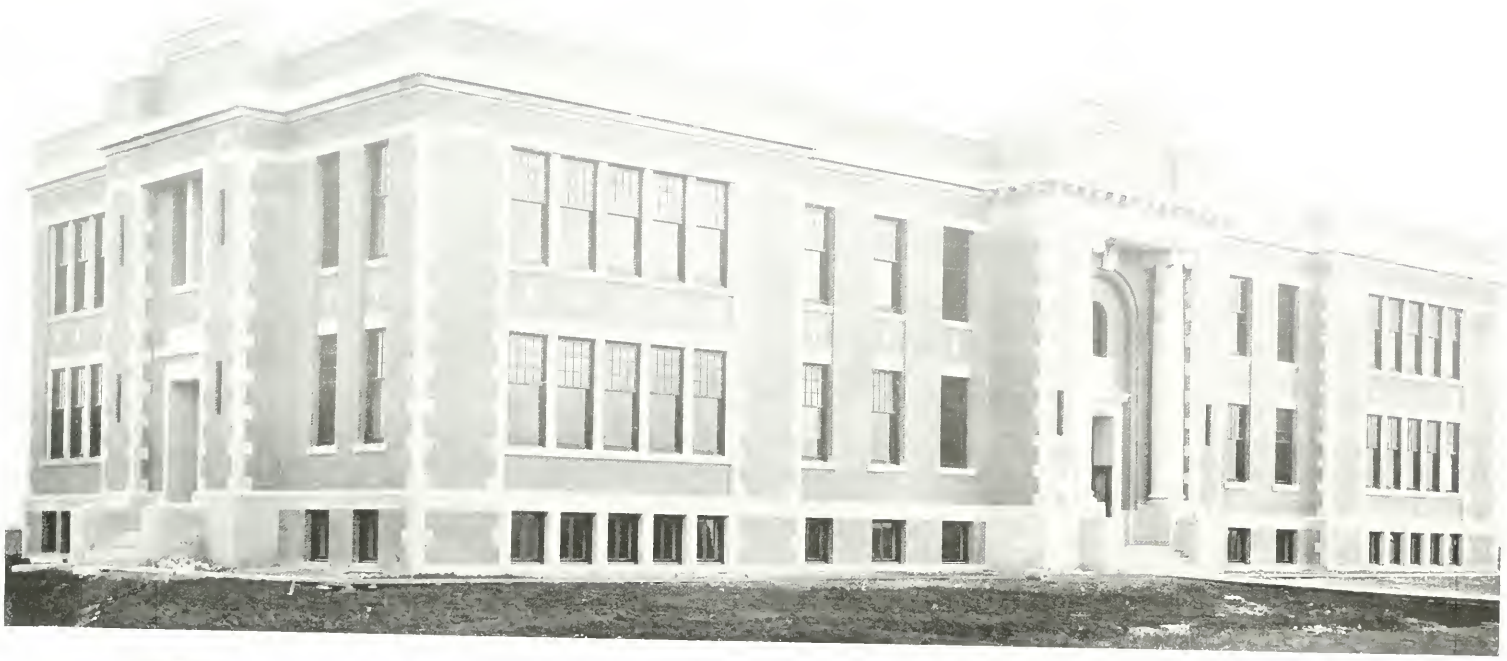




GROUND FLOOR PLAN. PUBLIC LIBRARY, REGINA, SASK. MAIN FLOOR PLAN.

STOREY & VAN EGMOND, ARCHITECTS.

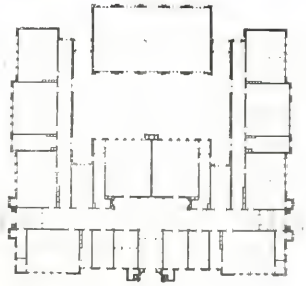
The exterior of the library is in stone and buff brick. The building is entirely fireproof with reinforced concrete construction; floors of cork and tile mosaic; stairway of marble. The central rotunda has a domed ceiling with skylight above, accessible to general delivery room, ladies' reading room, librarian, reference room, and general reading room. A heating plant is provided for in sub-basement at rear in addition to a vacuum steam heating system. The stack room is arranged so that a mezzanine floor can be added to double the capacity. . The library, which is specially noted for its practical arrangement, cost $50,000.00, and exemplifies the general progressive spirit of the Western cities.



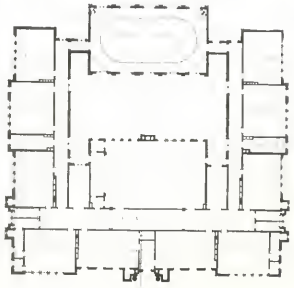
COLLEGIATE INSTITUTE, REGINA, SASK.

STOREY & VAN EGMOND, ARCHITECTS.

A large addition to this building is now under construction, with a plan for doubling the present capacity. The structure is fireproof with brick and stone walls and reinforced concrete floor construction; iron and slate stairs; vacuum steam heating; and exceptionally large gymnasium. This will be the largest collegiate institute in the Province of Saskatchewan, with an approximate size of 175 by 160 feet, two stories and basement in height. The total cost of building will be $200,000.



GROUND FLOOR PLAN.



FIRST FLOOR PLAN.

CONSTRUCTION

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

FREDERICK REED, Editor

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ADVERTISEMENTS Changes of, or new advertisements must reach the Head Office not later than the first of the month preceding publication, to ensure insertion. Mailing date is on the tenth of each month. Advertising rates on application.

CONTRIBUTIONS—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and duly returned

Entered as Second Class Matter in the Post Office at Toronto, Canada.

Vol. 6 Toronto, May, 1913 No. 5

CURRENT TOPICS

HUBERT SAVAGE, A.R.I.B.A., has opened up an office for the practice of architecture in the Haynes Block, Fort street, Victoria, B.C.

ON THE TOP floor of the new head office building of the Bank of Toronto, King and Bay streets, Toronto, is now located the new quarters of Messrs. Carrère, Hastings and Eustace G. Bird, architects.

THE NEXT convention of the American Society of Municipal Improvements will meet at Wilmington, Del., Oct. 7-10, 1913. The committee on fire prevention consists of Alcide Chaussé, chairman, of Montreal; Norman S. Sprague, of Pittsburg, Pa., and L. C. Willis, of Dallas, Texas.

THE SCHOOL BOARD at Victoria, B.C. has decided to call for competitive designs among the architects in reference to new buildings. This plan is to be in force after the present schools under construction by the board architect, C. E. Watkins, have been completed.

THE BUILDERS' EXCHANGE of Regina, Sask., has elected the following officers for the ensuing year: J. M. Taylor, president; D. Smith, vice-president; William Whiteford, secretary; H. Potts, George Minkley, A. Young, and W. A. Wilson, executive committee.

CORRECTION.—The plans on pages 154 and 155 of the April issue of "Construction," pertaining to the competition for the Winnipeg City Hall, belong to the perspective on page 157, and were part of the design submitted by Hugh G. Jones, architect. The plans on pages 156 and 157 should have been placed with the perspective on page 155 and credited to Brown & Vallance, architects.

THE FOLLOWING notice from Medicine Hat shows the rapid growth in some of our Western cities: The curling rink is being fixed up for sleeping quarters and the City Council will approach the Canadian Pacific Railway in regard to a supply of boarding cars to help meet the house shortage. The curlers abandoned curling for the balance of the winter in order to let the city have the rink.

CECIL S. BURGESS, A.R.I.B.A., formerly of McGill University, has accepted the position of superintendent of architecture for the University of Alberta, which is establishing a department of architecture. Work on the new buildings will begin in a short time, the site of which comprises 258 acres on the south shore of the Saskatchewan River. Mr. Burgess, before going to Montreal, was a practitioner in Edinburgh, London and Liverpool. He is a native of Scotland and a member of the Quebec Association of Architects.

THE VANCOUVER Chapter of the British Columbia Society of Architects will hold an exhibition, beginning on the evening of June 18, and continuing for a period of two weeks. The exhibition will consist of a selection of the best architects' work, executed and contemplated, in that section. In addition to the work of the local architects, the Architects' Chapter has arranged for a complete exhibition of the photographs of the buildings of the World's Fair now in the course of construction in San Francisco. The general committee in charge consists of Messrs. J. R. Putnam, W. T. Whiteway, T. Hooper, A. A. Cox, W. S. Painter.

WILLIAM PEARSON, president of the Winnipeg Housing and Town Planning Association, at a recent meeting of the Industrial Bureau of that city, announced that it was the intention of the association, if possible, to raise a million dollars which would be devoted entirely to housing, the work embracing the construction of a sufficient number of homes to take care of the ever-increasing population of Winnipeg. Numerous reforms that will tend to beautify the city, if carried out, were proposed.

In addressing the meeting, Mr. Pearson said:

"The city expresses the ideals and spirit of its people, and the citizens to a large extent are moulded by the physical characteristics of the city, that is by its building and general layout and the amount of attention it devotes to parks, play grounds, and public institutions of various kinds."

The Industrial Bureau has done magnificent work in the way of bringing industries to the city, and the association's duties are supplementary to the work of the Industrial Bureau in dealing with what he might describe as environmental conditions. He thought each one should cooperate for the beautifying of their surroundings and the health of the city and its home, thus working for a well planned city.

* * *

THE FOLLOWING notice, issued by Alcide Chaussé, Hon. Sec., will be of interest to the old and new members of the R.A.I.C.: The new charter of the R.A.I.C., adopted by Parliament on the 1st April, 1912, provided for the federation of the provincial associations of architects throughout Canada, recognized by the Royal Institute, and as such federation was effected at the fifth general annual assembly of the R.A.I.C., held at Ottawa, on the 7th October, 1912, all members in good standing of the five federated provincial associations are now members of the R.A.I.C. without paying any entrance fee or annual subscription. The old members of the R.A.I.C. in good standing and not members of any of the five federated provincial associations, remain members of the R.A.I.C., but they will continue to pay their annual subscription to the R.A.I.C. until such time they have joined one of the five federated provincial associations. The old members of the R.A.I.C. who are also members of any one of the five federated provincial associations will not have to pay any more annual subscriptions to the R.A.I.C. after the date of federation. The by-laws of the R.A.I.C. will be revised and amended to conform to the conditions created by the new charter, at the sixth general annual assembly of the Institute, which will be held at Calgary, Alberta, in September, 1913.

* * *

THE FOLLOWING JUDGMENT, handed down recently by Mr. Justice Lennox, of the High Court, in the action taken by Denison & Stephenson architects, vs. E. W. Gillett Co., Ltd., may prove of value to our readers. The case deals with the employment of a clerk of works and is clearly outlined in the judgment itself:

"Counsel for the defendants argued that this action should be decided upon the question of credibility. Determined by this standard, my judgment is unhesitatingly in favor of the plaintiffs. Even leaving out the important factor of probability—taking the naked testimony and the manner of giving it alone—I am convinced that Mr. Dobie instructed the plaintiff Denison to engage a clerk of works for the defendant company and agreed that the company should bear the expense. The evidence of the other plaintiff, uncontradicted, while he does not go to the length of saying that Dobie gave instructions at that time shows that he was interested in the wages to be paid and is strongly corroborative of Mr. Denison's evidence. I am satisfied, too, that whether from the discussion on the 15th of June, 1911, when the plaintiffs were retained or the terms of Exhibit 20, clause (c), Mr. Dobie realized all along that it was for the company to decide whether there would be a clerk of works, and if employed, employed at the company's costs.

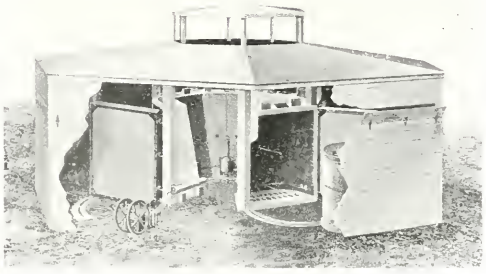
"The probabilities, however, are peculiarly cogent in this case. The defendant company had engaged a Chicago architect, Mr. Beman, and were to pay him 5 per cent. commission and his travelling expenses. The oftener Mr. Beman came to inspect the greater the cost. He was not to provide a clerk of works. Both Beman and defendants found that it would be better to have an associate architect in touch with local conditions, and necessary as a matter of law, and consequently, as defendants allege, an arrangement was come to between Beman and the plaintiffs to which the defendants were not parties, that the plaintiffs would perform for Beman the professional work which had to be done in Toronto, on a division of fees. It was no part of Beman's contract to engage or pay for a local superintendent or clerk of works—this is shown by clause (c) of exhibit 20, and is sworn to, and it might have been done with a good deal better grace by Mr. Beman. How, then, could Mr. Dobie imagine that the plaintiffs were to undertake this charge? As it was they visited the works at least 100 times, and presumably relieved the defendants from paying the travelling expenses of Mr. Beman for as many trips from Chicago. Probabilities? Even if Mr. Dobies' manner of giving evidence had been more satisfactory than it was I would find it difficult to believe that for weeks before there was any work to oversee he and Mr. Craig were time and again enquiring about a clerk of works, anxiously and repeatedly asking who was to pay for him and always answered in the same way, "we pay," and the more so as at the time it is sworn that the plaintiffs were bound to keep a man constantly there.

"There will be judgment for the plaintiffs for $1,100, with interest from the 22nd of November, 1912, and the costs of this action."

Fire Resisting Value of Plastered Partitions

THE FOLLOWING is a brief summary of tests recently held in Cleveland, Ohio, to show the relative fire resisting value of various typical plastered partitions. The work was under the supervision of V. D. Allen, building inspector, who appointed for the board of examination and report, L. H. Miller of the Bethlehem Steel Co.; Professor J. H. Nelson, Case School of Applied Science, and W. S. Lougee, architect. Figure 1 gives a general view of the testing furnace, while 2 and 3 show the plan and vertical cross-section.

The panel to be tested formed the outer wall of the furnace, being built into a frame made from nine-inch channels, lined with brick; the whole being hinged on the one edge and supported on a wheel rolling on a curved steel track at the other, forming a door which could be readily opened by means of a block and tackle without injury to the specimen. Heat was thus applied to the partition on one side only, and was

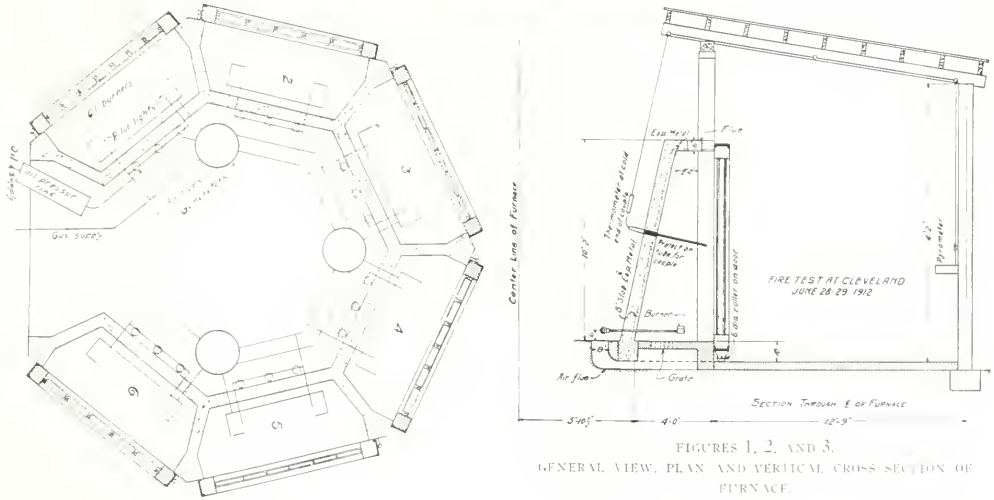


produced by a gas flame under perfect control. The furnace was provided with pyrometers and peepholes for examination of the heated side of the specimen during the test.

The method adopted is similar to that prescribed by the American Society of Testing Materials as a standard test for fireproof partition construction, which calls for a temperature raised to 1,700° F. during the first half hour and held at that temperature for one hour and a half. At the end of the heat test the partition is subject to a stream of water from a 1⅛ in. nozzle under 30 pounds pressure for two and a half minutes. The only variation from the rule worth noting is that the temperature at the end of the test averaged 1,900° F., providing the specimen was still in existence.

The description of the tests in this synopsis is given in the order of their merit. It should be stated, however, that the opinion of relative value is but a personal one. The full report, printed in booklet form, gives all the facts, enabling one to confirm or dispute the judgment here expressed.

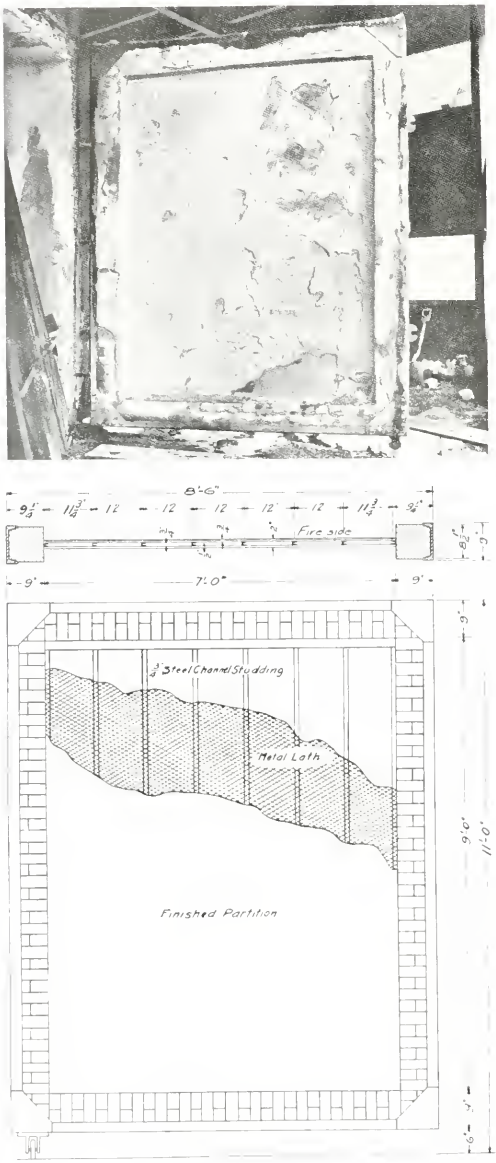
Panel No. 3 was constructed with three-quarter inch rolled channel studs, spaced twelve inches apart and lathed on one side with 24 gauge metal lath wired to studs. Plastered to a solid thickness of two inches with cement mortar mixed one to two and a half, containing one-tenth as much hydrated lime as cement and one pound of hair in the scratch coat to each bag of cement.



FIGURES 1, 2, AND 3.
GENERAL VIEW, PLAN AND VERTICAL CROSS SECTION OF FURNACE.

This partition was not thoroughly dried out, and the explosion of confined steam threw off part of the outer plaster coat early in the test, but in spite of this, an almost perfect test resulted. After one hour the temperature of the outside of the wall was 280° F., while the temperature of the furnace was 1,840° F. The furnace temperature was finally forced to 1,929, the outside temperature not being taken, as the thermometers only registered 300° F. Owing to unequal expansion the panel deflected at the

centre 3 1/2 in. toward the fire, but only opened one crack on the inside in doing so. The application of the hose reduced this deflection to 2 3/4 in. The water when thrown against the red hot plaster caused a portion of the outer coat to chip off, but not of sufficient quantity to expose the lath. The panel was



PANEL NO. 3

left apparently in good enough condition to go through the same test a second time.

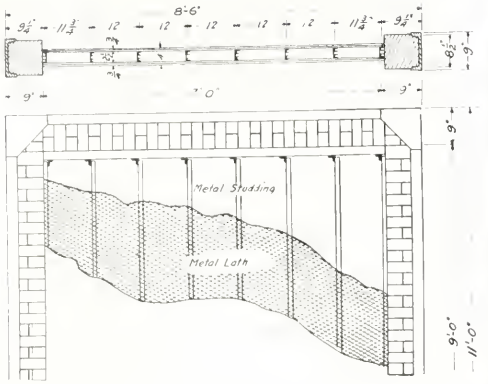
Panel No. 5 contained two and one-half inch 18 gauge sheet metal studs, spaced twelve inches apart and lathed on both sides with 24 gauge metal lath wired to the studs. Three coats of cement plaster formed a finish on each side of the partition.

The behaviour of this panel during the test was very similar to the solid metal lath and stud panel. It showed no less heat conductivity than the solid panel, and deflected somewhat more. The water test washed the plaster out sufficiently to expose the lath over a limited area near the hottest part of the flame. This exposure of the lath was the only phase in which the test was less satisfactory than that of the solid partitions. The highest pyrometer reading in the test was 1,976 F.—nearly 300 degrees above the specifications for a standard test. As the plaster did not disintegrate badly in the immediate vicinity of the pyrometer, it was evident that the fire where the plaster did disintegrate was much hotter than the instrument indicated.

Panel No. 4 was built according to the standard specification of the Associated Metal Lath Manufacturers for cement stucco outside walls. The outside of the wall, which was the side toward the fire in the test, consisted of 24 gauge metal lath attached to wood studs spaced twelve inches on centres. As herringbone lath was not used in these tests, it was necessary to place quarter-inch round rods between the lath and the stud in order to get key at the studs. The outer wall was plastered with three heavy coats of lime and cement mortar, the last coat being applied between the studs to the clinch of the first coat and the three totalling one and one-half inches in thickness. The inside of the wall had metal lath applied directly to the studs and plastered three coats of cement plaster.

After this test had run about forty-five minutes the gas generator broke, and the test was consequently discontinued until the next day. It was then completed with a due allowance for additional time necessary to heat the furnace. The maximum heat attained inside the furnace was 1,943 F., at which time the average temperature on the opposite side of the partition was about 300 .

When it is considered that the temperature of a wood fire varies between 800 and 1,100 F., and that the partition was built with wood studs and tested at a temperature that varied from 1,100 to 1,943 for over an hour and three-quarters, the result of this test is astonishingly good. After the fire and before the water test the partition was apparently in very good condition, but the water test exposed the lath over a third of the wall area. The washing out of the plaster was far greater than in the case of the hollow metal lath and metal stud partition, and was probably due to the greater amount of lime used in the plaster. Removal of the lath to examine the studs showed that they charred away by distillation to a depth of perhaps half an inch from the red hot inner face, but were still in good enough condition to support a floor. This was doubtless due to the absence of an air current between the studs. The key of the plaster on the outside of the wall was not injured.

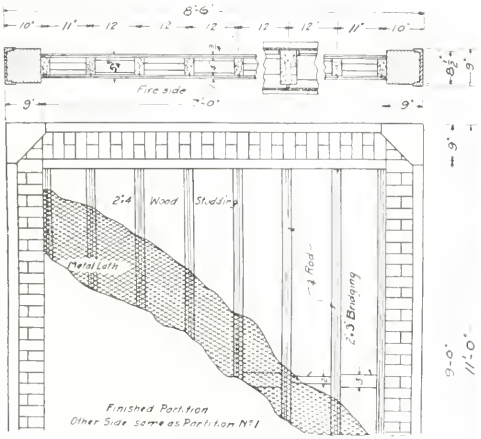


PANEL NO. 5.

Panel No. 1 had 24 gauge metal lath on both sides of wood studs spaced twelve inches apart, and plastered with three coats of cement plaster.

In general this panel was tested similarly to the cement stucco panel, although the result was not as good. The cracks which opened during the test became large enough to admit air to the studs so that later on the combustion of the studs themselves occurred, instead of combustion of the gases distilled from the studs as they reached the open air through the cracks. As the decrease in the amount of these escaping gases was first noted one hour and thirty-eight minutes after the start of the test, it is probable that this was approximately the time at which the stud took fire. The application of the water only exposed the lath over a small area. The partition after both the fire and water test was still an efficient fire stop, although during the last half hour of the test it was not in condition to support a floor.

This test is of particular interest to school and apartment house architects, as metal lath is commonly used in these buildings as a fire retardant. A partition which will hold the floods during a severe fire lasting an hour and a half and will act as a fire



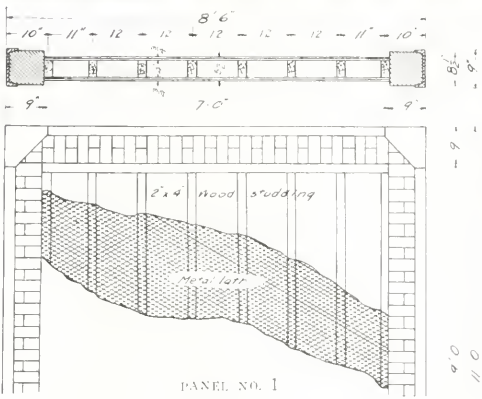
PANEL NO. 4.

stop for more than two hours is sufficiently fireproof to eliminate danger to life in all cases, and to save property in most cases.

Panel No. 2, of wood lath on wood studs, and the one following, were not tested with the idea that they were fireproof, but in order to get a comparison between the semi-fireproof construction made with metal lath and wood studs and the ordinary type of combustible construction.

The construction consisted of wood studs spaced 16 inches apart, lathed with wood lath and plastered two coats, the first coat of hard wall and the second a sand-lime finished with grounds $\frac{3}{4}$ in. thick.

Observations on this construction were not as satisfactory in determining facts as on the panels previously discussed. In the cases of the fireproof panels an observer could state with certainty that had the fire been stopped at any time during the test the panel would not have further depreciated. In the case of the partition formed with metal lath on wood studs,



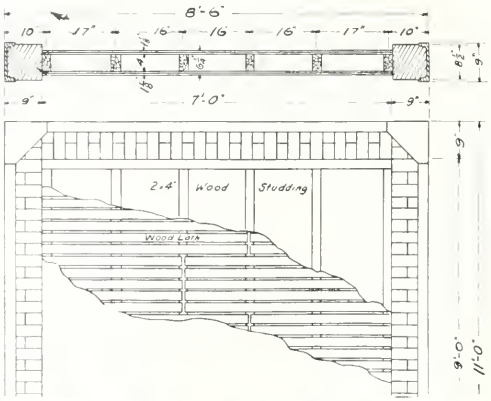
observations on the discharge of gases resulting from wood distillation showed that the studs did not take fire until the test had been on for about an hour and forty minutes. It is probable that the injury to the partition, would have stopped with the turning off of the flame, had the test been stopped previous to that time.

In the case of the panel of wood lath and wood studs, it is hard to determine just when the stopping of the test would have prevented the total destruction of the panel. Fifty-two minutes after the test started part of the plaster dropped off the inside of the panel because the wood lath supporting it had totally burned away at that point. It is therefore probable that the partition was doomed on account of combustion of the framing starting about thirty minutes after the test started. The destruction of wood framing was practically complete an hour and twenty minutes after the test started, yet the outer coat of plaster stood, with the exception of the formation of one hole, throughout the balance of the test. The opening of the door caused the complete collapse of the plaster.

Panel No. 6 was exactly like the one constructed of wood lath and studding, except that plaster board was substituted for wood lath.

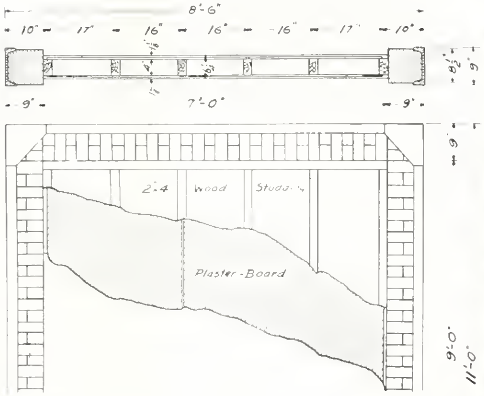
This partition was under test when the failure of the gas supply occurred as described in the discussion of the test of the cement stucco panel. The test had been on for twenty-four minutes, and fortunately the destruction of the panel through internal combustion had not started, so the test could be completed next day.

After twenty-nine minutes of test—with allowance for the interval—the plaster board burned off the fire side, showing the wood structure of the panel on fire. This is a poorer showing than that made by wood lath where the same incident occurred after fifty-two minutes. The first hole in the outside of the partition occurred at fifty-eight minutes, as contrasted with one hour and twenty-nine minutes for wood lath. The test was stopped at one hour when only half through, and as in the case of the wood lath and stud test, the partition collapsed when the door was opened.



PANEL NO. 2.

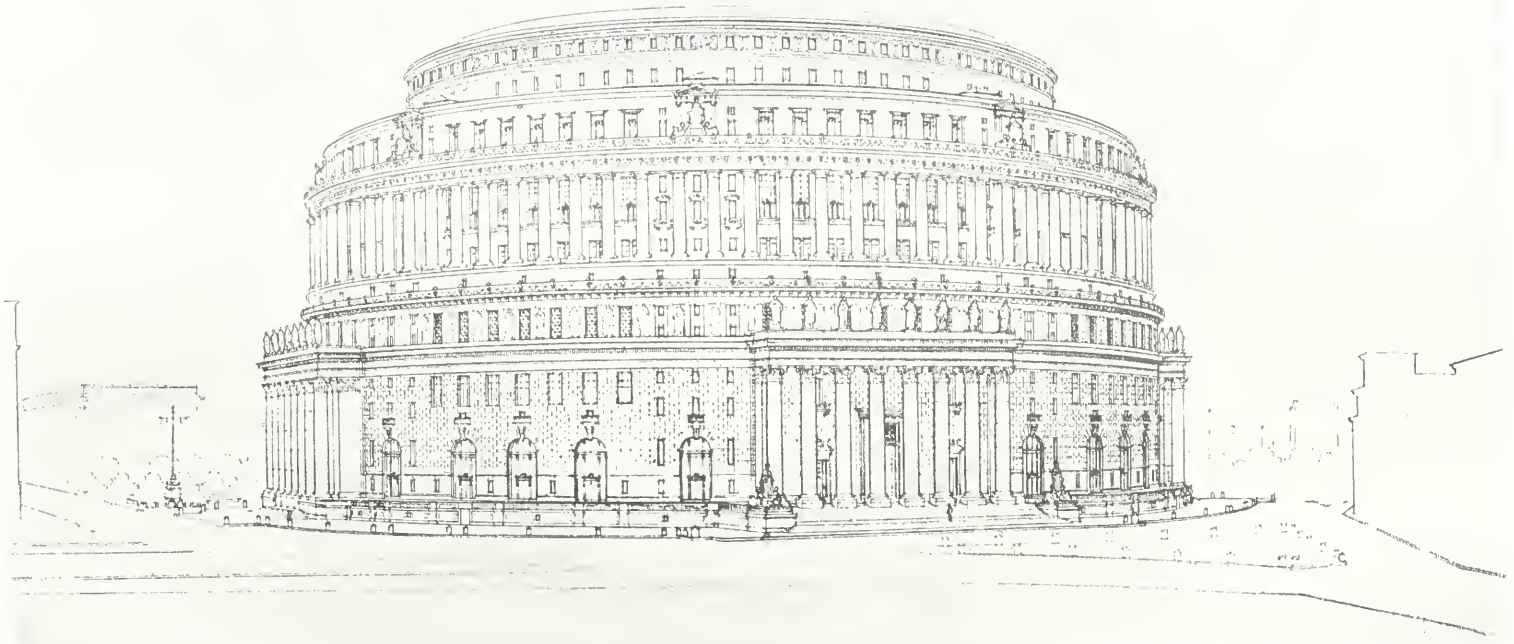
The complete failure of plaster board in this test seemed to be due to the fact that there was no direct bond between the plaster on the wall and the plaster in the board, except through the intervening paper felt. When, therefore, the temperature of the wall became high enough to char this felt the separation of the plaster from the wall was complete.



PANEL NO. 6

All parts of Canada were represented at the third annual banquet of the Sales Department of the Canada Cement Company Limited, held at the St. Regis Hotel, Montreal, on April 12th.

In addition to the felicitations common to such occasions, the remarks of F. P. Jones, general manager, concerned a subject of interest to the public, as well as to the members of the Company. When the Company was organized four years ago, one of its first corporate ambitions was to reduce the cost of cement to the consumer, without sacrificing a high standard of quality. The fact that this ambition has been realized, to the point where the price of the company's product is lower than cement was ever before sold for in Canada, was brought out at the banquet, to the thorough satisfaction of those present. The rapidly growing demand for cement, and various improvements in the company's facilities for supplying it, were also touched upon. [illegible] Mr. Jones presided, as toastmaster. Senator W. C. Edwards, of Ottawa, Hon. D. Murphy, of Ottawa, and Mr. F. H. Wilson, of New York, were present as the company's guests. Members of the sales department were present as follows: Montreal, W. H. Ford, general sales manager; J. A. Lapointe, assistant sales manager; G. Charette, L. A. Charbonneau, C. C. Lapierre, A. H. McGuire, W. T. Newmarch, W. A. Toohey, salesmen. Toronto—J. D. Johnson, sales manager; F. W. Coles, G. G. Dunlop, F. A. Robertson, L. J. Wookey, F. A. M. Wright, salesmen. Winnipeg—W. P. S. Johnson, sales manager; H. F. Beresford and S. W. Beresford, salesmen. Calgary—Geo. N. Gorman, sales manager; J. L. R. Gorman, John Boyd, salesmen; W. G. Bovard, special travelling representative. Heads of other departments were present as follows: A. C. Tagge, general superintendent; L. S. Bruner, manager of publicity; H. S. Van Scoyoc, inspecting engineer; J. A. V. Dube, traffic manager; J. V. L. Rianhart, purchasing agent.



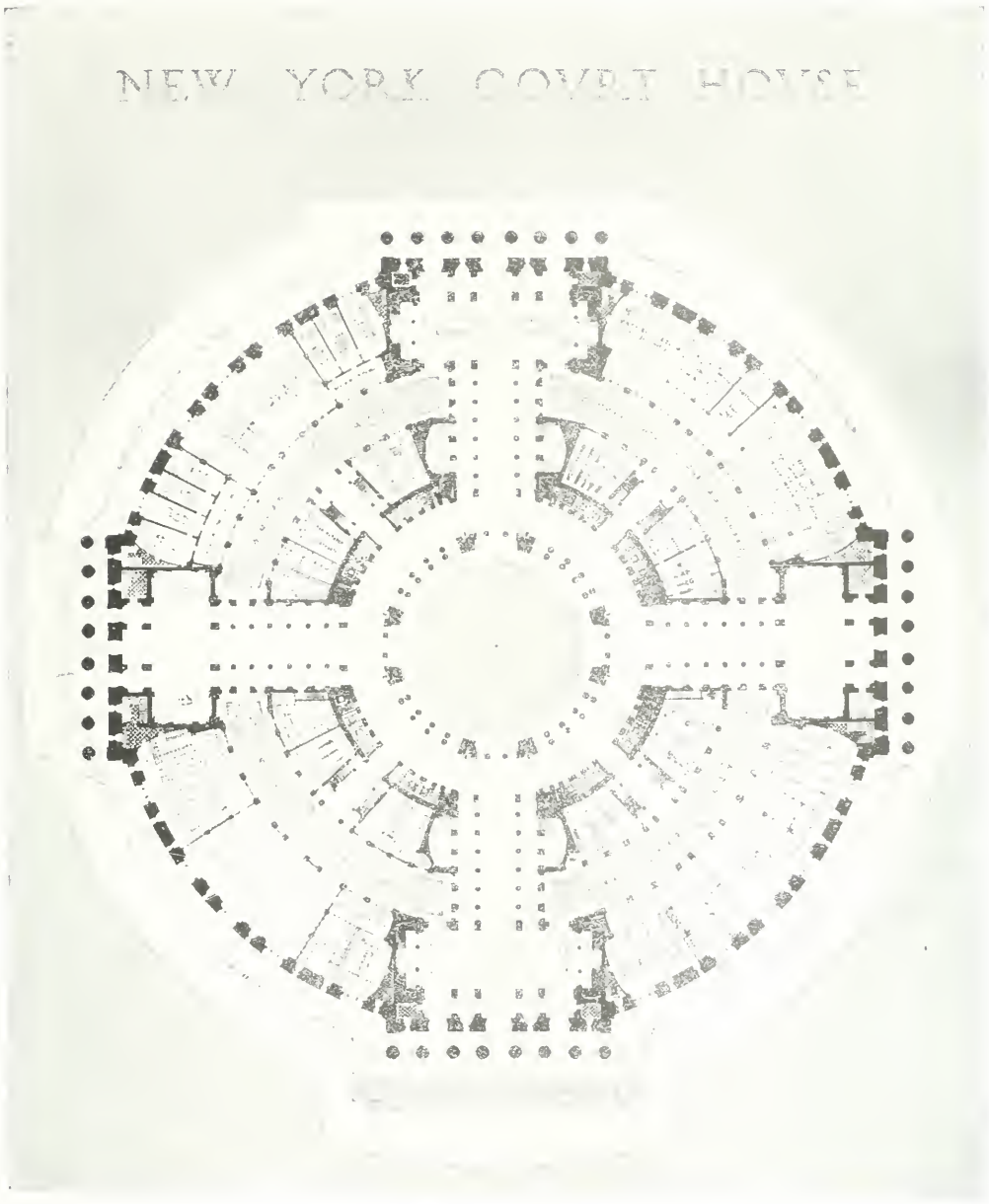
(From The American Architect)

Reproduction made from latest model

PERSPECTIVE VIEW—FIRST PRIZE DESIGN

COMPETITION FOR NEW YORK COUNTY COURT HOUSE.

GUY LOWELL, ARCHITECT



SECOND FLOOR PLAN.

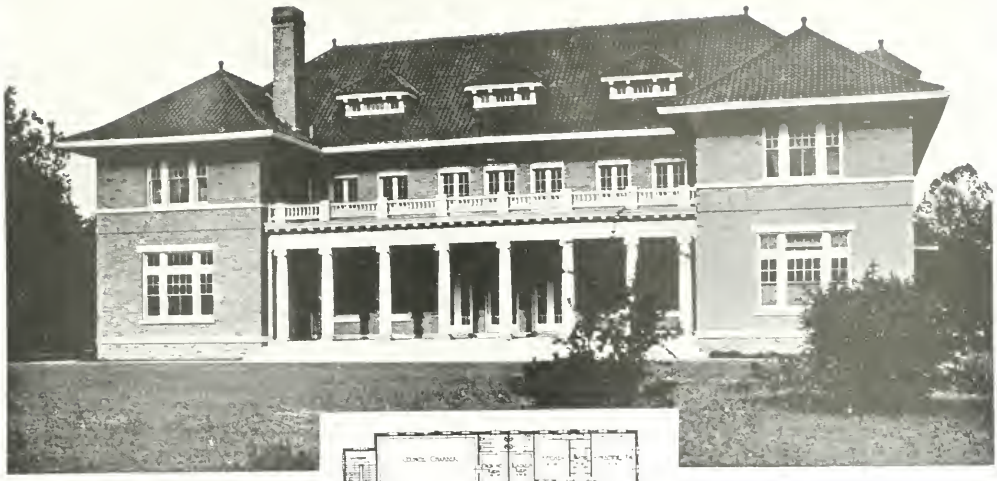
COMPETITION FOR NEW YORK COUNTY COURT HOUSE.

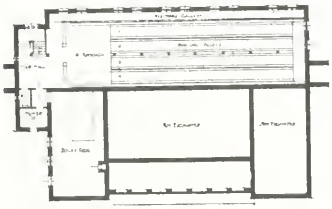
FIRST PRIZE DESIGN.—GUY LOWELL, ARCHITECT.

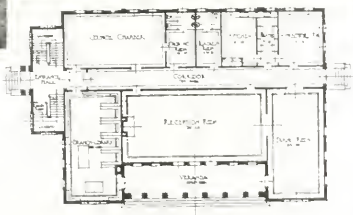
Mr. Lowell's accepted plan for the New York Court House has been universally approved on account of the facility with which all the work can be carried on. The building is accessible from all directions with spacious corridors leading to the central lobby around which are arranged the elevators. One entire floor accommodates the city court, four floors the supreme court, and another floor the library and dining rooms. The building will cover approximately 120,000 square feet of ground.

WOOLWORTH BUILDING,
NEW YORK CITY, N.Y.

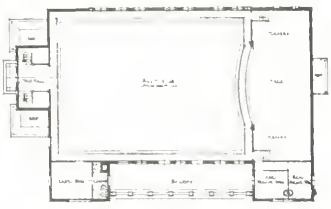
CASS GILBERT, ARCHITECT.



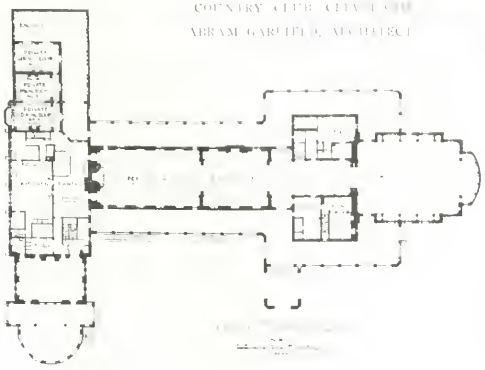




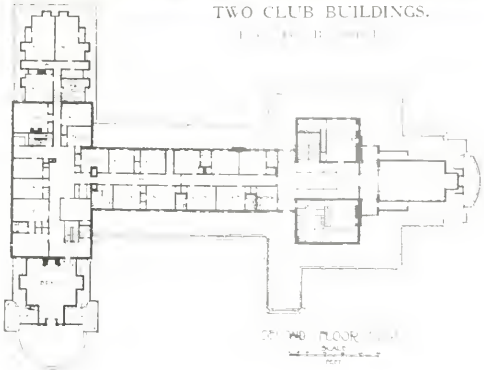
CLUB HOUSE, WYOMING, OHIO.
GARBER & WOODWARD, ARCHITECTS.

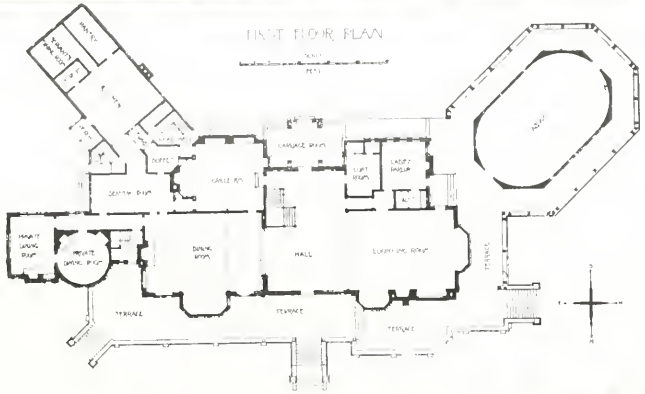


COUNTRY CLUB, CLEVELAND.
ABRAM GARFIELD, ARCHITECT.

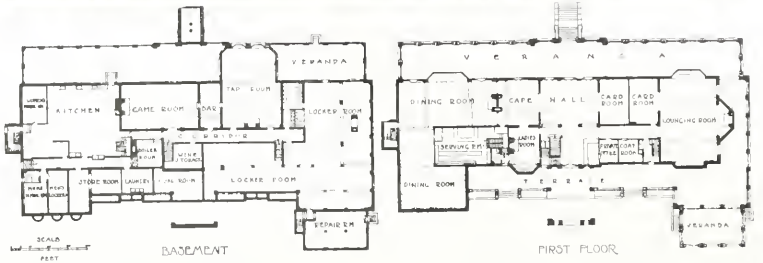


TWO CLUB BUILDINGS.





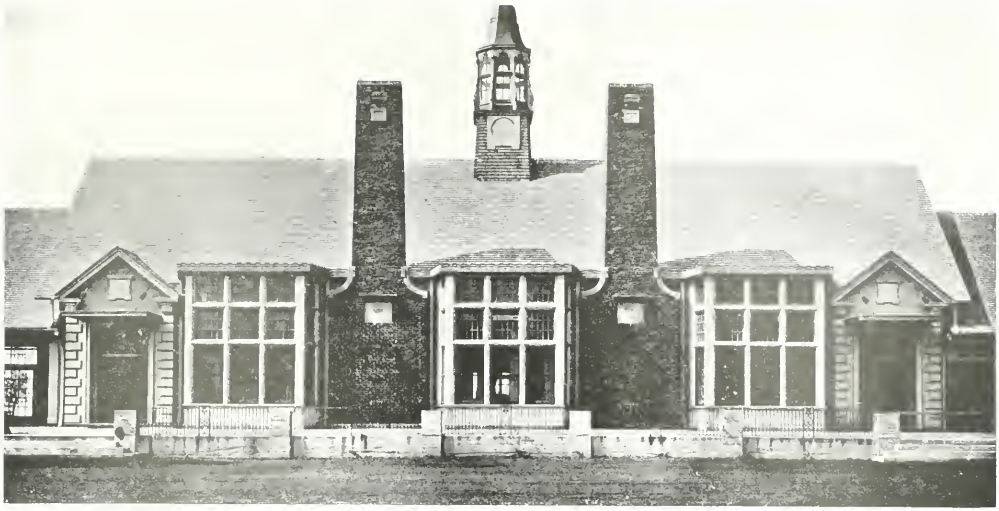
EUCLID CLUB, CLEVELAND, OHIO.
MEADE & GARFIELD, ARCHITECTS.

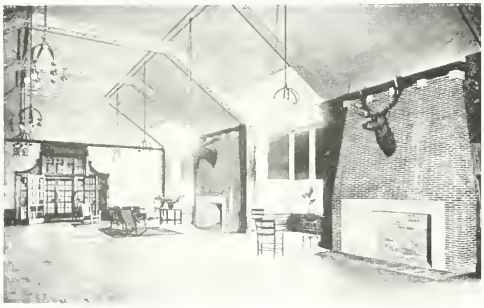


COUNTRY CLUB, DETROIT, MICH.
ALBERT KAHN, ARCHITECT

TWO CLUB BUILDINGS.

(From The Brickbuilder.)

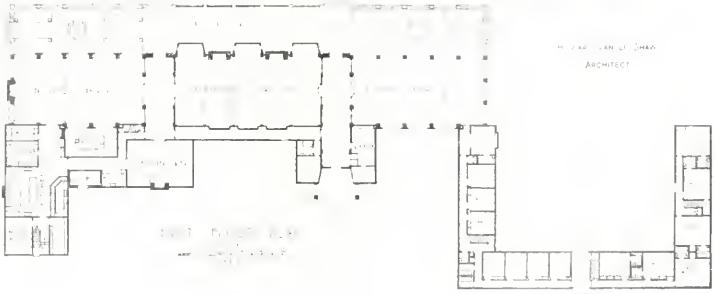




HOMEWOOD
COUNTRY CLUB,
FLOSSMOOR, ILL.

HOWARD VAN D. SHAW
ARCHITECT.

(From The Brickbuilder.)



ROTUNDA.

TWO VIEWS OF THE BRITISH CLUB, SHANGHAI, CHINA.

This building, constructed of stone and marble, accommodates a membership of two thousand. The total cost was $250,000.

HOUSE AT SHANGHAI, CHINA.

BUILT OF WHITE STONE WITH DECORATIONS IN GOLD LEAF

CHINA MUTUAL LIFE INSURANCE COMPANY, SHANGHAI, CHINA.

ONE OF THE LATEST additions to the pamphlet advertising world is the little 16-page booklet "Beautiful Floors," issued by the Dougall Varnish Company, of Montreal. It is descriptive, as are all such pieces of literature, and attractively arranged. The booklet is published by the Murphy Varnish Company of the United States, Canadian agents for whom are the Dougall Varnish Co. of Montreal. "Health and beauty," "Natural wood floors and varnishes," "Transparent floor varnishes," "A varnish that has wearing power," "How you can tell whether it is fine varnish," "Davy Crockett's advice—don't," "For a new floor of close-grain wood," and other topics of very timely interest in this season of general clean-up, are published in "Beautiful Floors." This booklet may be secured from the Dougall Varnish Co.

* * *

THE FOUNDATION for the High School and Administration Building, Montreal (E. & W. Maxwell, architects) is being waterproofed on the inside by the "integral method," the waterproofing compound being Hydratite. This work is being executed under the inspection and direction of the Industrial Foundation and Waterproofing Co., of Toronto, the material being furnished by Pinchin, Johnson & Co., Ltd. Undoubtedly this is one of the largest jobs in Canada to be waterproofed under "the integral method" in the form of an interior application. Details of this work consist in applying a three-quarter inch coating on the inside of all walls below grade, in a one to two mixture of cement and sand, with the waterproofing compound being mixed therein, carried across all floors and then turned up three inches on the columns.

* * *

THE YALE & TOWNE Manufacturing Co. announce the removal of its general and executive offices from 9 Murray street to 9 East 40th street, New York city. The new quarters comprise a twelve-story building erected by the company for their exclusive use. The basement accommodates the salesroom and repair department; the ground floor provides ample room for the various exhibits; the twelfth floor takes care of the executive offices, while the remaining portion of the building is occupied by the managing staff and clerical force.

* * *

THE BEAVER CO., LTD., of the Canadian Beaver Companies, has already broken ground at Thorold, Ontario, for the erection of a large modern plant for the manufacture of "beaver board." Power from Niagara Falls will be used and a contract has just been closed for the first unit of 2,800 h.p., to be run continually night and day for thirty years. Later machinery will be installed which will require nearly 6,000 h.p. in addition to 500 h.p. which will be generated in the boilers for the treatment of fibre.

THE FIRM of J. & J. Taylor has just been awarded the contract to supply the steel vault doors and lining for the Bank of Montreal, to be erected in London, England. The work will be erected in the Toronto factory and put into place by the company. This is a worthy compliment to "Canadian made" goods and reflects credit upon the company which has been able to secure the contract over local competitors.

* * *

THE NAME of the Winnipeg branch of the "Pease" Foundry Co., Ltd., Toronto, has been changed to "Pease" Western Foundry, Ltd., and is located at same address, 287 Donald street, Winnipeg. This branch has all the territory west of Fort William to the Rockies, and is under the charge of Mr. J. M. Bell, who entered into this work at Winnipeg after many years as sales manager at the head office, Toronto.

* * *

AFTER THREE YEARS of constant study and application of the street paver problem, the Chain Belt Company, Milwaukee, Wis., now have ready for distribution the chain belt street paver. This paver is equipped with a boom 20 feet long and delivery bucket. Paving contractors have found this the most economical method of spreading concrete on streets, as it eliminates the use of wheelbarrows and carts. The concrete is discharged from the mixer into the delivery bucket, travelling on a single boom, which can be swung at an angle of 180 degrees, taking care of a street 50 feet wide. The boom bucket will hold a full batch of the mixed concrete and is provided with an automatic tripper, while the gates open up automatically at any place where it is desired to deposit the concrete. When the bucket returns to the mixer the gate closes automatically. The same man who operates mixer levers also controls the movement of the boom and bucket. In work where the road is less than 18 feet in width a gravity swivel chute may be substituted for the distributing boom.

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CONSTRUCTION

VOL. VI NO. 6

CONTENTS FOR JUNE, 1913

Full Page Illustrations

H. GAGNIER, Limited, Publishers
GRAPHIC ARTS BUILDING, TORONTO, CANADA
BRANCH OFFICES:
MONTREAL WINNIPEG VANCOUVER CHICAGO NEW YORK

DETAIL OF FIRE PLACE,
"THE ARTS CLUB," MONTREAL.

EDWARD & W. S. MAXWELL,
ARCHITECTS.

¶ *The National Gallery of Canada—The great need for architectural replicas in every city as well as famous statues.*

THE BILL incorporating the National Gallery of Canada will interest the artist world of Canada far more than the naval expenditure which has occupied such a prominent position on the stage of politics. The latter smacks of destruction and bitterness even though some claim that peace is only maintained through a sense of fear. The former, however, casts a glow of promise to those who are struggling amidst few incentives. Soon we will be privileged to work from casts of famous statues—the exact replicas of an illustrious past when art meant life. Already a large collection of famous works has been secured from the European countries and every effort will be bent to make this department of the National Gallery a most representative one. It is to be hoped that the restrictions will not be so great as to deprive anyone from a free and unlimited use of this valuable material. For instance, the gallery should be open on Saturday afternoons and Sundays. Senator Dandurand went a step farther by suggesting scholarships to young Canadian artists for European study. Surely nothing could be more commendable and without a doubt nothing could raise our art to a loftier plane. May this spirit prevail and may it be reinforced by the moral stamina of all thinking people. If it can be brought to a point where every city will have its own gallery containing the best examples and where the deserving can hope to study abroad—then the impetus to work for purity and truth along the lines of pure art will supersede the present desire to surrender all for the extra farthing. We would like to see these casts include the architectural world also. What Canada needs is a Trocadero in every city. What is more before the people in the various phases of art than our architecture? What needs more careful study and improvement? What graces a city more than artistic buildings? With proper facilities this progressive country could surpass in time all other countries in modern work.

¶ *The one hundred years' peace celebration to be held among English-speaking people—Memorials for England, Canada and the States.*

THE CENTENNIAL of peace to be observed between the two great English-speaking nations, Great Britain and the United States, is of more import to the elimination of war than any other one historical achievement. As England has mothered the principles of a representative Government, so has she spread the influence of her ideals throughout the world, thereby maintaining honor and justice among the weaker countries. Her spirit and power has held less scrupulous kingdoms in check and allowed the children of the earth to grow into the developed strength of manhood. Who can foretell the influence for peace she will wield if the world knows what it already surmises—that the same intense devotion to law, order, truth and equality which has characterized her glorious past, will underlie this acknowledged cementation of the two nations whose combined resources are inexhaustible and whose efforts are bent in the direction of freedom and progress.

In addition to the benign influences this open confession of amicable relations between us will have upon the world in general, it will also reveal more clearly than ever before the close ties which exist between the Dominion of Canada and the States. Our political problems are practically the same; our industrial pursuits follow in the same direction; our commercial interests are identical; our pleasures, our sports, in fact every feature which enters into our private as well as national life is so interwoven that we will naturally unite in all questions which concern the welfare of each other's existence. Would it be possible for the States to have a serious complication with Japan without the same cause of contention producing a like result on our western coast? It is not proper to consider the imaginary line dividing us as a barrier foreign to our best interests. We are an offspring of the same mother and in problems of vital importance the two countries would act as one.

At the recent meeting of the conference held in

New York city for the purpose of adopting a programme, the Canadian and American sub-committees considered the question of suitable monuments along the border line. It was decided to build a memorial bridge in the neighborhood of the Niagara frontier; also to erect an arch at Rouse's Point, N.Y., in commemoration of the battle of Plattsburg, the last naval engagement which took place between England and the States. The arch will span the highway which is being constructed between Quebec and Miami, Florida. A number of other monuments will be considered such as the building of a tunnel between Detroit and Windsor, the erection of a bridge between Belle Isle and the mainland, etc.

Another outgrowth of the international conference was the plan to erect a statue of Queen Victoria in Washington and one of Abraham Lincoln in England. The scheme proposed will be carried out independently of other features arranged for the celebration itself. The memorials will be of heroic size and executed by the foremost sculptors. Action will also be taken to interest the Canadian and American Governments to contribute similar monumental ideas in Washington and Ottawa. Commemorative tablets at various points along the frontier as well as in public buildings will keep before the people the achievements of steady progress expressed by the celebration of the one hundred years of peace.

H. S. Perris, one of the English delegates, said just before leaving the American shores: "Whatever suspicions and fears of the object of the celebration may at one time have existed, we have heard scarcely a breath of them during the course of our tour, and we have taken every opportunity to make it clear that all nations of the world were invited to join sympathetically in the celebration and that the spirit in which we approached the celebration was that of Lincoln's commendable words, 'With malice toward none, with charity toward all.' Our British delegates have left your shores full of satisfaction at the great success of the conference and the subsequent tour, and more deeply impressed than ever with the close bonds, not only of blood relationship, but of friendly sympathy, born of common ideals and traditions, which bind our two great peoples together."

The spirit of confidence which permeated the action of each meeting augurs well for the success of the celebration and the educational and peaceful results accruing therefrom will more than repay the consistent endeavor of everybody concerned.

¶ *Gobelin tapestries—An ingenius way to utilize these valuable relics—It may prove a proper solution to hot weather troubles.*

THE MOST serious events sometimes become the source of our keenest humor. To think of one sweltering in the close and stifling quarters of a French museum during the warmest part of the summer and still keeping cool through the imaginary effects of living in the deep shade of a heavily wooded district with the winds of heaven rustling through the tree tops—this smacks of Munchausen fancy. Nevertheless this was the experience of our mutual friend the caretaker at Pau. It seems that the authorities in this little village had been greatly excited over the loss of some extremely precious Gobelin tapestries which they guarded religiously as one of their chief means of eternal revenue. The Government suspecting the wealthy American, began a quiet and extensive search for these priceless fabrics. After a considerable time some of the large pieces were found in a cupboard neatly sewn into a sack kept for the purpose of storing away the caretaker's cleaning materials. This seemed to be the only chance of replacing part of the lost material, but finally the keeper confessed that the embroideries representing the woodlawn scenes were used to line his own trousers as well as those of his boy. The indignation of the French authorities was hardly justifiable when we think that each small piece of these tapestries is worth the paltry sum of several hundred pounds. We feel the Government might pay these poor devils enough to clothe themselves—if not with cooler garments at least with less expensive ones.

¶ *Stanley Park, Toronto, in danger of being sold in order to purchase a larger tract some miles out—poor logic.*

IN THE DESIRE to sell Stanley Park, Toronto, we are up against the question which comes along each year, no matter what the personnel of the city authorities may be. Every city seems to suffer from similar idiotic desires on the part of its council to either dispose of the parks or else rob them of their usefulness by granting space for civic or art buildings. It is one constant struggle for New York city to keep their Central Park intact. If a pumping station is needed the narrow-minded councillors begin at once to select which corner they can confiscate; if some philanthropist donates several thousand to the erection of a structure, intended mostly to glorify his name, he usually tacks on the assinine clause—to be given if placed in a prominent locality. So the fathers argue what more desirable spot than the boys' playground, and it takes one big struggle to beat them back. Now Toronto is called upon to sell Stanley Park—a most useful playground in the heart of a populous neighborhood. What is the argument? If we sell this park we can purchase a much larger tract several miles out. Fine logic that. If there is need ahead of a park which will be useful to the children some ten years hence, by all means let the city purchase it, but we must not lose sight of the fact that the city needs Stanley Park more to-day than ever before, and will need it five years hence more than now. Experience teaches us that these insane ideas will permeate the atmosphere every so often, but we are proud of the fact that the people appreciate the value of such parks and emphatically say No to all such suggestions.

GRAPHIC ARTS
BUILDING,
TORONTO, CAN.

F. S. BAKER
ARCHITECT

MAIN OFFICE

ROTUNDA

GRAPHIC ARTS BUILDING, TORONTO, ONT.

F. S. BAKER, ARCHITECT

The Graphic Arts Building, Toronto

F. S. Baker, Architect

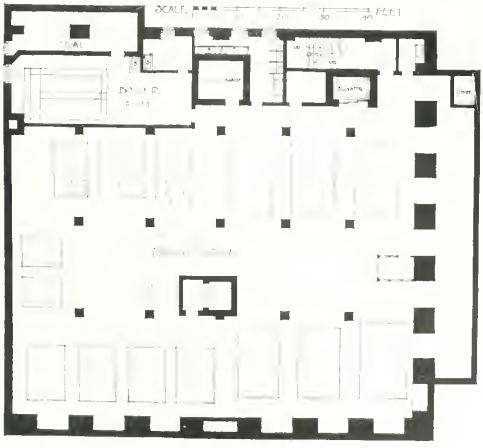
TORONTO'S RAPID GROWTH in size as well as artistic merit is evidenced in the new Graphic Arts Building. The structure was built to accommodate the publishing house of H. Gagnier, Limited, and the engraving firm of Grip, Limited. To properly provide for two companies so vastly different in their scope of work was a problem quite complex and of an unusual character. How creditably this has been accomplished is best shown by the general arrangement of the plans and the facility with which each concern is able to transact its tremendous business.

The building is located at the intersection of Richmond and Sheppard Streets, and stands as a monument to the great commercial activities of Toronto. Designed in a modern English adaptation of the Italian Renaissance, it presents a dignified appearance. The base course is raised so as to provide ample light in the basement and is broken only by the two entrances. Rising above this course are massive engaged columns extending through three stories which support a fitting cornice and balustrade. The columns are tied together at each floor with bands of stone, varied in treatment to suit the needs of each story. A wrought iron balcony is placed at the second floor which gives the necessary touch to what might otherwise prove a monotonous effect. The windows are large so as to furnish the maximum amount of light and are designed so as not to sacrifice either strength or elegance to the general effect. The fourth floor is hidden by the cornice treatment, but so planned as to secure plenty of daylight on all sides.

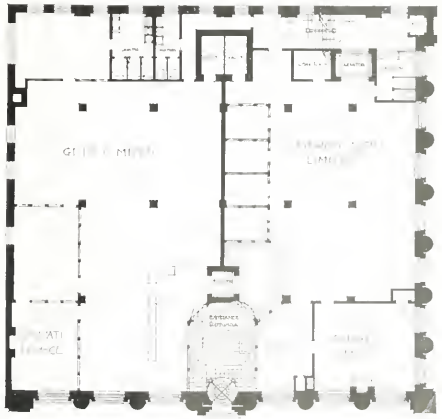
The two main facades are designed in Indiana and Roman stone of pleasing texture, the light tone of which softens the cold atmosphere usually prevailing in buildings erected of this material. The window sashes are pivoted and brought near to the floor, which in turn are protected by means of the balconies.

One of the charming pieces of detail is the main entrance, which leads through bronze doors into the rotunda. This rotunda is finished in Canadian marbles up to the coffered fibrous plastered ceiling. At the sides are screens glazed with leaded glass of unusual character. The revolving door and other wood work is of mahogany, the stairs leading to the landing opening into the two main divisions are of marble, and the balustrade of bronze. The doors to the right enter the offices of H. Gagnier, Limited, while those on the left give access to Grip, Limited. One passenger elevator, opening into each office, is situated directly inside the entrance lobby and runs to all floors.

The main office of H. Gagnier, Limited, has a Circassian walnut dado five feet six inches in height, above which imitation Caen stone extends to the ceiling. At the entrance corner of the office, which is 45 by 60 feet, is a public space with floor of marble



BASEMENT PLAN.



FIRST FLOOR PLAN.

SECRETARY'S OFFICE

EDITORIAL DEPARTMENT

PRESS ROOM

GRAPHIC ARTS BUILDING,
TORONTO.

F. S. BAKER, ARCHITECT

COMPOSING ROOM

PRIVATE OFFICE OF H. GAGNIER, LIMITED.

mosaic, dado and counter of Canadian marble. Adjacent to the main office is the manager's suite, consisting of his private office and the secretary's room. Here the Circassion walnut panels are carried to the ceiling and matched so as to lend a varied charm to each one. Accommodations have been made for a large recessed safe and wash basin so as not to break the harmonious treatment of the pilaster and panel effect. The fireplace is faced with Canadian marble and possesses some delicate carving; the ceiling is of hard plaster finished in ivory tints, and the floor of highly polished black walnut.

To the left of the entrance rotunda are the offices of Grip, Limited, arranged with public space into which the passenger elevator opens and screened by walnut counters and gates. The main office, 48 by 65 feet, has a four-foot dado of Circassian walnut above which is imitation Caen stone. The manager's room maintains the character of the other office with a high dado and fireplace of Canadian marble.

Both of these offices, which occupy the first floor, open directly into the side entrance hallway, which accommodates also a passenger and freight elevator in addition to the main staircase.

The basement is planned as a printing office with solid foundations underneath the large presses in order to prevent vibration. A sidewalk area and hoist for shipping and receiving has been placed on the west side. Part of the basement is separated and contains the tubular boilers, domestic hot water apparatus, foundry for casting type-metal, coal storage, ash carriers, hoist, water sumps, etc. The floor is of maple, the walls and ceiling of cement plaster.

On the second floor are located the library, editorial offices of "Saturday Night," "Construction," several other publications, and the composing room. This floor, as well as the other floors above, are finished in mahoganized birch with maple floors, burlap dado, and tinted walls. The third floor accommodates a circulation department, bindery, and art room; the fourth floor provides for the engraving department, shipping room and stock room; the fifth floor contains two large photographic galleries with skylights so arranged as to be warmed by steam coils and cooled by water sprays.

Ample lavatories have been arranged throughout the building with tiled floors and walls to a height of seven feet. A system of duro stone sinks and tile drainage for conducting acids to the street drain has been installed.

Indirect lighting is used throughout and each floor is operated by few switches. A complete automatic sprinkler system has been installed in addition to the usual standpipe and hose.

The cost of the building, exclusive of furnishings, was 20 cents per cubic foot.

DETAILS OF PRIVATE OFFICES.

GRAPHIC ARTS BUILDING, TORONTO.

F. S. BAKER, ARCHITECT.

TWO MAIN OFFICES ON FIRST FLOOR

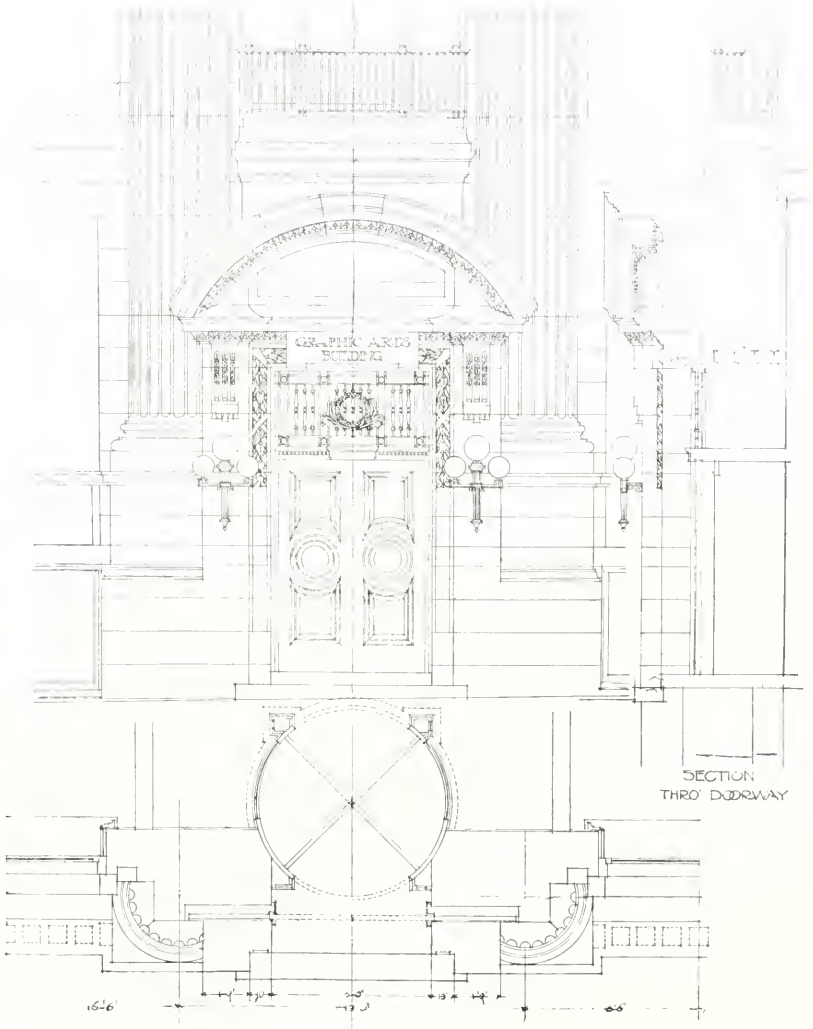
GRAPHIC ARTS BUILDING, TORONTO.

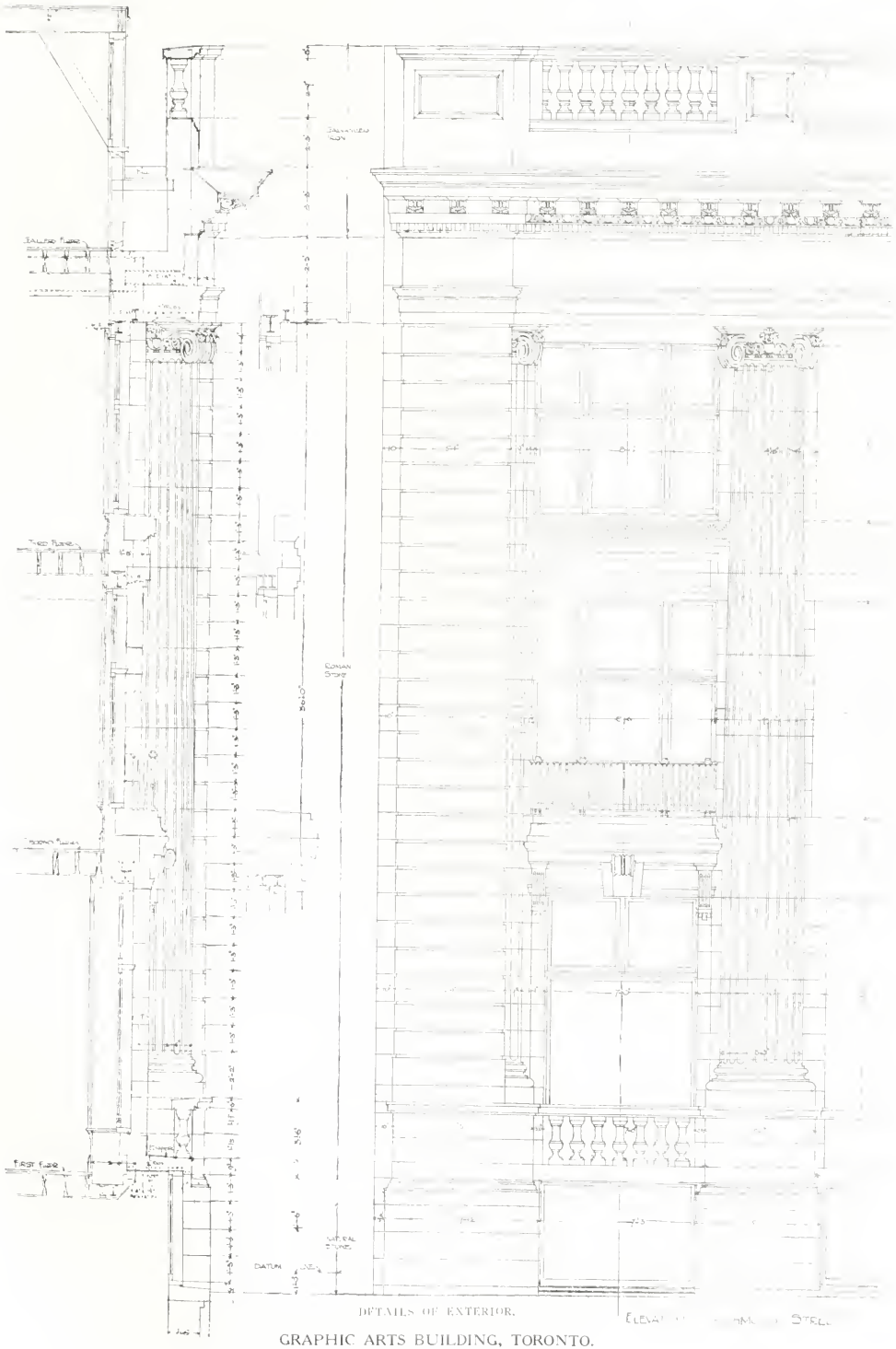
F. S. BAKER, ARCHITECT.

DETAILS OF MAIN ENTRANCE.

GRAPHIC ARTS BUILDING, TORONTO.

F. S. BAKER, ARCHITECT.





DETAILS OF EXTERIOR.

GRAPHIC ARTS BUILDING, TORONTO.

F. S. BAKER, ARCHITECT.

CLUB ROOM.

"THE ARTS CLUB," MONTREAL, QUE.

E. & W. S. MAXWELL, ARCHITECTS.

"The Arts Club, Limited," Montreal

EDWARD & W. S. MAXWELL, Architects

THE ARTS CLUB owes its inception to a group of artists, architects and amateur painters, who have been in the habit of meeting in the studio of Mr. Maurice Cullen, R.C.A., to paint from the model on Saturday afternoons. The suggestion that an Art Club be formed and suitable quarters procured was met with enthusiasm. It was agreed that permanent quarters were desirable and a temporary committee was formed to see if sufficient money could be raised to purchase a building. The usual difficulties incidental to financing the undertaking were encountered, but in the end an amount was subscribed which enabled the committee to purchase an old house at No. 51 Victoria street, and during the spring of last year plans were prepared and the contracts let for the necessary alterations.

It is well to mention that a provisional lease was arranged with a decorator whereby the club undertook to provide a store on the ground floor. This greatly facilitated the financing and enabled the committee to see their way clear to make the club a success without inflating the membership.

The membership consists of professional painters, sculptors, architects and musicians, and amateurs who have ability in these directions, as well as others who by their interest and sympathy are qualified to enter into the spirit of such a club.

Each month there is held an exhibition of works of art, ancient or modern, serious or otherwise; and on these occasions the opening evening is enlivened by music, song and good fellowship, accompanied by "churchwardens" and liquid, as well as solid refreshment. So far the following exhibitions have been held: Pictures by Canadian artists; Japanese prints and paintings; a fakir show; and a memorial exhibition of Mr. Henri Julien's work. The fakir show exhibits were auctioned for the benefit of the club and from the amount received it is evident that Montrealers are partial to advanced art movements.

Several times a week lunch is served in the club and during the evening a fair number use the club room and the billiard room.

The old building consisted of the usual three story and basement dwelling with a mansard roof—four rooms to a floor, quite uninteresting in every respect. The alterations and additions have provided a store on the ground floor, the tenant, Mr. Duncan Fraser, fitting up the interior in such a way as to obtain good reception rooms, a "studio" in which to show his merchandise, and a good sized workshop with a mezzanine story above.

"THE ARTS CLUB," MONTREAL, QUE.

The club is entered from an exterior vestibule, which has a Grueby red tile floor and walls of rough cast with tiles inserted at intervals. At the head of the staircase is a small hall with access to the billiard room, the coat room, the steward's supply room, and, towards the rear, to the exhibition corridor and main club room.

The billiard room, which occupies the whole front of the building, contains an English table. The decorative scheme consists of grey wavy grass cloth with tapestry curtains in which green predominates. The ceiling has four plaster beams supported on stone corbels, and the windows are of square lead quarries.

DETAIL OF FURNITURE

The exhibition corridor has a beamed ceiling of chestnut, and the walls are covered with grey fabrikona cloth, while the lighting is by the indirect system. This leads to the large club room, the arched entrance having stone reveals.

The club room offered an interesting problem to solve, as it was necessary to have conditions of lighting similar to those in a picture gallery, and at the same time retain a homelike atmosphere. After considerable study a hall of Tudor type was decided on and the general form of the room, with the use of deep stone reveals is obviously inspired by the period. The room is 21 feet 6 inches wide and 41 feet long, the ceiling being 15 feet high. At the rear is a large mullioned window having squares of leaded glass, while at either side cupboards are recessed into the wall. The opposite end of the room has an entrance in the form of a Tudor arch with a decorated lunette by Mr. Maurice Cullen, R.C.A. The shimmering effect of the gold background showing between the paint, applied in the manner of the "pointillists," is excellent. A mediæval castle towers above the mist and in the clouds appears a winged Pegasus.

In this wall is a casement window set in a deep framework of the same stone treatment. Above the window is a decoration by Mr. Clarence Gagnon, A.R.C.A., showing the Baie St. Paul in winter garb.

The dominating feature of the room is a mantel piece occupying the centre of the south wall. A massive carved beam supported by stone corbels, which enter into the constructive brickwork of the chimney-piece, was used in place of the usual shelf. This beam recalls in its detail the treatment found in the gables of half-timber houses in England. The carving is executed in the old spirit, while an interesting finish resembling driftwood has been obtained by brushing the wood with a wire brush, acid staining and a filler of dust color. The bricks are "Scotch scones," 9 x 1 x 4½ inches, such as the steel companies use for lining furnaces. The color varies from buff to a low keyed brown and the raked out joints give character to the work. The sloping hood of sanded plaster was painted and then subdued by a stain into which a powder of pale dust color was introduced somewhat unevenly. The same finish is on the sanded ceilings. Over the beam of the mantel a panel has been arranged, which will receive a decoration by Mr. Wm. Brymner, P.R.C.A. The frame surrounding the panel is well carved and surmounted by the monogram of the club and a crown. The stone blocks at either side of the mantel support early French carved and colored wood figures of

DETAIL OF MANTEL

fourteenth and sixteenth century workmanship. Seat fenders and a herringbone hearth of the same brick complete the design.

The andirons and fire tools are of Paul Beau's excellent workmanship.

The walls are covered with a Japanese gold grass cloth of a deep rich tone, and are equipped with a heavy picture moulding under the stone cornices and a lighter one set about 7 feet 6 inches from the floor. They are covered with grass cloth, which renders them almost invisible.

The ceiling beams are of plaster excellently modelled in the Elizabethan style by Mr. Geo. W. Hill, A.R.C.A.

The radiators are screened with coil cases, having pierced bronze grille tops. This method of screening is quite practical and the tops are at a level which enables them to be used for exhibiting sculpture and decorative objects.

Under the large window there is an Elizabethan bench with cupboards of pedestal form at either end. A radiator is back of the seat, and with this disposition there is no draught from the window, while the radiators are out of sight.

Reflectors of unusual type are suspended from six points in the ceiling, and the lighting of the walls is excellent, though the usual disfiguring trough is dispensed with. A supplementary system of table lamps with grass cloth shades furnishes a more homelike and agreeable lighting for ordinary occasions. At either side of the mantel are sixteenth century wrought iron cranes converted into electric fixtures by Mr. Paul Beau.

The furniture consists of a massive Elizabethan table in the centre of the room, upholstered sofas and arm chairs, covered with a vigorous pattern of verdure tapestry, and reproductions of old Windsor chairs.

There is a double skylight, heated by coils; the inner pivoted lights being glazed with ground antique glass which, when open, give excellent ventilation. The rugs are of Persian workmanship, quiet and deep in color and tone.

The top floor of the building contains the caretaker's quarters, consisting of bedroom, bathroom, and kitchen, with a small room leading to the roof terrace on Victoria street.

The exterior may be called rather Spanish in type, the walls being of cement rough cast of fine grain, with a cornice in the nature of sloping eaves, covered with Ludovici dull sea green tiles. The large square opening affords a suitable treatment for the entrance to the club and the store front.

[illegible] ROOM
CORRIDOR

"THE ARTS CLUB," MONTREAL.

F. & W. S. MAXWELL,
ARCHITECTS.

The Ontario Club, Toronto

WALTER N. MOORHOUSE

THE TASK presented to Sproatt & Rolph, architects, in altering the old Standard Bank building located at the corner of Jordan and Wellington streets, was of an unusual nature, and furnished an interesting problem both from an architectural standpoint and as an engineering undertaking. On the one hand were the requirements of a first-class club such as the Ontario Club; on the other, a building of clumsy design and solid construction occupied by a banking establishment and a firm of wholesale clothiers.

The chief difficulties in the construction and design of the interior were: (1) The floors of the building had to be fireproofed according to city by-laws. The existing mansard roof was supported by temporary trusses 16 feet deep and nearly 60 feet span, constructed with the floor joists as they were removed. These trusses were placed so as not to interfere with the erection of the new columns. All the floors were then torn out and steel rods with turnbuckles were carried across the building to act as ties. When the whole interior was removed, the work of placing the footings began. The dead loads due to the fireproof construction were so great as to necessitate the use of wall columns. The footings of these were placed one at a time with great care so as not to disturb the unbraced shell of the building, over 80 feet in height. Underpinning walls were built on each side of the footing with grooves so placed that a firm bond was obtained with the main column footing when the concrete was poured.

The confined space presented great difficulties to the steel erectors. There was very little room to operate a derrick of suitable proportions, and when the steel was placed it was exceedingly difficult to do the rivetting at the walls, on account of the nearness of the existing masonry. As the framing approached the existing roof, the problem became more arduous. The work of placing the steel roof beams on top of the columns, under the existing roof joists was exceedingly strenuous, as very little efficient mechanical aid could be used on account of the confinement of the space. As soon as these beams were placed, the temporary trusses and tie rods were cut away and removed, and the wall columns firmly anchored to the existing masonry.

(2) Adapting the planning and interior design suitable for the purpose to existing window openings.

(3) Concealment of pipes, ducts, etc. These were many in number, some of large size, and were only exposed in unimportant locations.

In plan the entrance hall leads directly into the main dining room, which, with the servery, occupies the remainder of the first floor. An elevator and stairway lead from the hall down to the members' cloak room, lavatories and barber shop in the basement and up to the other rooms of the club. A gallery overlooking the dining room forms a break in the main stairway and affords a good point of view of any function taking place in the dining room.

The main stair continues to the second floor, which accommodates the club lounge library, magazine room and two private dining rooms.

The third floor is occupied by the billiard room, two card rooms and a lavatory. The billiard room is furnished with seven English and one American billiard tables.

The fourth and fifth floors are divided into members' living quarters. A capacious kitchen occupies about one-third of the whole fifth floor and efficient service accommodation is arranged for in the rear hall on all floors.

The outside walls and roof are all that remain of the original structure, as has been stated. The floor

DINING ROOM—LOOKING FROM AND TOWARDS THE BALCONY.

THE ONTARIO CLUB, TORONTO, ONT.

SPROATT & ROLPH, ARCHITECTS.

READING ROOM.
CLUB ROOM.

THE ONTARIO CLUB, TORONTO, ONT.

SPROATT & ROLPH
ARCHITECTS.

LIBRARY.

framing is steel with reinforced concrete slabs and a cinder concrete fill around wood sleepers to take the finished flooring. The partitions, except in the basement, are metal, being formed of 7/8 in. steel channels wired together and metal lathed. Ceiling furring is done in a similar manner, rod hangers having been placed in the slab where required. Conduits for electric wiring were placed in the forms before pouring of concrete, as also were sleeves for pipes, etc. Beams and columns in all cases were encased in concrete. The old roof and mansard were thoroughly fireproofed with asbestos board and the spaces between the joists packed with mineral wool.

The entrance hall is treated in a formal manner with Caen stone walls; floor of tile with Laurentian marble laid diagonally, and a green Bancroft border and base; and stairway of an ornamental design in solid bronze.

The dining room is in dark oak, wax finish, with panelling 11 feet high; a frieze decorated with crimson damask and the ceiling of beam treatment in oak.

The club room is panelled in oak 8 feet high, having a frieze decorated with tapestry and a plaster beamed ceiling. The general character of the design is carried through the other rooms on the floor. The billiard room is also finished in oak in a colonial design, which is in keeping with its intended use.

The bedroom floors are treated in pine, white enamelled, with floors of birch. In the basement the lavatories and barber shop have white Italian marble walls and terrazzo floors, while the kitchen, servery and bath rooms have terrazzo floors and white tiled walls. The members' stair from the gallery to the fifth floor is bronze plated with white Italian marble treads and green Bancroft strings.

The lighting fixtures in the main rooms are bronze finish and of distinctive design. The semi-indirect fixtures in the entrance hall are of Italian workmanship, in alabaster.

In order to obtain the maximum of comfort for the members, considerable study was made of existing work of similar character the question of efficient service being given the greatest consideration. The various cooked meats, etc., are carried down from the kitchen in electric dumb waiters and placed directly in a steam table in the servery. The circulation from the dining room through the servery is such that there can be no congestion, the fixtures being so placed that a waiter can pass directly through in one direction only, depositing dirty dishes as he enters and procuring whatever he requires before re-entering the dining room. The system of checking supplies throughout is a most efficient one,

DINING ROOM.

and the plan has been arranged in accordance with this system. The control of the dumb waiters facilitates service on the other floors as may be required and an additional electric dumb waiter from the wine cellar and bar to the various floors takes care of this important branch of club service. In connection with orders to the bar, a gravity tube system is used.

The kitchen fixtures and dish washing apparatus, etc., in the servery are supplied with live steam from a boiler separate from the steam heating plant. The hot water for the lavatories, etc., is also an independent service.

The elevator equipment is electric and consists of a freight hoist of one ton capacity and a passenger elevator, in addition to the three dumb waiters already mentioned.

The steam heating plant consists of a tubular boiler, 14 feet long by 4 feet 6 inches diameter, the radiators being equipped throughout with thermograde valves set to operate at half-pound pressure. An electric automatic pump controls the returns to a sump. In addition there is an indirect heating system supplying the main rooms with warm air, the registers being placed near the ceiling. The air from the intake is first passed through a water curtain washer and over vento steam coils. An automatic control regulates the humidity of the various rooms.

The exhaust ventilation is taken care of by two separate systems, one fan serving the main rooms, exhausting from both ceiling and floor registers, and one the serveries and lavatories. These fans are direct connected and are situated on the roof.

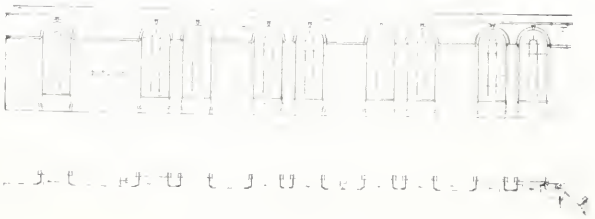
Two lins of piping serve the building with connections for vacuum cleaning, the machine being placed in the basement. A complete refrigerating plant provides the club with ice, and supplies cooling coils for the refrigerators in the servery and in three large cold rooms off the kitchen.

The plumbing throughout is of the most modern design, the members' toilets being operated by a flushometer tank situated on the roof. The fittings of the lavatories throughout are Primus pattern.

The barber shop is fitted with three chairs and a shoe-shine fixture.

The members' living quarters are equipped in the most up-to-date manner each bedroom having a clothes closet, basin, and telephone. The phones are operated from a switch board in the porter's office, with twenty-six private stops. A members' telephone is placed on each floor close to the main stairway. The club has a complete annunciator bell system, and speaking tubes, and is piped for gas in the servants' quarters in case of any accident happening to the electric lighting.

PLANS OF
THE ONTARIO CLUB, TORONTO, ONT.



DETAIL OF BILLIARD ROOM.

SPROATT & ROLPH
ARCHITECTS

DETAILS OF DINING ROOM
DETAILS OF CLUB ROOM

THE ONTARIO CLUB, TORONTO, ONT.

SPROATT & ROLPH
ARCHITECTS

THE
ONTARIO CLUB,
TORONTO, ONT.

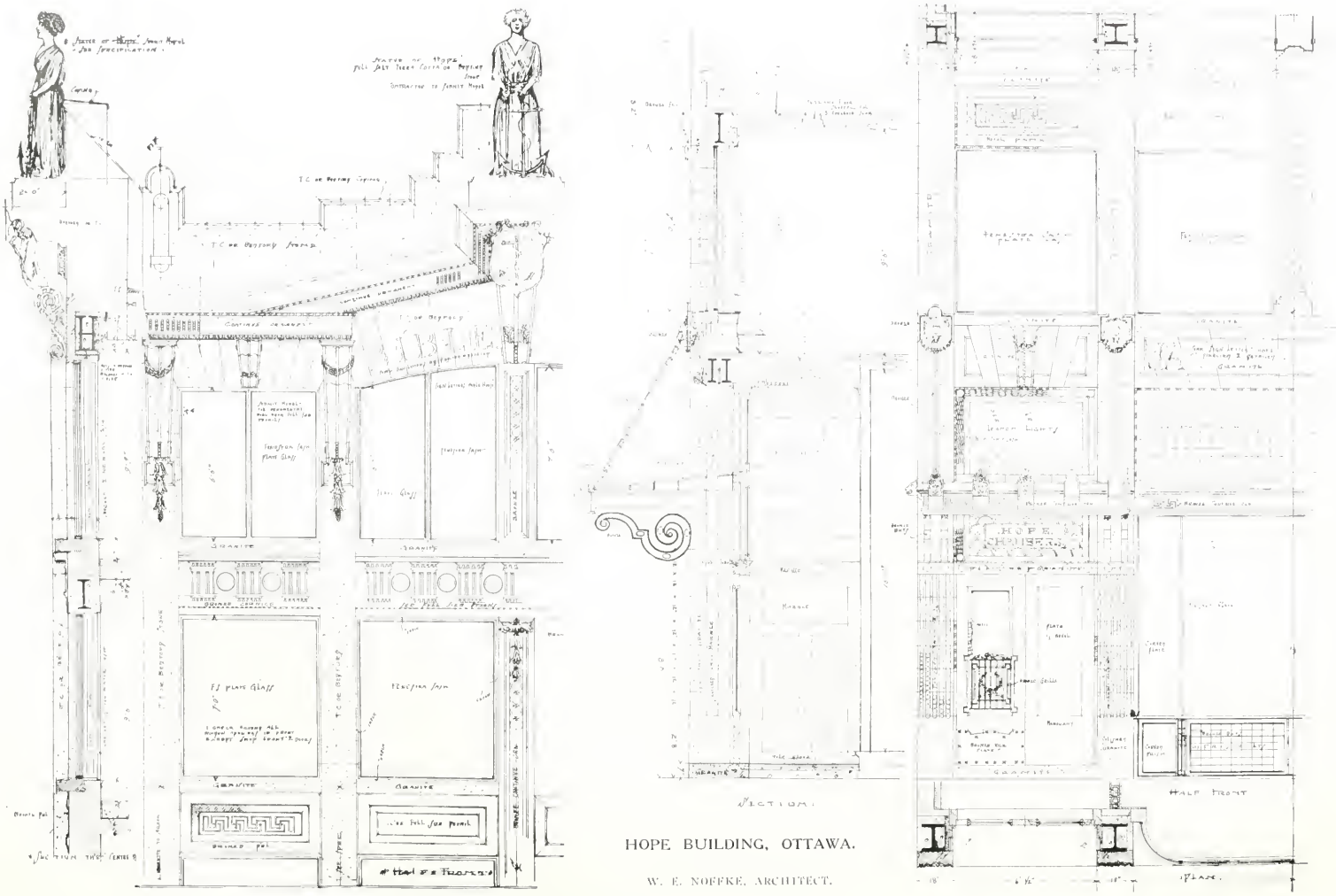
DETAIL OF
ENTRANCE
HALL

SPROATT & ROLPH
ARCHITECTS.

DETAILS OF CLUB ROOM.

THE ONTARIO CLUB, TORONTO, ONT.

SPROATT & ROLPH, ARCHITECTS

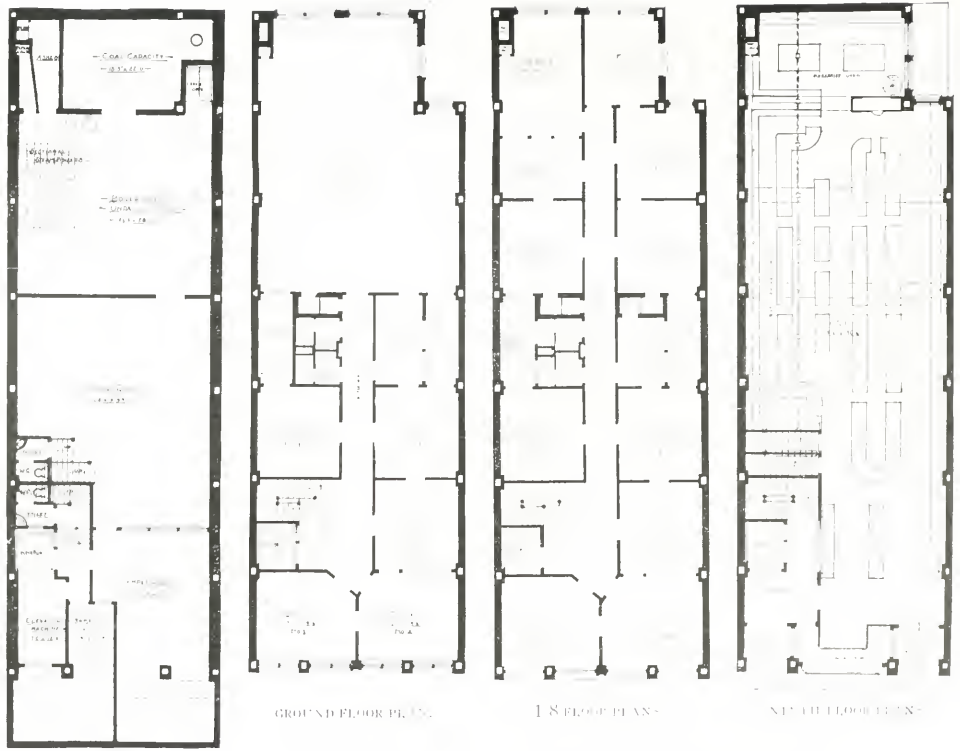


HOPE BUILDING, OTTAWA.

W. E. NOFFKE, ARCHITECT.

THE HOPE BUILDING, OTTAWA, ONT.

W. E. NOFFKE, ARCHITECT.



BASEMENT PLAN.

VIEW OF MAIN FACADE AND PLANS OF BUILDING.

The size of the building is 32 x 99 feet, consisting of 9 storys and a basement, the ground floor being used for a book store, and the basement for printing presses, show rooms, boiler rooms, etc. All floors above the ground are used for offices, with a total number of 96, each floor being provided with ladies' and gentlemen's lavatories, mail chute and waste paper chute. The building is finished in Stanstead granite with panels between the windows of cast bronze; the marquee is also of bronze. The cost of the building was approximately $112,000, or 25c. per cubic foot. The construction of the building is structural steel and 4 inch concrete slab. All floors are finished with terrano, all halls and corridors with ceramic-mosaic. The heating is by the modulation system; the ventilation by overhead exhaust fan.

CONSTRUCTION

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CURRENT TOPICS

J. N. SEMMENS of Winnipeg was the architect in charge of the Bank of Montreal illustrated in the April issue of "Construction."

* * *

THE SASKATOON Architects' Association has adopted a resolution providing that the plans and specifications for all new buildings to be erected shall be placed on deposit in the offices of the Builders' Exchange.

* * *

POINTE CLAIRE will build a new boulevard one hundred feet in width. This driveway will run along the brow of the hill parallel to Lake St. Louis and will present magnificent views of the valley and lake below. The boulevard will extend from Beaconsfield to Dorval.

A MEETING of the Council of the R.A.I.C. will be held in the rooms of the Ontario Association of Architects, 94 King street west, Toronto, on Tuesday, 17th June, 1913, at 10 o'clock a.m. for the organization of the 1913 General Annual Assembly, and the transaction of any other business that may arise.

* * *

BUILDING OPERATIONS in Regina are surpassing former records. The main buildings being erected are the Grand Trunk hotel, costing $2,000,000; Sherwood department store, $1,000,000; McCallum, Hill, ten story structure, facing Victoria square; churches, colleges, and hundreds of residential houses.

* * *

CONSIDERABLE damage is being done to old bits of architecture by the vibrations of the subway. The latest building to be affected is the chapel of the mediæval priory of Saint-Martin-des-Champs—St. Martin of the Fields, Paris. The main chapel has for a century formed the exhibition hall of patent inventions at the end of the Conservatory of Arts and Trades. It is the little old sacristy which has perished at last, its unique vaulted roof falling in because its walls began falling out. In this building the Gothic arch was first employed. It was begun in the year 1060, before the abbey church of Saint-Denis, which was the first great construction to make the Gothic style known.

* * *

RODIN, the famous sculptor, is working on what is considered to be his masterpiece, "The Biplane." It is only symbolical and is described by many who have seen it as of marvelous beauty. The sculpture consists of a tall, slender, unadorned shaft surmounted by what may be described as a lengthened sphere on which twin figures stand side by side, their bodies, which almost touch, curving gracefully backward. Their faces are upturned. Only one foot of each rests on the sphere, which seems to spring from beneath them in the moment of flight, and their wings are only half opened. The two figures, which seem to aid and support each other in flight, symbolize the two wings of the biplane.

* * *

INTEREST is evidenced everywhere over the controversy between the French Government and George Grey Barnard as to the latter's right to remove from France the arches, columns and capitals purchased six years ago. These architectural details belong to the Abbey St. Michel de Cruxa, near Prades, in the Eastern Pyrenees, and were purchased with a removal proviso. Mr. Barnard has repeatedly shipped parts of the old abbey, including some thirty columns and capitals. His idea is to construct an eleventh century cloister in America as a permanent object lesson of mediæval art. The Government is laying its claim by classing the ruins as public monuments, but the general opinion is that such action would be impossible since the sculptor secured a contract of purchase so long ago.

A Plea for a Better System of Estimating the Cost of Buildings*

G. Alexander Wright, Licentiate R.I.B.A.

THE ever-increasing amount of unproductive time, and usually money, which contractors are called upon to expend in preparing, gratuitously, quantities, as well as prices, often for an owner's benefit, suggests that the time has arrived when all concerned should take up, and seriously consider, the possibility of adopting a modern and more sensible system of estimating, such, for example, as has been long in successful operation in older communities. Not a mere copying of such methods, for I advocate the creation of a standardized method of our own—an American system, practical above all things; a system that will be in line with our otherwise progressive building methods; a system that shall be clear and accurate, and that shall stand for square dealing between contractor and owner—in short, a system that shall give every man his due, no more and no less; a progressive system, free from the defects of other systems, such as unnecessary elaboration, and yet one that will reveal to the bidder, at a glance, the actual quantity of material and labor in a structure, in any individual trade. When bidders are invited to submit bids, they are theoretically asked of course to submit competitive prices, but in actual practice their bids are based upon competitive quantities, before the competition in prices commences; which, in my opinion, is as unjust to the contractor as it is ridiculous. A building can only contain a certain amount of material, and no amount of figuring by contractors against each other can make that quantity any more or any less. Where, then, is the sense in a dozen or more general contractors competing against each other in taking quantities? One or more bidders, through being hurried, or being unable to take off the quantities accurately, leaves something out. What happens? Their bids are consequently low, and the owner benefits, at the low bidder's expense, whilst the competent or more careful bidder loses the job, because his quantities are more accurate, or because there may have been room for uncertainty when figuring the plans and specifications.

Not long ago, a general contractor (whom I have known over twenty years) told me that if contractors figured to do competitive work just exactly as plans and specifications called for, a man would not get "one job in fifty." Now, if this is true, and personally I believe it is, there is something very rotten in our methods. In my judgment it lies in our antiquated estimating practices.

Those of us who know something of the unsatisfactory conditions under which bidders are often obliged to figure, time after time without result, have realized that hundreds of thousands of dollars in time and money are taken from contractors' pockets every year, simply because they do not, so far, limit competition between themselves to the matter of prices. They go on competing, and I suggest gambling, with each other as to the quantity of material a building will take, whereas I contend that that is a question of fact, and that competition in the quantities between contractors never can, and never will, in any way, change the fact that a certain fixed quantity of material and labor is necessary to do every job. There can be no legitimate competition in taking off quantities of materials, except that unfortunate competition which bidders make themselves when they take off too much, or, as too often happens, too little.

The legitimate competition can only come in where one man can handle a job better than another, or one man may have some advantage over another in buying, and so forth. All this kind of competition is legitimate enough, but it must be obvious that no amount of figuring can reduce the real quantity of material which a building will take, and so my contention is that it would be proper and fair to start all bidders figuring upon the same basis, by furnishing each with a schedule, or bill of quantities, showing accurately and clearly the different quantities and kinds of materials which the bidder is invited to figure upon; and even then there would be plenty of competition left, in placing profitable prices against each item.

Our present method (or rather, want of method) in estimating, and the rapid strides being made in construction, are, as I have said, forcing upon the contractor, more and more every year, an increasing waste of time and money in figuring out quantities. This senseless waste and competition cannot go on for ever. It has already brought men to bankruptcy all over the country, and has often prevented the making of a proper and legitimate profit among those who do succeed in keeping their heads above water.

This is a live question, and it deserves the earnest consideration of all contractors' associations and architectural societies from the Atlantic to the Pacific coast.

No new or untried principle is involved. It is simply that of a definite quantity of work, for a definite amount of money. In substance the owner says "I want this quantity of work done. The drawings and specifications show you how this quantity of work is to be assembled or put together: Now, tell me how much money will this cost? I want you to

*An address given before the General Contractors' Association, of San Francisco, April 10th, 1913.

do the quantity of work called for; no more, no less."

At present, the successful bidder often says, in effect, to an owner, "I will erect your building according to plans and specifications," but—mentally—he says, "I do not figure that it will take as much flooring, concrete, plastering, or painting as my competitors think it will!" Let me ask, Is this a proper or fair competition between contractors themselves? Is it fair to their own interests? There is only one individual who stands to gain anything under such imperfect methods, the owner, and not always he.

It may be stated that the Quantity System is equally applicable to engineering works, such as railroad work, sewerage disposal schemes, canals, pumping stations, etc.

Before proceeding to a further consideration of this subject, I may be pardoned perhaps for expressing the opinion, after having had over twenty years' intimate experience with the workings of the Quantity System of estimating, and over another twenty years in San Francisco (without any such system), that I know of nothing in connection with the work of the contractor that would be more beneficial than the adoption of some equitable recognized system of estimating upon bills of quantities, and these latter would be equally valuable, whether sub-contracts were eventually let or not.

It is not the idea that we accept the methods of any particular country—the author hopes he is too much of an American citizen to suggest that—but where contractors in older communities favor a certain system to the exclusion of the very thing we practice here, then I suggest that we might well stop for a moment and take notice of what is being done. For example, in the year 1909 a conference was held in Great Britain between the National Federation of Building Trade Employers, the Institute of Builders and the London Master Builders' Association, and a resolution was adopted recommending contractors who were members of these powerful organizations to decline to bid in competition against each other, unless bills of quantities were supplied for their use at the owner's expense. A deputation from these contractors' organizations afterwards attended before the principal body of architects, who promised to further the aims of the contractors as far as was within their power; and to-day the Quantity System is in full operation, not only in the case of private owners, but in all building work for Government and municipal authorities, and upon the principle that it is impossible to obtain accurate bids without accurate quantities.

There must be some good reason for all this, and I suggest that it is worth consideration by any body of men, architects or contractors, who are endeavoring to get and to do better work, and thus elevate the building business to the honorable position which it is entitled to occupy, and to bring about such conditions as will cause owners to hold the competent architect, as well as the contractor, in higher esteem, and not regard him, as is too often the case now, with suspicion.

Now let us consider, for a moment, a few of the disadvantages of existing methods:

First—The time usually given for figuring is far too short for the accurate taking off of quantities, in addition to the pricing and figuring out of the many items. A bidder usually has contract work in progress, and other matters to be attended to during the daytime; other plans are to be figured by a certain time, and but little can be accomplished in the eight-hour working day, and so advantage must be taken of the night hours, sometimes all night, and even Sundays (as I happen to know), and any other time. Only those who have worked under these conditions and over blue prints at night, hour after hour, taking off items, can appreciate the many difficulties, pitfalls, and liability to error through figuring against time after the real work of the business day is over. But the plans must be returned first thing in the morning, or the bid must be in by a certain hour the next day. Nothing but hurry—hurry—hurry. In not a few cases more information is necessary; something is not quite clear. The plans and specifications do not agree on some point. Which is right? There is no time to find out, the only person who can enlighten you is asleep, perhaps, while the careful estimator is burning the midnight oil, and wrestling with problems which can be avoided and entirely eliminated under a more modern system of estimating.

Again, the careful bidder who honestly tries to get in all the items, and figures to do the work as called for, is frequently beaten by a less competent bidder, who forgets something, or who, maybe, is willing to take a chance anyway, in order to get the job. True, omissions in lists of materials are sometimes unavoidable, under existing methods, which unfortunately aim at speed rather than accuracy.

It is, to say the least, disappointing to a careful bidder on a large job to find his bid just above the lowest, and after the low man has signed up the contract, it develops that the painting, or some such item, was left out. This, however, could not occur with the Quantity System.

This is no overdrawn picture, as I know from personal experience. The competent bidder who gets in all his items to-day is usually under a disadvantage unless he happens to be figuring against men of his own stamp. Meanwhile it would appear that the chances are in favor of the owner, most of the time, and it seems to be a case of "heads I win, tails you lose." Surely it is time there was a change.

The existence of present conditions, whilst much to be regretted, is due to a blind continuance of early-day custom. It is in no way up to date, nor conducive to progress, nor to that business success to which a bona fide contractor is entitled. It is entirely unsuited to modern construction and modern methods. The tallow candle, years ago, was a great invention, but how many of us would light our homes to-day by this method? And yet our estimating methods

of to-day date from the same identical period as the tallow candle. Other countries have long ago graduated from such primitive methods, but we are content to stand still, and we are, in this respect, away behind the times. It seems to be almost inconceivable that shrewd business men are still willing to spend their time, all going over the same ground, figuring against each other on quantities, knowing all the time that they are all, save one (and sometimes even that one), simply wasting their time. By the adoption of some sensible system, all this quantity taking could be done by one competent person.

The great difference we find in bids arises, in my opinion, not so much in the prices or money values placed against the quantities, as it does from errors in the quantities themselves, the accurate preparation of which calls for special training and continuous concentration of mind, which the busy contractor of to-day can seldom find time to acquire.

Now we will investigate a bill of quantities, such as we are considering. What is it? and how is it used?

First of all, it is a document, handed free of expense to each bidder, lithographed or similarly duplicated, in order that all bidders' copies may be exactly alike. It will contain everything which it is essential for a contractor to know when making up a figure, with a separate section for each trade, such as excavation, concrete, brickwork, and so forth. A general summary is provided at the end of the bill, in which is entered the net cost of each trade; this summary is footed up, the profit the bidder expects to make is added, plus the cost of the quantities, the result being, of course, the amount of the bid.

The methods of measurement must conform to the standards used by each individual trade, and through the bill the greatest care is taken to have everything systematized; all cubic, square and lineal feet, and numbers of items, will be found all together under their respective heads. In this way, immediate reference may be made to any item required, even though the entire bill may contain hundreds of items, and so every item has its proper place—nothing is left to chance. Detail sketches also appear in the margins whenever necessary, to show a bidder at a glance what is required. These, as we know, are of more value to an estimator than the long written descriptions one sometimes finds in specifications. The keynote of the Quantity Surveyor is accuracy. In going through the drawings and specifications he has come across all those doubtful questions which always crop up when figuring under present methods. He will have taken them all up with the architect, and adjusted them, before the quantities are handed to bidders, so that everything is all plain sailing.

Nothing is "near enough" for a Quantity Surveyor—he scrutinizes every part of the work closely, clears up any doubts, or anything capable of a double interpretation, and his work leaves no loopholes for either the owner, the contractor or the architect to take advantage of. The result is that it is seldom necessary for a bidder to ask questions of the architect when making up a figure. If he should wish to do so probably he would be referred to the surveyor, who is familiar with every minute detail of the work.

Further, and right here, lies one of the greatest advantages of the Quantity System. It is not necessary, except in a general way, for a bidder to study the drawings and specifications at all, and he certainly does not have to figure them. He simply prices the bill of quantities, and, in these days of hurry and bustle, this is as much as a contractor can be expected to do for nothing. This enables the competent contractor (the one who has unit prices at his finger ends) to make up a bid for, say a $100,000 building, in a few hours, and he has the satisfaction of knowing, when the unit price is placed against each item, that nothing has been forgotten; in other words, he only contracts to furnish so much material and labor—and surely this is absolutely right in principle. Good reasons exist why the general contractor should have faith in his own judgment and accustom himself to price items in every trade which goes to make up the building business. It is the only consistent method of estimating, for anyone who claims to be a general contractor. Experience has taught most competent men that it pays to do it. The mere getting together of figures from sub-bidders, and footing up the totals of the lowest, is not estimating at all. That is mere schoolboy work. However, I am led to believe that this is now the exception among general contractors in San Francisco rather than the rule. The ideal contractor is the one who makes up his own estimates, and not he who is dependent, for any reason, upon sub-contractors, who thus become the real estimators. If every general contractor would keep a prime-cost book of all trades, and quantities were supplied to him, he would soon be in a position to give a fairly close figure upon any sized structure, without first taking sub-bids, and this I suggest is the most consistent, satisfactory, and profitable method to pursue, when bidding upon work as a whole; but of course it requires care and experience.

Further, one of the greatest arguments in favor of letting contracts as a whole is, of course, the fact that a general contractor has the ability to figure all trades in his own office, and that he knows how to, and will supervise the work of sub-contractors, if any. If architects can be assured of this being done, it would be better for all concerned.

In general practice I believe the accuracy of the bill of quantities should be guaranteed. Such a document might well be made the basis of the contract, equally with the drawings and specifications; if this were done, the chief cause of disputes between owner and contractor would be removed.

This, I submit, is entirely logical and right—a certain quantity of work for a certain sum of money, the owner to determine the former and the contractor to fix the latter. Surely this is morally just and fair.

It may be asked, Where are these competent sur-

veyors to be found? And it would be a natural inquiry, as it is no part of the duty of architects to prepare such quantities. In fact, the relation of the architect to the contractor should preclude him from having anything to do with furnishing quantities. This should be attended to by a disinterested specialist—the quantity surveyor. In older countries, young men of education are now apprenticed to practising surveyors, and it has become a recognized profession. Years ago these quantity surveyors frequently came from the ranks of the architects; others possessing the necessary education were possibly contractors, building superintendents or estimators. I have known contractors' representatives who commenced life in the workshop, who, after securing the advantages of special training, made experienced and very competent quantity surveyors. There must be a beginning to everything, and doubtless there are many men in this country who, after some little training in the technique of this work, should make reliable quantity surveyors. The principal qualifications are honesty of purpose and a knowledge of architecture and construction. The surveyor should be a neat draftsman and have actual experience in conducting building operations. He should possess the ability to readily detect discrepancies or conditions which might give rise to misunderstandings during construction, and last but not least, the necessary mentality to act disinterestedly. He must do what is right in measuring, as between the contractor and the owner. The usual custom is for the architect to furnish the quantity surveyor with a set of the drawings and a draft specification, and the latter then commences work in his own offices. During this period the architect and surveyor are in frequent consultation, to the end that all uncertainties are cleared up and adjusted upon the drawings and specifications. In short, no effort is spared to obtain perfect clearness and accuracy before bidders commence figuring.

Such uncertainties are bound to crop up; they are unavoidable. They nevertheless perplex the contractor when he is figuring, and his foreman on the job, and create unnecessary trouble and sometimes bitter disputes; and then, in such cases, one of the parties to the contract is usually a loser.

Now that we have briefly considered the qualifications of a quantity surveyor, let us take note of what the preparation of a bill of quantities involves. It may well be said that during the last forty years it has been brought to a mathematical science, and yet it is really surprising what a vague idea exists concerning the methods, objects and uses of the Quantity System. The fact remains, however, that, where the system has been adopted, responsible contractors refuse to figure without it. Some day that will be the attitude of contractors in this country—when they fully realize the folly of wasting their time and money in competing against each other on quantities as well as on prices.

But to return: Three distinct processes are involved, and each calls for different operations.

First—"Taking off" and entering every item (or "dimension," as it is called) upon the dimension sheets. This is always done in exactly the same order in every building; no dimension, however small, is omitted—no guess-work of any kind is permitted. The exact location in the building of every dimension taken is carefully noted, and every figure or note taken is preserved for future reference.

It is impossible to illustrate here the work in detail involved in taking off each trade, but the following may serve to show the general idea: Let us follow a surveyor for a moment in taking off his dimensions for a few items of—we will say common brick work. He always commences taking dimensions at the same point on each floor plan; every length of wall from one angle to the next is measured separately and the dimensions entered in "waste," as it is termed. We will assume that it takes say fourteen dimensions to go clear around a building—these fourteen dimensions and their locations are permanently recorded, footed up, and the total lineal feet is then placed immediately below this, and a line drawn across the column to separate it from the next item. The dimension is squared, i.e., the number of square feet these figures represent is figured out, and opposite to the total we find a description, thus, for example: 21-inch wall of standard common brick work laid up with lime, mortar and Portland cement, gauged three to one, pointed with flat joints one side for whitewash and raked out the other side for cementing.

In good practice it might be best to give the number of square feet superficial of wall, and give the thickness. The same method is adopted with each story, with its varying thicknesses of walls, every dimension being entered in precisely the same order, with its particular location noted.

Then we come to deduction of openings. Those with inside and outside reveals (as in the case of box-frame windows) are taken separately, door openings the same. Those of one size and one thickness of wall are "timesed," as we say, and entered in the dimension column, so: "Ddt. 9 3 feet 9 inches x 7 feet 13 inches outside wall, fifth floor."

Then should follow an item, "extra labor," to so many 8-inch common brick segment arches in say three half-brick rowlocks to 4-foot 6-inch openings with 3-inch rise in 8-inch wall, include for cutting skewbacks, etc., and for wood-turning piece and setting and striking. In case richer mortar was specified for arches, it would be so stated, and the proportions.

When rough cutting to brick work is required, every square foot of it would be measured. Brick work in footings or foundations, or walls below ground or at unusual heights, should be all segregated and given separately, with full descriptions.

Such items as the following are then taken by the square yard or square foot—viz., selected common

brick facing. If joints are struck and cut (as face work), it is taken as a separate item, as should be the case with any portions that are to be pointed with special or colored mortar. Cementing by the square yard if on ordinary plain surfaces, but if in widths of 12 inches or under, then this is separated and taken by lineal foot; should this work occur on circular surfaces, it would be so described, kept separate, and the radius given. Lineal dimensions are taken of all rough splays and chamfers, flues, pointing to flashings, projecting courses, with the number of mitres, splays, or stops in same; brick sills, with the returns, are numbered, if any. The labor of forming quoins, square or splayed, and (in certain cases) the lineal feet of plumbing angles and reveals, might be taken, also leveling up for joists, bond iron and the like.

The foregoing applies to common brick work, as before stated. Now, where "face" brick are used, the entire surface of such facing is measured by the square foot, including reveals and soffits (but openings deducted), the kind of mortar and the labor of pointing being given. Here would be taken such items as face arches. Fair cutting by the square foot on same principle as mentioned for common brick work. Then come lineal feet of each course, of which figured sketches should appear. Raking mouldings or belts separate; then follow the number of external, internal, raking, skew or other mitres; also square ends, etc. (if any). All other lineal feet items follow in their proper order, and then in a similar way, concluding with numbered items, which would be described and (if necessary) sketched in the margin. I am aware that this is but a very elementary illustration of the detailed method of taking off, but the principle applies throughout every department, in every trade, from the excavator to the painter, but it would be too great an undertaking to go fully into details here in each case.

Surveyors' quantities are usually measured net, and it is so stated in the preamble of the bill—upon the understanding that the unit price for each item is to be made, by the contractor, to cover trade customs, etc., which differ in each locality.

The before-mentioned dimension sheets are usually checked over with the drawings by a second person, and then all totals are abstracted; that is to say, they are transferred to abstract sheets, under separate headings. In this way many similar items of the same value are collected together and footed up and checked. This reduces the number of items which appear eventually in the finished bill, which is written direct from those abstract sheets, and any further sketches or descriptions necessary for the bidder to thoroughly understand what is required are then finally added. When completed, a sufficient number of copies of these bills are lithographed, or otherwise duplicated, and a copy is sent by the surveyor to the list of prospective bidders, whose names and addresses have been previously furnished him by the architect.

Some of the advantages of the Quantity System of estimating to the contractor are as follows: (1) Saving of time and money; (2) Greater precision in measuring; (3) No uncertainty as to interpretation of plans or specifications (the quantities should govern); (4) No visits to the architect's office when figuring, for explanations or otherwise; (5) No other work is contracted for except the quantity set forth in the quantities; (6) The contractor, if he so desires, can check up the quantities before signing a contract,—in an American system of estimating, the quantities should, I think, form part of the contract; (7) No bidder can inadvertently leave out anything, and so in this way arrive at too low a figure; (8) Not having to spend time taking out his quantities, the contractor has time to attend to more profitable business; (9) Systematically arranged bills of quantities duly priced (whether work has been secured or not) form excellent data for making future estimates.

Before an American system can be put into operation it will be necessary:

First—That a committee of representative contractors be selected to standardize a method of measurement to be universally followed by all contractors and architects.

Second—That competent men, mutually satisfactory to contractors and architects, be retained in such numbers as the volume of work may demand. These men, or quantity surveyors, could be placed under bond, covering their competency and integrity until they have been proved and assured; such appointments to be permanent, except for good cause; the compensation of these surveyors to be fixed at a certain percentage upon the total of each estimate; each bidder, of course, adding this amount to his bid.

Third—I suggest, also, that a law be passed requiring that a bill of quantities be furnished (free of expense to bidders) upon all State and other public buildings. I advocated this as far back as the year 1893, and it may interest you to know that such a law is actually in effect in the State of Pennsylvania, and has been since 1895. It does not, however, go quite far enough, as the quantities furnished have no guarantee as to their accuracy. Quantity question is attracting much attention at the present moment among contractors in Boston, New York and other cities, and I may mention, perhaps, that a programme is now being formulated to bring this Quantity System to the attention of every building contractors' association and every architects' society in this country.

Fourth—In connection with the Quantity System I still advocate (as I did in a brochure on arbitration which I published in 1894) the creation of a technical tribunal, or court of arbitration, where nothing but building suits and disputes shall be determined and adjusted. (See also the American Architect, April 13, 1901.) Such court is to be presided over by a specially selected judge and at least two other persons of practical experience in the actual construction of buildings, and in estimating the value of [illegible]

ers' work, and familiar with building trade methods, terms, processes and customs. I maintain that such technical matters as building construction, values, etc., should not be decided solely by technical law, nor by laymen alone, however skilled in other ways, notwithstanding the custom of calling expert witnesses before them. I consider that it would be an advantage to disputants if a majority on the bench had a first-hand practical knowledge of building construction and methods, such as I have indicated, where technical disputes might be determined in a few days, once and for all, and without delays, which only tire the contractor out and thereby force him to accept a settlement more or less unjust, from a practical standpoint.

I am hoping to shortly see a committee appointed in every building employers' organization in this country, to take up and seriously consider such matters as I have touched upon this evening. Nothing, in my judgment, will tend to elevate the building business and to promote a feeling of mutual confidence and respect between the architect, the contractor and the owner more than the Quantity System of estimating, which, as I think I have shown, aims at absolutely square dealing between the man who pays for the structure and the man who builds it.

In conclusion, during a recent trip East and to Europe, it was my privilege, through your courteous secretary, to be kept in touch with your activity and the progress recently being made by this organization. I wish to extend to your president, directors and members my sincere congratulations upon the progressive methods you have so far adopted, and to tender you my best wishes for continued success.

I would like to add, as President Wilson is reported to have put it recently, that "nothing is done to-day as it was done twenty years ago." That is the essential fact. I read somewhere the other day that this age we are living in to-day is a new age, an age in which everybody all over the world is doing new things, with interesting, important, wonderful new devices, new methods, new machines to make new products; new proofs of the power of the human mind to conceive and to control, and the human hand to construct instruments with which to conquer the forces of nature and bring them to the service of humanity—these are the characteristics of the age we live in. Never have the creative forces of mankind moved so fast as in the lifetime of us who are now on earth. Never before have there been so many people in the world eager to know what the world is doing and how it is doing it.

* * *

On April 10th, Mr. G. Alexander Wright, architect, addressed the Association on the very interesting subject of "Quantity Estimating."

The large attendance present at the meeting testified to the interest taken in the subject, and while for many reasons it may not be practical or possible to get this plan of estimating work adopted in the architects' offices, it is, nevertheless, a subject upon which the contractors should be fully informed, and it is worthy of note that a large number of the big contractors in this city to-day are employing estimators to assist them in figuring their work.

Mr. Wright, in his address, did not recommend a mere copying of the methods in use in England, but rather suggested an American system which would be practical for local conditions.

At the close of the address numerous intelligent questions were asked Mr. Wright, and a number of those present seemed to favor the system, having worked under it in other countries.

The objection is made that the owners could probably not be induced to pay the fee for a quantity survey on their job before it is put out for figures. Then, too, it is thought by some that the architect, with quantities of the work in front of him, might be tempted to go still further into the contracting business than some of them have already seen fit to do, and that the information might, therefore, be used to the disadvantage of the contractors. Of course, conditions vary in different localities, and while there may be some architects here who would take advantage of obtaining information as to the quantities of work and material in their buildings, there would probably not be many of such, and, in any event, it is finally the question of cost which must settle the awarding of a contract; and it is a well known fact that some contractors are able to obtain slightly better prices than others for their materials, and, again, others are able to construct buildings at a less cost than others, owing to their more efficient management.

One thing is certain—if all architects thought and dealt squarely and honestly the adoption of the system would undoubtedly be of advantage to all the contractors.

It may be well to state that this system of estimating is now under consideration by other organizations of builders in other parts of the country, and there seems to be a general tendency among up-to-date contractors throughout the country to adopt a more careful and accurate system of estimating the cost of a contract. The old days when a contractor practically cubed up a building and put in his bill, trusting to good fortune to make a profit on the work, have gone by. More money is spent for plumbing fixtures, wiring, etc., to-day than was ever thought of twenty years ago, and the man who roughly estimates the cost of a building at this time gets a job only when he has made a mistake.

The system is no experiment, and is being followed, and has been followed, for years past in several countries of the world, and the Association owes a vote of thanks for the intelligent and courteous manner in which Mr. Wright placed the subject before the stockholders. However, he, himself, states that it is impossible to attempt to give a thorough understanding of the question in one lecture.—*General Contractors' Association Review.*

Strength Test of Reinforced Brickwork

THE FOLLOWING tests of reinforced brickwork were made recently at Winnipeg before a representative body of architects and builders. For some time a practical method of reinforcing brick has held the attention of burnt clay experts and it has fallen to W. H. Brown, architect, of York, England, to furnish a thorough and simple means for producing the desired result.

The test was made to determine the carrying capacity of a reinforced beam resting on two end supports and of a cantilever beam.

In construction the test consisted of a hollow reinforced brick beam, 2 ft. 11 in. deep and 8 in. wide, supported on two brick piers so as to form a simple beam of 9 ft. 8 1/2 in. clear span between piers, and a cantilever beam of 4 ft. 6 in. clear overhang. The beam was built with its length running approximately in an easterly and westerly direction with the cantilever at the east end, and consisted of two separate walls with 1 1/2 in. air space between. The south wall was 4 in. thick and built of twelve courses of brick, laid flat, with vertical joints staggered. Wire mesh reinforcement was laid in the mortar of each course, and also below the lower courses of bricks. The north wall was 2 1/2 in. thick and was built of eight courses of brick, laid on edge, with vertical joints staggered. The reinforcement was laid similar to that in the south wall.

The brickwork of the beam extended in to the brick piers so that every other course had half of the brick in the pier and half in the beam itself, while the other course had a vertical mortar joint where the beam connected with the pier. The reinforcement was continuous over the piers, while the two walls were tied together at intervals by the reinforcement. The piers were built on a concrete foundation, which was laid directly on frozen ground, no special foundation being prepared.

All bricks used in the wall were of ordinary white clay purchased from a local manufacturer. A test of six samples of these bricks was made, and results are shown in Table A.

Table A.

Specimen No.	Method of testing.	Area, crush surface.	Loads at first crack. Total load.	Loads at first crack. Load per sq. inch.	Crushing loads. Total load.	Crushing loads. Load per sq. inch.
			Lbs.	Lbs.	Lbs.	Lbs
1	On edge	21.8	20,000	917	55,400	2,520
2	On edge	19.9	37,000	1,860	77,800	3,910
3	On edge	20.4	37,000	1,815	74,000	3,620
4	Flat....	31.0	35,000	1,130	155,000	5,000
5	Flat....	32.9	50,000	1,520	100,000	3,040
6	Flat...	32.9	50,000	1,520	106,000	3,220

Note—All crushing surfaces were coated with plaster of paris to insure an even bearing surface. Specimen No. 1 showed hair cracks before testing.

LOAD 10,504 LBS.

BRICKS CRUSHED BEFORE THE CEMENT GAVE WAY.

The concrete consisted of one part Portland cement to three parts of very fine sand. The reinforcing used was a special wire woven mesh steel

LOAD 12,512 LBS. TO THE LEFT AND 6,730 TO THE RIGHT.

LOAD 27,747 LBS.

LOAD 30,282 LBS.

fabric, of high elastic limit, consisting of four longitudinal strands, No. 17 gauge, held in place by diagonal wiring of No. 19 gauge, meshed so that a transverse section cuts the four longitudinal strands and three diagonal strands. The width of this fabric is about two and one-half inches.

During the construction of piers and beams the space was housed in with ordinary board sheathing and fire was kept going the whole time of the construction until within two or three days of the date of the test. The outside temperatures from date of construction to date of test are given in Table B.

Table B.—Maximum and Minimum Temperatures, January 20th to February 21st, 1913.

Date.	Maximum.	Minimum.
Jan. 20	—21.9 F.	—28.3 F.
21	—16.0	—25.7
22	6.1	— 8.0
23	—12.5	—21.1
24	— 5.8	—21.2
25	14.9	— 2.7
26	5.6	—12.9
27	4.2	— 6.2
28	13.2	— 5.1
29	17.2	12.6
30	9.6	— 7.9
31	— 9.7	—25.5
Feb. 1	5.2	—21.4
2	2.6	—12.1
3	— 9.3	—23.5
4	—11.8	—25.5
5	— 4.8	—22.6
6	— 3.5	—12.3
7	21.9	— 2.7
8	5.9	— 9.9
9	— 1.8	—20.0
10	11.9	— 4.9
11	— 9.7	—16.8
12	13.8	—24 3
13	23.3	3.1
14	26.7	— 3.1
15	10.8	—10.2
16	13.6	2.9
17	24.8	10.0
18	28.3	21.5
19	13.2	5.4
20	10.9	— 4.4
21	11.4	—18.3

Precaution was given, however, to exclude frost from the building, but it would appear that there was a slight degree of frost on the lower course of the cantilever at the end of the overhang.

The test was made by piling pig iron on top of the beam and cantilever, care being taken to spread the bottom courses of pigs so as to prevent, as far as possible, any arching effect. The test started at 1 p.m. February 20th, and the main beam and cantilever beam were loaded alternately until the main span carried a load of 12,502 pounds, and the cantilever span carried a load of 3,091 pounds. The cantilever beam was then loaded to destruction before placing any further loads on the main span. No hair cracks developed in the cantilever arm until a load of 8,882 lbs. was reached, at which time a hair crack developed at the top where the cantilever arm joined the pier. The loading and deflection observed are noted in Table C.

Table C.

No. of loading.	Time.	Main span. Total loading.	Main span. Observed deflection.	Cantilever span. Total loading.	Cantilever span. Observed deflection.
	Feb. 20th,	Lbs.	In.	Lbs.	In.
1	1.00 p.m.	1,029	0.		
2		2,030	0.		
3				1,043	0.
4		3,074	.02		
5		4,096	.02		
6				2,072	.01
7		5,122	.02		
8		6,196	.02		
9	2.00 p.m.			3,091	.01
10	2.45 p.m.	7,216	.02		
11		8,259	.02		
12		9,312	.02		
13		10,388	.02		
14		11,436	.02		
15		12,502	.03		
16			.03	4,126	.01
17			.03	5,138	.01
18			.03	6,166	.01
19			.03	6,740	c.01
20	3.35 p.m.		.02	7,247	.11
21			.02	7,807	.11
22			.02	8,312	.11
23			.02	8,882	d.14
24			.03	9,415	.22
25				9,946	.27
26			.04	10,506	e.37
27		13,057	.04		
28		14,115	.04		
29		15,154	.04		
30		16,203			
31		17,282	.04		
32		18,292	.05		
33		19,362	.06		
34		20,433	.07		
35		21,456	a.07		
36		22,497	.07		
37		23,527	.07		
38		24,551	.08		
39	5.00 p.m.	25,605	.09		
		Interval 30 m.			
40	5.30 p.m.	26,682			
41	5.45 p.m.	27,746	b.13		
	Feb. 21st,				
42	10.00 a.m.	28,811			
43		29,870			
44		30,903			
45		31,930			
46		33,002			
47		34,039			
48		35,131			
49		36,178			
50		37,198			
51		38,232			
52	12.30 p.m.	39,282			
53	4.30 p.m.	40,363			
54	5.00 p.m.	41,129f			

a—Hair cracks started at middle and sides of bottom of beam. Cracks at middle of south wall, extending six courses from bottom.

b—Last load February 20th. February 21st, 0 a.m., deflection before any loading. Three distinct cracks at middle, also crack at lower ends extending diagonally to the middle of span at the top.

c—No hair cracks.

d—Slight hair cracks.

e—Cantilever failed by shearing near support.

f—Loading fell to the north, caused by deflection and partial failure of north wall, thus throwing whole structure piers and all towards the south.

During the loading of the cantilever arm to destruction, a slight crack was noticed at the junction of the main beam and the east pier, due to the deflection of the cantilever arm. This closed up after the failure of the cantilever and did not seem to affect the main beam. After the failure of the cantilever, loading was continued on the main span until 5.45 p.m. February 20th, the total load on the beam then being 27,746 lbs., which load was left on over night. Owing to the deflection of the beam the horizontal mortar joints of the piers opened up at their outer edges, on the same horizontal plane as the bottom of the beam.

Loading was resumed at 10 a.m., February 21st, and continued until 12.30 p.m., the total weight on the beam then being 39,282 lbs., which load was then left on the beam until 4.30 p.m. When the total load reached 41,129 lbs. the structure failed due to the north wall 2½ in. thick giving way and allowing the load to fall towards the north, thus throwing the whole structure (beam and piers) towards the south, the piers themselves separating from the foundation. The north wall, which was only 2½ in. thick, probably failed by diagonal tension, a distinct crack having been noticed extending from the ends of the beam near the bottom to the top of the beam near the centre. The loading and the observed deflections are shown in Table C.

E. Brydone Jack, C.E., Professor of Civil Engineering at the University of Manitoba, in summarizing, said that the results of this test showed a remarkable increase in the strength of the brick walls, due to the use of the reinforcement, and very clearly illustrated its value for building operations, where brickwork had to act as a beam to carry loads.

* * *

The advantage in reinforcing a building similar to the above method lies in the fact that the thickness of the walls can be reduced one-third. Take a wall, for example, thirteen inches thick—fifty by one hundred feet—this would mean 105,000 brick. By means of the reinforcement the wall could consist of an outer course of four inches and an inner one of three inches with a cavity between. This makes a difference of 35,000 brick and will reduce the cost twenty per cent. In addition to the amount saved the hollow wall is more conducive to atmospheric changes in winter and summer, possesses more strength and lessens the weight on the foundations. The following reasons have been cited in favor of this method: Saving in foundation, saving in maintenance, saving in depreciation, saving in interest, increased life, freedom from condensation and freedom from noise, increased beauty of appearance. Similar tests have been held in different countries, resulting in a revision of by-laws, permitting of the use of reinforcing by means of special wire-woven mesh steel fabric. It is impossible to predict the outcome of this new method, but it is certain to produce the desired results and give to brickwork the enduring qualities necessary under all conditions.

A NEW FACTORY, costing in the neighborhood of a quarter of a million dollars, and employing upwards of a hundred men, is projected by the Metal Shingle and Siding Co. of Saskatoon. At the present time, temporary buildings are now under way for the company, and these will be replaced soon by the large brick and steel permanent structure.

* * *

THE BULLETIN of the British Chamber of Commerce for Italy states that on the occasion of the thirteenth Congress of Italian Engineers and Architects, which will take place at Messina in the autumn of 1913, there will be organized in that city a building exhibition with the object of illustrating the best technical, artistic, and hygienic arrangements, decorating and building materials, etc., suitable for the reconstruction of the destroyed city.

* * *

A. T. ENLOW has resigned as manager of sales of the Stark Rolling Mill Co., to become associated as partner with the Pedlar People, Oshawa, Ont., Canada. Mr. Enlow has had an active time in the sheet trade of the United States, starting twenty years ago and having been closely connected with the various companies ever since. While sales manager of the Stark Rolling Mill Co., he devoted considerable time to the exploiting of Toncan metal, the wonderful anti-corrosive, rust-resisting sheet metal product, in the Canadian field, and through the Pedlar People made it almost as well known here as in the States.

* * *

THE "Country Life" Book of Cottages, costing from $750 to $3,000, by Lawrence Weaver, is a treatise on cottage building setting forth some of the conditions imposed by varying limits of cost. The work abounds in illustrations of actual buildings, showing how different architects have succeeded in providing convenient and successful cottages at a reasonable cost. The chapters treat of cottages for laborers, cheapest types of rural homes, cottages for estate servants, cottages for $2,000, $2,500 and $3,000, gate lodges, the repairing of old cottages, the grouping of cottages, and village planning. The book is published by Country Life, Limited, 20 Tavistock street, Covent Garden, W. C., London. Price, $1.25.

* * *

THE TEST of reinforced brickwork given in this number is the outcome of an experiment by W. H. Brown of York, England. Mr. Brown started to manufacture in England, Australia and India. In Canada the patent was turned over to the Reinforced Brickwork Company, Limited, who are manufacturing at Walkerville, with their head office in Winnipeg. It did not take Mr. Brown a long time to have the matter introduced, and the result is that to-day over 40,000 buildings are using "H.B." reinforcement, in less than two years after the same was placed on the market. A similar test was held recently at Vancouver. The cantilever part of the test stood up until 8,200 pounds had been loaded on, at which weight it broke. The span of the brickwork was loaded on Monday afternoon with a weight of 20,153, at which time darkness came on and the test was postponed until next morning. Pig iron to the amount of 26,734 was loaded on and the wall still held up. The supply of iron having been exhausted, the wall was then hammered down by means of a plank. The deflection of the span under this great weight was one-half an inch. The firm which arranged the test was the Dominion Equipment and Supply Company.

* * *

BECAUSE of a recent notice of the removal of the New York offices of the Yale & Towne Manufacturing Company from 9 Murray street to 9 East Fortieth street, New York city, there seems to have been some confusion in the minds of Canadians that this might have reference to some change in the Canadian offices of Canadian Yale & Towne, Ltd., at St. Catharines, Ont. This is not so. The Yale offices at St. Catharines are the headquarters for all Yale locks and hardware sold in Canada, and all Canadian mail should be sent to this address. The makers of Yale locks and hardware take great pride in the fact that Yale products sold in Canada are now both made in Canada and distributed through a Canadian organization. The Yale plant at St. Catharines is growing so fast that it bids fair some day to rival in size the parent Yale works at Stamford, Connecticut.

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CONSTRUCTION

VOL. VI NO. 7

CONTENTS FOR JULY, 1913

Full Page Illustrations

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GRAPHIC ARTS BUILDING, TORONTO, CANADA
BRANCH OFFICES:
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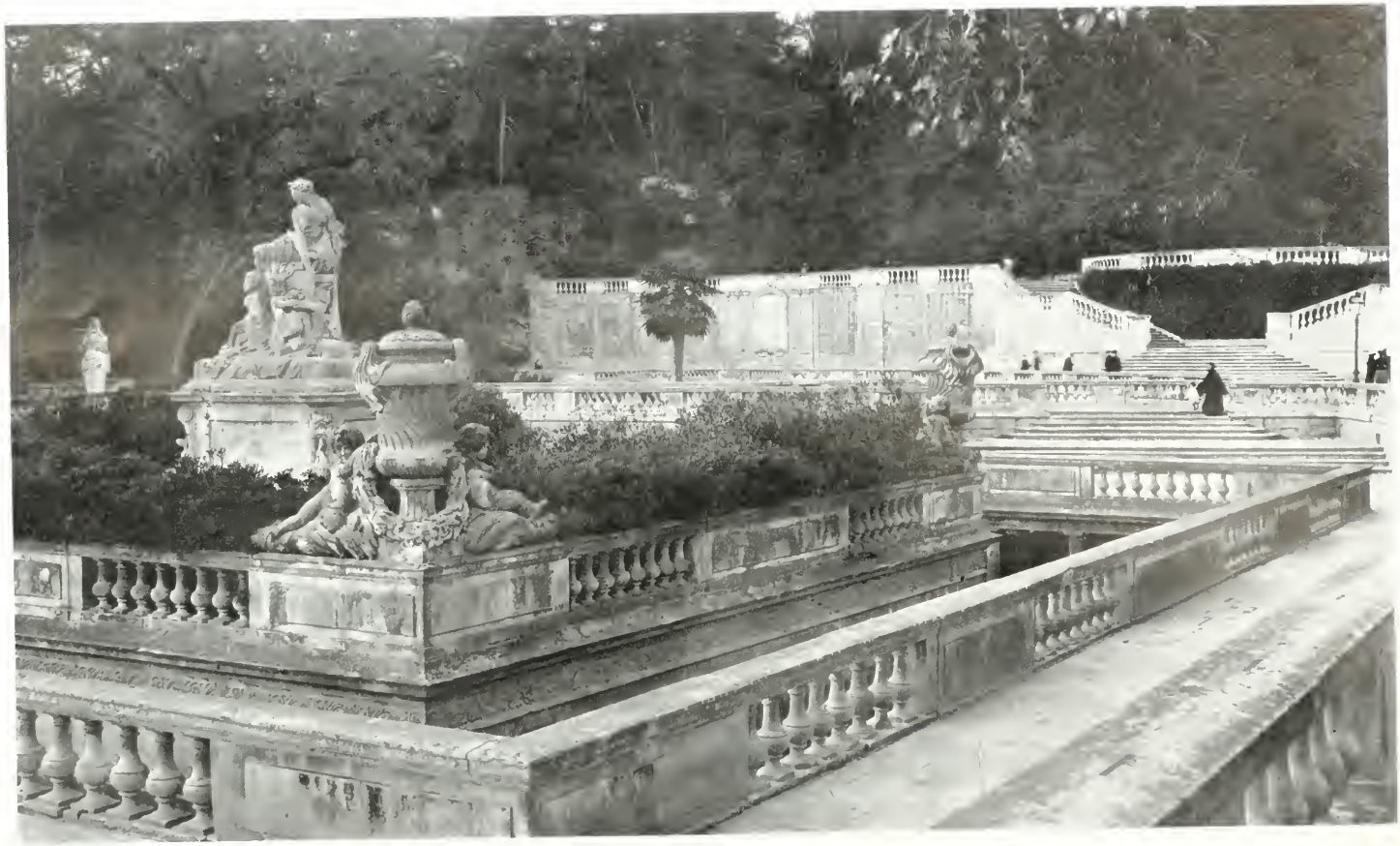

PUBLIC GARDENS,
NIMES, FRANCE.

¶ *Canada's need of Beaux-Arts work—A help to our draftsmen in creative work—the time to adopt the system is now.*

THE INFLUENCE of the Ecole des Beaux Arts bids fair to dominate the world's field of architecture. Not satisfied with the wonderful progress in France it is entering England, much to the chagrin of a large number of her prominent architects. We all know how far-reaching has been the effect of this school. The vast majority of successful designers in England and America have been tutored by her, already the American system is based directly upon the French method of architectural education. Now the well organized system of the Ecole has been started in England by the establishment of the atelier in Wells Mews which will be directed by Beaux-Arts men. Mr. Cox, of England, in drawing a parallel between a design class and an atelier, says: 1. The preparatory atelier, where projects are set by the patron or professor for the students to work out together as practice for the admission competition into the Ecole. 2. The atelier for those students who are received into the Ecole, and who render in the atelier the projects set by the professor of theory of architecture of the Ecole. It would be gratifying indeed if some of our prominent architects would grasp the needs of to-morrow and take a similar step towards bettering conditions. Since it is universally recognized as the one best method, why not establish it in our large cities at least? It means little expense, some sacrifice on the part of the men fully competent to conduct the work and a tremendous impetus to the character of work being done, as well as the ambitions of the young men who hope to be the builders of to-morrow. If such a system could be established we might follow the English idea of having the various ateliers take up problems on the same project as well as privileges for preliminary studies based on the French system. Eventually, when the time warrants, have a school of fine arts, enabling the students to study free. The time to take the initiative is now. Why wait until our nation is built, rather let it be the means of helping us to build it right.

¶ *City planning—The successful results in Germany and our need of emulating the motives and systems of other countries.*

THE WORK of our civic commissions augurs well for the future development of our cities. Still there is reason for further study and action in this direction. Too many places are progressing with little thought of the needs twenty years hence. William Sheperdson expresses himself in the New York Times that Germany in the handling of her cities, in the constructing and in the administering of them is to all intents and purposes at the top of all Governments, and that, although there would be neither sense nor profit in taking up a German city government and setting it down intact in America, many of the most important and fundamental projects of the Empire could be turned admirably to account here, and Germany could and should be our most gratifying and abundant source of wise precedents. Mr. Sheperdson attributes the superiority of the Germans to the idea of municipal control. It is one continual planning and building to meet the requirements fifty years ahead. The Germans understand thoroughly the beautification of their city streets. They also lay great stress on each undertaking which will in any way affect the health or property of the individual. One special lesson is the failure of the past and it is seldom that a second disaster or mistake will occur. There is a determined effort to provide thoroughfares, plan parks and play-grounds, which will meet all future contingencies.

One of the best examples of their careful planning is shown in provisions always made for the workingmen. So many towns are models of cleanliness in the cheaper districts while the sanitary arrangements are beyond reproach. In this way the filth and squalor of our own municipalities are guarded against and the children are brought up to know the meaning of healthy surroundings.

One handicap exists among us that is ever absent in Germany. We strive to individualize our aims, allowing each administration to choose its own method of operation. The Germans, on the other hand, work with a definitely prepared scheme and

no change in the improvements is made when other forces come into power.

To cite an example of their practical nature let us take the idea presented by Herr Wolf at the Dusseldorf exhibit. He shows a city block shallow enough to permit of only one row of houses to be built in it, facing the streets at the outer edge of the block. In the rear is an entrance leading into a roomy court which is naturally a park. The courts have an outlet into the streets and are designed for children's playgrounds and passage ways for pedestrians, which affords an avenue of escape from automobiles on the main street as well as a protection against dusty air made by heavy traffic. The whole scheme resolves itself into placing the walks behind the houses instead of in front, which eliminates all dangers of street traffic. Such a plan gives to the exterior a city character and a suburban effect in the rear.

This issue gives a condensed report of the "Fifth annual conference on city planning," and the progressive reports were gratifying. With a more consistent effort to secure a proper scheme and the privilege of working it out without political interference, our cities will appreciate the cleanliness and wholesomeness of those in other countries.

¶ *The Fourth International Congress on School Hygiene—A comparative programme covering the entire field has been prepared, also exhibits.*

UNIVERSAL INTEREST is being manifested in the Fourth International Congress on School Hygiene, to be held in Buffalo, N.Y., August 25-30. The one idea dominating the action of each committee is to assemble a body of men and women interested in the development of the proper facilities for school children. By a hearty co-operation of everybody—and it is a question which deeply concerns each person—this congress will undoubtedly be the most successful ever held and will go far towards the happy settlement of many complexing problems. A comprehensive programme covering the entire field of school hygiene has been arranged. Papers will be read dealing with results secured through the practical application of scientific facts and procedures of school hygiene, and with the results of scientific investigation and laboratory research. One of the features of the assembly which will be of extreme interest to our readers is the part dealing with plan, structural features and equipment of buildings. Such headings will be thoroughly discussed, as site, architecture, decoration, ventilation, illumination, plumbing, furniture, bathing facilities, etc. And it is only too evident in studying the existing conditions prevalent throughout the various provinces that we are quite deficient in our knowledge of these various phases. It behooves the architects, engineers, builders and contractors to attend this conference and if such a course is impossible to keep closely in touch with the daily proceedings.

¶ *Canadian buildings erected by American contractors—A need for local concerns and a promising outlook for a decided change.*

"WITH ALL its activity in building construction, Canada has developed no contracting firms of great size or extensive resources, and prominent concerns on this side of the border line have stepped in there during the last few years and gained nearly all the important building contracts." The veracity of the above quotation coming from the New York Sun, can be judged best by glancing over the large work which is being carried on throughout the Provinces. American contractors have completed or are building the Chateau Laurier at Ottawa, a $1,250,000 hotel; the Fort Garry hotel at Winnipeg, a $1,500,000 building; the Grand Trunk Pacific new $1,350,000 hotel at Edmonton; the C.P.R. building at Toronto, costing $900,000; the Prudential Trust building at Winnipeg, to cost $600,000; the Ritz-Carlton, $2,000,000 hotel at Montreal; the Read building at Montreal, worth $500,000; and the Royal Bank building at Toronto, to cost $1,200,000. Not many years ago the States chided us on the fact that our prominent structures were designed by Americans. The case is quite the reverse now—a fact which leads us to believe that all buildings of importance will in a few years be erected by Canadian contractors.

¶ *Conclusive arguments why women should enter architecture—A warning to the men and a ray of hope for the women.*

MRS. SPENCER, one of the pioneer architects among women, has written some conclusive reasons why her sex should rank high in the field of art. Her arguments are better quoted: "I never design a house without first living in it in imagination. I go through all the housework, fancy myself cook, and housemaid, and mistress, and thus discover any awkwardness of arrangement in the interior construction. I never build a house with steps between scullery and kitchen. Being a woman myself, I recall the continual inconvenience such an arrangement would be to the housewife and cook. Why so many men place the kitchen range in a dark corner is a curious problem. One must have light by which to cook.

"A woman builder has the advantage of practical experience. Shelves, for example, are too often placed at the height of a workman's arm. We would eliminate dark rooms in a house, even a dark coal cellar. If the coals are kept in an outhouse, why should this not have glass slates in the roof?"

Such arguments will undoubtedly persuade us that women could better handle the complex problems which confront every big office. The men should study these weighty problems set forth by Mrs. Spencer, else they find themselves supplanted. The spirit of the article should be inspiring at least to the dozen women who claim to be practising architects.

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BOWLING ALLEYS.

BOYS' ROOM

New Central Y. M. C. A. Building, Montreal

MONTREAL was the first city on this continent to undertake a work for young men on the same basis and principles as outlined in the organization known as the Young Men's Christian Association, founded by Mr. George Williams (later Sir George Williams), almost under the shadow of St. Paul's Cathedral, London.

The vision and faith of the founder, supplemented by the consecrated effort of men who have followed him, have resulted in thousands of buildings being erected all over this continent and in every quarter of the civilized world. As the birthplace of the movement on this side of the Atlantic, Montreal has kept pace with the development of the work, reaching out from the distinctively religious foundation upon which it is reared to the physical, social and educational fields, which make for the complete development of manhood.

The following photographs illustrate the exterior and interior of one of the three new buildings recently erected in Montreal. The architects were Messrs. Jackson & Rosencrans, New York, and Ross & MacFarlane, Montreal, associated.

The exterior is constructed with terra cotta and Columbus, Ohio, gray brick. The building is fireproof construction of steel frame and reinforced concrete. The main entrance is on the east side of Drummond street, entering a large reception hall with a fireplace alcove immediately opposite the entrance, a reading room and small meeting room on the right, and the writing room and secretarial offices on the left. Separate entrance is provided for the junior department as shown on the exterior view, and on the north side a corresponding entrance leads to the auditorium, which can thus be used for entertainment without in any way affecting the specialized work of the association.

The basement contains the lower part of the plunge room and plunge; the latter is 75 feet long by 25 feet wide, and presents one of the most attractive rooms in the building. The plunge bath, the floors and the walls, including the facings of the spectators' galleries, are laid with ceramic mosaic tile. It is well lighted from ceiling lights set in the vaulted ceiling. The source of the water supply for the plunge and the entire building, excepting the boilers, is a well penetrating 860 feet of limestone, yielding 6,750 gallons an hour. A wholesome, pure supply, without the necessity of filtration, is thus assured. This room also contains the showers and communicates with the locker rooms for boys and men.

Men's lockers, steam laundry, barber shop, cafe, billiard room and bowling alleys are also on the basement floor. The illustration of the billiard room shows a portion only of this room. The bowling alleys are well lighted and are among the best in the city, and fully justify their place among the association privileges.

On the first, or main floor, one view only is given of the reception hall, looking across toward the meeting room, and reading alcove. This room is tiled and the wood finish is fumed red oak. The furnishings are in harmony both for design and tone and the rugs impart a note of color that makes this part of the building exceedingly attractive.

The auditorium has a seating capacity of 500 people, and has been constructed with the columns so placed that as little obstruction as possible would affect the view of the stage. The ornamental plaster work of this room is very effective and considerable

comment has been made on the modeller's skill in this connection.

The gymnasium is on the main floor and is placed in convenient relation to the locker room and plunge; it also has special exercise rooms in immediate connection, and a banked-up running track with spectators' gallery. The requirements as to height for hanging apparatus and equipment has been observed.

The physical director's offices and examination room are on this floor, also the cloak room conveniently placed with relation to the gymnasium and auditorium.

On the second floor are situated the junior department with its own complete equipment, including secretary's office, reading room and library, reception room, game room and meeting room, club rooms and gymnasium, with spectators' gallery, locker room and shower baths.

Quite separate from the above, and yet so placed that communication can be arranged, the library, committee rooms, cafeteria and kitchen are provided. The offices of the Metropolitan Board are also on this floor. Illustrations are given of the boys' gymnasium and game room, the men's library and reading room and the restaurant, the wood finish in all cases being fumed oak.

The third floor is given up almost entirely to the educational department. There are eleven large class rooms, each with accordeon doors to enable the use of one or more together as may be desired. The educational directors' offices, a few bedrooms and the dark rooms of the photographic department are also on this floor.

The fourth and fifth are the dormitory floors, providing over 175 bedrooms for the members, with the necessary trunk rooms, shower and toilet rooms on each floor.

Freight and passenger elevators provide communication to all floors. The kitchen arrangements are such that dumb waiter communication reaches the boys' gymnasium, men's gymnasium and auditorium, making it possible to serve dinners or association banquets in any or all of these audience rooms with considerable ease, requiring only the additional help necessary to meet the demand on the kitchen resources.

The power plant and equipment is in a separate building in the rear, placed with due regard for convenience and economy in operation, and serving all the requirements of main building.

The total cost of the building without furnishings was about $397,250.00.

RECEPTION HALL.

THE PLUNGE.
DETAIL OF PLUNGE.

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NEW CENTRAL Y.M.C.A. BUILDING,
MONTREAL, QUE.

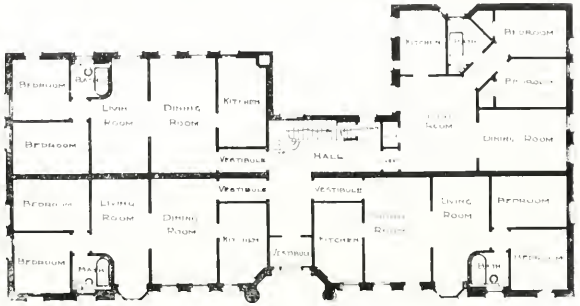
JACKSON & ROSENCRANS
AND ROSS & MACFARLANE,
ARCHITECTS.

BOYS' GYMNASIUM.

MEN'S GYMNASIUM.

NEW CENTRAL Y.M.C.A. BUILDING,
MONTREAL, QUE.

JACKSON & ROSEBERGS
AND ROSS & MACFARLANE
ARCHITECTS



WILLARD APARTMENTS,
KING STREET AND TRILLER AVENUE,
TORONTO, ONT.

HENRY SIMPSON
ARCHITECT

Apartment Houses, Toronto

WITHIN THE LAST FEW years the rapid growth of Toronto has necessitated the erection of numerous apartment houses. Their types vary considerably, ranging from the small duplex apartment to those which accommodate a large number of suites. This same need is experienced in all our cities and it is worthy of comment that in the majority of cases the plans have been carefully studied and made practical by the adoption of the best in all modern up-to-date work.

The cause of the rapid development of the apartment is given to the high cost of individual houses, both as to the rental and to the maintenance of same. People felt that for a small family a house was too large; the servant problem too troublesome, or the anxiety of the household cares too burdensome. These and other causes led many to encourage such structures and there seems to be little trouble in renting them, no matter how quickly they seem to spring up.

WALDORF APARTMENTS.

So many of the apartments have been erected by speculative builders, who gave no thought to a proper plan or the latest improvements. This practice to a certain extent has been eliminated by the gradual education of the people and it is to be hoped that the Canadian cities will escape the thousands of unsanitary, impractical and unsightly apartments which fill the American cities.

The plan is the chief feature and demands considerable thought. How often in early structures would the door to the sitting room command all others, or directly opposite a toilet, or back of less important rooms. The servants were forced to use the same entrance and stairs. All of which objectionable features are taken care of and the apartment of to-day should lack nothing in arrangement or comfort.

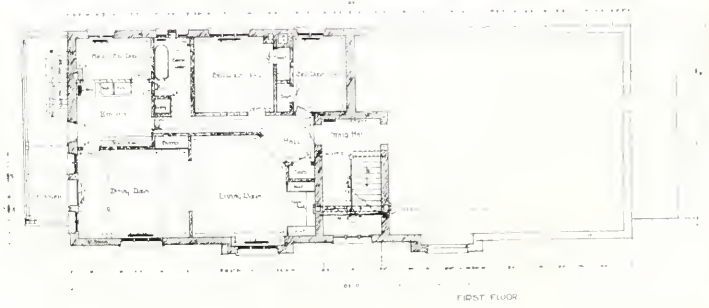
The College Heights Apartments are situated in one of the most desirable residential districts and carfully planned to meet every requirement of such a location. Pressed brick and cut stone are used upon the exterior; oak throughout the interior except in the living room, trimmed in mahogany. All floors are of hardwood and each apartment has one or more electric fireplaces. The heating system is steam. In the basement are provided the laundries, store-rooms, heating plant, etc.

The Waldorf Apartment consists of eighteen suites, all lighted from the exterior, there being no light shafts or areas in the building. Upon the interior oak and cypress provide for all woodwork. The floors are noise-proof, finished in seven-eighths-inch thick. Tiling is used in the entrance and stair-case hall. The plumbing is supplied with hot water from a central boiler, while the heating is by steam. As in the other apartment, all the basement space is given up to the heating equipment and storage-rooms. Each apartment contains at least one fireplace with an ingle-nook containing seats.

The Bradgate Apartment is designed in dark red brick, Roman stone, light stucco, and rough sawed pine stained dark. Upon the interior the stairs are of iron and the floors of oak.

The Willard Apartments are built of buff brick with light stone trimmings. The two buildings face each other and are designed with balconies overlooking the lake. Mahogany is used throughout while the living rooms have a dado of the same material 5½ feet high. Tiling is used in the entry, halls and bathrooms. The tar and gravel roof is arranged for the private use of the tenants as well as the basement. Steam heating has been installed, making the cost per cubic foot 20 cents.

The Hampton Apartments consist of buff pressed brick with Ohio stone trimmings. Arrangements are made for thirty suites, accommodating from three to five rooms, and separated by brick walls. The interior finish throughout is of quarter-cut oak and hardwood floors. Eighteen of the suites are accessible from one street, while the remaining twelve open upon another. The basement is planned with locker spaces and mechanical equipment. The cost approximated 20 cents per cubic foot.



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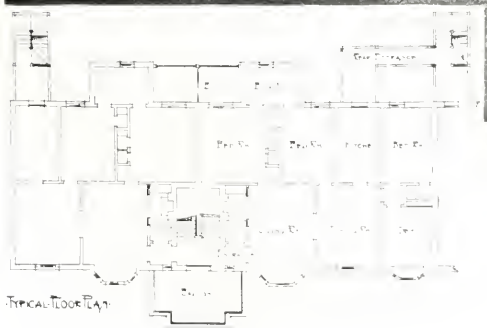

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KING STREET WEST,
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COLLEGE HEIGHTS APARTMENTS,
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R. J. EDWARDS & SAUNDERS, ARCHITECTS.

CONSTRUCTION

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

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CONTRIBUTIONS—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and duly returned

Entered as Second Class Matter in the Post Office at Toronto, Canada.

Vol. 6 Toronto, July, 1913 No. 7

CURRENT TOPICS

R. K. SHEPARD and D. D. Calvin have formed a co-partnership for the practice of architecture under the firm name of Shepard & Calvin. Their address is 43 Scott street, Toronto.

* * *

C. *HOWARD ELLIS*, of Toronto, formerly connected with the office of Chas. H. Platt, New York city, is taking an extended trip through Europe. Mr. Ellis expects to practise architecture in the Canadian field upon his return. Mr. Ellis is a son of J. A. Ellis of the firm of Ellis & Connery.

* * *

ARRANGEMENTS for calling for competitive plans for the new departmental buildings in Ottawa are being completed. Messrs. J. G. H. Russell and Thomas E. Colcutt, who, with J. O. Marchand, are the assessors who will have charge of the competition and will select the best design, are arranging the general ground plan, with the acting Premier, Hon. George Perley. The competition is to be open to architects all over the British Empire, and prizes will be given for the best half-dozen plans received. The author of the successful design will secure the work, and the five others next in merit will receive $3,000 each. The ground plan already prepared will be used as a basis in calling for plans, but the competitors are to be at liberty to send in different ground plans if they so desire. The competition will close in the fall and work on the first of the new buildings will commence next year. These buildings will include a new Supreme Court to accommodate also the Railway Commission and the Department of Justice, and a departmental office block. They will be erected on the recently expropriated property overlooking the river west of Parliament Hill.

Mr. Colcutt is a past-president of the British Institute, is the holder of King Edward's gold medal, a member of the Society des Artistes Francaises, and a member of the Belgium Architectural Society. He obtained the grand prix at the last Paris Exhibition for designing artists.

* * *

THE PLANS already in course of preparation for the various portions of Montreal's great municipal scheme of conduit work throughout the city, will when finished include twenty-three miles of city streets, while the placing of conduits in still other sections is also under contemplation. With the completion of the conduits already planned there will disappear about five thousand telegraph poles from the twenty-three miles of streets and approximately a thousand miles of overhead wires will be removed. In many parts of the city the telegraph poles are within two or three feet of one another. Within a distance of twelve feet at a point on St. Catherine street, there stand four poles, but placing them on an average of fifty feet apart the above estimate is made. Likewise, with the telegraph and power wires. On many of the business streets over forty wires are carried across each pole, but estimating an average of twenty wires to the twenty-three miles of streets with poles on both sides, a thousand miles of wiring is reached. The conduits provide for a future "Great White Way" street lighting, and for a perfect system of fire alarm and police patrol wiring. The method of distributing the light-giving, heat-producing or power-conveying, electric wires to the places of residence and business along the route of the conduits is interesting. The large manholes provide for the large cables carrying high voltage current and are stretched to the smaller transformer manholes. From the transformer manholes, the wires return to the main manholes and on through the main ducts to the service manholes, situated at intervals between the main manholes, and from the service manholes through the round service ducts into the private buildings.

SENATOR BERENGER has enthusiastically approved of the idea of M. Cochon, head of the Federation des Locataires, or Tenants' League, for the creation of barracks in which to house the very poor of Paris. It will be recalled that it was M. Cochon who one day found building sheds in the gardens of the Tuileries and appropriated them for his poor proteges. Another time he moved their furniture on handcarts into the Court of the Ministry of the Interior. Next he tried to lodge them at the Elysee, at the Ministry of War, and at the Palais Bourbon. M. Berenger declares that whatever there may be of the grotesque in such enterprises, yet the fundamental idea is no doubt good and praiseworthy, and M. Cochon's eccentric doings have at least had one good effect, that of drawing public attention to the matter. There are hundreds of destitute people, and often very respctable workmen, with large families, evicted from their lodgings on quarter day. The building of workmen's dwellings does not meet the case, as they are occupied as soon as built by workmen who can afford to pay for a fair amount of comfort. The people, on the other hand, who are evicted, especially when they have large families, have got into trouble because they are totally destitute. Senator Berenger suggests that the latter should be treated simply in the way that the temporary housing of soldiers is treated by the military authorities. Permanent barracks should be constructed, where these destitute people could find a shelter. The City of Paris has many empty plots of ground which it could lease for a nominal rent. With the buildings there should go large playgrounds for the children, and finally, this sort of workmen's barracks should be supplemented by suitable trade schools, in which the children should be taught a trade and fitted for life.

* * *

THE SOCIETY of Architects, London, considering it desirable in the public interest that persons requiring professional aid in architecture should be enabled to distinguish qualified from unqualified practitioners, and that steps should be taken to prevent incompetent persons from posing as architects, have to that end drafted "A Bill for the Registration of Architects." This will be presented in due form to Parliament.

The following present some of the reasons for their action in this regard: Architects have the spending in the aggregate of vast sums of public money and the control of matters affecting the life, health, convenience and financial interests of a very large section of the community. The practice of architecture calls for the possession and exercise of many and varied gifts and attainments, chief among which are, artistic sense and feeling, scientific and professional knowledge, practical skill, and business ability. The various architectural bodies publish registers of their members, but the value of these lists of architects as a guide and protection to the public is very considerably discounted by the fact that the public directories necessarily schedule under the title of "architect" without reference to his qualifications, any person who claims that designation, whether justified or not. The proposal for the registration of architects is not a new one, nor does it introduce any new principle. It is merely carrying to its logical conclusion of state registration, the present voluntary system of registration of their members by the various architectural bodies. Registration is in force in several European countries, many of the American States, and a number of our own Dominions, while others are applying for it.

The proposal is that at the time of the passing of the Act every bona fide qualified architect shall be entitled to register and that the vested interests of engineers, surveyors, clerks of works, builders or other persons who may be affected shall be protected, and opportunity afterwards given, to all who wish to practice architecture, of qualifying for admittance to the register. Only those so registered are to be entitled to recover fees for services rendered as architects. The bill would provide (*inter alia*) for the establishment of a registering body or council, comprised of members appointed by the Privy Council, the Royal Academy of Arts and the architectural societies, for the administration of the Act and the conduct of the examinations.

The first effect of an architects' Registration Act would be to give an immediate and definite impulse to architectural education and training, by setting up a compulsory standard of qualification. The chief weakness of the present voluntary system of architectural examinations is that they are not obligatory (except under certain conditions for admittance to membership of architectural bodies). At present such examinations are not in any case essential as a preliminary to the practice of architecture or to the claiming of the title of architect. The ultimate result of such an Act of Parliament would be that the unqualified practitioner would be gradually eliminated by effluxion of time without inflicting injustice or hardship on anyone, and without creating a monopoly, while the public would have a guarantee that in employing any architect they would secure the services of a person possessed of at least the minimum qualifications required for the proper performance of his very onerous duties.

Among some of the advantages to the public which in the opinion of the society would be secured as a result of the passing of a Registration Act of the kind advocated, would be: the raising of the standard of architectural education and training by the substitution of a compulsory in place of a voluntary system of qualification, the consequent adequate protection of the interests of that large section of the public affected, and the recognition by the State of the Art of Architecture as a great national asset to be fostered and cultivated to the utmost.

WAR.

C. M'CLURE.
SCULPTOR.

PEACE.

GROUP AND FIGURE
FROM THE
SOUTH AFRICAN WAR MEMORIAL,
LEICESTER, ENGLAND.

GROUP SYMBOLIZING "GRIEF." SOUTH AFRICAN WAR MEMORIAL, LEICESTER, ENGLAND.

CROSLAND M'CLURE, SCULPTOR.

From Architectural Review, London

Fifth Annual Conference on City Planning

THE FIFTH annual conference on city planning, held in Chicago from Monday to Friday, May 5-9, witnessed a gathering of 200 delegates, most of whom were experts in civic matters. Canada showed up well, sending five delegates from Montreal, ten from Toronto, two from Calgary and one each from Regina, Ottawa and Winnipeg. Toronto was previously represented on the committee of the conference and Montreal was now added as a tribute to the Canadian representation. The chairman of the national conference, Frederick Law Olmsted, of Brookline, Mass., and a city planner of national reputation, opened the proceedings by outlining a city planning programme showing: (1) The development of a city planning movement and the organization of unofficial activities and of official bodies to be charged with the duties of city planning; (2) The principal steps in the preparation of a city plan after its preparation is established, and (3) Methods of putting a city plan into execution.

Mr. Olmsted prophesied that "In fifty years an official body in every city will be assigned the responsibility for the carrying out of a consistent building plan." He said: "There are three logical divisions of any city planning movement: the winning of public support, the planning itself and the translation of plans into facts. The three divisions are concurrent, they advance or fall together. A knowledge of the facts is the first requirement, and the basis for a city plan must be a city survey covering information as to four classes of facts. The first of these includes the facts of the physical environment of the people; the second, the social facts concerning the people themselves and the reactions between them and their physical environment; the third, the economic and financial facts as to the resources of the community and the possible means of bringing those resources to bear on public improvements; and the fourth, the facts as to the legal and administrative conditions which must be reckoned with in any attempt to control the physical environment." Mr. Olmsted's address was followed by a statistical report on the city planning activities of the year, prepared by Flavel Shurtleff, of Boston, secretary of the conference. This was illustrated by stereopticon views of improvements actually effected in American cities, together with statements of the cost, etc.

Mr. Wacker, in the course of his remarks, said:

"I believe the experience of Chicago has demonstrated there are four important legal obstacles to be removed before the science of city planning can be made mose effective. One of these is the law forbidding cities to condemn more property than is actually needed for an improvement. Our cities should have ample powers of excess condemnation, that they may take whatever wide belts of property may be advisable in any improvement district, holding the same for rearrangement and resale after the completion of the improvement has added largely to the values. Secondly, our cities should have the right to acquire property for the purpose of eliminating unsanitary districts. Thirdly, the law should provide for issues of long-term bonds, under proper restriction, so the citizens of the future who will enjoy to the full the benefits of the great improvements may be called upon to contribute toward paying for such improvements. Fourth, to provide for economy, legal means should be had to stop realty speculation based upon the certainty of increased values growing out of improvements under a city plan, and also to prevent erection of costly buildings fronting thoroughfares to be widened, unless such buildings shall be erected to fit in with the new plans, and thus be exempt from condemnation, thereby lessening expense to the city.."

During the convention Dr. Hegemann, general secretary of the German City Planning Conference, pointed out the danger of ignoring the railway facilities and criticized the Chicago plan as having made such a mistake. In speaking of Paris he showed how $500,000,000 had been expended in making it a Renaissance city while the housing conditions and location of railways were poorly handled.

Dr. Hegemann, who had objected to seeking as a model for Chicago Paris, where, he said, transportation and housing were the worst in the world, told again of the results of the greater Berlin competition. Then he continued: "For a comprehensive transportation plan of a large city, the opinion of the leading transportation experts of the country—if not of the world—must be asked. At the competition for Greater Duesseldorf in 1912, nearly all the competitors worked in co-operation with some transportation expert. On the basis of a good solution of railroad problems, a satisfactory development of housing can be worked out. The main thoroughfares, the parks, and the public buildings, can be put in their right place without being endangered by resettlement of railroad troubles. The creation and protection of desirable districts for the homes of the people can be worked out on this basis. The well-to-do will be able to invest his money safely without fearing the deterioration of the neighborhood, and the man of modest means can get good connections with pleasanter little houses—far enough away from the heart of the city to give him ample opportunity to have all the garden he may desire. The basis of the city beautiful is the businesslike handling of transportation. Modern transportation, if thoroughly applied to city planning, will produce a new type of a decentralized city, which will contain more green spaces, gardens, and parks with a corresponding improvement in the health of the people than the crowded cities we have known up to date."

Designing and Laying Out of Towns

T. HAROLD HUGHES*

Approaching the Problem.

I. The Architectural Ideal.

THE architectural standpoint in designing and laying out cities and towns is that point of view which demands the subordination of many component parts to the production of an harmonious and united whole, which shall not only satisfy all utilitarian requirements but contribute to the mental and moral welfare of mankind. Practical problems must be so solved as to appeal to our sense of beauty. Such necessities as water supply, will, within broad limits, exercise no influence on schemes of drainage, or the transmission of power, the ultimate effect of the city; but lines of transportation, the allocation of the various quarters, the distribution of park lands, public buildings, and monuments, and the lay-out of streets and squares will all be designed to assist in the realization of some great artistic scheme.

Town planning is an art with a far-reaching influence. The painting or statue placed in the art gallery or in the dwellings of the wealthy is seen by few; but the town planner, whose canvas is the hill and the plain, can by his creation of the city beautiful give pleasure day by day and affect the lives of many not only for the present but for generations to come.

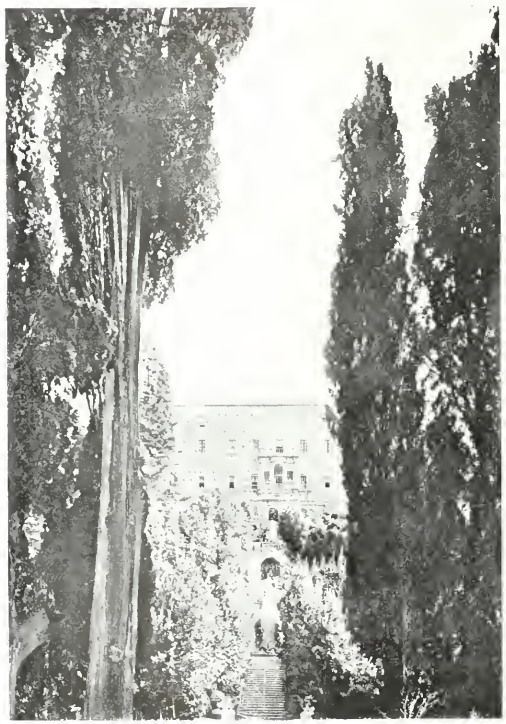

FIG. 1.—VILLA D'ESTE.

To whom must we look for the creation of the beautiful town? The mind accustomed to the design of buildings, to the grasp of an entire problem, to the harmonious relation of many details fitly proportioned to their object, alive to the value of the axial line and vista, knowing how and where to concentrate interest, able to accentuate and subordinate parts, this mind—the mind of the architect—is the one to design the town such as I would define it.

How must the problem be approached? No great work of art can be achieved without some high ideal, to attain which the artist constantly must strive. Some great thought must be embodied in every design, every detail must be attuned to some great ruling principle, and in a large comprehensive scheme the designer must seize upon every opportunity of enforcing the dominant idea.

The town must be conceived as a whole, and must be the work of one whose high ideals and imagination can rise above the host of details which beset the designer of such a vast and complex problem. The planner of towns must be a dreamer steeped in ideals and freeing at the outset his mind from all pretty details. He must create around him by his thoughts a favorable environment, and so conceive the broad lines of his scheme. By a wise study of the past, recognizing its limitations and its ideals, he can stimulate his imagination and gain an insight into the qualities required to create the city beautiful. Knowledge of the ruling principles and aided by these, an attempt to recreate in his mind, from their ruins, the cities of long ago, will be of the utmost value; and may he not, in this respect, glean something from painters who could depict the glories of the past in such scenes as the Landing of Cleopatra, or Dido and Carthage?

II. Lessons of the Past.

(a) Greek.

Was it well-considered planning and the grouping of buildings and accessories into one great architectural scheme, or beautiful buildings superbly placed, which contributed to the effect of a Greek city? I think the latter. Selinonte, influenced by the work of Hippodamus, in whom we see the highest attainments in Greek planning, owes its beauty to its elevated position above the water and to the sense

*Essay submitted under the motto "Rochidanus," awarded the Royal Institute silver medal and twenty-five guineas, 1912. Published through the courtesy of the Journal of the Royal Institute of British Architects.

of unity in the design of its buildings—as a town plan it is a failure. From the great period of the fifth century B.C. to the time of Alexander there was an increasing desire for clear reasoned thought and an attempt to render some fine conception in the city plan, in place of chance haphazard growth; but that perfect unity and subordination of all details to one great idea so beautifully shown in their individual buildings was never attained. Though attempts are made to obtain the best effects within the limits imposed, the necessity of fortifications and the insistence on the preservation of sacred spots, precluded the adoption of any unified architectural scheme. At no other period can a more complete understanding of the site and its resources be seen. Art and Nature are happily wedded, as shown in the magnificent disposition of their buildings on some prominent site or in the theatre cut out of the slopes of the hill; and at Pergamos, Athens, and elsewhere, the value of broad level lines on a hilly and diversified site is apparent.

The buildings on the Acropolis, Athens, though not planned in direct relation one to the other, were so placed on the rock as to give the appearance of one great *ensemble* as seen from the city below, the outward and visible sign of that which dominated their lives. The Propylæa, traced from the early Cretan palace to Mnesicles' superb edifice at Athens, shows a desire to obtain a dignified first impression and a portal worthy of the precincts to which it gives access. Public gymnasia and stadia were brought more into architectural relation with the city—a contrast to our method of dealing with recreation grounds, though now, as then, physical exercise plays an important part in life. The Agora, placed in relation to the two main cross streets of the town, shows an appreciation of the importance of the vista, and the grouping of their public buildings round it shows the value attached to the formation of some climax in their design, an effect, however, more magnificently obtained by the placing of the great dominating temples on an eminence, giving to the whole composition a sense of unity extending to the smallest houses, however distant and irregularly scattered about. Though symmetry was not always striven for, a general sense of balance is felt and an interesting sky-line maintained.

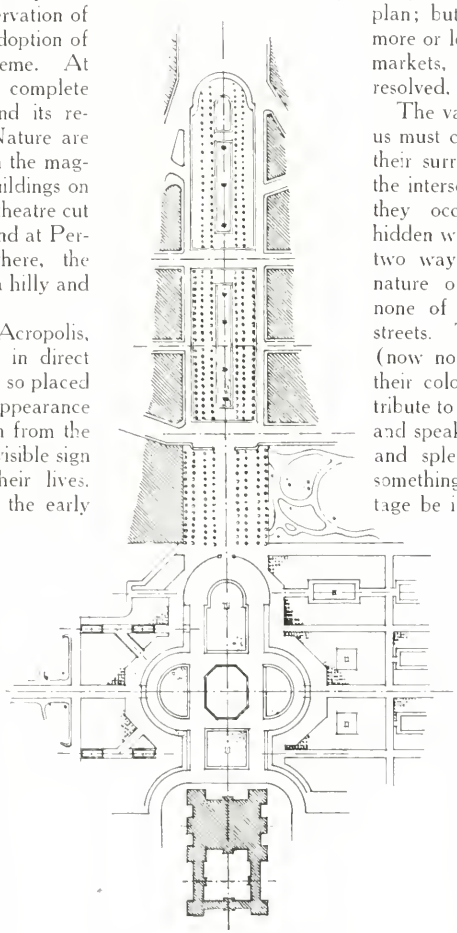

FIG. 2. LUXEMBOURG GARDENS.

(b) Roman.

In the study of Roman Civic Art it is the great scale and the big way of approaching problems which strike one most forcibly. Possessed of more power and fewer restrictions than the Greeks, they did not hesitate to cut away the side of a hill or to fill in a valley to suit their magnificent plans. Regular and symmetrical schemes were adopted, the chess-board system being more or less customary—the two main streets of the town set at right angles to one another regulating the lay-out of the remainder of the city plan; but effective planning is limited more or less to the public buildings and markets, the residential parts being unresolved.

The value, then, of Roman study to us must centre chiefly on the Fora and their surroundings. Placed usually at the intersection of the two chief streets, they occupy central positions, but, hidden within the angles formed by the two ways, they partake more of the nature of enclosed spaces and shed none of their glory on the adjacent streets. The surroundings of the Fora (now no longer market places), with their colonnades and porticos, all contribute to the total effect of magnificence and speak eloquently of the civic pomp and splendor of Roman public life, something of which might with advantage be infused into our own.

The importance attached to unity and regularity of planning and to the vista is shown in the grouping of the Fora in Rome, which are so placed that they are not only complete in themselves but are in architectural relation to those already built; moreover, in the great Fora of the Eternal City the important principle that public buildings must be well placed, if they are to have their full architectural value, is exemplified. Great care is taken to mask all irregularities—in the colonnaded streets of Palmyra, set axially with the temples at each end, any deviation from the straight line is overcome by a skilful adjustment of triumphal arches.

Delightful emphasis was given to the junction of cross roads, and an added importance to the axial lines by the placing of large pylons or four-way arches at the points of intersection. The Triumphal Arch to the Forum of Trajan, the Hexagonal Hall to the Temples of Baalbec, or the steps and mighty crescent forming the entrance to the Palace of

Augustus on the Palatine Hill, all show the same desire to create a magnificent first impression.

In the placing of civic ornament much may be learnt from the Romans. Their use of statuary placed on pedestals in the Fora in relation to the whole design, or on corbels attached to the columns, the lines of the drapery thus contrasting with the formal architecture, is far nobler than our haphazard methods of dealing with such objects at the present time.

The monumental character of Roman work is the result of a close adhesion to three great principles: (1) Symmetry; (2) the maintenance of the axial line, and (3) the establishment of some central feature and subordination of accessory parts. These principles, so well shown in their great Thermæ with their beautifully grouped halls, directly or indirectly must assert themselves in any successful city scheme.

In the hemicycle with its great possibilities, the Romans added the curve to the straight line of the Greeks to be fully developed in the Renaissance.

(c) Mediæval.

In all great periods of art a desire for symmetry and regularity is observable, at one time more pronounced than at another. In the Middle Ages, plans of towns, when laid out *de novo*, were regular and symmetrical whenever the nature of the site would permit. The majority of examples, however, have developed the irregular forms they take owing to determining lines of fortifications and a gradual unregulated growth; under these conditions then, they cannot have the value for study for a modern city, which should not be laid out to afford material for the water-color artist! It is possible to admire and love the marvellous effects of these old towns without wishing to reproduce them in the twentieth century. They are the products of a time when to do the right thing came naturally, and each man, with a great tradition behind him, unconsciously built so that his work took its place beautifully as a unit in the whole, and effects were obtained for which it would be absurd, under modern conditions, to strive.

Lessons, however, may be learned from mediæval work. The walls of fortification enclosing the old towns, and clearly defining them from the country around, show the value a definite boundary would be to our modern cities, instead of the straggling outskirts so often a disfigurement. The clustering of the town around some great towering church or cathedral, a dominating mass, like the Acropolis at Athens, gives a sense of unity to the whole; whilst countless examples show that perfect geometrical regularity on paper is not always necessary, for little deviations from the square are with difficulty measured by the eye. From the market place we can learn the value of the quiet, restful effects obtained by a judicious arrangement of street entrances, giving an unbroken frame of buildings, and with it that sense of seclusion so suitable for a square in a busy commercial centre (an effect which may be obtained without meandering streets but in a rectilineal system with streets entering "en bras de turbine"). Such an arcaded market place as that of Montpazier would make, in principle, an excellent model for our shopping centres; and we can learn something too for our residential quarters, where, removed from the centre of the city, the need of formality being less, a

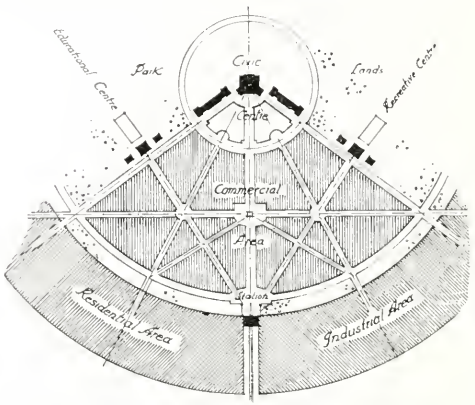

FIG. 3. RADIAL PLANNING: DIAGRAM OF A MODERN CITY BASED ON THE PLAN OF KARLSRUHE.

judicious variation in the building lines of the street gives a pleasing and welcome variety.

(d) Renaissance.

With the revival of Classic architecture in the fifteenth century in Italy, and with it earnest study of

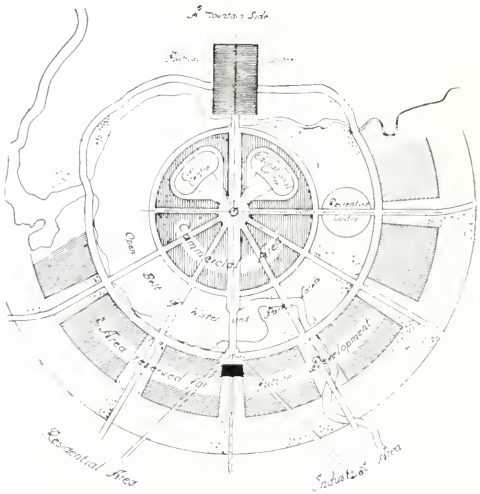

FIG. 4. A CAPITAL CITY: GOVERNMENT BUILDINGS DOMINATING THE WHOLE.

the great buildings of the Romans, appeared the revival of the "grand manner" in planning, and that fine sense of breadth and scale in architecture so closely associated with the name of ancient Rome. The regularity and symmetry of the buildings soon

spread to gardens, streets, and "places" which were laid out at that time and in conjunction with them. The setting of buildings and arrangement of their sites and the practice of formal gardening developed a desire for larger fields to conquer, and plans of cities and towns were schemed showing a desire to consider the problem in the light of a complete harmonious whole. A masterly grasp of the possibilities, a largeness of conception, and a power and a courage to handle civic design on a scale such as never before had been attempted now becomes apparent.

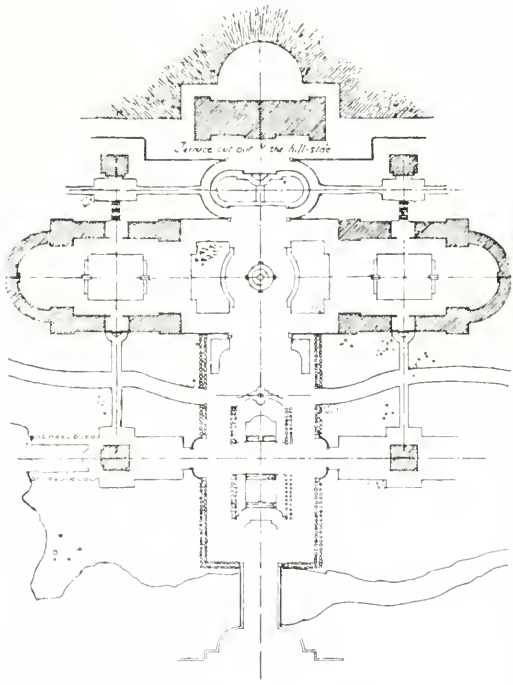

FIG. 5. GROUPING OF GOVERNMENT BUILDINGS ON A HILL SIDE.

The desire to shed the glory of important buildings upon their surroundings by placing them on some prominent point to which many roads converge, large open spaces or forecourts to buildings to enable their designs to be properly appreciated, magnificent vistas, a predominance of geometrical forms, and a linking up of many features into one connected design are all characteristics to be seen in the plan of any Renaissance town.

The Italian villas of the sixteenth and seventeenth centuries (largely the works of men who were painters before architects!) are excellent examples of the "grand manner" in architecture. A realization of the possibilities of the site, of the value of dignified approaches, of noble terracing, of vistas, of formally laid out gardens in excellent relation to the buildings, these and many other qualities which defy analysis are to be seen in such designs as the Sacchetti (Fig. 1), Madama, Aldobrandini, or the D'Este.

But in other countries besides Italy, countries to which the Renaissance spread, there also may be studied noble works. In France, perhaps more than anywhere else, can be seen the finest examples of the harmonious design of buildings and sites—of grounds treated as an essential part of the architecture. The sites usually flat, prolonged vistas (Fig. 7), large open spaces and beautiful broad effects of water, grass, and foliage, are points in which the French excelled. No other people have shown such a magnificent sense of breadth and space as may be seen in such creations as the gardens of Chantilly or Versailles. In the Renaissance, for the first time, we see the city planned as an artistic whole. A fine conception precedes its slower realization, and every detail is subordinated to the one central idea. Would that we again could pick up the threads of a lost tradition!

III. Influences of To-day.

All good art must live—it must reflect the age we live in. Full recognition must be given to all the practical considerations which affect civic art, for town planning is not an art plus a science, but demands that all modern utilitarian requirements and scientific problems be accepted and expressed in beautiful forms. Our retrospective glance at the cities of the past shows the results of forces entirely different from those at work to-day, and the habits and customs of the people who inhabited them are clearly written in their plans. It follows, then, that we must consider every tendency of modern life, science, and invention which will directly or indirectly affect our design and reflect the twentieth century.

Determining factors will be found in the railway and transit systems in general. The speed of traffic almost as much as its bulk will regulate the width of roads, and faster transit facilities will be desirable in the future. Motor and other rapid modes of locomotion necessitate long, straight streets, the avoidance of awkward turns, and the provision of open points of intersection together with means of easy supervision and direction. Modern city life with its stress, demands that office quarters be as free as possible from traffic; and, as shopping streets and centres must always entail blockage in the traffic, for such quarters as these duplicated streets may be the only solution.

Class distinction, "fashionable quarters," or socialistic tendencies will all leave their mark on plans. Economic problems, the cost of living, the desire of the workman to have easy or cheap access to his work, the tendency to avoid domestic problems and live in flats and hotels, and many other such present-day influences will have a marked effect on the city, and, properly grasped, will help in the production of a living plan suited to the needs of the population of to-day and to-morrow.

Scientific progress must leave its mark. The ten-

dency to concentrate in the production of power at large central stations will affect the aspect of the city, and newer methods of transit both by land and air must be considered. May it not be something of a fetish that in the days of such undertakings as the Suez and Panama Canals we should let our designs be regulated by every little undulation of the site, perhaps to the detriment of a broad, straightforward scheme?

Attainment of the Ideal.

The General Town Plan.

(a) The Individuality of the Town.

To portray the town's individuality and to express its character must be the first consideration and constant endeavor of the designer. He must consider the life of its people, the use of the city, be it collegiate, legislative, or commercial, the materials to be used, the vegetation that will thrive, and, greatest of all powers to give individuality, the configuration of the site, considerations which, by a clear acknowledgment and expression in his design, will give to the city its distinctive character and clearly reflect the life and history of its dwellers.

(b) The Site in General.

A glance at those cities which stand out pre-eminently as the most beautiful in the world will prove that, in each instance, the nature of the site has entirely governed the general lay-out, and will show how natural features have been turned to the greatest advantage; but whereas in the cities of the past military considerations have usually governed the selection of the site, we, more or less within limits, may select one for its æsthetic possibilities. Full knowledge of the site must precede the formation of any scheme for its covering—no greater mistake can be made than to approach the problem with some preconceived idea of a type of plan "formal" or "informal" which the designer wishes to produce. Originality, it should be remembered, will arise from a close adherence to the demands of the site.

The mountain, valley, plain, or river will all determine the form of plan (Fig. 4), whilst every feature of the site, woods, ponds, or clumps of trees must be taken into consideration and turned to good effect. The lake will suggest a water frontage and the public buildings placed in conjunction with it (Fig. 8). The river, perhaps, will have the strongest influence in the development of the city site, and the possibilities of great sweeping curves to its embankments, or the splendid position for public buildings, lining each side, should not be overlooked. The bridges should be carefully placed, since they will govern the setting out of the streets on each side, and care must be taken in the placing of the industrial quarters that they may not in time unduly spoil the river-side development. If the river runs at the foot of some precipitous hill, as does the Wear at Durham, a magnificent site is afforded for the building, ecclesiastical or civic, which is to dominate the whole city plan.

The hillside or summit will afford the most commanding position for the chief public buildings of the city. If the former, its dark covering of trees and foliage will demand a careful silhouette to the buildings grouped upon its slopes, and if these be of a public nature the effect must not be spoilt by allowing the town to develop behind them If the hill or mountain side be steep many opportunities may occur for noble terracing and sheer cliffs of wall. The residential quarter will naturally require high ground, which should not, however, compete with the spot selected for the civic centre.

Not only will the nature of the site itself determine the general lines of the design, but also prominent features of the surrounding country. Views of distant mountains, hills, or water, or any beautiful prospect, should be linked up with the city. Avenues, open spaces, and the forecourts to important buildings must be schemed to obtain a view of the distant country, the formal city buildings forming a foil and setting to the landscape.

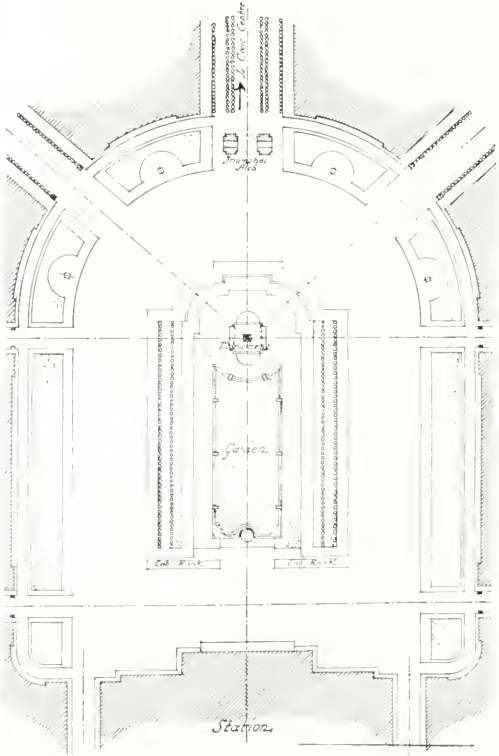

FIG 6. A STATION PLACE, RECESSED FROM LINES OF TRAFFIC AND SURROUNDED BY HOTELS.

Every part of the site having been given the fullest

consideration, and all its possibilities grasped, the planner, always thinking in three dimensions, may outline his scheme.

(c) The Sub-division of the Site.

Practical considerations such as prevailing winds, rainfall, geological formation, etc., accounted for, we may begin to dispose of the various quarters which will go to make up the city plan.

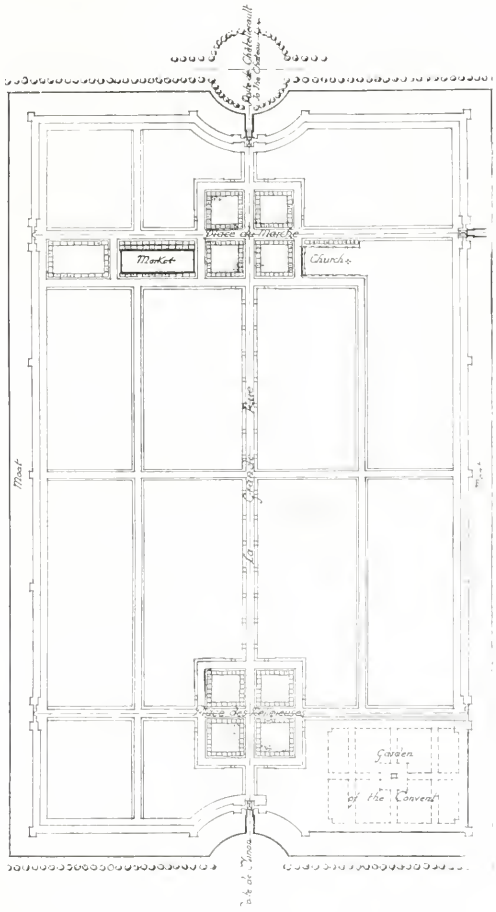

FIG. 7. RICHELIEU, AS LAID OUT BY J. AND P. LEMERCIER.

The city may be sub-divided into three areas: (1) The Civic and Commercial, conveniently considered together; (2) the Residential; and (3) the Industrial. Reasons of convenience and health may dictate that these areas must, within certain limits, be separately placed and grouped and determine the relative positions they should occupy. Our architectural standpoint demands more—it demands that, though separated (and each requiring a different treatment and some effect of centralization in itself), they shall retain their positions as units in a complete whole, and be in relation to one another whether viewed from the mountain-top or public square. The following are ways by which this may be obtained: (1) The subordination of the minor parts and accentuation of the chief, giving a greater vigor and sense of completeness to the whole. (2) Main radial avenues between the heart of the city and its outskirts (Fig. 4), which should, at their termination both in the centre and in the area they serve, have some prominent and well-fixed focal point, to give a sense of connection to city and suburb. (3) Ring roads maintaining their width and character throughout. (4) Great formal sweeps of dwellings in the residential quarters, perhaps terraced high on some hill like the seats of a Greek theatre, and having the chords of their curves in definite relation to the centre, whilst, whenever possible, straight streets, however short, may be planned with their axes radiating from the important buildings in the heart of the town. (5) Scale obtained by the adoption of a similar unit for both town and outskirts. There is no reason for the level lines of classical cornices in the civic centre to give way entirely to spires and mediæval gables in the environs.

Of great importance are the problems of the disconnection of the various areas, and the transition from one quarter and class of building to another. No definite rules can be laid down since each site will require a different solution. By treating the main avenues connecting the areas for part of their length as park-ways, not only would the park system be continued from the open outskirts to the more closely built upon commercial part, but the transition from one class of building to another would become less noticeable. More effective, perhaps, would be ring avenues of ample width connecting up a series of open spaces.

Where the residential area is in close contact with the commercial, the office buildings should not give way immediately to the detached villa standing in its own grounds. Flats or tenements would form a more agreeable transition from the city block to the suburban dwellings—yet, in any attempt to attain pleasing transition from one area to another, great care must be taken not to give too disconnected an appearance to the whole.

Assuming the positions to the various areas already allocated, each individual one may be considered. Something of the principles governing the lay-out of the whole town will apply to each area, each must have some centre of greater or less importance, whilst various other points of emphasis should be provided round which the plan may form. Proportion of solid and void, of masses of buildings and masses of foliage carefully considered, will greatly assist in the ultimate effect of each quarter and of the whole.

1. The Civic and Commercial Area.—Something of a climax is required in the whole city design, and this "climax," if the city be a political one, will be formed by the Government buildings (Fig. 4); if collegiate, perhaps by the university; usually it will

be formed by the civic centre of the city itself (Fig. 3). The preliminary consideration of the site will have shown the most suitable position for this centre; an elevated spot, the mountain side, or water frontage, or a combination of these, being selected as the most important and prominent place; round it the civic and commercial area will be formed.

Dignity should be the key-note in the lay-out of this quarter, and a greater degree of formality obtain here than in any other part. A more spacious distribution of the various parts, of roads, buildings, and open places, and a greater breadth of treatment, not only in the design of the individual buildings, but in the proportions of streets and forecourts, should pervade; and, in general, architectural magnificence will demand a more generous treatment than mere utility requires. From this quarter the greater number of avenues will radiate; its general shape and lay-out, then, should be so devised that its more prominent buildings may be seen from as many points as possible and cast their radiance over the greatest area practicable. It will be the organic centre of the whole, and should be so disposed as to leave no doubt in the mind of the visitor, arriving by rail, road, or water, as to which is the heart of the city. If circumstances dictate that the civic quarter be placed at one end, then, in its relation to the other quarters, it should occupy some such position as does the Schloss and surrounding buildings to Karlsruhe (Fig. 3).

Ample space should be reserved for the civic buildings, which, with their surroundings, should embody the pride of the citizens, for such centres as those of education, amusement, and shopping, and for the general commercial and office quarters; and if the various important buildings of the different centres be linked together by broad avenues, the value of each and of the total effect will be greatly enhanced.

2. The Residential Quarter.—A more homely, restful character will be proper to this quarter, and a much greater use of foliage, together with the smaller and more disconnected type of building, will prevent this part, on however much higher ground, competing with the civic centre. In this, as in other areas, a centre point to the design is desirable. Round this subsidiary centre, which should be spaciously laid out in conjunction with the great avenues coming from the city, churches, branch libraries, shops, etc., will be built, and from it avenues should radiate to the various parts of the area. Other points of interest in the plan may be formed at the junction of main roads, where groups of shops, a church, or a school may be placed to give further emphasis to the plan, whilst recreation grounds will, in the poorer quarters, similarly provide points of interest. The main avenues should be laid out in a simple and direct manner; they may be of great width and planned with centre plots of grass and trees, forming promenades. Variety may be obtained by broad terracing, by plateaux, and by great formal curves, having, when possible, relation to the centre of the area or the chief civic centre itself.

Great care will be required in plotting the streets when the site is hilly. A street carried straight up an incline will, if the houses be built fronting it, result in broken, restless masses. It would be better in such cases to make the streets run on level lines on the hill-side, giving the long, unbroken roof-lines so suitable to such a quarter. If the road to ascend the hill winds to right and to left, delightful effects may be obtained if direct access by foot be given by long, easy flights of steps, always providing some spot of interest at the summit.

Endless rows of small houses in the poorer quarters must be avoided. Houses should show some method of concentration and be grouped together in the streets or round open squares or spaces, as any appearance of dotting the buildings separately about the site, each with its little garden, would be ruinous to the effect as a whole.

Street junctions offer interesting problems in design; the houses must be so spaced and designed as to form interesting vistas to the incoming streets and to prevent any unpleasant effects from unconsidered "side elevations."

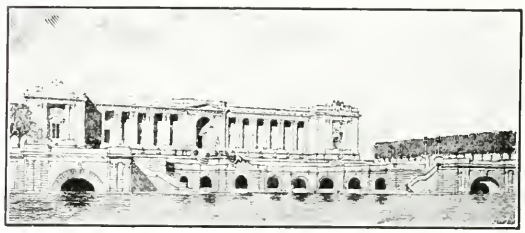

FIG. 8. THE WATER FRONTAGE TO A PUBLIC BUILDING.

3. The Industrial Quarter.—The treatment of development cannot be easily foreseen. It will, in its general disposition, be governed by railway lines this quarter will be the most difficult, for its future and sidings, rivers or canals. It follows, then, that in the careful placing of railways and waterways in the first place much can be done to ensure some ordered growth. This area, just as any other, should express its character in its streets, its places, and its buildings. Civic ornament will find no place here. Large and important buildings, such as customs houses, goods stations, or power houses might provide point of emphasis, and here, as elsewhere, a good street system will count for much. Architectural magnificence must, in the avenues, give way to the requirements of heavy traffic, and the buildings lining them should be of strong and simple character. Open spaces, quiet and restful in appearance, will be needed here more than anywhere else, and such should be placed away from the busiest thoroughfares. Offices and warehouses should be grouped in an orderly manner, and when large yards are required for loading and unloading goods, these might

face the road with the buildings grouped round the sides, the breaks thus formed giving variety to the lines of the streets.

(d) The Approaches.

The problem of the first impression is one which the architect is constantly called upon to solve in the planning of his buildings, recognizing how much it will count in the beholder's appreciation of his whole design. How much more important, then, must be the approach to the city and the impression given by it! It may be by water, rail, or road. Whatever the means, the first view should be as beautiful and impressive as it is possible to be, and should embrace the chief buildings and points of attraction which the city may possess (Figs. 3 and 4).

The Approach by Water.—In our country this may be from the sea or river. Water in relation to a town has great possibilities, and in the approach from the sea, the harbor should be brought into direct relation to the heart of the town, presenting the most imposing buildings, and the docks and warehouses treated in a more dignified and orderly fashion than usually obtains. Many cities may possess a river approach. Here again, if possible, a vista should be opened out from the docks to the civic centre, and the river-side given as attractive an appearance as possible. If the sides of the river are embanked the buildings should not be placed too closely to the river-side, but set some way back to give full value to the wide sweeps of river-side road, though, at intervals, some building, a customs house or dock office, may with great effect rise sheer from the water's edge.

The Approach by Rail.—The station, a noble building, the entrance portal to the modern city, should be placed in proximity to the best quarter, and from it should radiate avenues to the various centres, terminating in vistas of some important buildings (Fig. 3). Where possible, the chief avenue should lead directly, on the axis of the station, to the town's civic centre, framed in by a monumental arch or imposing pylons. In front of the station there should be a large open space, and the building itself must be somewhat recessed from the point of the traffic's greatest density. This open space should be laid out in a generous fashion, and planted with grass and foliage (Fig. 6). Something of the city's character might here be expressed, by the chief industries of the place forming the subject for sculptural ornament, and, recessed from the whirl of the traffic, a statue of some prominent citizen who may have brought fame to the town might well be placed. Ample provision for cab ranks and car shelters must be made so that they detract as little as possible from the general effect. The passage of the railway lines through the city must be devised to present as pleasant a picture as possible to the traveller, and, when they must necessarily run through districts fully built upon, it would be wise to plant the sides with trees, and in every case some reasonable space should be left between the rails and buildings.

The Approach by Road.—All main avenues will be designed to open out a vista of some important building which will add interest to the approach by road (Fig. 4). Main roads connecting the city with the neighboring towns should be wide and imposing, great piers or pylons should be built on the boundary line, which could serve the purpose of distance-indicating posts, and on the outside of these a less formal treatment of trees, hedges, and footpaths will all serve to mark more distinctly the transition from country to town.

The whole city should be designed to present a beautiful mass and outline as seen from afar, and some attempt should be made to define its boundaries, such definition not necessarily being incompatible with the provision for expansion. Wide ring avenues, belts of park land, or fields might help to attain this, whilst streets laid out in the outskirts should be so designed and the buildings so placed as to give a closed-in appearance to their outer ends—gable ends, curbstones, and macadam too often rub shoulders with grass and trees. Beyond the boundaries, too, straggling houses must be banned; inconvenient as they are to schemes of drainage and lighting, they are still more objectionable as eyesores.

(e) The Main Avenues.

From the architectural standpoint these are of twofold value: (1) As determining the development of the scheme, and (2) for their intrinsic beauty.

1. The main traffic lines will always be the chief factors in regulating the growth and expansion of the city, forming as they do the backbone or structure of the city plan. They must then, within such latitude as practical considerations and the configuration of the site allow, be laid out to give a broad, simple, and dignified scheme, helping to give a sense of connectedness and unity to the various parts and areas (Fig. 4), and to accentuate the physical centre of the plan. These main avenues will naturally by their connection with the outlying main roads help to link up country and town, an object, however, more effectively obtained by laying out streets so that they have as vistas some distant mountain, hill, or other beautiful prospect, linking up Nature and Art—whilst the formal lines of architecture will give a delightful setting to the view.

2. The avenues should be broad, not alone for traffic facilities, but as befitting the great scale on which an important town should be built, and an air of stateliness may properly be given to them. Buildings forming vistas to these great avenues must be of such size as to provide satisfactory terminations and not be dwarfed by them. Care must be taken that the road levels be continuous, either flat or inclined, dips and curves being avoided as destroying the effects of the avenue itself and in many cases obscuring the terminal vista.

Formal planting of trees and shrubs will make

these avenues pleasant promenades as well as traffic routes, and fountains and monuments placed to form focal points to by-streets will give additional points of interest, helping to break up too lengthy a vista. Trees planted in the avenues must have definite proportion in height and width to the street and buildings, and when strips of turf are planted in conjunction with them in the centre or side the plots should be simple and unostentatious in design. By the use of trees, shrubs, and grass, by fountains and monuments, and with good proportion between the height of buildings and width of roadway and well-schemed vistas, interest in the avenue itself should be maintained.

Ring avenues with their constant change of direction and vista afford a delightful contrast to the straight street. At their intersection with the main avenues large open spaces are necessary; here triumphal arches and great pylons may be placed, and suitable sites contrived for important public buildings.

(f) Allocation of the Various Centres.

The position of the various areas—residential, commercial, and industrial—settled, and the approaches and traffic lines laid down, the next step will be to provide focal points and spots of emphasis giving the necessary architectural expression to the plan (Figs. 3 and 4). These points will be supplied by the various centres which practical as well as æsthetic considerations render desirable, civic centres, centres of education and recreation, of commerce and shopping. Such centres should be treated in a generous manner, indicative of the wealth and importance of the town, being formed as they will by its chief buildings, whilst in their treatment something of their function and relative importance in the life of the inhabitants should be expressed.

Centres may be formed in connection with park areas, in connection with water or in the heart of the city, when they may be grouped in some great, broad street or round some place or group of open squares; whatever the site they should be so treated as to add as much dignity as possible to the neighboring streets and "places." The total effect may be increased, and greater importance given to each individual centre, by a judicious linking up, one to the other, with spacious avenues, and in their relative positions in the whole plan a balance of effect is necessary.

1. The Civic Centre.—The point for this centre, which must be the chief and predominate over the whole city, was selected on the first consideration of the site, since to a certain extent it governed the setting out of the main avenues and the general disposition of the quarters, and in laying out the civic and commercial area it was so placed as to be seen from as many points as possible that all might feel it to be the "hub" of the city and city life. This centre will include such buildings as the town hall, law courts, public offices, etc., and round it offices, both public and private (such as legal) will naturally congregate, and provision for them in relation to the chief buildings must be made from the first, assisting as they will in the architectural treatment of the whole centre. The arrangement of the streets and open places in connection with it should be spacious, and they should be so placed and proportioned as to express something of the "pomp and splendor" of the town. This portion of the city will afford the best positions for public statuary.

2. Educational Centre.—This centre, including such buildings as museums, art galleries, libraries, and colleges, will, especially if it include a university, form one of the largest. If such be the case, a compromise must be effected here; museums and libraries must be near to the heart of the city, to the people, whilst a university will require a more secluded spot, and ample space for playing fields—even then it may be brought architecturally into touch with the remainder by opening out a vista of it from the square round which the museums, libraries, technical colleges, etc., are grouped. If it be brought actually into conjunction with the other buildings, the large open "campus" such as will then be necessitated will add greatly to the breadth and dignity of the whole and form a noble setting. The necessary residences might be linked together and form interesting features in the scheme. A quiet and dignified effect should be striven for, and an artistic lay-out, well-designed buildings, and good sculpture, happily combined, will have an educational value in themselves.

3. Recreative Centre.—This centre, the centre especially of sports and pastimes, offers endless opportunities. Stadia, playing fields, swimming ponds, and playgrounds can be arranged to form a magnificent composition of architecture and formal gardening on a large scale. Physical exercise, occupying as it does so much of our modern life, might be provided for more on such lines as those of ancient Rome, the baths of Titus, with their surroundings, forming a better model than the present-day park playgrounds, playing fields, and scattered baths. This centre will probably form part of the park system, the most healthy spot being naturally chosen, and an effort should be made to form such an architectural whole of buildings, grounds, and surroundings, that, whilst the body is being exercised, the educational influences of an artistic environment may be felt.

4. Shopping Centre.—Shops will naturally be formed along the most frequented routes, but the establishment of a market in one spot will lead to the congregation of shops around, and this might form the chief centre. At such spots as this, and wherever any considerable number of shops will be formed together, an attempt to obtain orderly and artistic grouping should be made, and whilst a sense of quiet and enclosure is desirable the whole must have some architectural expression and value in the plan. Too wide a spacing of the streets and "places" will defeat the object of the centre, but great effects might be obtained by the frequent use of colonnades and covered ways, such as those of the Rue de Rivoli,

and arcades linking street to street and place to place will in themselves afford excellent opportunities for architectural treatment.

5. Commercial Centres.—The stress of business and the bulk of the traffic will demand that here everything be spacious and reticent in design. Sculpture and ornament should be reserved for less distracting spots. This centre, for which Wren's city centre in his scheme for rebuilding London is an excellent model, will contain such a building as an exchange, round which other public or semi-public buildings, banks, and offices will be arranged. These must all be grouped in an orderly and architectural manner; a centre square, with the lofty office buildings surrounding it, offers great opportunities for a dignified treatment of an essentially twentieth-century problem.

6. Minor Centres.—These can be effectively devised for small towns and residential quarters, giving the architectural emphasis which may be there required. Small centres, such as of hospitals or theatres, massing together buildings devoted to the same purpose, will all help to give variety to the plan and break up any too large areas of regular streets and buildings.

(g) Parks.

The existing system of dotting about "natural parks" unrelated to one another is bad. The park system should at all times provide a sight of its glories; all parks must be so placed that they may help to adorn the city, and that their benefits may always be felt. The tendency therefore should be to provide a number of gardens and parks—not dotted about, but connected together into one big system by wide boulevards and strips of park-way linking up the open spaces and providing walks and drives about the town.

Land should be reserved for park-ways on the outskirts of the city, thus spreading the value of the system further afield. Such strips of park-way carried out on radial lines will give delightful effects by the contrast of building and cool green trees (Fig. 4), and greatly enhance the appearance of the city by creating interesting "voids" in the city's mass of buildings, giving a more open and dignified appearance and affording a pleasant setting to any building or buildings which may be placed in conjunction with them. Under such conditions they should be so planned that their value may be felt over as large an area as possible.

City parks will, perhaps, be placed to separate the commercial areas from the residential, or the resident from the industrial. The nearer to the heart of the city the park is, the more formal must be its character, though the principle to be observed in the lay-out of a park will, of course, depend upon its use. It may be primarily for children, or perhaps a means of education, containing a vivarium, aquarium, botanical or zoological gardens. It may, again, be used as a recreation ground with tennis, football, and other fields, when it will form part of the recreation centre; or perhaps it may be used for music or a parade, as the Bois de la Cambre or Hyde Park are used, though for such purposes as drives a wide ring avenue or boulevard would be much more effective. Parks, in addition to those suggested within the town and of a different type, may be required in large manufacturing districts when the country is far away and inaccessible to the poorer classes. These parks, large in size, should naturally contain as many beautiful features as possible, running streams, hills and dales, and have in addition good views of the surrounding country. No attempt must be made to make unpromising sites look naturally romantic, and, when Nature is not especially beautiful, for man to try to "design" her is false and impossible of attainment.

In designing the parks a sense of spaciousness and scale should be observed throughout, the general plan being laid out on simple broad lines, with quiet masses of foliage and unbroken stretches of grass. On no account must any attempt be made to bring little scraps of country into the town, and the best types to select as models for our parks would be such examples as Kensington Gardens, Hampton Court Gardens, or the Tuilleries When there are no dominating architectural lines a sense of formality and an easily grasped geometrical lay-out become all the more necessary.

These parks will afford excellent situations for monuments and sculpture, to which foliage, perhaps planted in great hemicycles, will form a delightful background.

Road frontages to parks are often desirable, spreading their influence over a large area. The problem of the transition from the buildings and streets of the town to the park is an important one. A park laid out on simple formal lines will usually easily fall into place, but if some great avenue run directly up to the park gates, a satisfactory termination to it must be provided, and it would be wise to continue the avenue, in no way cut up, for a short distance into the park, to terminate in some feature such as a monument, which may also form a focal point to which the park avenues may converge. White stone terraces and balustrades, etc., will all help to "carry through" the architecture of the city into the park.

Vistas of groves, woods and parks should be planned for the open places and groups of public buildings, whereby both will gain by the contrast of Nature and Art and more dignified view-points will be obtained for the buildings.

(h) Streets in General.

The various areas and centres of the town's activity located, the large avenues and boulevards laid down, and the position of parks and approaches determined, the development of the city plan will be completed by the lines of the various streets. The disposition of these will have an important ultimate

effect on the plan and can do much to accentuate the ruling idea which has so far governed the design. The setting out should be simple and direct, and every line should have a purpose in, and definite relation to, the whole scheme.

Streets, where possible, should converge on to points of interest and show to best advantage the prominent buildings, an effect which streets radiating from some centre will give, providing a splendid series of vistas. Again, some streets in distant parts may be laid out in relation to the chief city centre itself, so giving greater unity to the plan. A "gridiron" treatment of the whole city must be avoided, but efforts must be made in laying down the lines of the streets to form good building plots and to avoid sites difficult to deal with.

The gradient of the street will materially affect its appearance—a long street will appear less monotonous if on an incline than if perfectly level. Changes in section, longitudinally, of the roads must be carefully considered, they may cut off the view of the terminal vista and have a disagreeable effect; the levels of the roads also must be taken into account in the design of the buildings lining it to obtain a pleasant treatment of the sky-lines. The streets should always be of a width and character suitable to the district they serve. In the main traffic lines the amount of traffic will determine their size, but some definite proportion should be given to the minor streets, both as regards length to width, or width to the height of buildings. The former cannot be easily regulated, and for the latter no hard-and-fast rules can be laid down, but, generally speaking, it will be found that they should either be definitely wide—the width being not much less than twice the height of building—or, when necessary, definitely narrow, high buildings being less suited to broad streets than to those of restricted width. When no vista is provided it becomes all the more important that the street be well proportioned and of interest in itself.

Long straight streets may become monotonous, however imposing the vista; in such cases their too extended appearance may be broken by fountains or monuments, not so large as to spoil the value of the terminal vista, and placed to accentuate the intersection of another street, which intersection may also be widened out to increase the value of the break. The widening out of the minor streets at their junction with the main avenues will, by displacing a certain part of the perspective, create interesting breaks, an effect which may be also obtained by setsback in the building lines, giving sites for more important buildings, and an opportunity for the introduction of foliage.

Whilst straight streets offer the most dignified approaches to architectural monuments, opportunities should be taken to plan great formal curves, and crescents and quadrants may be with advantage used. Such arcs of circles will give right-angled junctions with streets planned on a radial system, an effect which may be also obtained by bending the two ends of the street to an obtuse angle with the centre. This type of street and the curves will, well treated, afford excellent "closed street pictures," effects which will be all the more valuable as a contrast to the wide, open avenues. When two points have to be joined together, if the line connecting them forms awkward angles with the places around these points, the ends may be curved with good effect, and thus afford regular junctions.

The junctions of streets require careful management; merely canting the angles of the buildings does not give a sufficiently dignified treatment. It would be better that they should be widened out, to form circuses or other shapes, and thus give better sites for buildings and opportunities for their successful treatment. Streets intersecting at various angles should be avoided, since they form sites difficult to treat satisfactorily, and careful proportioning between the width of streets and the buildings between them is always necessary. An attempt should be made to provide a satisfactory vista to each incoming street.

Care must be taken to avoid spoiling any feeling of breadth and continuity by bringing too many cross streets into another street, and when brought in they should be reasonably spaced apart to leave good building blocks between.

Footpaths should be broad and carefully proportioned to the width of road. They need not be paved for their full width; when trees are planted strips of grass or of gravel may be laid down, and in the former the tram-lines could be made to run.

In the heart of the city important centres with their public buildings may be linked together by wide streets giving a continuous impression of spaciousness and increasing greatly the value of each individual centre. Such streets might be primarily "show" streets, and be of great width, with gardens and statuary in their centre and amply planted with trees.

In the residential areas difficulties will arise in laying down the lines of streets, for these districts will usually be on hilly ground giving new problems in street plotting. Here lines that may appear to be formal on paper will not necessarily be so in reality. Long lines of buildings should not attempt to "climb the hill," but should be made to run on one level and the effect of the sky-line considered. Broad terracing would here be an effective solution.

In the width of streets in residential parts a greater latitude will be allowable. Streets which are not thoroughfares, but serve only groups of houses, need not be wider than will allow two vehicles to pass, though the distance apart of the houses will be much greater. Gardens to houses which face important roads must be treated by the town-planner in a *continuous* and broad and simple manner, making the strips of garden form part of the roadway in effect the only sub-division being a stone curb, low wall or hedge.

(i) Open Spaces.

Open spaces are desiderata in every plan, and

may vary in size from the vast round point or square in the heart of the town to the small enclosed place recessed from the busy street. There are two ideals in the designing of open spaces, each having its proper place. The object of one is to cast its radiance on the adjacent streets, while that of the other is to form a sense of enclosure, becoming in its nature something of an open-air room. A combination of both these ideals may at times be made, and it should be remembered that open spaces, linked together by broad avenues and well planted with trees, will form valuable and effective park systems. Open spaces which are complete in themselves and not connected up with strips of park-way can, both "open" and "enclosed," be of various shapes. Squares, oblongs, ovals, circles and ellipses, hexagons and octagons, may all be effectively used, many of these shapes giving excellent effects of light and shade on the buildings which surround them.

Good proportion and complete harmony between the open spaces and the buildings around them are essential. One of the objects of the open space being to show to advantage the buildings in relation to which it is planned, great care must be taken that it be not so large as to dwarf them, nor so small as to prevent them being properly seen. Though no definite rules can be laid down, it will be generally found that a long building will require a space longer than deep, whilst the narrow lofty building will require the reverse. Care should also be taken in the method of running streets into the "place" to preserve the regular lines of the buildings surrounding it, and important buildings should be so placed as to form interesting vistas to such streets. Uniformity in the skyline is desirable, and in places of circular or elliptical form, attempts should be made to preserve the great sweeps of cornice and roof.

Large open spaces will be much used as traffic centres, and as such should not be placed in direct relation to any public buildings. They must be big enough to receive effectively the great avenues, and to preserve regularly the line of buildings round. The large round point will, when used as a "place" with traffic circulating round, and not crossing the open space, afford an excellent opportunity for some large central monument, which, with avenues entering obliquely, must be of such a form as to present a regular face to all points.

When open spaces have buildings occupying the sides only, some architectural frame to the angles, formed by trees or by columns, will be necessary to prevent any feeling of weakness at such points. Sometimes it may be necessary to group several open spaces round a building when owing to its location plenty of open ground is required, which must not, however, dwarf the building; then by some subdivision a proper setting to it on all sides may be obtained.

The value of the enclosed space should not be overlooked. The sense of enclosure may be obtained by a judicious arrangement of the incoming streets, by effectively closing the vistas of all openings out of it, by linking up the buildings with colonnades, trees, or arches, or the lines of the buildings themselves may be strong enough to carry the eye across an intervening street. Some methods of enclosing the space may be architecturally of great value, as, for instance, the use of hemicycles as at Nancy, and the Roman Fora with their magnificent colonnades are excellent examples of the happy treatment of similar problems.

When the centre of the place is laid out as a garden, well-designed piers and railings, preferably of stone, should be used. Thin cast or wrought iron fencing is ineffective in scale.

(k) Bridges.

In the well-laid-out town railway bridges within the city will be avoided, and the only bridges required will be those crossing some river or deep ravine, or, with streets at different levels, viaducts offering interesting problems in design. It should be borne in mind that the bridge must be satisfactory not only as seen from the top, when its proportion and vistas will be of great account, but as seen from beneath, when the proportion of its arches, its general design and connection with the embankment are the chief considerations. Naturally many lines of traffic will converge on to the approaches; these, then, may be made of great size, and possibly would be best in the form of large circuses, giving greater dignity to the bridge. The scale of the structure and its approaches must be very carefully considered in relation to the surrounding buildings—in all cases they will necessarily be so diverse that it will be advisable completely to disconnect them.

The ramps to bridges should make agreeable composition of line both with the bridge and embankment. The architectural forms which may be used to decorate the open place in front of the bridge should also have some definite connection with the embankment, welding by firm lines the river-side and open space together. Flights of steps, triumphal arches, colonnades, and trees may be used for the purpose, connecting the embankment with the bridge and giving greater importance to the approach.

Monumental bridges may be adorned with colonnades, whilst the piers will afford excellent opportunities for the introduction of sculptural decoration, and their approaches may be enhanced by triumphal arches, pylons, and great curved colonnades.

Long bridges with strongly marked architectural lines and broad formal surroundings should have no camber if it can be avoided.

When iron bridges are necessary the iron should be used in the simple straightforward manner expressive of construction in that material, and to bring the bridge into harmony with its surroundings stone abutments, pylons, and balustrades to the approach should be used, as so well exemplified in the Pont Alexandre III. at Paris.

(l) Grouping of Buildings.

The grouping of buildings is of the utmost importance in giving greater emphasis to the chief points in the plan, and, more effectively than can be done by a single building, however large, in making an impression upon the spectator (as it should be the designer's constant effort to do) of the bigness of scale of the city and the greatness of the civic life which the buildings express.

Public buildings must always be placed where they will be seen to best advantage and confer the greatest dignity upon the whole design. They may be grouped in a wide street, when their projections and general treatment should be modified to suit the points of view obtainable. They may be placed at the end of a long avenue, when care must be taken to proportion effectively to the latter the forecourts and open space in front, and the design itself must be composed to tell at a distance (Fig. 5). They may be built on an eminence, when a crypto porticus, great embankment walls, terraces, carriage-ways, flights of steps and buildings placed at a lower level to throw back the central mass, will all be conducive to a great monumental effect. They may be placed in conjunction with an open space or spaces, and then must be so grouped as to be well seen from the various avenues which may be connected with them; or again, they may rise from the water's edge, when the treatment of water and architecture offers endless opportunities (Fig. 8). A continuity of effect may be obtained by linking up the several groups of public buildings by wide avenues or strips of park-way.

The scale of the buildings must always be adjusted to the distance from which they will be usually seen, and should be suited to the size of the town which they adorn.

Buildings placed in architectural relation to one another may be all in line, some may be recessed or advanced from the general front or placed at right angles, or they may be grouped round a forecourt, or all these methods may be combined. When it is desired to preserve a vista of a building some distance away the grouping may take the form so effectively devised by Wren at Greenwich, a treatment which might also be adopted when an opportunity occurred in the streets of the town. When one building is placed behind another, it should be simple and severe in its lines as a foil to the more richly treated building in front.

In grouping, some principal units should be repeated through all the designs, thus obtaining unity of effect; and small subsidiary buildings must be so treated and placed that they may not be hindrances to the preservation of the general scale, a matter of some importance. A concentration of interest is desirable, and this, when produced by larger masses and deep shadows, will materially increase the value of the vista (Fig. 7).

The buildings may be linked together by arcades, colonnades (not timidly used, but used as Bramante would have done at the Vatican!), trees, terrace walls, and steps, whilst police boxes, monuments, statuary, and flights of steps well placed will help to link up the buildings with their surroundings and to create a greater total impression. All lines of grass, steps, terrace walls, and trees or shrubs should be so laid down as to give good composition of line with the buildings and their details.

An endeavor should be made to raise the buildings, when on the flat, above the general level. When the approaching street rises it should be made of great width, and the centre part may be sunk to form a series of flat terraces, connected by steps, the broad lines of which will greatly help in the attainment of a monumental effect.

(m) Buildings in General.

Modern conditions of city life and methods of transit condemn the irregular streets and junctions; on all hands formality is required, and this formality must be carried through to the buildings, long level lines of cornice and string best suiting the straight street and formal curve.

The planner of the town, unhappily, will not supervise its execution. He must not calculate, therefore, in his disposition of the several parts, that one building by a greater projection or a greater height, or by the addition of a tower, porch, or gable required to form a pleasing termination to some vista, will be erected when the time comes for his plan to be completely carried out. Such is impossible. All points of emphasis therefore desired in the buildings must be located at the centre or angle of a façade, or any other point which would naturally receive attention at the hands of its future designer.

Some system of massing buildings together should be adopted, avoiding a multitude of little straggling units, especially in the residential quarters, where it would be better to group several houses together and throw the little bits of garden into one large open space. Similarly six or seven storied flats and hotels could be grouped together round some open space, well laid out, the sum of all the unbuilt-on areas belonging to each.

Scale should be maintained in the buildings of each quarter, and their heights might be regulated in different well-marked zones. An attempt also should be made to obtain a certain uniformity of color and bulk in buildings on a given area. Absolute symmetry is not so essential as a balance of skyline, and it should be remembered how roof-lines affect the appearance of the city as seen from without. Long, level lines will generally be found to suit a hilly site, whilst vertical lines will be more effective on the plain.

The character of buildings should be expressed in their elevations, certain areas expressing their purpose in the design of the edifices—a solidity and plainness will characterize those of the industrial quarter; quiet, restful lines and a homely effect those of the residential; whilst a greater richness and wealth of

ornament, together with an appearance of greater dignity, will be the note for the buildings of the civic centre.

Buildings should be designed to suit the positions from which they are likely to be most seen—breaks and projections being avoided when it is impossible for the spectator to get far enough back to appreciate them properly, and the effect of the sun on the buildings according to their position should be carefully considered.

In the long city thoroughfare a judicious break might be formed by a set-back in the building line which may extend to the ground and be filled with trees, or to the first floor only, leaving a roof garden, a pleasant spot of color in the street. Similarly in the residential area long rows of buildings exactly alike should be avoided, and houses occasionally set back or brought forward from the general building line or gathered together into groups of definite form will give a welcome variety.

An effort should be made (in spite of our lack of tradition) to give some architectural character to the city, a character such as the dome gives to Byzantium, column and pediment to a Greek city, or the spire and gable to a mediæval town. Even under present conditions the establishment of a Minister of Fine Art might do much to preserve a more uniform and higher standard of design in the buildings of our towns.

II. The Town's Ornamentation.

(a) Trees, Shrubs, and Gardens.

Of all methods of adorning our towns the use of greenery is naturally one of the most attractive, and every town plan must provide amply for trees, shrubs and gardens. These must not be thoughtlessly dotted about, but subordinated to the architecture and used to assist in the general city design. No attempt must be made to make the work of man imitate that of nature, and trees and gardens used in our cities must partake of some of the city's order and formality. The introduction of trees, shrubs, and grass may be considered under the following heads: (1) Trees in Avenues and Open Places; (2) Shrubs, Flowers, and Gardens; (3) Plots of Grass; (4) Treillage.

1. Trees in Avenues and Open Places.—Trees, as spots of color contrasting with the buildings of the city, add much to its beauty. They must not be scattered about, but will be used to best advantage when planted in some open space or forecourt or in the long lines of the street. A building of strong classic lines may gain in appearance by the contrast of a free and informal treatment of greenery in front, and so with squares which are surrounded by buildings simple in outline, as may be seen in many London examples; but care must then be exercised in the disposition of the larger trees that they do not by their bulk dwarf the buildings and prevent the square being seen as one complete and architectural scheme. In avenues less than seventy feet wide trees should not be planted in the centre of the roadway, but only at the sides and openly spaced. In wider avenues the trees may be planted in the centre in one or two lines, and may be paired or used in rows of four, giving delightful shaded walks beneath. They must always be proportioned in their height and bulk to the buildings on either side. Variety can be obtained by using different kinds in the various squares, but care must then be taken to avoid anything in the nature of specimen planting. Trees may often be planted to frame-in some distant view; and long avenues of trees with some interesting terminal vista, such as in the Luxembourg Gardens, should find a place in every city plan (Fig. 2). Trees may be effectively used to link building to building and complete some great architectural scheme.

2. Shrubs, Flowers, and Gardens in Open Places.—Shrubs, since smaller in size, may be planted in greater freedom. In open spaces they may be used with advantage to accentuate the angles of the gardens there laid out, or, again, clipped, used as a border and in connection with statuary to which they form an excellent background. Shrubs in boxes should be freely used in conjunction with buildings and monuments, and flanking the steps of the former they will give an added dignity. If they are to be disposed regularly as a border to open spaces, and to accentuate angles or cross-paths, excellent models will be found in the Tuileries and Luxembourg Gardens. When put on parts which are paved and too small to permit of earth beds, they are of great value in "carrying through the green." Large shrubs in boxes, lining an avenue to a building, will, by the contrast of their mass and shape, give something of the effect of an avenue of obelisks before an Egyptian temple.

Parterres may be laid out in the open spaces, where masses of one kind of flower only should generally be used and not divided patches of different colors; for the shape of their beds, simple and interesting geometrical figures will always be best. In their general lines they must contribute to the total effect of the surroundings, and a fussy and restless appearance be avoided.

3. Plots of Grass.—Plots of grass will naturally be chiefly placed in the open squares and forecourts of public buildings, long wide stretches of grass unbroken by shrubs or flowers giving a splendid sense of breadth and repose. Intersecting paths should form good shapes to the plots, and an edging of flowers or shrubs will help more clearly to demarcate their shapes. Proportion between the paths and grass must carefully be observed, the bulk of grass (unless merely surrounding a statue) must predominate: the Schloss Garten, Vienna, is an example of the ill effects resulting from a neglect of this rule. Grass will be most effective in avenues when it is flanked on each side by shrubs or trees, and will help to take away from the hard dusty look of too broad an expanse of paving and roadway.

4. Treillage.—As a general rule the light appearance of treillage will exclude it from any position near to the large public buildings, and it will be best reserved for parks and open spaces, where it may be used with great advantage in connection with such utilitarian structures as conveniences, shelters, etc. As a background to a garden, in its general lines treillage should take some architectural form, and with it many interesting little alcoves and recesses may be formed.

(b) Water.

In addition to the river, lake, or stream, which the site may possess, the possibilities of sheets of artificial water or of playing-fountains should not be overlooked. These may be introduced into all parts of the city, the calm and repose suggested by water being intensified when contrasted with the roar of traffic.

Small streams or rivers passing through the city site, and of themselves too small to be in scale with their surroundings, might well be converted into water canals broad and formal in treatment, their banks affording excellent opportunities for the laying out of strips of pleasure gardens. When such streams or brooks are tributaries of rivers and their banks likely to be used for manufacturing purposes, Wren's scheme for the Fleet Ditch should be borne in mind.

Water as used to decorate cities may be considered under four heads: (1) Large Sheets and Canals, (2) Ponds of Medium Size, (3) Small Ponds, and (4) Fountains.

1. Large Sheets and Canals.—Big sheets of water are well adapted to the plain, and when large canals or lakes are planned they should definitely become the dominating element in the scheme, any grass plots in size and number being subordinate. With the great formal shapes such as these sheets of water would take, it would be best to avoid a too formal cutting of the surrounding trees; the Château de Chantilly and Versailles with their broad masses of foliage are good examples of the most effective treatment. Vast expanses of water such as these, with their feeling of great breadth, are eminently suitable for the forecourts to palaces or large public buildings. As sculpture in the water would be out of scale and detract from their broad effect, small jets of water only should break the line; and any sculpture should be placed at the ends, where, with architectural details, it may become an integral part of the scheme. The edges of the lakes should be kept low and parapets be avoided; a wide stone curb and an edging of grass will appear more effective and less disturbing to the general sense of breadth.

2. Ponds of Medium Size.—As with plots of flowers or grass, the first essential is that ponds shall be of interesting shapes, and so disposed as to harmonize with their surroundings. In a scheme in which both grass plots and water ponds are used, the water ponds will naturally be placed where any special point of emphasis is required, as in the gardens of the Tuileries or the Luxembourg (Fig. 2). Variety can be obtained by sinking the ponds below the general level. Much scope will then be afforded in the treatment of the sides with architectural details and formal planting, and, here as elsewhere, terminal figures might be placed in such positions as to give interesting reflections from prominent view-points. Delightful effects may be obtained by planning long narrow strips of water, the sides closed in by tall trees and the ends terminating in a building or piece of sculpture.

When sheets of water are planned in relation to buildings they should be so placed, both as regards levels and position, as to obtain from suitable points some interesting reflection. The great possibilities of water in conjunction with architecture should not be overlooked: water emerging from the deep shadowy recesses of the sub-structure of a building or terrace, or the walls rising sheer out of some lake or stream, such as Du Cerceau pictured in his ideal Châteaux, give effects worth striving to obtain.

3. Small Ponds.—Small ponds of water are of value in giving emphasis to certain points in a park or open place, or at the intersection of avenues having in their centres strips of grass. Such water ponds, when occupying important positions, may often be most effectively combined with architectural features, such as bridges, balustrades, and fountains, as in the Villa Lanti, Bagnaia. The small ponds will also afford excellent opportunities for the exercise of the sculptor's art and for the combination of architectural details with water. Interesting geometrical shapes will be the most effective, and proportion between the surface of grass and of water must always be carefully considered; one or the other must predominate.

4. Fountains.—Fountains should not be indiscriminately placed about the town, but rather reserved to accentuate spots of interest, and should be placed either in connection with some building to which their suggestion of life and movement will form a striking contrast, or in some relation to a formal lay-out in the avenue, open space, or park. A small and interestingly shaped basin fed from a fountain in some dark recess round which rise the approaching steps to the entrance of a building, as may be seen in such examples as the Villa Sacchetti (Fig. 1) or the Capitol, Rome, would greatly increase the importance of the entrance when the principal floor is much above the level of the ground.

In the bringing of the water service to a town, particularly if it be closely surrounded by hills, a water château could be most effective, even if on such a small scale as may be seen at Bourges.

(c) Utilitarian Accessories.

Such features as car shelters and cab ranks have, in this country at least, proved themselves objectionable, not only on account of their bad resigns, but chiefly because of their lack of proper positions.

Structures of this nature should never be placed at the sides of streets; from the very first in a well-ordered design they should have a proper place assigned to them where they will not detract from, but rather add to, the effect of the avenue and open place. Given a proper position, they might be built of a more permanent material; wooden erections can hardly be in keeping with the dignity of the surroundings.

Lamp standards might more frequently be of stone when in conjunction with buildings. If of metal, both wrought and cast-iron, properly treated, will give satisfactory results; better designs might also be attempted for the standards of the electric-car systems—designs more expressive of the material of which they are made. Lamp standards should be placed to serve some definite purpose in the street or square or on the buildings they illuminate, when, by day and night, they might enhance the effect of the architecture or the lines of the open place; the brilliant effect obtained by a judicious arrangement of lights, following the lines of the plan, may be seen in the Place de la Concorde.

Street name-plates should be uniform in size, of good lettering, and placed at uniform levels. They would be better on lamp standards than on buildings, the varied features of which will naturally prevent uniformity of height always being obtained. These and many other utilitarian objects necessary to the city, if provided for in the first place, even when not objects of beauty, will at least not assert themselves to the detriment of the general effect.

(d) Civic Ornaments.

Civic ornament must be in scale and harmony with its surroundings. Having a definite part in the conception of the whole scheme, it should be used, like ornament on a building, to concentrate upon points of interest, and as in architecture the structural parts are left severely plain, so also civic ornament would be better reserved for less distracting spots than the busier thoroughfares and traffic places.

Civic ornament may be divided into four classes: (1) Triumphal Arches; (2) Monuments; (3) Statuary; (4) Architectural Details.

1. Triumphal Arches.—These should be sparingly used and only in connection with some great wide avenue or bridge; in the first case, either to mark in an imposing manner the beginning of some such avenue, or used at its termination in some open space. Arches may be used in connection with bridges either in the centre or at the ends. They may, especially when used with a small bridge, be of great size, completely dominating the whole and forming a magnificent entrance to a city, or, with larger bridges, they may be smaller in relation and linked by colonnades and other details to the bridge and open space in front. Triumphal arches should be unattached to any building which, of its nature, must be different in scale, and skill is required when using them in juxtaposition to prevent the scale of the latter being destroyed. The arches themselves must be so designed and of such dimensions as to prevent their looking insignificant in comparison with neighboring buildings or forming an ineffective terminal to a vista. They must be placed with discretion; the Marble Arch can hardly be regarded as an example happy in its position, serving as it does no definite purpose; and they should never be placed to form, seen obliquely, a terminal vista to any important avenue or street.

2. Monuments.—Every city will have in the course of time some citizen or incident the people may wish to honor or perpetuate the memory of by some large monument. Such may be largely architectural with sculpture of secondary importance, such as Wren's monument to the Fire or the monuments to the cities of France in the Place de la Concorde; then, as with all other civic details, situation is of primary importance. They may be set in the centre of some large open place, such as Napoleon's column in the Place Vendôme; and when in direct relation to a building or group of buildings they must accord in bulk, shape, and detail with their architectural surroundings. They may be placed to form terminal vistas to the avenues or within the parks, in both of which cases the immediate surroundings should be formal and architectural in treatment, a link between the monument and the trees and gardens around. The importance of the monument may be increased by the addition of colonnades, large flights of steps, water basins or statuary, when it may become the *raison d'être* of a surrounding open square.

3. Statuary.—The use of sculptural detail should not be to mark the absence of any architectural idea, but rather to accentuate one; and if sculpture be used with buildings as it should, then to have its full value in any scheme it must be thought out from the very first in relation to the architecture it is to adorn. Statuary may be used most effectively in conjunction with buildings in such positions as flanking flights of steps, when its light and more fanciful touches will contrast well with the more formal building. Detached groups of sculpture completing the scheme of the building itself will have the value of linking the architecture with the open spaces and streets in front. The details of isolated groups of sculpture should always be designed to blend with the architectural character of the neighborhood, and when placed in conjunction with some building the details should be considered with those of the building itself. "Realistic" statuary would be best reserved for parks and gardens away from the buildings, while monuments with much movement and grouping of figures may be "steadied" by an architectural canopy. The beauty of statuary in combination with foliage must not be forgotten, but figures should not alternate with vases—such a plan only results in the scale of each being destroyed. The subject of the sculptural decoration of buildings might well be the history and industries of the town, and so help to portray its individuality.

4. Architectural Details.—These include such objects as seats, steps, vases, and other civic furnishings, all of which must take their place as units in the whole scheme, not asserting themselves, but helping to attain the general effect. Decorative paintings, iron, bronze, marble, and many other materials and crafts might be used to adorn the city and give color to a usually too sombre appearance. Finally, every little detail requires careful consideration, for interest in the town's design must be maintained to the least accessory. A baluster ugly in contour may mar the effect of a whole terrace. As Sir William Chambers said, speaking of mouldings, the whole can be spoilt by bad details, just as a fine musical composition may be murdered by a group of village fiddlers.

In the realization of a fine conception, by a steadfast adherence to a great ideal and a rejection of all that is unessential the city should have, as Wren said of buildings, at least "the attribute of eternal."

* * *

THE OLYMPIC STADIUM, erected for the athletic meet in 1916 in Berlin, Germany, was dedicated June 8th. The stadium is built of stone and concrete in the form of a huge oval within the new Grunewald race course on the western outskirts of Berlin. It contains 30,000 seats, each one of which, the management boasts, commands an unobstructed view. The stadium contains ample space for football, track, cycling, and aquatic events, and represents an expenditure of $500,000. The funds were provided by the Jockey Club, which owns the Grunewald race course, and the Government. The German Olympic Committee believes that the athletes of the world who will meet there in 1916 will find the Berlin stadium the finest yet constructed.

* * *

THE SWIMMING POOL room and plunge in the Montreal Young Men's Christian Association building, illustrated in this issue, is one of the most attractive features of the building. The treatment consists of a hard vitrified tile which forms the bottom, sides and overflow gutter, also walk, walls and facia of gallery around swimming pool room. The work represents the highest standing in swimming pool construction, every detail being most studiously worked out, and for cleanliness and sanitation the materials used are the best the market produces for such a purpose. The introduction of color in the underwater guide lines, the distance marks on the side walls of pools, the depth marks, the decorative treatment of the pool room, are all of colored tile. The ceramic treatment prepared was also installed throughout the floors of the entrance lobby, etc., and in a simplified manner on the walls and floors of toilets. The work was contracted for and installed by the Wm. H. Jackson Company of Canada, Ltd., who has furnished tile for many of the most prominent hotels and Y.M.C.A. buildings throughout the Dominion.

A NEW COLOR-CHART has just been issued by Samuel Cabot, Inc., of Boston, which will be of considerable help in selecting a color scheme for the house of any style or shape. The chart reproduces the coloring effects of Cabot's creosote shingle stains by a lithographic process. It shows the artistic qualities of the stains and how the various colors blend when used together. Sixty-four different combinations can be made by means of this ingenious method of showing the harmonizing effects of the Cabot's stains.

* * *

WHAT IS DECLARED by prominent authorities on higher mathematics to be the greatest invention of its kind is being demonstrated by its inventor, Sydney A. Gross, a 16-year-old student of Philadelphia. The device is an angle sector, which mathematicians who have examined the instrument say is capable of dividing an agle not a right angle and which they say has proved erroneous the prevailing theory since Euclid's time that there was no practical method of trisecting such angles. Gross' device is made of cardboard shaped like an eight-pointed star and divided into four large compartments along two axes, each of which is divided inio eight subdivisions and the points joined together so that a complete series of rectangles are formed and which may be moved about by means of flexible hinges. To divide an angle the device is placed over the angle and its hinges worked so that it forms the required section. It will make three groups of twin triangles which are equal and every group of two angles is one-third of the entire angle. Since 180 B.C. the only known method of trisecting an angle has been by higher curves. But this makes practical the trisection of an angle. It will be of inestimable value to architects and mechanical draftsmen and in the mechanical arts, where it is often necessary to make such divisions for the construction of polygon figures.

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CONSTRUCTION

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Full Page Illustrations

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¶ *Competition for the new capital buildings at Canberra, Australia—Mistake in abandoning the premiated design of the general lay-out.*

CANADIAN ARCHITECTS are invited to compete in the designing of the principal public buildings for Canberra, the capital city of Australia. We feel the honor bestowed upon the profession and it is to be hoped that the various provinces will be well represented in the final results. If so, we trust a better fate awaits them than fell to the young architect who entered the premiated design for the new capital's lay-out. After a careful analysis of his scheme, together with the others submitted, a local departmental board came to the conclusion they could not favor the accepted plan. Thereupon they made one of their own and resolved—using their own words—"to approve of the plan for the lay-out of the city as prepared by itself." They frankly admit plagiarizing the best ideas in each scheme. It is hardly creditable to think that any enlightened Government would permit of such a course and if so that the profession at large would condone such action. If we do not assert ourselves, fight for each other's interests, then we cannot hope to have justice done by us. While lamenting this procedure, which deserves nothing less than the most severe censure, there is still an opportunity for the architectural merits of the structures themselves to be of a redeeming quality. The new plan, while it does not permit of praise when compared with the accepted design, may still lend itself to an acceptable solution if the proper men succeed in this competition and are allowed to proceed without the constant interference of an assuming board. One phase of the committee's work is commendable. It is desired to have all buildings architecturally harmonious. Plans are to be submitted which embody the whole official block—Parliament house, Capitol, administrative offices, public library, etc. In this way the same style will pervade the *tout ensemble* and prevent the usual hodge-podge which accompanies a series of buildings, expressing the ideas of several individuals who refuse to co-operate in one consistent effort to create a perfect harmony throughout.

¶ *The skyscraper—How treated in America and Europe—The need of a definite and lasting ruling in Canadian cities.*

IN THIS ISSUE is illustrated the tallest skyscraper in the Dominion of Canada. It denotes the natural trend of our present-day existence. Imbued with a spirit of progressiveness, we are writing the history of our inmost thoughts in the buildings which crowd our busy centres. Where shall the limit be? This question has been and is agitating all the deep students of humanity. Toronto as well as the other Canadian cities must decide quickly on the merits of this class of building before it is too late to adjust the matter satisfactorily. With such a vacillating council there can be little hope for a proper solution. One day it countenances a 250 foot building, again it passes a by-law limiting the height to 130 feet, and then turns around, granting a special permit for one approximating 300 feet.

The report of the officers of the Fifth Avenue Association, who have been making a careful study of building conditions as affecting the height in other cities, cites the various American municipalities where buildings and streets conform to the highest standards of usefulness, beauty, safety and healthfulness. Boston, for example, regulates the height of its buildings under what is known as an "A and B law." Under this Act the city is divided into two districts, District "A," or the business section, having a height limit of 125 feet, and District "B," the residential part, being limited to buildings of 80 feet. Exceptions, of course, are made in the case of grain and coal elevators, sugar refineries, church steeples, towers, etc. Boston has been restricting building heights for nine years, and so has Baltimore. In the latter city no structure is allowed to be built more than 175 feet high, except towers, spires, belfries, and special fireproof buildings. Denver limits all buildings or parts of buildings to twelve stories, except campaniles, spires, domes, water towers, and smokestacks. Los Angeles places its building height maximum at 150 feet for all except public buildings, monuments, and such other structures as may be exempted by a two-thirds vote in the City Council.

Portland, Ore., limits the best type of buildings, those absolutely fireproof, to twelve stories, or 160 feet in height. Rochester provides that the height of a building shall not be more than four times the average of its horizontal dimensions, while in San Francisco and Providence the limitation of height is based upon the character of a building's construction.

European cities, while not comparable to America, the home of the skyscrapers, have their regulations governing the height of various structures. London's Building Act of 1894 in a street under fifty feet wide limits all heights to the width of the street. In thoroughfares more than fifty feet wide no building can be erected higher than eighty feet. In Birmingham the height is regulated in accordance with a proviso that a line drawn upward at an angle of 45 degrees from the edge of the premises will meet no resistance. Berlin permits a maximum height of 72 feet, but no building can rise higher than the width of the street. The maximum height allowable in Cologne and in Dusseldorf, known as the Park City of Europe, is 65 feet 6 inches. Munich draws the line at a building having a ground floor and four stories, not counting a mansard. Frankfort, Germany, is divided into zones, the maximum height for buildings varying from 58 feet 11¼ inches to 65 feet 6 inches in the inner city. In Zurich a maximum height has been fixed at 43 feet. Paris does not permit a façade higher than 65½ feet, while in Rome the height limit is set at 78½ feet, with a minimum height required of 45¾ feet.

In a recent issue of the New York "Times" Dr. Werner Hegemann, one of the world's greatest authorities on city planning, states that America is building a New York which they cannot endure. He believes that in ten years downtown New York will be built up and practically without light.

Mr. Hegemann says: "It is not beyond the bounds of possibility that you may solve the problem of your great necessity for concentration of great business space upon your narrow island by the construction of skyscrapers vaster even than the ones which you already build and plan. The business of your lower city may eventually be concentrated in a few vast towers. But between those towers will be spaces more commensurate with their soaring height than those which now divide existing skyscrapers. The practical way of getting this space, and with it light and air, is to create as a matter of health requirement a standard of light and air that every office window must be provided with. Without complying with this standard, no skyscraper should be built. If you do that a man planning to build a skyscraper will have to buy from his neighbors light and air and keep their properties down by paying for it."

Since the larger cities of the world have already set a comparatively reasonable limit to the height of their buildings, it seems rather imperative that our Canadian cities should consider the question in all its phases and decide on a fixed standard which our commercialistic spirit can in no way undermine.

¶ *Registration necessary for the practice of architecture in the Province of Quebec—What such action means to the profession.*

THE ASSOCIATION of Architects of the Province of Quebec is a closed corporation. At least this is the decision just handed down by Mr. Justice Demers. The same ruling was made several years ago by Judge Champagne of the Circuit Court, and forced to an issue in order to ascertain the opinion of the Superior Court. During trial the plaintiff, the Association of Architects, alleged that the defendants were engaged locally in the practice of architecture without being enrolled in the association. The defendants contended that it was not a closed corporation and that they should be allowed to practise as qualified architects on account of their experience and training without going through the formality of registering as members of this association. The law dealing with such registration, they maintained, applied only to those who, in the words of the article, "held their title in virtue of this law." Defendants represented as they held their title of architect in virtue of certificates conferred by American Institutes of Architecture, they did not fall under the operation of this law. The plaintiff association, on the other hand, maintained that the architectural profession, in virtue of the law referred to, was placed on the same footing as the legal and medical professions.

Justice Demers, in summing up, did not enter into a discussion of the question raised, but contented himself with declaring that all persons who were not members of the Association of Architects and who employed the style of architect and engaged in practice as such, were amenable to payment of a penalty not xceeding $25 for the first offence.

The defendants were condemned to pay a penalty of $1 with costs of the action as they were never before convicted of the offence and the case should have been tried before the Circuit Court. Such a decision will form a permanent basis for action and settle the much disputed question.

¶ *Impending collapse of the stone tower of the Victoria Memorial Museum at Ottawa—Advisability of rebuilding the whole structure.*

"COLLAPSE impends of Laurier Tower"—Startling headline this, but not unexpected. For some time workmen have been constantly patching and bracing in the hope that some miraculous turn of nature would stop its falling career. But it is no longer possible to prevent the inevitable. This makes the second tower to go, and should be serious enough to prevent another like catastrophe. It would be well for the Government to consider the advisability of rebuilding the whole structure. In this way the other glaring mistakes could be eliminated and the artistic merit of the museum raised to the standard necessary for all public buildings belonging to our Capital City.

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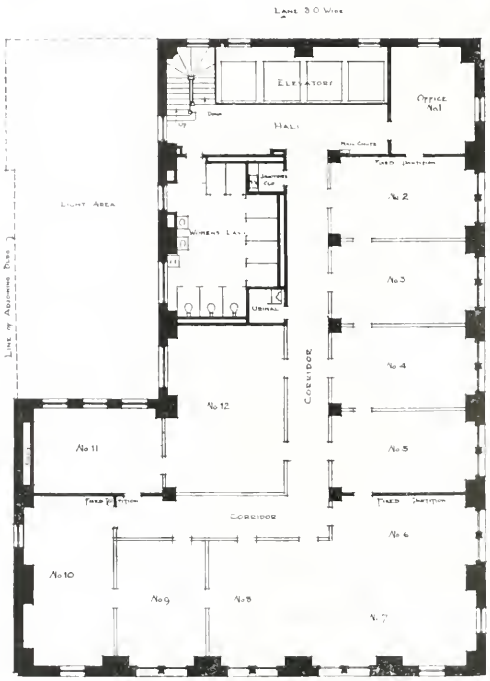
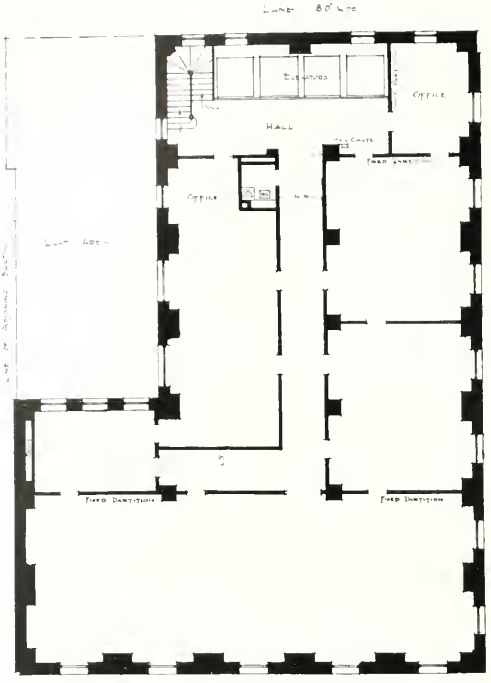
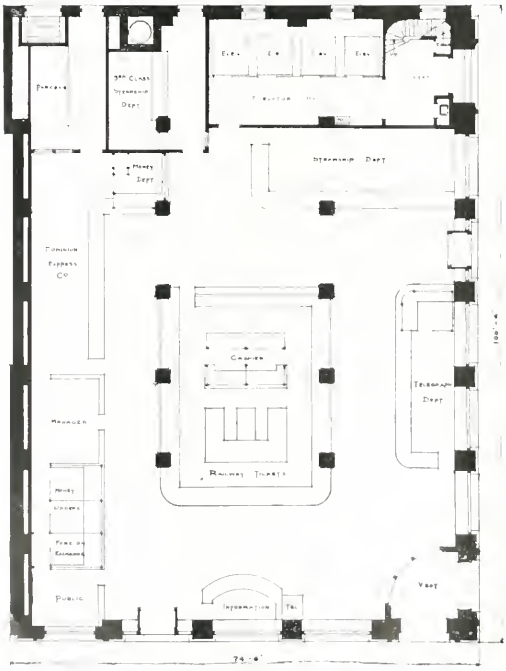


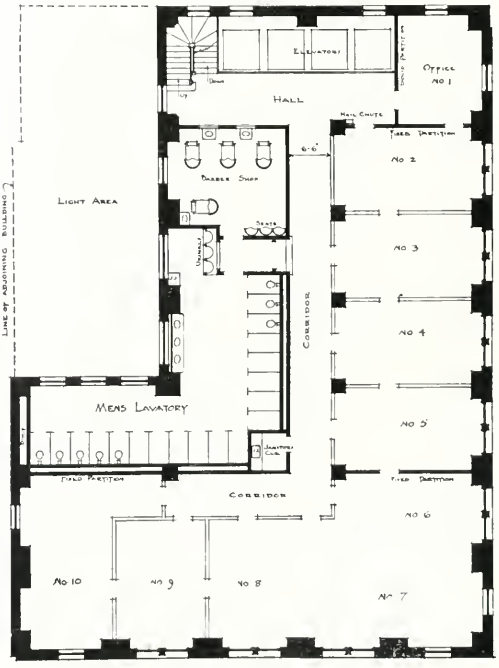
EIGHTH FLOOR PLAN.



TYPICAL FLOOR PLAN.



GROUND FLOOR PLAN.



SEVENTH FLOOR PLAN.

DARLING & PEARSON, ARCHITECTS.

C. P. R. Building, Toronto

DARLING & PEARSON, Architects

THE rapid strides in commercialism are nowhere more clearly depicted than in the buildings of to-day. Hardly a city of any appreciable size but boasts of its skyscrapers. The need for such structures is seldom considered; the advertisement forms the basis for undertakings of this nature. Still the tall building receives the hearty support of the majority, who look upon it as a necessary evil. It holds a position creative of awe and wonderment; it furnishes a means of giving vent to our proud natures; it presents to the world something original, a product as it were of our rapid drift towards the acme of business undertakings.

The Canadian Pacific Railway Company's building is the tallest structure in the British Empire. It rises fifteen stories above the street level, reaching a height of 236 feet, while two stories lie below the ground floor. When compared with American cities of the same size as Toronto this building stands forth in the most favorable comparison; it only suffers in contrast to the work being carried on in the very large business centres such as New York, Chicago, etc. In New York city there are 175 structures which have fifteen stories or over; the Metropolitan Life Tower and the Woolworth each having over fifty. Authorities are generally of the opinion that the skyscraper in itself is æsthetic and practicable, but fear on account of the congestive features. By the proper handling of this problem there will be no need of foregoing the impressive effects of the tall building and we will witness still greater skill in the erection of what is undoubtedly the most inspiring product of all art.

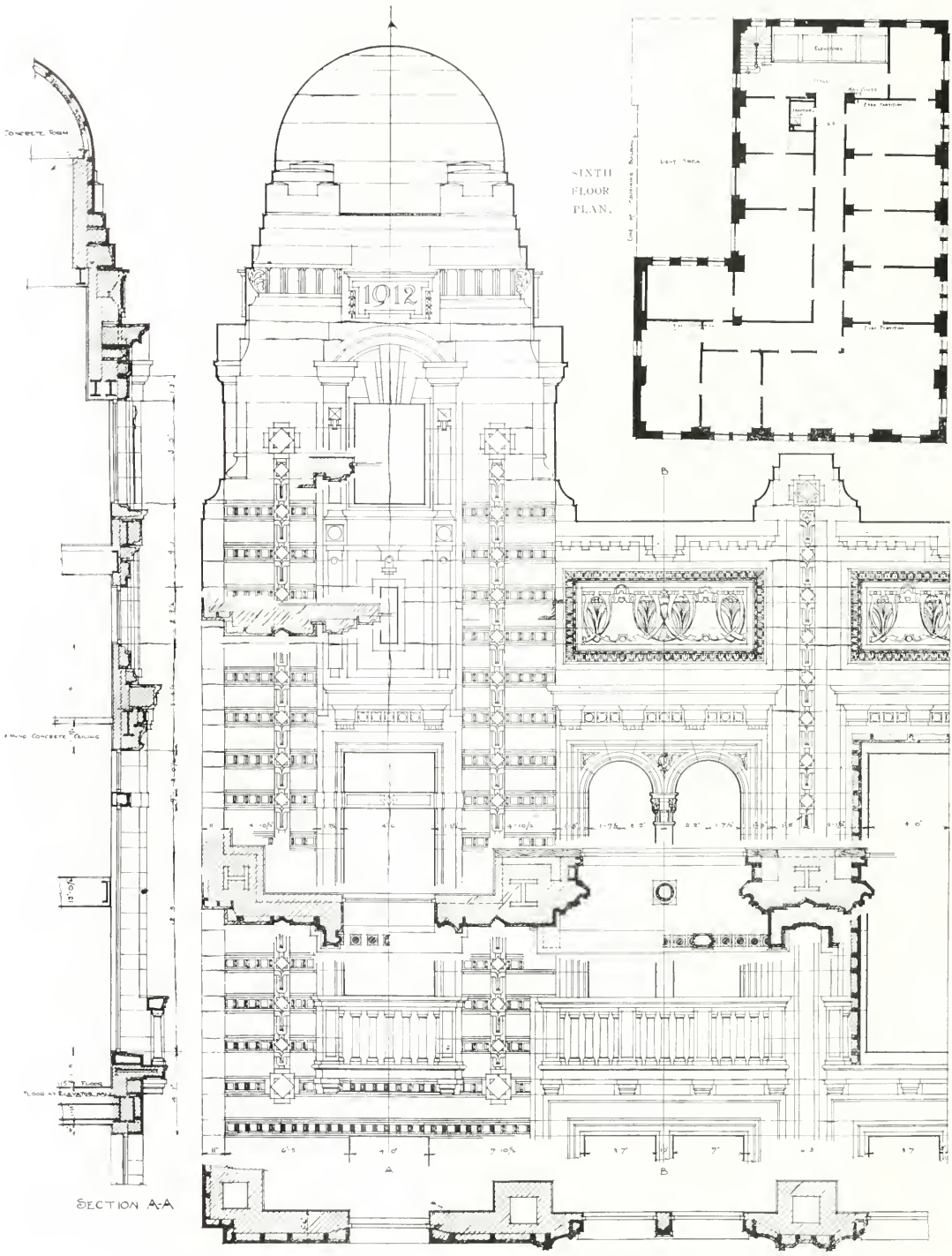
MAIN ENTRANCE.

The exterior has a pronounced vertical feeling subdued somewhat by the horizontal courses consisting of alternate plain and ornamented bands. The four corners are solidified by means of pier effects extending throughout the structure and finishing at the top with small domes. The first two stories are treated in Stanstead granite in a simple and dignified manner. As much space is allowed for the openings and window treatment as is consistent with the maintenance of an artistic and substantial design. From the third floor up the building consists of a light colored semi-glazed terra cotta. The third story illustrates the decorative use of this material; the panels between the windows as well as the cornice being extremely rich in design, while the effect is all the more striking by means of the subdued detail work throughout.

Above the third floor the eye is lifted upward by means of the piers, which run uninterrupted throughout the height of the structure. The various floors are indicated by moulded panel bands between the piers, which enrich the central feature of the building in keeping with the corner piers. At the fifteenth floor is the arcade effect which forms an ornate finish to the whole edifice. The balconies, the figures, the slender columns, the carving above all, tend to give the skyline an extremely rich character and form a pleasing contrast to the plain treatment of the first stories.

The building alone cost approximately $1,000,000 and consumed over two thousand tons of steel in construction. Caissons were sunk to bed rock, some forty feet below the surface. The foundation excavation was started October, 1911, and the building ready for tenants March, 1913. Fireproof throughout, the wall columns are bricked in, interior columns covered with 2-inch terra cotta tile, wall beams and girders bricked in, and floors, roof, etc., of terra cotta arches. All windows are of steel frames and sash.

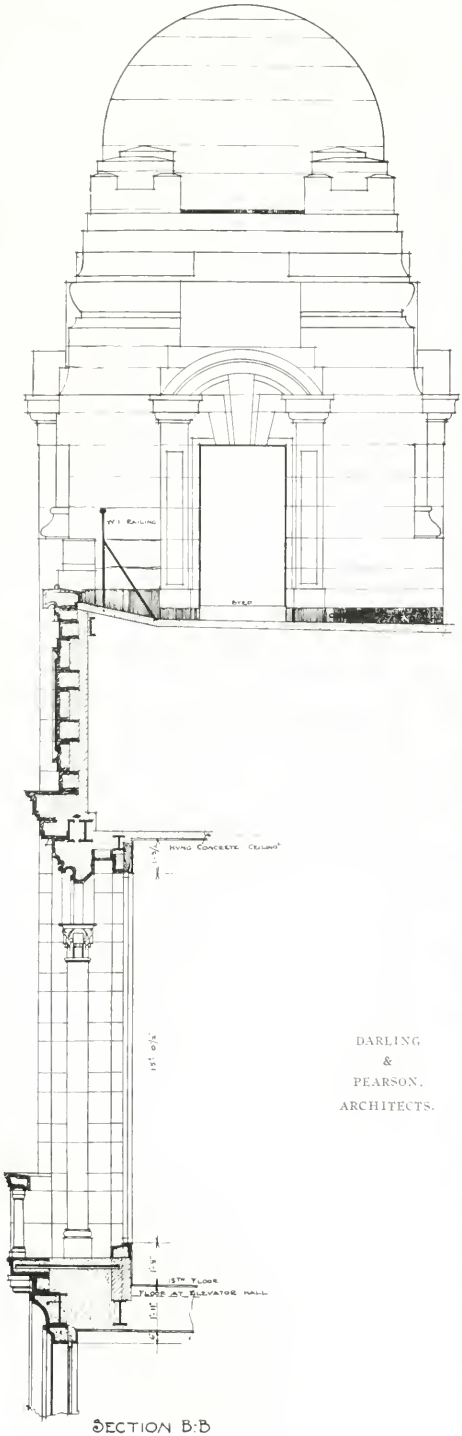
The ground floor is given over to the main office of the Canadian Pacific Railway Company. Passing through a large vestibuled entrance of marble



EXTERIOR DETAIL, FIFTEENTH STORY AND ABOVE.

C.P.R. BUILDING, TORONTO.

DARLING & PEARSON, ARCHITECTS.



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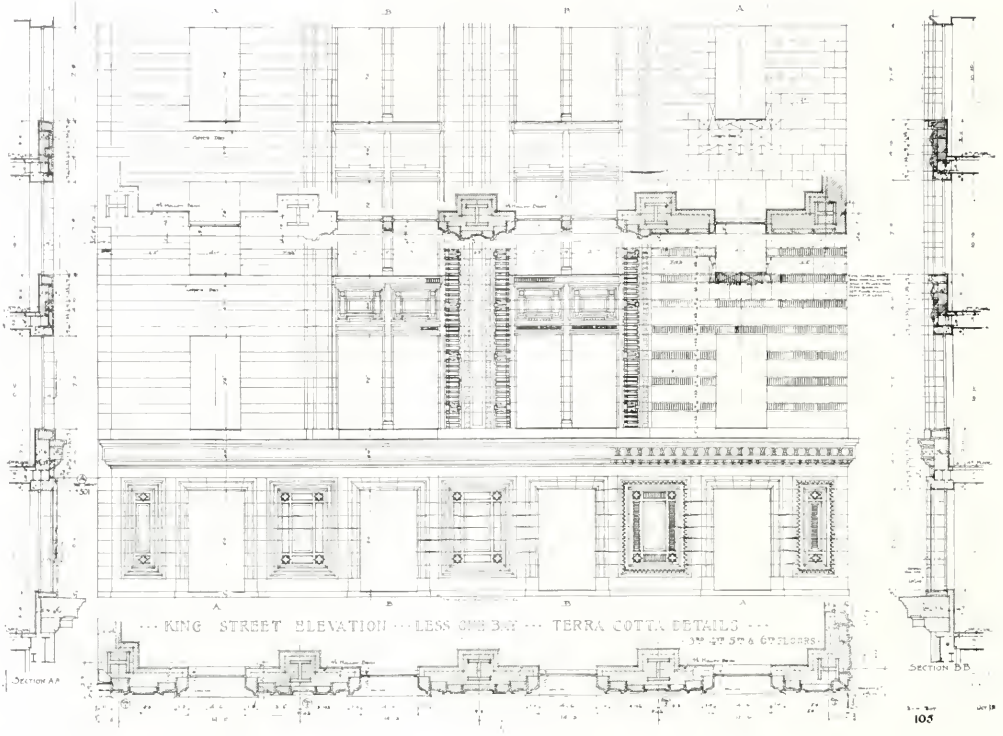
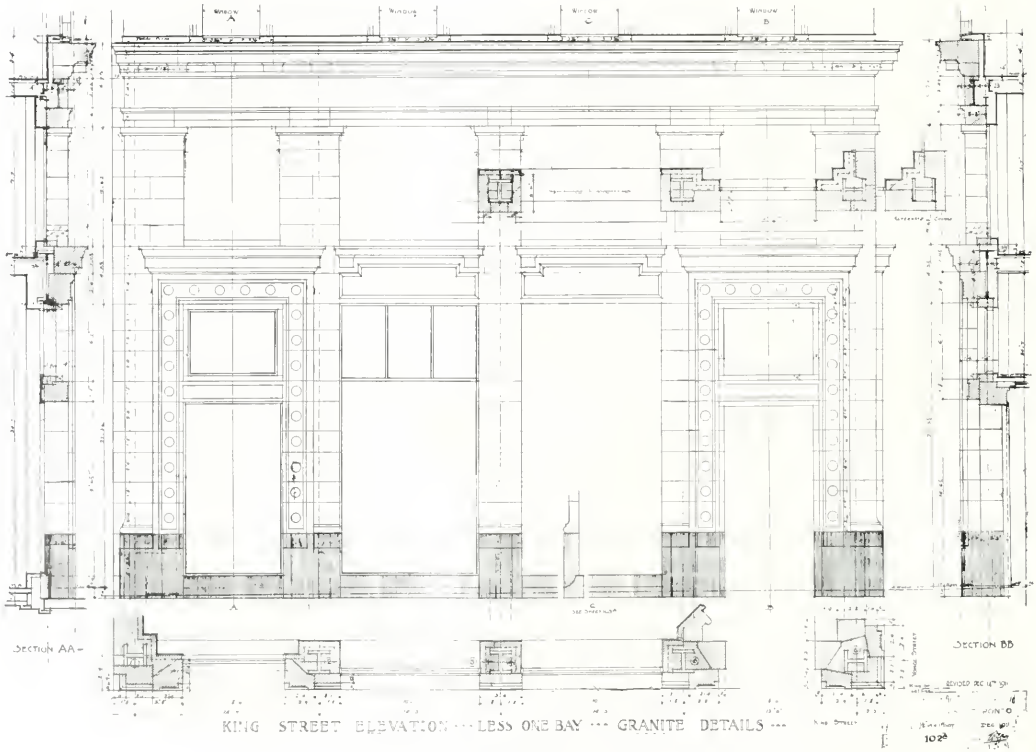
ARCHITECTS.

C.P.R. BUILDING, TORONTO.





C.P.R. BUILDING, TORONTO.

MAIN OFFICE.

C.P.R. BUILDING, TORONTO.

DARLING & PEARSON, ARCHITECTS.

and iron, one is immediately impressed with the airiness within. Extending 68 by 77 feet and reaching 25 feet in height, well lighted by means of the large window openings and skylights; accessible by means of four entrances; it affords the proper facilities for an institution of this nature. Ten large columns covered with Escalette marble support the richly panelled plaster ceiling. The walls are treated in various marbles; the dado being of Cippolino, the base of verte antique, the ten-inch belt of verte Tynos, the borders in verte Royal and Escalette, and the large panels in Jaune Royal. All flooring

VESTIBULE AND ELEVATOR HALL.

here and elsewhere is of pink Tennessee marble tiles; the counters, forty-two inches high, of verte Tynos.

The main stair hall and elevator corridor is finished in marble and bronze; the stairs being of white Italian marble. The elevator grilles maintain the same dignified character of the exterior first story treatment. All corridors have marble tile flooring, with borders of verte antique and red Tennessee wainscot four feet six inches high of Jaune Royal marble. Lavatories are finished with tile flooring, marble stalls, wainscot and basin fittings. The woodwork throughout the building is mahogany.

For cleaning and humidifying the air entering the building, a purifier with a total capacity of 18,000 cubic feet per minute has been installed. The apparatus consists of a five-foot settling tank, spray chamber and eliminator. Two curtains of water in proportion of one pound of water for each pound of air are operated, so that each horizontal line of spray heads is blown out three or four times an hour as desired. The water circulates by means of a centrifugal pump, the suction of which is connected to a strainer placed in the settling tank of the air washer. In connection with the air washer is an automatic thermostatic regulator for the purpose of humidification. This controls the temperature of the water and the incoming air so as to furnish the desired degree of humidity in all seasons.

Ornamental plate prism glass is used for all corridor doors; white pebble glass in office partitions and roulante dipped plate glass on mezzanine floor.

The elevator installation consists of four direct acting plunger elevators, three having a travel of 188 feet and the fourth 199 feet 6 inches.

In the basement are located two pressure tanks, each of 5,000 gallons capacity.

The Entrance to an Estate

F. R. MAJOR

THE entrance to an estate should foretell the true picture of what lies within. It should be the key note to the ensemble—the home and its surroundings. It may vary in design, due to the many styles of architecture and the wonderful diversity of nature, but it should never be a discordant note breaking the perfect harmony of the whole arrangement. For the entrance gives birth to the first impression as well as affecting the final one.

The people are slowly awakening to the need of privacy, and should be alive to the artistic possibilities when considering the practical side. The house should have either a natural or an artificial protection from the curious public whether it sets close to the main thoroughfare or is removed some distance away. Such a need opens up new opportunities for the artistic improvement of our highways and byways.

That the entrance is assuming its proper relation is readily seen in the accompanying illustrations, which are widely scattered throughout the Eastern States. Each one has its own style, but planned as a coherent part of the original layout. Very often the mistake is made in having a second party design the grounds and approach, who is not able to grasp the true feeling of the original scheme. As a result a very attractive house will often fail to harmonize with the surroundings, no matter how beautiful they in themselves may be. But this idea is fast losing vogue. We are planning as never before to make the entrance, the drive, the walks, the garden and the house one harmonious scheme. And this honest effort is enriching every section of our country with artistic estates in perfect attune to the nature about them.

FIG. I.

What could be more pleasing than the gateway, fig. I. The posts are built of the same rough stone as that used for the house, while the timber roof is wild with the overhanging *Wistaria Sinensis*. What a picturesque and Oriental effect this vine gives when left alone, which is undoubtedly the best way to train a Japanese species. This example shows how a little skill in the treatment of the same materials can produce a harmonious effect without appearing monotonous.

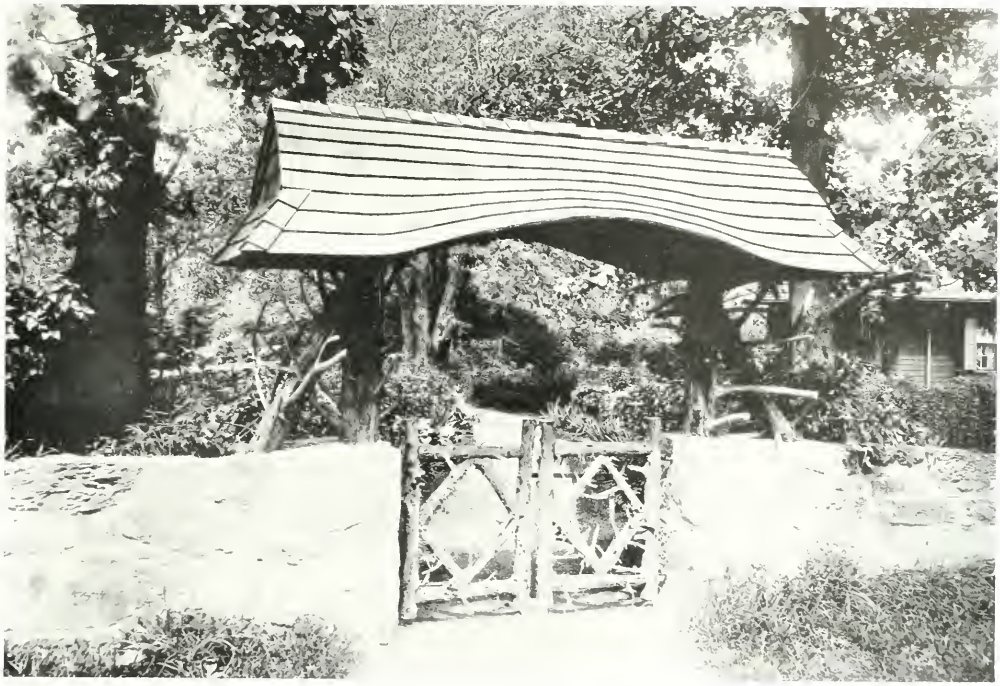
Compare with this the other roofed entrance, fig. II. Although treated differently, it creates a like impression in that it belongs to its own individual setting, and nowhere else. The design of the one is upright, possessing a dignity in keeping with the house, while that of the other is low and rustic, conforming to the nature of the bungalow. In the latter a wild charm is effected by the use of the rough wood taken from the depths of the forest, which makes it simple in construction and inexpensive.

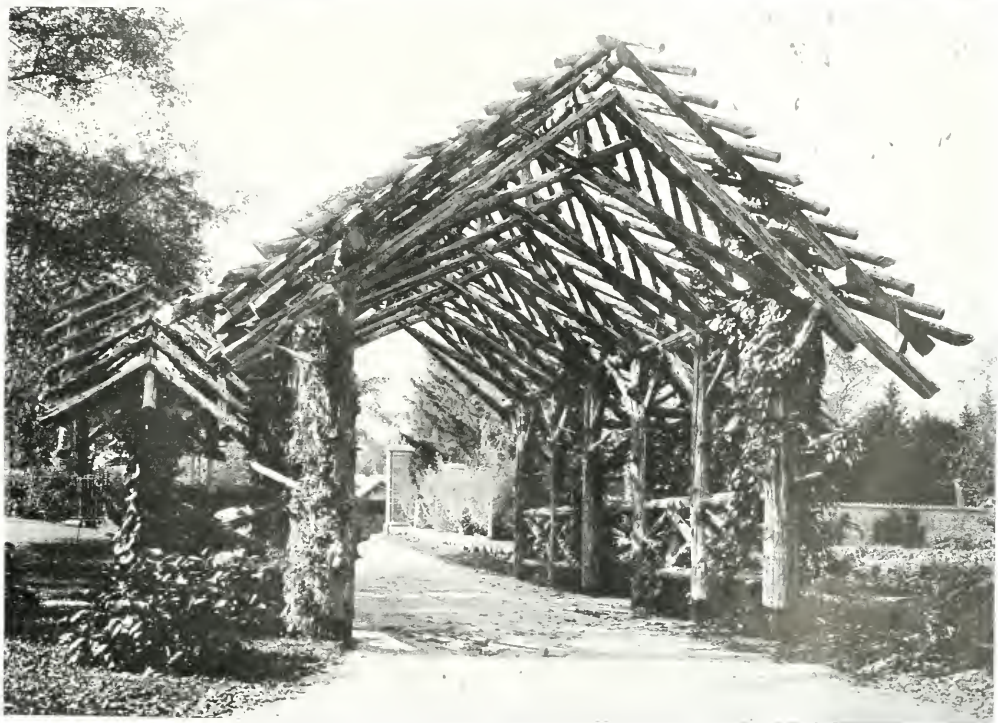
An unusual effect and one that lends dignity to its lines and a rustic nature to the whole, is found in fig. III. One enters between brick piers, passes a series of low posts chained together, and rests beneath a charming pergola. On one side is growing the hardy Dutchman's Pipe with its deep green foliage soon to shield the resting-nook from the sun. On the other side is the Japanese Morning Glory, wending its way up the rough tree posts and around the branches still clothed with the bark of their original haunts. Between the poles and vines the sunlight wanders, filling one with awe at the thought of what must await them as they emerge from these mysterious patches of light and shade. And there is no disappointment, for the pergola brings into uniformity the piers and massive

FIGS. IV. AND V.

ENTRANCES TO ESTATES.

FIGS. VI. AND VII.





FIGS. II. AND III.

ENTRANCES TO ESTATES.

FIG. XIV.

chains with the wonderful panorama of flowers and gardens within. It exemplifies the close relationship existing between nature's materials, no matter how we may see fit to form and shape them.

FIG. XII.

The two entrances, figs. IV. and V., belonging to the same estate, demonstrate the use of field and rubble stone. The one consists of two square piers from which spring a wrought iron arch, the filigree work of which would ordinarily be adornment enough. But the vista through the trees together with the heavy foliage near by demand the climbing Wistaria to embolden its somewhat delicate character. The other entrance affords a charming contrast. The opening is through a heavy mass of stone. In trying to penetrate the depth of the forest what could more adequately express the deep mysterious impressions of a dense wood than this structure made from the rough stone of the neighboring fields?

A drive leading into private grounds should have an entrance with sufficient character in itself to distinguish it readily from the rest of the enclosure. Too often the opening is an abrupt ending of a hedge or fence, a source of considerable annoyance especially if the estate is very large. To offset this the posts or abutments that form the entrance should be of a different material than that of the fence or have some individual motive.

The piers in fig. VI., which mark the road leading to the half timber house are very humble, with no attempt at proportion or style. The Virginia Creeper helps to relieve the crudeness and draw them into closer harmony with the other trimmings. The

FIG. XV.

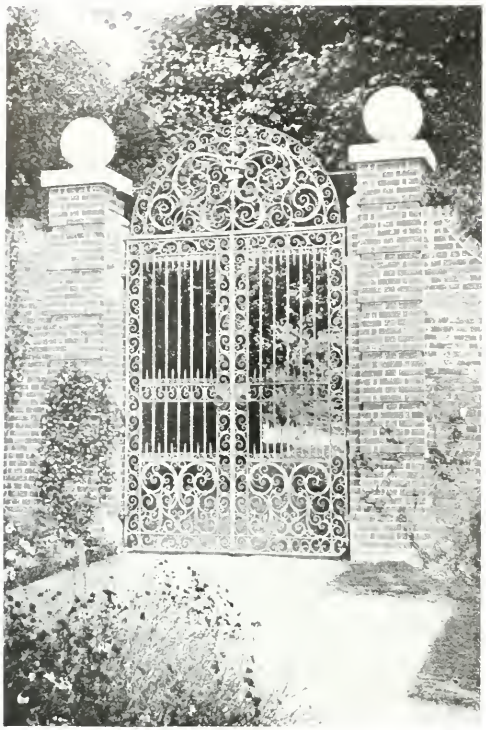
entry, fig. VII., is also built of stone gleaned from the fields, but somewhat more pretentious in design. A touch of dignity is added to the view by the stone seats which tend to form a second and more formal entry.

Wrought iron lends itself to the artist's skill in ornamenting the approach to vast estates and palatial residences. Nothing is more effective or practical. Figures VIII. and IX. represent two antique Spanish wrought iron gates adorning the gardens of elaborate setting. Figure X. exemplifies the ornate design breaking the heavy feeling of a solid wall. The same is made quite inviting through the open appearance of the grill and the verdant growth on either side. Figures X. and XI. convey immediately the thought of seclusion. While arousing one's desire to enter and see the charm within, still they impress the idea of trespassing.

One would seldom think of using the stumps which rarely escape the clearings for an artistic setting. Yet these horny monsters, fig. XII., have been partially clothed in ferns and vines as a guide to the sombre recesses of a heavy growth of timber. The mystery of the house beyond the trees could find no stronger impetus than this wild and rugged effect.

While fences, hedges, gateways and trees all serve as introductory motives, they should never detract from each other, but should be so correlated that the general plan will be harmonious throughout. Too many translations of the same idea in a small area will weaken the design. This may be seen in the illustration of fig. XIII. After entering through

FIG. XIII.



FIGS. VIII., IX., X., AND XI.

ENTRANCES TO ESTATES.

1668, XVI., XVII. XVIII., XIX.

ENTRANCES TO ESTATES.

FIG. XX.

the gate of roughly hewn saplings one is confronted with many kinds of openings, such as the majestic poplars, the simple hedge, the archway and various timber effects. Any one of these would have answered for an appropriate entry to the grounds within.

One commendable feature of the natural entrance is its kinship to the trees that shelter it and the grass and shrubs that surround it. It bids welcome to the farm-house, the cottage, the bungalow and the mansion. It adapts itself to the quiet and repose of the forest home as well as to the grandeur of the wealthy estate. The artificial entrance, on the other hand, with its air of dignity and stateliness admits only to a carefully groomed house and garden. A type of the artificial opening which conveys readily the more formal nature of the grounds is found in fig. XIV. The posts and enclosure are of concrete with a decorative frieze of ordinary iron pipes painted a deep red. The view within reveals a winding road leading to the house, which is also concrete.

The landscape should never be sacrificed to the driveway. On the other hand, the driveway and entrance should adapt themselves to the contour of the land and its natural growth. A heavily wooded section of short extent should have a straight drive

FIG. XXI.

with an angular opening, while a long stretch of woods or open lawn bespeaks a more easy approach. The low stone entrance, fig. XV., conforms to the graceful sweep of the drive. The design is thoroughly in keeping with the soft open lawn and whatever boldness might have resulted from the use of stone has been relieved by the vines.

Another entrance similar in dimension to the one mentioned last is fig. XVI. Here also the lines are consistent to the general effect of the setting, while a proper amount of life and color has been introduced by the use of brick with suitable capping and ornamental iron-work. The entrance, the drive, the trees and the house at the end of the charming vista are all harmonious parts of the composition.

Two examples of decorative piers somewhat similar in design are shown in figs. XVII. and XVIII. One has a finish of rough plaster with ornamental lamp brackets, the other of brick with shell fountains and panels. The character of the entrances are especially well suited to the surroundings, and to have an idea of how much out of place each one could be, picture them with their settings reversed. Figure XIX. represents quite a different type from the others. Here the iron-work runs from one building to the other and creates a feeling of wide, extensive tracts beyond.

In using artificial materials many conditions have to be considered, such as the style and pretentiousness of the house, the extent and lay of the grounds, together with the character of same, and the location of the entrance in respect to the house and grounds. A vast estate should command an imposing entrance. The large marble and iron gateway, fig. XX., conveys immediately the large scope of the plan within. Here is an artistic expression possessing a stateliness and character all its own and yet preserving the style and harmony of the whole arrangement. The same may be said of the elaborate entry, fig. XXI.

Fig. XXII.

Marble, terra cotta, brick and iron enter into the composition of this design. The general tone of the terra cotta and brick is a very delicate cream which reflects the texture and color of the house within the grounds.

The approach to the house in fig. XXII. is straight and dignified. It requires a somewhat stately entrance, simplified somewhat to be in perfect harmony with the general character of the home itself. In contrast to this is the entrance, fig. XXIII. With a sharp curve of the road, the rough growth of shrubbery, etc., the necessity of a retaining wall—all demand an opening marked with an individual feeling. It is of ornate design, full of character and yet does not produce or need the upright stately effect of the

FIG. XXIII.

one in fig. XXII., where one feels no interruption.

What wonderful possibilities lay in the perfecting of the many parts and mastering each feature so that it becomes a truthful expression of the others. The first impression is often the most telling. How necessary, then, for the owner as well as the architect to realize the need of an appropriate design for the entrance. It should be one of the most consistent features, interpreting the individuality of all the parts to which it gives access. The plan may consist of an inviting cottage growing up in a regular labyrinth of flowers, or an attractive bungalow surrounded by nature's choicest trees and shrubs, or a stately mansion with its formal gardens; yet if the entrance does not harmonize perfectly with the home and its surroundings it fails in the chief essential—to become the keynote of the ensemble. It should be the motive that vibrates in unison to the harmony of the whole and leads one into the delight of a perfect symmetry between the work of man and that of nature.

THE distance from the line of roadway to the entrance gate is dependent on many things. If the drive runs at right angles to the road, it is advisable to place the gates far back to allow a turn of large radius for carriages. If the public road be narrow in proportion to the amount of traffic upon it, it becomes all the more necessary to have some form of well recessed wing walls.

For entrances placed at right angles to the road, the cup-shaped plan is generally most effective, as it allows a good outside green, which may be protected by posts and chain. The most difficult entrances to set out with satisfactory lines are those which are of irregular shape, i.e., with unequal wing walls. Nothing could be more deceptive than the effect of curves. Somehow, even when they have had much careful planning, they lose that easy flow of line which on paper looks so pleasing, for there is all the difference between a flat scale drawing and the lines as laid down and viewed in perspective.

The carriage entrance, if sufficiently important, should be provided with side gates for pedestrians on one or both sides; these may be any width from three to five feet, and the parapet or sidewalks where these exist, with proper kerb and channel terminating against the pillars. The opening for a carriage gateway is usually twelve feet, but if the gate pillars and general arrangement are on a large scale fourteen feet is not too wide. Where wrought iron is used and a very wide open effect is aimed at, fixed side panels with strongly braced and strutted hanging bars may be adopted.—*Mawson.*

HOUSEHOLD SCIENCE BUILDING, TORONTO UNIVERSITY, TORONTO.

G. M. MILLER, ARCHITECT

FOUR VIEWS,
HOUSEHOLD SCIENCE BUILDING,
TORONTO UNIVERSITY, TORONTO.

G. M. MILLER, ARCHITECT.

CONSTRUCTION

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Vol. 6 Toronto, August, 1913 No. 8

CURRENT TOPICS

R. B. WHITTEN and Geo. A. Oman have formed a co-partnership for the practice of architecture under the firm name of Whitten & Oman, with offices at 413-415 Lougheed Building, Calgary.

* * *

GEO. B. POST & SONS, architects, whose Canadian branch office is in the Standard Bank building, Toronto, announce the removal of their main office from 347 Fifth avenue, New York city, to the Architects' Building, 101 Park avenue.

* * *

THOMAS KELLY & SONS have been awarded the contract for the construction of Manitoba's new Parliament Buildings, to be located on the magnificent site bounded by Kennedy street, Broadway, Osborne, and the Assiniboine River. The contract was awarded for $2,859,750, and calls for the completion of the building during 1917, which is in about three and a half years' time.

* * *

AT A MEETING of the Council of the University of Manitoba, Arthur A. Stoughton, of New York, was appointed to the chair in architecture, which was recently established in connection with the university. Mr. Stoughton enters upon his new work after years of practical experience. Among the more important designs are his Soldiers and Sailors' Monument, New York city, and the Canton Christian College, China.

* * *

PRESENTING an unique appearance, something after the style of the forestry building at the A.Y.P. Exhibition at Seattle, and composed entirely of British Columbia timber, for the most part fir, will be the Forestry building at Hastings Park, erected by the Vancouver Exhibition Association. The general effect will be rustic; in place of stone pillars there will be massive logs four feet in diameter, and the beams will also be composed of logs; 14 inch logs will support the gallery and the second floor. This massive, ornate building will be a valuable object lesson on the forestry of the province.

* * *

A SCHEME has been outlined for the University of Alberta which it is estimated will take 100 years to carry out and which will be sufficient for that length of time. The Albertans believe that in the course of the next century the Alberta University will be one of the largest and most important on the continent. The plans call for the erection of 100 or more buildings grouped together in three or four units. The arts or university building alone will cost half a million dollars while others of the various structures will be little less costly. The dining room when completed will seat 1,400 students and the residences planned will have a housing capacity of 2,500 students.

* * *

LONDON WILL soon see the construction of a new hotel on the site of St. George's Hospital, near the top of Constitution Hill and facing the principal entrance to Hyde Park. The Governors of St. George's Hospital have resolved to accept proposals to sell their site for the approximate sum of $2,350,000, and to amalgamate with the Westminster Hospital in the erection of a new hospital in a suburb. Some years must elapse before the projected hotel comes into existence, for one of the conditions placed by the Governors of the hospital on their acceptance of the proposal is that the hospital authorities shall remain in occupation of the present building for two years, by which time the new hospital which is to be a result of the amalgamation with the Westminster Hospital will be ready. The cost of the hotel is to be $5,000,000.

AN AMBITIOUS PROPOSAL put forward by a few gentlemen who are deeply interested in the future of the Dominions, and of which Lord Grey, ex-Governor-General of Canada, is the head, looks to the establishment of what is grandiloquently described as the Temple of Empire in the very heart of London. Mr. Grey, who recently obtained a three years' option on the Aldwych site of a building lease of ninety-eight years, for the purpose of erecting offices for the Dominion Governments, writes now to say there is danger of exception being taken to the site unless it is secured freehold. Accordingly he has communicated the fact to the London County Councillors, who suggest that the site should be taken outright, at a price of $6,500,000.

* * *

AT THE INTERNATIONAL exhibition of 1911 the United States had a pavilion built to represent a typical old Colonial house, one characteristic of which was that the bricks were brought from across the ocean. When the exhibition was over the building definitely passed into the hands of the Roman municipality. Now Bulgaria has opened negotiations to purchase the American pavilion in order to have in Rome a permanent building in which to exhibit specimens of Bulgarian art. It is intended to transform the site of the old exhibition of 1911 into an artistic quarter, where all countries will be represented by permanent exhibits. England is turning her exhibition building into a home for the British School, which hitherto has had small quarters in the Palazzo Odescalchi.

* * *

DRASTIC PROVISIONS to guard against slum districts were taken in the new building by-law of Hamilton, Ont. recently formulated by the revision committee. One of the new clauses makes it compulsory for every room in a dwelling house to have a window, at least ten per cent. of the area of the floor space, opening outside. The abolition of dark rooms is considered an essential to proper living conditions, and this provision in the new by-law is along the line of present-day progress. Another striking change is the clause which compels every private house to have a back yard of a depth corresponding to the height of the house. The aim of the by-law drafters was to provide an air space of at least ten per cent. of the extent of the lot in order to guard against slum conditions.

* * *

DETAILED PLANS have now been announced by the C.P.R. at Winnipeg, showing the enormous extensions to be made to the local terminals, which, when completed, will entirely change the appearance of Higgins avenue. These improvements will involve an addition to the Royal Alexandra Hotel of 474 rooms, a new six-story office building, replacing the present baggage and old Dominion Express offices. There will also be considerable extensions made to the present station and waiting rooms while in the train shed, the tracks are to be raised six feet, and lastly the Main street subway is also to be raised to a corresponding height, and it will be widened to permit of the installation of two additional tracks. Every effort will be made to have all the improvements finished within two years and will cost approximately $1,500,000.

* * *

AT THE ANNUAL meeting of the Victoria Chapter of Architects held recently, officers were elected as follows: President, J. C. M. Keith; vice-president, Ridgeway Wilson; council, Messrs. James Cullin, Butler, Rose and Spurgeon; secretary-treasurer, N. Reid. It was shown that the organization has grown in numbers and in influence during the past year, having sixty-two full members, twenty-five associated members, and five student members. That a member is engaged in preparing conditions to govern the competition in the preparation of plans for the new Provincial Royal Jubilee Hospital was one of the announcements made. Another statement of interest was that two members had been appointed a committee to act with the city building inspector in examining applicants for the position of assistant city building inspector. These matters, it was argued, were but a few of the indications of the constantly increasing influence of the body which now included practically every local architect.

* * *

THE EXCAVATIONS during the past year in Egypt by the British School of Archaeology have resulted in a series of remarkable finds illuminating a civilization of over 10,000 years ago. The most interesting discoveries were made in the great cemetery of the first dynasty (5500 B.C.) at Tarkhan, about forty miles south of Cairo, where 800 graves were explored. They yielded in abundance alabaster vases, slate palettes, pottery vases of the time of Mena, and the only skeletons of donkeys known from ancient Egypt. At another site, at Gerzeh, a few miles further south, numerous remains of the twelfth and eighteenth dynasties were unearthed, including statuary and gold ornaments. Another interesting archaeological event is the recent discoveries under Nero's palace at Rome. A. Forestier, in describing the work, says: "In Nero's palace there were found, by the side of the triclinium (or dining room) five well-preserved subterranean rooms, carefully plastered and cemented, vaulted, and in communication with each other. These were the piscinae, or fish tanks, in which sea fish were kept alive in water brought from the sea by means at present not definitely ascertained. It is well to state that the fresh-water fish was food only for the plebeians; the patrician families, and, naturally, the Emperors, ate only sea fish, numerous varieties of which were kept in plenty to meet the demand of the imperial table. The piscinae are at present, of course, dry.

Pleasing Design in Reinforced Concrete

V. J. ELMONT, C. E

THE EMPLOYMENT of reinforced concrete as a building material has increased very materially during the last two decades, owing to the steady growing understanding and appreciation of its economical and technical advantages.

At the present time there is no class of architectural structures, in which reinforced concrete is not used to a more or less extent, but only in a few of them—factories, warehouses, exhibition halls and buildings of a similar type—does the reinforced concrete play any important part in the façades. In contradistinction to this the exterior treatment of reinforced concrete is of great significance in many engineering works, for example, bridges, water towers, silos, chimneys, retaining walls, etc.

Many structures reveal the fact that both architects and engineers are afraid to let the reinforced concrete appear visible without any foreign embellishment. There is, in fact, a tendency to cling to the old forms, though no reason can be deduced why it should be forced into an unnatural imitation of stone buildings, erected of single cut pieces, or of skeleton steel frame buildings covered with a material which has properties entirely different from those of steel. It is, of course, an irresistible temptation for a mercenary or unscrupulous architect to design the façade in the easiest way possible by making monolithic reinforced concrete look like masonry through the medium of joint lines.

The average observer might perhaps appreciate

FIG. I.—WATER TOWER.

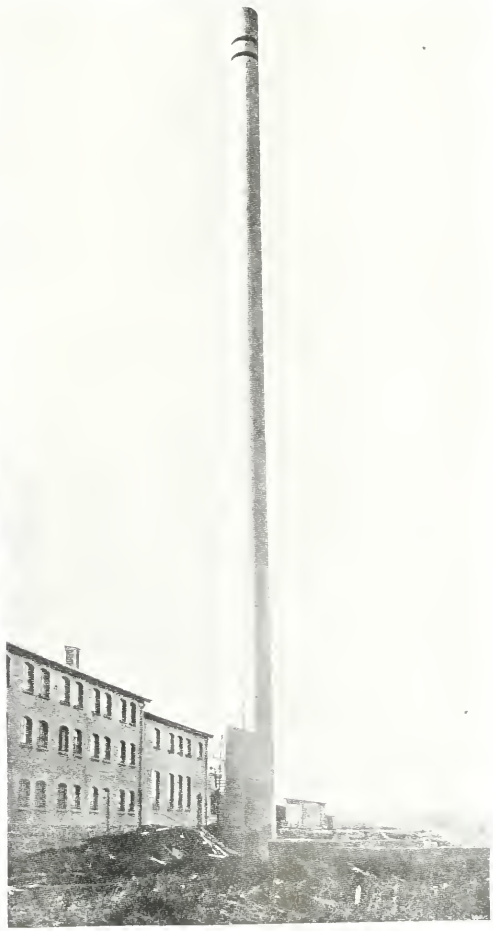

FIG. II.—CHIMNEY.

the exterior of a structure in which the designer has been successful in his efforts to veil the real character of the material used, but it must be characterized as deception and falsehood in art, considered from an æsthetical viewpoint.

It should be mentioned that all over the world we find architects and engineers who, to judge after their works in reinforced concrete, possess sufficient knowledge of the artistic and structural properties of the material itself. They should allow this knowledge to form the main guiding factors in the design of reinforced concrete façades, thus developing an artistic style, which will be all the more pleasing because of its harmonious possibilities in conjunction with the purposes of utility and the monolithic character of the material. In process of time thereby "the average observer" will reach an appreciation of reinforced concrete, realizing its strength and permanence, though it will likely be years, as Ibsen says, for the crowd to reach the place where the few advanced are now.

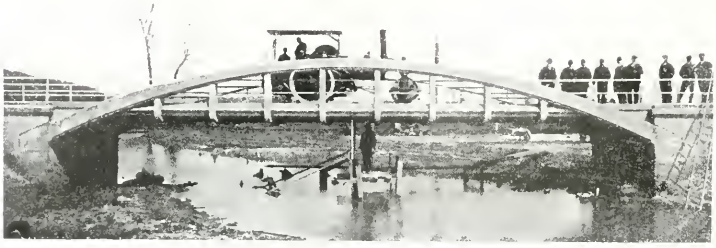

FIG. III.—BRIDGE BETWEEN FRANCE AND GERMANY.

Naturally it will not take reinforced concrete so long a time to develop a true and harmonious type, as in former times it took new materials or building forms to evolve from their primitive state to full development. Owing to convenient communications, the easy means of interchanging thoughts and results, and the all round ability of architects, engineers and artisans, reinforced concrete will shortly reach a state of perfection. The circumstance that reinforced concrete design has been thoroughly discussed at the international architectural congresses—held for the first time in London, 1906, afterwards in Rome and Vienna—will help materially in the same direction.

As examples of plain design in reinforced concrete the following engineering structures are worthy of consideration: Fig. I. shows a 150-feet high water tower built entirely in reinforced concrete with the exception of the spire, which is made of wood covered with red tile. The tank has a capacity of 100,000 gallons. As the tower also serves as an outlook, special arrangement was made for this purpose with stairs and an open platform built in the spire. The tower is rough plastered and painted with a light yellow color, the base being dark grey. The part of the building which projects between the tower shaft itself and the shell around the water tank gives room for the staircase which passes from inside the tower and out between the shell and the wall of the tank, thus leading up to the roof.

The 160-foot chimney in Fig. II. shows how easily and inexpensively a chimney structure can obtain a more pleasing and satisfying exterior than most of the reinforced concrete chimneys. This is accomplished by applying a special forming, which allows of a gradual decrease in the width of the chimney from the bottom to the top, and which at the same time gives a few strongly marked lines in the shaft.

The bridge in Fig. III. is built on the boundary line between France and Germany, providing an approach from Lorraine into France. The simplicity of its lines and the ease with which the layman realizes the object of each part of the bridge, that is, understands the basic principles involved, create a liking for similar structures. This feeling is caused by our long familiarity with arch structures in stone; but entirely belonging to reinforced concrete. The principle to suspend the roadway to the arch is a feature which portrays very clearly how the most significant qualities of cut stone and steel are united in reinforced concrete.

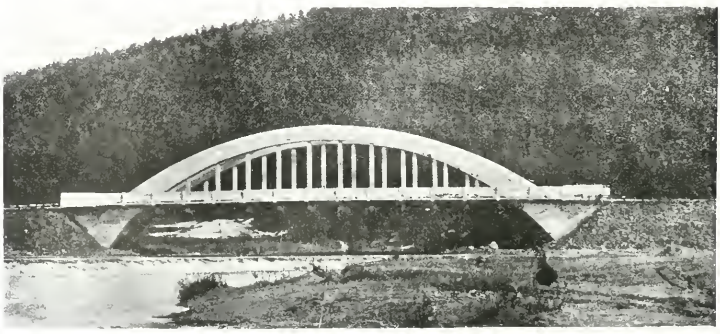

FIG. IV.—CONCRETE BRIDGE

Fig. IV. shows a bridge of the same type, only with larger span and dimensions. The solid handrailing, employed in this case, seems to help successfully in the balancing of the masses of the structure

Fig. V. gives a design with a mixture of good and bad details, especially the misuse of ornamental features. The small arches at the ends of the bridge show a typical concealing of the true nature of the material by employing joint lines. Concrete, to be practical, must be truthful.

FIG. V.—ATTEMPT TO CONCEAL NATURE OF MATERIAL USED IN CONSTRUCTION

THE difference between the two great historical divisions of architecture is based on the structural design. In the first instance the elements of the classic orders are the lintel and the column, while in Gothic architecture the design depends upon the vault, arch and buttress. All other sub-divisions of architectural design are purely adaptations of these, and illustrate either growth or decadence.

In modern times new materials have been introduced. The use of structural steel has developed designs impossible with any other material; but even with this modern material the use of the column and lintel is adhered to. For the application of an entirely new principle in construction one must turn to reinforced concrete. This differs from all other materials heretofore used in that it is composite, using the tensile resistance of steel to develop the compressive resistance of a monolithic artificial stone.

If particular styles of architecture can be developed from the column, lintel and arch, it is certain that in the use of a new material such as reinforced concrete, a style of architectural design and decoration can be developed which will express truly the nature and capabilities of the material. Unfortunately, it is difficult to overcome the habits of years and the training of past generations, so that up to the present time the architectural designer has shown, in handling reinforced concrete, the influence exerted by previously used materials.

The effort of the architectural designer to imitate masonry construction in handling reinforced concrete shows an effort to deceive the observer into a belief that the structure is built up of blocks cemented together, and, in order to make the deception doubly real, the joints are boldly marked by casting a bevel into the concrete to illustrate the chambered joints of massive masonry construction. Not satisfied with this effort to simulate masonry, the designer sometimes goes to the extent of bush-hammering the centre section of the blocks.

The essential difference in the possibility of reinforced concrete, as compared with the lintel and column supports of the classic orders and the vaulted arch and buttress of the later mediæval construction, is that it is practically a masonry material, possessing, besides the great compressive resistance of stone, the tensile strength of the steel which can be embedded in it. It is therefore possible to develop a particular style of architecture in working in this material, though it can be used for the development of almost any architectural treatment, a feature which is particularly valuable in house construction.—*Sloan.*

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GENERAL ELECTRIC COMPANY BUILDING, BUFFALO, N.Y.

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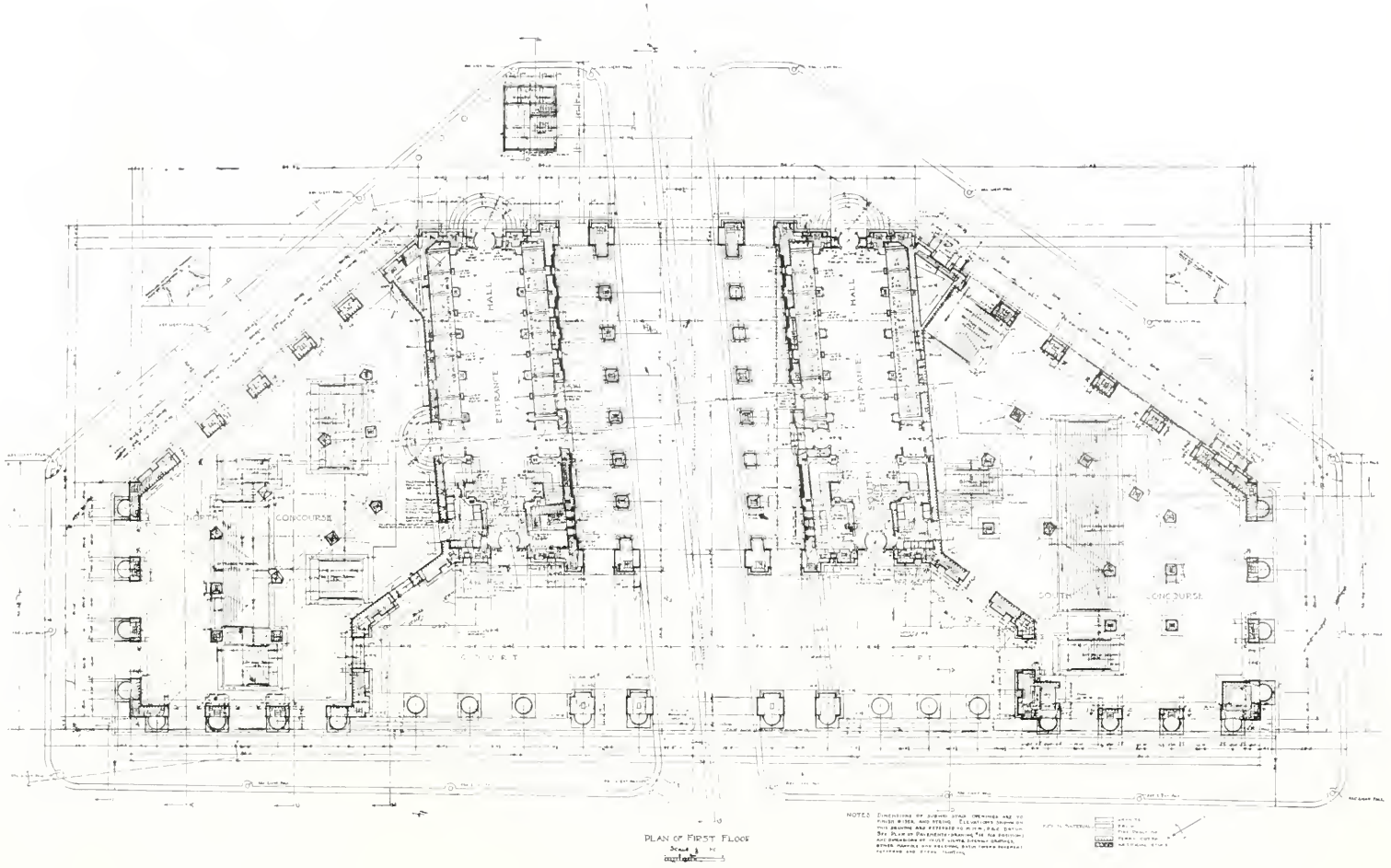

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MUNICIPAL BUILDING, NEW YORK CITY.
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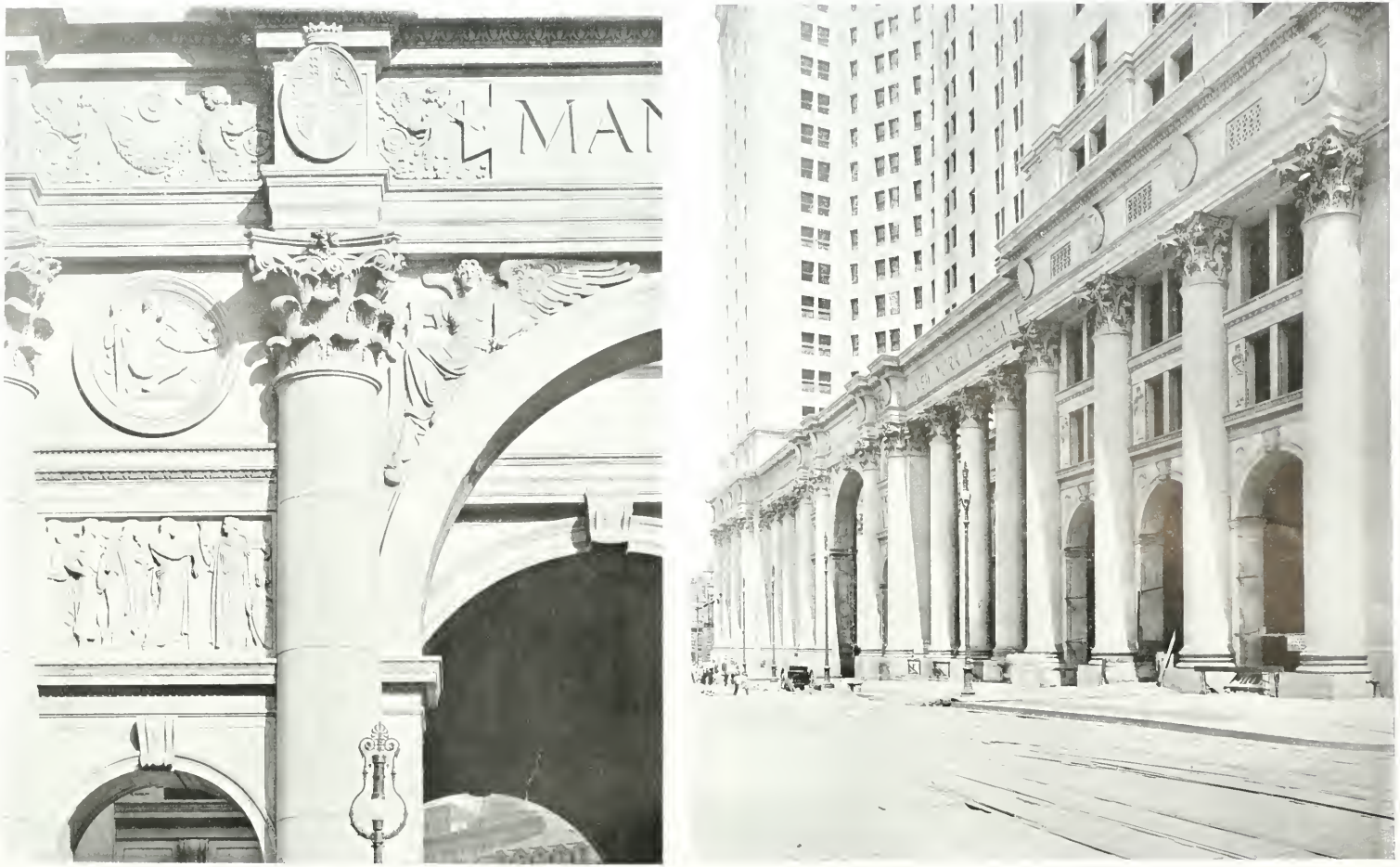

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SAMUEL CABOT, INC., have just published a booklet entitled "The Book of 100 Homes." Each house was treated with Cabot's stains and affords a series of prominent examples showing the effectiveness of this material.

* * *

THE WHOLE installation of the elevator system of the C.P.R. Building, Toronto, including the drilling through rock to a depth of 200 feet for the cylinders, was carried out by the John McDougall Caledonian Iron Works Company, Limited, of Montreal and Toronto.

* * *

THE ARCHITECTURAL Year Book of the University of Illinois, published by the Architectural Club of that institution, presents in a tasty manner the students' work during the past year. The results are highly commendable and indicative of the careful instruction being tendered at the various universities.

* * *

THE LONDON Concrete Machinery Co., Ltd., has just issued a 168-page catalogue illustrating the various lines of machinery manufactured by that company. This information will be of value to the architects, engineers and builders, and can be obtained by addressing the company at London, Canada.

* * *

THE VESTIBULES, entrances, counter railings, teller's cage, window frames, and elevator enclosures on the main floor of the C.P.R. building, Toronto, are of bronze, the elevator enclosures on the upper floor and the stair railings throughout are of iron. This material was furnished by the Architectural Bronze and Iron Works of Canadian Allis-Chalmers, Limited.

* * *

BUILDERS' QUANTITIES, by W. E. Ballard, is a recent volume added to the Longmans' Technical Handicraft Series. It is for the use of students, and all persons interested in the building trade. Actual examples of preparing bills of quantities are given with the correct method of dealing with them. The book is published by Messrs. Longmans, Green & Co., London, E.C., and cost 60 cts.

* * *

THE CONCRETE HOUSE and its Construction, edited by Maurice M. Sloan, is the title of a book published by the Association of American Portland Cement Manufacturers, Philadelphia. The book considers the fire-resisting qualities of concrete in the construction of dwellings and enters into all the details of this method of building. The volume contains 224 pages, well illustrated, and cost $1.00.

CANADA TO-DAY, 1913, bound in one volume, forms an instructive and comprehensive survey of the progress Canada has been making during the past year. It contains some three hundred illustrations together with a specially prepared map of the Dominion. The work is published by Simpkin, Marshall, Kent & Co., Ltd., London. Cost, 50 cents. Canadian address, 306 Confederation Life Building, Toronto.

* * *

IN KEEPING with the policy of the late George H. Pedlar, the Pedlar People, Ltd., have materially strengthened their staff at Oshawa headquarters by the addition of new and experienced men. W. R. Geikie, formerly branch manager at Toronto, has been made managing director; W. Loach, formerly of the Canada Foundries, Ltd., Toronto, has been added to the operating department; A. T. Enlow has been given general charge of the sales and advertising department.

* * *

THE BEST SELLER among the German novels of the summer season is "The Tunnel." Like so much in recent German romantic and melodramatic literature, it deals with New York society life. The story gets its name from the fact that the author, Herr Kellerman, selects for his hero a daredevil young engineer, who conceives the gigantic project of connecting Europe and America with a tunnel. Some of the newspapers which are reviewing "The Tunnel" say that it would probably be as much a mistake to ridicule the suggestion as it was to scoff at some of the ideas first launched by Jules Verne and H. G. Wells, which, in the meantime, have become every-day actualities. One commentator has figured out that the shortest tunnel route between the Old and the New World would lie between Cape Ortegal, Spain, or Brest, France, and Cape Charles, Labrador, distances of about 2,250 miles.

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CONSTRUCTION

VOL. VI NO. 9

CONTENTS FOR SEPTEMBER, 1913

Full Page Illustrations

H. GAGNIER, Limited, Publishers
GRAPHIC ARTS BUILDING, TORONTO, CANADA
BRANCH OFFICES:
MONTREAL WINNIPEG CHICAGO NEW YORK

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.

¶ *The cathedral spirit of to-day which will produce edifices rivalling the better examples of the middle ages.*

THE AGE of cathedral building in Europe has been and always will be a remarkable epoch to the artist world. We have grown to recognize that period as one of monumental growth in the ecclesiastical world and can scarcely believe that our modern tendencies could permit of structures which woul rival the glories of the middle ages. Still the tendency is towards democracy and the cathedral is a democratic institution. The people look upon the church as an expression of truth and wish it to embody their feeings for everything that is noble and inspiring. They are awakening to the realization that a beautiful home, a lofty edifice, an ornate structure, is essential to the free worship of God. Once imbued with this spirit nothing can prevent the places of worship in the new world from surpassing the wonders of the old. There are evidences already that we have entered into an era which demands cathedrals of the most inspiring type. Ever since 1875 the cathedral desire has gradually spread and to-day the following cities are building or contemplating the erection of such a structure: Toronto, Halifax, New York, Baltimore, Albany, Denver, Detroit, San Francisco, Cleveland, Los Angeles, and Washington. These buildings are universally planned by and erected under the supervision of the same architect, which gives to the ensemble a harmonious feeling. Unfortunately hte large cathedral in New York was started and partly built in Romanesque, only to be completed in Gothic. The reason for such a calamity is attributed to a change in the personnel of the building committee, who dismissed the original architects and called upon another to do the impossible. The final result cannot help but remain an eyesore for ages. The edifice at Pittsburgh, on the other hand, is a dignified example and well known for its harmonious effect in design and color. Polychromatic decorations are becoming more generally used and helping to create beautiful churches which will compare favorably with the fine examples of our European brethren.

¶ *The Bank of Toronto—Its successful career in commercial activity and its architectural value to the City of Toronto.*

THE BANK OF TORONTO, illustrated in this issue, is one more example of Canada's progressive spirit. Artistic in design, thoroughly practical in plan and pleasing in its decorative sculpture, it is representative of the wealth, taste and thrift which is bringing the Dominion rapidly to the front. This edifice, along with the other notable structures recently erected, shows a decided advance in the architectural merits of our buildings and promises a vast improvement in the artistic appearance of our cities.

No institution produces so many ornamental structures as the bank. When one stops to consider that there are some thirty chartered banks, many of which have upwards of three hundred branches, and increasing every year, an idea is obtained of the wonderful growth in this field. Taking into account the keen competition of the various companies in making their respective buildings the most attractive and homelike, it is readily seen that their design and planning must be treated with considerable study.

The banking field of Canada is entirely in the possession of corporations chartered by the Dominion Government. Such an act bars all foreign and British banks unless they take out a Canadian charter and otherwise conform to the banking laws of the Dominion. It is interesting to note that while all other countries are excluded to a certain extent in the establishment of banks in Canada, still many of our companies are represented in England, France, Mexico and the States.

The Bank of Toronto is the oldest bank in Canada with head office in Ontario, having been incorporated in 1855. The bank opened for business in July, 1856, with a paid up capital of £27,435. The progress of the bank has always been steady, and by the year 1871 its capital exceeded $1,000,000, which figure steadily increased until to-day it is $5,000,000, with reserved funds of $6,176,578.

Among the men of marked ability who have contributed of their experience and skill to the upbuilding of this institution was the first president, J. G.

Chewitt, who was succeeded in turn by Messrs. Cameron, Wm. Gooderham and G. Gooderham. In 1911 Mr. Coulson was elected president, which office he now holds. His unusual ability and untiring efforts are mainly responsible for the bank's high standing at the present time. The management of the bank has ever been conservative, but yet progressive, and has extended its operations throughout the Dominion as the requirements of business demanded. At the first and for some years, the branches of the bank were all in Ontario and Quebec, but with the opening up of New Ontario and the Western Provinces, many new branches have been opened in these sections as well as in the older provinces.

The city of Toronto may well be proud of this new structure, which stands as the resultant of a long cherished ideal. It is the home of a large institution and is worthy of the great and distinctive business it represents. As a work of art it is destined to take its place as one of the notable structures of the present time. The sculptural decorations embellishing the main façades are carved in marble representing Canada in agriculture, industry, science, etc., and show the wisdom in the selection of the sculptor. It is worthy of note that while the architects represent one of the strongest organizations in America, every drawing was done in Toronto under the direction of Eustace G. Bird, the Canadian member of the firm.

¶ *South American States a rich field for art—The progressiveness of their people—Civic improvement brought to a high state of perfection.*

A SERIES of articles on the South American countries which are appearing in the Sunday "New York Times," teem with practical information for the architect and student. The author is General Rafael Reyes, ex-president of the United States of Colombia, a man well versed in the life and art of these nations. He refers to the high standard of culture and æsthetic refinement of the educated Brazilians, whose qualities find expression in their many public institutions and in the artistic embellishment of their principal cities. The greatest improvement has been in beautifying the city of Rio de Janeiro, which in the short space of seven years has been completely transformed into an artistic centre. Sao Paulo has become also one of the most magnificent cities of the western hemisphere. It has extremely wide paved streets, attractive homes and well designed public buildings. Among the prominent structures are the Government Palace of the State, Palace of the Elysian Fields, Municipal Theatre, etc.

In speaking of the Argentine Republic, the point is emphasized that this country is still in its infancy and the opportunities are as great to-day for the man of all professions as they were twenty years ago. Surely no city can boast of a greater advance in the civic improvement than Buenos Aires, with its open and attractive Plaza De Mayo, the Plaza Hotel and the Colon Theatre. Progressive and friendly, this country is bound to become a great factor in the progress of the world and will help maintain a sense of justice between the various Southern States.

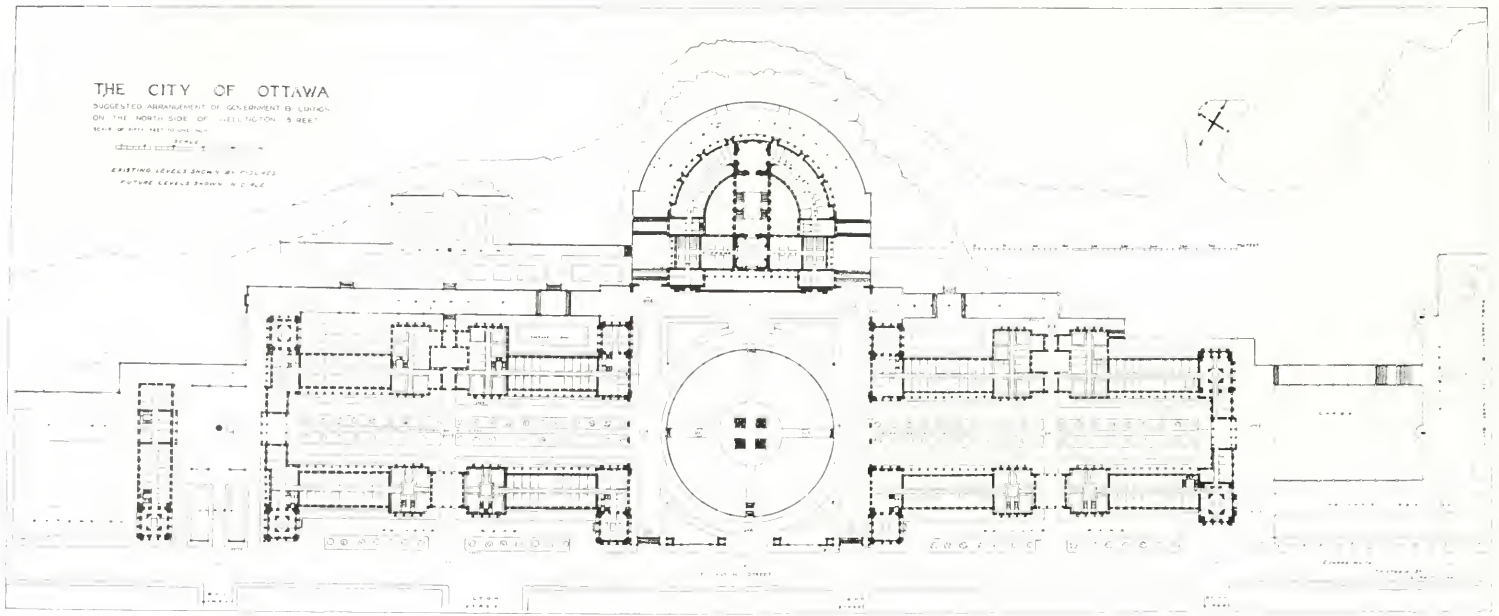
Uruguay assumes the same relationship to South America as Switzerland does to Europe. Of small territorial extent and population, its people may justly claim to have attained a degree of civilization and progress equal to that of her more powerful neighbors. Approaching the Uruguayan coast, a delightful impression is made. The capital, Montevideo, is built in the form of an amphitheatre, with handsome modern edifices and gardens. The scene is more effective upon entering the gates of the city, where are seen broad avenues, wide squares, artistically designed parks, and monumental sculpture work. In appearance the more important avenues with their native foliage may be likened to the summer effect of the Bois de Boulogne at Paris, and the winter of Buenos Aires.

¶ *The registration of architects in England—Terrible disasters daily argue in favor of such an action—Need is also felt in Canada.*

UNIVERSAL consideration is being given to the registration of architects in England. C. McArthur Butler, secretary of the Society of Architects, wrote a strong appeal in order to stir up public opinion, which seems to be a necessary course, no matter how excellent a reform may be in itself. One of Mr. Butler's arguments is the multiplicity of the architect's duties, which are those of a lawyer, chemist, surveyor, engineer, builder, sanitary expert, etc.

Mr. Butler says: "Mistakes in other professions can be buried or otherwise consigned to oblivion, but architectural mistakes are always with us. They will go on being perpetrated so long as it is possible for unqualified persons to assume the title of architect and under that disguise to bring disgrace on the profession and the nation by plastering our landscape and streets with such hideosities and banalties as may be seen on every hand."

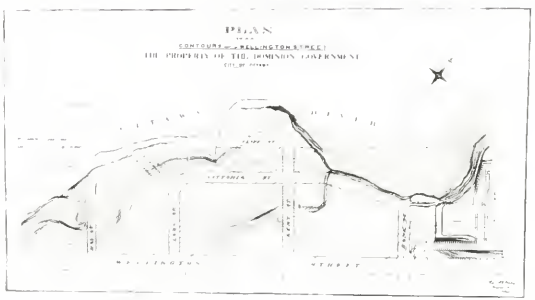
The argument applies to Canada also. Within the last week or so startling headlines appear in our papers: "Frightful disaster at Peterborough; five bodies already recovered from the ruins;" "Garage block falls while in construction;" "Fifty-three persons missing; terrible disaster when houses fell in;" "Two buildings in Montreal collapse;" "Church collapsed, two men injured." Dozens of similar notices could be cited to show the loose manner in which our modern structures are being erected. Is there not a need of some action upon the legislative side which will prevent so much loss of life and general suffering? Protection must be given against the untrained artist whose knowledge of building construction is lamentable. It is due both the profession and the people.



The Government invites architects to submit preliminary sketch designs in competition for the erection of certain buildings, which are to be included in the scheme for the development of complete Departmental and Courts Buildings. The ground floor area of the Departmental Buildings must cover a space of about 200,000 superficial feet.

It is the intention to build at once a certain portion of this complete scheme, viz., the Supreme Court, the Exchequer Court, the Railway Commissioners Court, and the necessary offices in connection with these courts, also a block or blocks of Departmental Buildings covering a ground floor area of about 100,000 superficial feet and providing about 500,000 superficial feet of floor area.

The Dominion Government has appointed T. E. Collcutt, Past President of the Royal Institute of British Architects; J. H. G. Russell, President of the Royal Architectural Institute of Canada, and J. O. Marchand, A.D.G.F., and a member of the R.A.I.C., as assessors to draw up the conditions and instructions to competing architects and to select from the preliminary sketches, six designs, the authors of which are to be invited to submit final designs and each of the five unsuccessful architects submitting designs in accordance with these conditions shall receive a honorarium of $3,000. The competition is restricted to architects who are British subjects, practising in the British Empire.

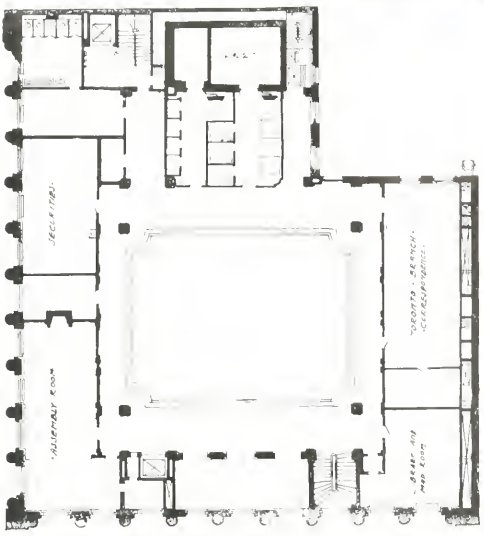


PLANS SHOWING SCHEME FOR NEW DEPARTMENTAL AND COURT BUILDINGS FOR THE DOMINION OF CANADA, IN OTTAWA, ONT.

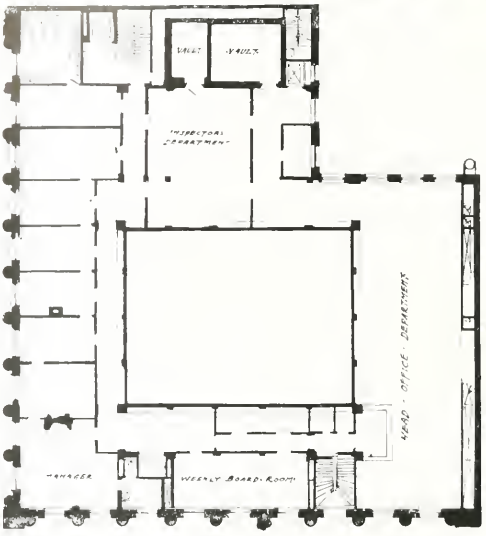
The designs in the first competition must be delivered in Ottawa by 12 o'clock noon, January 2, 1914, addressed to the Secretary of the Department of Public Works.

The author of the design placed first in the final competition shall be employed by the Government for the work to be done at once, provided that he can satisfy the assessors as to his possession of sufficient experience and ability to undertake and carry out the work to a successful issue.

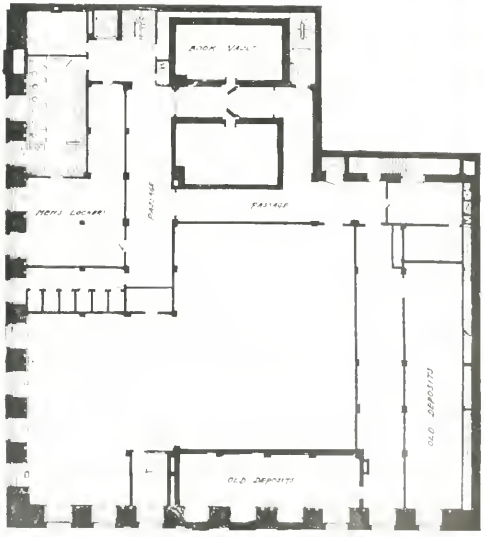
All enquiries regarding the competition should be addressed to the Secretary of the Department of Public Works, Ottawa, Ont., typewritten on plain paper.



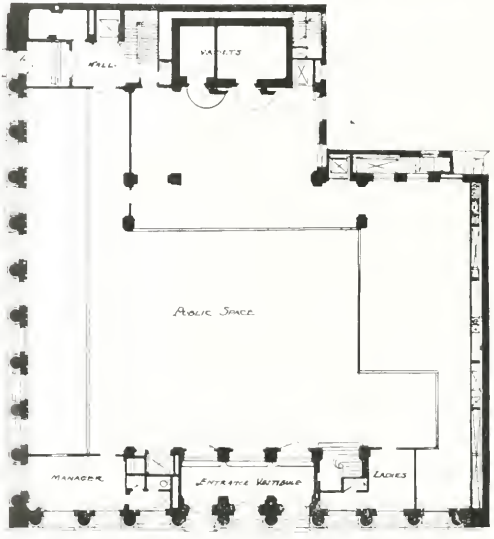
MEZZANINE FLOOR PLAN.



FIRST FLOOR PLAN



BASEMENT FLOOR PLAN.

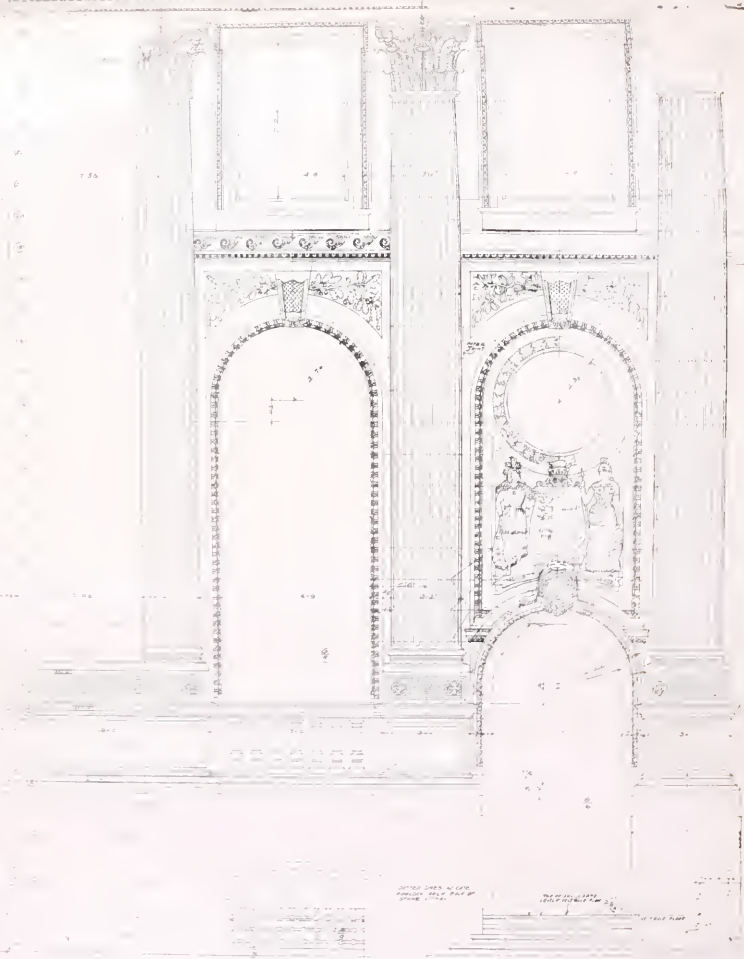


GROUND FLOOR PLAN.

THE BANK OF TORONTO, TORONTO.

DARLING & PEARSON AND EUSTACE G. BIRD, ARCHITECTS.

332 A.



EXTERIOR DETAIL
MAIN FACADE

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND
EUSTACE C. BIRD ARCHITECTS.

The Bank of Toronto, Toronto, Ont.

Carrere & Hastings and Eustace G. Bird, Architects.

ONE more monumental structure in marble and bronze bespeaks the rapid progress of Canada's commercial life, especially in the Province of Ontario. The Bank of Toronto not only houses adequately one of the large chartered institutions of Canada, but depicts as well the constant betterment in all phases of architecture. It stands as a cherished ideal clothed with decorative and costly art, in perfect harmony with the life of the institution within. When we stop to realize that this structure is one of many which have sprung up within the last few years throughout the Dominion, it would be impossible to foretell the vast improvement in architecture which will occur in the next decade.

The banking institution is one of the most potent incentives to art. Catering to all classes and profiting from the earnings of the people, each corporation strives to make its local bank the most artistic and home-like. As a result no expense is spared in decorating its façades and main banking space in a utilitarian and attractive manner. As the banking field of Canada has some thirty chartered banks, many of which have upward of three hundred branches, it is readily seen that buildings of this nature are erected quite frequently. With a keen desire to better existing conditions there is always considerable care manifested in the design, and the present standard, which surpasses by far the past, will have to give way to a future style even more artistic, practical and sanitary.

The Bank of Toronto has at present 116 branches in Ontario, Quebec and the West, many of which are located in handsome and commodious buildings erected by the institution from time to time to meet the growing demand for accommodation. The first office occupied in Toronto was a small one on Church street opposite St. James Cathedral, but in 1862 the building at the corner of Church and Wellington streets, which has accommodated the bank during the intervening half century, was erected. Some ten years ago the need for enlarged premises was again foreseen, and the property at the southwest corner of King and Bay streets purchased.

Rising four stories above ground, the ensemble of the new bank presents an appearance of stability and richness. The two main façades frankly express the character of the work for which it has been built. Enriched by large attached columns extending throughout three stories, it stands as an example of unusual dignity in the business world. The exterior tends to create a feeling of unity brought about by subordinating the entrances—which are extremely rich in treatment. Following classical motives, the work stands forth as an index of the people's desire towards the beautiful. The light pink Tennessee marble used throughout the exterior treatment adapts itself to the style and general surroundings, and will always maintain the general warmth of the present structure.

The corner piers are elements of strength and simplicity which lend to the ensemble an impression of stability as well as forming an appropriate framework for the rich window and entrance treatment. The sculpture is worthy of considerable study and may become in time one of the few illustrious examples of the present era.

VESTIBULE STANDARD

Over the middle entrance on King street is carved the civic arms of Toronto. The former coat of arms of the Province of Ontario rests between the figures of an Indian and Britannia. Beneath are the words "Intelligence, Industry and Integrity." The group to the left is symbolical of the agricultural pursuits of Canada. A shield containing the plow, scythe, beehive and rooster is graced on either side by figures which carry grain, fruit and flowers. To the right is depicted the mechanical pursuits with the scientific shield separating two figures with firebrands and having the word "Enterprise" beneath.

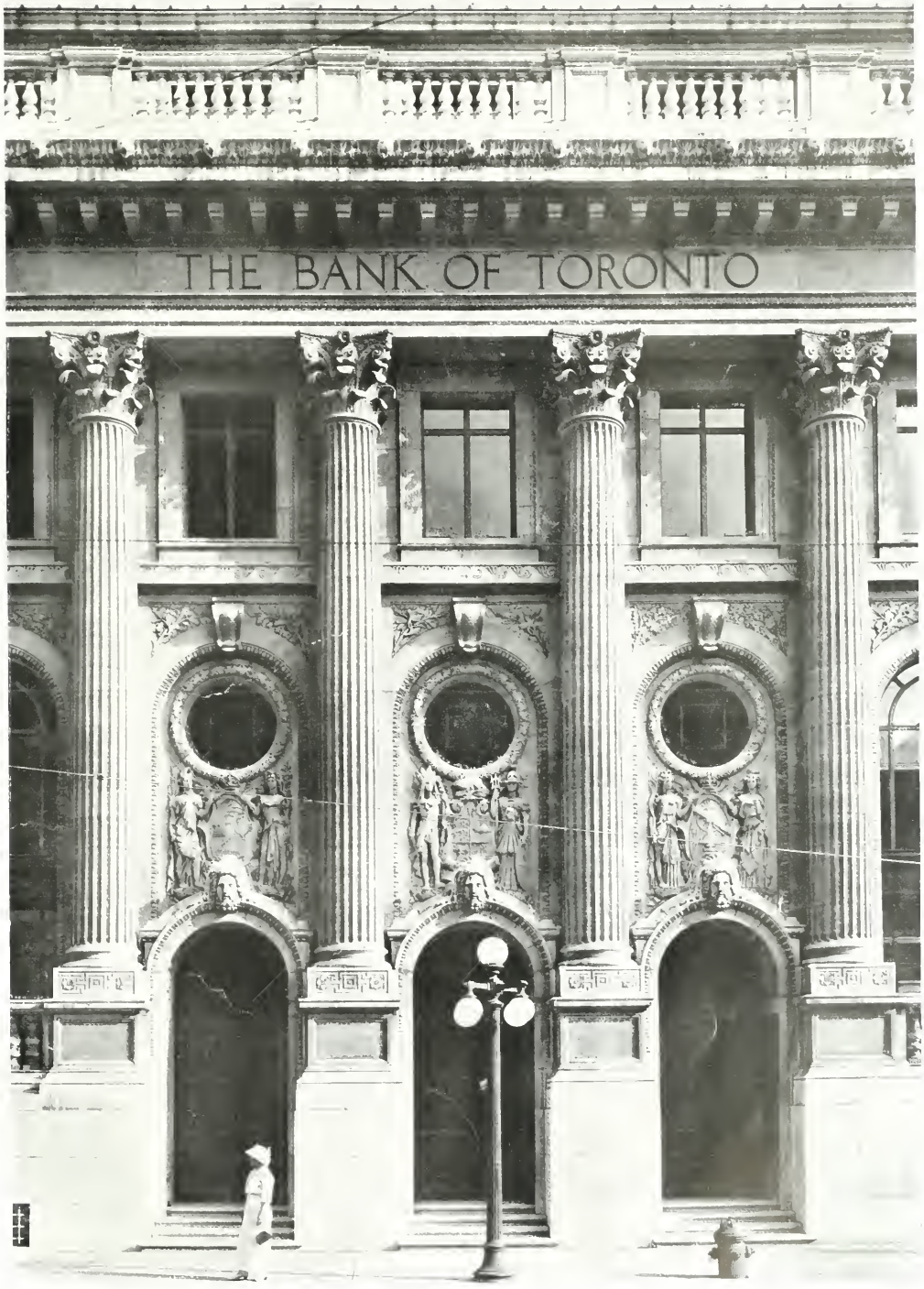
The building is entered from King street through three cast bronze double-faced door grilles which lead to the main banking room through the vestibule, and from Bay street to the elevator lobby and large public space. These entrance doors are swung on steel pivots with bronze bushings and operated with ornamental lever handles which control concealed bolts. Directly inside of the panelled grilles are light single-action doors with large panels of clear glass encased in cast bronze frames. The three double doors leading from the vestibule into the main banking space have glass panels set in ornamented bronze chased on both sides.

One of the charming bits of architecture is the main vestibule. Designed throughout with Cenere marble, it is a

DETAIL OVER MAIN ENTRANCE.

THE BANK OF TORONTO, TORONTO.

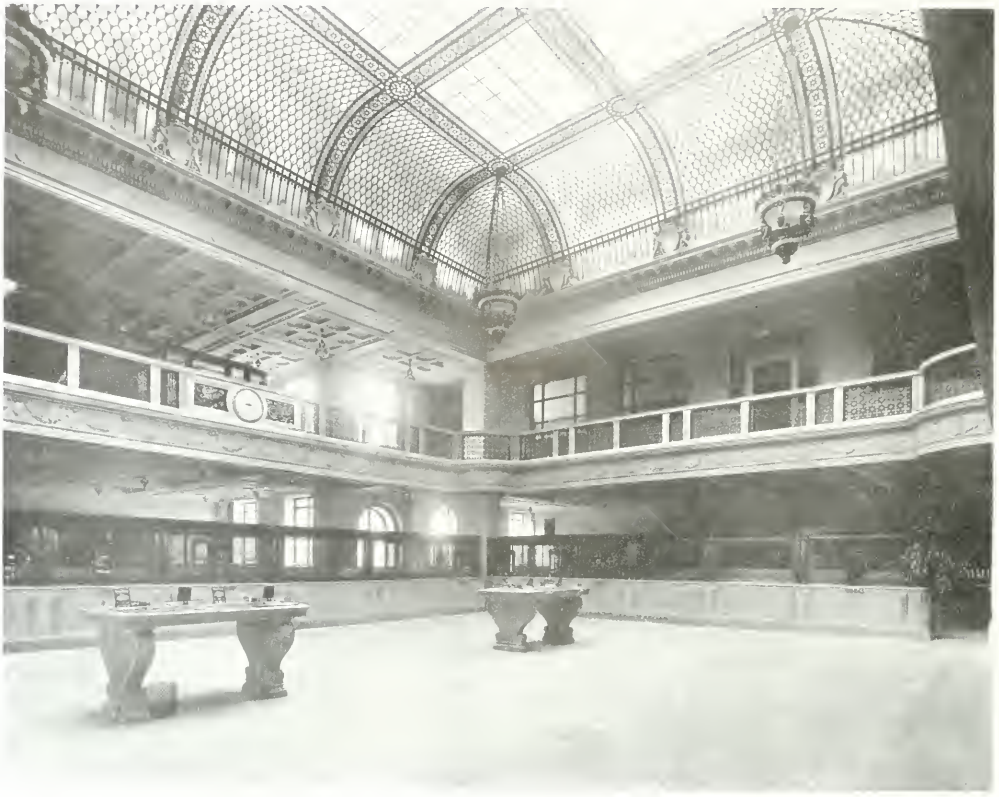
CARRERE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.



DETAIL OF MAIN ENTRANCE

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.



MAIN BANKING ROOM

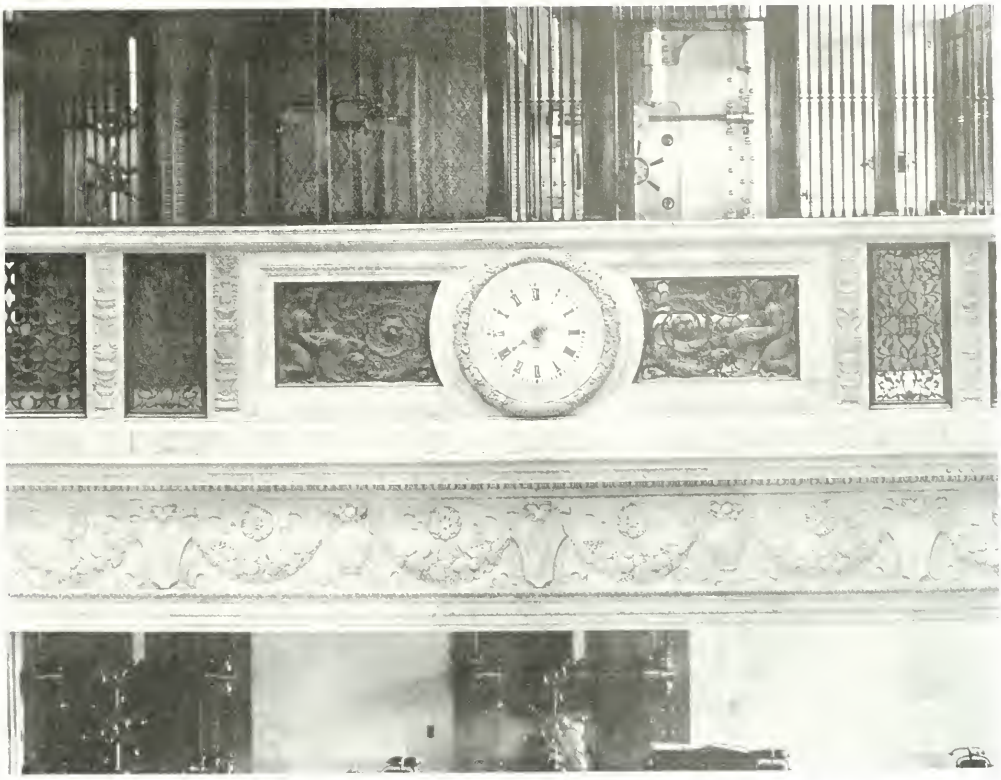
harmonious introduction into the large space beyond. The ceiling is vaulted with richly ornamented soffits in the archways. At each end is a solid bronze standard of six lights with the detail in low relief hand chased.

Uncuestionably the greatest impression is made upon entering the public banking space. Spacious in every direction, rich in marble and bronze, attractive in tinted and decorative marbles, it creates a pleasing effect. The floor consists of large Hauteville marble squares surrounded on the street sides by an elaborate border made up of the following marbles—gray convent Siena, red Numidian, Jasper rouge and Hauteville. Counters have been planned around three sides of the large open space unbroken by any structural feature which only tends to give the impression of a larger area than really exists. The counters are of Vrdello marble harmonizing perfectly with the Botticino which decorates the wall surface.

This public room rises three stories, the second being a mezzanine floor and protected by a marble and bronze balustrade of extreme richness. Upon two sides are plain artistic clocks set in a circular band of marble which in turn are surrounded by bronze wreaths. The whole panel effect is enhanced by two elaborate bronze designs set on either side of the clock. The frieze, exquisite in design and execution, adds to the ornamental panels of bronze directly above which are separated by delicately carved pilasters.

The third story, consisting of a dome of cast bronze and muffled cathedral glass, is the striking feature of a pleasing effect throughout. Constructed so that all supports are invisible from below, it lifts the eye upward to a field of pale amber whose outline is a white cathedral glass. The ribs and portions between are perforated and glazed with art glass. Weighing sixteen tons, the dome is supported with steel rods fastened to the trusses above and attached to the centre rings of the intersections of the main ribs carrying the entire upper portion. Above the dome and on a level with the fourth floor is a roof garden floor consisting of glass bull's eyes set in lead rings with concrete support.

Four sixty-light electroliers hang from the bronze dome. These semi-indirect fixtures have a centre bowl of Italian alabaster, specially carved, with a diameter of 3 feet 6 inches, while the metal crown of hand chased bronze finished in gold is 5 feet. The height from the bottom to the crown is 15 feet 6 inches. The balcony is lighted by eighteen alabaster ceiling fixtures finished in bronze and gold. Each one has six lights and in conjunction with the



DETAIL OF BALCONY RAIL, MEZZANINE FLOOR.

four large electroliers furnish a strong and wholesome illumination.

The main stairway leading from the banking room is executed in Botticino marble and double-faced cast bronze. This feature carries out the chaste and delicate character of the interior treatment. All structural parts are of wrought iron and steel designed to sustain a live load of one hundred pounds to the square foot in addition to the materials themselves. The stairway accommodating the Bay street entrance from the ground to mezzanine floor is of Bottocino marble excepting the balustrade, which is of solid bronze. Above the mezzanine floor are wrought and cast iron risers, balustrade and tread supports with marble treads and bronze rail.

The large banking room windows, twenty-one feet high and six feet nine inches wide, are made of ornamental cast bronze panels, and the best British polished plate glass. Care was taken in order to secure the maximum amount of light which necessitated special heavy gun-metal sections in order to obtain the required strength. Fixed sash is used throughout excepting the two centre parts, which are arranged to swing inward. The casements have ornamental bronze hardware of a harmonizing chocolate bronze finish.

The assembly room is elaborately finished throughout. Above the base and floor border of gold and black marble are French walnut panels carried to the ceiling and matched so as to lend a charming effect. Between the windows and directly opposite are hand tooled brackets of two lights each. The ceiling is enriched by a patterned design in moulded plaster which is relieved by lights in clusters of five, each one cast, hand-tooled and finished in Vernis gilt. Upon the floor is a red hand-tufted English carpet, nine by fourteen feet, covering an oak flooring of herringbone pattern and parquet border. The furnishings of the room consist of a French walnut table richly carved by hand and eighteen arm-chairs upholstered in red pigskin leather.

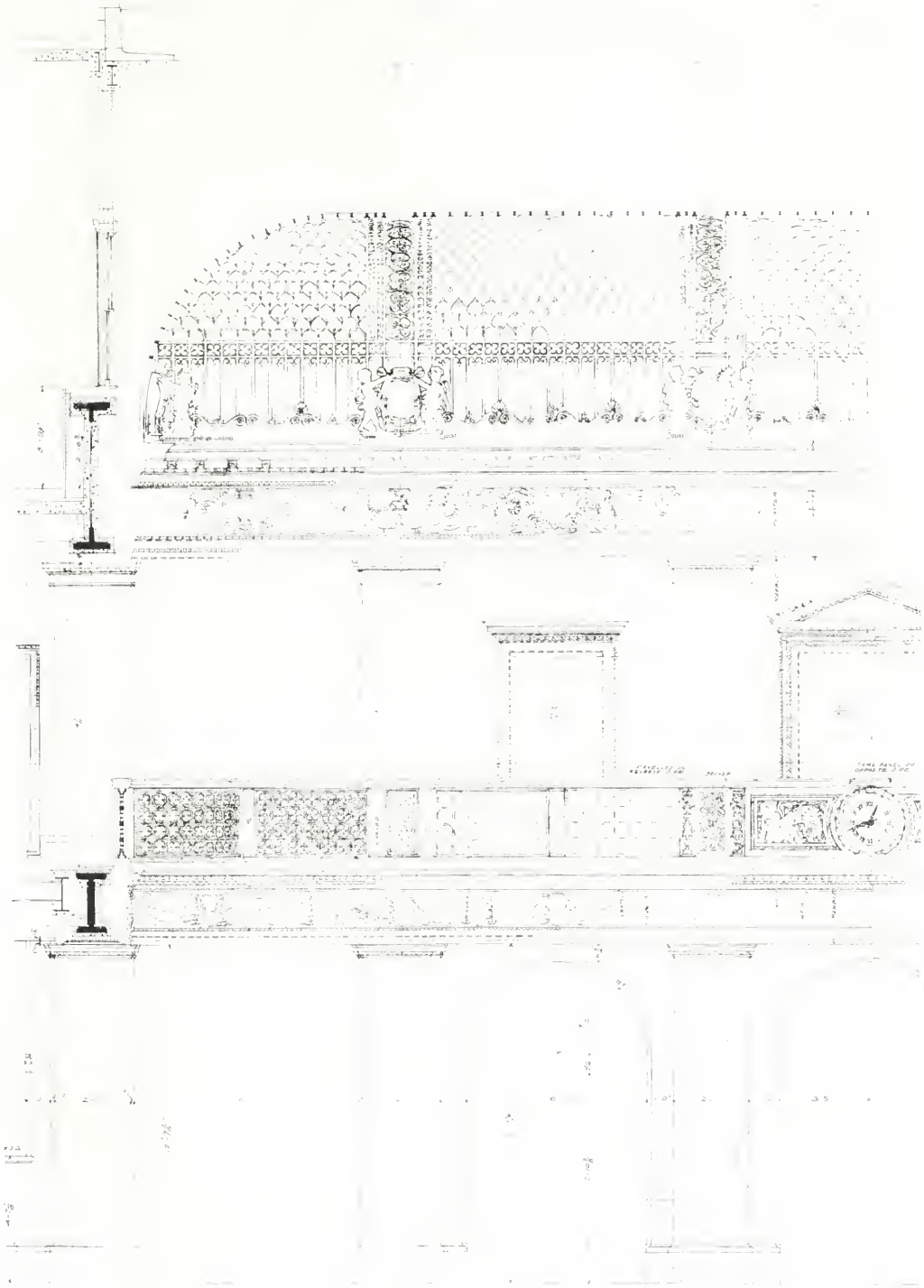
The weekly board room is also finished in French walnut. The walls are paneled, each division being practically square and making three divisions between the floor and ceiling. Oak strips and oak borders with narrow strips of black walnut around the edge make up the flooring, which is covered by a red hand-tufted English carpet, thirty-one by ten feet, with no design except a formal border pattern. The large table is of French walnut, also the chairs, which are upholstered in pigskin leather.

Other rooms are finished in quarter-cut oak floors with parquet borders, walnut dadoes, etc. The president's and manager's suites, however, are designed in quarter-cut Austrian oak, which material is used for the carved arm-chairs and settee. All

VIEW OF MAIN BANKING ROOM.

THE BANK OF TORONTO, TORONTO, ONT.

CARRÈRE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.



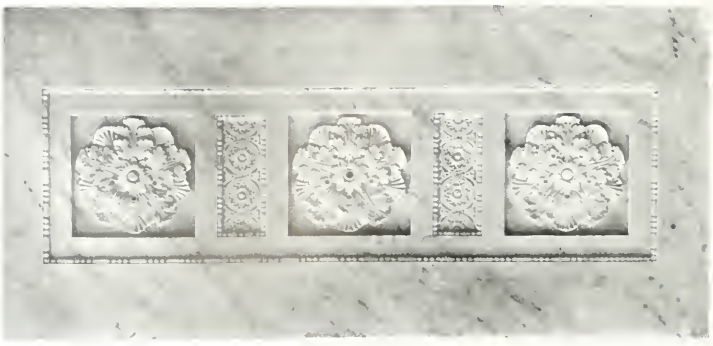
SECTION THROUGH BANKING ROOM LOOKING TOWARDS KING STREET

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS

fixtures are of hand-carved woodwork with a finish of gold leaf, the high lights being brought out by means of a polished finish with the shadows in a dull gold.

In the sub-basement is arranged the boiler room, engines, air cooling and purifying equipment, power house and engine room. The electrical equipment has been well established by means of a generating plant and auxiliary, the former consisting of four generators, two of 75 units and two of 25 units. The room itself is impressive in its cleanliness, the floor being of six-inch square red flint tiling and the walls of white enamel brick. Located at one side is a fifteen-foot switchboard of gray Tennessee marble. The loose cable work is eliminated by entering the feeders into a fifteen by three by four foot steel junction box where all cables reach their respective switches through bushed holes. Fifty-two telephones are established in the building, which are directly under the control of the bank's switchboard in a separate room that provides also for the automatic air pressure messenger system.



DETAIL OF MARBLE PANEL.

Seventeen clocks throughout the building are controlled by one master clock, guaranteeing an accurate time system. Two of the clocks are in the mezzanine balustrade and have marble dials sixteen inches in diameter. A solenoid switch from sixteen three-way, momentary contact, lock switches, controls the vacuum cleaning system which is placed in every room.

Concrete paving is used in the sub-basement with brick finish in boiler room and coal storage, cement elsewhere. The paving consists of a two-inch levelling course of concrete, eight inches of broken stone, two inches of coarse concrete screeded smooth, four inches of waterproofing, three inches concrete, and one inch of cement finish marked off in four-foot squares.

DETAIL OF DOORWAY ON MAIN FLOOR

Special arrangement has been made for obtaining purified water and circulating same by means of a pump. The water passes through a filter upon entering the building, thence through a sterilizer where the water is heated and sterilized, after which it is automatically cooled.

Compressed air provided by a horizontal rotary blower operates the pneumatic tube system with its twenty-three stations. The capacity is thirteen cubic feet of air per revolution, and driven by a ten horsepower 400 r.p.m. motor.

Three passenger and one freight elevators have been installed. At the King street entrance is a hydraulic plunger elevator of two thousand pounds capacity and a speed of two hundred and fifty feet per minute with a twelve hundred pound load. The hydraulic elevator at Bay street has a capacity of twenty-two hundred pounds with a speed of three hundred feet per minute. Two dumb waiters are operated by a seven and one-half horsepower electric motor, one be-

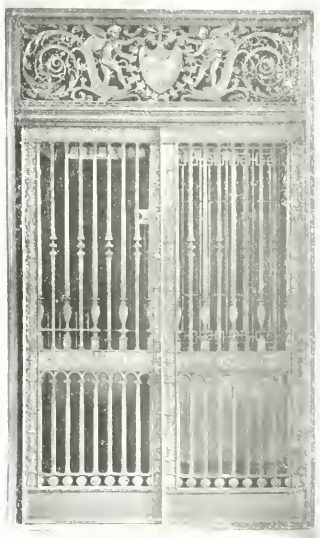
ing used for service work, the other for a booklift.

Of unusual interest is the incinerator equipment for the destruction of worn-out currency. Located in the basement, it is built of steel with massive doors and smoke pipe. Directly inside the steel door is a cast iron heavily baffled door which opens into the reduction chamber measuring two and one-half feet in all directions and lined with fireclay blocks. Between this chamber and the next is a perforated arch through which small openings allow the products of combustion to pass and thence into a third chamber. The burner reaches twenty-eight hundred degrees of heat produced by gas with air supplied by an electric motor. A series of adjusting valves admit the necessary amount of gas and air for the work.

The boilers are provided with Dutch ovens in which the coal is coked before being admitted to the firebox, which eliminates all danger of smoke. A continuous flow of water is kept during the coking process in order to keep the coal from burning and all gases during the process are forced over the firebox, which aids in the work of combustion.

The engine equipment consists of two nine by ten-inch horizontal slide valve engines direct connected to the 25 kw. generators at 310 r.p.m.; also two thirteen by fourteen-inch horizontal slide valve engines direct connected to two 75 kw. generators at 275 r.p.m. The steam valves of these engines are the straight line type scraped through and balanced against steam pressure by a heavy plate held away from the valve-seats by distance strips .002 in. thicker than the valve, thereby allowing it to move more freely. Double port openings in the valve allow the steam to enter the cylinder and exhaust quickly. The pistons are made as light as possible to prevent wear to the cylinder, and so that the piston may break before the cylinder or head in case of confined water.

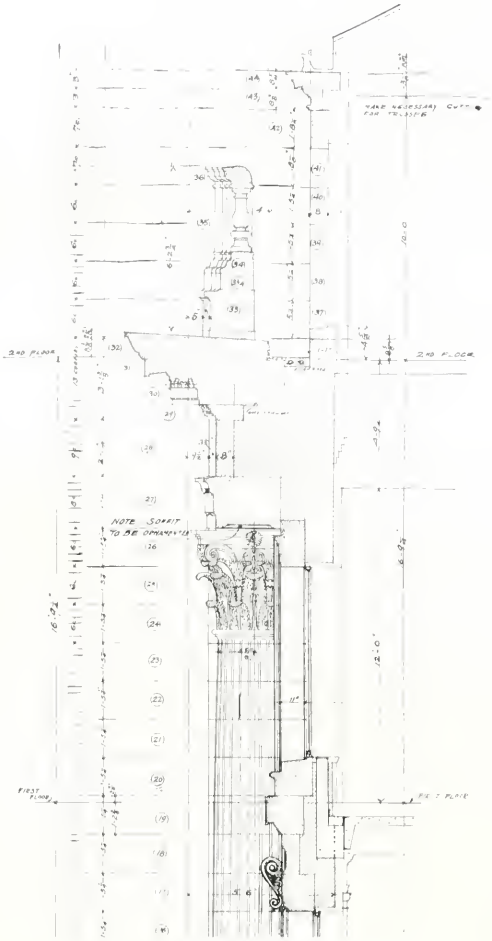
PORTAL OF ELECTRIC [illegible]



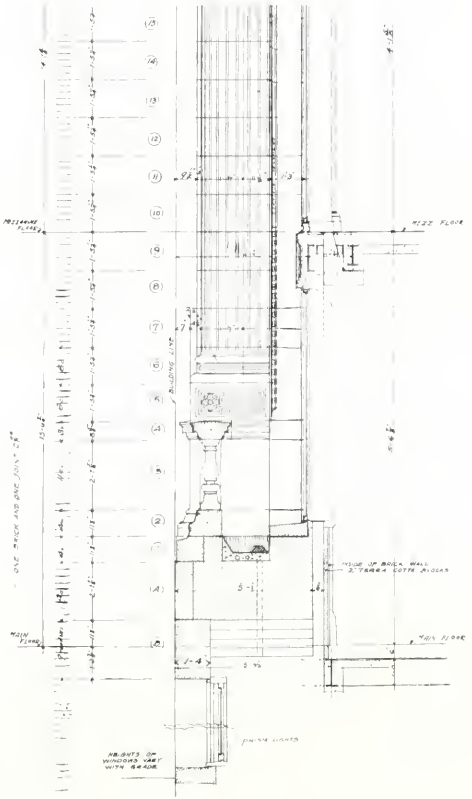
BRONZE ELEVATOR GRILLE.

The engines are equipped with governors, giving a throttling effect on light load and reducing range of temperature in the cylinder; also as the load becomes greater the initial pressure approaches full pressure in steam pipe, giving a steam distribution well adapted to economy in variable loads. The shaft bearings consist of interchangeable removable shells which may be adjusted while the engine is running. The oiling system consists of positively driven pump attached to the crank pin which draws oil from the base and distributes it through the pipes to the bearings. The regulation of these engines is one per cent. from light to full load.

Woodwork upon the interior consists of white pine first quality for the sash; Georgia yellow pine comb grained for pulley stiles and mullions; white pine for linings and finished with oak; quarter sawn white American oak first quality for interior finishings throughout the basement, ground, mezzanine, first and second floors excepting the janitor's quarters, which have plain oak; quarter-cut white American oak first quality for all floors excepting janitor's quarters and second floor offices, which have plain cut red oak. The sleepers consist of three by four-inch chestnut pieces placed twelve inches on centres



TYPICAL SECTION, UPPER PART.

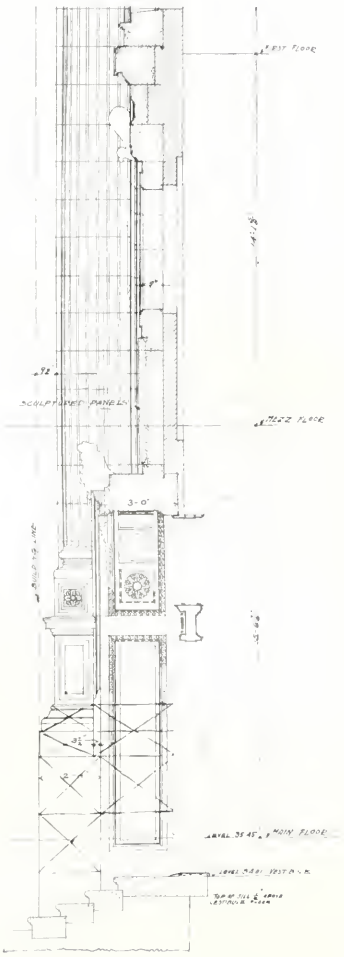


TYPICAL SECTION, LOWER PART.

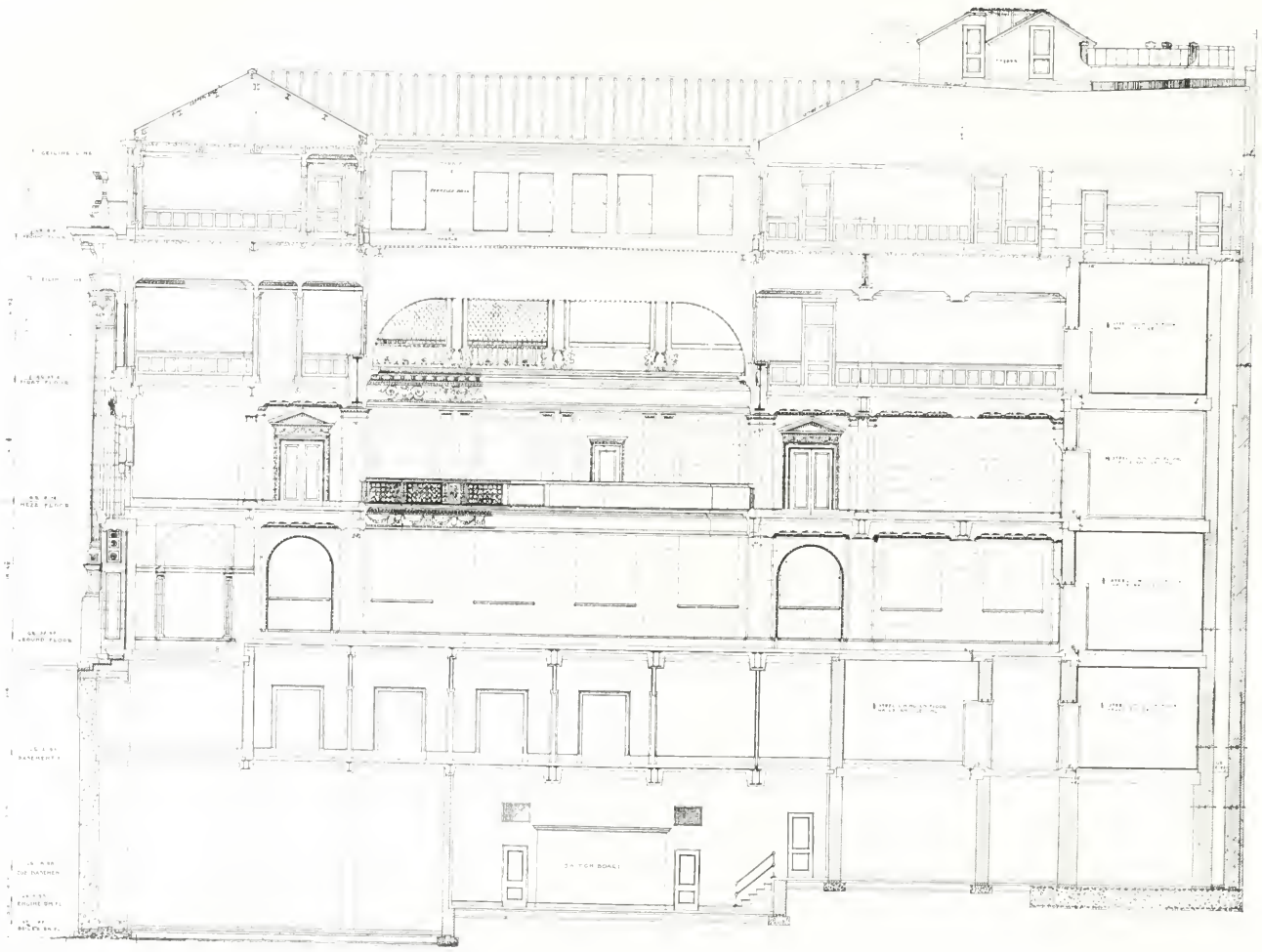
EXTERIOR DETAILS.

THE BANK OF TORONTO, TORONTO.

CARRÈRE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.



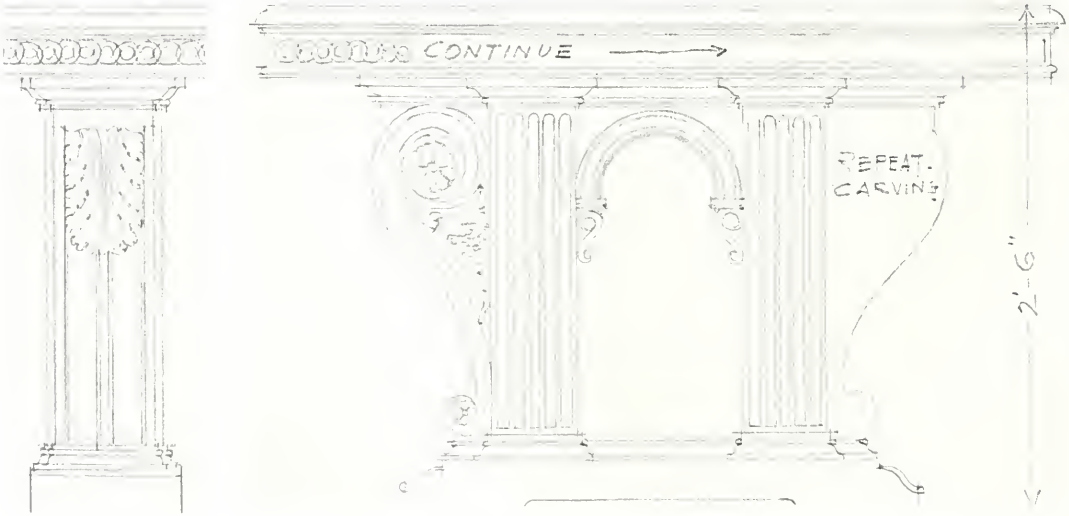
SECTION, BAY STREET ENTRANCE.



LONGITUDINAL SECTION.

BANK OF TORONTO, TORONTO.

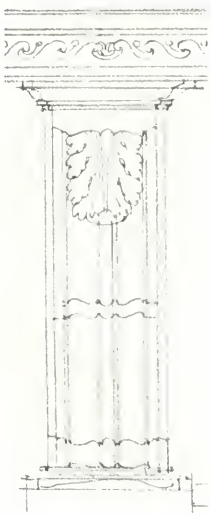
CARRÈRE & HASTINGS AND
EUSTACE G. BIRD, ARCHITECTS.

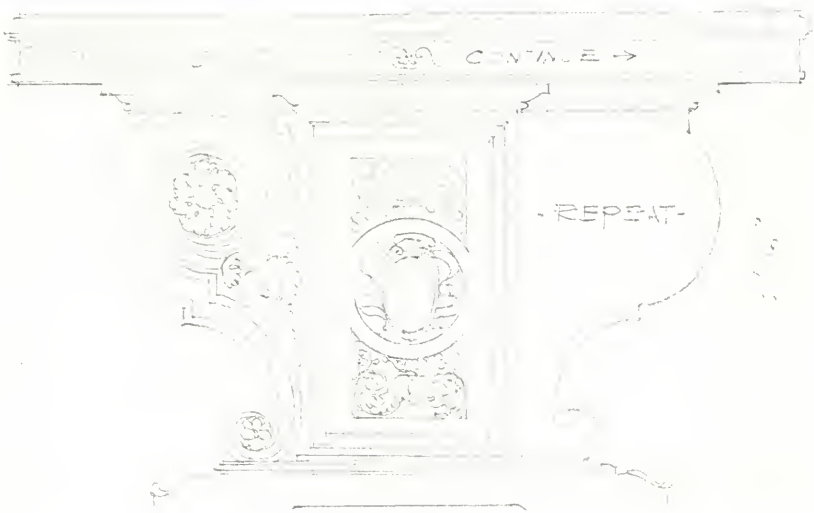


THE WEEKES BOARD ROOM AND DETAIL OF TABLE.

THE BANK OF TORONTO, TORONTO.

CHADWICK & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.





THE ASSEMBLY ROOM AND DETAIL OF TABLE.

THE BANK OF TORONTO, TORONTO

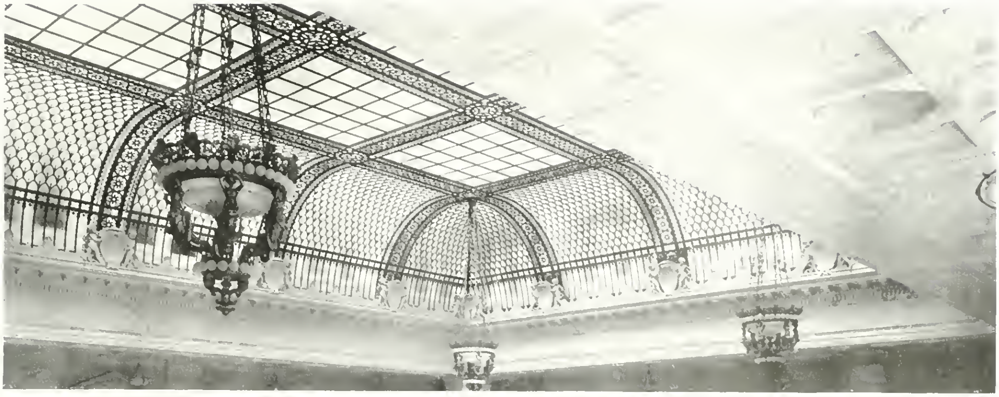
CARRÈRE & HASTINGS AND DARLING & PEARCE, BIRD ARCHITECT

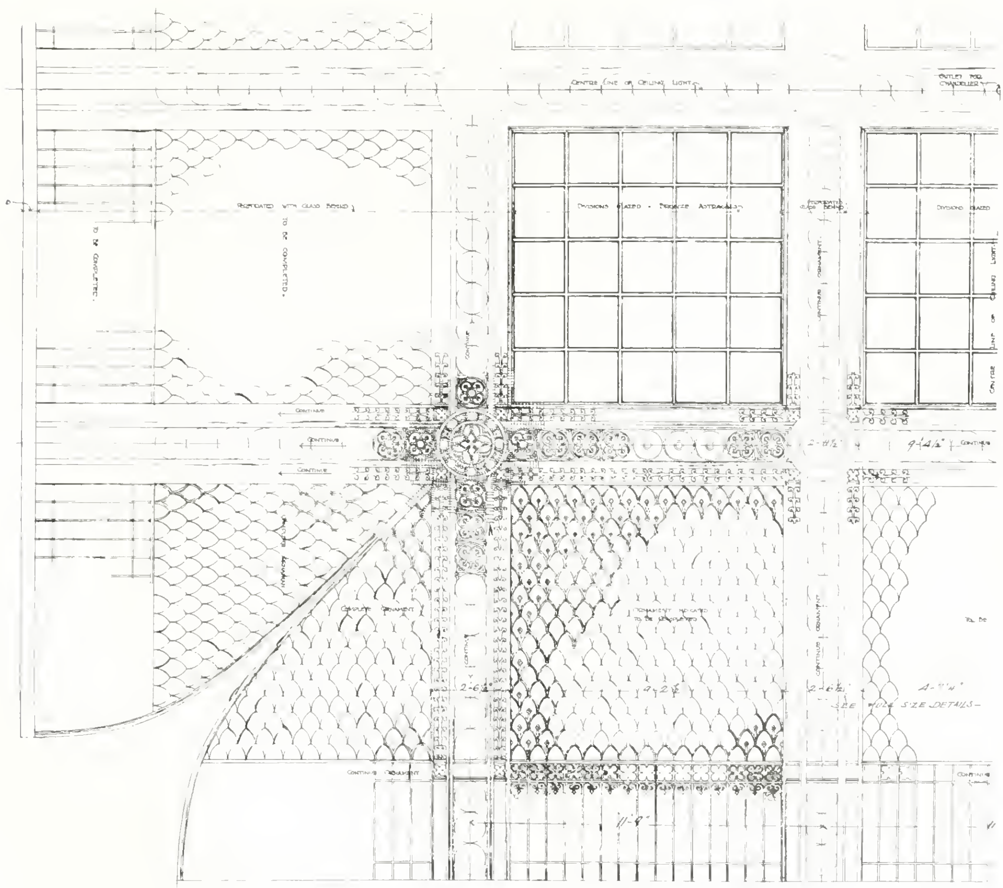
MAIN BANKING ROOM.

MAIN STAIRWAY.

THE BANK OF TORONTO, TORONTO.

CARRÈRE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS





DETAILS OF BRONZE CEILING IN MAIN BANKING ROOM

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.

BRONZE DETAIL IN MEZZANINE BALUSTRADE

properly framed about all openings and filled in with cinder concrete.

The exterior frames, excepting those of bronze and iron, are covered with heavy sheet copper. All door frames in the basement, sub-basement and leading to the roof, are kalameined with sixteen-ounce copper. Interior wood frames are one and one-quarter inch thick, the oak frames having a veneering of one-quarter inch. Doors leading to toilets are one and one-eighth inch thick, four feet six inches high with solid panels, and set ten inches above the floor. The doors to electric panel board and telephone junction boxes are one and one-quarter inches thick, paneled with a removable plate glass panel on back so arranged that a schedule of switches can be placed behind same.

A general wood base twelve inches high occurs throughout the building, arranged for running wires behind a movable member. Chair rails one and one-half inch by four inches are provided for all walls above basement, together with double picture moulding.

The manager's department on the ground floor, the assembly room and visitors' room, have seven-eighths parquet floor borders and fields of herringbone pattern. The general manager's, president's, vice-president's, weekly board, conference and directors' lunch rooms have seven-eighths by two-inch quarter-cut white oak strips with parquet borders two feet wide. All other floors throughout the building have white American oak strip flooring with oak strip borders and herrinbone mitering at the angles, excepting the top floor offices, which are finished with plain oak strips without borders, and the janitor's department, of Georgia pine.

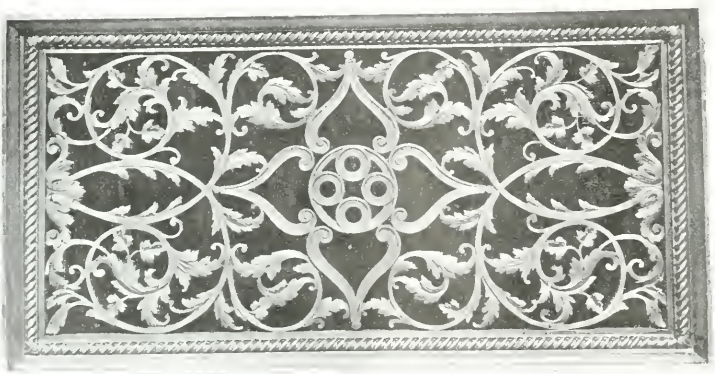
The space behind the counters on the ground floor and at the back of the mezzanine gallery are finished with nonpareil cork tiling one-half inch thick and cut in blocks of twelve inches square securely laid on a concrete bedding.

Suspended ceilings are constructed of one and one-half by one and one-half by three-sixteenths steel angles twelve inches on centres suspended from steel beams and concrete by hangers placed three feet apart. The general furring has one and one-eighth by three-sixteenths plate iron bars twelve inches on centres with cross bracing of steel angles.

All oak wood before being finished has been fumed, filled, stained, shellaced, rubbed down, varnished, re-rubbed with pumice stone and oil. Oak floors have been filled, finished with two coats, rubbed down, waxed and polished.

All glass is one-quarter inch British plate glass highly polished; glass for tank and fan houses, also facing the court yard, is wire mesh; glass in office doors and transoms is ground with marginal lines.

The standing marble for ashlar work is seven-eighths inch thick; floor marble one and one-eighth inch; slab work for wall linings seven-eighths inch; lavatory stalls and partitions one and one-quarter inch.



BRONZE DETAIL IN MEZZANINE BALUSTRADE

Terrazzo work consists of Siena, Numidian and white Italian marbles laid in cement mortar and rubbed to a glossy surface. The tile is set in Portland cement, grouted and pointed in Keene cement, cleaned and polished.

Ornamental bronze is used for the cove ceiling light over the public banking room, elevator grilles, main stairs and public stairs at Bay street entrance, balustrade around mezzanine well, entrance

door grilles and vestibule doors, basement window frames, fascias, and sash on first three floors. The bronze is composed of ninety per cent. copper and ten per cent. zinc.

The cove ceiling light is of solid cast bronze supported so as to allow the space between it and the roof free of material. In the main ribs the glass sheets are curved and designed to permit of a smooth surface to the back of the dome. At the back and around the edges is a sixteen ounce gutter reinforced with iron rods.

The window filling in partitions between the mezzanine gallery and the departments is of cast and wrought bronze. The frames, sills, transoms and mullions are of drawn bronze; the pilasters and ornamentation of cast bronze chased. The doors are of marble frames and jambs with bronze and British polished plate glass.

The four bronze entrance door grills, three on King street and one on Bay street, are of cast bronze, double faced, including the frames, transom bars and transom. The doors have corrugated cast polished bronze saddles reinforced with ribs and swing on steel pivots. Directly inside are light single action glass doors of gauge drawn bronze with reinforced brazed joints. The vestibule doors are of number

MARBLE FRIEZE IN MEZZANINE BALUSTRADE.

ten gauge bronze plate and cast bronze frames and edges with cast moulded panels around polished plate glass.

Basement windows on King and Bay streets have cast bronze window frames, including sills, with moulded hanging stiles and bed moulding; drawn bronze sash rabetted meeting stiles reinforced.

Ornamental iron has been used for the guards to court windows and doors; grilles to openings leading to platform in engine room, window frames, stairs; ladders to roof; fascias at all floors in elevator shafts. All wrought iron has an ultimate tensile strength of fifty thousand pounds per square inch, and where ornamental is of heavy bars hand forged.

The guards to court windows and court doors are of one by one inch wrought iron, spaced four inches apart, let four inches into the masonry.

The iron windows are of wrought iron with one-quarter inch polished plate glass, and are complete with bronze hinges and fastenings.

Janitor's stairs run from the basement to top floor, and built to sustain a live load of one hundred pounds to the square foot in addition to the materials themselves. They have wrought iron strings, cast iron risers and one-eighth inch plate treads for marble support.

The iron doors at the entrance to court yard area are of three-sixteenths inch plate reinforced on all

MARBLE CAPITAL, MAIN ENTRANCE.

edges with cross bars spaced three inches on centres. The ash hoist has double doors of one-quarter inch galvanized iron plate hung on brass hinges and safety guards, chain fastenings and device for operating the doors.

The gratings under the elevator shafts are of three-sixteenths by one and one-quarter inch bars spaced one and one-quarter inch on centres, bolted together at both ends. Corrugated steel fascias are provided at all floors in the elevator shafts, the metal inserted under the nosing of the saddles and finished at the ceiling level.

All exterior walls below grade are waterproofed in four layers except the pit and trench walls, which have six layers applied to outside surface of wall and protected by cement mortar one inch thick.

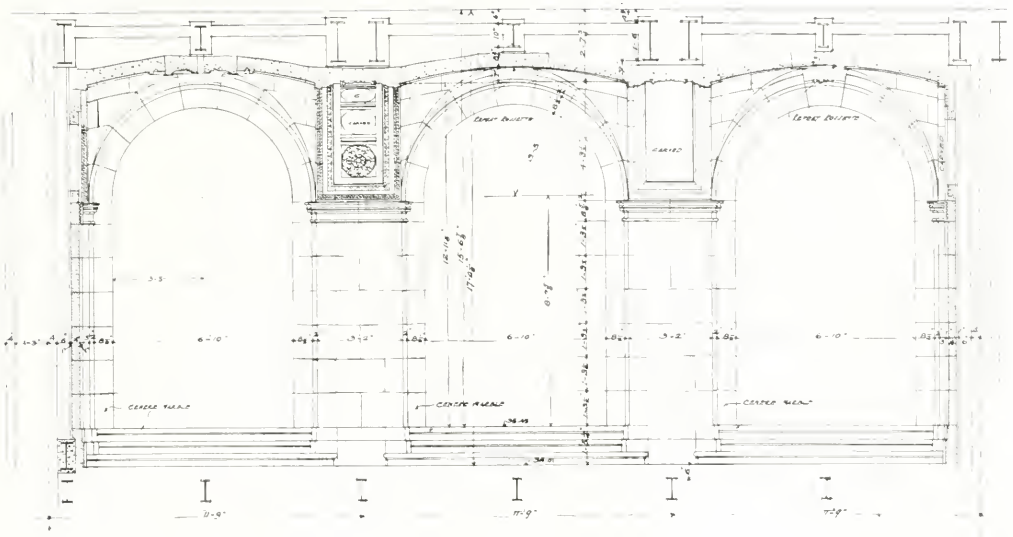
The building stands as an example of the best fireproof type, having steel frame floors of reinforced concrete, terra cotta partitions and copper roof laid on concrete supported by steel beams. The structure as it stands cost approximately $1,350,000.

SOFFIT UNDER CORNER OF THE MEZZANINE BALCONY.

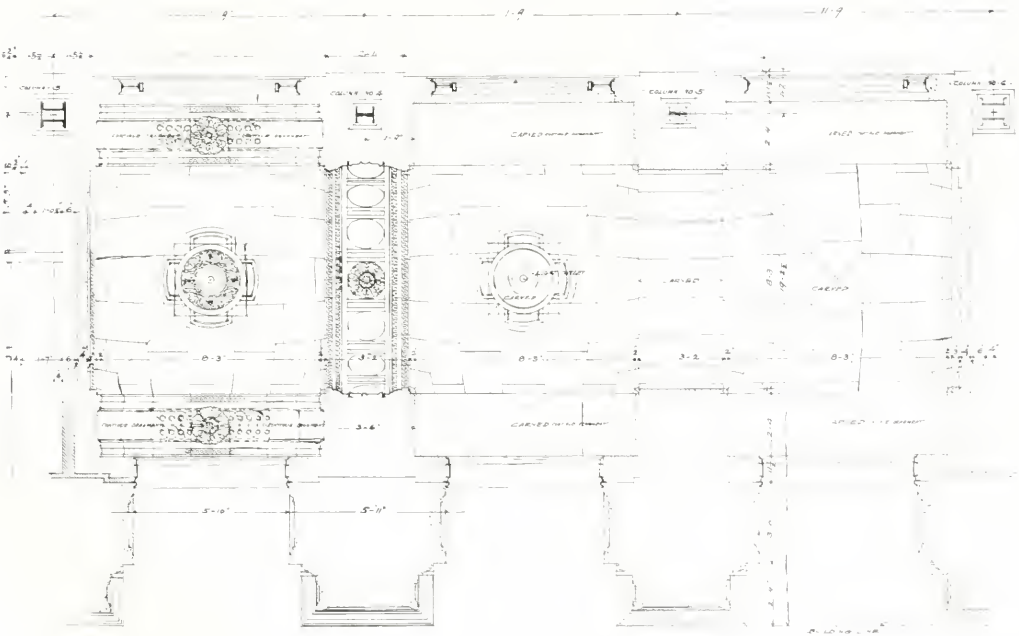
TWO INTERIOR VIEWS
ENTRANCE VESTIBULE

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND
EUSTACE G. BIRD, ARCHITECTS.



ELEVATION LOOKING TOWARDS BANKING ROOM

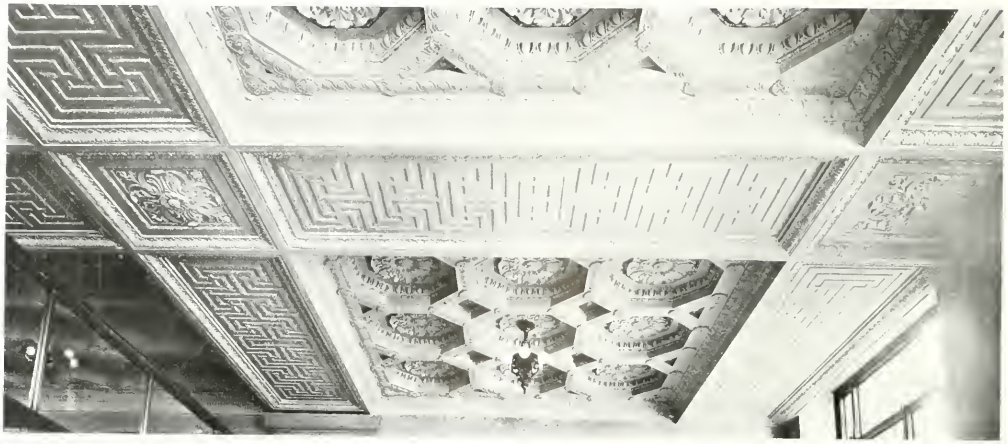


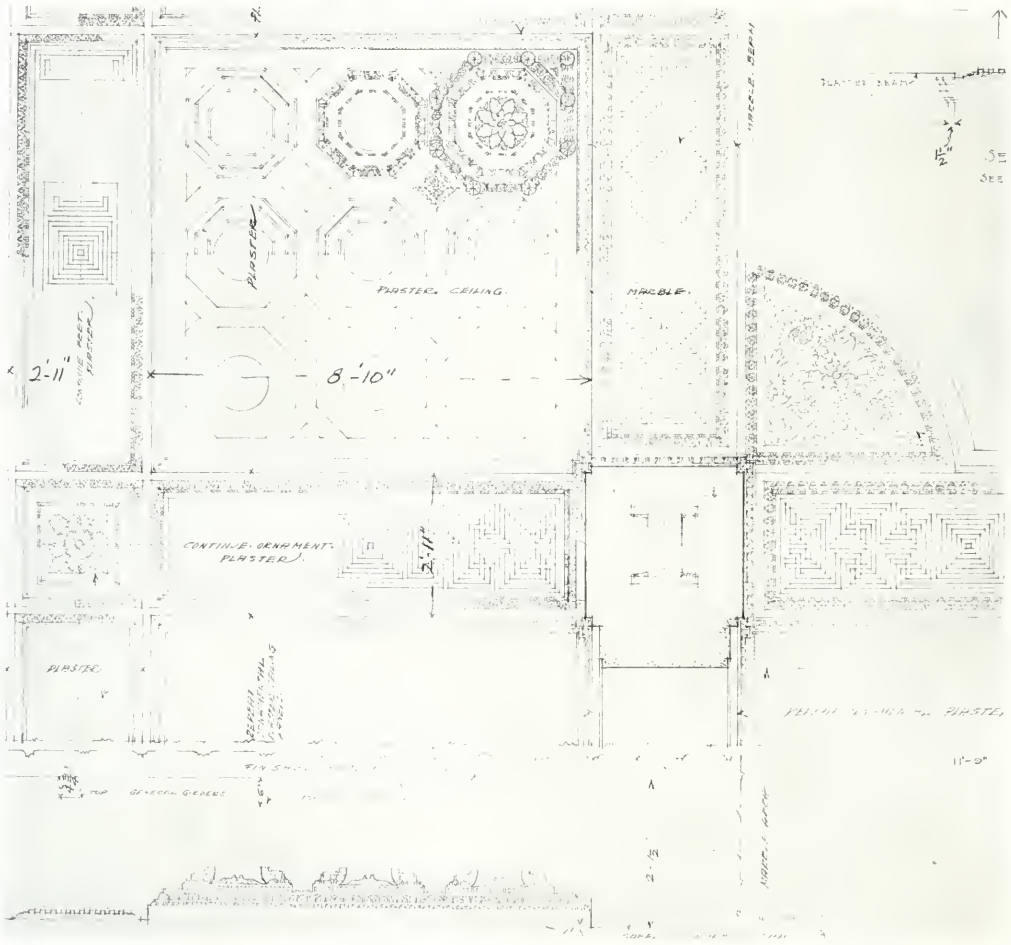
PLAN OF CEILING.

DETAILS OF ENTRANCE VESTIBULE.

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.

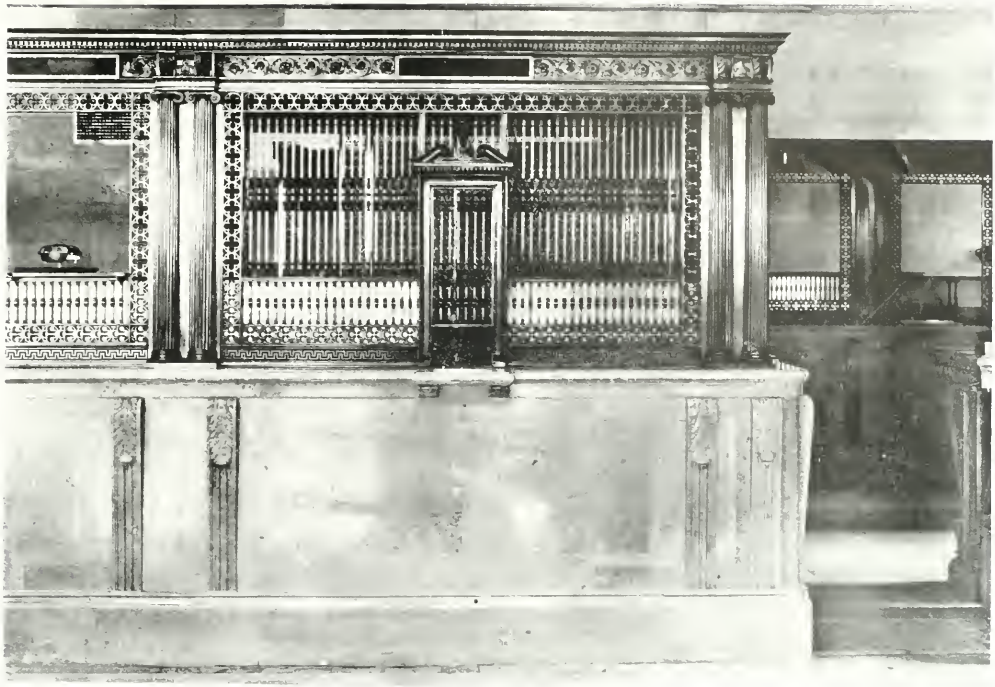




CEILING OF MEZZANINE FLOOR, MAIN BANKING ROOM.

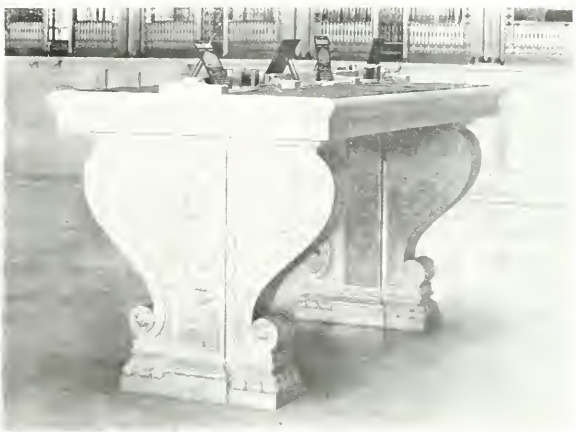
THE BANK OF TORONTO, TORONTO.

CARRÈRE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.



SCREEN
WRITING TABLE
AND
SEAT.

THE BANK OF
TORONTO,
TORONTO, ONT.



CARRERE
&
HASTINGS
AND
EUSTACE G. BIRD,
ARCHITECTS.

ASSEMBLY ROOM. PRESIDENT'S ROOM. MANAGER'S ROOM.

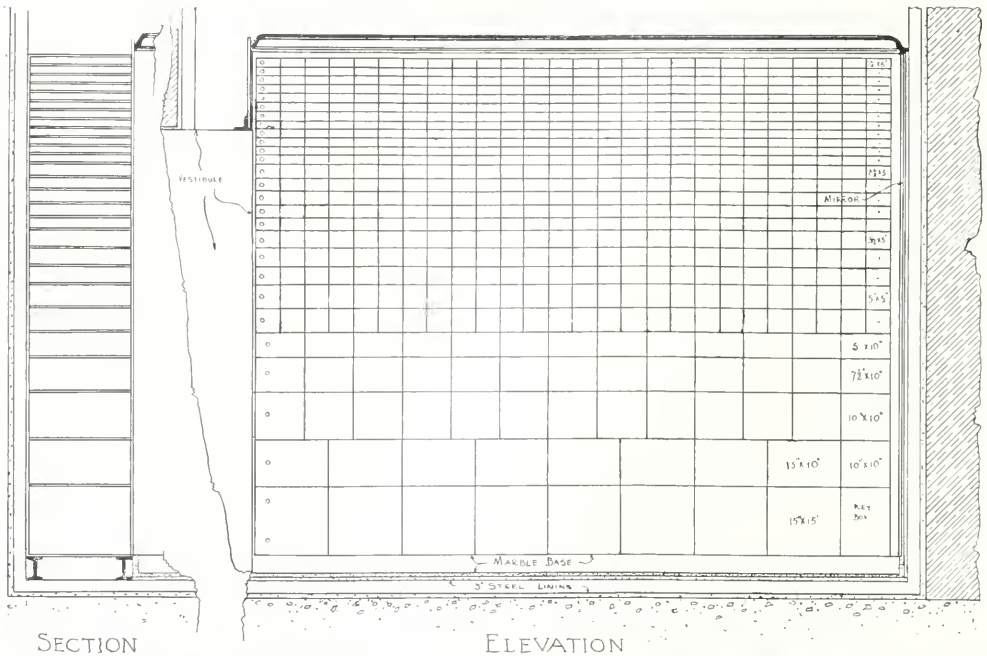
THE BANK OF TORONTO, TORONTO.

CARRÈRE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS

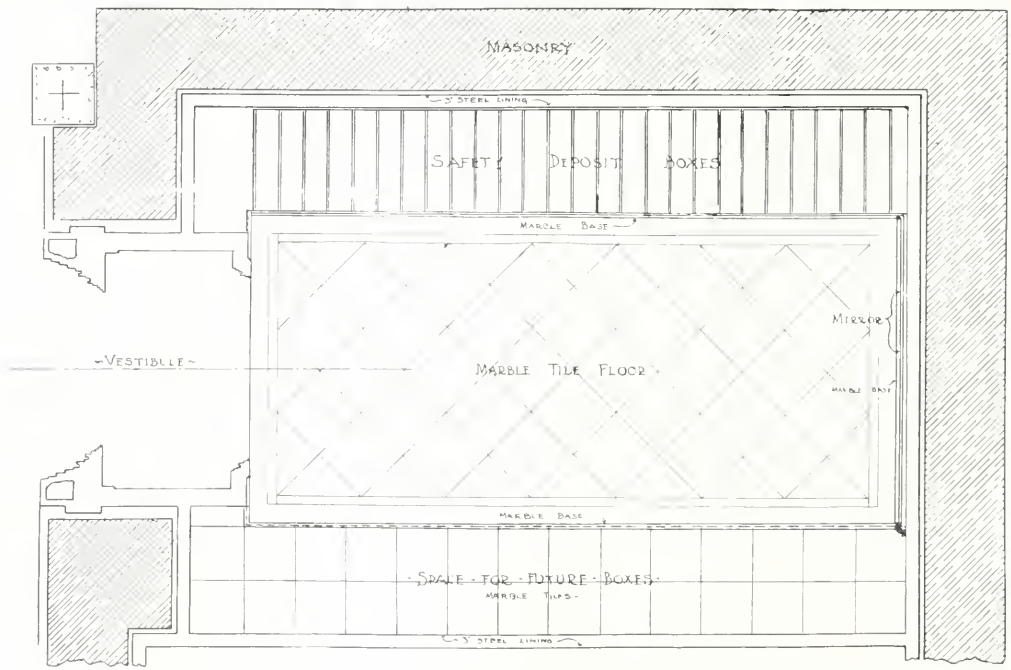
KING STREET FACADE.

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS



SECTION ELEVATION



PLAN

SAFETY DEPOSIT BOXES.

THE BANK OF TORONTO, TORONTO.

DARLING & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.

Vaults, Bank of Toronto

THE VAULTS of the bank are located in the basement, ground, mezzanine and first floors. All foundation work for the vaults is independent of the structural supports of the building, and consists of a six-foot bedding of concrete reinforced by cross layers of one and three-eighths bars six inches on centre. The aggregate weight of the vaults on each floor is four hundred tons.

The accompanying description of the manager's vault answers also for the safety deposit vault and the securities and cash vault. All sides of the vault, the tops and bottoms, are built up as follows: Outside layer of low steel; two layers of five-ply welded chrome steel, and a layer of low steel, each three-quarters of an inch thick—making three inches of metal. The exterior corners of the vault lining are formed with six by six by one and one-quarter inch steel angles forged solid into three members of crow's foot sections. Panels formed by the angles are filled with plates of low steel three-quarters inch thick. The four layers of steel are secured to each other by welded chrome steel bolts spaced twelve inches on centre.

The vestibule of the manager's vault shown below has outside single door and double vestibule doors, with clear walkway of two feet ten inches wide, three feet in depth, and six feet ten inches in height. The face of the vestibule is constructed of single solid cast low steel frame one and one-half inches thick, having returns at the sides, top and bottom. Stiffening ribs are cast across the pockets one inch in thickness. Lugs are cast on stepping section of the frame to receive the fastenings from the laminated frame. Heavy filets are cast on all inside corners and over the entire outside face, jamb stepping and all joints abutting the laminated frame. Total thickness of steel casting is seven and one-half inches over all.

The front frame of the laminated portion of the vestibule is formed of the following layers, which make a total thickness of thirteen and one-half inches: One and one-quarter inch chrome steel forged solid; chrome steel one and one-quarter inch; low steel one inch; five-ply welded chrome steel one and one-half inch; low steel angles one inch; low steel one and one-quarter inch.

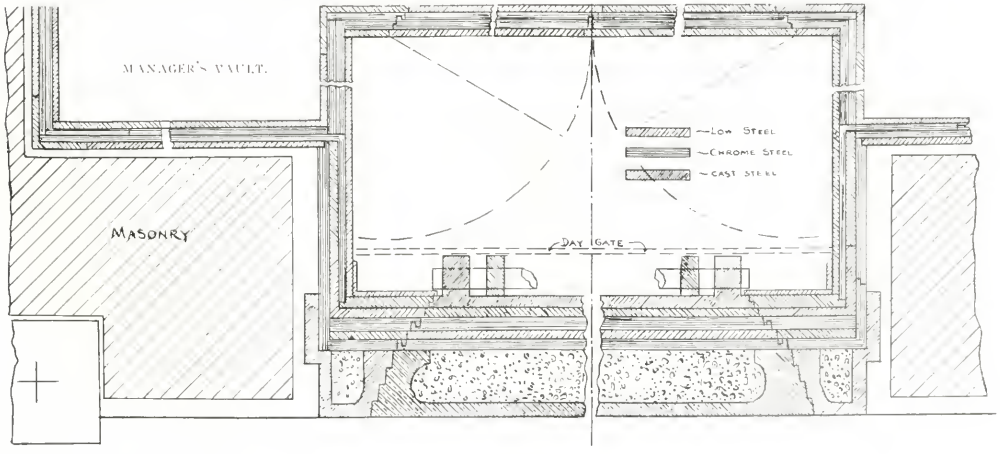
The inside frame of the vestibule is three and one-half inches, constructed with low steel one inch thick; five-ply chrome steel angles one inch; five-ply welded chrome steel three-quarters inch; low steel angles three-quarters inch.

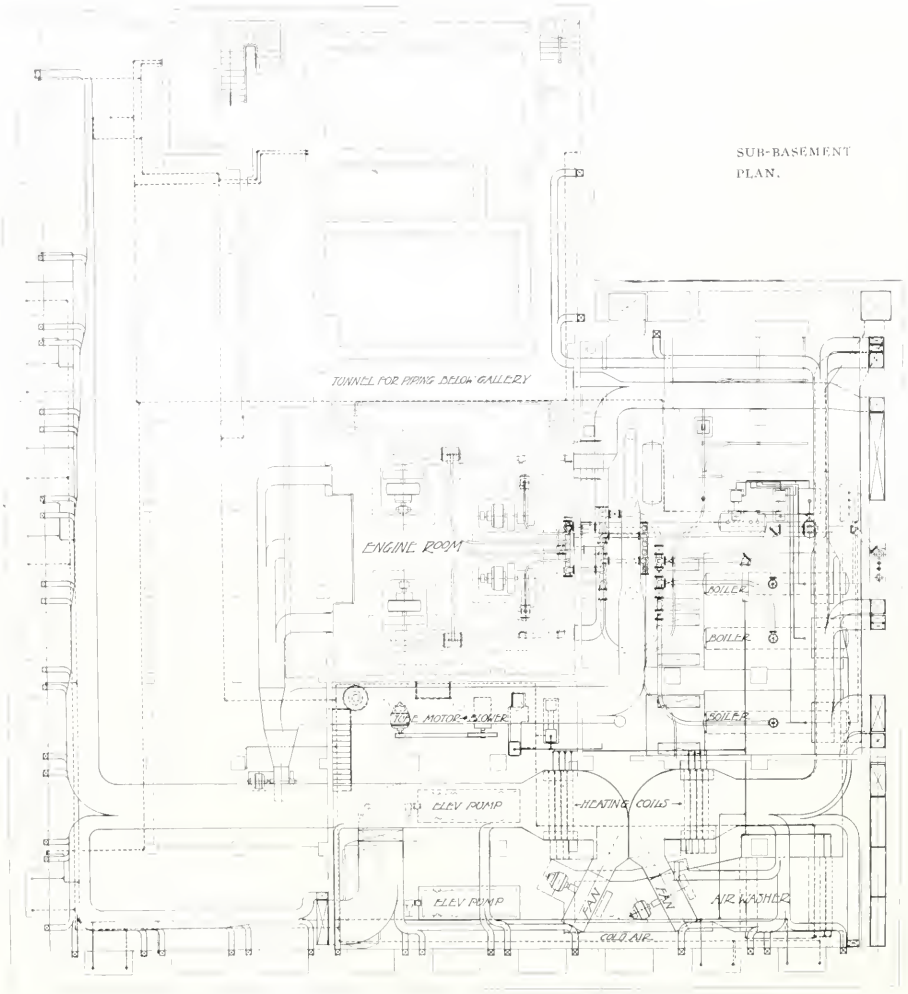
The body of the vestibule is built up of steel with a total thickness of four inches: outside layer five-ply welded chrome steel one and one-quarter inch thick; low steel one inch; five ply welded chrome steel one inch; low steel three-quarters inch.

The outside vestibule door of the manager's vault is thirteen and one-half inches thick. In addition to one and one-half inch facing of low steel with return flanges of six inches filled in with concrete containing two rows of hardened chrome steel laminated jail rods four inches on centres—one horizontal and one vertical—the door consists of cast low steel one and one-half inch; five-ply chrome steel one and one-quarter inch; one inch of low steel; five-ply chrome steel one and one-half inch; one inch of low steel; steel casting one and one-quarter inch.

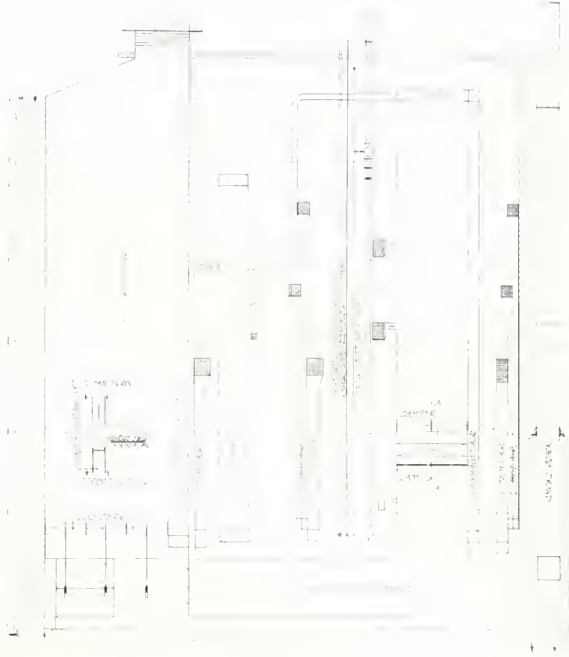
The floor of the manager's vault consists of white veined Italian marble tiling, ground with hard cement and set in concrete.

In the safety deposit vault there are six hundred and twenty-nine boxes, ranging from fifteen inches in height, fifteen inches in width, twenty-six inches in depth to one and one-half inch in height and five inches in width. All boxes are built of one-quarter inch low steel plates, the interior finished dead black with doors of quadruple nickel plated and highly polished. The entire end of the vault is covered with a plate glass mirror set in a nickel plated frame. There is also a verde antique marble base.





SUB-BASEMENT PLAN.

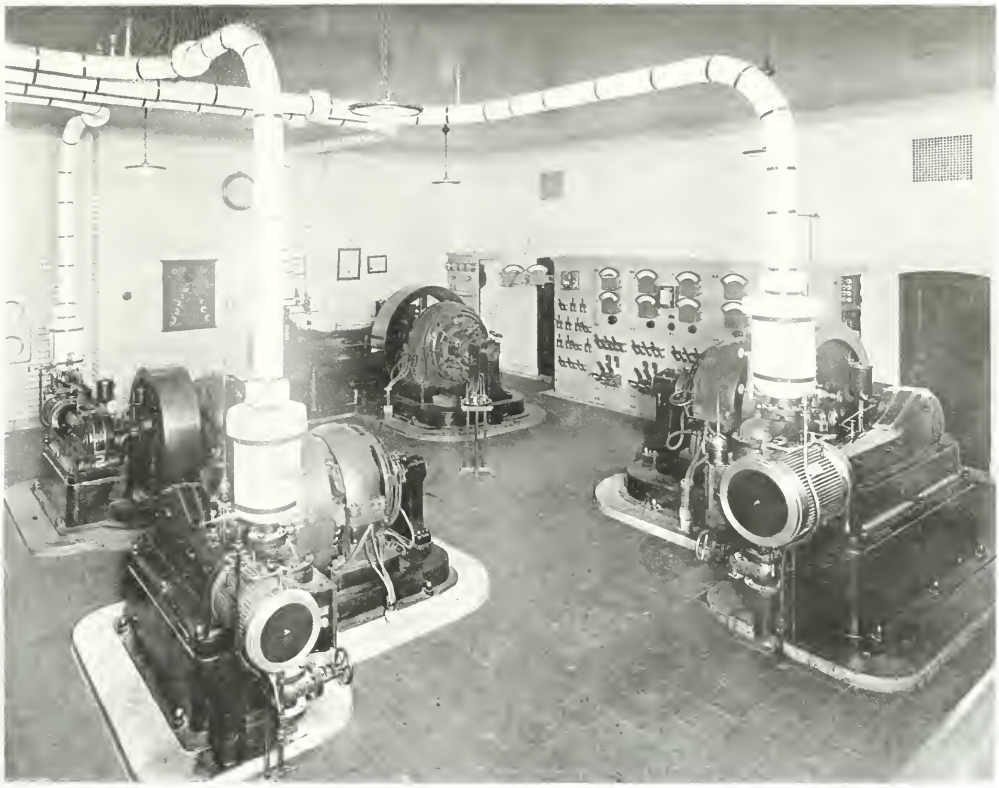


ELEVATION OF EAST WALL.

HEATING AND VENTILATION.

THE BANK OF TORONTO, TORONTO.

CARRERE & HASTINGS AND EUSTACE G. BIRD, ARCHITECTS.



Heating and Ventilation, Bank of Toronto

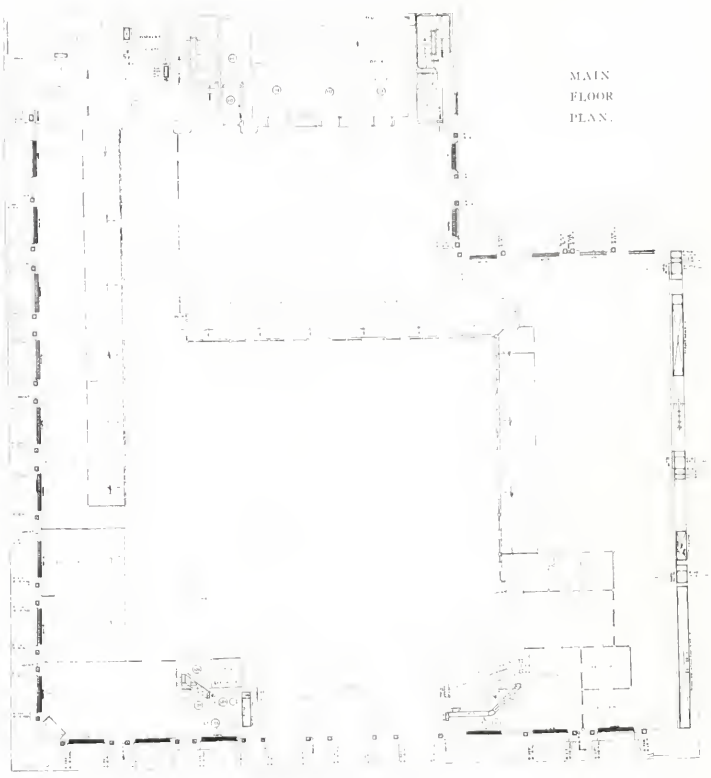
M. A. BOYD

ONE of the cleanliest and most attractive parts of the Bank of Toronto is the engine room, located in the sub-basement. The walls are of white enamel brick and the floor of red tile with a floor space of 1,800 square feet. The room contains four steam-electric units consisting of two 25 k.w. and two 75 k.w. direct current generators, directly connected to 10 x 12 and 12 x 14 inch side crank engines—the small units at 300 r.p.m. and the larger ones at 275 r.p.m. Steam pressure at the throttle valves approximates 120 lbs., the steam being supplied to the engines from a distributing header on west wall of engine room, pipes being made up with long radius quarter bends and joints of the vanstone type with copper gaskets. The piping is hung from the ceiling beams and braced to the walls to prevent vibration. Vertical separators are used to ensure dry steam.

With the idea of preventing all engine vibration from being communicated to the building, special care was exercised in the construction of the engine foundations. After the necessary excavation was completed, floor prepared, form work erected and waterproofing installed, a six inch bed of dry sand was laid, forming a cushion for the foundations to rest upon. Upon the sand, for the purpose of keeping it dry, was placed several layers of tar paper. The concrete foundations were then poured, and a space of four inches maintained free between the retaining walls and the foundations proper, which space was also filled with dry sand, and the opening between the floor slab and foundation covered by the marble base around the engines.

Exhaust piping in connection with the engines runs in large trenches under the floor, which in turn are covered with tile and finished to match the rest of the floor, thus doing away with the dirty iron plates usually used. The trenches can be entered through openings in the engine room floor, or from the boiler room. Openings in engine room have covers made of tile set in iron frames, these covers can be removed if necessary by means of an iron ring set in the floor.

The exhaust steam after passing through an oil separator enters the feed water heater or passes into a ten inch vertical exhaust main which runs to the roof. Just below the second floor level a five inch connection is taken off the main for the direct heating system. A back pressure valve located in the main



just above the five inch connection controls the pressure on the heating system and also the back pressure on the engines.

In the boiler room next to the engine room there are three 135 h.p. water tube boilers, each being equipped with a Dutch oven furnace specially designed for the burning of soft coal without smoke. Each furnace is fitted with two magazine hoppers into which coal is dumped from a bucket travelling on an overhead I beam track; bucket is raised and lowered by an electric hoist operated from the floor.

Steam is taken from each of the boilers through a six inch connection feeding into an eight inch loop main made up of quarter bends with vanstone joints, and extra heavy flanged valves and fittings. The loop main feeds a double ten inch header from which two six inch connections feed the auxiliary header. From the auxiliary header is taken the steam connections for elevator, boiler feed, vacuum pumps, etc.

The high pressure piping has been laid out so that one half can be shut off for repairs, while the other half is in use and supplying the requisite amount of steam for running the plant.

From the boiler room one enters the pump room, where are located the air washer, main supply fans, vacuum heating pumps, tube dispatch blower, vacuum cleaner, elevator pumps, and stacks for indirect steam heaters.

The heating equipment of the building consists of a system of direct steam radiators and coils, supplying heat to the second floor, toilet and locker rooms on the first floor and mezzanine floors, and to the basement. The greater portion of the building is heated by means of a hot blast system which also supplies fresh air for ventilation.

To accommodate the large fresh air supply, exhaust flues and the distributing systems in connection with the mechanical equipments of the building, a space two feet wide extending from top to bottom and across the entire width of the west wall, was partitioned off with tile walls. A space four feet deep was also allowed between the second floor and ceiling of the first floor for the concealment of ducts supplying air to the main banking room, pipes connecting the direct radiators on second floor, for the horizontal runs of the pneumatic tube despatch system, and piping in connection with the temperature control system. Horizontal runs of ducts and piping under ground floor are concealed by a hung ceiling in the basement.

Air for ventilation and heating is taken in through a louvered inlet built on the northwest corner of the roof, which inlet is connected to a vertical brick flue twenty-five feet long and two feet wide running straight down to the sub-basement, at the base of which is a chamber built of black iron.

The air after leaving this chamber passes through a bank of Vento stacks two rows high and two rows deep, while the heater raises the air from the outside temperature to about 60 degrees in cold weather. After leaving the preheater the air enters and passes through the sprays of the washer. The spray nozzles are so formed that they atomize the water and produce a cloud of finely divided mist-like spray.

From the spray chamber the air and contained moisture enters the eliminated plates, which take out of the air all free moisture, and with this moisture almost the whole of the dirt and gases brought in with the so-called fresh air. The cleaned and moistened air is then free of the washer and is drawn through a single row of Vento re-heaters into the suction of the two main fans. As seen on the plan, these fans are set on piers, the air for the east fan passing under the fan on the west. Both fans discharge into a plenum chamber, in the east and west outlets of which are placed the main re-heaters which raise the air to the temperature required for heating.

These heaters are arranged one row high and four rows deep.

From these heaters a system of ducts is run that carries air to the various rooms to be heated. From the mains in the sub-basement branches are taken off and run to the rooms above in ten by ten inch chases left in the building walls. At the base of these vertical branches is a damper operated by a diaphragm motor controlled by a thermostat in the room above. The damper shuts off the hot air should the temperature of the room rise above the point desired or to that at which the thermostat is set. The temperature of the air just beyond the re-heaters is controlled by means of a by-pass under the vent stacks and by thermostatic control of the steam to the heaters. The thermostats are so arranged that while a constant volume of air is being delivered to the rooms above the rooms are not over-heated. The thermostats in the rooms are mainly used to throttle the hot air supply to the more sheltered parts of the building.

The general scheme of the supply system is the delivery of large volumes of air to the main banking room at the first floor level and also the ground floor, through registers in the sills of exterior windows in the mezzanine and the first floor offices, also through registers placed in the window sills.

A system of ducts and fans is installed for removing the vitiated air from the building. The toilet and locker rooms throughout the building are connected by a separate main to a fan on the roof.

The large main ducts of the exhaust system are located under the ground floor, and follow the lines of the banking screen. Short vertical ducts connect the register faces of large size in the banking room screen to the horizontal exhaust mains, which are themselves connected to a vertical sheet metal flue twelve by two feet built in the chase on the west wall. This flue is run to the main fan or roof and is also connected by means of a large horizontal duct at the sub-basement level to the fresh air chamber of the supply system. By operating double dampers in the main exhaust flue, from a switch in the pump room, air may be re-circulated throughout the building. During the times when heat is required without ventilation and on very cold days, there is some fuel economy in re-circulation. A separate fan is used for supplying air to the engine, boiler and pump rooms in the sub-basement.

Fresh air is introduced into the engine room through registers in the wall above the switchboard; a supply outlet is also provided at the back of the board and tends to keep the fuses cool. The heated air is withdrawn from this room through registers located in the wall just below the ceiling and opposite the switchboard, which registers are connected to a flue running to the fan on the roof.

Fresh air for the boiler and pump rooms is discharged through vertical spouts connected to a main air duct hung from the ceiling slab. These spouts are fitted with adjustable nozzles. Air is withdrawn from these rooms through the furnace and smoke stack.

This method of ventilating the boiler room appears to be the most logical one, and gives entire satisfaction, affording an ample supply of air for ventilating purposes and ensures a positive draft for the furnaces at all times. Were a separate exhaust fan to be provided, a possibility would always exist that the supply fan might be shut down, in which case there would be a strong tendency to reverse the draft in the stack and draw all the furnace gases out into the boiler room.

The condensation from the direct radiation of the building is returned to the boilers by a vacuum system. Special pumps draw all air and condensation from these radiators, discharging into an air separating tank and feed water heater. The water is pumped directly into the boilers from this heater.

SECOND FLOOR PLAN.

CONSTRUCTION

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

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CONTRIBUTIONS—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and duly returned

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Vol. 6 Toronto, September, 1913 No. 9

CURRENT TOPICS

J. CARLISLE PENNINGTON, of Windsor, Ontario, has removed his offices from the Boug building to the fourth floor of the new Labelle block.

* * *

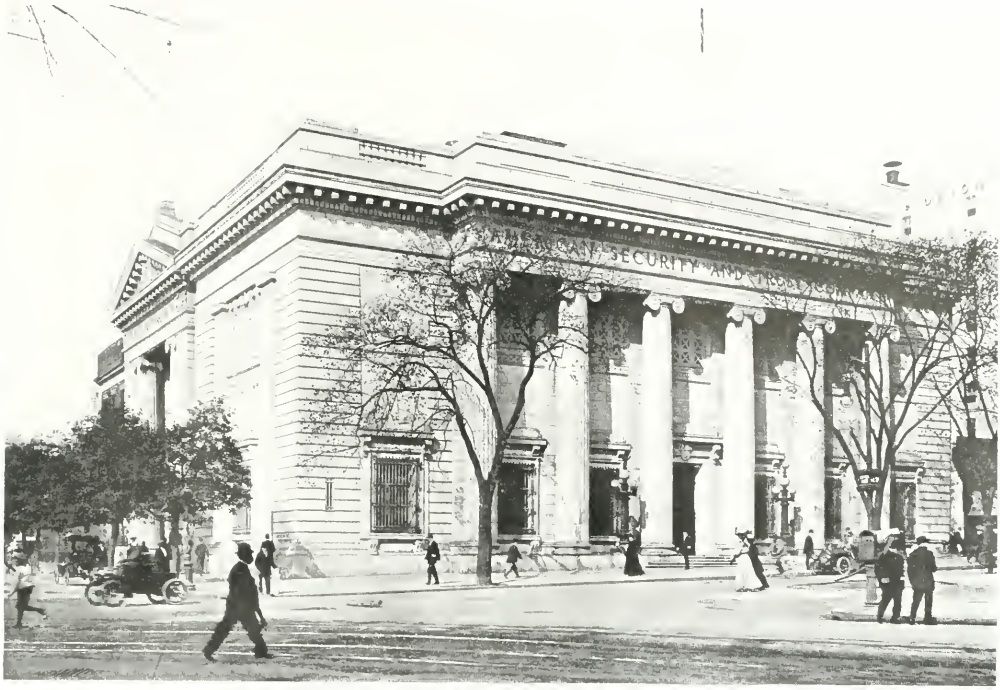
IN A RECENT description of how German towns manage their business affairs, Count J. H. von Bernstorff says in regard to planning new districts: "In a modern German town new streets are not the creation of private enterprise. It is not the owner of the land who makes the plans for a new street, according to his own interest, but the town council plans the streets in accordance with the interest and needs of the whole population." Practical experience of the rule in Germany shows that land owners find it to their advantage to co-operate with the city authorities in the matter of town planning. If they do not agree the municipalities possess the right of expropriation, which, as matter of fact, very rarely requires to be exercised. Moreover, German cities and towns have benefited greatly by the power of land purchase. Count Bernstorff instances the city of Frankfort, which, within the last ten years, has expended more than $50,000,000 in the purchase of land. German municipalities are also able to impose special rates on property that has been increased in value by public works or by town extension.

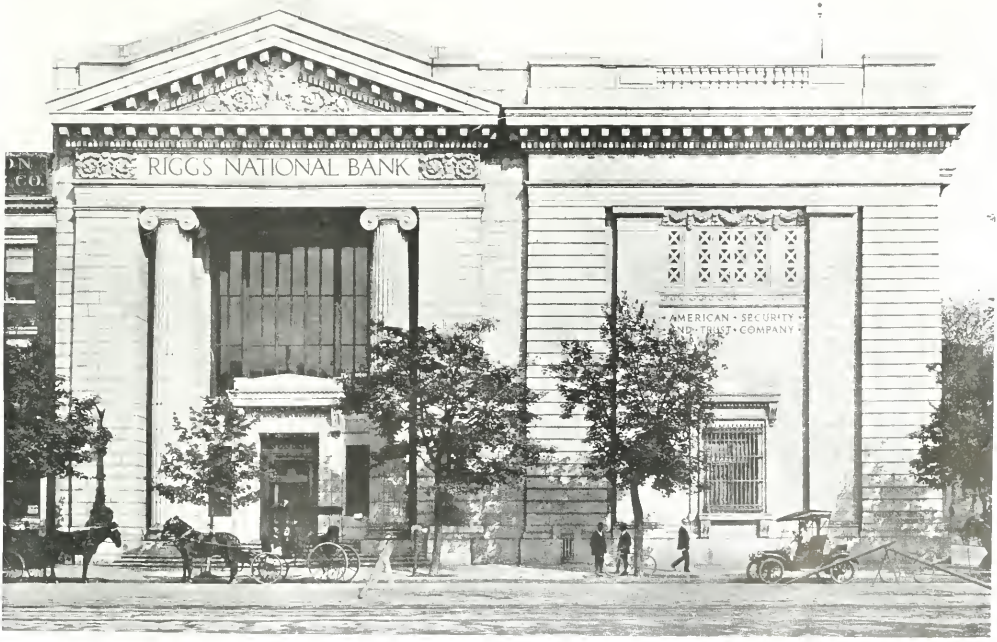
* * *

A STRUCTURE unique among commercial lofts is to be erected at the northwest corner of Tenth avenue and Thirty-sixth street, New York city, by the Hill Publishing Company. The architects have provided a plan, probably not duplicated in that city or elsewhere, the windowless house being adopted because it was deemed that windows are unsanitary, as they endanger life through drafts, are noisy, and permit dust to sift into the lofts. The entire front of the building and its interior sides are to be entirely of glass. In fact, 78 per cent. of the walls will be of glass. It has been estimated that the structure will cost approximately $600,000, the glass alone costing something like $78,000. On the interior the glass will be a specially polished plate, and for the exterior surface will be a specially treated plate, that will not transmit heat waves into the interior, but throw them off like a stone. The entire building will be supplied with an adequate quantity of washed and tempered air from a ventilating plant. A duplicate system will also exhaust vitiating air and discharge the same above the roof. The system will be used to cool the air in summer and warm it in winter.

* * *

PUBLIC SPIRIT should be aroused in New York in behalf of St. John's, in Varick street, the demolition of which is now threatened. Some time ago the Corporation of Trinity Church decided that this old chapel of their parish had outlived its usefulness, but because of the public clamor the building was preserved and services are still held in it, though its share of the parish work has been transferred to St. Luke's, in Hudson street. The building has now been condemned for the widening of Varick street, under which the new Seventh avenue subway will be built. This much-needed improvement threatens to cut off the imposing portico and tower of the old church, thus destroying it entirely. Various plans to save the church have been proposed, and the simplest and best of them is to cut a narrow street on either side of it, connecting Varick street with St. John's lane and York street, back of the church. This would isolate the building and leave it as a permanent monument of old New York on an island of its own in the sea of traffic. London's experience with St. Clement Danes indicates that the traffic will not be discommoded by this plan. The church is nearly 100 years old, and is a fine example of church architecture.





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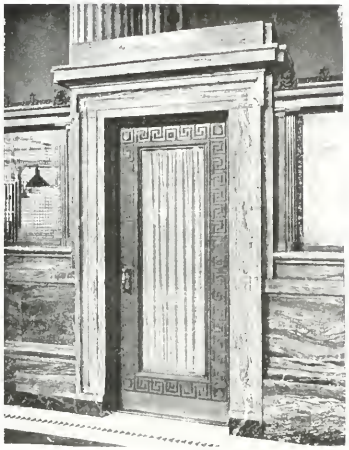
TWO BANKS AT WASHINGTON, D.C.

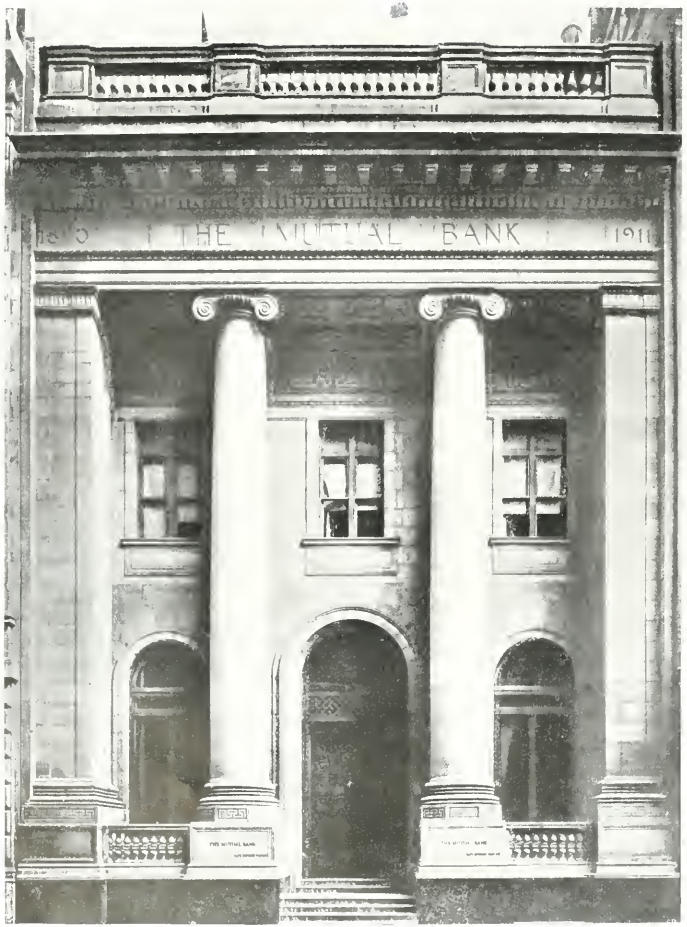
From the



YORK & SAWYER,
ARCHITECTS.

FOUR BRONZE LAMP STANDARDS AND FOUR BRONZE DOORWAYS.

From the
Architectural Review



From Architecture.

From the Architectural R

BANKS AT NEW YORK AND ALBANY, N.Y.

ENTRANCE AT CASTLE FRANK ROAD, ROSEDALE, MODELED AFTER OLD ENGLISH STYLE.

THE MATERIALS entering into a building are one of the essentials in producing a finished result wholly satisfactory to the designers themselves as well as acceptable to the criticizing layman. The companies responsible for the artistic and practical merits of the Bank of Toronto are as follows: Canadian Allis-Chalmers, Ltd., makers of architectural bronze and iron; Dancy, R. C., contractor for plaster ornamentation, Mycenian marble and artificial stones; Don Valley Brick Works, makers of brick and porous terra cotta; the E. Howard Clock Company, producers of clocks—electric, secondary, tower and watchman; the Gorham Co., makers of ornamental bronze and iron work; Loomis-Manning Filter Distributing Co., makers of the Standard filters; Murray-Kay Limited, makers of lighting fixtures; Office Specialty Mfg. Co., producers of filing and record keeping equipment; A. B. Ormsby Co., Ltd., manufacturers of equipment for skylights, bronze windows, and copper clad doors; Otis-Fensom Elevator Co., Ltd., makers of elevator equipment; R.I.W. Damp-Resisting Paint Co., producers of damp-resisting paints; J. & J. Taylor, Ltd., manufacturers of vaults. A word of praise is due our advertisers who have materially assisted us in securing the data for this number. With such hearty co-operation from all sources one feels that the work presented should not only do justice to the subject in hand, but also become a source of pride to those whose manufactured products helped the architect in effecting such a striking result. To superintendent Joseph D. Fennen is also due considerable credit for his hearty services.

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CONSTRUCTION

VOL. VI — NO. 10

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Full Page Illustrations

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GRAPHIC ARTS BUILDING, TORONTO, CANADA

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MCLEAN & WRIGHT, ARCHITECTS.

¶ *Relation of expert adviser to the people who hire him—Condition at Calgary over scheme for a city bridge.*

UNTIL THE LAST few years the people, in general, have paid little attention to architecture and civic planning. It has been a source of considerable embarrassment to the architectural profession and has taken years of constant effort on its part to overcome this prejudice. But the results are more than satisfactory, and it behooves each member to help keep the confidence won through such a struggle. To do this it will be necessary to avoid such clashes as the one which is now taking place in Calgary. The people are paying liberally for the services of an expert city planner to advise them. In connection with his duties plans for a proposed bridge have been prepared which should naturally be brought to the people's attention, especially since they are voting on a by-law relating to this subject. The city council has refused to grant their wishes in posting sketches of the expert's plans for a free and wholesome consideration. What is more inconsistent and what will embitter the people more than such actions? They only serve to generate criticism and hostility towards a project, no matter what qualities it may possess to recommend it. We have worked hard to bring the people to a point where they will hire men of authority in matters of an artistic nature. Are we going to drive them back to their former condition when even the suggestion brought only smiles of derision? It is a serious matter and must not be treated lightly. In this case we hope it is due to the ignorance of the members of the city council, but if it should be at the advice of the expert himself or even countenanced by his silence, then due pressure should be brought to bear not only for the future welfare of Calgary, but also for the maintenance of the present standing of art among the people at large.

¶ *Calgary's present status as a commercial centre—Her great wealth and building enterprises—The possibilities for a successful future.*

FROM A POPULATION of five hundred in 1884, Calgary, "The City Phenomenal," has grown to approximately ninety thousand. Forming the commercial centre between Winnipeg and Vancouver, it lies in the midst of a great agricultural and industrial section. There seems to be little which might be termed antagonistic to the prophetic statements that Calgary will become a large and prosperous city, as the climate, soil, timber, and mining wealth in the Province of Alberta warrant such predictions. One of the sources from which it will be greatly benefited is the forest reservations. The Commission on Conservation feel that one of the most important acts is to expedite the inclusion in forest reserves of all lands which are non-agricultural. The reservations in Alberta are especially important on account of the extensive tract on the eastern slope of the Rocky Mountains which was set apart on the recommendation of the Commission. It is considered the greatest problem which is being handled at the present time. Proposed additions to the amount of 7,698 square miles have been endorsed by the Forestry branch of the Department of the Interior. The agricultural possibilities have been proven by the official records of the past few years. An unusual richness of the soil makes the producing power far greater than that of any other large grain growing area in North America. From this year's crop report compiled by the C.P.R., Alberta has approximately twenty-three and one-half million bushels of wheat, forty-five million of oats, and eleven and one-half million of barley. An idea of the yield may be obtained by comparing it with the crop for 1911, which totaled 44,745,000 bushels, including wheat, oats, barley, flax, rye, etc. The Province of Alberta has

also an abundance of mineral wealth. Aside from the inexhaustible supply of coal, natural gas, etc., the architectural products are obtainable in all parts and the quality of the building stones, clay for brick and terra cotta, limestone for cement, is of a superior grade. The rapid growth of the country creates a large demand for these materials, which results in the architectural development of its cities and towns. The building enterprise of Calgary is a constant factor and totals between one and two million dollars each month. At the present time there are under construction twelve large buildings which are being erected with reinforced concrete frames. By-laws are before the people to vote on new bridges, industrial building, etc., to the total of $1 500,000. Having become the greatest centre for abattoirs and pork packing; one of the largest milling sections in the West; the outlet for the vast grain belt; a great future awaits this progressive city in its steady stride towards an ambitious goal.

Sir Gilbert Parker's address before the R.A.I.C. at Calgary—His plea for the establishment of Fine Arts departments.

IT IS TO BE sincerely regretted that all our readers were not permitted to listen to the inspiring address given by Sir Gilbert Parker before the sixth annual convention of the R.A.I.C., held at Calgary. The eminent author and statesman spoke eloquently of the rapid progress made in the architectural field and encouraged the members to accept as their highest reward the satisfaction of expressing their own ideals in elements of beauty. He urged each one present to take a most serious view of their profession.

Sir Gilbert, in referring to his subject, "The Arts," felt the need of more encouragement to our Canadian artists. He expressed the idea that architecture has made wonderful strides in this country because she has adopted the methods and beauty of the great artistic nations such as Rome and Greece to the exigencies of a utilitarian age.

It was gratifying to hear his remarks in regard to the establishment of a department of fine arts in every college in Canada. May his criticism along this line bear fruit, for we must train our present generation in the direction of æsthetic beauty if Canada is to claim the distinction of being artistically built and preserved during future generations. The association could not build a more lasting monument than establish a means in every city whereby the student could come under the influence of masters in all branches of fine arts and have exact replicas of the art which Sir Gilbert mentions as having influenced our best efforts in the past.

The copyright bill introduced in the British Parliament during the last session was also commented upon. The author, while a member of the Opposition, said that when this bill came before the House he favored it because he realized it was the first time in the history of British politics that an Act had come to an issue whereby the musician and the architect were guaranteed ample protection in their work. It is worthy of mention that Sir Gilbert frequently addressed the House in favor of the measure, pointing out that such a measure would assist the author, musician and architect as no other act of legislation had ever done before. "I did that," said Sir Gilbert, "because I wished to help protect the architects and because, gentlemen, I wanted to protect you."

In conclusion, the author said: "I have to construct, just as you have to do, for every book of mine, such as it is, is an attempt at architecture. We are one in our failures and our successes. You who represent the whole Dominion and make the people realize and understand that culture and beauty go hand in hand with utility the rewards that you receive, namely, the satisfaction of your own ideals and the satisfaction of the eternal elements of beauty, these are indeed the greatest and most precious rewards that you can gain in all the failures and successes of your career."

An attempt to convert our public parks into homes for working people—Toronto's need of more parkage in the crowded districts.

IT IS TO BE sincerely hoped that Controller McCarthy will find tremendous opposition to his pet scheme of erecting homes in the various parks of Toronto. While his contention is to buy the waste ends of city lands which he styles as "barren wastes" and use them for model homes for working people, he does not consider the advisability of improving these sections and adding them to the much needed park area of the city. Plenty of ground in suitable quarters can be obtained for housing problems, but little land is left in crowded districts for breathing and recreation parks. Toronto, like all other cities in the Dominion, is woefully lacking in this regard and it is about time a proper squelching were administered to any and all persons who try to secure such land for private use. A worthy precedent might be found in the city of Paris, France. The areas of the principal public parks in that city are as follows: Bois de Vincennes, 2,290 acres; Bois de Boulogne, 2,156 acres; Jardin des Tuileries, 74 acres; Jardin du Luxembourg, 62 acres; Buttes Chaumont, 62 acres; Parc de Montmartre, 63 acres. In addition to the above there are dozens of smaller parks like the Champ de Mars 25 acres and the Parc Monceau 6 acres. All the parks above named have remained substantially unchanged as to area during the city's growth. Paris is at present demolishing the fortification walls which inclose the city, filling up the moat, and converting a large portion of the area thus reclaimed to a belt of parks and public gardens. The constancy in preserving their parks and creating more is due to the increasing population as well as a broad grasp of the essential needs of the people. Surely Toronto should study her future conditions, for no city is growing faster in proportion to her present size. Let the other members of the board take a decided stand and give an emphatic no to the elimination of any section of our public parks.

THE BANK OF NOVA SCOTIA BUILDING, CALGARY, ALTA.

SHARP & BROWN, ARCHITECT.

THE BURNS BUILDING, CALGARY, ALTA.

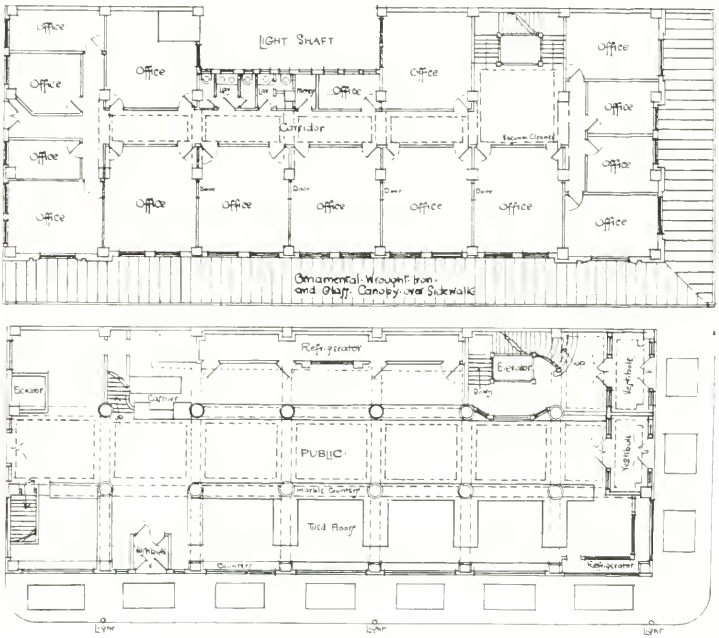
HODGSON, BATES & BEATTIE, ARCHITECTS.

New Buildings, Calgary, Alta.

CALGARY furnishes an excellent example of the progressive spirit prevailing throughout the Western Provinces. This is clearly demonstrated by the fact that twelve large buildings with reinforced concrete construction are being erected at the present time, while several others of artistic merit will be started in the near future. The business centre, which was formerly confined to a limited section on Eighth avenue, has encroached upon other streets, where some of the largest structures have been built. During the month of August the permits amounted to approximately $1,100,000.

In addition to the buildings shown in this issue there are several important structures which have been or are being erected that will be taken up in another number. Among them might be mentioned the C.P.R. Hotel, occupying an area one hundred and twenty-eight by two hundred and twenty feet, with a height of one hundred and fifty feet, by E. & W. S. Maxwell, architects; the Herald building, ten stories high, with a frontage of one hundred feet, by Brown & Vallance, architects; the Dominion Bank, by George Northwood, architect; Central Fire Hall, by Lang & Major, architects, and others of similar prominence.

A brief description of the buildings illustrated herewith is given, limited to the few facts obtainable in a short time. The Bank of Nova Scotia possesses a façade in English matt white terra cotta and granite base; windows on ground floor are metal casement; floors of marble mosaic; walls and ceiling of hard tinted plaster; counter of mahogany, and fittings of bronze. The vestibule is panelled with Canadian marble.



TYPICAL OFFICE AND FIRST FLOOR PLANS, BURNS BUILDING. HODGSON, BATES & BEATTIE, ARCHITECTS.

The new Burns building is six stories in height, with basement covering a site of fifty by one hundred and thirty feet. The structure is of reinforced construction with facing of white glazed terra cotta. An ornamental wrought iron and glass canopy extends along both façades. The main entrance and corridors have a tile flooring; white and green marble wainscoting. On the ground floor, which accommodates a meat market, are marble counters, tile walls and floors, and panelled ceiling. The staircase is finished in marble enclosing the elevator well of polished wire glass.

In the basement is a pool room, barber shop, boiler room, refrigerator and lavatories. The upper floors consist of offices finished in oak, with floors of composition covered with a cement preparation, and partitions of tile plastered. Tile flooring, Italian marble wainscoting and oak trim is the treatment of all corridors. Accommodations are provided for the janitor and other help on the seventh floor. The approximate cost of the building was $350,000.

The Bijou Theatre is one of the latest moving picture buildings in the West. It is twenty-five feet in width and one hundred and thirty feet deep, designed in ornamental plaster, with seventy-five tons of steel entering into the construction. The seating capacity of the main auditorium and balcony is six hundred and fifty. An indirect system of electric lighting has been installed, with glass bowl fixtures suspended from the ceiling. The cost of structure approximated $50,000.

The Lougheed building is of fireproof construction and covers a tract two hundred by one hundred and thirty feet. An artistic theatre occupies a large portion of the building, the rest being planned for stores, offices and living quarters. In the basement, in addition to the boiler room and other mechanical spaces, is a restaurant, together with accommodation for other places of amusement. The ground floor is devoted to stores on the two main fronts as well as entrances to the theatre. The second and third

floors are arranged for commercial sample rooms for wholesalers and jobbers, while the fourth and fifth floors are planned in two and three-room living suites.

The new Hudson's Bay Store building stands six stories above the street and one below. Cream glazed terra cotta decorates the entire frontage, excepting a narrow granite base running beneath the first story show windows. The corner piers are relieved of their plain treatment by means of decorative coat of arms representing the company, while the same shield made of bronze is laid flush in three sections of the concrete sidewalk. On the street façades the window frames of first story are copper, the two remaining façades facing the lanes having steel sash. Three main, one employee and an emergency exit constitute the entrances to the main floor. The vestibules have marble mosaic flooring, all other parts of the building being finished with wood floors. The walls and ceiling of the main floor are of plaster painted an appropriate shade, while the trim and fittings are of mahogany.

THEATRE AT CALGARY.
JAMES C. TEAGUE, ARCHITECT.

The elevator system consists of four passenger with ample provision made for two more; two plunger from first story to basement only; three freight which run to a freight room located on all floors, and one for the employees. There are two main stairways of iron, an employees' staircase and an outside fire escape all enclosed in wire and glass.

The basement accommodates a shipping room occupying one-half the floor space; a boiler room with three tubular boilers; engine and pump rooms; employees' coat rooms and locker space; refrigeration machinery which supplies all drinking water, fur storage department, etc. In addition to the above is a spiral parcel conveyer connecting all floors from which runs an endless belt to the distribution table. There are also three ventilating rooms under the main entrances which take the fresh air from the street, wash, filter and warm same and then distribute it to the basement and main floor.

A mezzanine gallery extends along the rear of the first story and provides for telephone and lounging quarters. The second floor, in addition to general selling space, accommodates the ladies' waiting room; the fourth floor the general offices, board room, and cashier booths finished in mahogany; the fifth floor, a storage room; and the sixth a public dining room, cafe and kitchen. The dining room is finished in oak after the Elizabethan style in commemoration of the fact that the charter was granted to the Hudson Bay Company in 1670.

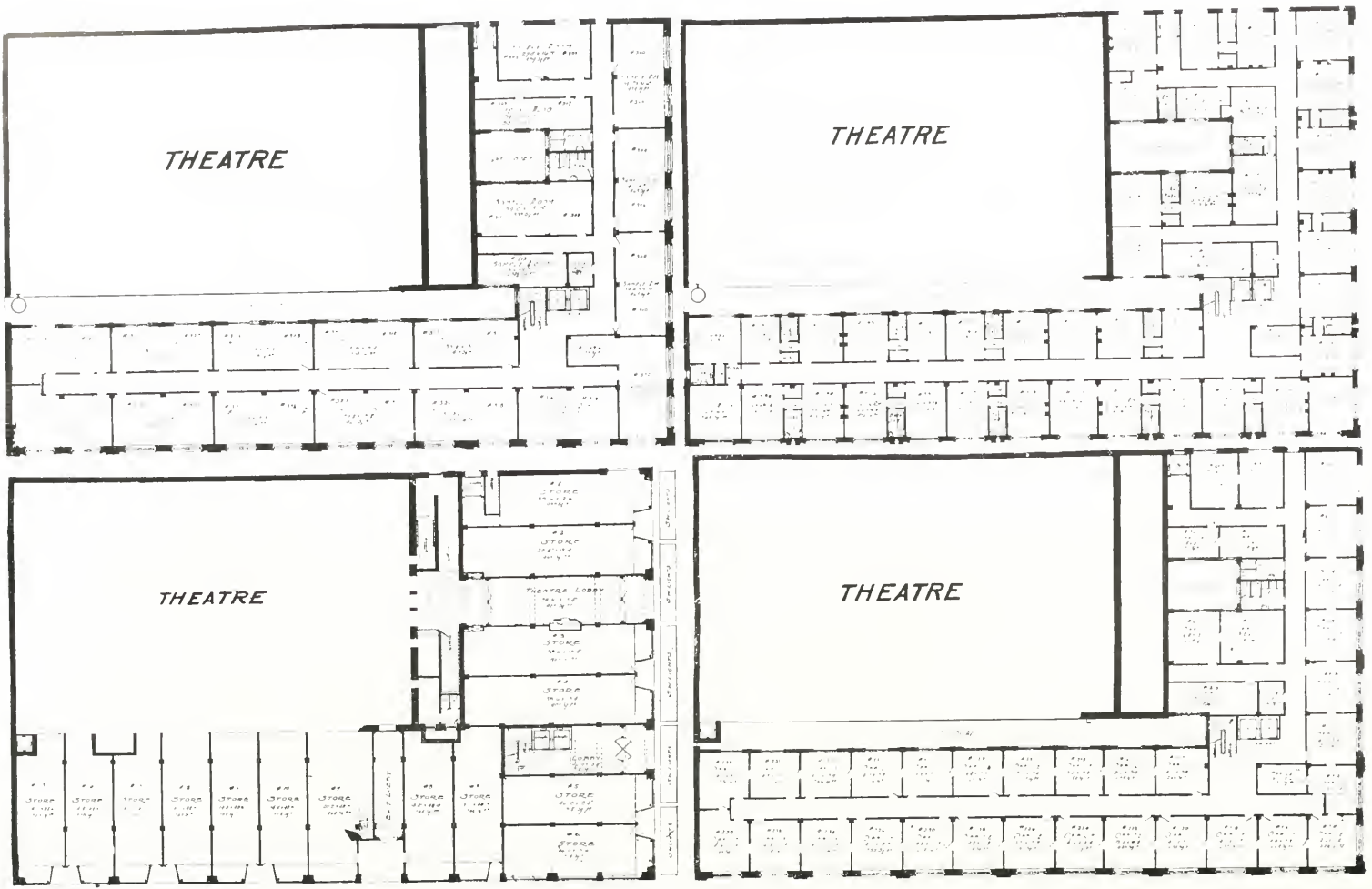
The building is of fireproof construction, having floor dimensions of 130 by 250 feet, and cost approximately $1,500,000.

What the next twenty years will make of Calgary can only be surmised. Judging from the last three years' growth in the building lines, it would seem that E. N. White, London manager of a large Canadian real estate firm, in his interview with a representative of "Canada," speaks conservatively when he says: "Calgary continues to grow, and it is the conviction of many that it will one day be the largest city in the Canadian West. Those who have placed their confidence in it need have no fear of the consequences, but with a little patience and judgment should in due course reap the fruits of their trust."

One of the progressive signs is the completion of the C.P.R. Ogden car-shops, the largest repair shops in the world, with a full capacity of five thousand men. Another wholesome sign is the result of the election held recently which passed by-laws authorizing the erection of an industrial building to cost $250,000; union stock yards for $350,000, and a tubercular hospital for $30,000. The industrial structure will be six stories in height with basement, erected for the housing of small industries locating in the city until they grow large enough to house themselves. The various bridge by-laws were defeated, which is only temporary, for the need is imperative, but the people spoke loudly in its criticism

MACLEAN BUILDING, CALGARY, ALTA.

LANG & MAJOR, ARCHITECTS.



THIRD FLOOR PLAN.

GROUND FLOOR PLAN.

THE LOUGHEED BUILDING, CALGARY, ALTA.

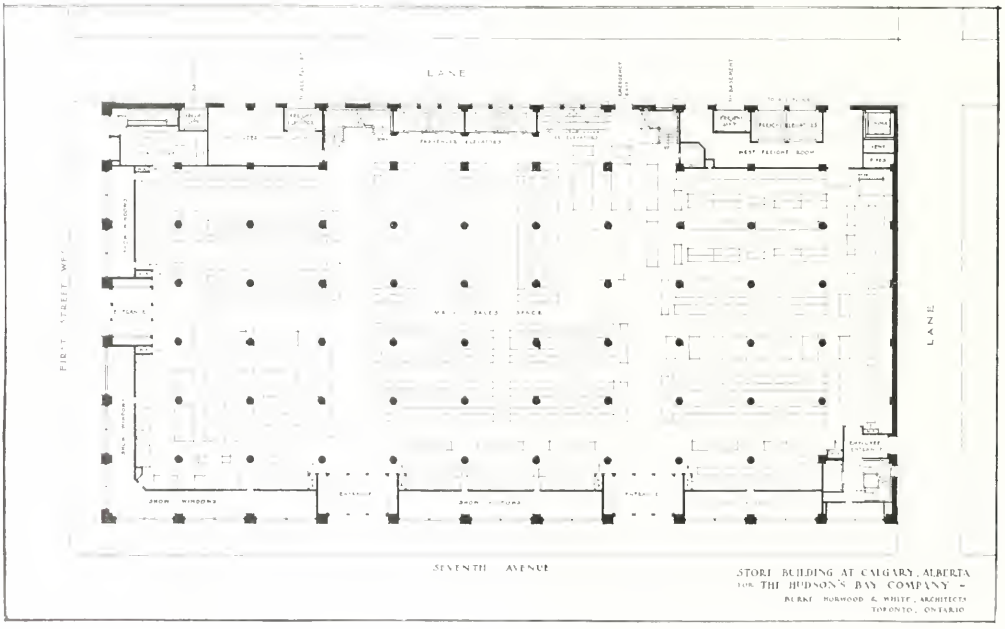
R. WARDROP, ARCHITECT.

SECOND FLOOR PLAN.

FIFTH FLOOR PLAN.

THE LOUGHEED BUILDING.

R. W. WARDROPE, ARCHITECT.



HUDSON'S BAY STORE BUILDING, CALGARY.

BURKE HORWOOD & WHITE, ARCHITECTS.

of the secretive manner in which the bridge propositions have been handled. A city laboratory will also be built which is to cost $12,000.

The city commissioners have acted against the installation of improvements in country subdivisions before the population of these places warrants such procedure. This will act in favor of a natural growth in the course of construction. Among the more important is the one for Pilkington Bros., which will cover a plot one hundred by one hundred and twenty feet. Faced with pressed brick and sandstone trimmings, it will be constructed of reinforced concrete.

The Burns cold storage building will cost $300,000, six stories in height, and covering a site of

HUDSON'S BAY STORE BUILDING, CALGARY.
BURKE, HORWOOD & WHITE, ARCHITECTS.

to the city instead of being determined by a few real estate sharks. As a consequence the people decide the proper direction for the city's extension, after which the sewerage, sidewalks, etc., are laid for their use. This eliminates one sub-division suffering by the beautifying of another less desirable.

A number of large warehouses and factories are approximately 25,000 square feet. The exterior walls of pressed brick will be entirely independent of internal structure, the floors, etc., being carried on independent columns. Work is also being rushed on a $100,000 addition to the present building of the Canadian Consolidated Rubber Co., also grain bins and malt house for the Canada Malting Co.

VIEW OF EIGHTH AVENUE, CALGARY.

The City of the Plain—Calgary

T. H. MAWSON

TRUE we are, at tremendous cost and sacrifice of energy, busily engaged setting our cities in order, whilst others, seeing nothing, hearing reading nothing, oblivious to what has for generations been so patent, are repeating our mistakes and laying up trouble which will tax to the uttermost the energies of their children.

If I had to name our greatest error, I would say that we have allowed our cities to grow hap-hazard without plan or forethought. If I had to name the greatest mistake made on the American continent I would say the adoption of the chessboard plan, which, checking all imagination, often ends in dreary, treeless monotony. Both the American and English methods, however, have this in common. They have both to a great extent been developed in the interests of individuals, but let me add that it has always been the apathy of the public, and the absence of a Civic Consciousness which has made this possible. Let me further add that in the Old Country our trouble has not been with the owners of large estates, or men with ducal minds (not necessarily dukes), but with the owners of small areas. It is only within the last few years that our Government, realizing the pernicious effect of this system, has come to our aid, and even yet the fight for individual rights against those of the community goes on.

These rights, if too rigidly observed, may override the best interests of the community, and feverish anxiety for present gain, blunt all those finer expressions for which our race has always stood. In all this division and sub-division the permanence and solidarity of our cities is often lost sight of, and only that which is for the day and the hour fostered. We are indeed builders of great cities, but are they not built for profit rather than for use, and may it not be truly said that the quality they possess is sometimes spectacular rather than intrinsic? And do they not suggest that "sick hurry and divided aims" of which Matthew Arnold speaks, rather than that noble quality of restraint, refinement and scholarship which characterizes all great art? The present movement for civic betterment, especially in Europe and the United States, has received its impetus from the recognition of two facts:

First, that a city based on the unit of 25-foot lots and 60-foot roadways can never express the virile, living soul of a great city; and secondly, that the

*Paper read before the Canadian Club, Calgary.

VIEW OF FIRST STREET, CALGARY.

enormous and at times crushing indebtedness of our municipalities has largely been brought about by self-styled economists, men who live day by day without any guiding policy, and who can only grasp the necessities of the day. It is always clearing away the debris of these false economists' mistakes which help to pile up our indebtedness.

In all progressive and well regulated communities, however, there comes a time when national and civic interests take precedence of narrow or private interests. Nay, there comes a time when men without compulsion think spaciously and when even millionaires are inspired and civic consciousness becomes the prevailing atmosphere. This is a phase of development upon which we in Europe are now entering.

There are three broad principles on which all city builders must proceed, and each is of such vast importance as to deserve a separate lecture. The City Beautiful can only be realized by the due observance of each principle and their proper co-relation. I must, however, content myself by briefly stating them and then pass on.

Convenient transit, whether by water, rail, street car, automobile, or other vehicle, and the proper grading and division of these several modes of transit so as to attain the highest efficiency and therefore least waste of time and energy, forms two-thirds of the anatomy of our subject. In this connection you must bear in mind the rapid evolution of transit.

Hygiene, controlling density of population, provision of ample open spaces for physical recreation and especially playgrounds for the children, water, and perfect sanitation.

Beauty, or the comely external presentment of the city's life and activities and the correlation of features which individually may be antagonistic. The perfect orchestration, shall I call it, of Nature, Art and Science.

It is to the creation of beauty that I must devote the remaining part of my address, but before I idealize or give a local application allow me briefly to state my position in relation to Art, Science and Nature. It will help you to interpret what I have to say later. I will not speak of great Art, for I realize that the highest is only attainable when great ideas are patent and the prevailing atmosphere is propitious.

To give logical sequence to my address I ought now to speak of Architecture and the art of construction, especially of a great civic centre, the value of street perspectives, focal points and accentuated centres of interest, but as I must say something about parks and gardens I can only stop to tell you that the other day I was asked by Sir Richard McBride what style of architecture I would suggest for the new University of British Columbia. I replied that there could only be one style which could adequately

VIEW FROM CORNER OF EIGHTH AVENUE AND CENTRE STREET, CALGARY.

express a seat of learning, and that was the one which was universal and which expressed the most ripened scholarship. Let me say how delighted I am to find in Calgary such distinct evidence of scholarly attainment in some few of your newer buildings. You are showing commendable progress, and judged by the best, you have already reached a high degree of excellence.

If without offence I may be critical I would like to say that I find throughout Canada that you expect men who have no claim either temperamentally or scholastically to be regarded as artists to interpret Nature, and give you a beautiful composition. You expect to reap that which you have not sown. The pity of it is that the more amateurish a work is the more costly it becomes. I suppose I need not further urge the claim of the idealist or the need for a well-considered policy for park development. Economy and common sense alike suggest it. What, then, are the principles on which you should proceed? Calgary is a city of the plain, unscreened either from the storm or summer heat. Surely afforestation on a comprehensive scale (there must be nothing niggardly here) is your first necessity. From forests on the outskirts of the city should be arranged wedges of land narrowing as they approach the city. This is the theory of the thing; in practice you would need to compromise and where the land is more or less developed take what you can get. Still, the idea of a wedge widening as it approaches the forest lands is a good one. Before you can lay out your parks you must first recognize that you have several distinct classes of individuals to cater to.

The children, who must have well equipped playgrounds—for the boy without a playground is father to the man without a job. The young men and women, who must have recreational opportunities provided under the best and most elevating conditions. The large number of middle aged and aged who require restful spaces combined with something of the pageantry of Art and Nature.

Your immediate privilege and present duty to posterity is to evolve a great plan providing for the assured development of your city, on hygienic and æsthetic lines; your second to prove to John Smith the practicability of your idealism by presenting your scheme to him in pictorial form with connected plans and by propaganda in which your women folks must take a part. You may not agree to give them a vote, but if you really wish your city to become beautiful you had better ask their help. (Applause.)

Meanwhile establish a nursery where you may experiment and grow the vast quantities of trees which you must plant if your city is to appeal to permanent residents, and then secure every acre of land you can purchase on the outskirts of your city and plant quickly with young trees of proved hardiness. Secure every strip of river bank still available, and don't forget the children's playgrounds; but, above all, be aye stickin' in a tree.

How to Apply Town Planning to Calgary

HENRY VIVIAN

FIRST I thank those responsible for inviting me here to-night, for the great compliment they paid to me, and you, gentlemen, for the very kind way in which you have received me. This is, as your mayor has stated, my second visit to Calgary. I was here about two years ago, at the invitation of the then Governor-General, Earl Grey, to talk on this question, he knowing I was interested in it in the Old Country. I am now paying a visit to some of the cities I visited at that time to see what progress has been made. Undoubtedly progress has been made in a great many directions, more particularly in population, in several of these cities. I think I then said, Mr. Mayor, I looked forward to Calgary having 200,000 of a population in fifteen to twenty years. I believe you have already cut off 30,000 in two years. I was a pretty good prophet in regard to the size of your population. (Laughter.)

With regard to the question of town planning, I think it is also true to say that Canada has made considerable progress during the two years that have intervened between my last visit and to-day. It is possible that one might not be able to see it in practice, in the actual towns themselves, as two years, after all, is but a comparatively short time in the life of a nation. Though there may not have been any practical steps taken in many of the towns of Canada, yet I am satisfied there has been a great deal of talk on the question during those two years. Large numbers of people are realizing the importance of the issue, and in several of the towns I have visited, plans are being prepared for the improvement of the towns and cities on what are called "town planning lines." I have been more impressed by that this time than I was on the last occasion.

I have come through from Montreal, and it is difficult to find any city in Canada that has not a magnificent position for the development of something, of which we should all be proud. You come right through from Montreal to Ottawa, on to Toronto, then on to Saskatoon, through Edmonton, and from there to your own city of Calgary. All these cities are finely situated for the purpose of making of them magnificent organizations of human beings for the development of all that is worthy in human nature.

First of all, Mr. Chairman and Mayor, I would like to say that those of us who are interested in city planning would like people to take a wide and comprehensive view of the term. That it does not merely mean better houses, or the providing of parks or playing sites for the poor, or the provision of bold arteries and main streets. It is true it includes all these, but town planning, in its widest sense, is nothing more or less than the science of city development. We see no reason why cities should be left to grow practically without order, and without some scientific attempt being made to adapt the growth of the city to the real needs of the people. The truth is, I suppose, that our control over the resources of wealth individually has grown more rapidly than the civic or corporate spirit has grown.

Take, for instance, any city in Canada. I suppose it will be true to say that the bulk of the people are given merely to improving their own fortunes. I am not saying anything against that, but I believe there is a great mass of men who centre most of their energy on that object, and it remains for a later time for us to have the civic support that will enable us to order our towns wisely and rightly. But unfortunately, Mr. Mayor, we have made too many mistakes. All we require in connection with the development of cities—I would have in mind the development of every city—is a Thinking Centre, charged with reporting and recommending whatever happened within the boundaries of the city, so that those responsible, whether it be the city council or whatever authority, may have before them, in the rough, the forecast of how the city ought to grow, so as to provide for the future needs of the city.

I see no reason why we should throw the best brains of the community merely into such questions as the development of industries, leaving the development of cities for the fag-end of our intellects. (Applause.) And, in my opinion, the building up of a city is as vital to the healthy development of the people as the building of factories of any kind. (Applause.) In my opinion the building of the city will be found in the long run, to be the principal industry, not the secondary. And, as for the sense of town planning, I assert that we ought to get the services of not the second best, but the best that the community has to give for purposes of this kind.

With regard to one or two practical points, in order to illustrate what I have been talking about, we will look at it from different viewpoints. Could anyone say that the average city in Canada—or any other country for that matter—could anyone say when one looks back for fifteen or twenty years, that our city has been so developed as to enable its citizens to work in the most efficient way at their business? We can see in every direction waste as the result of a lack of forethought. We have had that experience in the Old Land in practically every town that I know of. We are to-day spending large sums of money taking down buildings that have only been erected during the last fifteen or twenty years, and using the ratepayers' money. Taxpayers' money is being spent in enormous sums undoing the mistakes that are not fifteen or twenty years old, because there was no "Thinking Centre" charged with looking ahead with regard to the needs of the city.

*Address delivered in Calgary at a complimentary dinner given to the speaker.

Indeed, it is going on to-day in the Old Country, and I can see myself where money is being spent in the Old Country in the erection of buildings, paying frontages on main streets, that I absolutely say must be taken down in the next ten years, because there is no "Thinking Centre" charged with planning that area, and no responsible person to see that the plan is carried out. In other words, everyone is minding his own business, and I have no doubt but you have the same difficulties in the cities of Canada on a smaller scale than in England. No one attending to public business!

Let us take the cities of Canada. Take Montreal; you see mistakes being made there. Look at Toronto; I believe the widest street is sixty-six feet. They have already discovered that sixty-six feet is quite inadequate for the purpose of traffic in the city of Toronto. I believe your width here is sixty-six feet, if I mistake not. I may be wrong about that, but I am most certain I am right when I say that you will all regret that the streets were not twice as wide as you have them to-day. (Hear, hear.)

But Calgary is still young, and it is possible, therefore, to prevent the development in the wrong direction going too far. I want to emphasize that. The value of Calgary as an industrial centre, as a trading centre, as a manufacturing centre, will be affected immensely by the question as to whether your streets are so laid out as to secure that both population and material should move from point to point in the quickest possible way, with the least expenditure of energy, and the least cost; and surely that is one of the functions that the city should take upon itself. That is a function that cannot be taken by an individual; it must be taken charge of by an authority responsible for the whole of the city, also an authority that has a continuous life. The individual is in business to make a fortune—at least something approximate to it. He is in business to enhance his own interests. The individual's is not a continuous life. Some central authority should be charged with the continuous responsibility for unfolding the development of the town. Not only do we want it for the city proper—we want it for the areas beyond.

We have found in the Old Country—although I believe Calgary extends its suburbs out—one of our difficulties in the surrounding areas. Take London for example. To take, in the surrounding areas they must spend large sums of money to connect them with the bold arteries of the inside city; and I say, therefore, that the authorities should not only have a plan for the inside city before them, but a rough sketch of the area beyond, so that when the time arrives that the inside extends so as to include that area, it will come into harmony with the city that has already been developed.

The Germans have undoubtedly led us in that respect. You can go into almost any town hall in any important city in Germany and you will find the very thing I am talking about in existence there. I myself have been in the town hall in the city of Frankfort, and there you will see plans, Mr. Mayor, showing how Frankfort has got to unfold itself for the next fifty years! Frankfort is a great city. Frankfort has added over 250,000 population in a comparatively few years, and it will add enormously in the next few years. In the town hall you will see market gardens already planned out, and many important sites selected for public buildings, reclaimed ground, and all that sort of thing. There is no doubt that that is partly due to the scientific German mind. I don't suppose that we can fully come up to the standard set by the German cities, but undoubtedly we can take great steps in the direction in which they have gone, more particularly in regard to our main arteries.

I would plead, therefore, for the central thinking authority for the purpose of laying out this main artery connecting up the suburbs with the city. Owing to the absence of such a plan you have enormous wastes on secondary roads. My own view is, that in regard to purely residential roads, sixty-six-foot thoroughfares are quite unnecessary, and that a lot of money is wasted in macadam that could be turned into gardens or lawns for the beautification of the city; and the roads leading to the main arteries would be termed secondary roads.

We have made a great feature of that in Hampstead, a suburb of London, with a population of about 30,000 people. We have made a special effort in these minor roads, to get the little children away from the danger zone where they will not be run over, and to keep peace near the residences of people. I am confident there is a great deal in that, the peace of mind and comfort that a man enjoys when he is far away from the heavy traffic. Let us take the motor traffic. I don't speak of the pleasure motorer or the business motorer. I refer to the motor for carrying produce. I don't know how far that has made headway in Canada, but it is certainly making great headway in the old land. There are trolleys being run by motor, and timber is being carried by motor instead of using horses, until your main roads are, after all, practically for the carrying of produce. If you are to have peace in your residence, you must get away from this.

So much in regard to that, and I think it might be carried a little further, in connection with the placing of our factories. I see no reason, myself, why factories should not be located by the authority responsible for the growth of our towns. They would be absolutely located in close connection with your present facilities. You, yourselves, frequently, no doubt, there being no plan of development, find the areas which should have been used for factories, are built up by perhaps residences or perhaps by something else which is not suitable for the neighborhood, leaving factories to develop in a less suitable quarter of the town, which makes the cost of production more.

And now I would make an appeal for the support of this security of property. I know it is sometimes said that Town Planners are people who want to ride rough-shod over the interests of others regardless of the private rights of the individual, and that their

plans would be in a direction of injuring property. I want, Mr. Mayor, to enter a very strong protest against that view. Indeed, I ought to reverse the argument and to say that on the whole, that rational town planning, instead of being detrimental, will really serve to add security to property itself. A man lays out $5,000.00 or $10,000.00 on the cost of a house somewhere near Calgary or Edmonton or anywhere else. Without order or properly laid out regulations, without some central control laying down the rules of the game, he has absolutely no security that a stencil factory would not be located within one hundred feet or a gin palace would not be located there or a lodging house. A man may spend ten thousand dollars for a home and at the end of five years his place is ruined because there is no order or general control. I say, therefore, that well-regulated town planning and city planning would, in the main, tend to secure property, rather than to injure it.

With regard to another aspect of it—provision of open spaces. People may ask why they are presented separately. They are only presented separately because it is natural to deal with them in that way, there is a very close connection between them. I think the city is not fulfilling its duty unless it lays down rules of the game so as to ensure for us practical parks in all parts of the city so as to develop the stamina and health of the people who have to live there. In the long run the future of Canada, just as the future of England, or any other country, depends upon the stamina of the great masses of its population. There is no getting away from that. We all may make hurried fortunes in five or ten years, but the final test is really the health of the people, and it is that test that we Town Planners ask shall be applied.

You want all these things in Calgary at the present moment. When you have 300,000 or a million people, you then begin to realize the injury inflicted on the large mass of people, or the failure to prepare the necessary conditions for a healthy city. That is why I believe that Calgary, Edmonton and Saskatoon should secure plans so that they may unfold themselves for the advance in the way of population. You will, in the time that is to come, have all these for a life-giving city, rather than a crowded city that has been so common in the old world.

In regard to one other aspect. I think we want to think of the whole nation. And I believe we cannot ever reach the matter of the individual living in a beautiful city, without making everything beautiful around him. Perhaps I may be permitted in this matter to refer to our experience in the Old Country. I mention Hampstead, one of the suburbs of London. I have been struck by the intense appreciation of the beautiful by the people who have lived there for a year or two, and, Mr. Mayor, I believe that the people who have been living in that suburb for two or three years, would be absolutely miserable if they were transferred to the ordinary, dirty working-class dwelling or to the average poor city of the old land. I am not at all sure if they wouldn't turn anarchists! There you develop people in places of that kind, and they become acclimated to the beautiful, and when you place them in a poor section they shrink from it. Surely, Mr. Mayor, that means a great advance in human nature, in human intelligence, and also in imagination; and I would further say that this question of the development of our cities is very closely related to another task we have had in the British Empire. The British Empire is founded on representative government, called the principle of democracy. Here in Canada you have that very self-same thing.

Now, Mr. Mayor, this Empire depends upon the outlook of the average man. It does not depend merely on great statesmen like Laurier or Borden, Asquith or Balfour. They may be all born statesmen and at the head of the nation, but the future of the Empire depends, as I say, and I repeat it, upon the outlook of the average man all over this Empire. If he is to be equal with the average man who has responsibility as a founder in that Empire, he must have imagination. He is not in any fit condition, as a matter of fact, to express an opinion at the ballot boxes on great national issues and consequently great Imperial issues, unless he has had his imagination cultivated, because the whole thing implies developed imagination. I say, Mr. Mayor, in the average city, more particularly in the working class quarters, is where this imagination should be developed. If you wish a city beautiful in connection with this city, you have there—as it were—you have there the development of the imagination that will widen and greatly include, not only great national questions, but questions on Imperial outlines. If you do not develop his imagination, you will find his stamina dwarfed, which undoubtedly means unfitness for the great responsibilities for the future of the Empire. I would say that this question is not merely a question of developing the imagination, but has a bearing upon character and upon outlook and general conditions under which the average man lives in our great city of to-day.

And may I just urge this point in conclusion, that we in our cities should not, Mr. Mayor, accept the principle of tenement dwelling for the ideal home. You may not be able, in a generation, Mr. Mayor, to see the effect of these upon the individual character, and that is one of the difficulties of this great question of city development. You must take the long view, and you have to calculate what will be the effect on a certain man, not to-morrow, but in generations to come; and so with regard to this question of tenement dwelling. You are not able to see the effect of existing home life on efficiency merely in one generation. I have seen in London, during my twenty-five years of very close contact with London life—more particularly among the working classes—I have seen enough to enable me to conclude that the effect of the tenement dwelling upon efficiency is very bad indeed. The sturdy laborer who comes up from the country with all the energy country life gives to him, may be able to last through it, and you don't see much difference in his efficiency. (Perhaps

I may be able to speak from personal experience. I came up from the country and found myself in difficulty. I have been through the mill.) You at once begin to see the effect upon the children. You transter a family from the country into the city, there the laborer himself is able to go through with his day's work year after year and earn his money, and you don't see much injury to his physical strength or his stamina. No doubt it is there. If the bulk of his work is outdoors, it helps and the unhealthful tenement doesn't count for as much as if he had not that outdoor life. Take the shoe operative or clothier, it begins to tell pretty soon on the workman himself, but not to the full extent.

The full extent falls on the wife, and later on the children, and if you take three generations, then you have got the full effect. You have got the little, measly, niggardly type of growth, unfit both physically and morally as well—a veritable weed of a man! You cannot see these things in one generation.

When you begin to get cramped, what happens? You begin to go up instead of spreading out. You may not see it in the first generation, but I believe that the working people brought up in the tenement house, must in the long run, spell disaster.

First of all, take individuality of character. The British race, what has made it so strong as it is in the world, is its strong individuality of character. Our German is scientific, but he lacks individuality. I believe, Mr. Mayor, the future of our Empire and the future of our race depends upon our preservation of those conditions that make for the retention and the strength of that individuality, and upon that our future really rests. The individual home, the individual family, the individual brought up in the home, and the association of home life—upon that all our success depends! Why, I remember in my boyhood days in our old village home in Devonshire, I used to have an individual friend in every apple tree and most of the gooseberry bushes. It is in these one thousand and one ways that you nurse all individual responsibility with life.

Take the child of the tenement house, what has he? The landing stage at the top of the staircase for a playground. To transfer the individual workman and his family into three rooms, the fourth floor up, does it have no effect upon character? Can you have the same kind of race? No, I am sure you cannot.

I say, therefore, Mr. Mayor, not only for the reasons I have given, first of industrial efficiency and for health and beautification in the interests of our race, so that we may nurse cities and this kind of character, we want to handle this problem of city planning in such a way to draw out our imagination and for the teaching of individuality.

I would make my last appeal, Mr. Mayor, to the business men of cities of this kind. I would make an appeal to the most able of our business men, not to think that this question has nothing to do with them. In my opinion, Mr. Mayor, the man who is making his fortune in a city like Calgary has not done his share of the work when he has merely made his fortune out of the city. He owes some service, some work or duty to the city out of which he has been able to make his money. I would make an appeal to him to do that duty, as well as his private one, and give his services to health and beautification. Patriotism has been required on the battlefields of Waterloo and battlefields of that sort. I trust the day is very far distant when we will be required to have battles like that again; but there are battlefields at home where we can all render service to the city and community around us. I would appeal for that co-operative effort on the part of the whole of the citizens, and I would appeal to the public support of the most capable and successful of the citizens to go through with this work. Co-operative conscience is essential to a healthy national and municipal life.

We would not be able to reach the highest standard of civilization unless side by side with our material aims we draw out and cultivate and nurse the co-operative spirit. This spirit draws out of every individual a feeling that he owes his community something. You won't get any Victoria Cross for this kind of patriotism—patriotism that demands time and all that—but I believe in the long run, that kind of patriotism which has expressed itself in better sewerage schemes for towns, the planning of streets and open spaces for children, women and men, the securing of healthy home life—that these are the many different ways of expressing our patriotism. I would appeal for that kind of patriotism in Calgary. I believe, Mr. Mayor, that patriotism is forthcoming, and that Calgary will be a city of which we all will be proud; and I believe those who have taken part in building it up will, in years to come, look back with pride to the little contribution they may have made towards it.

IN REFERRING to the recent convention held in Buffalo, Edward Marshall claims the one main idea is to secure a proper balance between the physical and mental work. There must be recognition of the paramount necessity for such treatment of the student as will best insure his health with a most special reference to his general efficiency.

The educated weakling may be as inefficient as a citizen as the uneducated strong man, but neither will come near to realization of his capacity for usefulness. And we must take some thought, in these days, of the fact that in our school children is the material which becomes the parents of to-morrow.

In large cities the problem of ventilation has proved most difficult to rightly handle. In this, of course, is inextricably involved the architectural problem of constructing buildings properly lighted and ventilated upon limited areas and surrounded by high structures. Within the past few years, however, there has been a real revolution in the science of ventilation. The architect of to-day is an important factor in the future status of our country's welfare. He must plan to encourage cleanliness and sturdiness.

Sixth Annual Assembly R. A. I. C.

CALGARY extended a cordial welcome to the forty delegates representing the various chapters of the Royal Architectural Institute of Canada, September 15th and 16th. The general feeling of the members was expressed by J. H. G. Russell, President of the Association, in the following statement: "We were better entertained than ever before. The Calgary Association treated our wives and daughters like queens, and ourselves like kings, and every minute of our stay in this city has been enjoyable. We will never forget the manner in which we were looked after and everything possible done for our enjoyment."

The meeting held during the morning of the first day in the public library was devoted to registration, together with a session of the council. At the civic luncheon the freedom of the city was extended by W. J. Tregillus, acting mayor, after which addresses of welcome were given by R. W. Lines, of Edmonton, President of the Alberta Association, and R. A. Brocklebank, president of the Calgary Builders' Exchange.

In the afternoon Mayor Sinnott expressed the pleasure the citizens of Calgary felt at being chosen as the convention city of such an influential organization. After representatives of the board of trade and the builders' association made a few appropriate remarks the regular business of the session was transacted.

PRESIDENT J. H. G. RUSSELL.

During the second day's proceedings Secretary Alcide Chaussé reported the Institute in a flourishing condition, having five hundred and fifty-eight members, eighty-eight per cent. of whom are active by virtue of belonging to provincial organizations. After a thorough discussion of the by-laws several changes of importance were made: one that each provincial organization pay two dollars for every accredited member; another that non-active members be elected by a unanimous letter ballot of the council. Without a dissenting vote the convention rejected the proposed schedule of fees and reverted to the former code of ethics and rules governing competitions. New by-laws covering problems dealing with a greater scope of the confederated Association were adopted.

Upon the conclusion of F. G. Engholm's interesting lecture the following officers were elected for the ensuing year: President, J. H. G. Russell of Winnipeg; vice-presidents, R. W. Lines of Edmonton, and J. P. Ouelette of Quebec; Secretary, Alcide Chaussé of Montreal; treasurer, J. W. H. Watts of Ottawa; members of council from Alberta, G. M. Lang of Calgary, James Henderson and R. W. Lines of Edmonton. Quebec was unanimously selected as the meeting place for 1914.

The entertainment of the second day consisted of a luncheon given by the Calgary Association, followed by an automobile trip. The Country Club entertained the delegates during the afternoon. The evening functions furnished an agreeable ending to the successful convention. The ladies were given a theatre party by the wives of the members belonging to the Calgary Association, while the delegates themselves were guests at a smoker given in Paget Hall.

One of the pleasant memories is the address given by Sir Gilbert Parker, member of the British Parliament. Among other remarks, he said: "You who represent the whole Dominion, you who are making the people realize and understand that culture and beauty go hand in hand, with utility, the rewards that you receive, that is the satisfaction of your own ideals and the satisfaction of the eternal elements of beauty, these are the greatest and most precious rewards that you can gain in all the failures and successes of your career.

"Architecture," continued the speaker, "is the first expression of the human race, then come painting, sculpture and music. Your position is not less to-day for your profession appears to me to be one that is getting nearer to the people themselves than any other profession in your country. Pictures are getting fewer, for most of the valuable masterpieces hang upon and adorn the walls in the houses of millionaires, hidden away from the sight of the man in the street. But your fine buildings are every day made

CONSTRUCTION

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Vol. 6 Toronto, October, 1913 No. 10

an education to the poorest of the poor. The splendid edifices that your skill and genius erect will last for all to see them and learn the splendor of their beauty. Historic places such as the ancient cathedrals of the old land and on the Continent, mansions erected in the far away ages by the nobility of England and fashioned by the hand of men like Christopher Wren and Grindley Gibbons, will last and endure when paintings and perchance music may have passed into oblivion. Take your profession seriously; look upon it as a profession that tends above all others to elevate and educate the minds of men and women."

CURRENT TOPICS

CREDIT SHOULD have been given in our last issue to Clark, MacMullen & Riley, who were the consulting engineers on the Bank of Toronto in connection with the mechanical equipment of the building.

WORK HAS BEEN started on the foundation for the monument to be erected in Philip's Square, Montreal, in honor of the late King Edward. The tall shaft will be surmounted by a figure of the late King, while around the base will be a number of artistic and appropriate groups and figures, surrounded by a low granite fence. The foundation will be twenty-four by seventeen feet. One hundred thousand dollars will approximate the cost.

* * *

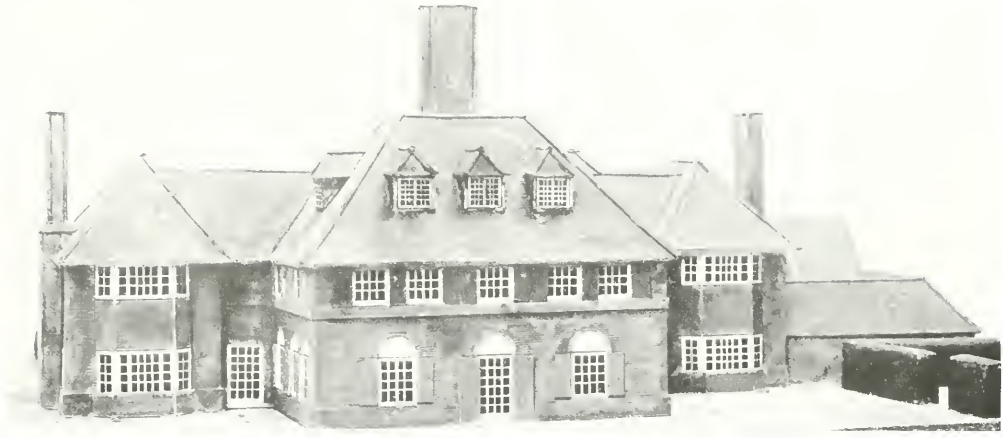
PROF. DANTE VAGLIERI, of Italy, is meeting with considerable success in the excavation of Ostia. Within the last few days about 800 coins of the fourth and fifth centuries A.D. have been found buried at Ostia, including several of the Emperor Jovian (363-4). The shops near the so-called Temple of Vulcan, the history of which is in course of study, are also being excavated, as well as a large building in the Via Decumana, the main street of Ostia. At that point recently was found the base of a statue with Cupids carved upon it, as well as portions of other statues.

Almost all the long Via Decumana is now visible. A large but unfinished drain beneath this street has been unearthed, and among the finds in this one street are two headless female statues of the second century A.D.; another inscription to a Prefectus Annonæ; a huge inscription with the name of the Emperor Trajan; a piece of a cornice bearing the sacrificial emblems; an inscription by the College of Smiths to Antoninus Pius, and two fine columns, one of which has a sun dial scratched upon it.

The theatre, the stage of which is at present being partially reconstructed, is the most beautiful sight at Ostia. Following the precepts of Vitruvius, Prof. Vaglieri has planted a garden in the square adjoining the portico of this building, and in the centre of this square is the Temple of Ceres, a goddess of great importance at Ostia, whence Rome derived her transmarine supplies of corn. Recently discovered brick stamps show that it was Commodus who built the portico.

From an artistic point of view, the most valuable of the recent discoveries is the almost perfect statue of a woman sacrificing. This statue, which is ascribed to the Flavian era, was found only a fortnight ago. A small nymphæum and an inscription to Jupiter Optimus Maximus, as well as another mosaic near the theatre and a further female statue complete the recent additions to our knowledge of Ostia.

The workmen, of whom 130 are at present engaged, are now excavating a fuller's shop, which might have been—so close is the resemblance—the original of that depicted at Pompeii. One other discovery, an ancient lime kiln of the time of Antoninus Pius, accounts for the disappearance of much that was older, and shows that it was not only in the Middle Ages that marble fragments were cast into the oven. Attention is also being paid to the better preservation of monuments.



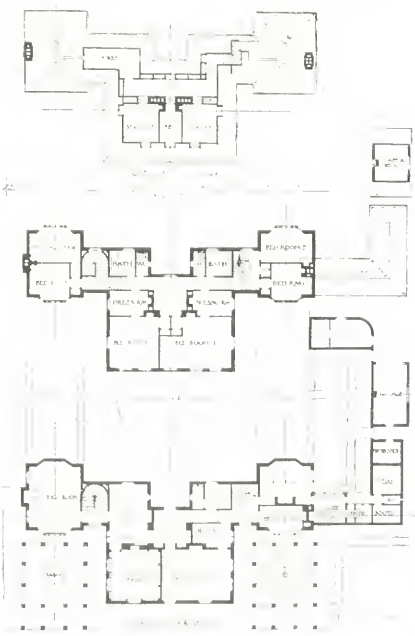
GARDEN FRONT. FIRST PRIZE. BY W. C. GREEN.

Competitive Designs for Houses

THE FOLLOWING competitions held recently by the "Country Life" of London and "The Brickbuilder" of Boston are reproduced in this number of "Construction" on account of the meritorious drawings submitted. We wish to thank both publications for their courtesy and trust the results will augur well for similar contests being held in the Canadian field.

In the competition held by "Country Life" there were one hundred and ninety-seven contestants. The cost of the house was to vary from three to four thousand pounds and be so expressed as to stand the ordeal of being transferred into brick and mortar. The judges gave the following report:

"We have carefully examined the designs submitted in the 'Country Life' competition for a house to be built at Forest Row, Sussex. Having taken into account the conditions laid down, and in particular the limits of size, accommodation and cost, we make the following awards: The first prize of £80 to Mr. W. Curtis Green—(in accordance with the conditions, Mr. Curtis Green is appointed architect for the carrying out of the work); the second prize of £40 to Mr. Cyril A. Farey; the third prize of £20 to Mr. A. Winter Rose; the fourth prize of £10 to Messrs. Geoffry Lucas and Arthur Lodge; a prize of books to the value of £10 to Mr. E. Brantwood Maufe; a prize of books to the value of £10 to Mr. Leslie Mansfield; the prize of £20 for the best perspective drawing to Mr. Charles Gascoyne; the prize for the best model submitted has been awarded to Mr. Lionel F. Crane. (The conditions provided that this prize would amount to £20 if more than twelve models were sent in. As only seven were received, the amount of the prize is £10, and the fourth prize mentioned above has therefore been awarded.)

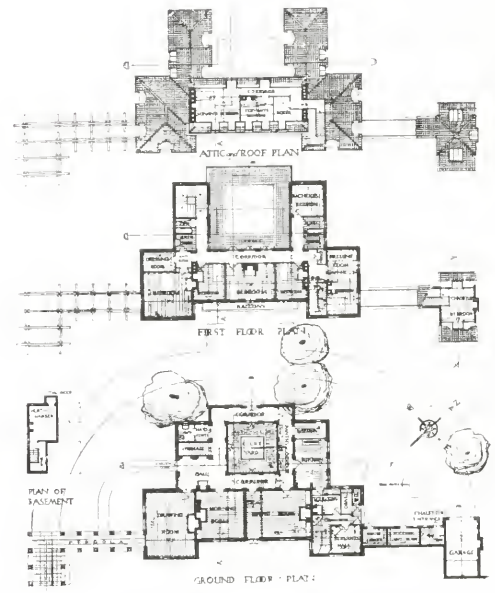


FIRST PRIZE PLANS

"A high level of merit is shown, not only by the designs to which prizes have been awarded, but also by many others, which we have recommended for reproduction in the pages of 'Country Life.'—E. L. Lutyens, P. Morley Horder, Lawrence Weaver.

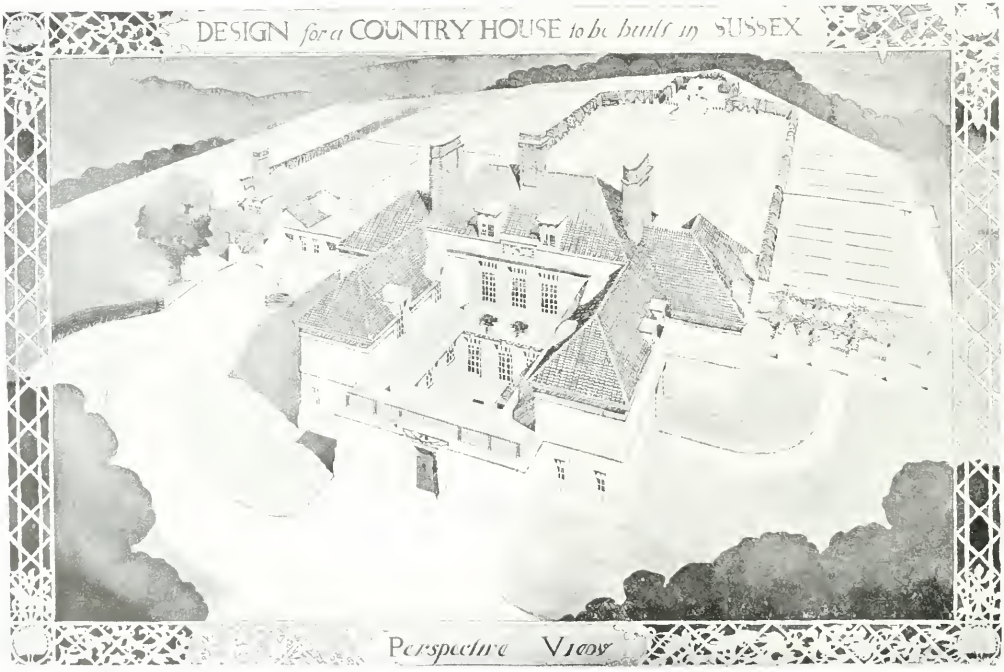
"June 2nd, 1913."

Mr. Weaver, in commenting on the competition, said that the problem in the present competition was to give practical and dignified shape to a country house of moderate size with the following accommodation: Hall, dining-room, drawing-room, study, six bedrooms and one or two dressing-rooms for the family, two servants' bedrooms, the usual

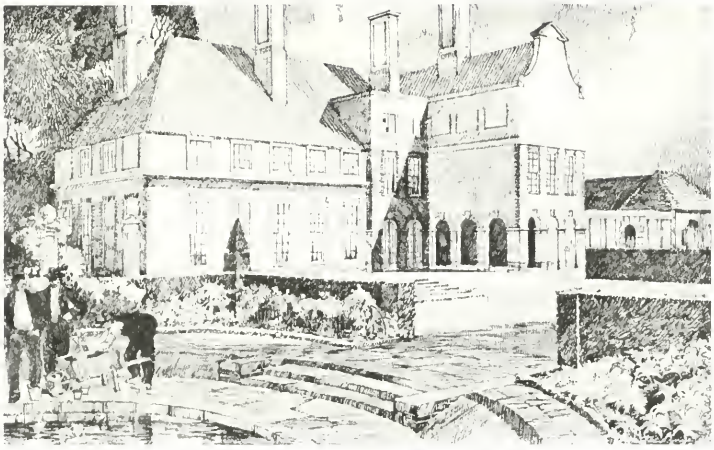


SECOND PRIZE PLANS.

kitchen offices, a garage and accommodation for an electric light plant. Limits of cubical content and cost were included in the competition, and allowed reasonable latitude in the employment of good, but not extravagant, materials. The competitors were also required to design the garden. The designs now illustrated will be understood the better if the nature of the site is understood. Covering rather more than two acres of Ryst Wood and oblong in shape, with sides almost parallel, it measures a little more than one hundred and fifty yards over its longest dimension, and averages about seventy yards in width. Its main axis runs from northwest to southeast, and, as is seen by the garden plans reproduced, it runs to a point at its southeast end. There is a gentle slope upwards to that end from the approach road. From the southern end of the site there are broad views over the Royal Ashdown Forest golf course southwards, and to the higher forest land towards Hartfield eastwards. Three great chestnut trees and one double oak are important features of the site, and they obviously needed to be preserved as features of the garden scheme. To the northeast, and covering much of the land between them and the approach road, is a charming plantation of oaks and firs, Nature's ready-grown protection. The first consideration, therefore, was for the right placing of the house. It is obvious that it would not be appropriate to build it close to the road, as in that position the fine range of view would be blotted out by the trees. It also seems desirable, in order to secure the utmost possible privacy for the garden, that the carriage road to the house should creep up the site at one edge instead of being carried up the middle. With regard to the aspect of the main garden front, the choice lay between the southeast, due south, or south with a touch of west, all satisfactory.



FRANCIS [illegible] SECOND PRIZE. BY CYRIL FAREY



GARDEN FRONT. THIRD PRIZE. BY A. W. ROSE.

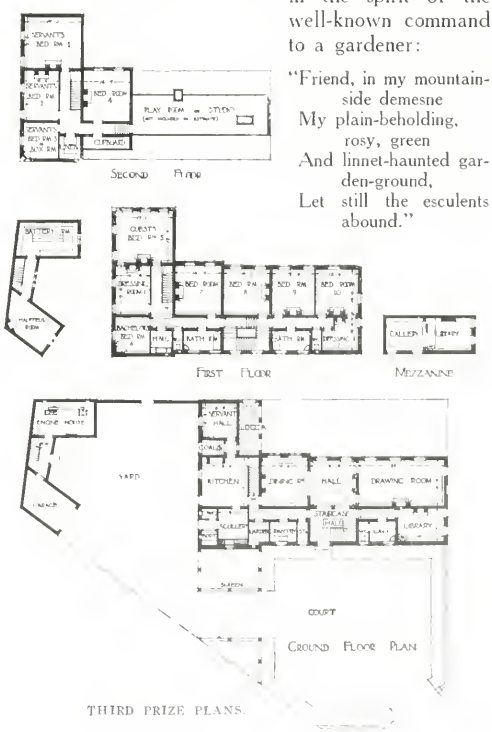
We now come to the question of architectural treatment. The country is typical of the genius of Sussex in that milder, wooden mood which belongs more especially to her northern borders. It is as unlike the large austerity of the South Downs as may well be conceived.

Forest Row, from which Ryst Wood is about a mile distant, is a charming village, but can no longer claim any aspect of remoteness. People are swiftly discovering that in its neighborhood are some of the most enchanting sites for country houses which can be found within so reasonable a reach of London. Other houses are springing up near by, but the various sites are so wisely hedged about with restrictions that no one house will spoil the view of another. The competition site is especially well guarded in this respect, and a perpetual open outlook is assured for the windows of the house. It seems, however, quite unnecessary to emphasize that vernacular and rural note which is appropriate to a house hidden away in an untouched, unknown neighborhood. The large majority of the competing architects seem to have appreciated this point. Although no indication of any desired style was given, most of them sought to achieve balanced and sober compositions rather than the rambling and picturesque type associated with the Sussex farmhouse. In this they have followed the increasing tendency to invest domestic architecture with those characteristics which we associate with Georgian times.

One definite impression I take from a study of the sheets of details to half-inch scale which accompanied each design on which a personal word may be allowed, seeing that it is impossible to reproduce these large drawings. They rather lack gaiety and life. It is true that the demure eighteenth century manner which most of the competitors have adopted demands sobriety and reserve in the application of detail, but it does not ask for dulness. We may require of all manners of building appropriate to domestic work that the detail shall actively please, and believe that dispirited treatment, like the dank words which Robert Louis Stevenson hated, is a crime of *lèse-humanité*. "Every gay, every bright word or picture, like every pleasant air of music, is a piece of pleasure set afloat; the reader catches it, and if he be healthy, go on his way rejoicing; and it is the business of art so to send him, as often as possible." It is reasonable to extend the same demand to architectural detail. It may be restrained in quantity and soberly disposed, but that is no reason why it should be lacking in an intrinsic vitality.

The interesting character of the garden designs marks the attention given nowadays to the unity which should subsist between the house and its surroundings. The elements of lawn and hedge, pool and pergola, are disposed with considerable skill in most of the schemes, but it has not been forgotten that the garden should be a place not only for flowers but for the kindly fruits of the earth. Indeed the competitors seem to have interpreted the conditions in the spirit of the well-known command to a gardener:

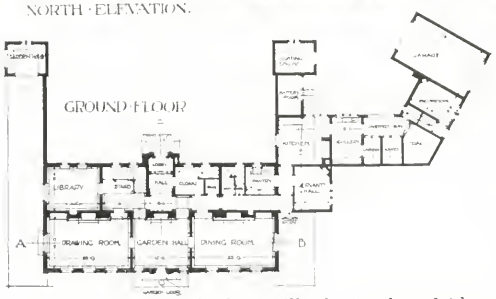
"Friend, in my mountain-side demesne
My plain-beholding, rosy, green
And linnet-haunted garden-ground,
Let still the esculents abound."

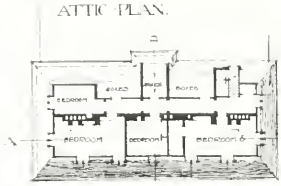


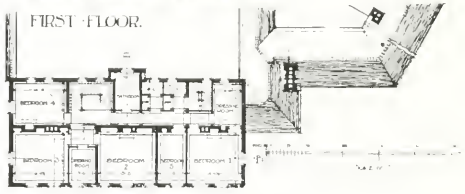
THIRD PRIZE PLANS.

The First Prize Design.—Mr. Curtis Green, well known among his professional brethren as the new President of the Architectural Association, is to be congratulated on a design of fine architectural quality. The placing of the building on the site is ideal, as is also the planning of the carriage road. The planning of the house leaves a little to be desired. The reception-rooms are well devised, but the kitchen quarters seem not to have been thought out carefully. On the first floor the bedrooms are well disposed, but those in the flanking wings are somewhat small. It must, however, be accounted to Mr. Green for righteousness that he has strictly observed the limits of cubical content and cost laid down in the conditions, and this cannot be said of many of the designs sent in. The elevations are altogether admirable. They show a fine reticence, a dignity of proportion and a right adjustment between solid and void which combine to make a design of unusual merit.

NORTH · ELEVATION.



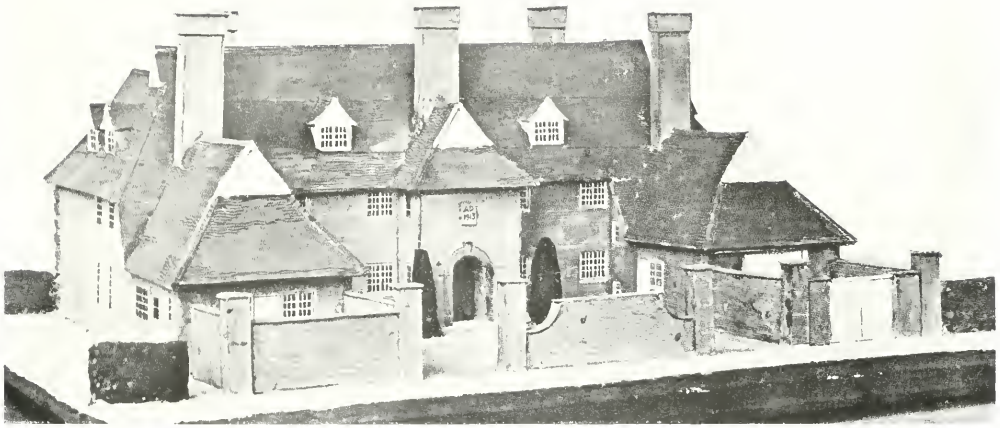




FOURTH PRIZE PLANS.
BY GEOFFRY LUCAS AND ARTHUR LODGE

When the house is built, it will take its place faithfully and naturally in direct descent from the later phases of Sussex domestic architecture. Its walls will be of hand-made, sand-faced bricks of various colors, so mingled that the wall surface will yield a broken and lively effect. The roof will be covered with hand-made tiles. Mr. Green has not provided for anything elaborate within. Cornices and paneling will be used in strict moderation. Elements which minister to the enduring comfort of the house, such as wood-block flooring throughout the ground story, will be provided with no sparing hand, and the whole house will be warmed by a low-pressure hot water apparatus. Mr. Green did not submit a perspective or model with his design. Mr. Lionel Crane was therefore commissioned to make a model so that the merits of the design might be more clearly shown. Photographs of the model are now reproduced, and give an excellent idea of the house.

Second Prize Design.—Mr. Cyril Farey, to whom has been awarded the second prize, submitted a design of notable interest and scholarship. It shows, indeed, a definite classical idea, represented in a very personal way. It is worthy, in fact, of the brilliant reputation of Mr. Farey, who last January carried off the Tite prize of the Royal Institute of British Architects for the façade of a royal palace. Mr. Farey's house is not so well placed on the site as Mr. Green's, as the carriage approach divides the wild garden into two halves. On the north, or entrance front, a little courtyard is provided, surrounded by a cloister-like arrangement. Three alleys of this cloister serve as passages to the staircase hall and sitting-rooms, while the remaining alley is ingeniously appropriated to the purposes of a pantry. Mr. Farey, however, has broken down on his kitchen plan. The arrangement of the bedrooms is perhaps the best that was submitted. The elevations are of great dignity, but it is doubtful whether the dormer windows when built would look so well as they appear in Mr. Farey's cleverly drawn bird's eye view. The main criticisms of this design are that the house is not big enough in scale for the plan adopted, that the courtyard entrance is an admirable feature, but would need to be at least double the size to be effective, and that

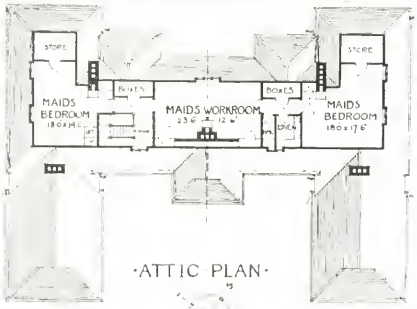


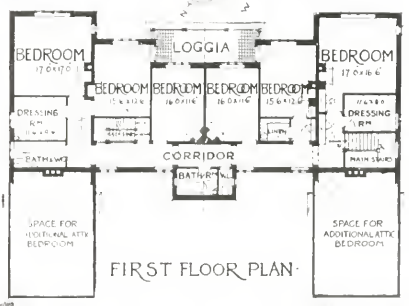
the elevations are rather un-English in feeling, and would hardly look comfortable in a country setting. For a site in a near London suburb their character could scarcely be bettered, but they show no regard for any building tradition which Sussex knows. Mr. Farey observed his conditions with regard to cubic content, but if the house were built with materials that would secure a proper interpretation of the design, it is unlikely that the limit of cost could be observed.

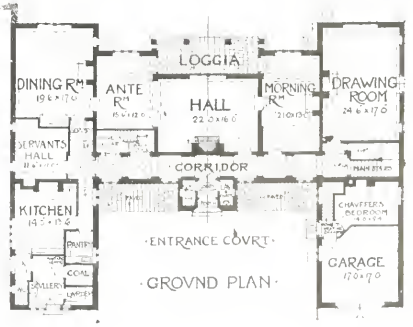
Third Prize Design.—Mr. Winter Rose is also to be congratulated on having given to his scheme a definite personal character, which lifts it markedly above the average level of the designs submitted. An admirer of this design, in practical proof of his liking, has commissioned Mr. Rose to plan for him a little country house. The competition house is placed well on the site, and its planning shows original thought.

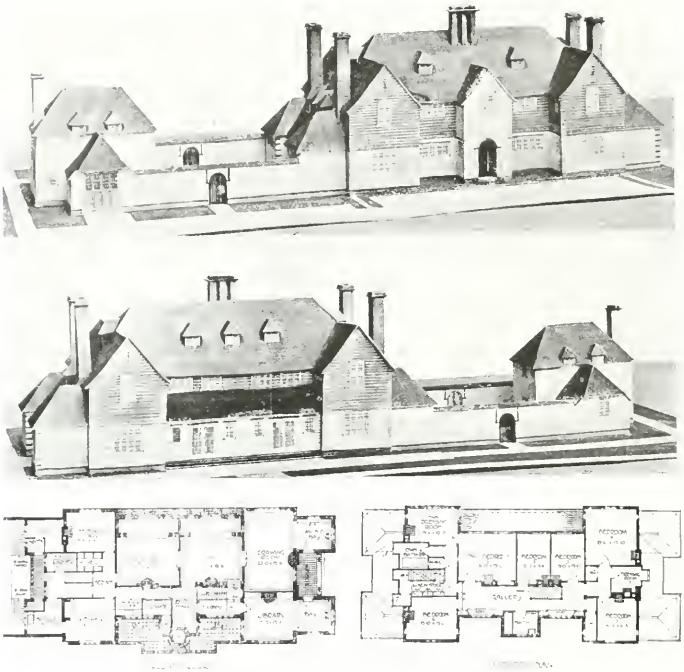
All the important rooms have a south aspect overlooking the garden, and all servants' quarters and bedrooms face to the east, so that neither would their windows overlook the garden, nor would the sounds of domestic activity reach the other part of the house. In the disposition of the reception-rooms Mr. Winter Rose has provided two rooms, the hall and the dining-room, of unusually bold proportions. They

PRIZE DESIGN
STREET FRONT, GARDEN FRONT AND PLANS
BY LIONEL CRANE







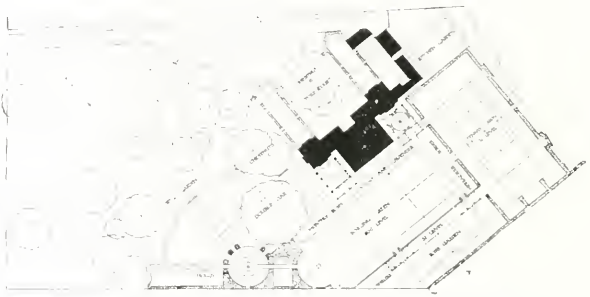


BOOK PRIZE BY LESLIE MANSFIELD.

are twelve feet high, and this difference in scale has a large effect on the general outline of the elevations. A gallery has been arranged on a mezzanine floor to the library, and is approached by a little circular stair. This would serve as a convenient book store and a pleasant retreat for a studious owner. The bedrooms are admirably planned, but, with an unusual generosity, the largest room is allocated to a guest. On the second floor there are not only two good servants' rooms, but an extra bedroom in excess of those laid down in the conditions is provided. The elevations of the house have a distinctive character. In some respects they show the result of the increasing attention paid to the classical work of the early nineteenth century, but the curved gable on the south side does not rhyme very happily with the rest of the design. The loggia is not very well placed, as there is no direct access to it from the house except from the servants' quarters. Mr. Rose's garden design is very ambitious, and the great lily pond seems rather out of scale with the house. In color, the house would be interesting, for Mr. Rose specified brick walls of a dark orange color, with dark grey bricks for the quoins and other dressings. For the roof, he contemplated using dark grey pantiles of the kind which at present seem to be got best from Holland—a state of things which does not do very great credit to the English tile maker.

Fourth Prize.—The design of Messrs. Geoffry Lucas and Arthur Lodge, which secured fourth prize, shows a very practical plan. The reception-rooms are all in the main block, and the kitchen quarters and garage in an annex. The authors have taken the opportunity allowed by the conditions of putting one of the family bedrooms in the attic. The general scheme of the house is so satisfactory that it is a pity it has not been invested with a greater air of distinction. The elevations are sound, but it must be confessed they are also dull. The impression given is that with rather more time and thought the design would have been much more successful. The house is put in the right place, and good use is made of the existing trees, but the authors are a little optimistic if they suppose that yew hedges would flourish under wide-spreading oaks. One of the less satisfactory features of the garden is the very curly drive, but clearly this has been so contrived with a view to saving the maximum number of trees. The same good effect, however, would have been achieved if the drive had been brought up the northeast boundary. The design is represented by an attractive perspective drawing, which, however, was not received in time to be judged *qua* perspective.

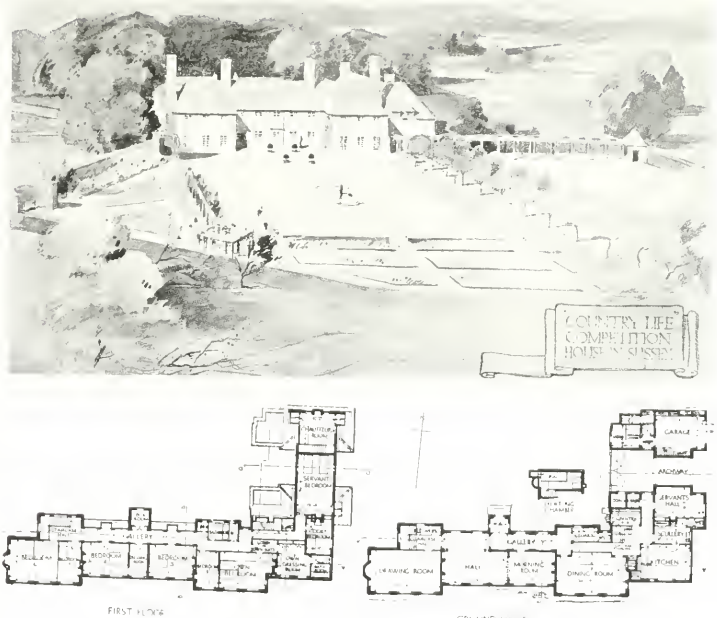
Book Prizes.—The design submitted by Mr. Brantwood Maufe, to which a prize of books to the value of ten pounds has been awarded, has considerable merit. The garden front is now illustrated by a perspective, drawn by Mr. Charles Gascoyne. Mr. Maufe has devised a very extended plan, and the house is only one room thick. The arrangement of the rooms is practical enough, except that the staircase is placed too much at one end. It would be necessary to walk over fifty feet to get from the dining-room door to the foot of the stairs, and the



FIRST PRIZE, GARDEN PLAN.

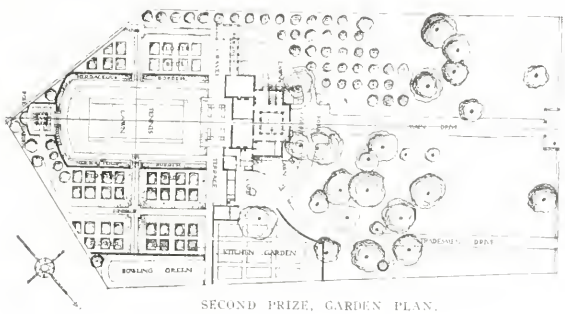
traveller would have to pass through the sitting-hall. The kitchen premises are well arranged, and the garage is joined to the house, being divided from it on the ground floor by an archway. A very good point in the bedroom plan is that the six family bedrooms and the two dressing-rooms all face south. The garden plan is characterless.

Mr. Leslie Mansfield's design, to which a book prize has also been awarded, was represented not only by plans, but by a very neatly made model, of which photographs are now reproduced. The elevations are conceived in rather too markedly a cottage spirit for a house of such dimensions, and the sloping roof over the loggia on the garden front would not have a very happy effect. The best feature of the scheme is the treatment of the servants' quarters, which are admirably practical, and the little kitchen court connecting the house with the garage is also well contrived. The reception-rooms are spacious and well placed, but the provision of bays in the drawing-room and library, connected by a set-back loggia, is not a very mature piece of design. The bedrooms on the first floor are satisfactory, and the servants' bedrooms are, as in most cases, on the attic floor.

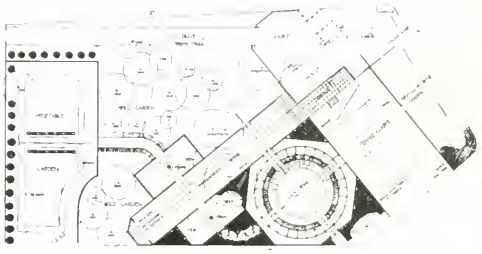


BOOK PRIZE BY E. B. MAUFE.

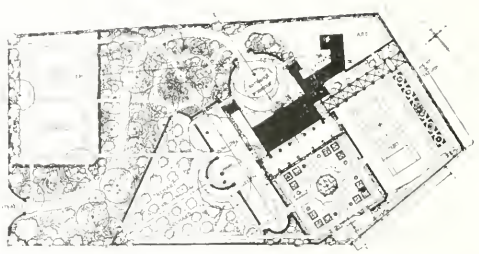
Perspective and Model Prizes.—The perspective prize has been awarded to Mr. Charles Gascoyne for a drawing of great merit. He is so well known as the interpreter of other men's designs for the purposes of the Royal Academy Exhibition that it is needless to discuss his technique here. It is sufficient to say that he combines the gifts of showing the architecture faithfully and of presenting it in a pictorial way, which is none the less attractive for being explanatory of the design. His drawing shows the scheme for the house submitted by himself, in conjunction with Mr. George Nott. It is full of architectural feeling, and the entrance front, not shown in the perspective, is especially attractive. The house is planned as a right angle, and the forecourt is formed by the two inner sides of the angle, and by wing walls ending in attractive brick posts. It is a little difficult to imagine a motor-car manœuvring in such a confined space. The ground floor plan is satisfactory in respect of the disposition of the main reception-rooms, which are flanked by a pair of garden rooms connected with the house by pergolas. It has to marked defects. One is the arrangement of the lavatory and cloaks lobby, which block what would otherwise be a through corridor from the main hall to the trades entrance. The other is the provision of the garage immediately adjoining the library. One rather trembles to think what the student in the library would say when the chauffeur was carrying out some small repairs to the car on the other side of a nine-inch wall. It is a pity that these practical points were not better thought out, as otherwise the design would have deserved a prize other than that awarded to the perspective. The garden has been spaciously designed with a very pleasant little yew-hedged garden, a tennis lawn similarly enclosed and a large parterre on the south



SECOND PRIZE, GARDEN PLAN.



THIRD PRIZE.



GARDEN PLANS.

FOURTH PRIZE.

side, in which a sunk pool forms an attractive feature.

The prize for the best model has gone to Mr. Lionel Crane, and two photographs of it are now reproduced. Unfortunately, its pleasant coloring can only be imagined, but emphasis must be laid upon this feature of it, because of the admirable idea of the house which is thereby given.

A model is to be regarded as a perspective sketch in the solid, and the merit of the perspective is not in the meticulous accuracy with which it shows every brick, but in the faithfulness and charm with which it gives a general impression of the building portrayed. In the model of a country house the main qualities to be looked for are, first of all, accuracy of scale, but, secondly, an artistic quality which commends the building to the eye, and regarded in this light, Mr. Crane's model meets all the requirements. With regard to the design which it interprets, Mr. Crane put himself out of court by setting the house at the edge of the approach road, with the result that the splendid views to the south would be entirely blotted out by intervening trees. Even if it were to be assumed that these trees would be cut down—a quite incredible assumption—the southward rise in the ground would be enough to destroy the possibility of a view. In point of planning the house is satisfactory, and Mr. Crane has provided a good balcony on the garden front, with doors from two of the bedrooms. The little gables treated in white roughcast look rather spotty, and one may be somewhat doubtful about the wall which partly encloses the forecourt on the north side. Like some other competitors, Mr. Crane takes rather an optimistic view as to the ease with which long motor-cars can be manœuvred in confined spaces.

The pleasing feature of this competition lies in the fact that the first prize design is to be actually constructed; in fact work has already been started. The competition considered as a stimulus to artistic skill has been justified by the results.

PRIZE PERSPECTIVE BY CHARLES GASCOYNE.

Competition for Two Semi-Detached Cottages

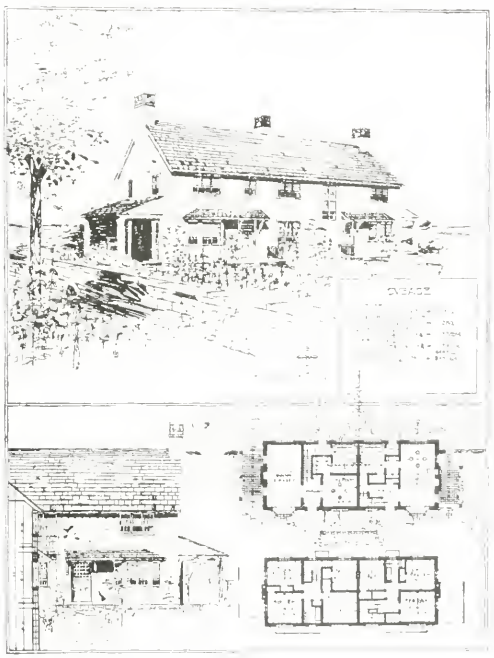
Held by "The Brickbuilder," Boston, Mass.

THE problem of a small two-family house is one which has been so often treated as to render anything new extremely difficult of attainment. Moreover, the necessity of basing these particular designs upon the use of stuccoed surfaces of largely uniform character had a tendency to restrict the designs to three general types, namely, the Old Colonial, the English country house, and the Spanish. Under these circumstances the variety of solutions submitted and the general high order of merit was a matter of both surprise and satisfaction to the jury. The results of this competition are an excellent indication of the general advance in design and composition to which the younger generation of American architects are so largely contributing, and, in particular, testify to a very high average of good taste and a strong feeling for simplicity. These facts rendered the duty of selecting the ten best designs one of particular difficulty, as many of the drawings submitted were of almost equal excellence with those premiated.

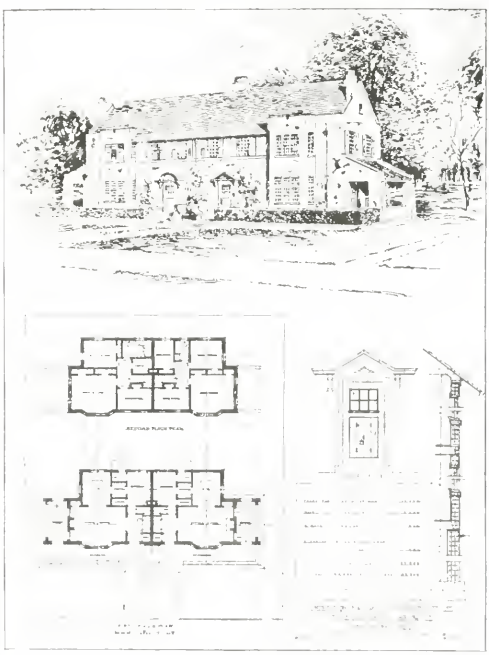
First Prize. Was awarded for exceptional imagination and originality in the use of the material, this being the primary requisite upon which the judgment was based, according to the terms of the programme. This drawing also showed a command of composition and grouping which extended even to the arrangement of the accessories in connection with the rendering, which is particularly to be commended.

In plan, this project is less practical than some of the others. In particular, the rooms marked "Den" are too small to be used for this purpose and might better have been denominated "Coat Rooms," as their real use seems to have been dependent upon the requirements of the exterior effect. On the other hand, this plan shows staircases with square landings, a feature largely neglected in many of the other plans, where winders were the rule. Certain other features, such as the recessing of a space for the kitchen stove, are also to be commended.

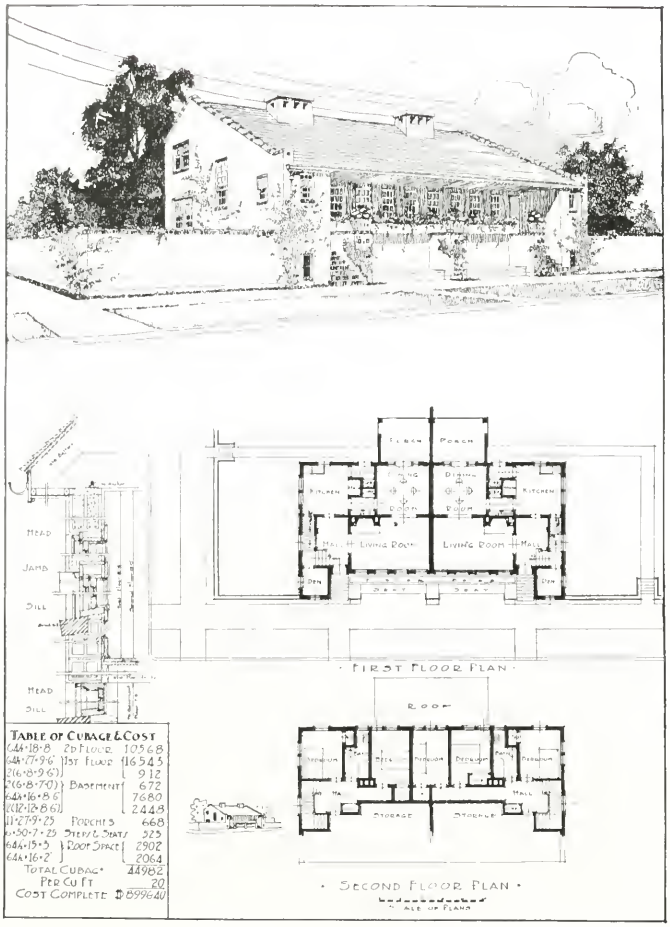
Second Prize. Was awarded to a scheme less interesting in design than the one already mentioned, but showing more careful study in the arrangement of the plan and better knowledge of livable conditions. In particular the grouping of the service in such a way as to be convenient to the street and as not to interfere with the use of the garden, is a point of particular value. This arrangement concentrates the plumbing while keeping the main entrance entirely separate and in direct communication with the garden at the rear. It also carries out the intentions of the programme with reference to bedroom facilities. There is no doubt that this would give greater practical satisfaction to an owner than the first prize,

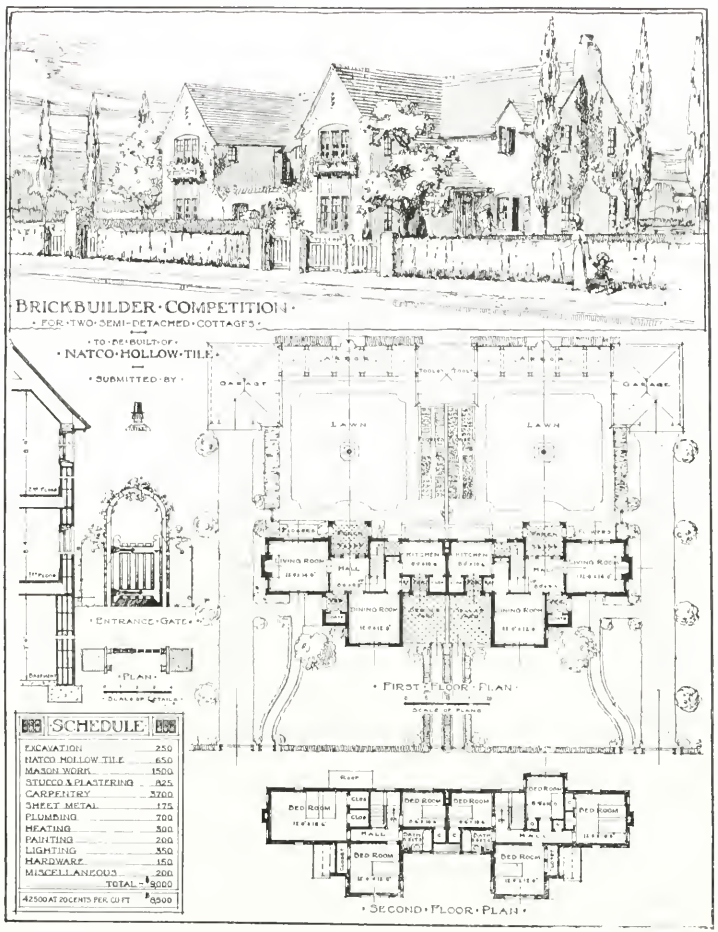


MENTION DESIGN BY L. E. VARIAN.



MENTION DESIGN BY R. T. STEVENSON.

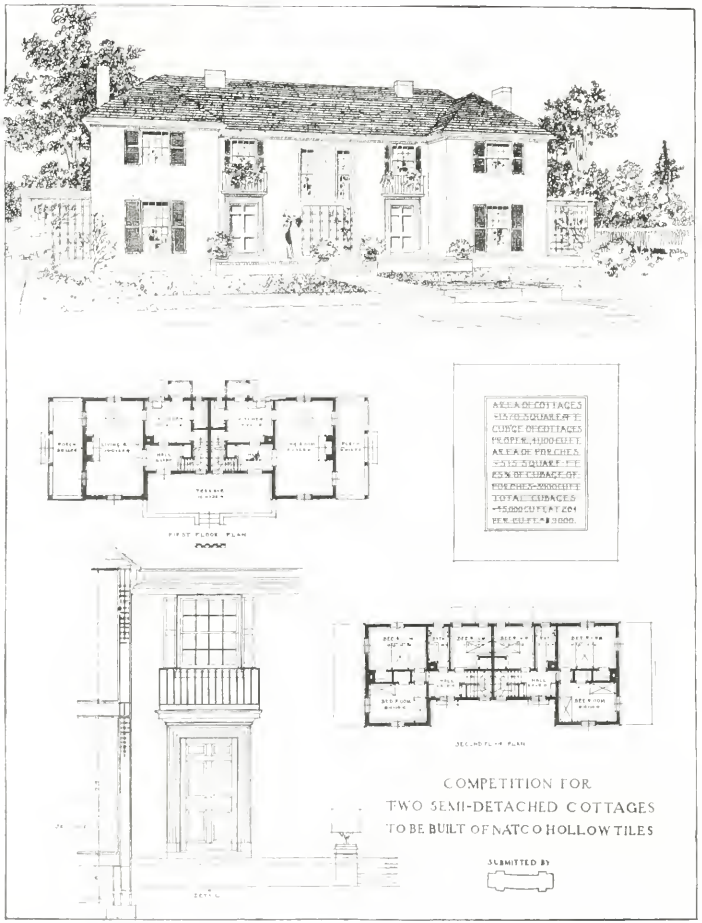




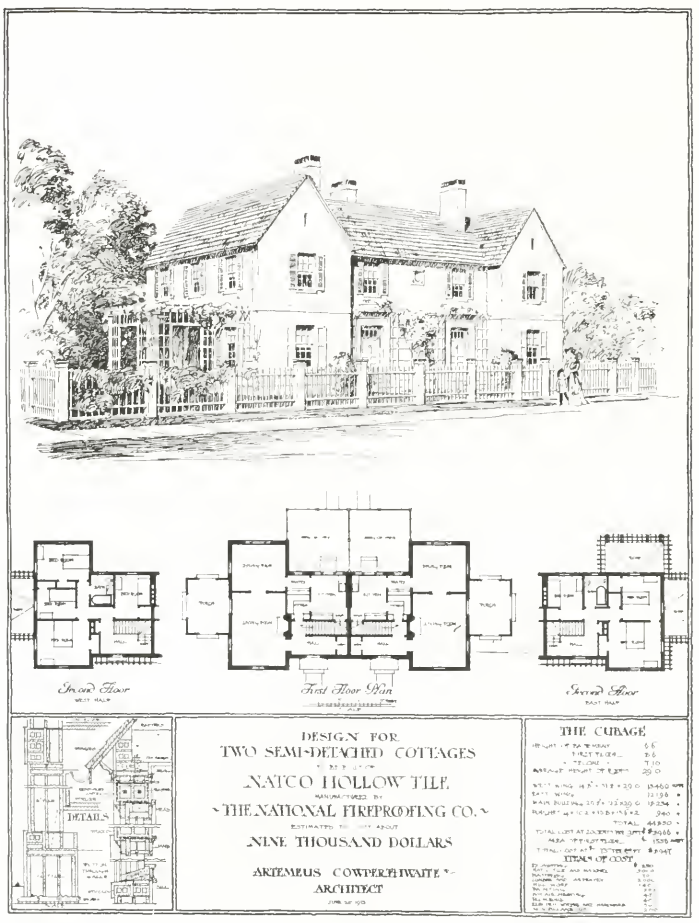
FIRST PRIZE DESIGN,
BY H. A. SULLWOLD.

COMPETITION FOR TWO SEMI-DETACHED COTTAGES.

SECOND PRIZE DESIGN.
BY TOMPKINS & BRODSKY



THIRD PRIZE DESIGN
BY CHAVE & BETMAN



FOURTH PRIZE DESIGN
BY A. C. CASS

COMPETITION FOR TWO SEMI-DETACHED COTTAGES.

although doing less for the advancement of architectural design. The exterior is, however, better than it appears, as its effect is marred by the rendering.

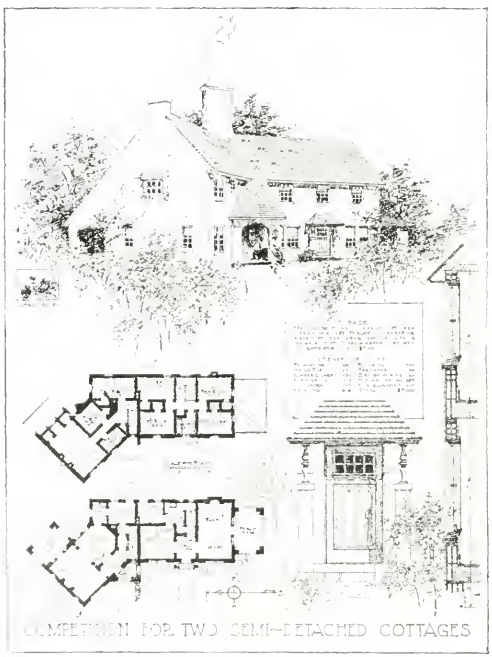
Third Prize. Was given to a simple and attractive design. It would be improved in plan by dividing the living room from the dining room, and as the cubage was well within the requirements, both living and dining rooms, together with the bedrooms above, might have been enlarged to advantage. While this design is well adapted to the use of tile, the actual detail of the construction was poorly indicated and showed a lack of knowledge of the material to be employed. The perpendicularity of the two centre windows is also disagreeable, but there is a nice feeling in the detail of the door.

Fourth Prize. Was awarded to a design which, although simple and well considered, was somewhat lacking in originality. In plan the entrance halls are narrow and unsatisfactory, owing to the service arrangement which necessitated a closing off of the staircase. This drawing is commended for good general composition and excellent presentation.

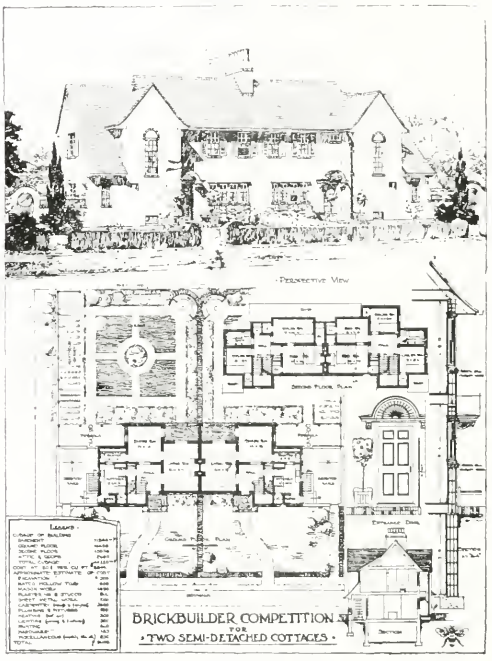
The six drawings following the prizes have been given equally honorable mention and the order in which they are discussed bears no relation to their respective merits. That by P. C. Dunham shows a simple and attractive exterior with a distinctly homelike charm. It is also very agreeably presented and in particular the free-hand rendering of the plan eliminates much of the stiffness which characterizes the presentation of other drawings. In the mention design submitted by R. H. Bullard is shown a good livable plan with proper separation of service yard from garden. Certain practical points are, however, forgotten. In particular, no kitchen chimney is shown and the design would, therefore, be unsatisfactory in parts of the country where the gas stove and fireless cooker are not in general use. R. L. Stevenson's drawing, while attractive, is to be criticized for the treatment of the tops of the walls of the bay windows, which in actual construction would result in staining and disintegrating the stucco surface. The difference in the two doorways is out of keeping with the otherwise symmetrical treatment of the elevation. The bay windows also appear to be incorrectly shown in perspective, as they give the effect of rectangular projections which, in point of fact, would have been much better than the sloping bays shown in plan. The mention drawing of Lester E. Varian shows a simple, straightforward plan, but commonplace and lacking in originality of design. The presentation is also unfortunately complicated.

The Jury of Award was composed of Frank C. Brown, Boston; Abram Garfield, Cleveland; William H. Schuchardt Milwaukee; Hugh Tallant, New York; Waddy B. Wood, Washington.

The problem called for two small semi-detached cottages located in a town, or small city, and costing not over $9,000. The cost of the cottages was to be figured at twenty cents per cubic foot. First consideration was given to the æsthetic fitness of the design to the material employed, second adaptability of the design to the constructive requirements of the material, and third, excellence of plans.



MENTION DESIGN BY P. C. DUNHAM.



MENTION DESIGN BY R. H. BULLARD.

FIG. I.

Leaded Glass as a Decorative Feature in English Homes

John Y. Dunlop, A.B.I.C.C.

ORNAMENTAL MATERIAL and every sort of decorative art are employed to add beauty in appropriate settings, and the English architects have been able to avail themselves to a great extent of one ornament—leaded glass—the crowning invention of the Gothic artist. This glass at one time largely influenced the design of the finest buildings, and thus was able to reflect a glory on them which nothing else has approached. The peculiar excellence of this material over other decorations is that it is luminous and the light which comes streaming through the window conveys to the eye the strong contrast between the light and the opaque masses.

In England the smallest wayside cottage has its lead glass windows, which in the most of cases are designed in some way to add to the charm of the house. Nowadays there is a tendency to increase the use of this material for decorative purposes which is due to the growing use of casement curtains and to the prevailing idea of the up-to-date housekeeper who wants to do away with the use of blinds.

FIG. II

LEADED GLASS AS A DECORATIVE FEATURE.

FIG. VI.

There are, of course, excellent reasons for this change in window decorations. The old-fashioned Venetian blinds are objectionable, as they collect dust, which can only be removed with great difficulty, besides being complicated and always getting out of order. Heavy curtains are also unavoidably collectors of dust, and especially when they are hung on heavy and insecurely fixed cornices with heavy fringes which are impossible to dust.

The recommendation of leaded glass or partly leaded glass windows applied to all houses. It was not a protest against this material when architects helped on this overwhelming popularity of clear glass which has caused its wholesale use. There is no doubt that the necessary conditions of health are air, light and warmth, but at the same time we must have an absence of damp, dirt and dust. Therefore it is evident that the window decoration is an essential and important part of the problem of house arrangement.

FIG. V.

Dust enters our houses through the fresh air inlets from without, and is formed within by the wear and tear of our furniture and the combustion of fuel in our fireplaces. Dust is deposited everywhere, clings to our curtains and margins of books, and is of the most varied composition. On this account the window is a question upon which the architect is compelled to spend a certain amount of thought so that the incoming dust may be arrested.

The natural outcome is in making the window decorative; in the small modern building we find the windows treated in three different ways: Glazed with clear glass throughout;

wholly glazed with leaded glass; partly glazed with leaded glass.

Of the first arrangement we will have very little to say; still by close observation we must admit that it is very popular and that it is conducive to health. But we must also consider the essential aims of the internal arrangement of the house which are conducive to health and comfort.

Our windows must be arranged for fittings which will be convenient, elegant and clean, and which will give a soft light and free passage to the air. They should also permit of a good view from the inside and not from without, thus securing the same privacy as if they were opaque. Opening leaded lights so far as suitable to the climatic conditions are very satisfactory. The ultimate cost may be a little more than for plain glass, but it is money which is going to supply some essential for the comfort of the house, and every penny spent in this way goes to make the home more valuable and enjoyable.

FIG. VII.

It has always been a peculiarity of English architects that they have devoted more attention to leaded glass than their colleagues of the other isles. There must have been a period at which time these architects worked with some feeling and sentiment over the design of these windows.

The typically English use of leaded glass in wayside cottages is shown at figs. I., II. and III., in each of which the design contributes in some way to the æsthetic charm of the house. Fig. IV. shows how this decoration gives an accent to the front of an old wayside inn. Fig. V. shows a detail of the southwest gable and Fig. VI. a bow window on the ground floor.

The variety of the geometrical patterns chosen breaks the plain lines of the front and lends a charm apart from the contrast in color which the designs afford.

Fig. VII. shows an internal view of a dining-room window, while fig. VIII. furnishes an example of a window in the hallway. In each of those patterns the quality of glass determines the color from which has been obtained a glowing lustre of color comparable only to the beauty of gems. In each of these windows the glass is fitted into frames, for the days are now past when it is considered advisable to insert the glass into grooves in the stonework of windows. These frames are of two kinds: sash windows and casements, each class having its peculiar advantages and disadvantages. Sash windows are essentially British in their origin and development, and in some parts of the country

FIG. VIII.

very little else is used. Figure IX. shows a design with leaded glass and made very effective by the introduction of those simple ornamental glazed panels. In the most of domestic architecture the character of the design of those panes of glass is more impressive when kept very simple in treatment. A simple leaded drapering or pattern of small compass introducing roses of a deep shade furnishes a pleasing and harmonious effect.

Another point to be considered is the fact that the glass for this work should be fairly thin, as no advantage can be obtained in using thick glass for this distinctive decorative feature of the home, while the thin furnishes a more pleasing effect to the ensemble.

FIG. IX.

DISCOVERY has just been made that the originator of the American "skyscraper" or "gratteciel" was not an American architect after all, but a Frenchman, a Savoyard, who lived three centuries ago. At the Bibliothèque Nationale in Paris there is preserved a volume written by this architect, whose name was Jacques Perret of Chambéry, in 1601, describing a skyscraper of the author's invention. "This grand and excellent pavilion, in which one can lodge 500 persons in comfort and luxury," was to be of 160 feet frontage, 145 feet in width, and with walls ten feet thick. Perret did not foresee the use of iron and steel as building materials. The edifice was to rise twelve stories and have a little pavilion on the roof surrounded by terraces, and was thus to reach an altitude of 350 feet, "which," says "L'Illustration," "is, of course, hardly to be compared with the gigantic buildings of 480 to 650 feet which Pierre Loti saw on his recent visit to New York. At the same time, Perret's design is certainly the ancestor of the American skyscraper of 300 years later—an audacious idea conceived by a Frenchman."

* * *

A UNIQUE engineering problem is the construction of sufficient houses to quarter the men employed on the task of constructing the gigantic tunnel through the Selkirk range of the Rocky Mountains at Glacier, B.C. One of the problems the contractors had to face was the drifting snow in winter, which made it well nigh impossible to proceed with the work in a satisfactory manner, so they conceived the plan of building a village on stilts. The proposition was placed in the hands of a well known architect and he was asked to draw up plans which, when finished, will cost $50,000. The floors of the houses, which will be of substantial construction, are to be eight feet above the ground; the streets will have no sidewalks, but will have a walk in the centre, also eight feet above the ground level and connected with the doors of the houses by little bridges.

E. VINCENT HARRIS, AND
T. A. MOODIE, ARCHITECTS.

THE GLAMORGAN COUNTY HALL, CATHAYS PARK, CARDIFF, WALES.

From Architectural Review, London

UNIVERSAL APPROVAL is accorded the "Ancient Monuments Act" passed by the recent Parliament in London, England. The late Lord Avebury led the way in bringing the subject to the notice of Parliament, and in 1882 Mr. Shaw-Lefevre (now Lord Eversley), as First Commissioner of Works in Mr. Gladstone's Government, passed the first Ancient Monuments Act. It extended only to monolithic and other prehistoric remains, and was purely permissive in its character. The owner of such a monument might place it in the guardianship of the Commissioner of Works, and it then became an offence on the part of anyone (including the owner) to injure or deface the monument. In 1900 these provisions were extended to any "structure, erection, or monument of historic or architectural interest," with the exception of a structure occupied (otherwise than for caretaking) as a dwelling house, but the application of the Act still depended upon the consent of the owners of monuments.

The fabulous sums offered by Americans to transport ruins across the Atlantic has only been conjured up to raise the market value of ancient monuments. Another serious matter is the purchase of old structures to despoil it of its intrinsic value for the enrichment of modern buildings.

The London "Times" says it is obvious that in relation to such traffic the mere scheduling of monuments or any other arrangement devoid of some machinery for arresting destruction merely attracts the destroyer. Hence the existence of the Royal Commissions which have been at work for the last five years examining and scheduling the places of historic interest in England, Scotland and Wales, and which have already made valuable reports, is an additional reason for protective legislation. At the same time the Commissions form a nucleus for an authoritative advisory body to share with the Commissioners of Works the responsibility of restrictive action.

These considerations have been in the minds of the framers of the new Act, which not only amends but consolidates the existing law. In the first place, it authorizes the purchase of monuments either by the Commissioners of Works or by the Council of any county or borough, or the Common Council of the City of London; but such a purchase can be carried out only by agreement with the owner. The gift or devise of a monument to the same bodies is also authorized. The alternative machinery of guardianship is then provided, as in the existing Acts, and the effect of guardianship is explained.

By constituting the Commissioners of Works or the local authority guardians of his monument the owner does not divest himself of any right of property except that of destruction, active or passive; in other words, the guardians of the monument may restrain the owner from injuring it, and may, concurrently with the owner, do any work necessary to maintain and protect it.

So far the Act follows on previous lines, and can only be applied with the consent of the owner. On this stem is grafted the compulsory machinery of the Act. An Ancient Monuments Board, representative of the three Historic Monument Commissions, the Societies of Antiquaries of London and Scotland, and other artistic bodies, is to be constituted by the Commissioners of Works, and upon their report that any monument is in danger of destruction, removal or damage, and that the preservation of the monument is of national importance, the Commissioners may make a preservation order, placing the monument under their protection, and while such an order is in force the monument cannot be demolished, removed, added to, or altered without the consent of the Commissioners.

There is a further piece of machinery designed to keep the Commissioners of Works acquainted with the area of their work. They are, after notice to the owners, to prepare and publish a list of monuments of national importance, and when a monument is included in this list the owner must, under a penalty, give a month's notice to the Commissioners of any proposed work of demolition, removal, alteration, or addition.

The influence of French legislation may be traced in the new Act. In France the grip of the State on buildings and remains of interest has long been effective. In the time of the great Napoleon, the acquisition of any private building merely to prevent its destruction was authorized, and in 1837 a Commission des Monuments Historiques was appointed with the Minister of Public Instruction and the Fine Arts as its president. In 1887 a registration of monuments was initiated, and powers of compulsory acquisition, where the owner objected to registration, conferred. Nor is there any disposition to leave this machinery idle. Three general inspectors of historic monuments and a large staff of architects are attached to the Commissions, and the annual grant for the upkeep of monuments is substantial, amounting to as much as $600,000 in one year.

* * *

CONSTRUCTIONAL work on the seven hundred foot terminal pier at Deep Water, Nova Scotia, is progressing rapidly. Approximately two thousand reinforced concrete piles are being driven into the sea-bottom varying from eleven to twenty-three tons dead weight. The work is carried on by means of a one hundred and twenty foot scow equipped with four engines, the main one controlling the carriage, raising and lowering the sixteen ton steel hammer. The other engines are used for driving in the great "spuds" whereby the scow is made fast to the bottom. These "spuds" are thick wooden beams, 95 feet high, two of which are placed at the bow, and a third at the stern. At the forward end of the scow are two steel derricks whereby the concrete piles are lifted into place and then driven in by the hammer, which derricks are operated by the engines on the scow. The carriage at the forward end of the pile-driver is placed on rollers and can be adjusted so as to place the hammer directly over the pile

which has been lowered into the water. Two pile-leads, 74 feet high, are set up on the carriage between which the hammer is worked. Iron rods are driven into the ends of the piles and these in turn are fitted into hollow pipes at the bottom of the hammer, which is then slowly lowered until it rests upon the wooden top, placed on each pile. When all is ready the pile-hoist is removed and the hammer begins its work driving the piles. Reinforced concrete constitutes the floor laid upon the tops of the piles. For this purpose two lofty wooden towers have been erected. At the bottom of these will be placed mixers from which the concrete will be sent up to the tops of the towers and thence distributed by chutes. The shed is also of concrete with steel bars embedded in it, and covers an area of 136,000 sq. ft. There will be two stories, the lower being devoted to the handling of freight and the upper to the handling of passengers. Four railway tracks are to be laid down on the pier, two to run on either side of the shed and two to run through the centre of the building. On either side of these central tracks will be roadways for horse-drawn vehicles. Accommodation will be made on the lower floor for railway and customs offices. The upper floor, which will be taken up with immigration offices and accommodation, will be so constructed that, if there is a sufficiently large staff, the immigrants from two liners, one on each side of the pier, can be handled together with ease. The shed will be fireproof and at the same time fire escapes will be erected in the case of any local conflagrations. With the exception of the windows, doors and strengthening bars, the whole building will be of concrete.

* * *

ALL ENQUIRIES regarding the competition of the proposed Government buildings at Ottawa shall be addressed to the Secretary of the Department of Public Works, Ottawa, Ont., and all such enquiries must be typewritten and submitted on plain paper without heading or signature and must be received on or before the 30th day of October, 1913, they will be answered by identical communication to all competitors. By order, R. C. Desrochers, Secretary, Department of Public Works.

TO ARCHITECTS

MASONIC TEMPLE, TORONTO

Competitive designs for the above will be received up to noon on the 20th day of January, 1914.

The Conditions of Competition have been prepared by a competent professional adviser who will also report upon the merits of the various designs.

For copy of Conditions apply to

MR. W. H. BEST,
No. 181 Avenue Road.

THE PEDLAR PEOPLE, Limited, announce the establishment of a branch factory and the removal of their eastern office to 26 Nazareth street, Montreal. The office telephone is Main 3328 and shipping department Main 8447.

* * *

A CATALOGUE illustrating the various lighting fixtures of Parian ware has been issued recently by the Gill Brothers Co., of Steubenville, Ohio. The Canadian selling agent for this ware is the Canadian General Electric Co. of Toronto.

* * *

A VOLUME relating to the by-law for regulating the erection and to provide for the safety of buildings in the city of Toronto, passed April 1st, 1913, has been issued, bound in red leather. It contains all matters enacted by the council of the corporation of the city.

* * *

"CANADA TO-DAY, 1913," just issued in bound form by Simpkin, Marshall, Hamilton & Kent Company, is alive with general matters relating to the progress and prosperity of the Dominion. It contains over four hundred illustrations and a specially designed colored map of the various provinces.

* * *

THE METHOD of burning brick by producer gas in a continuous kiln has been installed in the plant of the Sun Brick Company at Toronto. The bricks, after being dried by radiated heat, are placed in one of a series of chambers, preheated by the surplus heat being drawn from burning and cooling chambers and gradually brought to a degree of heat sufficient to ignite the gas. By means of an electric pyrometer system the exact temperature is automatically registered on a dial which permits of a constant flow of gas, thereby furnishing an even temperature throughout the chamber. This method insures a uniform color and metallic hardness which is essential in the making of first class products.

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CONSTRUCTION

VOL. VI NO. 11

CONTENTS FOR NOVEMBER, 1913

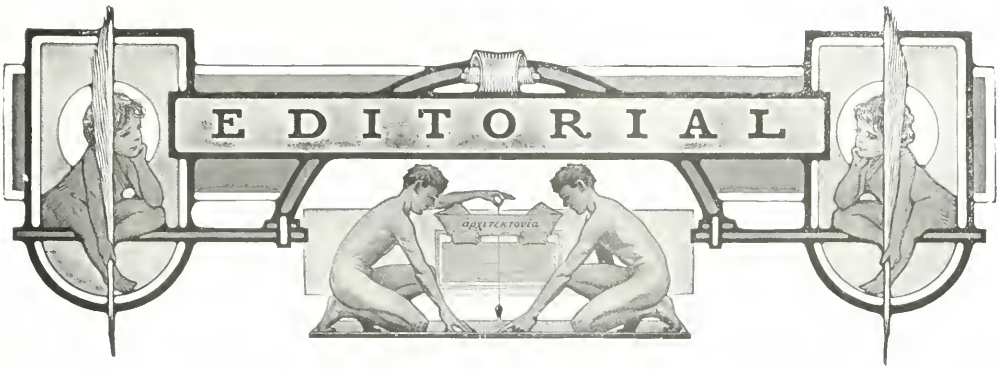
Full Page Illustrations

H. GAGNIER, Limited, Publishers
GRAPHIC ARTS BUILDING, TORONTO, CANADA
BRANCH OFFICES:
MONTREAL WINNIPEG CHICAGO NEW YORK

DETAIL OF
MAIN FACADE.

TORONTO GENERAL HOSPITAL.

DARLING & PEARSON,
ARCHITECTS.



¶ Canada's Thanksgiving—A cause for general gratitude over the progress of the present year and the future promise.

SURVEYING the conditions of the past year, the great question arose on Thanksgiving day whether or no, as individuals and as a united people, the times warranted the optimistic opinions offered by the various prominent men throughout the Dominion of Canada. To be sure, our pessimistic friend was ever present. He could see nothing but portending disaster ahead. Is it not evidenced, he asked, in the scarcity of money, the large number of unemployed, the moneyed institutions' refusal to advance loans on real estate, the drop in all phases of commercial activity, the building slump, etc., etc. We have meditated over his statements and after a conscientious endeavor to sift the various arguments to the very bottom, we are convinced more than ever that the clouds are breaking and that we have great reason to be thankful. In the messages from the Premiers of the Provinces we note a sentiment of confidence which must express the feelings of the millions under their jurisdiction. Sir Lomer Gouin of Quebec congratulates the Dominion on her present prosperity and prays that the industry and skill of the people, the productiveness of the agricultural and dairy lands, the commerce, the industries, the output of its forests and mines, all will continue in their present state of activity. The acting Premier of British Columbia cites the year as one of substantial gain in commerce and general development. He believes they are on the eve of a new era, a condition emanating from the successful operations at the Isthmus of Panama which is focusing upon the western coast the attention of the world. From Saskatchewan the Premier greets us with the statement that in no previous year has there been harvested a more satisfactory and bountiful crop. The Premier of New Brunswick claims the season has been one of the finest in many years; the harvest has been bountiful; prevailing prices in most lines satisfactory; demand for labor good and the remuneration fully up to if not in advance of previous years. Such optimism is true and wholesome. The real cause for our uneasiness is a failure to grasp the helm firmly, but rather be contented with a shaky and dangerous existence. Let the world cry hard times and we have it, but let each individual weigh the points carefully, consider the cause and effect, and he will soon feel his pulse tingling with new life. For some time the building trades took a slump—a slump not from the standpoint of a good successful period, but measured from the phenomenal record of 1912. When it is appreciated that in some cities the total for this year will exceed that of last and that in most of the remaining places the amount is gradually encroaching on the total for the preceding twelve months, then it is advisable at least for the hard-times look to disappear. All the more so when you realize that this has been true during a period of general depression when external causes have kept the world in a state of fear and anxiety. Our general tendency is to exaggerate the existing impressions by ignorantly quoting false conditions elsewhere. What a large amount of wasted sympathy has been expended on the Western people. The poor people, with their heavy crops, their gains in commercial life, their remarkable industrial growth. No, we feel that Postmaster-General Samuel, of London, in commenting on his recent extended visit to the Dominion, spoke correctly when he said: "The impression I received of the working classes throughout my tour was that on the whole they are prosperous. The sole unemployment existed in the West on acount of the recent financial stringency. These conditions were, however, passing away in consequence of a very bountiful harvest, which has done much to restore the financial equilibrium."

The little lesson of economy as well as the bridling of real estate speculators during the past season has made a profound impression on us all. We have grown cautious once more and as a result the wheels of progress have been set in motion towards a future prosperity unparalleled in our history. And if we can only prove ourselves masters of this new era there can be nothing to hinder our advancement in the direction of unsoiled dignity and power.

Toronto General Hospital—The high conception evolved from the first of making the institution practical and modern in every respect.

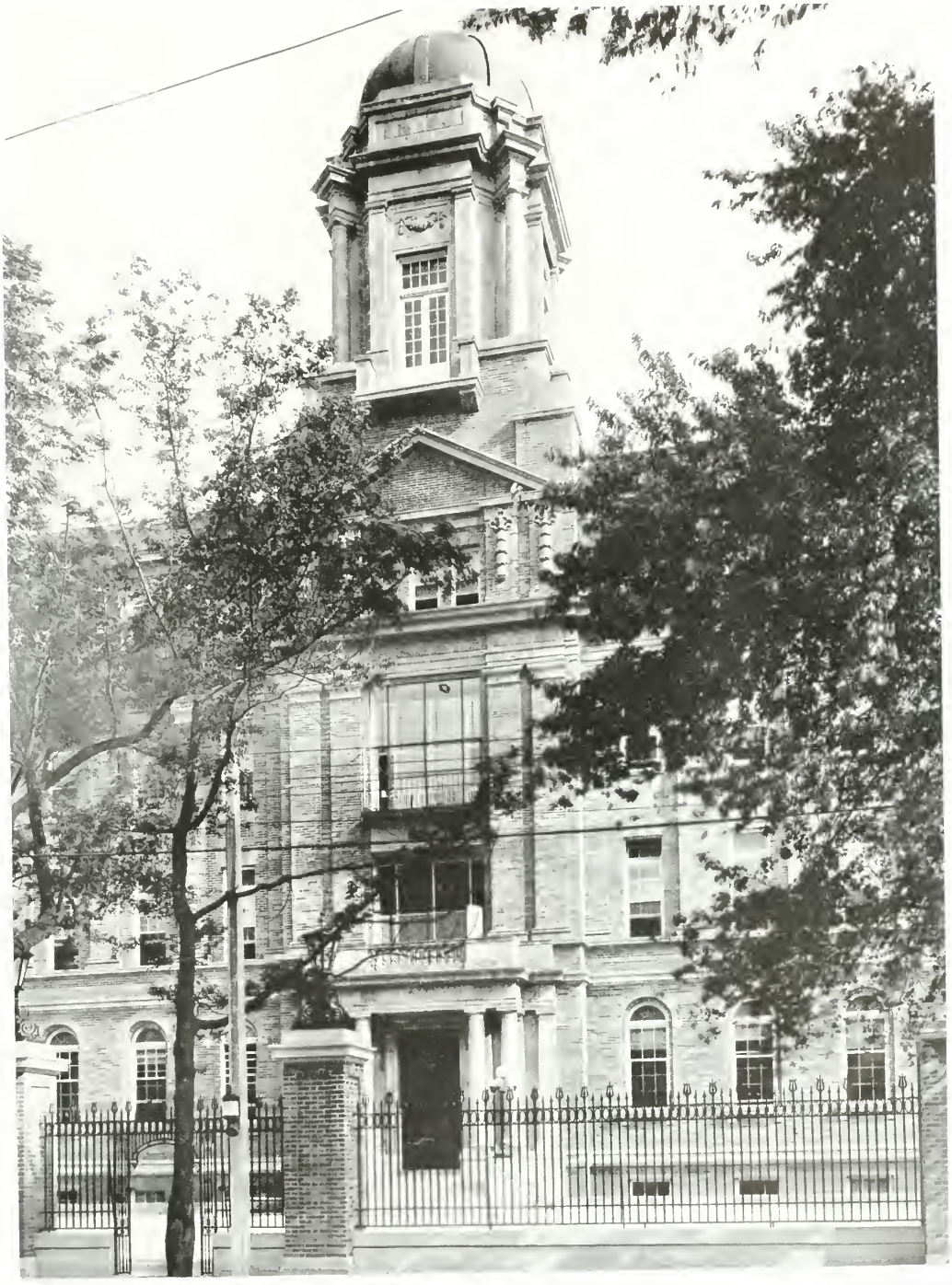
THE FINISHED product of a large undertaking creates enthused admiration from the people at large, and yet how many of us stop to appreciate the intricate problems met during its erection. The new General Hospital illustrated in this issue stands as one of the best types in modern hospital work. It is cited by authorities in the various countries as having an exceptional plan, and an equipment of unusual merit. It reflects the æsthetic ability of our local architects and the practical modern methods employed by our hospital boards. The committee in charge started the undertaking with a comprehensive view of what the present and future needs demanded. Their chief aim was to erect a hospital complete in every phase of the work, with a prominent location, practical arrangement, modern equipment, a stable organization, proper co-ordination of efforts in every department, staffs of efficiency and the best facilities possible for student education. As a result of their untiring efforts the architectural firm of Darling & Pearson was selected to prepare the plans. Their task involved a considerable amount of of preliminary work. The site was solidly built, cut through by numerous streets and of an unsanitary state. After the removal of over two hundred houses the complete area was specially treated and made thoroughly sanitary in every respect. On Tuesday, April 11th, 1911, the Governor-General of Canada, Earl Grey, laid the corner stone of the Administration building. The magnitude of the institution was impressively expressed at that time and assurance was given that the completed work would be second to none—a fact fully demonstrated by the present group of buildings. How the new institution was started is set forth by C. K. Clarke, M.D., LL.D., Superintendent Toronto General Hospital, in his treatise on the historical phases of the work. Dr. Clarke states that two years ago the Board felt the urgent need for a change of policy in the whole conception of the institution, including buildings, equipment, maintenance and administration. Conditions had changed and the marked advance in knowledge as to what constituted adequate hospital facilities necessitated an adjustment. The Board decided to make no further expenditure in patching up old buildings, but that provision should be made for new structures and equipment suitable for the modern and scientific treatment of the sick, and at the same time furnish facilities for educational work in conjunction with the University.

Steps were taken at once to secure the co-operation of every one interested in the creation of a new hospital. Among the donations were $250,000 from the Government; $200,000 from the city of Toronto; $50,000 from the University of Toronto; $100,000 from Cawthra Mulock for the out-patient department; $100,000 from Hon. Mr. Cox for a memorial building; $100,000 from the Massey estate, and $330,000 from J. C. Eaton for the erection of a surgical wing and memorial. Generous and spontaneous contributions came from every source and are still giving evidence of the great interest which this humanitarian project has awakened among the people.

The hospital, which provides beds for approximately seven hundred patients, occupies nine acres of land in the heart of Toronto within easy access to every part of the city. It is a source of pride to the Torontonians, as it reflects the progressive spirit of our present area. It is worthy of note that while the work has been carried to completion in a mercenar age where the bare necessities sometimes obliterate all else, still here the æsthetic and practical are so happily united as to produce a dignified and artistic institution endowed with the very highest conception of structural ingenuity.

The main argument in favor of sacrificing parts of our public parks—Intolerable conditions should be eliminated, not concealed.

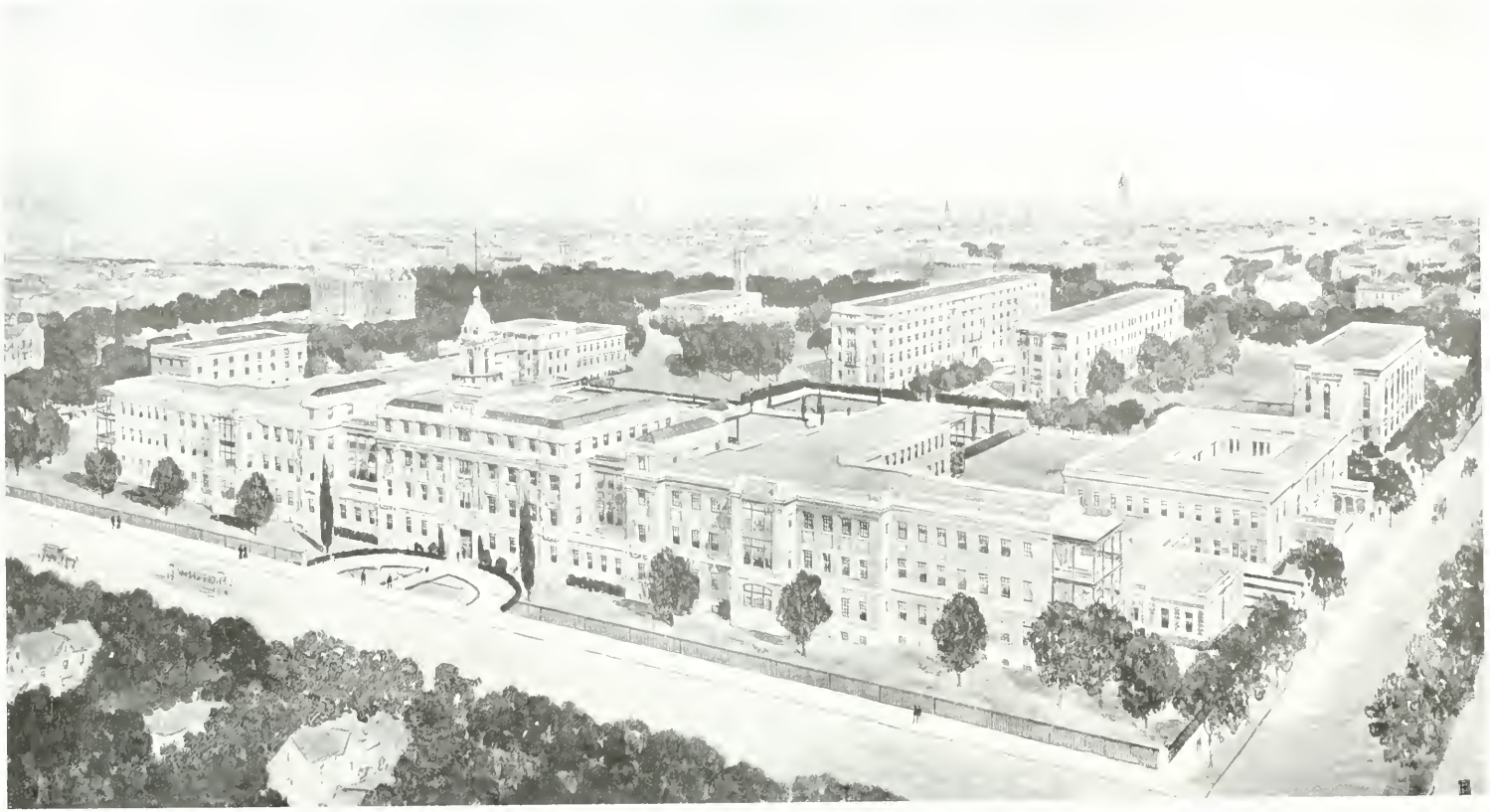
IN THE OCTOBER issue of CONSTRUCTION a criticism was offered against the scheme before the Toronto City Council of converting certain sections of the various parks into homes for the working people. Our attention has been called to the fact that the press in commenting on same failed to express the one important reason for such drastic action by the committee, viz., an endeavor to conceal conditions intolerable to the people who enjoy the parks. It is claimed that in certain places the rear yards and surroundings are of such a nature that the ground adjoining is never used—and in order to obviate this condition the happy solution offers itself of building artistic workingmen's homes, the front of which will lend an attraction to the park, while the rear will hide from the public the filthy and unsightly features already existing. Surely the press has been the greatest help to the exponents of the act in their failure not only to mention but to dwell upon this point. Two reasons present themselves of the injustice of such a change. First, the present need of more park area. The argument to sell strips from our existing public spaces and purchase new land farther out is wholly out of the question. The city should and will create parks in new sections as the increase in population warrants, but she must not take from us what little we have in the crowded districts. Second, if conditions are unbearable in certain sections then we must eliminate these unwholesome places and not conceal them. Would it benefit the poor man to have an attractive home and be compelled to suffer at his very door a situation that is repulsive enough to prevent the parks from being used at the present time? What the people need and what the people must have is more opportunity to feel the magic power of nature. To take one foot of our parkage system is a crime towards the poor and must not be allowed. To counteract the unsightly views let the City Council purchase the parts which are objectionable and turn them into inviting lawns or athletic fields which will be a godsend to the people.



TORONTO GENERAL HOSPITAL, TORONTO.

MAIN ENTRANCE OF ADMINISTRATION BUILDING.

DARLING & PEARSON ARCHITECTS



PERSPECTIVE FROM
COLLEGE STREET.

THE TORONTO GENERAL HOSPITAL, TORONTO.

DARLING & PEARSON,
ARCHITECTS.

The Toronto General Hospital, Toronto

HERBERT HORNER

THE HOSPITAL, which represents the result of years of consistent work upon the part of the Trustees, is a living monument to their untiring energy and enthusiasm. Accommodating seven hundred patients and occupying nine acres of territory, it marks a decided advancement in the hospital growth of the Dominion. The site cost $600,000, while the total expenditure for buildings approximates $3,000,000. Towards this amount is the munificent grant of $600,000 from the University, authorized by the Government and Legislature, $400,000 from the municipality of the city of Toronto, and $1,000,000 from private citizens.

The block plan shown on this page pictures the condition of the property when purchased by the hospital. In order to complete the present areas Christopher street was extended to Elizabeth, at which thoroughfare Hayter was stopped. In return for this new portion of land the hospital authorities presented the city with narrow strips extending along Christopher and Elizabeth streets. This exchange not only enabled the hospital to build on a rectangular piece of ground, but also permitted of an ample widening of the two streets mentioned above. The bill permitting the Board of Trustees to expropriate the property for hospital purposes gave a clear title to the parts of Chestnut, Centre, and College streets lying within the present boundaries.

BLOCK PLAN OF PROPERTY WHEN PURCHASED, REVEALING THE CONGESTED AREA OF THE NEW HOSPITAL SITE.

As the work of wrecking the old buildings on the hospital site and the cleaning up of the debris progressed, it was found necessary in order to put the ground in a thorough sanitary condition to plough the whole, using hundreds of bushels of disinfectants. The tree doctor was called in and all trees to be left standing and requiring treatment were thoroughly attended to.

To-day the north façade facing College street is of free Renaissance treatment, which is rendered the more dignified and impressive by the well executed iron fence, the main gateways being accentuated by brick piers of unusual dimensions, surmounted by iron lanterns. Another impressive feature is the brick paved court surrounded as it is by the iron fence and having for its central point, the main entrance to the hospital buildings.

To the left of the entrance is the corner stone, which was laid by the Governor-General, Earl Grey, on April 11th, 1911. This entrance admits to the Administration building, the centre of the whole College street front. The Administration building is four stories high, or a story higher than the wings, and is surmounted by a tower executed in terra cotta and finished with a copper dome, thus giving greater prominence to the central feature.

The walls are faced with a specially manufactured brick and relieved with trimmings of British made terra cotta, while the whole is further relieved by the interesting spacing of windows, and the sub-division of the windows themselves. In the rear the buildings are grouped from a wide open quadrangle, commanding abundance of fresh air and sunlight, some of the windows being finished with green shutters, which not only form a pleasing contrast to the walls, but also suggest on a hot day a delightfully cool and shady effect within. This great quadrangle is smoothly sodded, providing abundance of lawn space for convalescing patients and is beautified by shrubberies, walks and flower beds. The court being almost entirely surrounded by buildings, privacy and quiet prevail, and yet abundance of fresh air and sunlight is admitted, partly owing to the fact that the connecting corridors are but one story high.

The buildings throughout are fireproof, the outer walls being of solid brick, the floors of concrete and the inner dividing walls of hollow terra cotta tiles with metal lath used throughout. The outer walls are faced with a specially manufactured brick obtained by the careful mixing of different clays and requiring more than ordinary skill in firing to obtain the variety of color. These bricks are one and one-half times as long as the length of the ordinary brick. 800,000 square feet of porous terra cotta were used in partitions. Most of the floors are of a cement finish with red Scotch battleship linoleum, laid directly on the cement, which gives a firm and even wearing surface that is

VIEW SHOWING MAIN ENTRANCE GATEWAYS

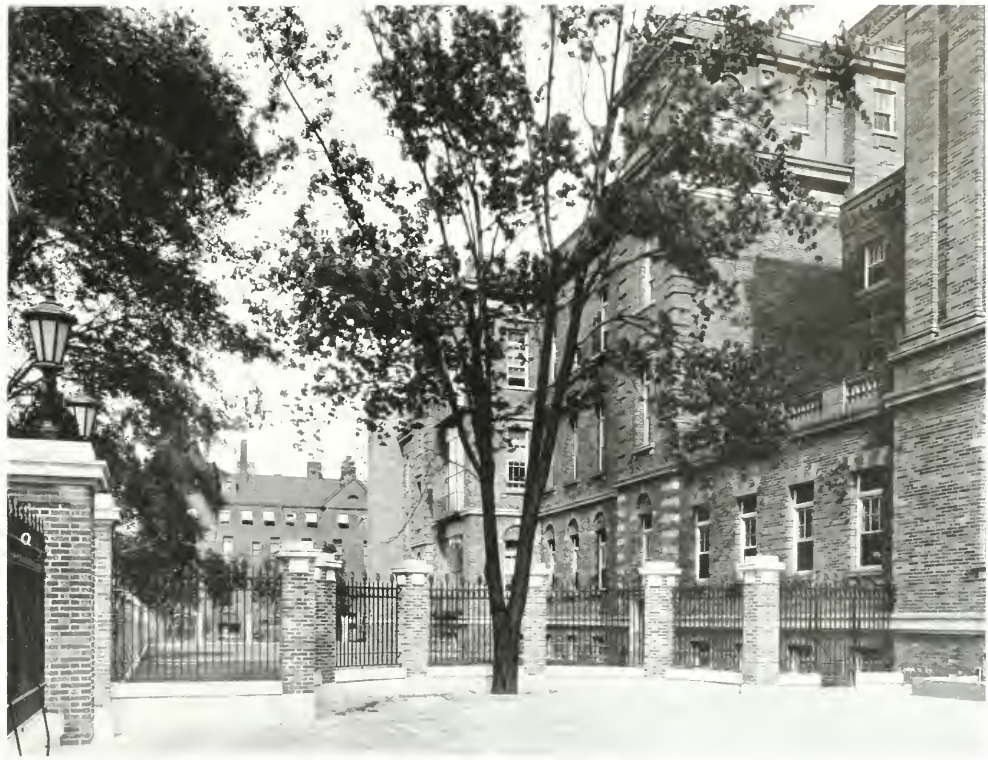
not only noiseless, but easy to walk upon, an ineffable boon to the nurses who will have to traverse it almost unceasingly for hours both day and night.

The walls are finished at the floor line with a smooth and jointless base of terrazzo composition of marble chips and cement. Some of the most noticeable features of the interior are that all moulding and projections have been omitted wherever possible, all internal and external angles coved or rounded as the case may be, and all doors made perfectly plain and without panelling. For all interior painting an enamel specially prepared for hospital use has been employed, all wearing surfaces having a glossy finish which is as readily washed as marble.

Visitors to the hospital, or those having business to transact, will enter by the main entrance off College street, which opens directly into the main rotunda and waiting room. This hall, the floor of which is of marble, is lighted by the stained glass windows, which coloring offers a pleasing contrast to the walls finished in a soft and restful gray. On the left is the general office; on the right the information bureau. Here also is located the telephone exchange which will be in direct communication with all parts of the buildings. In close proximity are the offices of the medical superintendent, superintendent of nurses, secretary, and steward, also the board room. Upon entering the latter room one is impressed by the thoroughly business like and quiet treatment of the interior. Handsome bookcases extend across either end and the balance of the wall space is panelled in oak to the height of the doors, above which point the walls are of a dark olive green. The furniture is of fumed oak and the window draperies of rich dark material combine to put the finishing touch to a most quiet and harmonious interior.

The public wards throughout the building are equipped with all that is most modern and up to date in the way of hospital furniture. The beds are the best that money can buy and are furnished with large ball bearing casters of rubber, thus greatly facilitating the moving of patients from place to place when necessary. Beside each is a sanitary bedside table of enamelled steel and a particularly comfortable arm chair constructed on a special slant. At the head of the bed is an electric bracket of white enamel provided with a specially made glass shade and a fixture for the attachment of the physician's examination lamp. The artificial lighting of the wards is all on the indirect system, which gives a soft, pleasing and shadowless light and can be regulated at will in three different intensities. Close to each bed is a large window, the transoms having ventilators specially arranged to avoid draughts.

All through the building is the silent nurse-call system is installed. Each ward bed is provided with



VIEW OF COURT AT MAIN ENTRANCE

a cord bell push which lights a bull's-eye on the indicator board in the head nurse's table, showing from which patient the call comes. Should the nurse be temporarily absent from the ward, her attention is attracted by a red light over the ward door which lights up simultaneously with the bull's-eye. As the nurse answers the call she touches a button at the bed which extinguishes both bull's-eye and red light.

Each group of private and semi-private wards has its own indicator on the nurse's table in the hall outside and every door has its own red light. This system also facilitates inspection, as a supervisor making rounds from the corridor can see at a glance if any of the patients in either public or private wards are requiring attention.

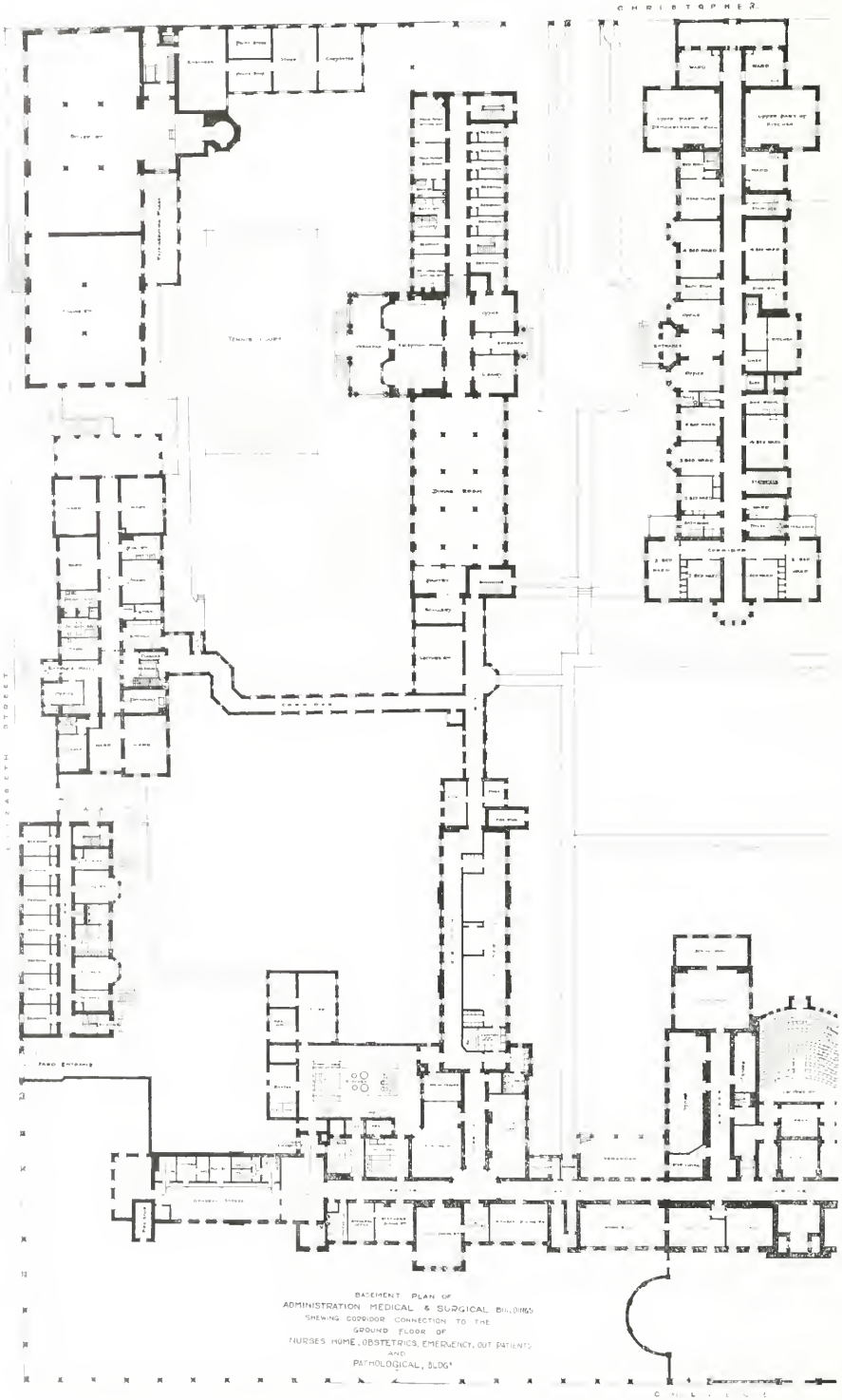
The whole building is thoroughly ventilated with fresh air in quantities sufficient to change the entire air in the wards every ten minutes and in bathrooms, lavatories and operating rooms every six minutes.

Spacious and airy verandahs are provided on each floor, laid with tiles and in direct communication with outside stairs to be used in case of fire or other emergency. These verandahs are a priceless factor in the welfare and recovery of patients and even those confined to bed may be wheeled into the fresh air with perfect ease and comfort, owing to large rubber casters on the bedsteads before mentioned.

All bathrooms, lavatories and nurses' wash-up rooms are supplied with up-to-date sanitary fixtures, mostly of vitreous ware, many of which have been specially designed and made to order. The floors and trimmings of these rooms are of grey Tennessee marble, and the glossy enamel used on the walls reduces the labor of the inevitable sanitary cleaning to a minimum.

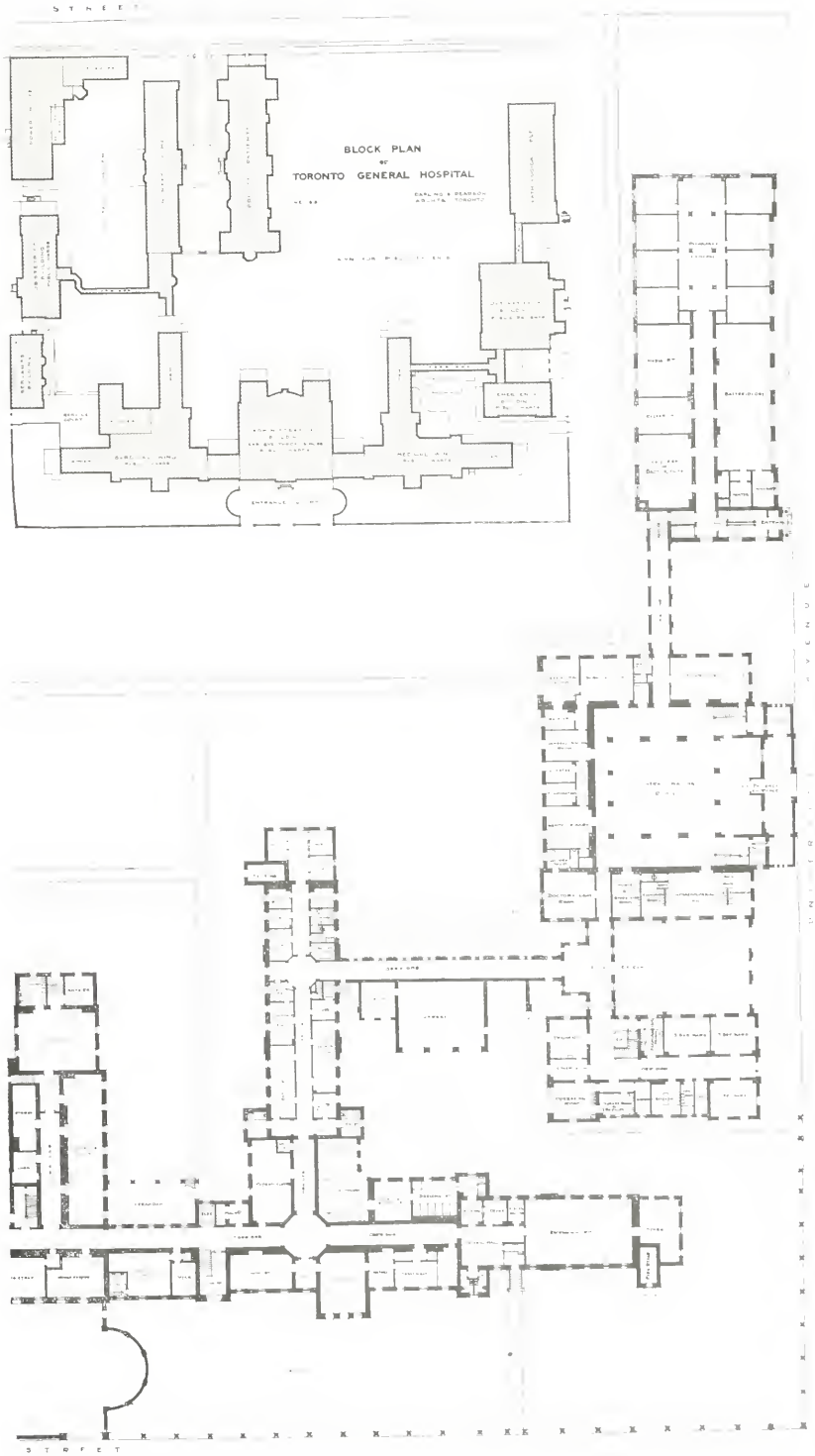
The operating rooms are eleven in number and are found in the main building and almost every other building of the group. Most of these are lighted from the north, the windows running nearly the whole height and width of that side of the room. The floors, and in most cases the walls, are of specially imported tiles. Each suite, consisting of operating room, anesthetizing room, sterilizing room and doctors' wash-up, has its own special system of ventilation. The equipment generally is of a very high order of merit and has been brought to such a pitch of perfection that already it is being adopted as a standard for comparison, and purchased by other institutions. A very useful adjunct is found in the copper hoppers with a grating at the bottom, designed for the reception of both waste water and soiled dressings.

The sterilizing rooms are fitted up with sterilizers for hot and cold water, utensil and instrument sterilizers and autoclaves for the sterilization of dressings. The proper use of this outfit means that nothing is



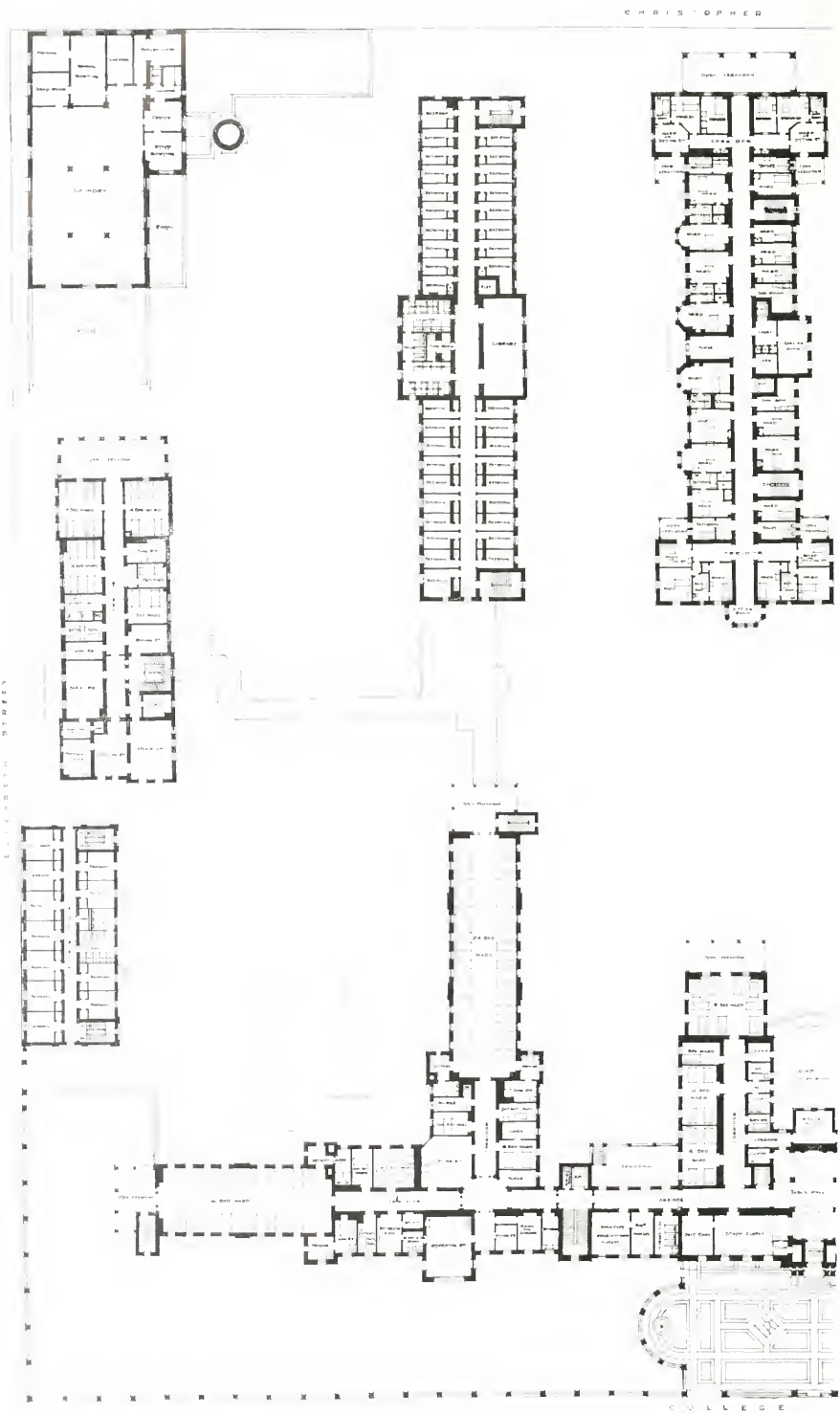
PART OF BASEMENT PLAN, TORONTO GENERAL HOSPITAL, TORONTO.

DARLING & PEARSON, ARCHITECTS.



PART OF BASEMENT PLAN, TORONTO GENERAL HOSPITAL, TORONTO.

DARLING & PEARSON, ARCHITECTS.



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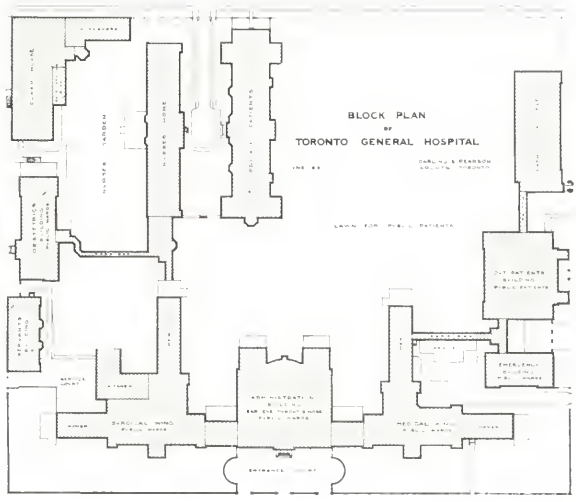
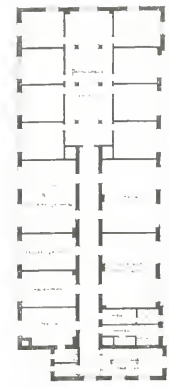
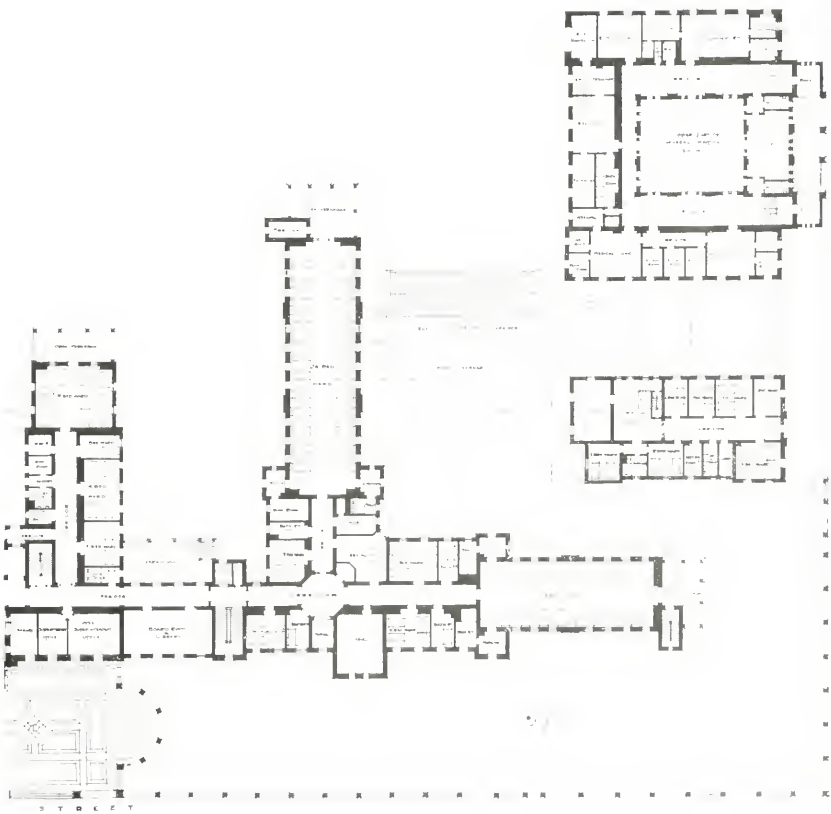




PART OF GROUND FLOOR PLAN, TORONTO GENERAL HOSPITAL, TORONTO.



DINING ROOM, NURSES' HOME.

permitted to come in contact with the operating field which is not absolutely sterile.

The ether room holds everything possible for the administration of one of the greatest of all blessings —the anesthetic, and the apparatus of all kinds is as complete as it is possible to be. No pains have been spared in equipping the doctors' wash-up and dressing rooms with everything to promote their comfort and welfare. In two or three instances shower baths are found. These will be thoroughly appreciated by weary men who have been standing perhaps for hours.

The diet kitchens are conveniently situated adjacent to the wards and private rooms on the different floors and are thoroughly equipped with the newest and best appliances. Each kitchen has its gas range, steam table, dish sterilizing sink, refrigerator, and cupboards. From these diet kitchens the individual trays are served, most of the food being brought cooked in bulk from the main kitchen. The main kitchen, which is located in the Timothy Eaton wing, the dimensions being fifty-four by thirty-two feet, is lighted by three large skylights. The floors are of terrazzo and the walls are lined with tile to the height of six feet. By the system of ventilation employed, the air of this room will be changed every six minutes, rendering it impossible for the odors of the cooking to penetrate other parts of the building. This is doubly assured by the fact that the vents of all steam cookers are carried through above the roof.

Too much praise cannot be accorded to the equipment, which is in many ways the only thing of its kind in Canada. There are four coal ranges for the fine roasting, two dry steam roasters capable of holding one hundred and fifty pounds each, for the heavier work. The broiling is done by charcoal and three fifty-gallon steam kettles will be used for the heavy boiling of vegetables and meats. In the two steam vegetable cookers may be seen the latest thing in kitchen apparatus, the prepared vegetables being enclosed in heavy steel compartments into which high pressure steam is admitted and brought into direct contact with the vegetables with incomparable results. Two twenty-five-gallon cereal cookers, two seventy-gallon urns—one for coffee and one for tea —warming tables, working tables and coffee roasters complete the stationary equipment.

Opening out of the kitchen is the bakery, furnished with two ovens each having capacity for 140 loaves. Connecting the kitchen with the corridor is the serving pantry, in which are steam tables, egg boilers plate warmers, and hot food trolleys, designed for the transportation of hot food to the diet kitchens. These latter are the only ones of the kind

RECEPTION ROOM, NURSES HOME.

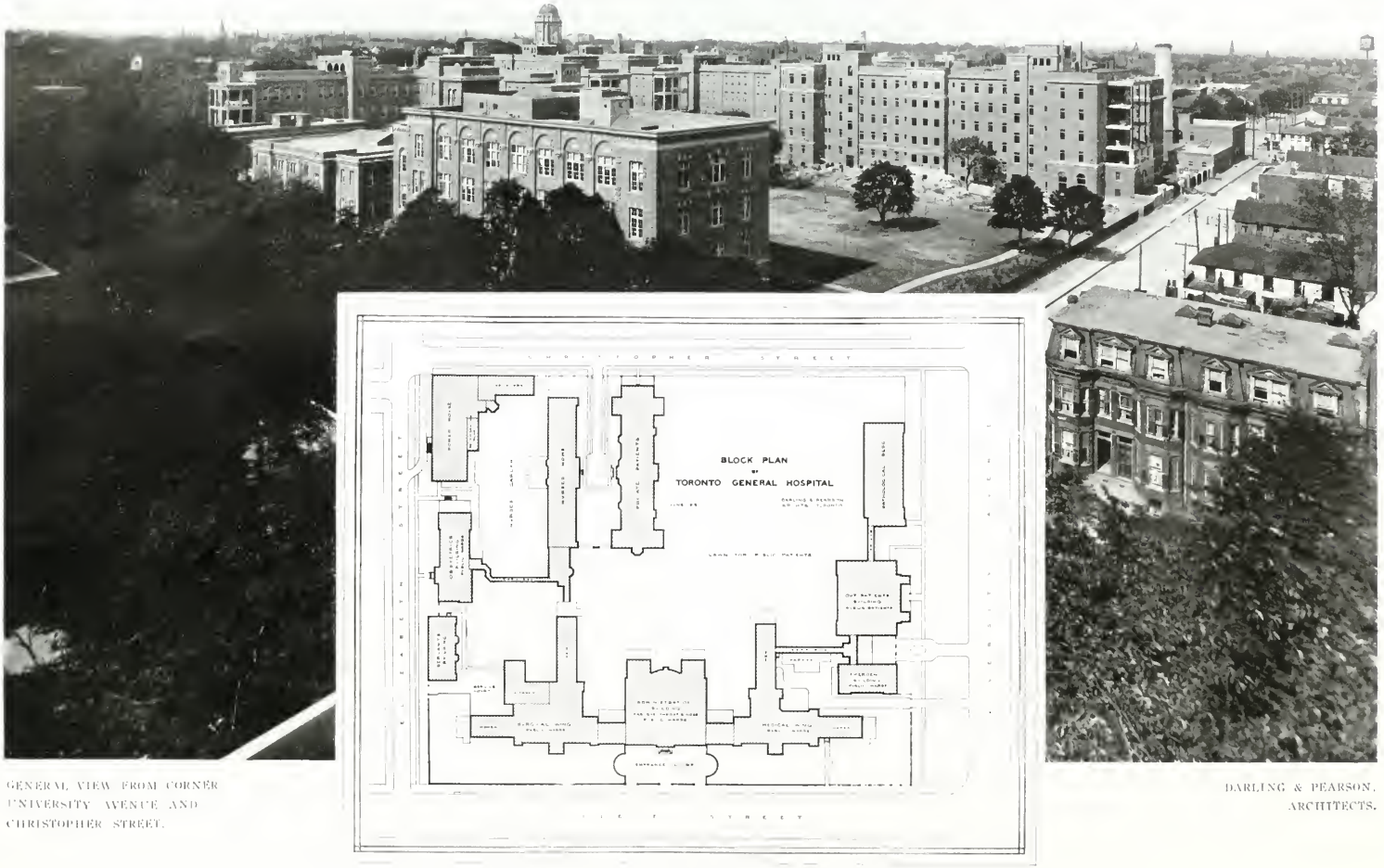
in Canada and are equipped with a storage battery which is connected with heating plates in the sides of the wagon. The food may thus be kept at any desired temperature. Close to the serving pantry is the ice cream room, containing two twenty-five quart ice cream freezers and also ice crushers. This room also accommodates the machinery for peeling vegetables. Near to the kitchen is the entrance by which all food supplies are received into the building, and close at hand is a line of refrigerators which are cooled by brine pumped from the power house and consisting of a range of cold storage rooms kept at a temperature varying from slightly above freezing to ten degrees below zero.

The first building on University avenue south of College street is the Shields emergency, the gift of Misses Agnes and Jane Shields in memory of their brother. Connecting this building to the south with the main group is the receiving lobby, opening directly on to the large partially-covered ambulance court, which is suitably screened from the street by a brick wall with two gates.

On admission the patient is taken to one of the two accident wards where all minor injuries are treated, from where, should an operation be necessary, the preparations are made. The anesthetic is given in an adjoining room, after which the patient is taken directly into the operating room. Two more rooms complete the suite, the surgeon's room and the sterilizing department. Here, as in the main building, the standard equipment prevails. A specialty of this operating room is the artificial lighting, which is accomplished by a battery of powerful electric lights, focused on the field of operation. Thus the table is flooded with light, insuring the absence of shadow on any part of the operation field—a system which is the only one of its kind in Canada. One observation stand is provided for visiting surgeons or students, for whom sterilized gowns will be provided.

In this building are ten wards, public, private and semi-private, containing in all twenty-one beds. These afford temporary accommodation as recovery rooms for operative cases or for very serious accidents. True to its name, the emergency operating room will be in readiness day or night. Completing the equipment of this department the same donors have given two of the finest automobile ambulances procurable, machines fitted with two pneumatic stretchers, and a cabinet containing all appliances possible for first aid. The garage which belongs to the main hospital group has a capacity for three ambulances, and is fitted with small machine shop for minor repairs.

It should be mentioned here that it was the original intention of the donors to erect this building independent of the General Hospital, but to Dr. Powell



GENERAL VIEW FROM CORNER UNIVERSITY AVENUE AND CHRISTOPHER STREET.

DARLING & PEARSON, ARCHITECTS.

THE TORONTO GENERAL HOSPITAL, TORONTO.

DETAIL OF ACCIDENT AND EMERGENCY DEPARTMENT.

THE TORONTO GENERAL HOSPITAL, TORONTO.

DARLING & PEARSON, ARCHITECTS.

DETAIL OF ENTRANCE, NURSES' HOME

belongs the credit of having it incorporated in the same scheme as now executed. To the south of the Shields emergency, connected with it by the receiving lobby, is the out-patients' department, the gift of Mr. Cawthra Mulock. The main entrance to this building is off University avenue, where patients are admitted at certain times and receive medical and surgical treatment free of charge, if unable to pay a nominal fee. This building, which has a forecourt tile paved with a shelter at either end, is able to treat upwards of 600 patients per day. The door opens directly into the large waiting room, which is exceptionally fine. It is square in plan and surrounded on three sides by a cloister having a vaulted ceiling, from which open the various rooms for the reception of gynecological and surgical patients. Here also is the dispensary where prescriptions are filled. The plan is repeated on the second floor, leaving the main

GENERAL WAITING ROOM, OUT-PATIENTS' BUILDING.

hall open to the roof, through which it derives most of its light. Off the gallery over the cloister open rooms for the treatment of medical, eye, ear, nose and throat patients in addition to the history room, where the out-patients' records are kept. The accommodation and equipment in this building are extremely good and the department includes two operating rooms, one on each floor, where minor operations are performed. This building is connected by a closed corridor with the pathological building, which is a University as well as a Hospital department.

All cases are admitted to the hospital by the receiving lobby, the only exception being the private patients, who are taken immediately to their own building. From the receiving lobby the patients pass directly to the medical wing basement by way of a covered corridor, where they are received by the physician in charge, who makes his examination and diagnosis and personally admits the patient. Small observation wards are provided, where cases of suspected contagious diseases are kept until the diagnosis is determined. In close proximity are found fumigating rooms so that patients and their clothing may be cared for specially before going to the wards if occasion requires.

The Medical wing is the building to the extreme west of the College street group. Here are six wards containing in all one hundred and twenty beds, in addition to which there are smaller wards containing thirty-six beds for purposes of classification. In this building is a large hall to be used as demonstration and class room, as well as a recreation room for the nurses.

All the X-ray work of the hospital, emergency hospital and out patients' department is to be done in a special department, which is located in the basement of this wing. There are five X-ray machines and every accessory for exact scientific work, such as X-ray treatment, locating bullets and other foreign bodies, taking exact heart measurements, studying bone diseases, the setting of fractures, etc. The orthodiarscope completes the equipment, this instrument, the only one of its kind in Canada, having been designed and specially made for this Hospital. This machine projects a parallel beam of X-ray; the operation through which the ray passes may be, as in the camera, increased or diminished in size at the will of the operator, and the whole moved in any direction in the vertical plane; by this means the movements of the heart or digestive organs can be outlined on the photographic plate. Adjoining this department is the photographic laboratory, where X-ray plates will be developed and photography, microphotography and even cinematography will be carried on. The arrangement for filing and classifying the thousands of X-ray plates is a very complete one.

Across the corridor from the X-ray treatment room is located the Hydrotherapeutics department. Here the equipment is as modern and complete as it is possible to make it. For severe burns, acute and alcoholic delirium, there are continuous baths provided in which running water is kept at a constant temperature; in severe cases patients are immersed for days at a time. The Nauheim baths are provided for those suffering from heart and other diseases; in

these baths the water is impregnated with gases of various kinds. In the electric baths the water acts as a resistant between the two terminals; when the patient, who is in all probability suffering from some nervous disease, is immersed in the water a proportion of the current passes through the body. Vapor, hot air, and electric light cabinets are provided for special treatments. The shower, needle and spray baths, together with all douches and hip baths, are controlled by a system of levers from a station in the centre of the room.

Access to this and the X-ray Department is from College street; a special entrance is provided for the purpose. A general waiting room, history room and offices complete the suite.

Next in order is the Administration building. In the basement is located a large lecture room for the use of University students, also for the giving of clinics to the practitioners throughout the city. On the ground floor are thirty-six beds for semi-public patients of all classes; on the second floor are public wards containing forty-four beds. This floor is for the treatment of the eye, ear, nose, throat, and has two operating rooms to one suite. On the third floor are public wards containing forty beds with ample provision for the treatment of gynecological cases. On the top floor of this building are the internes' quarters, with accommodation for twenty-seven doctors, although the number employed by the hospital will be in the neighborhood of forty. Everything here is exceptionally comfortable. Large, airy sitting and dining rooms, pleasant, well furnished bedrooms, all combine to make a delightful home, while the verandah to the south forms a noteworthy feature. Easy access is also provided to the roof, which will be used extensively.

The Surgical wing, occupying the eastern end of the College street group, was donated by J. C. Eaton in memory of his father. In an extension to this building are the main kitchen as described before, the orderlies' quarters and the servants' dining rooms; on the first, second and third floors are found six wards containing one hundred and twenty beds, besides which are smaller wards having twenty-one beds. Each floor has its own suite of operating rooms, all of which are of ample size and well lighted. In this building, as in the medical wing, the roofs are devoted to the use of the convalescing patients. The push-button elevators running to these roofs are fitted with every modern safety appliance and are long enough to admit any hospital bed or stretcher. One great advantage of the push-button elevator is that it can be operated by anybody with perfect safety, it being impossible to start the car until all hatch doors and the doors on the car itself are closed.

REST ROOM.

The Nurses' Home is situated to the south of the Surgical Wing, with which it has direct communication by a covered corridor. Neither pains nor expense have been spared in the effort to render this beautiful building an ideal home for nurses and to surround them with every comfort possible. The home is five stories high and basement. On the ground floor are the dining room and reception room.

HALLWAY.

THE TORONTO GENERAL HOSPITAL, TORONTO.

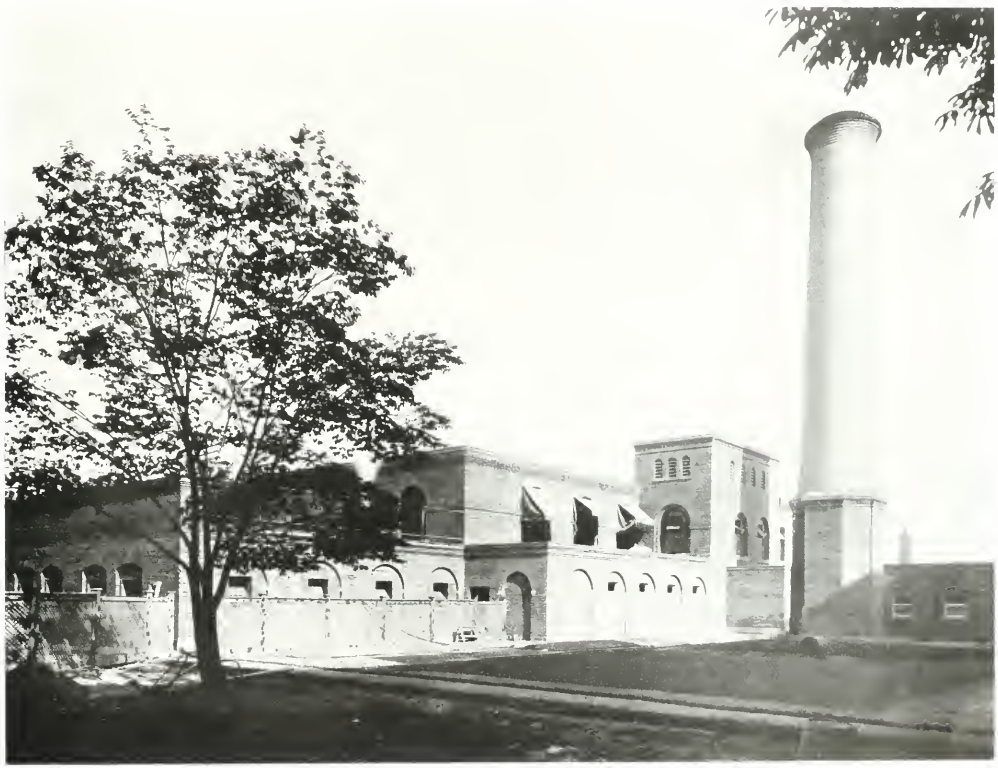
THE OUT-PATIENT DEPARTMENT BUILDING.

DARLING & PEARSON, ARCHITECTS.

Of the latter special mention may be made, as it is unusually spacious, with two fine bay windows finished in oak panelling. There is a fireplace at either end, and the walls are finished in soft green; the barrelled ceiling is relieved with plaster ornament. This room opens on to a large verandah, which overlooks the nurses' tennis courts and flower gardens. The entrance proper is by way of the large court to the west. On this same floor, but remote from the general quarters, are the rooms devoted to the Superintendent of Nurses and her assistants.

The upper floors are given over to bedrooms and lavatories, each nurse having her own room. These rooms are tastefully furnished, there being a pleasing variety of decoration employed throughout. The lavatories are exceptionally well arranged with a view to comfort and privacy, each bath and basin having its own cubicle. Here also the nurses have the advantage of the push-button elevator.

The private patients' building lies to the west of the nurses' home, and stands in a commanding position, overlooking the major portion of the hospital grounds. The approach to this building is from Christopher street, where a fine gateway marks the entrance to a large court on which the building faces. This building is of the same general construction and design as the remainder of the group. It is five stories high, with basement, and has accommodation for one hundred and fifty patients. Here the general equipment is of the same high standard as that employed throughout the institution. The main kitchen has been arranged for gas and steam cooking only, while all apparatus is of Russia iron with nickel trimmings. The stocks and soups are made in copper steam-jacketed kettles lined with a coating of pure block tin three-sixteenths of an inch thick. The service tables are of polished steel, while scullery and kitchen sinks are of cold rolled copper. This, with a full equipment of vegetable cookers, ranges, broilers, vegetable peelers, etc., go to make up a most complete installation. The demonstration room, which is across the corridor from the kitchen, is for the purpose of teaching the nurses the art of dietary cooking. Here the equipment is a duplicate of the kitchen, only on a smaller scale. There are in addition, however, twenty-five small gas stoves which are used for the purpose of individual instruction. These two rooms are exceptionally high and well lighted, the floors and walls to the height of six feet being of white tile. The refrigerators are conveniently located, and together with the diet kitchen refrigerators are cooled by brine pumped from the power house. The equipment of the diet kitchen, consists of steam tables, ranges, etc.



POWER HOUSE.

OPERATING ROOM.

TYPICAL WARD.

MUSIC AND LIBRARY.

THE TORONTO GENERAL HOSPITAL, TORONTO.

A notable feature of the whole institution is the doctors' call system, which consists of twenty-nine stations, each station consisting generally of four series of five different colored lights, the whole contained in a rectangular white enamel casing and suspended from the ceiling usually at the intersection of the corridors. These lights are controlled from the telephone switch-board in the main building, where the operator, by pressing a button, flashes a signal simultaneously to all stations. The doctor upon seeing his signal is expected to telephone the operator.

The main entrance leads into a reception room, which is panelled in oak and burlap to the height of about six feet. The walls above the panelling are tastefully decorated, while the barrelled ceiling is freely ornamented in plaster.

The general office, at which all enquiries are made, is conveniently located to this room. A pair of oak doors open into the main corridor, which is in direct communication with the two staircases, the two push-button elevators and ambulance entrance. The bedrooms are entered from this corridor, this plan, except for the ambulance entrance, being repeated on the upper floors.

All the bedrooms in this building have oak floors, with wood base, and the plaster walls are painted with a special egg shell finish enamel to the height of the picture moulding, the ceilings being done in a soft cream white. The general lighting is by the indirect method, a bracket being supplied over each bed. In each room is installed a standing basin, and in the majority of cases there is a bathroom to each pair of rooms. There is direct telephone communication between each room and the office. The chintz hangings are careful reproductions of fabrics from either the Adam or early periods in England. There is a soft harmony of colors which give a pleasing and restful effect. A number of the best rooms are furnished throughout in the Adam style; some few are of an old ivory finish, while the balance are in cream. The furniture includes bed, dressing table, cheval glass, somnoe, easy chair, and a chaise lounge (the two latter having covers to match the hangings), a large central rug completes the set.

On the top floor are located the two operating rooms, with their dependencies, the balance of the floor being reserved for obstetrical cases.

In the southern half of the basement is located the mai nkitchen, demonstration kitchen, storerooms, refrigerators, elevator machinery, etc., while the north end is given over to the help. Nice bedrooms and sitting rooms are here provided.

The servants' building, the first building south of College street on Elizabeth street, lies directly to the south of the goods and servants' entrance. It is separated from the main kitchen only by a paved delivery yard. This building is three stories high with basement and has accommodation for sixteen female servants and twenty-two male servants. On the first floor are two nicely furnished sitting rooms. The building is comfortably arranged and, as in the nurses' home, all bedrooms have outside shutters.

The Obstetrics building, which is three stories in height with basement, is entered from Elizabeth street and is also connected to the main group by a covered corridor. This building, in construction, design, and equipment is up to the same Toronto General Hospital standard. The out-patients' department is located in the basement and entered by a separate entrance at the south end, while the upper floor gives accommodation for fifty-nine patients.

The vital centre, the heart of this great system—the power house—is situated on the northwest corner of Christopher and Elizabeth Streets. Under this roof we have the source of all heat, light and power used in the institution. The pipes and electric wires are carried to the various buildings through considerably more than a third of a mile of tunnels. These tunnels connecting the different buildings are of concrete and carried underground. Otherwise they follow the line of the corridors.

The power house is divided into three sections,—the boiler room, the engine room and the laundry. The two former are approximately on the same level, or about 16 feet below the sidewalk, while the latter is the height of an ordinary story above the sidewalk. It will be seen from the foregoing that the boiler and engine rooms, extending as they do above the street level, afford good opportunity for abundance of light and ventilation.

The boiler room contains four Babcock & Wilcox boilers in two batteries and having a total capacity of 1,800 horsepower; they are equipped with the most modern automatic smoke consuming stokers, the fuel being supplied to the stokers by an electrical overhead crane and dump bucket.

In the engine room are located four 125 k.w. steam turbine generators, delivering current at 125-250 volt, three wire system. These machines, besides supplying all electricity required for light, furnish power for elevators, for the 39 large ventilating fans, for the air washers, the nurse call system, the electro-theraupeutics, the laundry, and all minor electrical apparatus. For emergency service there has been installed a 150 k.w. motor generator set. The power for the motor, coming from an outside source, is 550 volts, 25 cycle, 3 phase. The generator side of the machine is the same voltage as the steam generators.

The entire apparatus is controlled from the main switch-board; for each machine there is mounted the standard equipment of ammeters, volt meters, circuit breakers, controlling switches, etc. From this board separate feeders are carried to each of the various buildings, all lighting being operated on the 125-250 volt circuit and all power on the 250 volt circuit, which is taken from the two outside lines. Full records of current consumption are kept on record—the total voltage for each machine being recorded, while a graphic recording watt meter indicates the total load for any period during operation.

The buildings are heated by a system of forced circulation of hot water, direct radiation being employed throughout; the radiators are of a special

hospital type, sections far apart and perfectly plain. The water so circulated is heated by the exhaust steam from the generators. The steam turbo-driven impellers, which are in duplicate, ensure a positive circulation of water, no matter at what temperature it may be.

There is also a pump and receiver for condensation returned from the live steam lines which supply heat for the steam tables, cooking apparatus, sterilizers, etc., together with the indirect heating coils employed for warming the air which by the various fans is forced into the different parts of the buildings. It should be mentioned here that air washers are installed wherever air is drawn from the outside and used for purposes of ventilation. These washers consist of a series of water sprays, through which the air is drawn. This method insures a positive cleansing of all air used for purposes of ventilation.

The usual installation of boiler feed pumps, feed water heater, sump pumps, etc., complete the installation of the power plant proper, the exhaust from these latter pumps going direct to the feed water heater.

The upper floor is occupied by the laundry. Here there is a plant which is as complete as is possible to make it. The most noticeable machine is the compound flat ironer, capable of forty thousand pieces a week. In addition to this there are four body ironers, one shirt ironer, two extractors, four washing machines, which with the metal dry room, rotary tumbler dryer, blueing and soap tanks complete the equipment.

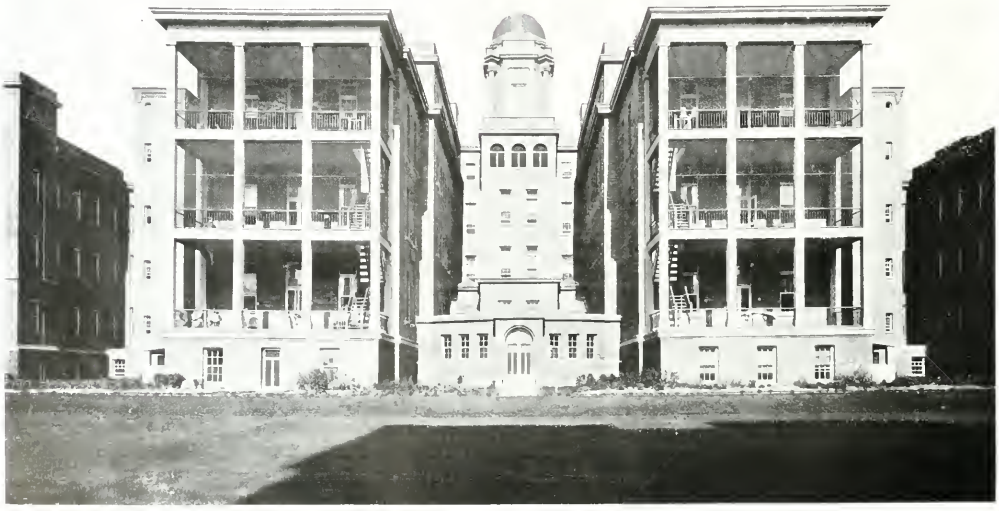
The soiled linen, entering the building at a separate entrance, follows one continuous circuit during the various processes of cleansing, until it reaches the sorting room. From here it is delivered to the different departments. In this way the clean work never comes in contact with the soiled.

Adjoining the power house is an addition containing the refrigeration plant. The brine pumps and ice tanks are located here, while the ammonia compressor is in the engine room. The plant has a capacity of two tons of ice and eight tons of refrigeration per day, the ice being used throughout the institution, while the refrigeration is for the refrigerators located in the surgical wing and private patients' building.

In close proximity are located the workshops, the machine shop having the usual equipment of lathe, drill press, forge, work benches, etc., while the carpenter and paint shops are conveniently arranged.

A large greenhouse is also provided for the care of many flowers which make the gardens attractive.

The completed work affords a solid unit comprising all the departments essential to the ideal institution of the present time. Nothing interfered in the endeavors of the board to make the final result efficient in every phase of hospital work and accordingly to give Toronto one of the finest of its kind in the new world. How successfully this has been accomplished is judged by the enthusiastic and unstinted praise of foreign critics, who are unanimous in their favorable comment in respect to the plan as well as the equipment.



REAR VIEW, ADMINISTRATION BUILDING.

The Ontario Association of Architects

TO ATTEND the ordinary annual meeting or convention of an association is one thing; to attend such an annual meeting as that held this year by the Ontario Association of Architects is quite another thing. It was so filled with diversity of places and of interests that the charm of the gathering seemed to grow rather than to lessen as it progressed. Let us begin at the beginning. Most of those in attendance left Toronto by the C.P.R. train at 9.30 on the morning of Wednesday, October 15th. The time in the train went so quickly, thanks to cheery badinage, that the hour appeared to have fewer than the normal number of minutes in its make-up. At the Hamilton station the incoming members were met by local members who formed a sort of small body guard to escort the arrivals to "The Wentworth Arms." Here the professional interest of the members was at once aroused, for was not the old Lovering House being transformed, under the able hands of an architect, into a comfortable modern hostelry in which happily there was to be found something of the quiet spaciousness of inns of olden days! A meeting of the dying Council was held in a cozy quarter of the hotel, and, after that, the welcome sound of the luncheon gong was heard. The members of the architectural profession then demonstrated that amongst their capacities they included the art of demolition. In other words, full justice was done to the excellent fare provided.

ACTON BOND.

Newly Elected President, O.A.A.

Luncheon over, the annual meeting was called to order by the President of the Association, Mr. C. P. Meredith, and under his gracious chairmanship the members showed the most admirable spirit, no matter how keenly at variance they may have been upon any point under discussion for the time being. The main topic for consideration was the revision of the by-laws, and for that purpose, as well as for many others during the deliberations from day to day, recourse was had to the services of Mr. A. Monro Grier, K.C., the Solicitor and Counsel of the Association. His methods were such that it seemed almost as if he belonged to some profession whose aim in life was to bring men together and exhibit their several good points rather than to keep them apart by exploiting their failings. His reading of the by-laws was of such a quality that it seemed almost heretical to suggest that there were any flaws in them. The gaiety of the occasion was considerably heightened when a member who had moved an amendment was asked, after some discussion had taken place upon it, if he wished to take a vote upon it, and replied that he would like to, if he knew it would carry! During the session at Hamilton an exceedingly interesting event took place in the birth of the Hamilton Chapter of the Association. It was welcomed most heartily and long life and prosperity were wished for it.

At 5.10 the members took a special car on the Hamilton, Grimsby and Beamsville electric line for the "Village Inn," Grimsby, where the annual banquet was to be held that night. When the members trooped into the spacious, comfortable dining-room for the banquet the scene was grateful to the eye and appetizing to the palate. The feast was enjoyed by all, and it was not only a material feast, as food for the mind and soul, some substantial, some lighter, was provided by the speakers. The list of toasts was not long. Amongst the members who spoke were the following: Mr. Meredith, who of course presided; Mr. Wickson, Mr. Acton Bond, Mr. Fennings Taylor, Mr. F. S. Baker, Mr. Ellis, Mr. A. H. Gregg. "Our Country" was responded to by Mr. A. Monro Grier in a splendid burst of oratory, and a fine fighting speech was delivered by Rev. Dr. Lyle in defence and praise of the Drama. Mr. C. W. Jefferys spoke as President of the Ontario Society of Artists; Mr. W. B. Wolsey on behalf of the Engineers' Club; Mr. Reed responded in fitting and sympathetic terms for the Press. The proceedings wound up with "Auld Lang Syne" and "God Save the King."

The deliberations of the Association were continued the next morning, Thursday, October 16th, in the "Village Inn," amongst the morning's proceedings being the election of new members of Council to take the place of those retiring. The following is the Council for 1913-14: President, C. H. Acton Bond, Toronto; First Vice-president, Herbert E.

"THE VILLAGE INN," GRIMSBY, ONT.

SKETCHED BY C. W. JEFFERYS.

Moore, Toronto; Second Vice-president, L. Fennings Taylor, Ottawa; Treasurer, J. P. Hynes, Toronto; Registrar, Franklin E. Belfry, Toronto; Councillors, Colborne P. Meredith, Ottawa; J. W. Powers, Kingston; W. R. Gregg, Toronto; W. W. Stewart, Hamilton; Chas. E. Langley, Toronto.

That morning the members imposed upon the good nature of Mr. C. W. Jefferys. It was thought desirable that the record of the annual meeting should be enhanced with sketches of the "Village Inn," and of an old doorway in the main street of the village, and it was calmly suggested to Mr. Jefferys that he supply the sketches. Behold, therefore, whilst the members do nothing but argue and discuss in meeting assembled, the President of the Ontario Society of Artists, seated on a verandah opposite, his back propped up against the wall, drawing the "Village Inn." How faithfully he lived up to his own high standard of work can be seen by any and all who examine his sketches which enrich this article.

After lunch, visits were paid to houses and cottages near by, where genius, in the shape of old porches and old mantel pieces were to be seen. The occupants of the dwellings were politeness itself in allowing the visitors to wander through their rooms, and the members noted these visits as amongst the most interesting items of the outing.

The concluding note of the occasion was a visit to Grimsby Beach, which included not only an opportunity to see the natural beauties of that spot, but also the chance to walk through a neighboring vineyard and pluck and devour bunches of luscious grapes at the gatherer's own sweet will. The task of gathering was greatly lightened by the efficient help of the two children of the newly elected President, who, with their happy laughter, also made the scene more joyous.

Let us close our reminiscence here, with the memory of the quiet of that autumn shore, beautiful with the pines and poplars a decorative foreground to the uprising hills beyond; beautiful with the sunset glory of the waters of Lake Ontario.

COLONIAL DOORWAY AT GRIMSBY, ONT.

SKETCH BY C. W. JEFFERYS

CONSTRUCTION

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CURRENT TOPICS

THE PRELIMINARY MEETING of the Ottawa-Hull Town Planning Commission was held in Ottawa, October 2nd. The following members, which constitute the Commission, were present: H. S. Holt, chairman, and Sir Alexander Lacoste of Montreal; Frank Darling and R. Home Smith of Toronto; Hon. W. T. White and Mayor Ellis of Ottawa, and Mayor Dupuis of Hull. The meeting was given up to a general discussion of the lines along which the Commission's work should proceed. The members wished two points clearly stated, viz., that there would be no conflict between the new Commission and the Ottawa Improvement Commission; that in outlining a plan for the development of the capital an endeavor would be made to lay down a scheme for a distinctly Canadian city. The Commission will take some time for studying conditions before getting down to the detailed work.

THE ORDINARY method of using open stoves, burning coke, to heat and dry buildings in course of construction, has been forbidden by the German Government. The vitiation of the air caused by escaping gases is considered detrimental to the health of workmen, and a new law requires that all such stoves be connected by pipes to chimneys or to some point outside of the building.

* * *

THE ANNUAL CONVENTION of the Saskatchewan Association of Architects was held in Saskatoon on October 25th. Some forty members were present to enjoy the hospitable reception offered by the city and enter into the important matters brought before the Assembly. One of the problems taken up by the Association was the question of technical schools for the building trades. These schools were thoroughly endorsed by the Association. In order that boys intending to enter the building trades could receive a liberal education along the line of their chosen work, it was thought advisable that technical schools should be established in connection with the collegiate schools. The secretary was finally instructed to take the matter up with the Provincial Government.

In a brief address F. C. Clemesha of Regina, president of the Association, expressed the appreciation of the members of the architectural profession in Saskatchewan for the arrangements that had been made for them by the local chapter. He referred also to the hospitality of the Saskatoon club, which had made the visitors honorary members for the day, and also to the kindness of the University authorities in placing an auditorium at their disposal. He spoke feelingly of the recent death of Mr. John Storey, of Regina, who was a prominent member of the profession.

A very enjoyable banquet was held in the dining room of the Saskatoon Club, at which function sixty architects felt the great bond which brought them together in hearty fellowship. The hall was profusely decorated with red, white and blue, which formed an admirable setting for this impressive gathering. A feature of the banquet was the menu. By each plate was laid a roll of blue prints, on which appeared the menu, the toast list and some clever sketches, besides a number of conundrums on technical subjects. Among those who proposed and answered the various toasts were the newly elected president, W. G. Van Egmond, Mayor Harrison, F. A. Fevell, Dr. Murray, Denis Shannon, R. S. Byers, Professor Grieg, Commissioner Yorath, R. M. Thompson and F. C. Clemensha.

During the afternoon session the officers of the Association for the ensuing year were elected as follows: President, W. G. Van Egmond, Regina; Secretary-Treasurer, F. C. Clemesha, Regina; Vice-presidents, R. G. Bunyard, Moose Jaw, and A. G. Creighton, Prince Albert; Council, A. R. Greig, Saskatoon; D. W. Webster, Saskatoon; A.

L. Favell, North Battleford. Moose Jaw was the unanimous choice of the convention as the next place of meeting.

* * *

THE FOLLOWING Scheme of Competition for the Scholarship in Decorative Painting at the British School at Rome, has been offered by the Commissioners for the Exhibition of 1851. The Scholarship will be of the value of two hundred pounds per annum, and will be ordinarily tenable for three years. Candidates must be British subjects, and less than thirty years of age on 1st July, 1914. The Competition, which will be conducted by the Faculty of Painting of the British School at Rome, will be in two stages:—A. An open examination; B. A final competition, open to not more than four candidates selected from those competing in the open examination.

A. The Open Examination: Competitors in this examination should submit the following works:—1. Not less than four drawings of the nude figure from the life; 2. One painting of a head, and one painting of a figure from the life in oil or tempera; 3. Two figure compositions in color suitable for wall decoration (not larger than thirty inches by twenty-two inches); 4. Sketches of designs for decorative purposes, which should include some architectural studies.

Competitors should notify the Honorary General Secretary, British School at Rome, 54 Victoria Street, London, S.W., of their intention to compete in this examination as early as possible, and in any case not later than 24th January, 1914, and with such notification must enclose a certificate of birth, or a declaration as to age and nationality, duly attested by two responsible persons. The works submitted for the Open Examination should be addressed to the Honorary General Secretary, British School at Rome, care of Messrs. Chapman Bros., 241 King's Road, Chelsea, London, S.W., and delivered at that address not later than 31st January, 1914. The words "Scholarship in Decorative Painting" should be clearly marked on the outside of each package. The names and addresses of competitors must be clearly written on the back of each drawing, painting, etc. The works must be sent unframed and unglazed, and must be forwarded at the candidates' expense. The works will be returned to candidates at their own expense. The Faculty will undertake no responsibility in the case of any damage or loss.

B. The Final Competition: This competition will be held in London from 27th April to 20th June, 1914, and will be open to not more than four candidates selected from those competing in the Open Examination. The subject will consist of a design for a wall decoration to fill a given space for a given purpose, and to a given scale. Eight weeks will be allowed for the execution of the design, and during that time candidates will be provided with studio accommodation, and given an allowance of two pounds per week for models. The successful candidate in this competition will be recommended for appointment to the Commissioners' Scholarship.

The Faculty reserve to themselves the right, at their absolute discretion, to alter any of the conditions, periods, dates or times herein specified, and to decline to hold the Final Competition, or to select any candidate for it, or to make any recommendation for the Scholarship. The Faculty also reserve to themselves the right to publish photographic reproductions of, or exhibit, any of the works submitted by competitors.

* * *

SIR LAURENCE GOMME, Clerk to the London County Council, London, England, contributes to "The Sphere" an account of a remarkable discovery recently made in the Corte Reale or Reggia at Mantua. "It is a thought worth bearing in mind," says Sir Laurence, "that foreign cities have, and have had, a better opinion of London than Londoners themselves. Somehow or another a Londoner is always a Little Londoner. There are many instances of foreign opinion in the past looking upon London as one of the great world cities, but no instance, perhaps, quite so interesting as the London County Council has just succeeded in recovering from Mantua. Mantua itself has all the romance of Italy associated with it—scenery that Dickens described as only Dickens could describe, a history which goes back to the wonderful Etruscan period which can appeal to us through the verses of Virgil, which came through the vicissitudes of the mediæval struggles following the fall of the Roman Empire, and which in the late fifteenth century made Mantua one of the great homes of European art. It was then ruled by the eighth member of the house of Gonzaga, Gian Francesco III. (1484-1519) whose wife was Isabella d'Este. On July 24, 1523, Isabella, in pursuance of her policy to embellish Mantua with all the best products of contemporary art, asked the Mantuan Ambassador at Venice to obtain drawings of notable cities as materials for frescoes in her loggi. One of the cities chosen under this instruction was London, and there can be little doubt that the scheme was carried out in its entirety. About ten years ago many town plans, including one of London in fresco, were discovered in what were known as Isabella's apartments in the Reggia, and through the kindness of the Director of the Reggio Archivio the London County Council obtained a photograph of the London plan, which by permission of the Council was exhibited at the annual meeting of the London Topographical Society. The outline of the city wall agrees closely with Norden's drawing of 1593, between which date and that of Isabella's request to her Ambassador there was practically no alteration in the city's exterior appearance. We can therefore on the whole accept this fresco as a representation of London in the early sixteenth century."

Testing of Cement and Concrete

PROFESSOR BRYDONE-JACK

MR. PRESIDENT and members of the Royal Architectural Institute of Canada: It is not my intention to give you to-day anything in the form of a lecture, but I propose making a few rambling remarks upon the manufacture and tests of cement and concrete for use in building construction. It may be as well at the start to let you know that my remarks will be brief, as of course it would be impossible to go fully into the subject in the short space of time at my disposal. I propose outlining briefly: 1. The history of the discovery of cement; 2. The general process of manufacture; 3. The interpretation and meaning of results obtained by the standard tests of cement; 4. The effect of alkali on concrete; 5. The use of oil.

History.

The use of cement and concrete extends back to a period long before the Christian era. Lime must have been used by the Egyptians thousands of years before Christ, as the stones of the pyramids were apparently laid in mortar of common lime and sand, while it is thought by some that the Egyptians understood the principle of mixing lime and clay together to make a real cement. Concrete was made by the Romans several centuries before Christ, and they discovered that volcanic ash or puzzolan, when mixed with slaked lime, made a cement with hydraulic properties.

In the first century, Vitruvius describes a method of making concrete with lime, and gave the following formula: 12 parts of puzzolan, well pulverized; 6 parts of quartz, well washed; 9 parts of rich lime recently slaked; to which is added 6 parts of fragments of broken stone, porous and angular, when intended for a pise or a filling in.

From the downfall of the Roman Empire to the last half of the eighteenth century, little appears to have been done in the manufacture of cement, but the cement mortars and concretes of the early Romans were so hard that in the eighteenth century experimenters endeavored to discover the supposedly lost art.

In 1756 John Smeaton discovered that an argillaceous limestone produced a lime that would set and harden under water; but no immediate appreciation of this knowledge appears to have resulted.

Natural cement was first discovered by Parker in 1795, as a result of an attempt to equal or excel Roman cement, and in 1796 he took out an English patent. Natural cement was not produced in America, however, until 1818, when Canvass White discovered a rock suitable for the manufacture, and this was the principal cement used for a long time, the maximum yearly production being about ten million barrels in 1899, which has decreased rapidly since then, due to the superior qualities of, and the reduction of cost in Portland cement.

The art of manufacturing Portland cement was discovered in 1824. The cement was called "Portland" on account of its resemblance to a building stone obtained from the Isle of Portland. It was not until 1855, however, that much progress was made in the manufacture of Portland cement in England.

In America, Portland cement was first manufactured in 1824, but it was not used to any great extent until 1880. Mr. D. O. Sayler is regarded as the founder of the Portland cement industry in America. He experimented on it from 1871 to 1875, and marketed the cement in 1875.

The manufacture of Portland cement now is approximately one hundred million barrels per year.

Manufacture.

Natural cement is the product resulting from the burning and subsequent pulverization of an argillaceous limestone or other suitable rock in its natural condition.

Portland cement is the product resulting from the process of grinding an intimate mixture of calcareous and argillaceous materials, calcining the mixture to incipient fusion and grinding the resulting clinker to a fine powder. It contains no materials added after calcination, other than small amounts of certain substances used to regulate its setting properties.

The distinguishing characteristics between Portland and natural cement are: 1. Portland cement is manufactured by the use of an artificial mixture, grinding before burning, and calcination to incipient fusion; 2. Natural cement is manufactured by the use of a single variety of material, unground, and burned at a low heat; 3. Portland cement is heavier, slower setting and has greater strength than natural cement. Portland cement, then, may be considered as a mixture of calcium carbonate and aluminum silicate, ground fine, calcined, and then re-ground, for commercial use.

The processes of manufacture differ with the natural state in which these materials are found, but the operation consists essentially of: 1. Pulverizing and mixing the two ingredients; 2. Heating to a temperature near the melting point; 3. Grinding this product to a fine powder.

There are two principal methods of manufacture, known as the wet and the dry processes. In the wet process the materials are mixed and ground in the wet condition and introduced into the kilns. In the dry process the materials are mixed dry and introduced into the kilns in a dry state. After the calcination in the kilns the clinker is ground in the same manner for both processes.

The exact proportions of ingredients for Portland

Read before the R.A.I.C. Convention, September 15th, 1913.

cement are determined by their chemical composition, a usual ratio being seventy-five per cent. of calcium carbonate and twenty-five per cent. of aluminum silicate.

Due to the many forms of these substances as found in nature, there is a large range of choice for raw materials. Some of the combinations used are as follows: 1. Cement, rock and limestone; 2. Limestone and clay; 3. Limestone and shale; 4. Marl and clay; 5. Chalk and clay; 6. Limestone and slag.

Fine grinding before burning is one of the secrets of successful manufacture.

For calcining the mixture of finely ground material the rotary kiln is principally used. This consists of an inclined steel tube from sixty to two hundred feet long, the diameter usually being from six to twelve feet. The tube is lined with fire-brick, and is set on a slight slope in such a manner that it can be rotated on its axis. The fuel used for calcining is usually either powdered coal or petroleum, and is fed to the kiln at its lower end by piping. The ground materials for the cement are fed to the kiln at the upper end by a spiral conveyor enclosed in a water-jacketed pipe. The degree of calcination is governed by the supply of raw material, the speed of rotation of the kiln, and the quantity of fuel. The temperature for burning is between 2,700 and 3,000 deg. Fahr.

At a certain point in its descent the raw material becomes semi-vitrified, and forms into irregular balls or clinkers. These roll around and around, and finally fall out red hot at the lower end. They arnge in size from sand to one inch in diameter. This clinker is of a greenish black color with a faint glisten.

The output of a kiln varies with the length and diameter from one hundred and fifty to twelve hundred barrels per twenty-four hours. After coming from the kiln the clinker is first cooled and then crushed in rolls or some form of crusher. It is then ground fine by passing through ball and tube mills.

The rotary kiln has been used largely for the dry process of manufacture, but it is also used for the wet process even in cases where the slurry (or mixture of raw materials and water) contains as much as forty per cent. of water. For use of the rotary kiln in the wet process the slurry is pumped into the end of the rotary and dried by the same flame used for calcination, but considerably more fuel must be used. Before the introduction of the rotary kiln all cement was calcined in stationary kilns, which were either intermittent or continuous in action. The labor cost with stationary kilns is much higher than with rotary kilns.

Testing.

Cement is used to such an extent in engineering structures and in building construction, and the strength and stability of structures depend so much on the quality of the cement used that it is imperative to have all cement tested before using in any important work.

In selecting samples for testing purposes care should be taken to get representative samples for each lot in a shipment. The sample for testing is generally taken in one of three ways: 1. An average sample from several packages; 2. Separate samples, each from a single package, tested separately; 3. One sample from a single bag. Obviously the test of a sample taken from one bag is unfair, and inaccurate, and should not be permitted. The separate testing of a number of samples each taken from a single bag involves a large amount of unnecessary work, though in some cases it may be necessary in order to test the uniformity. The average sample from several bags is usually the best method, and on large shipments approximately every bag in thirty or forty should be opened and sampled.

The cement taken from each bag should be the average of its entire contents, since the cement on its exterior is more liable to influences tending to change its properties than that on the interior. The bag should be sampled from surface to centre, using either a sampling auger or a long narrow scoop.

The tests which are regarded as the most suitable for the acceptance of cement are as follows:—1. Chemical analysis; 2. Specific gravity; 3. Fineness; 4. Activity, or time of setting; 5. Tensile strength of neat cement and mortar; 6. Soundness.

1. Chemical Analysis: The average analysis of a good Portland cement is as follows:—Silica, twenty-one to twenty-four per cent.; alumina, six to eight per cent.; iron oxide, two to four per cent.; lime, sixty to sixty-five per cent.; magnesia, one-half to two per cent.; sulphuric acid, one-half to one and one-half per cent.; carbonic acid and water, one to three per cent.

Significance of Chemical Analysis: Chemical analysis may render valuable service in the detection of adulteration of cement with considerable amounts of inert material, such as slag or ground limestone. It is of use, also, in determining whether certain constituents believed to be harmful when in excess of a certain percentage, as magnesia and sulphuric anhydride, are present in inadmissible properties.

The determination of the principal constituents of cement—silica, alumina, iron oxide and lime—is not conclusive as an indication of quality. Faulty character of cement results more frequently from imperfect preparation of the raw material or defective burning than from incorrect proportions of the constituents. Cement made from very finely ground material, and thoroughly burned, may contain much more lime than the amount usually present, and still be perfectly sound. On the other hand, cements low in lime may, on account of careless preparation of the raw material, be of dangerous character. Further, the ash of the fuel used in burning may so greatly modify the composition of the product as largely to destroy the significance of the results of analysis.

2. Specific Gravity: It is usually specified that the specific gravity for Portland cement should not be less than 3.1.

Significance: A lower specific gravity may indicate adulteration and hydration.

Fineness: Specifications for Portland cement usually state that a residue of not more than five per cent. by weight should be left over a No. 100 sieve after shaking, and not more than twenty-five per cent. on a No. 200 sieve. A No. 100 sieve contains 100 meshes per lineal inch and 10,000 meshes per square inch. A No. 200 sieve contains 200 meshes per lineal inch or 40,000 per square inch. The diameters of the wire are .0045 inch for No. 100, and .0024 inches for No. 200.

Significance: It is necessary for the cement to be very finely ground, as the coarse particles in cement are practically inert, and it is only the extremely fine powder that possesses adhesive and cementing qualities.

Time of Setting: It is usually specified that initial and final set for Portland cement should take place between the limits of thirty minutes and ten hours after mixing. The initial and final sets are determined by purely arbitrary standards.

The initial set is said to occur when a needle 1 mm. in diameter and weighing 300 grammes ceases to penetrate more than 35 mm. into a cake of neat cement 40 mm. thick. The final set is said to occur when the needle no longer penetrates the cement.

Significance: It is essential that initial set does not take place too rapidly except in special cases—as the process of crystallization, or hardening, is said to begin then, and a disturbance may produce a loss of strength.

Tensile Strength: The test of tensile strength consists in mixing cement and water, or cement, sand and water, into a paste, forming it into test-specimens, called briquettes, which are allowed to set, and harden, under definite conditions, and then determining the amount of force necessary to cause rupture in tension at the expiration of fixed intervals of time.

The object of the test is to obtain a measure of the strength of the material as used in actual work. In construction a concrete is often subjected to every conceivable form of stress, except possibly that of torsion, while the testing is confined almost exclusively to tension. This condition is the outcome of both theoretical and practical considerations. While it is impossible to formulate definite ratios between the ultimate strength of cement under different forms of stress, nevertheless the tensile is, more or less, a measure of the compressive, transverse, adhesive and shearing values, and furthermore investigations have apparently shown that the strength of cement in tension is more susceptible to any good or bad influences operating on the material, and hence furnishes a better criterion of its value than tests made in any other manner, the results of the tensile test thus giving the most reliable basis for computing the values of the strength under other forms of stress.

The practical considerations favouring the adoption of this form of strength test are the small and easily handled test-specimens, the lower stress, as compared with compression tests, necessary to cause rupture, and also the fact that uniformity in the preparation of the specimens is only necessary in a small portion of the specimen, namely the breaking section, while accurate test-pieces for the other determinations must be homogenous and uniform throughout their entire mass.

Although in practice cement is invariably mixed with an aggregate, tests are usually made on both neat cement and sand mixture. The objection to the use of test pieces of neat cement is that they are not similar to the conditions of practice, while the reason that sand tests are of comparatively recent origin is that the sand introduces another variable in the influence exerted by its character.

For Portland cement the following strength should be found:—Neat: 24 hours' moist air, 150 to 200 pounds per square inch or over; 7 days' moist air, 450 to 550 pounds per square inch or over; 28 days' moist air, 550 to 650 pounds per square inch or over. 1 part cement, 3 parts sand: 7 days, 150 to 200 pounds per square inch or over; 28 days, 200 to 300 pounds per square inch or over.

Soundness: By soundness is meant that property which resists any force tending to cause disintegration or lack of permanency in the structure.

The test for soundness is one of the most important tests of cement and one of the hardest to interpret. A sample of cement may pass all the other tests with ease; but if it is unsound it will eventually disintegrate on the work. It is misleading as well as worthless, because the disintegration may not appear for a considerable period.

The main cause of disintegration in cement is an excess of lime, either free or loosely combined, which has not had an oportunity of becoming sufficiently hydrated. Unsoundness may also arise from an excess of magnesia, alkalies or sulphides.

The usual tests for soundness are as follows: Accelerated test—placing a pat of cement in boiling water for a definite period, or keeping pat in an atmosphere of steam for a definite period.

Normal Test: Keeping a pat of cement in air at normal temperature for at least twenty-eight days, or keeping pat in water at normal temperature for at least twenty-eight days.

In both cases the object is to find out if there is any tendency on the part of the pat to disintegrate. Evidently it is usually impossible to wait for the twenty-eight days before accepting the cement, and the accelerated tests are usually taken as at least a guide to the acceptance of the cement at the start.

Failure may be revealed in the pat by cracking, checking, swelling or disintegration; or by all of these combined. A cement remaining of constant volume without cracks, checks or swelling, may usually be accepted as a sound cement.

The above outline represents the usual commercial tests made, while there are a great many other special tests which may be made.

In the interpretation of all cement tests it must be borne in mind that the cement should be judged from

the results of all tests made, and not from the individual case.

It can be said that any failure in the normal pat tests, or any indication of normally low sand strength or neat strength is sufficient to warrant the rejection of the shipment without other evidences of poor quality.

There are two additional points to which I would like to call your attention briefly:—1. The action of alkalies on cement and concrete; 2. The use of oil mixed concrete.

This would seem appropriate in the first case, due to the great use of concrete in building work in Western Canada, in places where alkali is present in quantity, and may come in contact with foundation walls, etc.

In the second case, where we find damp foundations and cellars, oil mixed concrete may be used to advantage under small pressures and with very little additional expense to prevent moisture and dampness.

Effect of Alkali: It has been found in several localities that alkali water has affected concrete work, as instanced by the disintegration of the cement, mortar, and of the joists and coating of a sewer in Great Falls, Montana. This disintegration is supposed to be due to the action of alkali. Other instances have also occurred in various localities.

The matter was investigated by Professors Burke and Pinckney, of the Montana Agricultural College, the following conclusions being reached:—

"I. The disintegration of cement by alkali salts is principally due to reactions between these salts and the calcium hydroxide necessarily present in set cement.

"As a result of these reactions relatively insoluble new compounds are formed in the body of the cement structures.

"It has been shown that these new compounds have greater weight and require greater space than the calcium hydroxide replaced.

"In order to obtain the necessary space the new compounds force apart the particles of the cement, thus weakening or breaking the binding material.

"1. The compounds resulting from these reactions with the various destructive salts are as follows:—

"a. With sodium sulphate the resulting compounds are sodium hydroxide, which is soluble and therefore is removed by leaching, and gypsum, which is relatively insoluble, and therefore accumulates in place of the calcium hydroxide.

"b. With magnesium sulphate the resulting com pounds are magnesium hydroxide and gypsum, both of which are insoluble and accumulate in place of the calcium hydroxide.

"c. With sodium carbonate the soluble sodium hydroxide and the insoluble calcium carbonate are formed. In this case there is little increase in the space required, but the silicates and aluminates are also attacked and dissolved. This solvent action is especially marked upon the silica. This loss of silica must weaken the cement, but there is little, if any, crumbling due to expansion.

"2. The additional material, requiring increased space, consists in part of dry matter and in part of combined water, which is taken up by the cement during its exposure to the alkali solutions.

"a. This increase in dry matter is brought about by the formation of the sulphates, magnesium hydroxide, and carbonates, as shown by the reactions given in paragraph 1, a., b. and c.

"b. Part of this increased amount of combined water is due to the fact that the new compounds, gypsum, magnesium hydroxide, etc., require more water for crystallization than did the calcium hydroxide which they replaced. This further assists in the disruption of the cement.

"c. A part of this increased amount of combined water is due merely to the continued action of water upon the incompletely hydrated cement. This amount should serve to set free more calcium hydroxide, and thus to a certain extent repair the damage due to loss of the binding material and to expansion.

"II. A certain weakening, not a disruption of the cement, is due to the loss of a portion of the binding material, crystallized calcium hydroxide, which is merely dissolved and removed in solution.

"III. In order for destructive action to become marked the alkali solutions must percolate through the cement work, or at least must penetrate beyond the surface.

"IV. When the action is strictly confined to the surface, as when briquettes of neat cement are immersed in a still solution, the tensile strength may be increased. In such cases the expansive action closes up the pores, making the surface more nearly impervious and preventing the alkali from penetrating further.

"V. When cracks are started by the expansive action due to alkali salts, wetting and drying, or freezing and thawing, will hasten the destruction of the cement by extending the cracks already started.

"VI. Any measures that hinder the penetration of the alkali solutions into the interior of the cement will delay the destructive action. For this purpose both soap and aluminum sulphate have been tried in laboratory tests and have been found to afford some protection. The soap, however, in itself had a slightly injurious effect on the tensile strength of the cement.

"The efficiency of these and other waterproofers is being further studied and results will be reported in a later bulletin." (Above quotation being found on pages 130 and 131, Bulletin No. 81, Montana Agricultural College.)

I might add, however, that the denser a concrete is made, the less it is subject to the attacks of the alkali, as the alkali cannot penetrate into the concrete, but closes up the outer pores, thus preventing further disintegration. Oil mixed concrete might also be advantageously employed to protect the concrete. In regard to oil mixed concrete, it has been found that five to ten per cent. of the clunch of petroleum residuum oil mixed with the concrete will render it impervious to moisture, and waterproof

under small heads. This can be made by mixing the cement mortar and adding oil, the oil being measured as a percentage of the cement.

The specifications for the residuum oil are as follows:—1. The oil shall have a specific gravity of not less than .930, nor more than .940 at 25 deg. C.; 2. It shall be soluble in carbon disulphide at air temperature to at least ninety-nine and nine-tenths per cent.; 3. It shall contain not less than one and one-half per cent., nor more than two and one-half per cent. of bitumen insoluble paraffine naphtha; 4. It shall yield not less than two and one-half per cent. nor more than four per cent. of residual coke; 5. When twenty grammes of the material is heated for five hours in a cylindrical tin dish, two and one-half inches in diameter and one inch high, at a constant temperature of 163 deg. C., the loss in weight shall not exceed twenty per cent.; 6. The viscosity when heated to a temperature of 50 deg. C. and maintained at that temperature for three minutes, the viscosity shall not be less than forty nor more than forty-five degrees.

GROUP OF DELEGATES AND FRIENDS ATTENDING THE R.A.I.C. CONVENTION.

President's Address at Calgary

J. H. G. RUSSELL

MR. ACTING MAYOR and Gentlemen,—On behalf of the Institute, I thank you heartily for your cordial welcome to Calgary. It is, I can assure you, a great pleasure for us to be here, to meet here in the westerly city of the federated bodies belonging to the Institute, and although we hope it will not be very long before we have the British Columbia architects to join in with us. We will be very glad when they will be in a position to join us, but I may say they have been trying hard to get the Act passed through, but they are experiencing some trouble, as Mr. Lines has told us, in getting together, to make it strong enough for the Legislature to do what is best to do.

I think it has been said that Calgary is one of the most progressive cities in Canada and no doubt in some respects you are. You have gone towards the town planning part of it so far, and in that respect you are further ahead than any other city, and taken such steps that it would be well for others to follow. When a city is in its making is the time when its beautifying should be considered instead of leaving it until the place gets too old, like, for instance, the city of Winnipeg.

At our last meeting in Ottawa some person kindly said that he thought the Winnipeg convention of 1910 was the most enthusiastic we had had, but I am inclined to think that if he was here to-day he would think that Calgary was as enthusiastic as it was possible to be. I suppose it is due to the fact that you are further west and more up in the clouds and have a little more ozone to breathe than us further east. We will take that as the reason now. I would not want our eastern brethren to think we are egotistical at all, because we have a very high feeling for them and their work, but they must begin to realize very shortly, if not now, that the west are far ahead of the east. We are better organized than in the east, Quebec being the only province in which they have the Registration Act. Down in the Maritime Provinces the members of the profession are not strong enough to form a body, there being very few

in New Brunswick and Nova Scotia; so I am afraid it will be a long time, perhaps never, before they will have any registration that far east.

This last year, although really the sixth year of our Association, is in some respects the first year, since we had a new charter at the last meeting and it was at that meeting that we organized the federated societies of architects comprising the five Provinces—Quebec, Ontario, Manitoba, Saskatchewan and Alberta. I might say, owing to the difficulty of getting the lists of members together so that we could form committees, we did not get very much work done, so that it was really a kind of formative period this last year. That has been overcome now and we hope that the new Council will find something for everyone to do. That is the only way to make a success out of it—to find something for everyone to do, and let everyone become an enthusiastic member.

I might say, our by-laws require to be amended. Before we could really commence operations, at the meeting in June last held in Montreal, there was a draft made of these by-laws and I think a copy was sent to every architect who was a member of the Association, and you will be asked to take this question up to-morrow and I would like to impress upon every person that it is a very important thing to have a good set of by-laws, and I earnestly trust you will all give your best consideration to the matter.

Mr. Lines truly said, I think, when talking about the profession at large, the work they had to do and what an architect is supposed to know, and also Mr. Brocklebank when he said he thought we met here together to protect the public, I think the public are becoming better acquainted with our work and our aims.

Our assistance as an Institute has been sought different times during the past year. Even in British Columbia they asked us to name assessors for their recent competition for a hospital in Victoria, and they followed by selecting one of our members as assessor, and I understand through him that they had a very successful competition.

We have also been asked by the Dominion Government to assist them in drawing up a programme in selecting for the new Court House buildings in Ottawa, and I might add that this is one of the largest things the Government have undertaken for a long time, and we are hoping for a successful competition. The Government were ready to meet us at every point and showed a great deal of interest in the getting up of the programme.

There is one thing I might mention in connection with the work that they have done by Mr. White, that when he was selected by the Dominion Government he was only asked to lay out a plan of the new grounds and suggestions as to the way he would locate the buildings on those grounds, and he asked to be allowed to consult some architects in connection with the work, and he got in communication with Sir Aston Webbs and they got up the drawings which perhaps some of you have seen published. I might say to those going into the competition, please do not take the elevation as shown as any criterion of what the Government requires. The design as submitted to the Government was classic in character, as classic as some people would like, but the present buildings are entirely Gothic and it will be left to the competitor as to what he thinks best to work out.

The Quebec Association have appointed Mr. Marchand of Montreal as one of the members of the new Council, and he was appointed by the Government, and as he had been appointed one of the assessors by the Government, we have now two members of the Council on the Board of Assessors, and Mr. Colcutt of London, England, was the third assessor appointed by the Royal Institute of British Architects.

A great honor was done Mr. Baker a short time ago. He was asked to go over and address the Institute of British Architects on Canadian Architecture in London, England. Perhaps most of you have seen the synopsis of the paper Mr. Baker gave there. He was very heartily welcomed in London last January and had a very pleasant time. I might say that during his visit to London that time he got into communication and saw Lord Strathcona in connection with a scholarship in architecture, and he got Lord Strathcona to promise to give $12,500.00 if he would raise the other $12,500.00, to provide a fund of $25,000.00 to be invested and have a travelling scholarship on architecture each year. I may say we tried during last summer and spring to get about a hundred and forty gentlemen in Canada to subscribe this other $12,500.00, but we were not very successful. I guess the money stringency had something to do with it. We only had two responses out of some two hundred letters sent out asking for the money, but the Council at its last meeting decided that we get Mr. Baker to approach Lord Strathcona to supply the whole $25,000.00 and that is what is being done now.

There was a movement started by some of the members in the east to ask the Government to subscribe or put aside a certain amount of money to establish a travelling scholarship in architecture and in each one of the allied arts. Personally I think the Government ought to do this because they are spending money for the country in a way they should not, and I think we should appoint a committee to interview the Government on the matter. It has been impressed upon them before and it would not be anything new to them, and they would be ready for it. I think that is one thing that should be taken care of.

I think we also require a Publicity Committee to keep our public press fully informed as to our aims and objects. With the different Provincial Acts that have been passed, the profession has been raised to a higher standard in the eyes of the public, and every year our work grows harder and we are really supposed to be expert in all the trades under the sun and to know a little of too many things.

A member was saying to me to-day we ought to try and unload a lot of things which are shoved on to our shoulders at the present time. It is a hard

thing to do. The architecture of the country is going ahead every year; in fact, I do not think we have to take a back seat now with any place on the face of the earth so far as that goes. I think we have some buildings in Canada to-day that would be a credit, no matter where they were placed.

I do not think I will say much more. We have a lot of business to attend to, and I am a great deal like the medical doctor who had a friend, a very worthy friend, who was a doctor of divinity. The medical doctor one day by mistake had a visitor call on him. After getting admittance, he said to the doctor, "you have changed a good deal since I heard you preach last." The doctor said "preach;" the visitor said "yes," and went on, "why, are you not the doctor that preaches?" and he said "no, I am the doctor that practises." That is about the way I feel.

AT the R.A.I.C. banquet held in Calgary, September 15th, Sir Gilbert Parker gave the following toast:

"You who represent the whole Dominion, you who are making the people realize and understand that culture and beauty go hand in hand with utility, the rewards that you receive,—that is the satisfaction of your own ideals and the satisfaction of the eternal elements of beauty, these are the greatest and most precious rewards that you can gain in all the failures and successes of your career.

"The man who can rise to the highest summits in the profession of architecture would rise to the same eminence in any other profession or walk of life to which he was attracted; because he had been successful in the one, so would he become capable and efficient in whatsoever other sphere of life his lot might be cast. As an instance of this I remember that Paderewski, the famous pianist, once told me that there was a time when his fingers forever seemed paralyzed, and he made up his mind that he would give up music, and enter the field of politics in Vienna. Had the eminent virtuoso thus changed his profession, he might have risen to as lofty a height in the world of politics as he has done in the world of music.

"I have a profound regard for the profession of the architect, and am indeed glad to have the opportunity of saying a few words to men of your ilk.

"I expect shortly to visit Montreal in order to deliver an address at McGill University on the occasion of the anniversary of the founding of that well-known seat of learning.

"I have chosen for my subject on that occasion 'The Arts,' for I feel that in most new countries art does not have the same encouragement that it has in the older lands. Architecture has made wonderful strides in this country, because it has adapted the methods and beauty of the great artistic countries such as Rome and Greece to the exigencies of a utilitarian age.

"I would like to see a department of fine arts established in every university in Canada, and I am very glad to know that McGill University has lately founded such a department.

"Regarding the copyright bill, which was introduced into the British Parliament during the last session, and concerning the passing of which I have done my utmost, in spite of a good deal of opposition even from my own party; I happened to belong to a party which is at present not in power in the old land, and it was my duty on nearly every occasion to oppose legislation proposed by the party in power. When, however, the copyright bill was introduced into the House I felt that I could not oppose it, because for the first time in the history of British politics there was protection for the musician, and for the first time there was protection for the architect.

"There were members, many of my own party, who strenuously opposed the passing into law of this bill. Members would not protect the composer from the pirating of his works, neither would they protect the architect from his works being copied. In spite of opposition, I frequently rose in the House and spoke in favor of the measure, pointing out that such a bill would assist and protect the writer, musician and architect as no other act of legislation had ever done before. Perseverance told in the end, for the measure finally passed the House of Lords and received the Royal assent.

"Architecture is the first expression of the human race, then come painting, sculpture and music. Your position is not less to-day, for your profession appears to me to be one that is getting nearer to the people themselves than any other profession in your country. Pictures are getting fewer, for most of the valuable masterpieces hang upon and adorn the walls in the houses of millionaires, hidden away from the sight of the man in the street. But your fine buildings are every day made an education to the poorest of the poor.

"The splendid edifices that your skill and genius erect will last for all to see them, and learn the splendour of their beauty. Historic places such as the ancient cathedrals of the old land and on the Continent, mansions erected in the far away ages by the nobility of England, and fashioned by the hand of men like Christopher Wren and Grindley Gibbons, will last and endure when paintings and perchance music may have passed into oblivion. Take your profession seriously; look upon it as a profession that tends above all others to elevate and educate the minds of men and women.

"I have to construct just as you have to do, for every book of mine, such as it is, is an attempt at architecture. We are one in our failures and successes. You who represent the whole Dominion, and make the people realize and understand that culture and beauty go hand in hand with utility, the rewards that you receive, namely the satisfaction of your own ideals and the satisfaction of the eternal elements of beauty; these are indeed the greatest and most precious rewards that you can gain in all the failures and successes of your career."

THE FOLLOWING address of welcome was extended to the delegates by Roland W. Lines, President of the Alberta Association of Architects:

Gentlemen,—Mr. Tregillus has welcomed you to the City of Calgary, so that it is my important duty to welcome you on behalf of the Alberta Association of Architects, and I have very great pleasure in having that privilege, and trust you will have an enjoyable visit.

Those who are visitors here will no doubt enjoy themselves, and we of course—we always have a good time. We feel greatly honored by the Institute of Canadian Architects because the Institute is a premier organization for the advancement of architecture in this country, and therefore it is an organization which we should all feel proud to belong to. Alberta, although it is one of the youngest of the provinces, has the honor of being the second to recognize the necessity for registration of architects. In 1905 and 1906 we passed a bill through the Provincial House in Edmonton making it necessary for all architects practising at that date in the Province of Alberta to become registered. Architects who, subsequent to that date, wished to practise had to prove to the Examination Board of the Alberta Association their ability to practise. So that, gentlemen, in future we shall only have duly qualified men practising in the Province.

This example, I am pleased to say, has been followed by several other Provinces, and very soon I hope we shall have every Province in the Dominion with a Provincial charter, and therefore have registration throughout the whole Dominion, and in addition to that, I hope to see all the provincial associations affiliated with the Royal Architectural Institute of Canada. That is one of the most important things on which we have set our hands, and although it was commenced only two years ago, a great deal has been done. It has been done under the guidance and influence of the Royal Architectural Institute, and it will only be completed when we have every Province in the Dominion with a Provincial charter and everyone federated with the Royal Architectural Institute of Canadian Architects. When that is complete, we shall have an organization which we should be very proud of, because it will have a great future, and it will control matters of award in architecture throughout the whole Dominion.

The Royal Architectural Institute of Canada is about beginning its career as a federation and has yet most of its work to do, a greater part at any rate, but there can be no question if all the members of the Institute are fired with the zeal for the advancement of our profession, we shall one day have a great organization, and there will be no limit to what we shall be able to do.

There are several suggestions I should like to make, and I would like to see the Royal Architectural Institute carry them out later. They can be discussed to-day, I think, and one of the first points is the nationality of members of our Association and of the Royal Institute. This is a great problem and should be very carefully considered. We are having a number of men join and practising in our country who are not naturalized citizens, and I think it requires a great deal of consideration.

Then there is the question of standardizing examinations throughout the whole of the Dominion so that it will be just as easy or just as difficult for a man to become a registered architect passing an examination in Quebec as in Alberta.

Then there is the scheme for the promotion of study for architectural students, and also for the general enlightenment and education of the public in architectural subjects.

My opinion is that the Royal Architectural Institute should give all the assistance and guidance that is required by some of the Provincial associations who have agreed to obtain their charter. There are some of them in very awkward positions and require a little advice. They have not been able to get their charter, and it is very necessary that they do get their charter before they can become federated with the Royal Institute of Canadian Architects.

It has occasionally been said that an association of architects applying for a Provincial charter is an organization formed for the aggrandizement of its own members. As to this, I think all of us should give serious consideration, and I think I speak for all of us when I say that this is not the case.

Registration for practising as an architect makes it necessary for a man to become educated in architectural matters, and this will lead to very much better architecture in the future. As a natural consequence of this, we get a greater number of more qualified and more enthusiastic men in our profession, and we shall have, as an actual result a far greater number of well designed and finer buildings, which will be quite a national asset.

In no profession is it more necessary that the practitioner should be highly trained. An author will write a book, and after it is written, if it is considered no good it is generally thrown away and nobody troubles about it. Another instance, a doctor makes a mistake on a patient and it is spoken about, but it is altogether different with an architect. An architect making a mistake builds a building that is a monument to him for generations, and it stands there for everybody to see, and is in the public view. So that you will see, it is necessary that an architect should be highly trained so that should there be any errors they should be limited as much as possible.

Also you must remember the commercial importance and the wealth of any country is the trade in its buildings and its history is written in its architecture. It is therefore very necessary that the men who are going to portray the wealth and history of this country should be well trained, as well trained as can be found anywhere in the world and get as good an education as possible, and it is to this end we are forming our associations. It is necessary for us to take an active interest in the furtherance of our profession and the welfare of the Royal Institute of Canadian Architects.

The Modern Hospital

THE following digest is taken from "The Modern Hospital," edited by J. A. Hornsby and R. E. Schmidt, which treats of its architecture, its equipment and its administration. The preface considers in turn the charity hospital, the charitable and private hospital combined, and the private hospital, devoting considerable space to the financial aspect. Following this is part one, dealing with the hospital architecture, which purposes to place the various kinds of building materials, devices and arrangements before those interested in the building and management of hospitals..

The Site. Unsuitable sites hamper the growth of the institution. The more the location and surroundings of a hospital approach those desirable for a high class residence, so much more will the site be desirable. Ample air; distance from neighboring buildings, from the dust of the streets, from steam railroads, street traffic, electric railways and manufacturing plants—are all exceedingly important to the patients. Inasmuch as most hospitals must be maintained within the limits of large cities, close to their activities, they are built on restricted ground areas. In such cases the fresh air and ventilating devices must be more highly organized and, naturally, more expensive to install and operate. On account of the relatively high price of land, city hospitals frequently are built on the masse or block plan. The difficulty with this is to arrange the building in such a manner that every room will receive direct sun-rays during some time of the day. This is practically an impossibility, and it is, therefore, desirable to plan so that the wards and rooms of the sick will receive as much sunlight as possible. The auxiliary rooms, such as pantries, chart rooms, and linen rooms, are then placed on the north side of the building. Many of the hospitals in which the best work has been done in this country are built on such plans; but where a semiblock or semipavilion plan is possible it is usually more desirable. The appearance of such a plan is that of a number of barrow strips, sometimes joined solidly and sometimes by cut-offs or necks. On such a plan all of the wards can usually be arranged to receive direct sun-rays during some hours of the day, and only so much of the northerly side of the building is arranged into patients' living space as may be absolutely necessary, or for such as eye wards, where sunlight is not so necessary.

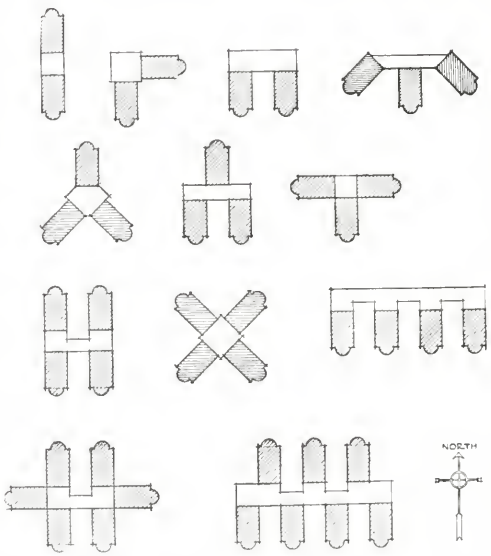


FIG. I.—VARIOUS COMBINATIONS OF UNITS.

Planning the Hospital. A unit in proportion to the size of the proposed hospital should be designed and one of these incorporated in the whole plan for each department, such as male medical, female medical, male surgical, female surgical, maternity, private rooms, etc., each one as far as possible self-contained so as to keep the nurse close to her patients, and make it unnecessary to leave the unit while on duty; the surgical units should have a surgical dressing-room, the maternity department, a nursery, labor rooms, and accessories, and each of the others their special requirements. The units must be in easy communication with the kitchen, the general laboratory, the operating department, and other common divisions. A unit should have the following rooms: (1) The ward or private room; (2) toilet room; (3) nurses' toilet room; (4) serving room or diet kitchen; (5) a quiet room for one bed; (6) bath room; (7) utility or sick room; (8) cabinet for linen; (9) cabinet for medicine; (10) station for nurses. If the units can be made large enough, one or more of the following will be of advantage: (11) A solarium; (12) a reception alcove or room. Where two or more units are close together, Nos. 3, 4, 5, 11 and 12 may sometimes be arranged so that they can be used in common. The accompanying plans, Fig. I., illustrate combinations of two, three, four and more units and the manner in which they are customarily assembled to obtain different capacities.

Floor Construction. The invention of reinforced concrete and reinforced tile has produced a fireproof construction which increases the cost of a hospital only from ten to twenty per cent. above the cost of one in which wood-construction floors are to be used. Two types are shown, Fig. II., the first of which contains a woven wire fabric in the lower layer of concrete in short spans and rods in longer spans; it also requires a strong concrete layer on its upper surface, firmly united to the tile. The second type shows two parts to the construction, the reinforced concrete joist and the hollow tile between; this is only a filling and may be cut out or formed into channels

for the reception of pipes and conduits. The steel beams and girders connected together with hollow clay tile is undoubtedly the best type and too well known to require illustration.

Area for Patient. The minimum area and cubic contents per bed permitted in Chicago at the close of 1912 were 80 square feet and 800 cubic feet. A new law with factors for adults, children, and infants will be submitted to the legislature of the State of Illinois in the coming session. A similar law will probably be enacted for the State of Ohio. The factors are as follows:—Minimum square feet of floor space per person: Private rooms, adults 90, children 75, babies 55; wards, adults 80, children 65, babies 45. Minimum cubic feet of air-space per person: Private rooms, adults 900, children 675, babies 500; wards, adults 800, children 600, babies 400.

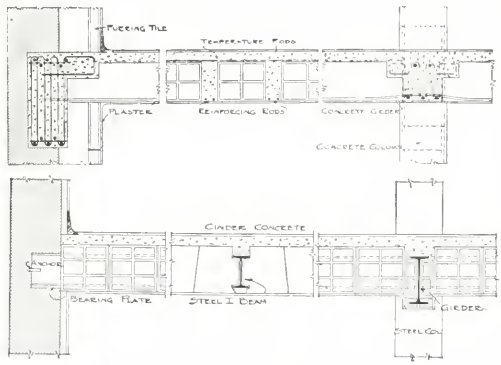
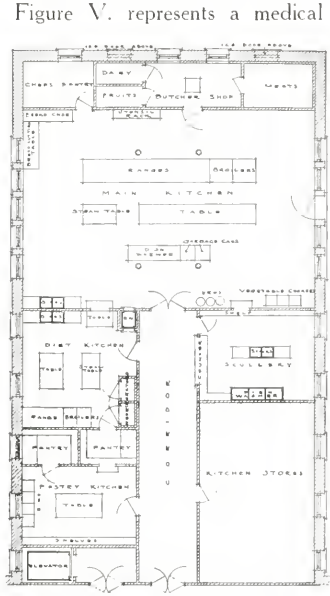
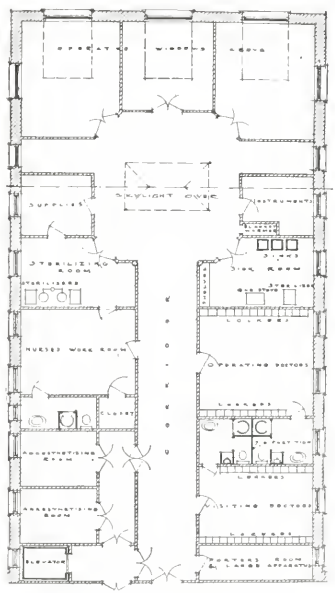


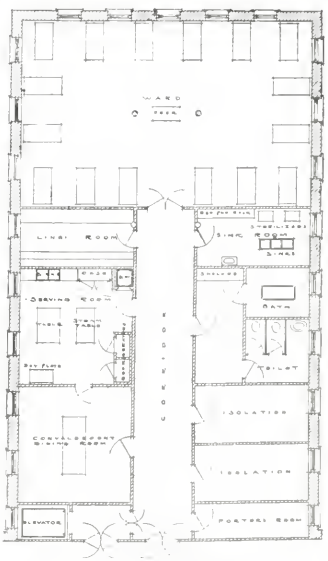
FIG. II.—TWO TYPES OF FLOORING—CONCRETE, RIB AND TILE, AND ARCH CONSTRUCTION.

Figure III. shows the author's conception of an ideally arranged kitchen and its auxiliaries, with minimum height of ceiling twenty feet. There is an areaway ten feet wide on each side of the kitchen; the windows go almost to the ceiling, and the window glass is in three independent sash, each capable of being raised or lowered independent of the others, for purposes of light, air, and additional ventilation as required. Figure IV. is a typical operating department which seems to meet most requirements. Figure V. represents a medical ward with all its appurtenances. The medicine cabinets for such a suite can be set into the walls of the corridor, just outside the ward, or at some point in the walls of the ward itself.

Window Frames. The windows are of such a great importance for ventilating that they must receive special consideration. The standard window is the double-hung check-rail sash with box frame. This window has the advantage of accessibility for cleaning, but the window has several disadvantages. One is that it does not open the entire opening of the window, but only half in hot weather, and in cold weather it permits direct drafts. The so-called plank frame window, with hinged or casement sash swinging inward, is also objectionable on account of the direct drafts and the difficulty of applying an adjuster by which the sash can be set and held at any angle. These objections also apply against the same kind of a frame with sash swinging outward, but such sash can be equipped with satisfactory operators, can be opened and closed without removing the insect screens, which must be on the inside when the sash swings outward. Double transom sash in the upper part of a window will ventilate a room rapidly without objectionable drafts. Such transoms can be used in combination with double-hung sash for the lower part of the window, but this is not advisable, except where the







FIGS. III., IV., AND V.—KITCHEN ARRANGEMENT. OPERATING DEPARTMENT. MEDICAL WARD ARRANGEMENT.

FIG. VI.

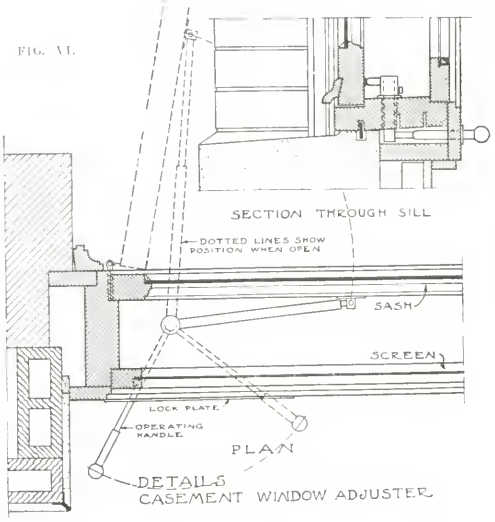


FIG. VII.—REINFORCED CONCRETE STAIRS.

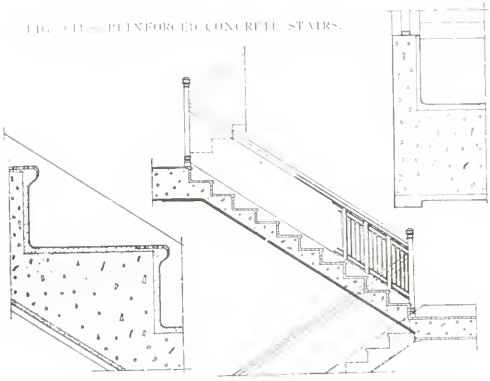
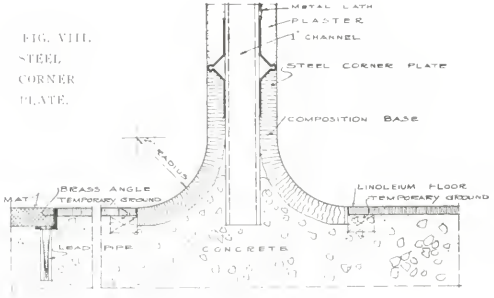


FIG. VIII.
STEEL
CORNER
PLATE.



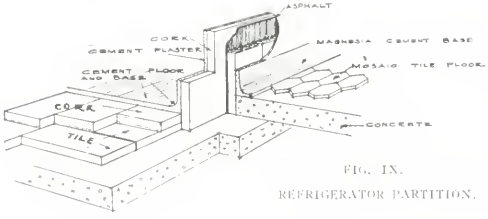


FIG. IX.
REFRIGERATOR PARTITION.

window frames and the stories are unusually high. Where they are to be used in frames and stories of ordinary height the lower portion of the window should be equipped with outward-swinging casement sash, operated by casement adjusters, as shown in Fig. VI.

Stairs. Polished artificial marble made in the same manner as described for floor surfacing is one of the best and most economic stair materials. If used in combination with solid masonry walls such stairs can be self-supporting without the use of iron, except such is used for the balustrade. Figure VII. illustrates such a stairway. If solid masonry walls cannot be built, such a stair may be supported on steel supports or a reinforced concrete slab, which will require a plastered finish on the soffit, which is good, but not as attractive as a polished artificial marble surface.

Floor Corners. Attempts have been made to cover a cement cove with the floor linoleum, curving this to the cement upward to a steel corner bead, forming the division between the plastered wall and the floor linoleum. This could be done fairly well adjoining the straight walls, but it is unsatisfactory in both re-entrant and salient angles. It will be seen that the salient angles must be filled with a small patch of linoleum, or a cement such as magnesia-cement, but the result is not as perfect a piece of work as a combination of linoleum floor and artificial marble or magnesia-cement baseboards, as shown in Fig. VIII.

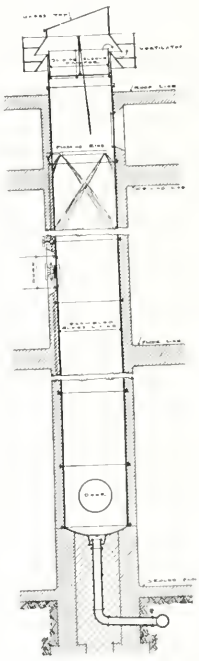


FIG. X.—LAUNDRY CHUTE.

Refrigeration. As the proper preservation and condition of foods and the purity of water supply are of the utmost importance in hospital service, so the refrigerating requirements are most exacting. The advantages of refrigeration in hospitals include the cooling of main kitchen and diet kitchen food-supply boxes, refrigeration in service rooms located throughout the hospital, cold-storage refrigerators for stocks of foods and supplies, the preparation of such foods as ices, ice-cream, and delicacies for the sick. To eliminate a considerable loss in economy, all the cold piping of the refrigerating system should be protected by a heat-insulating covering of the highest obtainable quality, Fig. IX. Standard coverings are furnished of compressed cork and of wood or hair felt. In selecting insulation it must be kept in mind that a considerable difference in first cost will be very rapidly outweighed by the continued loss of refrigeration due to the selection of a lower quality of insulation. The

specifications should establish a guaranteed result of refrigeration and a five-year guarantee against deterioration of the covering. Pipe-covering manufacturers who specialize in refrigerating insulation will agree to such guarantees.

Laundry Chutes. A newly devised laundry chute, shown in Fig. X., consists of rings of iron, glass lined on the inside, and is made in sections or rings, 3 or 4 feet long, and of any desired diameter. The sections are made gasketed, so that they fit watertight one against another, and the chute can be made of any desired length in that way. The joints are fitted so closely that they can thus be washed out at any time with hot or cold water shower at the top. The glass is fused into the metal at a

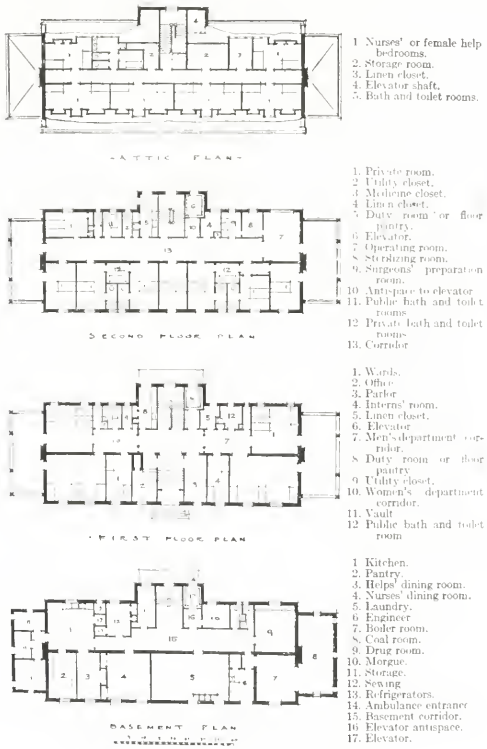


FIG. XI.—PLAN FOR SMALL HOSPITAL.

temperature of about 2600 deg. F. and does not crack or split off under any variations in temperature. The bottom of the chute ends in a drain-pipe with trap and grate, so that it is perfectly clean and sweet all the time. At the top there is a shower crown for hot and cold water for cleaning purposes. The top of the chute is led to the roof, and is covered with a hood.

Small Hospital. The principles of hospital architecture apply equally in the small and the large institution. The radical difference between the two is simply that one contains a very few units and the other a great number of units. In the large hospital there are questions of transportation of food and hospital supplies that do not apply in the small institution. There are questions of light, and perhaps problems of ventilation and heating, that render the scheme of architecture more complicated. In figure XI. are shown the plans of a small building, the width of which is 33 feet, the length 111 feet, and contains the following beds:—First floor: 4 three-bed wards, 12; 1 two-bed ward, 2; interns, 2. Second floor: 8 one-bed wards, 8. Third floor: Nurses and help, 12. Basement: Fireman, 1. Total number of beds, 37. Each of two first-floor wards will accommodate an additional bed, making a total of 39 beds. The cost of this building should not exceed $38,500. If the three floors and all partitions are built of fireproof construction, and slate roof on

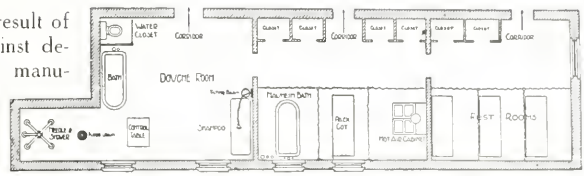


FIG. XII.—ARRANGEMENT FOR HYDROTHERAPEUTIC SUITE.

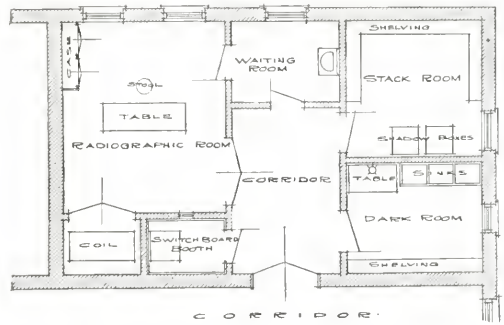


FIG. XIII.—X-RAY DEPARTMENT FOR SMALL HOSPITAL.

wood roof construction, the cost should not exceed $45,000, or about 33½ cents per cubic foot.

Hydrotherapy. Figure XII. is a well designed hydrotherapeutic suite which may be elaborated or contracted to conform to any special conditions desired.

X-Ray Suite. Figure XIII. is a most convenient plan for an X-Ray department in a small hospital, where practically all the apparatus must be housed in one room.

Milk Station. The plans for a practical milk laboratory are shown in figure XIV. This satisfies as nearly as possible the health authorities of the larger cities in their demand for efficiency in methods of pasteurization.

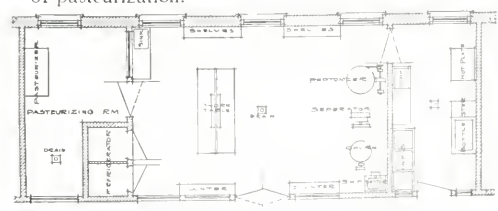


FIG. XIV.—[illegible] MILK STATION.

CHARLES S. COBB, who has had charge of the architectural department of the Toronto Technical School for the past two years, has opened an office for practice in the new C.P.R. building.

* * *

WALTER N. MOORHOUSE, until recently with the firm of Sproatt & Rolph, has entered into partnership with Allan George, son of Sir Ernest George, who is at present practising in Toronto at 67 Victoria street. * * *

GEORGE N. MOLESWORTH, formerly of the fir mof Bovell & Molesworth, 449 Yonge street, and Gordon M. West, until recently with Architect George W. Couinlock, have opened a joint office in Bank of Commerce building at 2 College street, Toronto. * * *

THE PEDLAR PEOPLE will move from their present location on Bay street to the new Art Tailoring building, corner of Markham and College streets, Toronto. The company has secured a ten years' lease and ten thousand square feet of floor space will be used for offices and warehouse purposes. * * *

THE PARIPAN lacquer enamel, which has been so successfully employed in the decorative scheme of the new Toronto General Hospital, is of an English enamel of high grade. It has been used in some nine hundred hospitals scattered throughout the British Empire and has withstood the continued washing and general wear in the older institutions for fifteen years. The material lends itself to various treatments and can be applied in flat tones or glossy tints. The paripan enamel is handled by Sturgeons Limited. * * *

IN A RECENT LECTURE Edward Howard Griggs expressed his thought of architecture in the following words: "Music takes sound forms in nature in their lower relation and recombines them in harmony with human sensibility and intelligence. Architecture does the same with dimensional forms in nature, and in both arts is to be found the most far-reaching application of mathematical principles. Goethe speaks of architecture as frozen music. Browning, in more significant language, speaks of music as liquid architecture. One art is to space what the other is to time."

* * *

THE MODERN HOSPITAL is the title of a book recently published which treats of the hospital in relation to its inspiration, its architecture, its equipment and its operation. The work is edited by John A. Hornsby, M.D., Secretary Hospital Section, American Medical Association; member American Hospital Association, etc., and Richard E. Schmidt, architect, Fellow American Institute of Architects. The book contains six hundred and forty-four pages with two hundred and seven illustrations of plans, structural details, finished rooms, equipment, etc. Philadelphia and London: W. B. Saunders Company, 1913. Octavo volume, cloth, $7.00 net; half morocco, $8.50 net. Sole Canadian agent is the J. F. Hartz Co., Ltd., Toronto.

* * *

THE FOLLOWING well known companies furnished material for the new Toronto General Hospital, which merits the universal approval it is receiving in relation to its constructional features and equipment: Architectural Bronze and Iron Works, iron fences and lamps; Berry Brothers, liquid granite; Canadian Fairbanks-Morse Co., scales; H. N. Dancy & Son, Ltd., masonry; R. C. Dancy, plastering; Dennis Wire and Iron Works Co., ornamental iron; Dominion Bridge Co., steel; Don Valley Brick Works, brick and porous terra cotta; A. D. Grant, plaster work; W. J. Hynes, plaster work; Lautz Co., marble and tile; W. J. McGuire, wiring; G. B. Meadows, ornamental iron; Pedlar People Ltd., metal lath; R. Robertson & Sons, general contractors; Sturgeons Ltd., paripan enamel; Teagle & Son, masonry; Turnbull Elevator Mfg. Co., elevators.

* * *

A VERY PRACTICAL apparatus for the disposal of garbage and ashes is manufactured by Gillis & Geoghegan, 537 West Broadway, New York City. The G. & G. ash elevator takes up scarcely any room in areaway or cellar; the opening in the sidewalk need be little larger than necessary to permit passage of the can. It is telescopic—no part showing above the sidewalk when not in use. Compound gearing is provided in connection with both the handle which telescopes the apparatus above sidewalk, and the handle which raises the load to sidewalk. The gears are "machine cut," so that working smoothly and firmly it is possible for the heaviest load to be raised easily and rapidly. The upper hoisting head revolves so that can is swung over on sidewalk without hitting, while a safety ratchet device is provided with both handles. A powerful all-steel brake attachment permits the lowering of heavy loads without trouble.

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CONSTRUCTION

VOL. VI NO. 12

CONTENTS FOR DECEMBER, 1913

Full Page Illustrations

H. GAGNIER, Limited, Publishers

GRAPHIC ARTS BUILDING, TORONTO, CANADA

BRANCH OFFICES:

MONTREAL WINNIPEG CHICAGO NEW YORK

STREET SCENE IN LOCHES, FRANCE.

PHOTO BY F. R. MAJOR.

¶ The aim of "Construction" for the year 1914—An endeavor to present the best work in a wholesome and practical manner.

IN REVIEWING the year of 1913 through all its varying successes and failures, one fact seems to stand forth—the lessons learned through over-investment will make the progress of the coming year greater and place it on a more secure foundation. Already indications point to a gradual return of our illustrious record during 1912. CONSTRUCTION aims to present in an artistic and practical manner the best architecture and engineering problems throughout the provinces, and naturally relies upon the co-operation of each individual interested in a sane and broad development of our various cities and towns. Beginning with the January issue, it will present a number of plate forms dealing with subjects which should prove helpful to every artisan. The policy of showing a building in its entirety will be adhered to, while the examples will cover each type of structure and at the same time depict the character of work being done in all parts of Canada. The best designs executed in other countries will be shown from time to time in order that we may keep in touch with the class of work as well as the men who are responsible for the future progress of art. Prominent men in the profession are preparing for CONSTRUCTION articles dealing with the living questions of the day, matters with which they are thoroughly acquainted and which are vital to the sane progress of our artistic ideals. The house will take a prominent place in CONSTRUCTION for 1914. This type of building has been sadly neglected during the past year, while so much excellent work has been done in that direction. The territory covered will represent the architects from Quebec to Vancouver. Government buildings, schools, commercial structures, hospitals, art galleries, churches, apartments, etc., will also be thoroughly illustrated. Civic planning will be seriously considered, and several schemes for Canadian cities are to be shown in connection with the author's description of same. Space will not permit of further detailed information, but with the hearty commendation and assistance of each person concerned we will endeavor to present all the best work, thoroughly and practically, and with a dignity, we trust, which will command the admiration of our readers as well as foreign contemporaries.

¶ The commendable work of the Toronto Housing Company—Plans accomplished and general results from an esthetic and social standpoint.

THE HOUSING of workingmen, who rely upon a moderate wage for the maintenance of their family, is a problem which confronts the authorities of every city. In Ontario the Government considered the question as a Provincial matter and passed a bill presented by the Hon. Mr. Hanna which was drafted in conjunction with others most prominent in the housing movement. This measure opened the way for each city, enabling them to act with the Government in the solution of providing comfortable and artistic homes for the poor. The city of Toronto felt the need and appointed a committee from which resulted the authorization of a company to whom the city council voted bonds to the amount of $850,000 on the basis that $150,000 be provided by said company. With a capitalization of $1,000,000 the first step was to prepare plans for five acres of land fronting Logan avenue. The scheme involved an expenditure of $400,000 and resulted in the housing of two hundred families. The second development of the Housing Company is located near Riverdale Park, comprising two thousand feet of street frontage. The buildings will accommodate one hundred and eighteen families; cost approximately $500,000, and include a private plant for the ample provision of heat and hot water. One of the schemes has quite an English character, the homes surrounding a central court. These houses have a minimum rental of twelve dollars a month, which covers the cost of upkeep, taxes, insurance, interest on bonds, interest on shareholders' capital, and which provides a sinking fund to retire all bonds in forty years. The work of the company is highly commendable and will result in the betterment of localities wherein the homes are built. The children are provided with ample playgrounds, while gardens are arranged for flowers, vines and terraces. As stated at the laying of the corner stone of the second building development, it is not an undertaking of philanthropic motives but one of social justice. Times and conditions have forced us to provide for the needs of those who are alive to the real sense of living and who are unable to meet the exorbitant increase in rentals, etc. The object of the Housing Company is to make it possible for the working man to live comfortably and at

the same time give his family the opportunities for education and wholesome pleasures. It is a business proposition and will do considerable to eliminate the evolution of slums in our cities. Give the conscientious working man a chance to better his conditions and he will in time bring about a condition which in itself will enhance the esthetic appearance of the city as well as the moral status of the community wherein he lives.

¶ *Tremendous fire loss of forests through railways —Action already taken and need for more stringent laws—Value of re-forestration.*

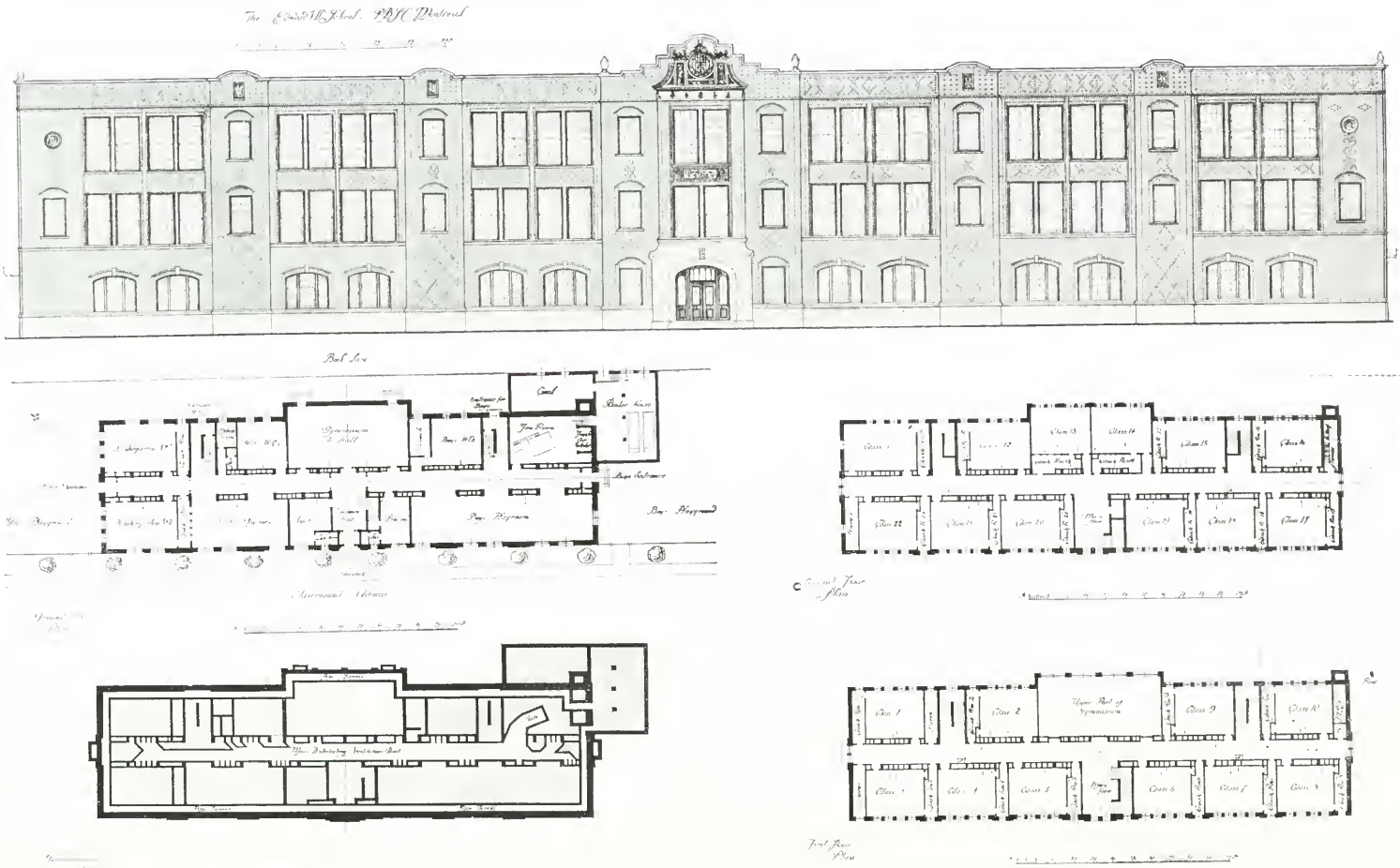
DURING THE YEAR 1912 there were over two hundred fires started within three hundred feet of railway lines subject to the jurisdiction of the Board of Railway Commissioners for Canada in British Columbia, Alberta, Saskatchewan and Manitoba. Of this number one hundred and sixty-four were caused by trains. The loss resulting from eighty fires on the Canadian Pacific line alone was approximately $65,000. Appreciating the urgent need of definite action the Board in May, 1912, ordered certain regulations for the prevention of fires. Among the various clauses is one which states that every railway subject to the legislative authority of the Parliament of Canada shall cause all locomotive engines to be fitted with an extension smoke-box having the aperture entirely covered with wire mesh. Another provides that capable inspectors shall be stationed at the different terminals, whose work will consist of a thorough examination of all fire-protective appliances and keep a record of each inspection. Still another states that the various companies shall maintain efficient patrol and fire-fighting service from April to November. These, together with numerous other conditions enacted, should assist materially in the preservation of the forests. But they alone have not, nor can they, prevent the big conflagrations until proper jurisdiction is passed which pertains to all railroads. The Government Forestry Branch reports that half of the original forest of Canada has been destroyed by fire; that for every foot of timber utilized seven has been burned, and that at the low estimated value of fifty cents per thousand feet b.m., the timber uselessly ruined by fire would have yielded a direct revenue of more than one billion dollars, to say nothing of the benefits resulting from its utilization. Such statements as these cannot help but awaken the people interested in the country's welfare to the pressing need of more stringent action. As soon as proper means have been employed to eliminate the fires, new forests will be planted. Considerable attention has been paid to the question of ensuring the perpetuation of the forest by old-style methods of lumbering on Government lands, but the phase of forest planting has been seriously neglected. It is quite imperative that the Government take even more stringent action towards the railways and at the same time anticipate the future's need by re-forestration.

¶ *The skyscraper—The mistakes of New York should be a lesson to our Canadian cities in their haste to erect tall structures.*

THE SKYSCRAPER for Canadian cities is universally condemned, and still two are being erected on opposite corners to the C.P.R. building in Toronto. What congestion will occur at the narrow intersection of the two busy streets when the thousands pour from the three structures, is passed over lightly by the exponents of the commercial tower. The abundance of land within a stone's throw of this site, which is practically being wasted for want of thorough up-to-date buildings, is not even considered. To ape the skyward tendencies of New York City seems to rule the ambitions of some few who are powerful enough to force the will of the people's representatives. Toronto might well learn the experience of America's metropolis. In that city the majority of the older buildings remain unimproved at low levels on account of the skyscrapers enticing away their tenants. Such a condition exists in close proximity to many recent tall buildings where may be found abandoned residences, poor tenements, cheap lofts, etc. An example of note in this connection is the Tower building, eleven stories high, flanked on both sides by other structures—44 to 50 Broadway—all of which are to be torn down because they do not possess sufficient tenants to pay for the operating expenses. These buildings are serviceable, but doomed to destruction by the eagerness of people to occupy the more elaborate and self advertised structures. Why shouldn't the adjacent property owners have some rights, some protection not only as concerns the question of rentable values, but also the problem of light and air? The Borough President of New York appointed recently R. P. Bolton to make a scientific study of building construction and cost. Mr. Bolton, in commenting over his report, says: "I have suggested to the commission a limitation of nine times the gross plot area in gross interior floor area. Coupled with a restriction as to cornice heights and permission to build higher only by recession from all sides of the property lines, the access of light and air to street and neighbors would be secured. With the increased high cost of construction, it follows that rentals must be high if a proper return is to be secured, but it is a fact that the mere height of buildings does not bring in commensurate returns. There are actually instances in lower Manhattan where the lower floors of some skyscrapers are unrentable as office space and are rented for storage purposes on account of the insufficient light and air they afford. This is due to the building itself, which has not only robbed its neighboring properties of their share of light, but has robbed itself of its own share of reflected light. The same applies to access of air for ventilation. Had such buildings been constructed with regard to these features a much less height would have been found to produce equal results."

EDWARD VII. SCHOOL, MONTREAL.

NORRS & HYDE, ARCHITECTS.



EDWARD VII. SCHOOL, MONTREAL.

NOBBS & HYDE, ARCHITECTS.

Three Montreal School Buildings

NOBBS & HYDE, Architects.

THE PROTESTANT Board of School Commissioners of Montreal have been compelled to meet the rapidly increasing demand for school accommodation within their jurisdiction in recent years by enlarging such of the schools as were capable of enlargement and building at the rate of one new school a year besides. This activity in connection with primary education (quite apart from the Board's high school and technical school work) has naturally resulted in very clear and definite views as to accommodation requirements on the part of the experienced officials of the Board. Such matters as the sizes of ordinary class rooms, kindergarten rooms, sloyd rooms, cookery rooms, etc., may be said to have been reduced to an exact science. The cost of land and the cost of building in relation to the funds available impose a rigid, though not a gross, economy in school building in Montreal, and two very desirable elements in the ideal school plan have had to be dispensed with or only partially provided for of late years; firstly, playground accommodation, and secondly, assembly halls. In recent cases, however, the indoor playrooms have been greatly improved in type, while the gymnasium, so arranged as to be capable of use as assembly halls on occasion, provides what is essential in that respect

When the officials have prepared their schedule of cut and dry accommodation, and the Board has provided the site and the funds and the admonition as to "cost per cubic foot," checked by the "cost per class room provided," the architect is called upon to invent a synthetic solution. In the case of the three schools illustrated the sites were the only variable factors of moment and the only element of accommodation susceptible of much variation was the "coat room."

In the case of the Edward VII. School, the usual and ideal coat room was possible owing to the extreme length of the site.

In the Strathearn School on a costly site which did not admit even of a playground (but happily situated within a stone's throw of the Mount Royal Park), extra wide corridors flanked with a special sliding front locker device, take the place of the separate coat rooms, saving 20 p.c. of the cubic contents of the class room floors in the school building.

The Peace Centenary School, which is the next to be proceeded with, is fortunately on a very liberal site. The school is of such a size that the well-plan proved the most economical, the coat rooms in this case being placed on the inside across the corridor from the class rooms. The whole of the external walls are thus available to light class rooms.

Without quoting the standing orders of the Board as to detailed requirements for the various elements of the school plan, a note on the most important element,—the ordinary class room,—may be of interest. The officials very rightly insist that there shall be no door in the wall behind the teacher, but a blackboard the whole width of the room. Another blackboard is placed on the inner wall (opposite the windows) between the entrance door and the cupboard, if on that wall. The back wall is provided with rails only for diagrams.

MAIN ENTRANCE, EDWARD VII. SCHOOL.

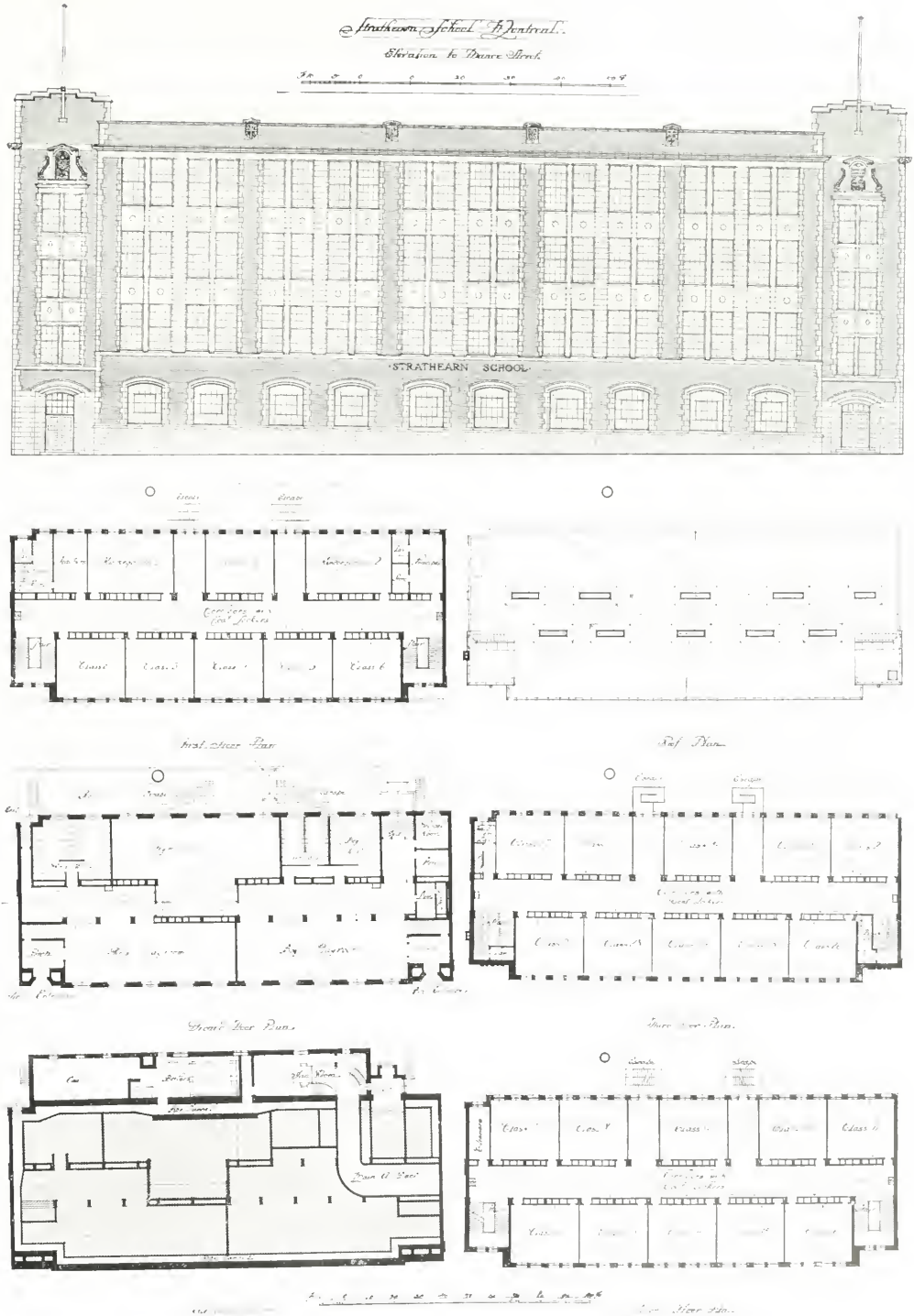
The dimensions of the class rooms are, maximum twenty-five by thirty feet, to minimum twenty-four by twenty-eight feet. The height in the cases illustrated is twelve feet ten inches, floor to ceiling. The window sills are three feet high and the *glass* area is one-sixth of the floor area—a rather excessive requirement

The school buildings under construction are thoroughly fireproof in their construction. The fuel and heating apparatus are disconnected as far as possible from the ground floor, from which the stairs lead up. There is no basement, the space below the ground floor being filled in, except for ventilating ducts and pipe tunnels. Where internal concrete staircases can be suitably distributed throughout the building external fire escapes are dispensed with.

The ventilation provided in class rooms is thirty-five cubic feet of air per child per minute, and as the class rooms are seated for from forty to fifty children,

STRATHEARN SCHOOL, MONTREAL.

NOBBS & HYDE, ARCHITECTS.

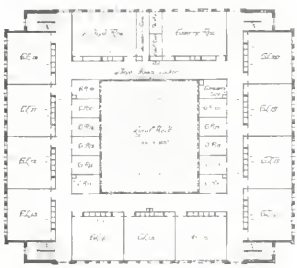


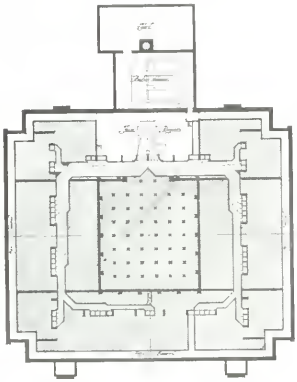
STRATHEARN SCHOOL, MONTREAL.

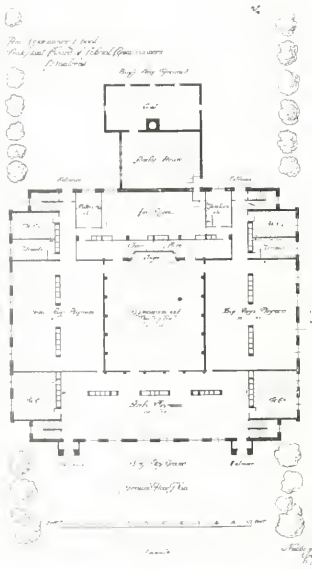
NOBBS & HYDE, ARCHITECTS.

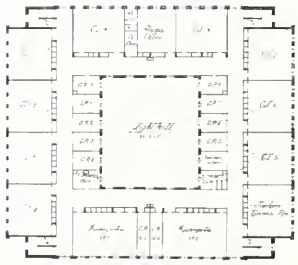
PEACE
CENTENARY SCHOOL,
MONTREAL.

NOBBS & HYDE, ARCHITECTS.





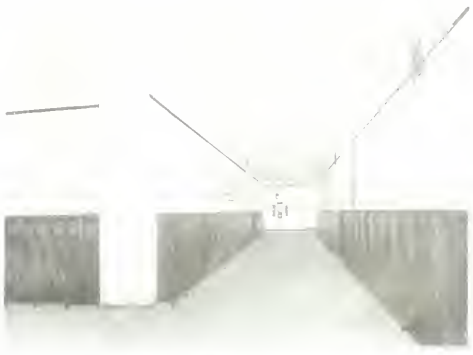




that represents between ten and eleven changes per hour. The heating and ventilating of the three schools illustrated has been designed by the Canadian Domestic Engineering Company.

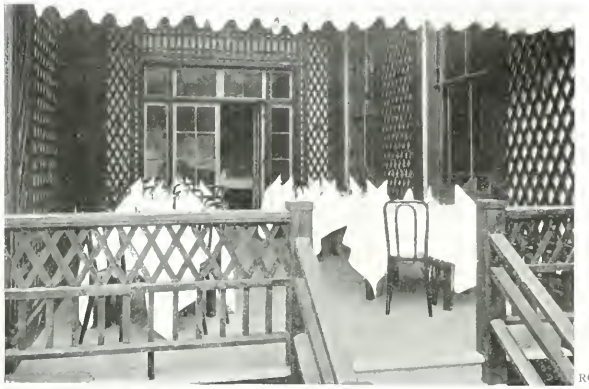
Comparative Table.

	Edward VII.	Strathearn.	Peace Cen.
Common classes	22	26	31
Kindergarten	2	2	2
Sloyd	0	0	1
Cookery	0	0	1
Total class rooms	24	28	35
Boys' playroom area, ft.	3,300	2,700	6,500
Girls' playroom area, ft.	1,900	2,400	4,000
Gymnasium area, ft.	2,000	2,100	3,600
Boys' urinals	18	41	58
Boys' water closets	16	17	36
Girls' water closets	16	31	58
Cubic contents, ft.	931,000	873,000	1,434,000
Cost, general contract	$143,775	$168,000	$205,000
Cost, engineering	30,550	33,500	45,000
Total cost	174,325	201,500	250,000
Cost per cubic foot	19c.	23c.	17½c.
Cost per class room	$7,280	$7,150	$7,143
Number of children	1,000	1,200	1,500
Cost per child	$174	$167	$167
Date of completion	Sept., '12	Sept., '13	Sept., '14



BILLIARD PARLOR.

DINING ROOM.



ROOF GARDEN.

THE

AMERICAN CLUB,

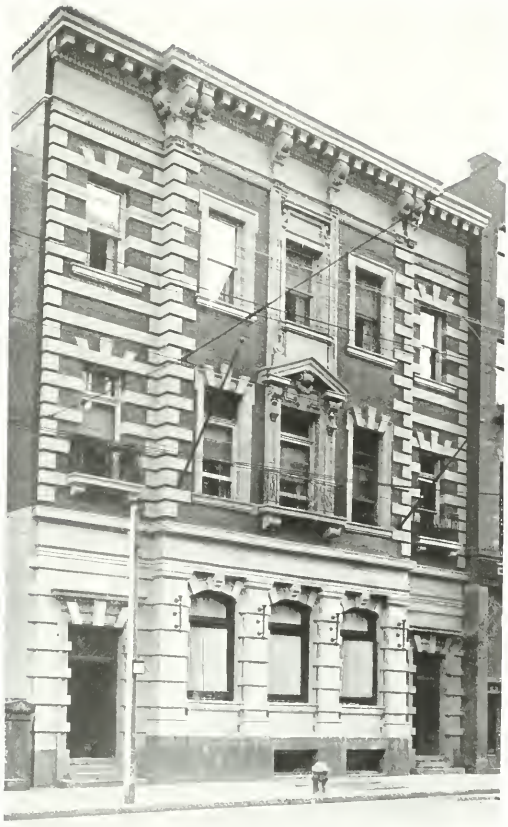
TORONTO.

JULES F. WEGMAN
ARCHITECT

LADIES LOUNGE.

The American Club, Toronto

JULES F. WEGMAN, Architect.

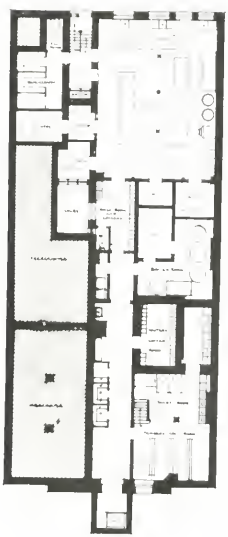


MAIN FACADE OF AMERICAN CLUB.

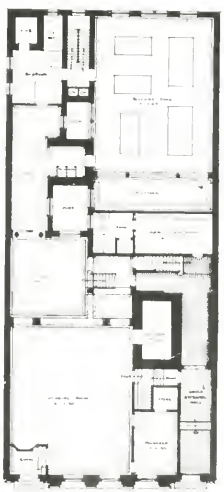
THE AMERICAN CLUB, organized in the fall of 1912, purchased recently the Union Bank building, which is located at nineteen Wellington street. Facing the Ontario Club, it marks the site of another historical spot which has gradually grown into the active commercial life of that vicinity. The original structure was erected in 1858 by Cumberland & Storm, architects, for the Edinburgh Life Assurance Company. From 1874 to 1888 the Federal Bank occupied the premises and were succeeded by the Union Bank. The legal firm of Saunders, Torrance & Kingsmill held offices in the building from the date of occupancy up to last spring. The exterior of the structure was enlarged in 1899 to its present condition.

The building has a frontage of fifty-two feet and a depth of one hundred and twenty feet. It afforded quite an architectural and engineering problem in changing the needs of a banking institution to that of a social club, and its present state reflects considerable credit on the designer, J. F. Wegman, associated with the architectural firm of Darling & Pearson, and Norman A. Hill, the consulting engineer.

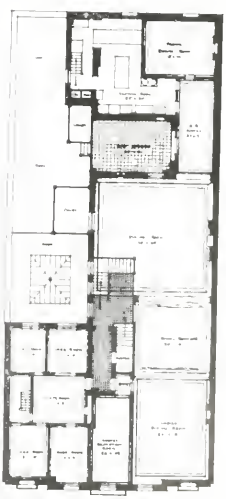
Two entrances furnish access to the ground floor, one leading to the men's lounging room, the other providing a means whereby the ladies can enter their own quarters privately. The lounging room, thirty by fifty-eight feet, takes the place of the old banking room with its decorative ceiling and saucer-shaped dome equipped with innumerable hidden lights. The room is seventeen feet high with walls finished in a brown shade to harmonize with the oak woodwork. In addition to the invisible ceiling lights are brass electric brackets on the walls.



BASEMENT PLAN.



GROUND FLOOR PLAN.

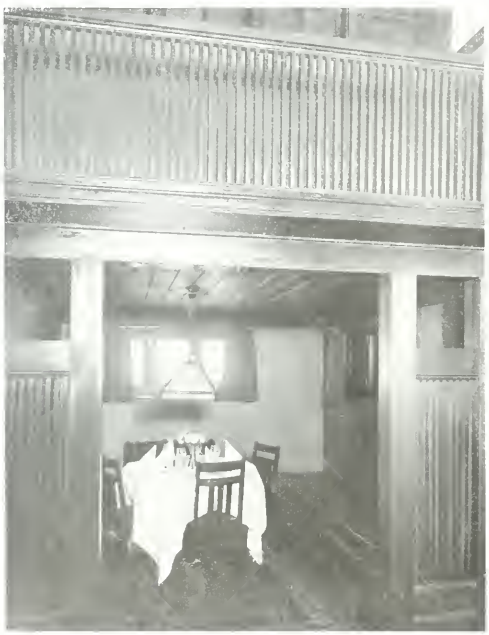


SECOND FLOOR PLAN.

THIRD FLOOR PLAN.

PRESENT LAY-OUT OF AMERICAN CLUB.

LOUNGING ROOM.



PRIVATE DINING BOOTH.

The oak flooring is covered with large Oriental rugs, setting off the big mahogany chairs and davenports upholstered in leather. Palms, tables and heavy raw silk curtains with fish-net lace at the windows lend a welcome atmosphere to the room.

Leading from the lounge is the smoking room, equipped with velveteen portieres, oak tables and chairs, which in turn opens into the billiard room, thirty by fifty feet. This room accommodates five billiard tables and has a raised platform with oak benches for spectators. Nine semi-indirect lighting fixtures of alba glassware finished in brush brass and black are suspended from the ceiling by chains. The walls are covered with painted canvas nine feet high with oak moulding above, while the flooring is of cork matting. Directly off from the billiard parlor is the wine and refrigerator room, containing the oak service bar and compartments extending from the floor to the ceiling.

The ladies' entrance has a floor of red square tiling covered with a runner of rich red carpet; walls of Pompeiian red burlap nine feet high surmounted by oak moulding; hanging lights and oak settees. Stairs lead to the main dining-room on the second floor from the ladies' entrance lobby as well as from the lounging room.

The dining-room consists of two divisions thrown into one, seventy-five by thirty feet, with height of

LOUNGING ROOM.

seventeen feet and a seating capacity of one hundred and thirty. By raising the lower portion the floor presents a level surface throughout. The walls are covered with a brown paper of striking texture, nine feet in width, hung horizontally so as to eliminate all need of jointing, above which is a decorative frieze with designs of fruit, etc. This room is made especially attractive by nine electric fixtures of moonstone glassware finished in Roman gold; side draperies of gold Turkanum cloth; lace curtains in point Arab and Oriental rugs. A striking feature is the opening of the stairway originally closed.

Accessible from the main dining-room by French windows is the roof garden, thirteen by twenty feet, built in the old interior court. The floor is of slate, the walls of trellis work painted green. A small flight of stairs leads to the roof of the lounging room, which will permit of future extension to the present roof garden.

The ladies' reception room is finished with Austrian bentwood of art nouveau design finished in satin gray; walls of printed linen in bright floral designs; rug of Queen Anne period with black ground and varied in tones of yellow. Adjoining this room is a suite of four private dining-rooms, ten feet square, with copper colored velveteen draperies and point Arab lace curtains. These rooms surround an anteroom, twelve by thirteen feet, from which a private

SMOKING ROOM.

stair leads to the board room located on a mezzanine floor.

At the rear of the second floor is a private dining-room adjacent to the serving quarters, fully equipped with modern fixtures and possessing two electric dumb waiters running to the basement. Stairs also connect this serving space to the basement, where is planned a thirty by forty foot kitchen whose walls are lined with expanded metal and plaster painted. The flooring consists of concrete covered with rough and finished maple. In addition to the kitchen, equipped with combination coal and gas range, accommodations have been made for the help, locker rooms, toilet rooms, steward's office, bakery equipped with portable oven, store rooms, and boiler rooms.

The third floor has ten bedrooms, private bathrooms, showers, janitor's suite, linen closets, etc. The curtains of these rooms represent the hand block English tinted effect.

The success of club institutions is amazingly rapid and demonstrates clearly the tendency of our Canadian life. Started less than one year ago, the American Club has an active membership of five hundred and a large waiting list. Its aims are purely social and all matters of a political nature are rigidly barred. The majority of the members are citizens of the United States, while a large number of Canadian born are allied to the organization as associate members, which tends to eliminate all unnecessary sectional demonstrations and at the same time foster harmonious relations between the members which cannot help in time to eradicate any bitterness that may exist at present. With the present accommodations and the completion of other features already planned for such as bowling alleys, swimming pool, etc., the club will be thoroughly equipped to provide a suitable home for all members and friends who sympathize with the club spirit.

ORIGINAL FACADE OF PRESENT AMERICAN CLUB.

I THINK we all understand the term "Ideal" —an aim or inspiration of the mind—a dream which we may hope to realize. It is probable, however, we are not all so equally agreed as to what is understood by building. In these days building has become a science, rather than an art, and it is of the art of building, rather than of the science of building, I wish to speak. And so it becomes necessary to define art in some way. Well, as you know, a great philosopher—Tolstoi—has written a whole book in answer to the query, What is art? It will be enough for me here to roughly define art as an occupation in which man seeks to satisfy, not only the need of his body, but the desire of his heart.

Nothing is so essential to a building as the quality of truthfulness and reality. Why do we admire so much those fine old structures of half-timber work in old English villages? It is not merely because of their superficial charm, but mainly because we recognize their inherent truth. The whole arrangement of their timbers represents the actual structure of building, and we shall find throughout the same principle.

Everywhere we find function expressing itself in form naturally and inevitably. The creators of these dwellings had not, it is true, our modern advantages of education and research. They knew nothing of Classic temples, or of buildings designed in other lands. They worked out their own local problems in their own way unencumbered by unnecessary knowledge, and so could bring the whole of their unbiassed intelligence to bear on what they had to do. And the essential fact about their work is its unpretentious reality.

It must also never be forgotten that all the old work we admire so much was new once, and when it first appeared it must have been as startling in its novelty as any of the products of the "New Art" of our day. What a marvellous innovation must have seemed that first creation of the delicate beauty of Early Gothic art, when compared with the clumsy, rude, barbaric Norman work! And art, if it is alive, must always so change and develop; for in the continual flux of human affairs, to stand still is to fossilize and decay.—*Scott.*

Proposed Registry Office, Toronto

THREE PREMIATED DESIGNS

THE ACCOMPANYING illustrations show the three premiated designs accepted in the competition for a Registry Office, Toronto. Held under the promotion of the municipal corporation and open to Canadian architects, a large number of schemes were presented, representing the skill of prominent firms located in all parts of the Dominion. The Board of Assessors consisted of Arthur R. Denison, Professor Wright of Toronto University, and R. H. Bowes. The first prize was awarded to Charles S. Cobb; second prize to Chapman & McGiffin; third prize to Symons & Rae, all of whom are located in Toronto. A brief description is given by each contestant, stating the main ideas they kept in mind while evolving their final solution to the problem.

First Prize, by C. S. Cobb.

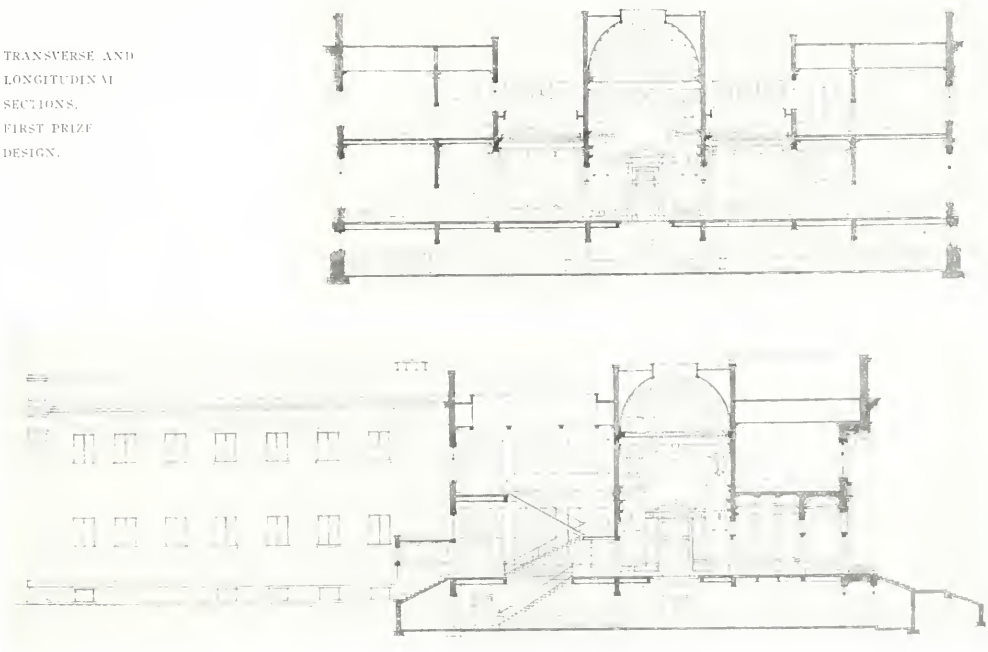
The requirements of this building are peculiar in that there is to be housed under one roof duplicate organizations similar in every respect, one for the registry division east of Spadina avenue and the other for that west of Spadina avenue. As stipulated in the program, it was thought desirable to face the building toward the south, so that the conditions required a structure symmetrical about a centre axis running north and south, and the design placed first is a direct solution of these requirements of plan. The design, however, has one major feature which peculiarly enough was overlooked by most of the competitors in the competition, and that is a well marked separate entrance for the clerical staff, which allows them access to the building during hours when it is closed to the public, and thus obviates troublesome interference. The searching office has light and natural ventilation on all three sides.

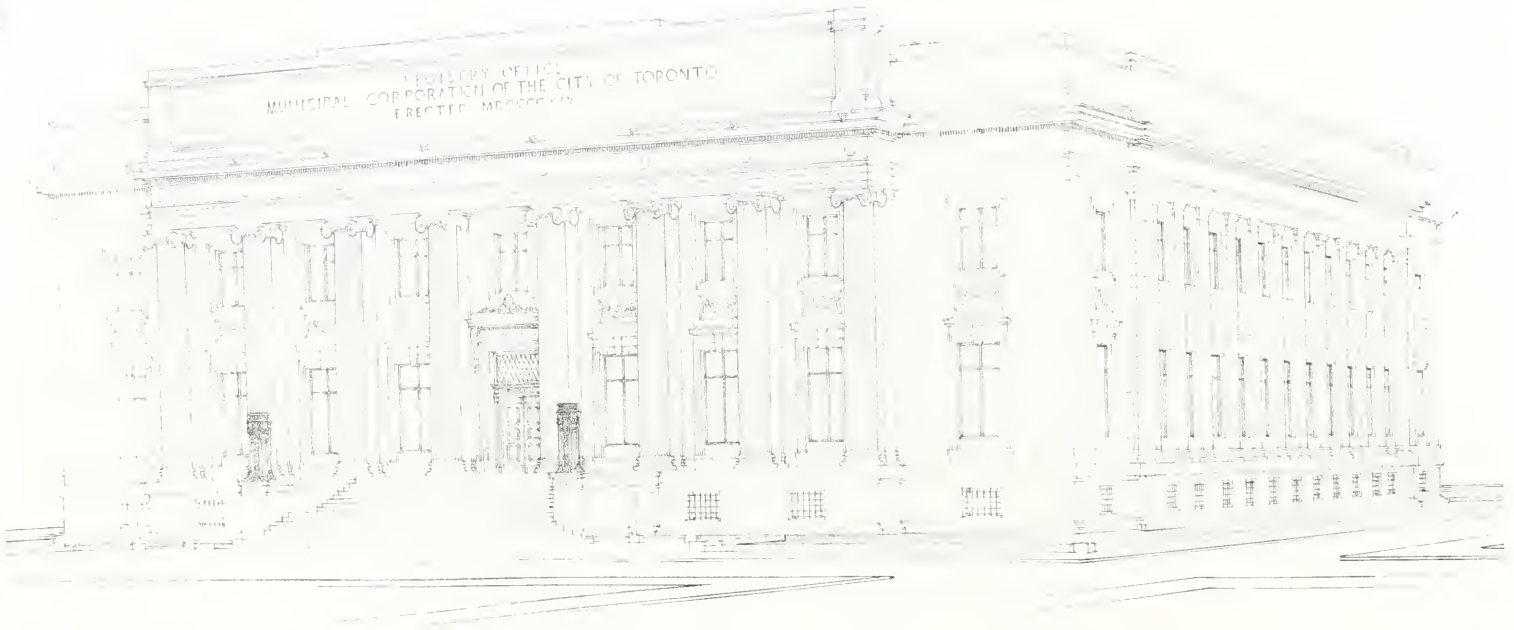
The elevation on Albert street is a Roman octostyle portico, while the lateral façades on Elizabeth and Chestnut streets are treated in a simple way with ten pilasters, embracing with their corner piers the entire length of these elevations.

Second Prize, by Chapman & McGiffin.

In studying the plans it will be observed that an effort was made to arrange the two registry divisions in order that each in itself would form a complete unit and at the same time be most accessible to each other for purposes of administration as well as to the general public. Two main entrances lead to the large public space, extending up two stories in height, around which are grouped the two tiers of minor registry offices. Directly opposite the entrances is the administrative counter, the extension of which divides the searching divisions and permits of ample

TRANSVERSE AND LONGITUDINAL SECTIONS, FIRST PRIZE DESIGN.

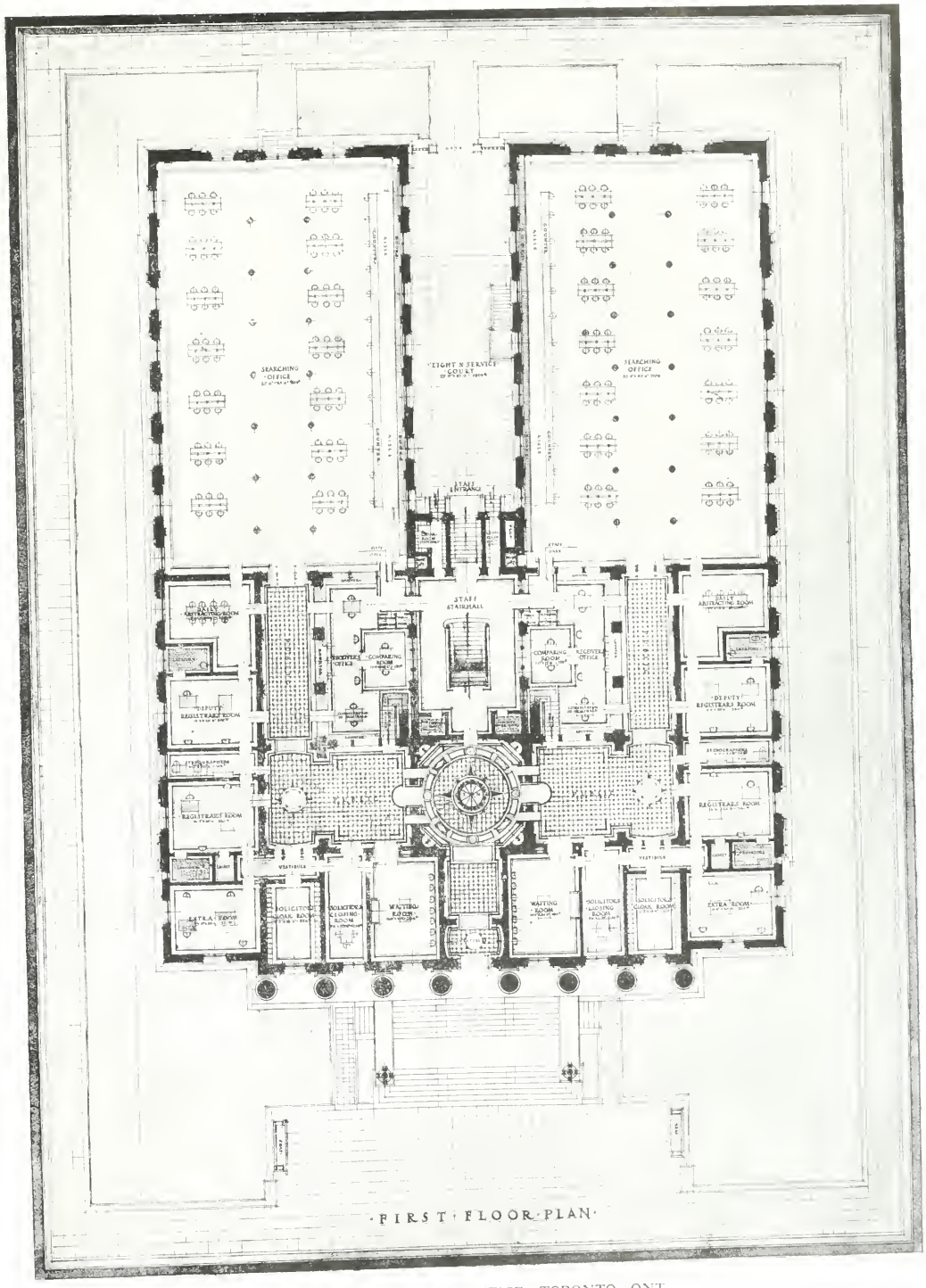




PROPOSED REGISTRY OFFICE, TORONTO, ONT.

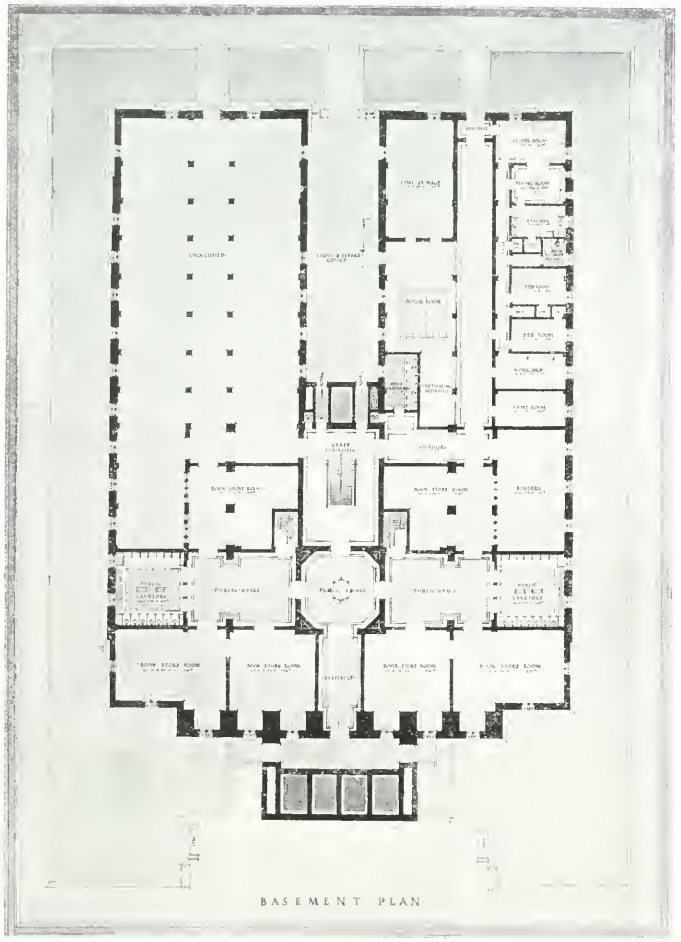
FIRST PRIZE DESIGN.

CHAS. S. COBB, ARCHITECT.

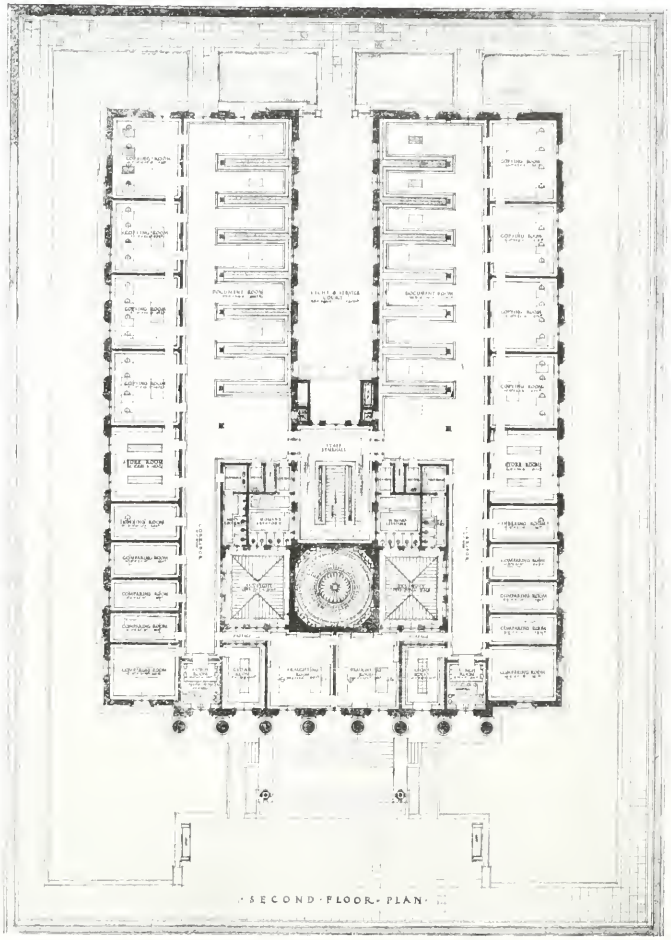


PROPOSED REGISTRY OFFICE, TORONTO, ONT.

CHARLES S. COBB, ARCHITECT.



BASEMENT PLAN.



SECOND FLOOR.

PROPOSED REGISTRY OFFICE, TORONTO, ONT.

CHARLES S. COBB, ARCHITECT.

provision for book stacks. At the rear of this central feature space is allowed for clerical communication between the two divisions and a telephone booth for each division. The offices surrounding the public space have a private corridor for the staff in addition to the stairway which leads to the original document stacks on the third floor as well as the toilets for the clerical force located in the basement.

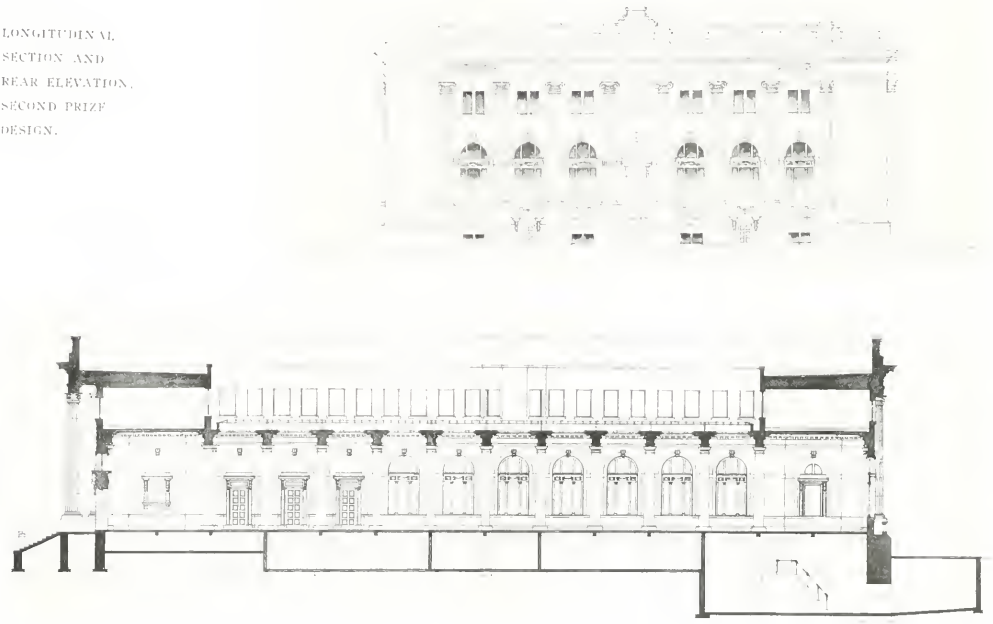
A feature of the scheme is the lighting.

Besides the windows on either side of the building there is a large skylight extending from the front portion of the public space back over the searching rooms, providing ample working light in all parts of the interior. The basement also secures an abundance of light from the outside windows and the large area covered with floor lights.

Plan and Construction.—In considering the designs, particular importance will be attached to simple and convenient planning, and it is essential that all parts of the building be amply lighted. The construction of the building shall be fireproof throughout as described under heading of "First Class Buildings" in the building by-laws, and all fixtures and fittings are to be fireproof as far as possible.

Drawings Required.—The following are the drawings required and no others are to be submitted: (a) Block plan, scale = 16 feet to an inch; (b) Floor plans for each storey and a roof plan, scale = 8 feet to an inch; (c) Sufficient sections to clearly illustrate the scheme proposed, scale = 8 feet to an inch; (d) Elevations to illustrate the façades, not shown on perspective drawing, scale = 8 feet to an inch; (e) A perspective drawing showing a view of the proposed building set out to scale of 8 feet to an inch at the nearest corner, with the horizon line taken eight feet above the ground level.

LONGITUDINAL SECTION AND REAR ELEVATION, SECOND PRIZE DESIGN.



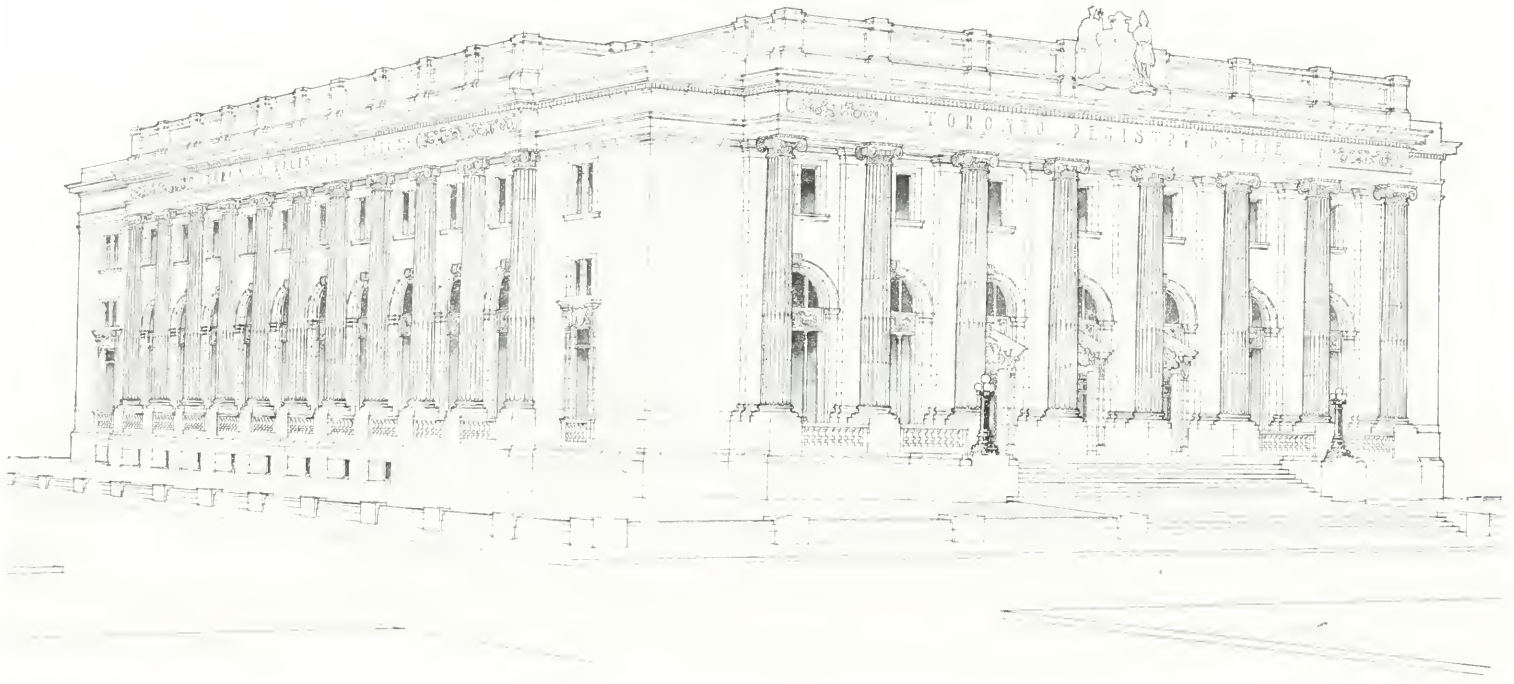
Third Prize, by Symons & Rae.

It has been the endeavor in this plan to emphasize that portion of the building which would be used by the public. The one chance of architectural effect would be the entrance, and taking advantage of this, the plan shows a rotunda running the full height of the building roofed with a cupola, thus giving expression to the plan on the exterior of the building. It was the intention to make the south front as imposing as the means at hand would permit.

The plan in other respects resolved itself into carrying out the instructions of the competition and fulfilling the requirements of the various departments.

In order that the reader may consider more carefully the schemes presented, the conditions of the competition are given.

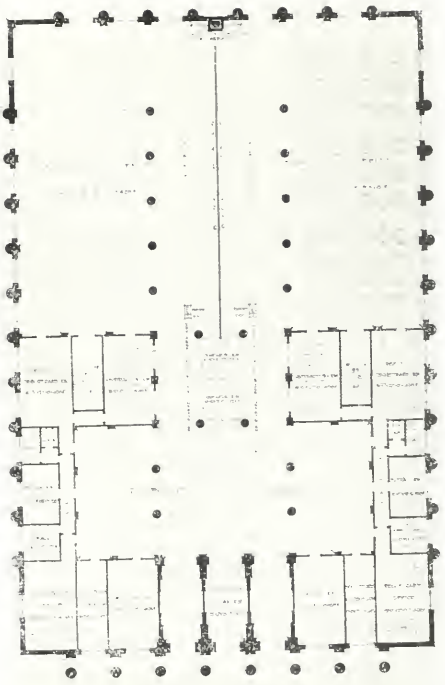
Accommodation to be Provided.—There are two registry offices, known as the Registry Division of East Toronto and the Registry Division of West Toronto, referring to city property east and west of Spadina avenue respectively. Each division is to be planned as a collection of units practically complete in itself, with such exceptions as will be stated in the following conditions. The floor areas given for the various rooms are to be followed as closely as possible, but it is not intended that they be rigidly adhered to, as variations within reasonable limits are permissible. The arrangement of the various rooms in relation to each other, as defined in the conditions,



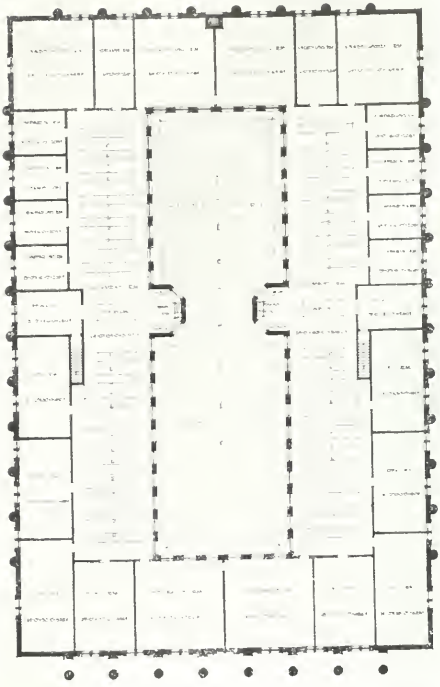
PROPOSED REGISTRY OFFICE, TORONTO, ONT.

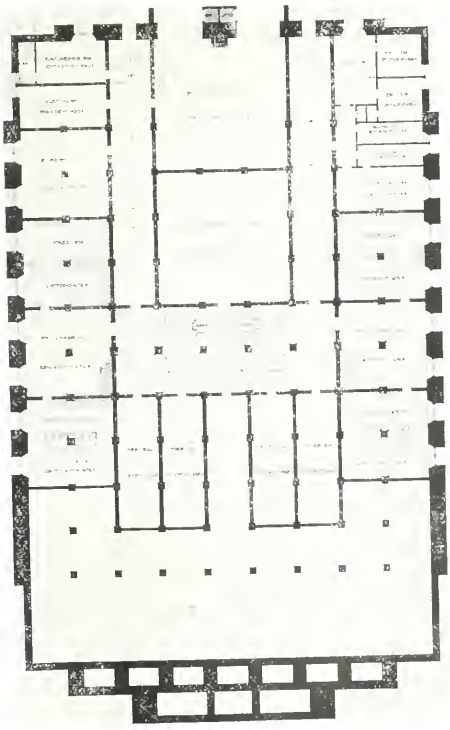
SECOND PRIZE DESIGN.

CHAPMAN & MCGIFFIN, ARCHITECTS.

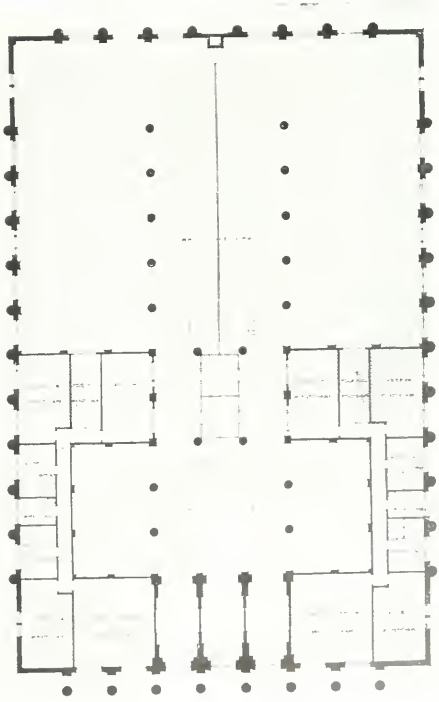


FIRST AND THIRD FLOOR





BASEMENT AND SECOND FLOOR



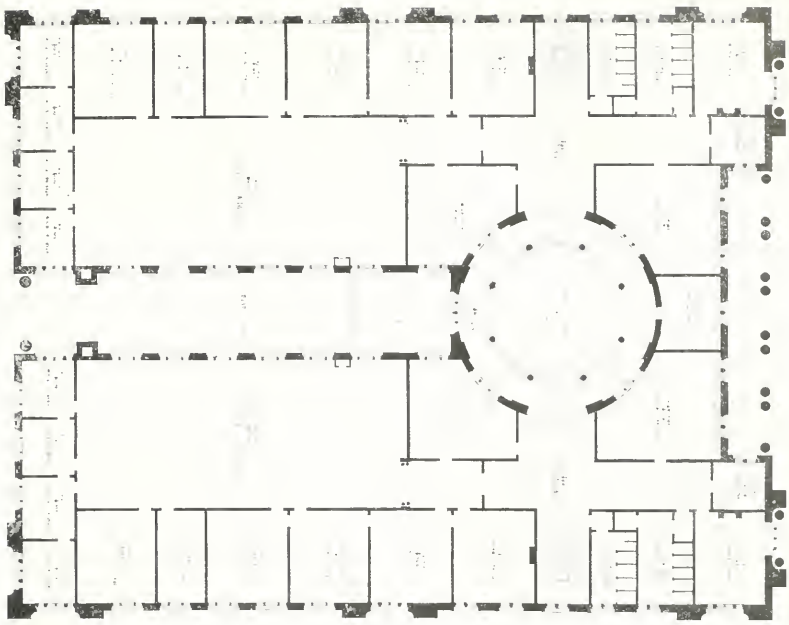
SECOND PRIZE DESIGN.

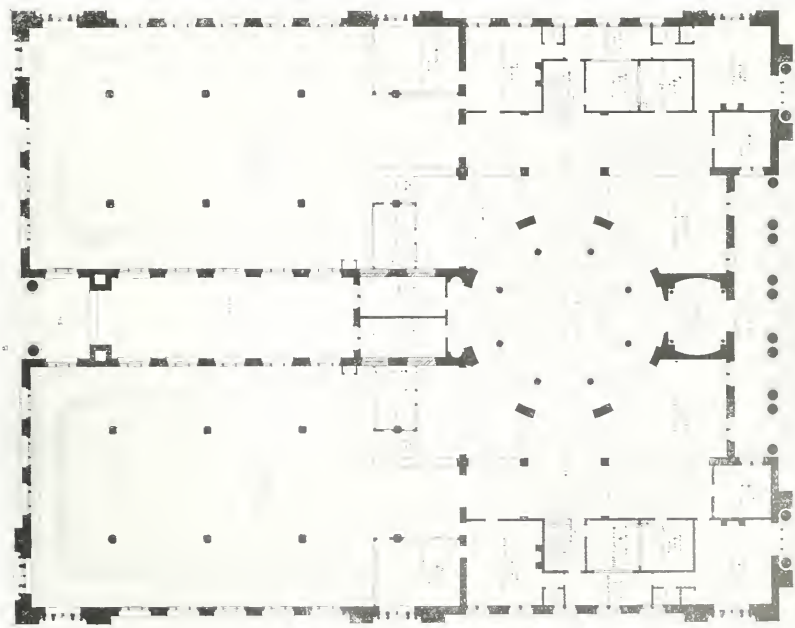
PROPOSED REGISTRY OFFICE, TORONTO, ONT.

PROPOSED REGISTRY OFFICE, TORONTO, ONT.

THIRD PRIZE DESIGN.

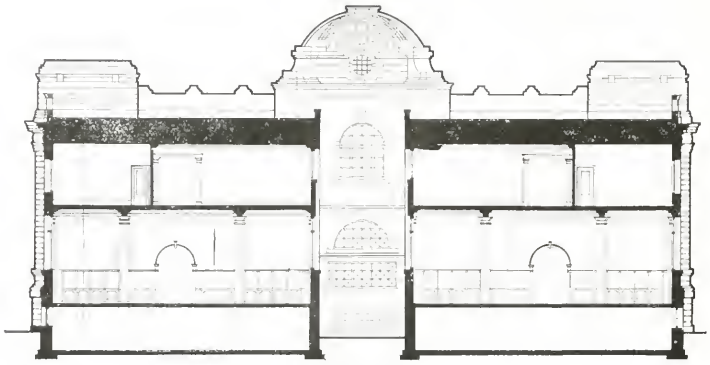
SYMONS & RAE, ARCHITECTS.





FIRST AND SECOND FLOOR PLANS
THIRD PRIZE DESIGN.

PROPOSED REGISTRY OFFICE, TORONTO, ONT.



THIRD PRIZE DESIGN. TRANSVERSE SECTION.

is an important factor. A moderate amount of daylight will suffice for the basement rooms, but it is of absolute importance that a maximum amount of daylight be admitted to all other parts of the building. It is preferred that the main entrance faces the south.

Basement Accommodation.—Heating, and ventilating apparatus, including coal cellars, store-room, a small workshop and lavatory accommodation for engineer. Two storerooms for books of East division, total 1,000 sq. ft. Two storerooms for books of West division, total 1,000 sq. ft. Bindery, 400 sq. ft. Stair for staff, East division. Stair for staff, West division. Lavatories for public and male members of staff with access from first floor of both divisions. The public lavatory is to meet the requirements of an average of 100 persons in the building at the same time.

The janitor's quarters are to have a separate street entrance. The janitor will obtain access to first floor by the staff staircase. The engineer in charge of heating, etc., is to have a separate street entrance. The store-rooms in basement are to be convenient to the staff staircases of their respective division. The bindery will be common to both divisions.

Entrance vestibule and entrance hall, on first floor, will be common to both divisions.

First Floor Accommodation, for East division.—Waiting room, 525 sq. ft.; solicitors' cloak room, 200 sq. ft.; solicitors' closing room, 250 sq. ft.; receiver's office (including counter), 375 sq. ft.; comparing room, 150 sq. ft.; telephone switchboard operator, 80 sq. ft.; registrar's room, 400 sq. ft.; deputy registrar's room, 400 sq. ft.; stenographers, 120 sq. ft.; extra room, 200 sq. ft.; private lavatories for registrar and deputy; daily abstracting room, 400 sq. ft.; searching office, 5,200 sq. ft.; cloak room for staff, 200 sq. ft.; staircase for use of staff giving access to basement and second floor; slop sink and storeroom convenience for janitor. The searching office is to be planned so as to allow of about 70 lineal feet of book stacks about 7 feet high against walls, and is to be cut off as much as possible from the public space, and there is to be only one entrance between them.

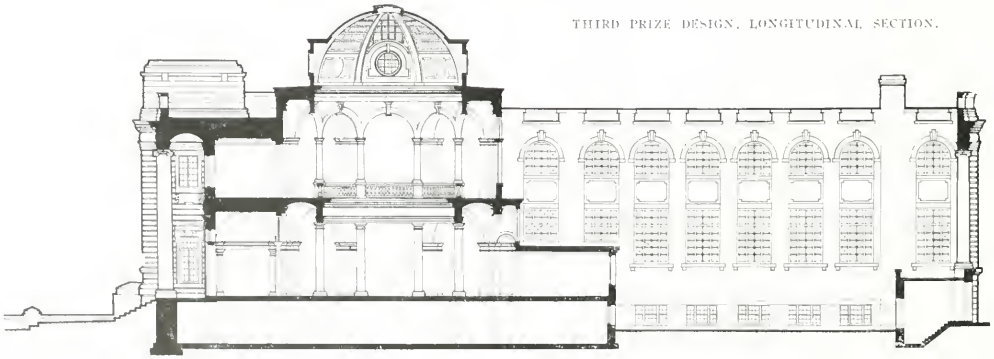
The accommodation required on first floor for the West division is to be the same as that for the East division.

Second Floor Accommodation, for East Division.—Document room, 3,000 sq. ft.; copying rooms (4), total, 1,800 sq. ft.; comparing rooms (4), total, 800 sq. ft.; draughting room, 400 sq. ft.; indexing room, 250 sq. ft.; lunch room, 300 sq. ft.; store-room, 600 sq. ft.; cloak room, 500 sq. ft.; women's lavatory (say 20 employees); men's lavatory (say 10 employees); slop sink and storeroom conveniences for janitor; stair hall, corridors, etc.

The accommodation required on the second floor for the West division is to be the same as that for the East division.

Cost of Building.—The proposed entire cost of the building, including heating, ventilation, plumbing, lighting, and architect's commission, is to be $350,000. If it should be found on opening the tenders that the building cannot be completed within a margin of 20 per cent. above the proposed cost, the promoter may abandon the design tendered on.

THIRD PRIZE DESIGN. LONGITUDINAL SECTION.



CONSTRUCTION

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

FREDERICK REED, Editor

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CONTRIBUTIONS—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and duly returned.

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Vol. 6 Toronto, December, 1913 No. 12

CURRENT TOPICS

TUESDAY EVENING, November 18, C. T. Currelly addressed the Toronto Chapter of the O.A.A. on Egyptian architecture. The lecture was highly instructive from the standpoint of construction as well as design. A large number of views were shown revealing the ancient method of constructing the various temples.

* * *

ANNOUNCEMENT has been made from Berlin that the coming year will see the erection of a railway bridge between Rugen and the mainland, which will be the longest in the world, exceeding even that over Ho-hang-ho, with its 3,580 yards. The cost of this great engineering work will not amount to more than $5,000,000, or less than a third of that of the Forth bridge. When the bridge, which, it is said, is to include a track for pedestrians, though none for road traffic, is completed, it will substantially shorten the journeys between Berlin and Hamburg, on the one hand, and Stockholm and Christiania on the other.

THE PLANS of the Quebec bridge show a main span, eighteen hundred feet long, which is divided into three sections, two of which will be built out from the north and south main piers, measuring five hundred and eighty feet each in length, while the centre, or the section measuring six hundred and forty feet and weighing six thousand tons, will be built on as many as five floating barges and when completed will be carried to the middle of the river and placed in position. From the top of the stonework which constitutes each main pier to the top of the steel superstructure the height is no less than three hundred and twenty-five feet. From each main pier the supporting work will be carried out to where the two ends of the centre section begin, the whole presenting a very solid structure.

* * *

CALGARY is the first city in Canada to undertake as a municipal department the construction and operation of an industrial service building. For the $250,000 appropriated by the large favorable vote of the ratepayers, a six-story concrete structure will be erected and leased to incoming manufacturers. It is anticipated that by getting a start in this way, small industries will be encouraged, soon outgrow their temporary quarters, and go out to build more extensive accommodation for themselves. The advantage primarily to the newcomer is that he retains his capital in the form in which he can most profitably use it. To the people at large this plan offers an inducement to small manufacturers which, instead of being a tax as is the bonus idea, is a revenue producer from the beginning.

* * *

IT IS BENEFICIAL at times to hear the expressed opinion of foreign critics as they receive various opinions from our existing architecture. Johann Koller, a prominent architect of Vienna, Austria, who visited recently the various provinces of Canada and the States, says: "Your architecture, both Canadian and American, is an eyesore. The greatness of the building does not count, the decorations of a building will not stand alone; here you have, in fact, your whole idea seems to be the loftiness of your buildings, and then in these towers of straight lines and angles you attempt fancy decorations. Your taste is wonderfully insipid. In Austria, in Germany, France, England, all over Europe, you find buildings, large and small, but always a restful sight to the eyes and a pleasing picture to the mind. America and Canada in particular has a lot to learn yet in the designing and erecting of her buildings. Explain the cause of the number of buildings I have seen to be toppling over—nothing more than your Jack and the Beanstalk methods." In speaking of Montreal, Mr. Koller said: "You may think that in the few days I have been here I have not had time to judge. I have visited your East End and I have been through Westmount. I am amazed at your tastes and cannot help but feel that your outlook and ideas are still a trifle barbarous and stunted."

OCCASIONALLY the unusual in architecture strikes us very forcibly. A band of Ruthenian immigrants have erected a village in the Province of Alberta where no hardware, not even nails, enter into the construction. The buildings have pitched roofs composed of logs and thatch, with wide overhanging eaves. An artistic entrance is made of slender twigs woven and laced together, with hinges and latches of like material. Floors are laid in hewn logs, while the roof consists of poles and cross-woven wheat straw ten inches thick, packed solid and laid with extreme care, capable of withstanding the climatic changes for some twenty years.

* * *

JAMES & DAVIDSON, architects, of Vancouver, are plaintiffs in an action against the city of Winnipeg, arising out of the recent competition for the plans of the new city hall at Winnipeg. The city of Winnipeg invited competition, promising to return the plans of all unsuccessful competitors. James & Davidson, who were among the unsuccessful competitors, claim that they have never received the return of the plans they submitted, and have issued a writ for damages for breach of contract. The contract sued on is the contract for return of the plans. Chief Justice Hunter this morning gave his consent to allowing service on the defendant corporation out of the jurisdiction.

* * *

SOME INTERESTING comments were made by J. J. Shallcross, president of Victoria's Board of Trade, who has just returned from a trip abroad. In speaking of "Town Planning Schemes," Mr. Shallcross said: "They have been generally adopted throughout Great Britain and the urban and rural councils control them. These schemes are produced under the powers of the Town Planning Acts of the last three years, enabling municipalities to control the development of building areas both in respect to roads and the character and number of houses to be erected on any given area. In one district under my notice the municipality limited the number of houses per acre to twelve, whereas under the previous conditions the builders may have erected thirty or forty houses on the same ground." Mr. Shallcross thinks Canadian cities could take lessons from the legislation which has been perfected in this respect in the old country, where the land question has been for years such a vexed one, and where the present Chancellor of the Exchequer has under way one of the most far reaching and revolutionary land schemes ever projected by any State. In conclusion he says: "The time has certainly come when the people should seriously consider the character of the city itself and set out definitely to prevent over construction, congestion, false methods of construction—all of which could be regulated by laws controlling every phase of the work."

* * *

IN THE EARLY HISTORY of San Francisco, the area to be occupied by the main exhibit palaces of the Panama-Pacific International Exposition in 1915 was a tide flat, some portions of which had been dredged to accommodate shipping. In recent years, however, private interests had built a sea wall across the north basin in an easterly and westerly direction and filled a portion of the area inclosed. This work was not completed and it remained for the exposition company to fill the inland basin by means of suction dredgers. After the exposition's fill was completed, a number of tests were conducted to determine the supporting power of the soil at the depth of what probably would be the spread footing bottom. The result of these tests indicated that the supporting power of the dredger sand was very low, namely, about 400 pounds per square foot, which prohibited the use of this type of footing. Pile tests were made also, and it was found that the fill, in settling, gripped the piles in such a manner as to act as a load upon them. This caused the piles to penetrate into the original bottom and the conclusion was reached that unless the piles were sufficiently long they would settle with, and more rapidly than, the fill when the superimposed load would be brought upon them. Therefore, after a careful investigation, the engineers were forced to the conclusion that it would be inadvisable to carry any given load by skin friction alone. The general character of the soil under the dredger fill was clay, mixed with blue mud and water, underlaid with a layer of green sand and clay, and, finally, hardpan, the hardpan being located all the way from thirty to one hundred and twenty feet below the surface. In view of the great number of piles required, economy of length was an important factor, and it was decided finally to drive all the piles into the layer of green sand and clay overlying the hardpan, to a one-inch penetration at the last blow. In general, the character of the soil underlying the sites not covered with the dredger fill was yellow beach sand, soft clay and sand, hard green sand and clay, and, finally, yellow hardpan except in areas that had been filled prior to the commencement of exposition activities. It was decided to use, in general, piles for the support of all buildings, walls and special loads in these areas, as well as in the recently filled area. The reason for this was three-fold: (1) Uniformity of construction; (2) greater safety in case of earthquake, as portions of the site were originally submerged and past experience in San Francisco indicated that structures were most affected when they were supported on spread or raft footings, and (3) in giving a value of three thousand pounds to the square foot to the sand it was found that a spread would cost as much if not more than a pile footing. The actual length of pile driven through the site will vary from sixty to seventy-five feet, and in all cases an assumed load of twenty tons was taken as the value of one pile. The oddity of this constant unit, inasmuch as the value of the pile usually depends upon skin friction and length, is explained by the fact that, in the case in point, tests were conducted that confirmed the selection of the amount named.

Erection of Viaduct at Trenton

R. K. PALMER

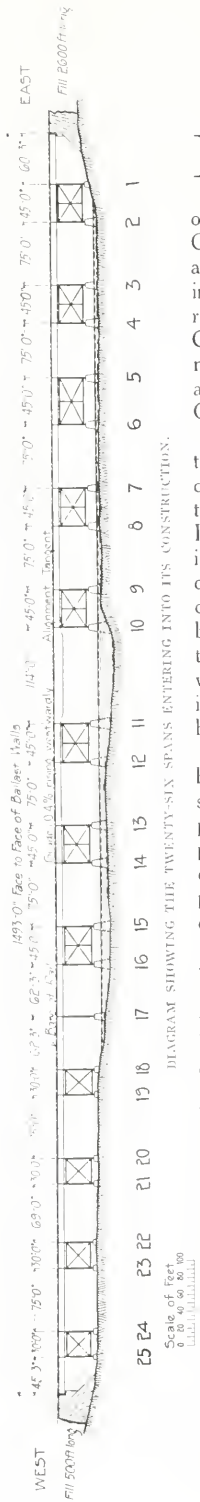


DIAGRAM SHOWING THE TWENTY-SIX SPANS ENTERING INTO ITS CONSTRUCTION.

DURING the past year a large amount of bridge building has been going on in the construction of the new Campbellford, Lake Ontario and Western Railway, connecting Agincourt, just east of Toronto on the C.P.R., with Glentay on the same line. This new line will serve the towns along the North Shore of Lake Ontario.

This line is a subdivision of the C.P.R. and serves to double-track that railway between Agincourt and Glentay. In all, there are sixty-five crossings, and each of these consists of one or more spans. Several crossings require a large number of spans, as, for instance, the crossing at Port Hope, where twenty-nine spans varying in length from forty to one hundred feet were required.

With the exception of the bridge at Mud Lake, all the spans on this line are of the plate girder type, and these plate girders rest either directly on the masonry or are supported on towers which rest on concrete piers.

The bridge at Trenton is a viaduct of the latter type, and this article is mainly a description of its erection, as its building comprises most of the operations involved in the erecting of plate girder bridges. This bridge has twenty-six spans and is made up as follows:—Nine 45 ft. spans; four 30 ft. spans; one 60 ft. span; two 62 ft. spans; one 69 ft. span; eight 75 ft. spans; one 114 ft. span; four 30 ft. towers; eight 45 ft. towers; one single bent.

The approach at the west end of the bridge consisted of a deep fill for about five hundred feet, after which the line passed through a hill, necessitating a deep cut and allowing very little room in the cut to handle erection equipment or to pile bridge material, and on the fill there was, of course, no room at all. In the erection of this bridge it was decided to operate from the west end, as the approach from the east was over about two thousand feet of high temporary wooden trestle and the conditions were generally undesirable to an erector.

All erection equipment and material for the bridge was brought in over the C. L. O. & W. Railway track from Smithfield, a station on the Grand Trunk Railway about seven miles west of the bridge, and as this track was newly laid, unballasted, crooked, soft, uneven and ungraded for a part of the way, the difficulties may well be imagined and appreciated.

The transporting of material and equipment from Smithfield to the bridge site was done by the general contractors, and although the cars were loaded with pieces that were very heavy and awkward to handle, all parts arrived at the site in good condition. The material was brought in from the yard at Smithfield in the order wanted, and as much as possible was stored in the cut. All unloading and handling was done by two double boom derrick cars that were used for this erection and the type of which can be seen by referring to the illustrations.

The weights of various pieces were as follows:—One single girder, 30 ft., about 9,000 lbs.; one single girder, 45 ft., about 16,800 lbs.; one single girder, 62 ft., about 27,500 lbs.; one single girder, 69 ft., about 34,500 lbs.; one single girder, 75 ft., about 40,000 lbs.; one single girder, 114 ft., about 102,000 lbs.; one single tower bent, about 31,000 lbs.

There were two tracks in the cut, one of which was a through line to the bridge and the other a siding on which the material cars were placed. The derrick worked from the main line. The small spans could be picked off with one boom at a single lift by booming far out with the second boom to balance up the car.

It must be borne in mind that the very greatest care must be exercised in lifting loads at one side of a derrick car, as a standard gauge track makes a very narrow foundation and a small amount of bad judgment will upset a car and load, particularly if the track is new and the ground soft.

After a girder is lifted from the flat cars the two booms are gradually brought in, always maintaining the balance until the load is centred over the track in front of the derrick car, when it is carried along the line to some desired spot where the load can be boomed out and lowered out of the way. The longer girders are unloaded in a similar manner, with the exception that they are handled one end at a time. One boom of the derrick car is hooked to the forward end of the girder and this end is swung over

NO. I.—FASTENING THE TACKLE TO LIFT THE 114-FOOT GIRDER.

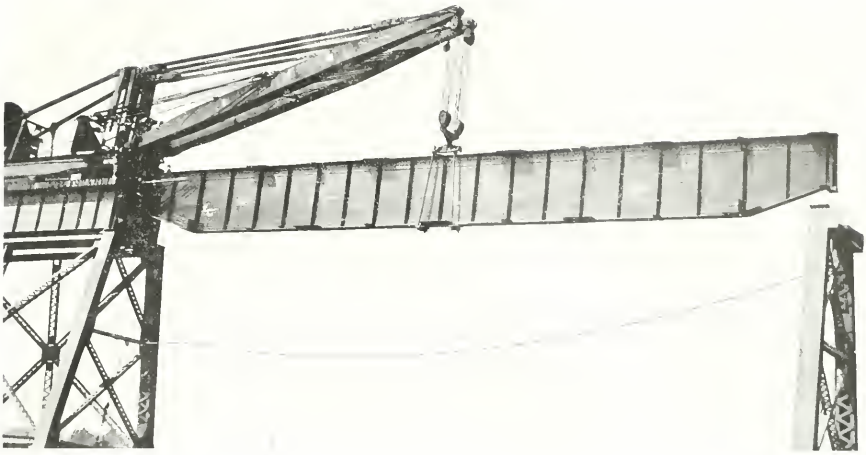
until it is centred over the track in front of the derrick. Then the derrick is backed up and the rear end of the girder swung over, after which the derrick is brought forward and both booms hooked to the centre of the girder by means of a balance beam to be described later. The load is now balanced over the centre of the track in front of the derrick and can be carried to the blocking prepared for storing it and the girder swung out to one side by the reverse process of unloading.

By referring to the general elevation it will be seen that the first piece to erect was bent No. 25. As noted on the diagram, there was a grade on the bridge rising westwardly, but the average distance from base of rail to top of pier was forty-four feet and the distance from the base of rail to the water was about fifty-three feet.

Bents of this height are easily handled by a derrick car. All the pieces forming a bent were assembled and bolted up in the cut and the bent carried out with the derrick. As span No. 26 was only 45 feet long, bent No. 25 could be set in place directly with the derrick and guyed until span No. 26 was dropped into place, after which the remainder of the pieces in tower Nos. 24 and 25 were erected in place and the thirty-foot span erected.

Short spans may be bolted and even riveted up complete before erecting, but this is not usually done, owing to the likelihood of getting a twist in the span and the girder shoes not sitting evenly on the bridge seats. Moreover, it is about as easy to put the bracing in place and rivet up after the girders are erected as to do it beforehand, and in this way any give and take in the connections is used to advantage.

NO. II.—THE 114-FOOT GIRDER CARRIED OUT BY DERRICK CAR.

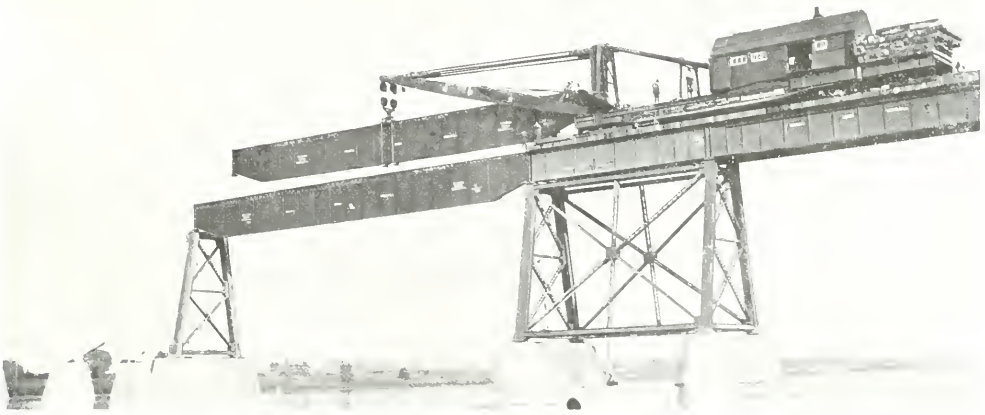


No. III.—THE 114-FOOT GIRDER BEING LOWERED INTO POSITION.

Span No 24 is seventy-five feet over all, and as the extreme length of the booms on the derrick is only sixty feet, it may be seen that bent No. 23 could not be placed directly with the car. Consequently a more roundabout method of erection had to be used. In this case the bent was assembled and bolted up complete as in the previous case and the main fall lines were attached just above the centre of gravity of the bent so that it was slightly heavy on the bottom end. Extra lines and tackle were led from the booms to the lower end of the bent to maintain it in a horizontal position until the car was brought forward and the bent swung clear of the trestle, after which the lower end of the bent was allowed to drop down, and as the car came forward this lower end of the bent was swung out until it sat at the proper place on the pier.

The bent was then tilted up as far as possible by raising the load line. This probably brought the bent to within fifteen or twenty degrees from the vertical. In the meantime, guy lines were attached to the top of the bent and brought to the tower under the derrick and left in charge of men stationed where the lines could be properly snubbed. A winch was also anchored on one of the piers from two to four hundred feet forward of the bent and a cable passed through a block at the top of the bent, had one end fastened to the pier beside the winch, and the other end attached to the winch. Two men quickly pulled the bent to a vertical position, when it was held by the guy lines. The bent was then centred on the pier by means of bars and jacks and the anchor bolts dropped in place in holes left in the concrete when building the piers.

As a practical measure it is better to leave holes in the piers and grout the bolts in because of the great



No. IV.—PLACING OF SECOND 114-FOOT GIRDER.

difficulty of properly locating the bolts if they are built in place when building the piers, although if they are built in and properly located it is a great help to the erector when erecting a bent, as the bent is centred as soon as the bolts are entered in the holes at the foot of the columns, and when the nuts are tightened the bent will stand regardless of guying.

It should be noted that as soon as an inclined bent is held by the guy lines and the cable from the winch, the load lines from the derrick are cast off, so that if anything gives way the load will not fall suddenly and upset or otherwise damage the derrick and hurt the workmen.

The bent being placed, the next operation was to erect the span. This was done by erecting one girder at a time and filling in the bracing after the girders were in position. The derrick was run back to the material yard and one of the girders was loaded on a pair of buggies after the manner of handling girders when unloading

The loading frames used in shipping girders, and each consisting of a timber sill and a timber brace on each side of the girder leading from the outer end of the sill to the under side of the top flange of the girder and all properly bolted, are used to steady the girders on the buggies. As soon as the girder is loaded on the buggies it is pushed out by the derrick car to the end of the track and the load lines of the derrick car fastened to the centre of the top flange of the girder by means of heavy grab hooks. The tackle is so arranged by means of balance beams that the load is equally distributed between the two booms and its position is readily controlled. Care must always be used to see that the load is in line with the centres of the two trucks under the car and that a lift is not taken in anything heavier than a light breeze, otherwise the girder could not be controlled and might easily upset the car.

By referring to the illustration it will be seen that two balance beams are used. These are made to be interchangeable for convenience in assembling. The upper one is at right angles to the track and its ends are connected by shackles to the blocks on the load lines. This beam serves to distribute the load equally between the booms.

The lower beam is just above the girder and parallel to it. At each end is a shackle which carries two double hooks which, in turn, catch the under side of the top flange of the girder. In all, the girder is lifted at eight different points over a length of about four feet, and by so lifting no undue strain comes on any of the rivets in the flange. A pin at the centre of each beam connects to an intermediate togle, and as these pins are in different planes and at right angles to each other, a universal joint is formed which allows the girder free play. A bridge tie is chained or clamped to the track at the extreme end of the trestle to act as a stop and prevent the car accidentally going over the end when carrying out a girder.

By referring to illustration No. I. it will be seen that the girder had been pushed out as far as it would go on the buggies. In this particular case the buggies were taken out one at a time and the buggy at the end next the car had already been removed and the men were connecting the tackle at the centre of the girder. The buggy and braces were still in position at the outer end. As soon as the girder was lifted the buggy and bracing at the outer end were removed and the girder was free to be carried out over the opening with the car.

NO. V.—UP-ENDING A DENT BY MEANS OF DERRICK CAR.

The buggies mentioned above are so made that they are readily taken apart and the pieces placed along the outer ends of the ties out of the way of the car as it advances with the girder. After the car has been run forward to its final position, blocking is placed under each forward corner of the car frame and brought to a firm bearing by means of wedges and the help of jacks.

The girder was then lowered to nearly the level of the column cap, and when in this position it was rotated until the outer end was directly above the column cap, when the girder was lowered to take a bearing on the column at one end and the cross strut between the columns at other end. The girder was then braced in this position, the load line disconnected and the car backed up until the load line from the boom on the side that the girder was to be placed could be attached and the inner end of the girder swung out to its final position and the girder permanently bolted to the column caps at each end.

Girders up to seventy-five feet in length can be handled and set in place with one boom and time saved, but the risks due to greater strains in the car and the greater chance of upsetting lead the prudent erector to proceed as outlined above for all girders over fifty feet in length.

If brace frames are shipped in one piece they are carried out and lowered to place with the car, but if all bracing is shipped loose the various pieces are carried out over the girder by the men and bolted to place, after which the deck is laid temporarily and all is ready for the derrick to bring out the second bent and complete the tower.

The erection of Trenton viaduct from the west end up to and including bent No. 11 was accomplished by methods and equipment commonly used in modern bridge building. There was one feature in the erection of this viaduct, however, that is of more than passing interest, i.e., the erection of bent No. 10 and the 114 ft. span.

For the erection of bent No. 10 a large scow was provided and bridge ties were used to build a cribwork blocking to carry the bent and of such a height as to bring the base of the columns at just the right elevation to clear the top of the pier and to raise the top of the bent so the latter would rest at as great an incline as possible after the scow was loaded. The scow was then shifted to the east of pier No. 10 and the projecting bases of the columns were brought to the proper position over the pier and the scow anchored. The derrick was placed as near the end of the trestle as possible and securely anchored and the forward corners of the car frame blocked from the bridge deck. The load lines were carried out, fastened to the top of bent No. 10 and the bent upended and anchored with east and west guy lines.

The erection of the 114 ft. girder was done in a manner very similar to the erection of the 75 ft. girders with the exception of the equipment used. Owing to the great length of these girders and the fact that each girder weighed fifty-one tons, it was necessary to handle them with equipment that is quite out of the ordinary. For the erection of such girders a derrick car had been built by the bridge company which is unique and single of its kind. It is so principally because of its great size, weight and capacity and because of the speed and ease with which it can be handled.

To handle girders of this size required the sixty-four foot booms, giving a clear distance from the end of the car to the load lines of sixty feet when the booms are in their normal position for handling girders, as indicated in the illustrations. The load to be lifted was about fifty-three tons, two tons of which was due to special tackle, and to take care of this load a counterweight of thirty tons were required and used at the back of the car. When supporting this load on the booms there was a reaction of 440,000 lbs. under the front truck. As this front truck is a three-axle truck, each axle load was about 147,000 lbs., or about three times that of the heaviest locomotive. To take care of this load the ties on the last spans were spaced close together, making a solid timber floor fourteen inches deep. The axles are only 3 ft. 9 in. centre to centre, and hence there was an extremely heavy concentrated load for the girders to carry, but as the derrick moves very slowly under load, there was no impact to consider, and although the unit stresses in the steel work and timber flooring were high, they were not excessive. Special tackle was built to carry the girders from the blocks so that the load would be carried from the bottom of the girder, thus saving the top flange from undue strain and saving the risk of hooks slipping or straightening.

Illustration No. I. shows the actual work of fastening this tackle and making ready for the lift, all other preparations having been made as was done for the seventy-five foot girders. The day was quiet, hardly any air stirring The order was given to raise the girder and cast off the outer brace, and immediately this immense girder went up with the same ease as had all the smaller ones. The brace and the buggy were laid at one side and the car began to move out and finally lowered the girder onto greased rails that had been fastened on blocking which rested on special struts between the columns and on a level with the column caps. From here it was jacked over to its final position, the booms following and taking sufficient load to keep the girder right side up until it was firmly bolted to the column caps and the load lines disconnected for the car to go back after the second girder. It is probable that few onlookers realized they had just seen the erection of the largest girder that had ever been placed with a derrick car working on a standard 4 ft. 8½ in. rail base.

The entire span was erected and bolted up in one working day, the second girder being erected in about half the time required for the first one, probably because of greater confidence and the experience gained in erecting the first one.

The Trenton viaduct was designed and erected under the direction of P. B. Motley, Bridge Engineer, and C. W. P. Ramsay, Engineer of Construction of the Canadian Pacific Railway.

SCHOLARSHIPS AWARDED FOR THE YEAR 1913.

THE FOLLOWING announcement of scholarships is taken from the recent journal of the R.I.B.A., and should stimulate the draftsmen with a keen desire to take advantage of such unusual opportunities:

British School at Rome: The Henry Jarvis Studentship—The Council of the Royal Institute of British Architects have awarded the Henry Jarvis Travelling Studentship in Architecture to Louis de Soissons, student of the Royal Institute, on the recommendation of the Faculty of Architecture of the British School at Rome. Mr. de Soissons is the first winner of this studentship, which is open to associates and students of the R.I.B.A. under thirty years of age and is of the value of two hundred pounds per annum, tenable for two years at the British School at Rome. Louis de Soissons won the Tite prize of the Royal Institute in 1912.

The Rome Scholarship in Architecture—The Royal Commissioners for the Exhibition of 1851 have awarded the Rome Scholarship in Architecture to Harold Chalton Bradshaw, on the recommendation of the Faculty of Architecture of the British School at Rome. Mr. Bradshaw is the first winner of the Rome Scholarship, which is open to British subjects under thirty years of age, valued at two hundred pounds per annum, and tenable for three years at the British School at Rome. Mr. Bradshaw, who is in his twenty-first year, is a student of the School of Architecture, Liverpool University. In July last he was awarded the University Certificate in Architecture, which exempts from the R.I.B.A. intermediate examination, while he also received at that time the Holt Travelling Studentship of fifty pounds. Mr. Bradshaw was placed second and was awarded a certificate of honorable mention in the competition for the Soane medallion last January. He was the winner of the first of Sir William Lever's prizes in the Liverpool School design for a new river front at Liverpool.

The Herbert Baker Scholarship, 1913—The trustees of the Herbert Baker Scholarship announce that, having considered the report of the assessors on the work sent in by the two competitors and the work, they have decided not to award the scholarship for the present year. The scholarship is in value two hundred and fifty pounds, and is open to any British subject who has spent seven years in the study and practice of architecture, under thirty-five years of age, and who has spent at least two-thirds of his architectural career in South Africa. The holder is required to spend eight or nine months in Rome as his principal headquarters, acting under the direction of the British School at Rome, this period to include a visit to Athens with the British School there as headquarters. The trustees express their regret that the offer of the scholarship has not met with a better response, both as regards the number of candidates and the standard of work sent in. The scholarship was intended to benefit the young architect who has passed the elementary stage of his profession and is by his own experience learning to understand the difficulty of scholarly design and to feel the need and desire of direct study of the great masterpieces of art. The subject and the conditions prescribed were set with the object of testing the candidates not merely in regard to their technical capacity and power of expression, but also whether they have reached that stage in their architectural education at which a period of study in Italy and Greece would be of benefit to them as architects, and not merely as students of art or archæology. The trustees state that the work of the two candidates comes short of the required standard in both respects, while it contains elements of promise which encourage the hope that they will come forward again. It is to be hoped also that other young architects who are ambitious of taking a high place in their profession in the future, may seek to profit by the opportunity which this scholarship gives of enlarging their artistic education, even if it may involve some present sacrifice of professional work. The scholarship will be offered again next year, and due notice will be given of the work required of candidates.

* * *

THE CONSENSUS of opinion of the largest party of American medical men that ever visited Europe is that Paris is one of the most healthful cities in the world. The party comprised seventy physicians, who started on a study tour of the chief towns of the Continent before attending the recent International Congress of Medicine in London. They visited all the leading medical establishments, including the Salpêtrière Medical Training School, the Central Pharmacy, the Paris School of Medicine, the Hygienic Museum, the Tarnier Clinic, and the principal hospitals. "What we admired most about Paris," said the vice-chairman, Dr. S. Breitenfeld, "was the marvelous purity of the air and the best and cheapest medicine in the world. The city is extraordinarily free from dust. As far as installation, service, etc., of French hospitals are concerned, the authorities certainly have nothing to learn from America. Only one thing overlooked here is ventilation. In all the hospitals, including even the new hospital of La Pitié, the patients have the choice between a pronounced draught or going without air altogether. This is probably due to the hinged windows used here instead of the sliding windows employed by us. Another defect is the absence of screens to keep off flies, which are always carriers of bacteria."

* * *

RECONSTRUCTION of the Canadian Pacific Railway hotel at Vancouver is progressing. It was first intended to build the central portion twelve stories at a cost of $800,000, but it will now be made sixteen stories. This addition and construction of east wing to eleven stories will add $1,200,000 to total cost, making $2,000,000 expenditure. The present seven-story west wing will later be raised to eleven stories.

AN IMPORTANT FACTOR IN DEVELOPING THE CEMENT INDUSTRY IN CANADA TO ITS PRESENT IMMENSE PROPORTIONS.

ALTHOUGH unheard of in the world of cement and concrete prior to his debut into this field only eleven years ago, the man who has played an important part in the development of cement for almost universal use is none other than W. H. Ford, Montreal, the general sales manager of the Canada Cement Company, Limited.

The progressiveness and ability of Mr. Ford are evidenced by his rapid rise in so short a time, and the decision with which he handles the matters connected with so important a position as he now holds.

The best evidence of Mr. Ford's ability is contained in the fact that only a comparatively short time ago he was selling cement in less than carload lots, while to-day his department controls the sales of one of the largest (if not the largest) cement companies in the world, owning and operating thirteen mills scattered the length and breadth of Canada.

W. H. FORD

That the public owes much to Mr. Ford's foresightedness cannot be gainsaid, for it was he who first suggested a campaign of education for Canadians that has enabled them to know the wonderful possibilities of concrete, and to build with it structures that are not only better and more permanent, but cheaper in the long run.

Charleston, South Carolina, is Mr. Ford's "home town," and although born in the South, he has since coming to Canada five years ago, been in and studied the conditions obtaining in every section of the Dominion and is now one of her most enthusiastic and energetic adopted sons. He believes that no country in the world offers as great possibilities to progressive, capable young men as does the great expanse of land, rich in resources, lying north of the United States and reaching from the Atlantic to the Pacific—Canada.

The rapid rise of W. H. Ford to the prominence he has attained, is an interesting example of what brains and enthusiasm can accomplish when combined with determination and hard work.

Mr. Ford has always maintained that to be a really successful sales manager, personal contact and acquaintanceship with customers is necessary, as well as a complete knowledge of conditions throughout the sales territory. At the end of each year's shipping season, which arrives about November 15th, Mr. Ford "takes to the road" and is gone until spring, a matter of about five months, during which time he covers approximately twenty thousand miles, about four-fifths of the distance round the world, and often arrives at a small hamlet when the thermometer is many degrees below zero. These trips are largely accountable for the vast and pleasant acquaintanceship (for he seems to know almost everyone) that he has made in the short space of time he has been in Canada. However, Mr. Ford's knowledge of the people, territory and conditions, is not limited to Canada, for he has travelled over practically the whole of the United States, and takes considerable pride in being able to discuss with the same degree of intelligence, cement conditions in both countries. The success of Mr. Ford's efforts as a sales manager is unquestioned, and it would seem that his career has only just begun, and that there are surely bigger things yet in store for him.

Mr. Ford's personality is second only in importance to his business ability. He has keen perception and far-sightedness. He is considerate and generous to a fault; broad in his views, but simple in his tastes, and welcomes one with a smile. He carries with him a genial and democratic "good-fellowship" that makes you feel comfortable the instant you meet him. He has a good word for everybody and is an optimist of the "first water."

It is to be hoped that Mr. Ford will never leave Canada, but if he should, it would be impossible to forget him, because of the many immense concrete structures that have been built with his cement, but another unique monument to his memory is the beautiful big steel freighter which has been named for him, "The Fordonian." This vessel enjoys the distinction of being the first commercial vessel, propelled by oil-burning engines, to be placed in commission on fresh water. "The Fordonian" is owned and operated by the Canada Interlake Line, and is 250 feet in length, with a carrying capacity of 2,800 tons.

For recreation, Mr. Ford betakes himself to the depths of the "big woods," with his gun for company, and there pursues the moose, deer and other big game, with the same tenacity that has produced such excellent results in cement sales, and his many trophies bear witness to his "hobby" for hunting.

PLANS are now being prepared for four large new buildings which will be added next year to those already comprising the University of Saskatchewan, Saskatoon, and upon which over $2,000,000 have already been expended.

* * *

THE OAK FLOORS and battleship linoleum in the private patients' wing of the new Toronto General Hospital have been treated with Ronuk, an English sanitary floor polish. This material has been successfully used in a large number of hospitals, schools and colleges in the United Kingdom, among the more important of which might be mentioned the National Portrait, Tate and Wallace Galleries of London; School of Technology and City Art Gallery of Manchester; also the St. Bartholomew's, University College and St. George's Hospitals. A booklet entitled "The Sanitary Treatment of Floors" has been issued by the company, entering into all phases of this antiseptic polish for floors, which may be obtained at their Canadian office, 53 Yonge street, Toronto.

* * *

IN DESIGNING modern buildings of large construction the safety of the public is paramount to every other exigency. To eliminate fire danger is a leading consideration. Recent experience in large conflagrations has overthrown the confidence of architects and designers in materials which had been considered proof against intense heat. That pulpstone gypsum blocks were selected for the interior construction of the Booth and Masonic Temple buildings, Ottawa, is the result of the builders' demonstrated conviction that the safety of the public and the protection of the users would be unquestioned. As a result twelve thousand feet of pulpstone gypsum blocks have been used in the partitions and the furring for the brick and stone walls in the Booth building. In the Masonic Temple thirteen thousand feet were laid. The fireproof blocks are the product of the Alabastine Company of Paris, Ontario.

* * *

DURING THE PAST YEAR Frank Brangwyn has been at work in London on a mural painting for the new Court House at Cleveland, Ohio. The work consists of a canvas 50 feet long and 15 feet high, representing King John signing the Magna Charta at Runnymede in 1215. The King, seated, with parchment in the act of signing, is seen in a group comprising the Earl of Pembroke, Pandulph, the Papal Legate; two bishops, Robert Fitzwalter, kneeling and closely watching John as he signs, and Stephen Langton, whose robe of rich orange red gives the keynote of color to the panel. The last named is standing in a persuasive attitude, obviously completing arguments in favor of the King's unwilling act. Near him are Church dignitaries in their ecclesiastical robes. Attendants and nobles in armor, boatmen, and men bearing their masters' shields form a picturesque crowd. A notable feature of the work is its balance and strength and its masterly color harmony. Some idea of the magnitude of the task may be gathered from the fact that Mr. Brangwyn had to take one of the largest studios in London for the work. The canvas was built on a large timber frame, and the artist had to use a movable scaffold to reach some parts of the picture. Only the purest oil colors were employed, and to remove the high lights of the ordinary oil painting, which would make it difficult to see the details of the panel at the height at which it is being fixed, the artist mixed the oils with wax—an unusual medium, but one which should retain all the beauty and quality of the picture for at least three hundred years.

* * *

ONE OF THE VITAL essentials in life is to move forward, not backward. This fact has aroused the best efforts of every successful business corporation as well as each individual who has made his worth felt in our present age. CONSTRUCTION is endeavoring to reach a position where it will be recognized as an important factor in the uplift of Canadian art and commercialistic growth. We want to show the best work which is being done throughout the Dominion and at the same time present it in the best manner possible for our readers and our advertisers. Beginning with the January issue, we will include each month a series of plate forms, illustrating a subject on heavy paper and on one side only of the page. In addition only full page advertisements will come in front of the editorial matter. These changes will improve the appearance of the magazine considerably, and also make it of infinitely more value to everybody concerned.

* * *

THE LAST WORD

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CONSTRUCTION

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Bull, Charleston, S.C.	Ex.		January.	27
Carlton, England	In., Pl.		January.	39
Dunchurch Lodge, England	Ex.		April.	164
English Homes	Ex.		October.	401-405
Paca, Annapolis, Md.	Ex.		January.	27
Ravina, Ill.	Ex., Pl.	Buck, Lawrence	January.	36
Shanghai, China	Ex.		May.	207
The Grange, Wraysbury	Ex.		April.	164
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Regina, Sask.	Ex., Pl.	Storey & Van Egmond	May.	191
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Mamidieh Jam	Ex.		March.	103
Santa Sophia, Constantinople	Ex.		February.	56
Selamlik	Ex.		March.	100
Suleiman Mosque	Ex.		February.	59
Sultan Ahmed	Ex.		March.	101
Sultan Bayezid	Ex.		March.	99
St. Irene, Constantinople	Ex.		March.	98
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Imperial, Stamboul			March.	102
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Berry Bros., Detroit	Ex., In.	Mason, Geo. D.	February.	80
Birks, Ottawa	Ex., In., Pl.	Weeks & Keefer	May.	172-175
Brigden, Toronto	Ex., In., Pl.	Bond & Smith	March.	94-96
Burns, Calgary	Ex., Pl.	Hodgson, Bates & Beattie	October.	372-373
Canada Life	Ex., Pl.	Weeks & Keefer	May.	176-177
C.P.R., Toronto	Ex., In., Pl.	Darling & Pearson	August	293-299
General Electric, Buffalo	Ex.	Eisenwein & Johnson	August	319
Graphic Arts, Toronto	Ex., In., Pl.	Baker, F. S.	June.	213-221
Great West Life, Winnipeg	Ex., In., Pl.	Atchison, John D.	April.	135-139
Hope, Ottawa	Ex., Pl.	Noffke, W. E.	June.	236-237

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Doma Boghtchen			March.	103
Roumelia			March.	98
Seraglio	Ex.		February	60
Tcheragan			March.	102
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New York County Court House	Ex., Pl.	Lowell, Guy	May	200-201
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Registry Office, Toronto	Ex., Pl.	Chapman & McGiffin	December	471-473
Registry Office, Toronto	Ex., Pl.	Symons & Rae	December	474-476
Municipal, New York	Ex., Pl.	McKim, Mead & White	August	320-325
State House, Boston	Ex.		February	69
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