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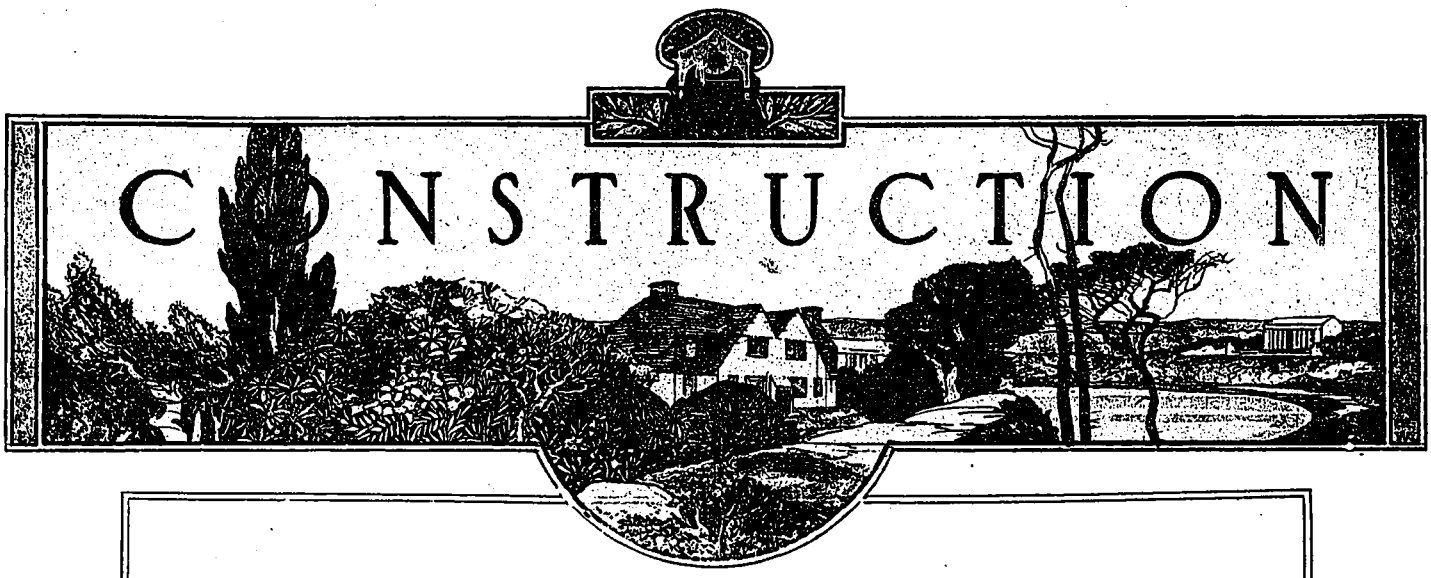

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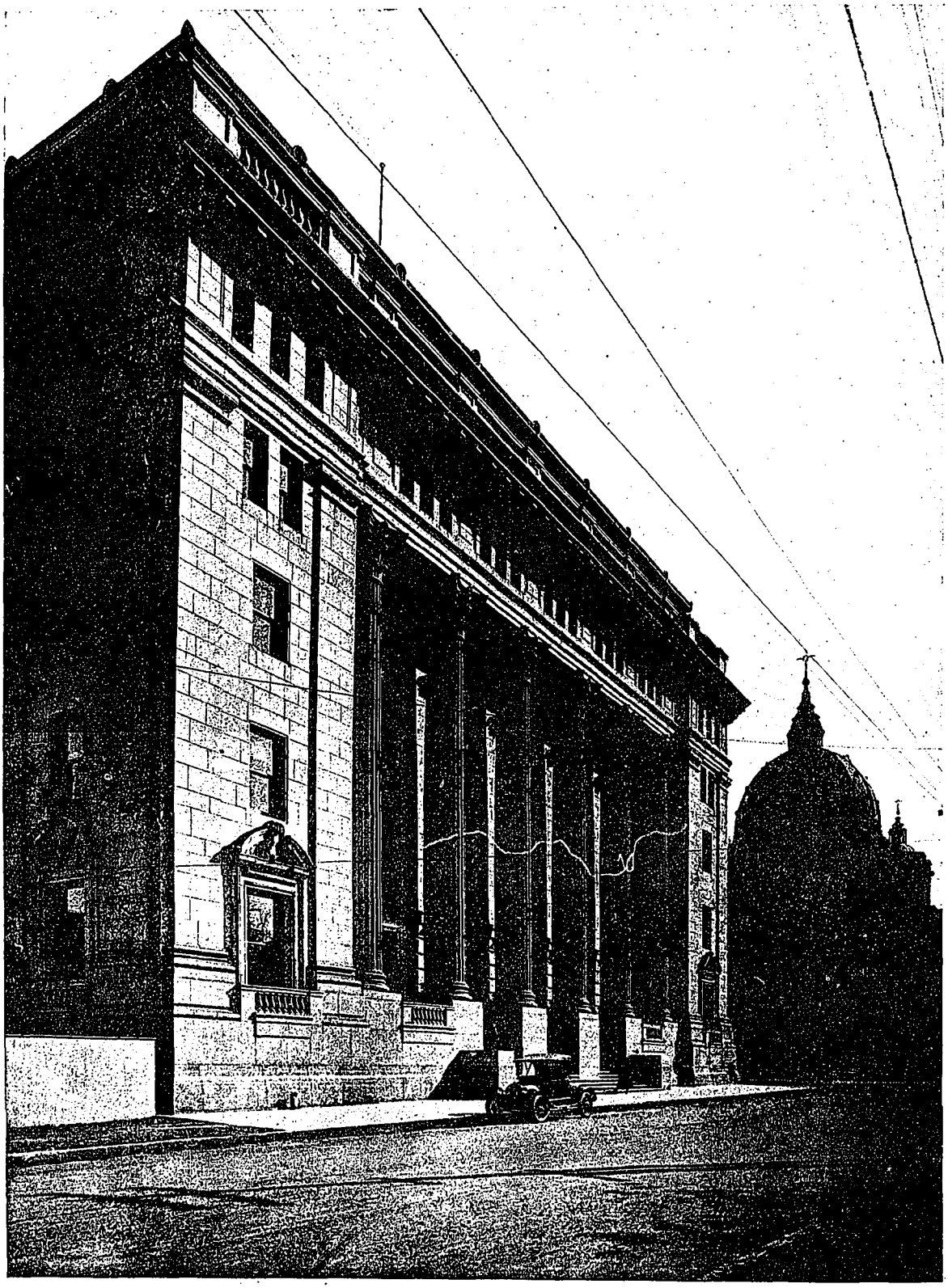
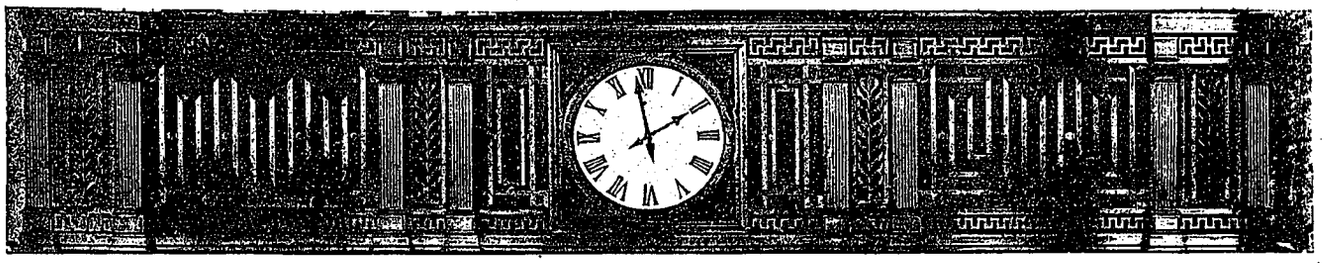


THE NEW SUN LIFE BUILDING, MONTREAL, QUE.

DARLING & PEARSON, ARCHITECTS.

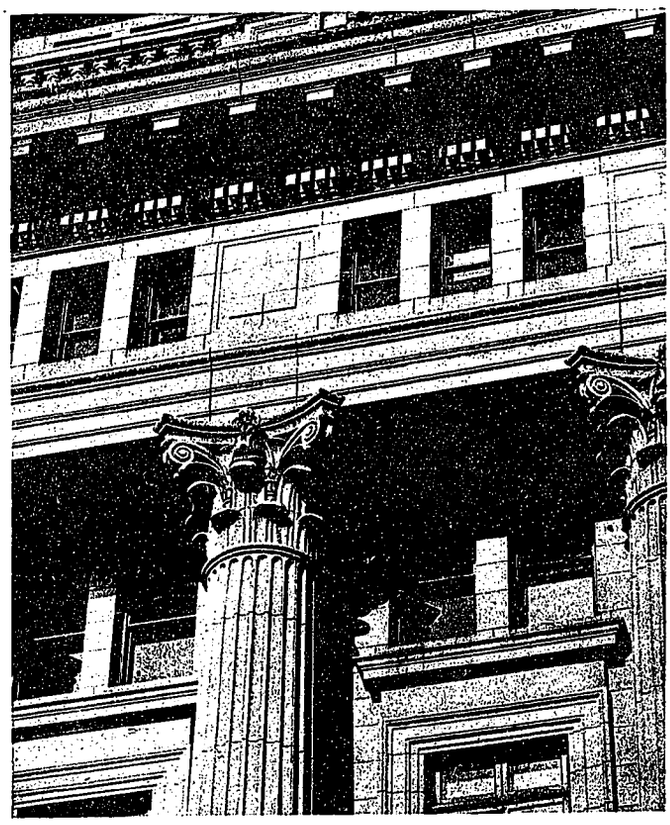


The New Sun Life Building, Montreal, Que.

DARLING & PEARSON, Architects

In the new Sun Life Building, the city of Montreal has once more demonstrated to our readers her progressiveness. It has always been her ambition to be the leading city in Canada for structure which impress the student as well as the laymen of their artistic merit and their commercialistic value. How well she has succeeded is revealed in the large number of her up-to-date banking institutions, schools, churches, theatres, hotels, manufacturing plants and public buildings. If she does not stand supreme in this respect, she is going ahead so rapidly that it behooves other cities to have a care, else she will gradually outdistance them.

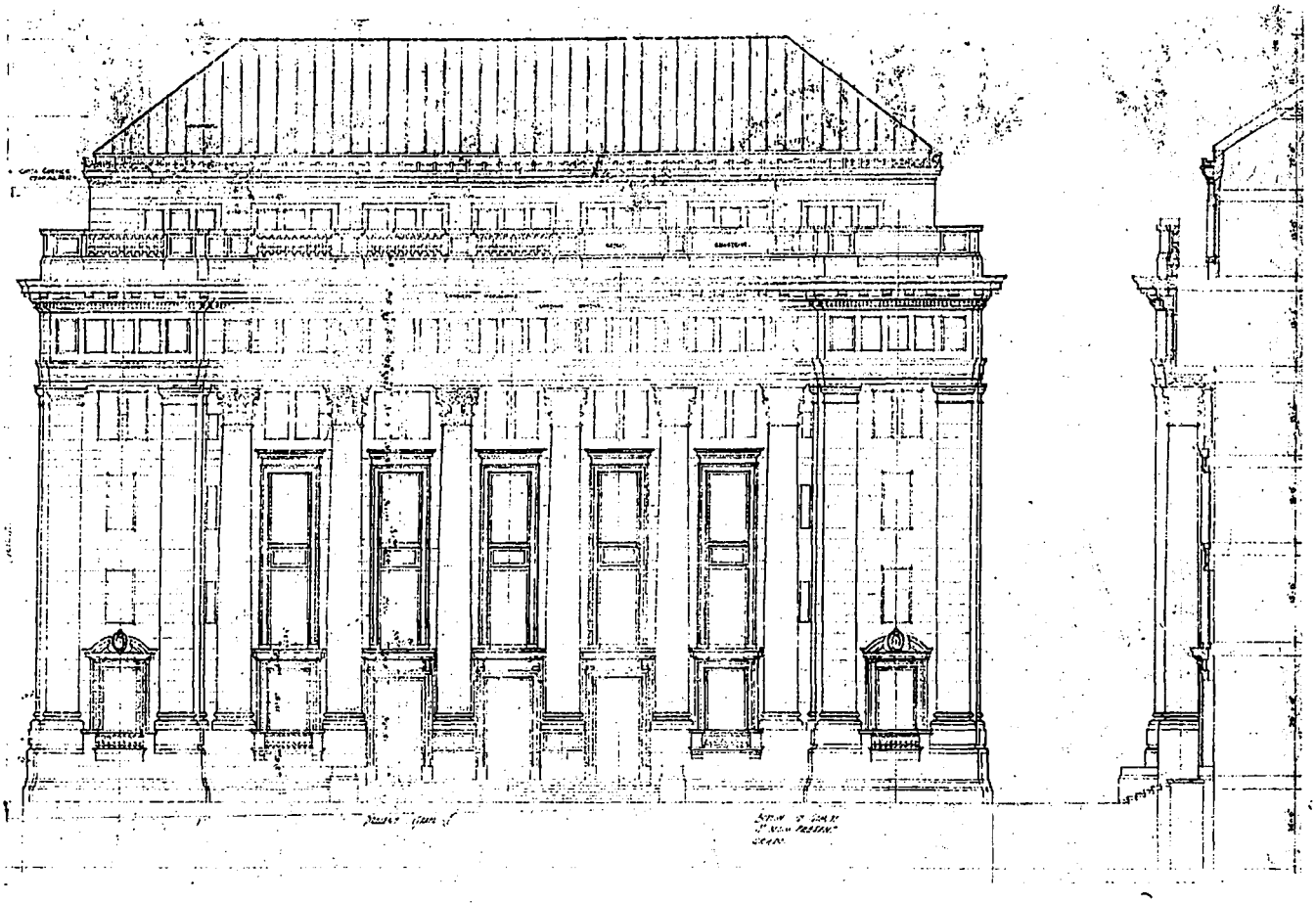
This new home of the Sun Life Assurance Company of Canada is a monument of dignity and restraint; in perfect harmony with the institution itself. What better accommodation, more tasty design or commanding site could have been selected by the architects? The Company itself is of Canadian birth and has grown into the largest and best equipped corporate body of its kind in the British Empire. Organized in 1865 it has been guided since infancy by the same Scottish thrift which brought it into existence. And what better appreciation of its worth than to know that during the present year over $60,000,000 of new business will have been transacted on account of the studied plans of the heads being executed with enthusiastic confidence by a corps of men well equipped to carry on this great work. The wonderful spirit of Robertson Macauley, who was President of the company from its birth until three years ago seems to have permeated the whole organization. Guided by the motto "Follow the Flag" The Sun Life Assurance Company of Canada is found in all British colonies, and is also fast gaining a commanding position in other countries.



EXTERIOR DETAIL.

It would have been a difficult task to have selected a more commanding site than the Dominion Square. Representing the westward growth and life of Montreal, this small park is situated in the best neighborhood of the city. As one leave the entrance to that well-known hostelry—the Hotel Windsor—he sees facing him on the opposite side of the square an imposing edifice which happens to be the subject of our article. Originally this location was occupied by a seven story grey cut stone building in Queen Anne style. It was the oldest Y.M.C.A. building in Canada. As traditions and landmarks mean nothing to us it naturally fell a prey to the ravages of modern progressiveness. Just to its right on the other side of Dorchester street is the St. James' Cathedral designed by Victor Bourgeau after the style of St. Peter's of Rome, Among other buildings on the square might be mentioned a number of interesting churches as well as the C.P.R. station.

In the square are several monuments, one of which is closely connected with the Sun Life Company. It was a fitting tribute to Her Majesty, Queen Victoria, on the date of her jubilee 1897.



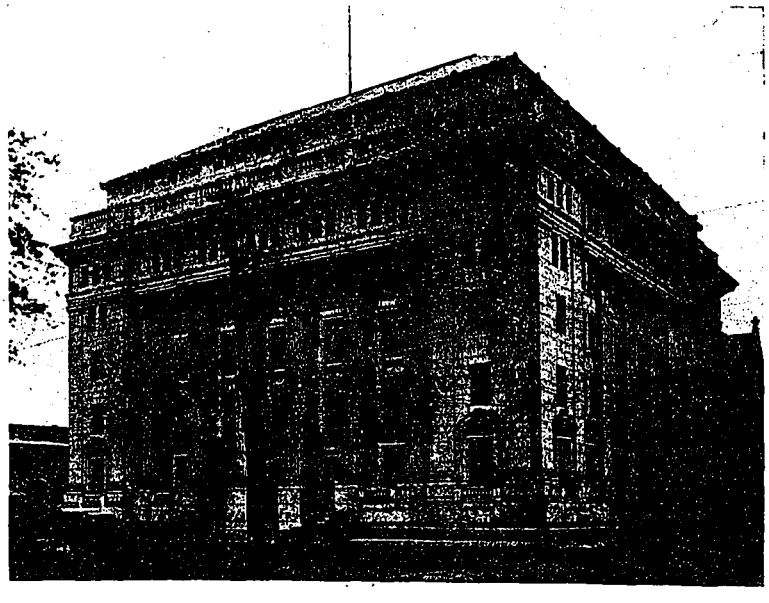
FRONT ELEVATION.

and was at that time presented to the city of Montreal. Executed in rough stone and surmounted by a lion it acts as a natural link between our Empire and one of her leading institutions.

This, then, was the problem presented—to plan for an active modern business a structure which would express the full meaning of the business within and at the same time have it enhance rather than detract from the dignified character of it environments.

That the architects fully appreciated the task in its entirely is quite evident, not only from the appearance of the building itself, but also when taken in conjunction with its general surroundings. Standing some hundred feet above the ground; clothed throughout with a gray granite which invites as well as demands respect; designed with classic feelings of severity and refinement; it tends to raise our own standards of art and as a consequence lift a little higher our immediate thoughts. It is one more argument in favor of adhering to precedent and still allowing of a liberal and free adaptation to fit our present needs.

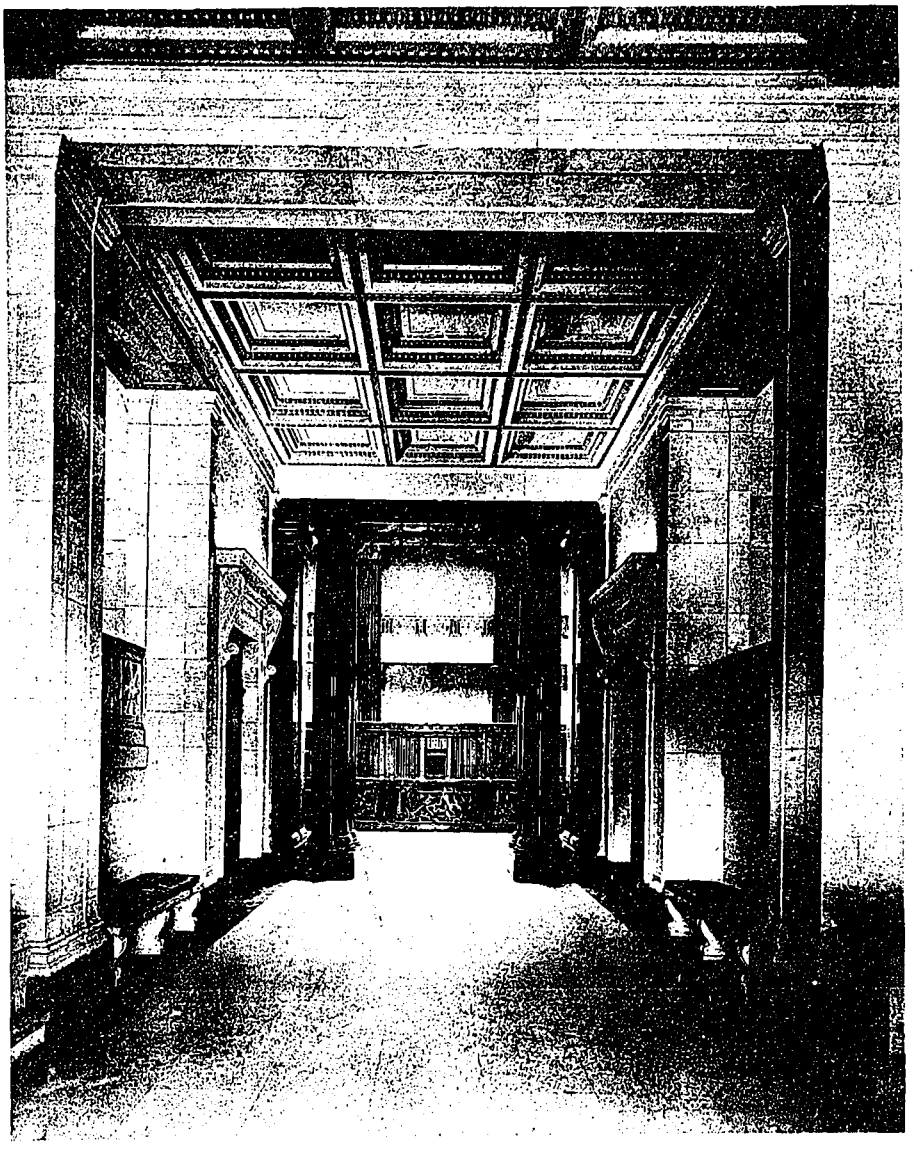
The central portion of the main facade consists of six massive fluted columns, five feet in diameter, fifty one and a half feet high, which form the decorative feature. These in connection with moulded treatment of the windows between, furnish a striking contrast to the plain subdued treatment at each corner. The columns are recessed so that all the mouldings are back of the face of the main wall, a feature permitting of a richness without the feeling of obtrusion. In order not to break the stability and severity of the corners. The openings are plain with the exception of those at the ground floor. The vertical tendency of the central portion is enhanced by allowing



GENERAL EXTERIOR VIEW.

the window trim to continue unbroken from the first to the third floor.

The writer had the pleasure of studying this structure by moonlight when the silhouettes of the main divisions stood out, submerging to a large extent the small openings and details. At this time the real strength of the design became more apparent. The one thought which seemed to prevail was the unfortunate demand of our modern ideas for so many window openings. Our mind wandered back to the Spanish architects who seemed to possess to a marked degree the value of contrasts. They always selected the vital spots for ornamented richness with the surrounding portions treated in a simple unbroken surfaces so as to enhance, if possible, the value of the parts they wished to emphasize. Naturally their business methods were not ours of to-day. We need the light and ventilation in each small interior division. In the Sun Life building this need is met in as wholesome a manner as possible in the use of classic design. Each and every room, no matter how small, is well provided with window space, so that the artificial methods have been reduced to a minimum.

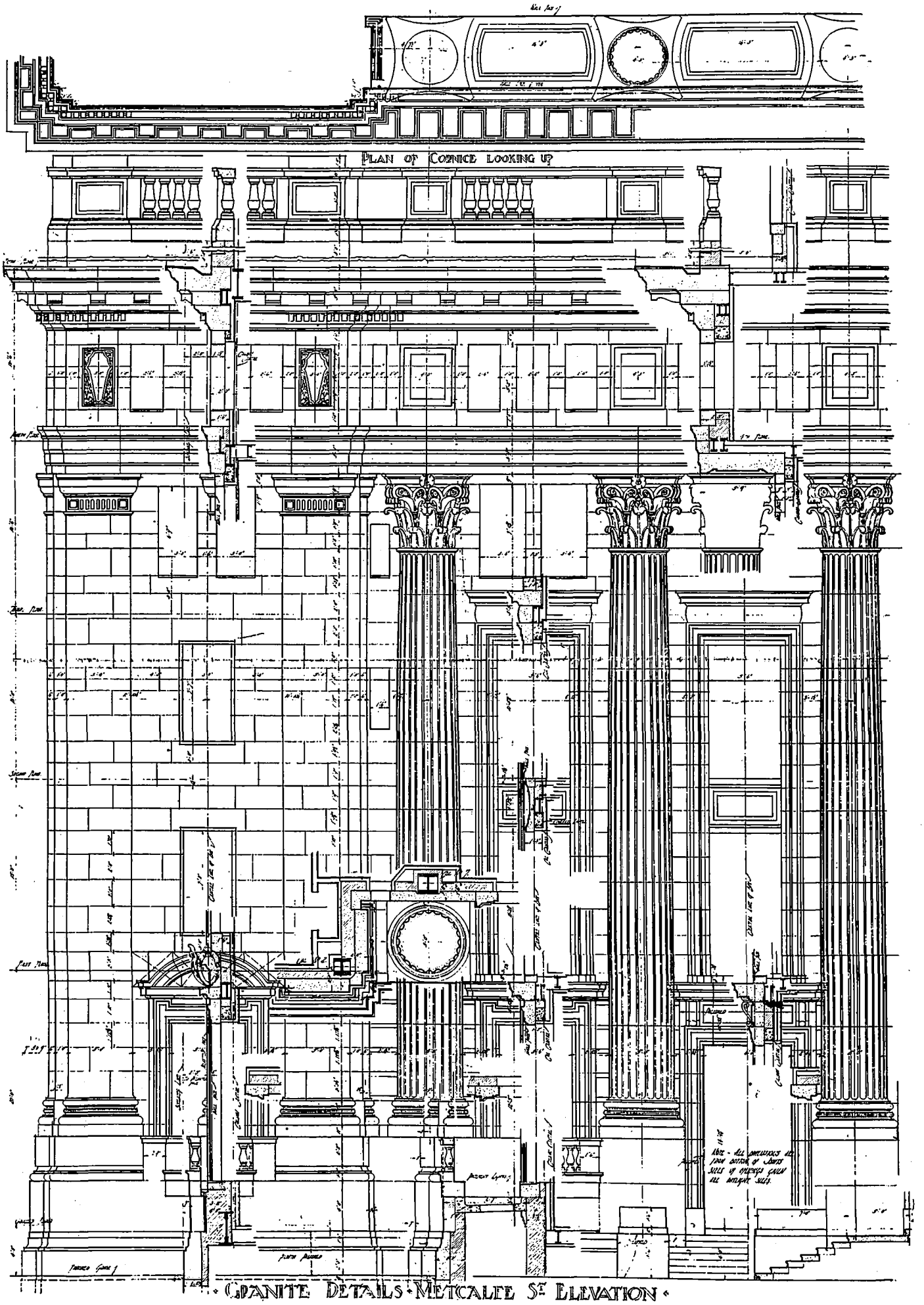


VIEW TOWARDS MAIN HALL.

The sides of the building vary slightly from the main facade. A series of seven full pilasters enclose the window treatment. Here the openings for the various floors form a unit in themselves; that of the ground floor consisting of a single window possessing a circular pediment; the three floors above having a double opening, while those in the frieze are grouped in threes. Running around the building at the fifth floor is a pierced balustrade effect. No attempt has been made to show a completed design toward the rear as it is the intention of the company to lengthen the building at such time as conditions warrant.

The entrance to the main hall is through any one of three doorways. These consist of revolving doors housed in solid marble walls circular in plan, the sturdy character of which provides a fitting debut to the interior. The central opening is on the direct axis passing between stairways, elevators into the main hall while the other two are placed directly opposite the two main stairways. Once within we are struck with the severity of the design which grows more impressive as we appreciate the airiness and warmth imparted by the pinkish Tennessee marble which springs from its base of polished Belgian black and continues uninterrupted around the walls to the ceiling, up the stairways, by the elevator enclosures and on throughout the large main hall. The marble being slightly tooled so as to impart an atmosphere of solidity as well as delicate ornateness, the eye is naturally carried to the coppered ceiling, which corresponds in tone value to that of the walls. The monotony which might otherwise arise in prevented by the ornamented courses in gold. This entrance hall is exceptionally pleasing to the eye in its design of chasteness and restraint as well as the mellow effect given to the color scheme throughout.

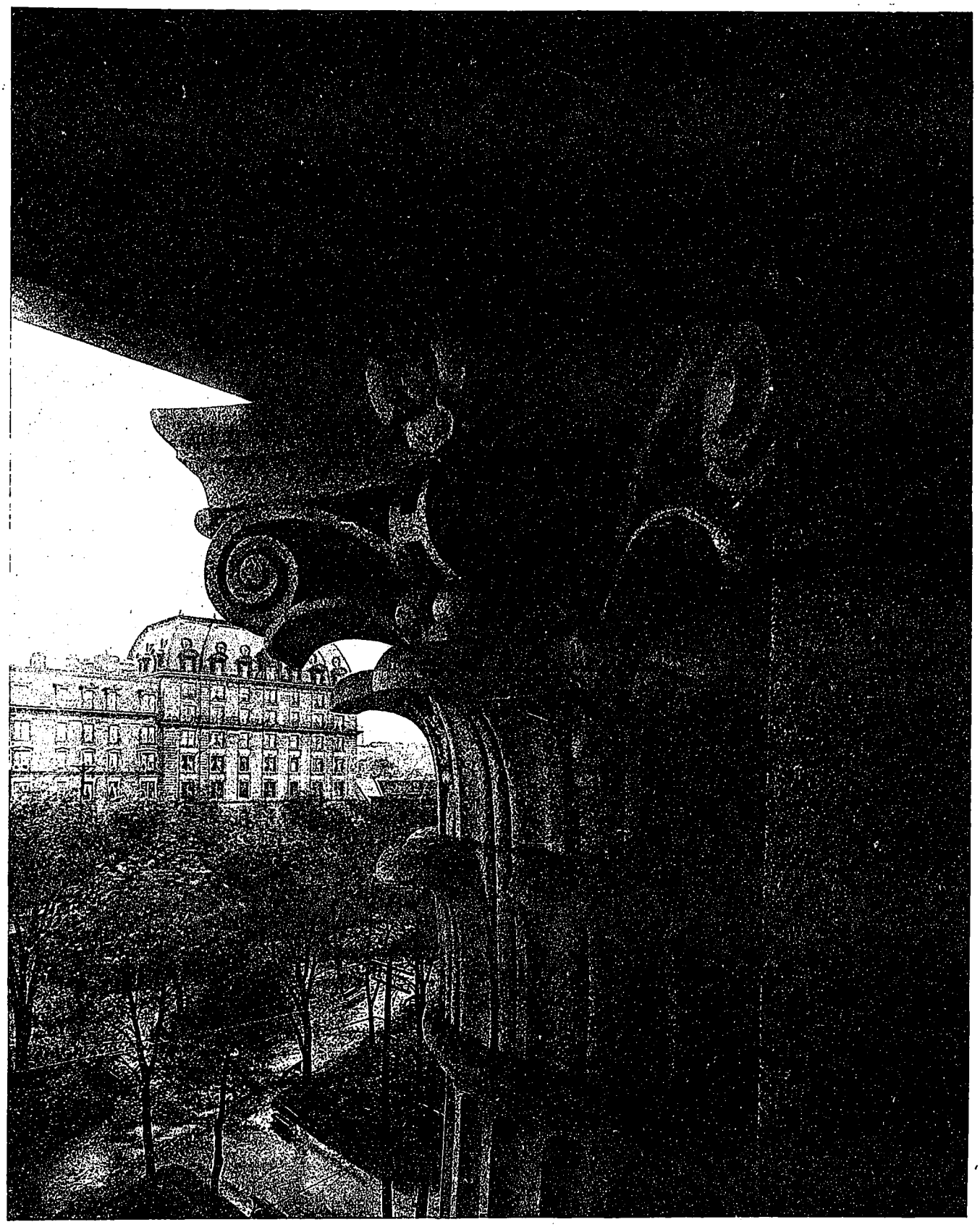
Leading to the executive offices on the first floor are two monumental stairways. The treads consist of two inch marble slabs, while the balustrade is patterned after a plain Grecian idea having the perforated design cut from a solid five and one half inch thickness of marble. At



GRANITE DETAILS - METCALFE ST ELEVATION

THE NEW SUN LIFE BUILDING, MONTREAL.

DARLING & PEARSON, ARCHITECTS.



DETAIL OF CORINTHIAN CAPITAL.

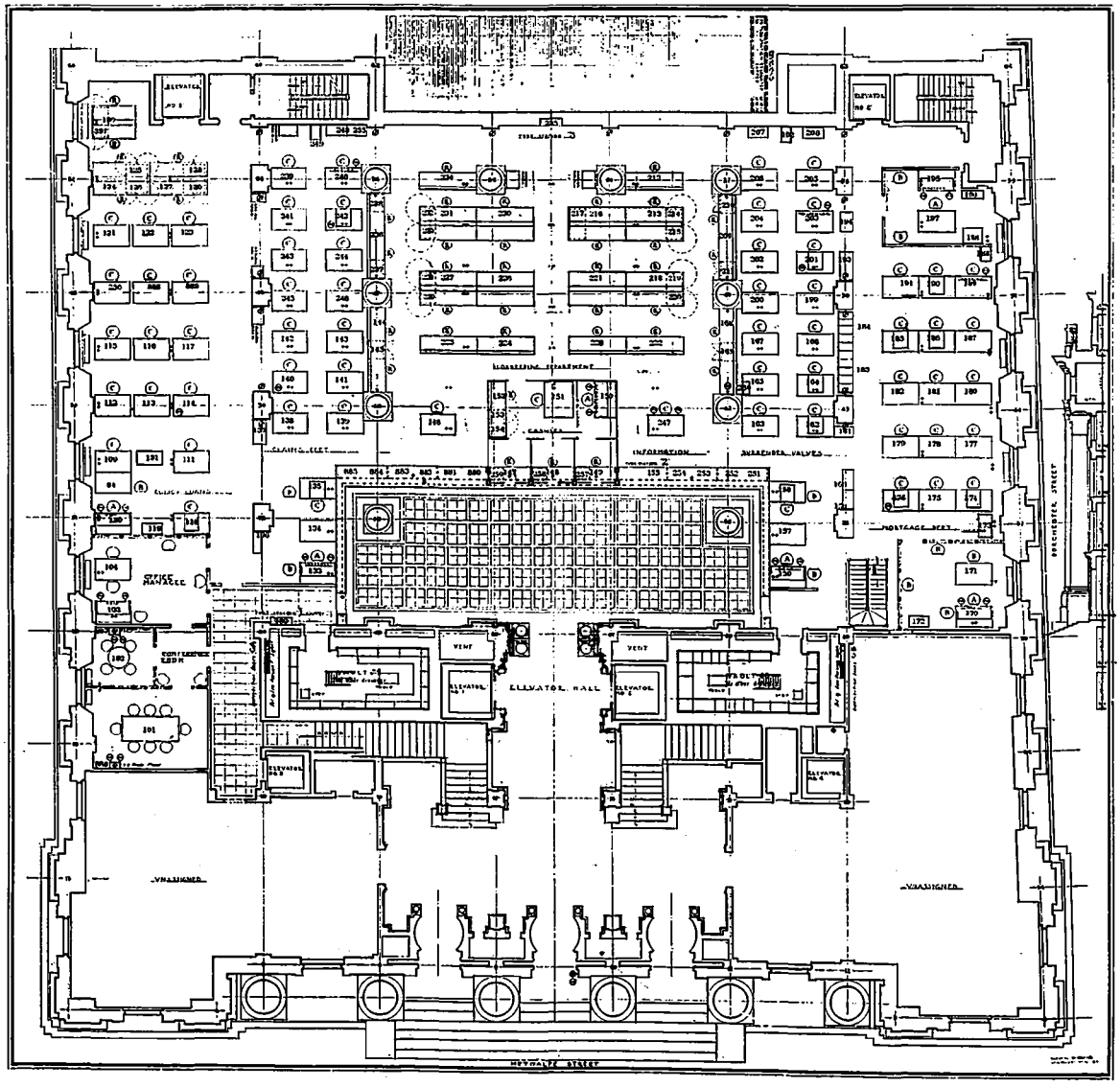
THE NEW SUN LIFE BUILDING, MONTREAL, QUE.

DARLING & PEARSON, ARCHITECTS.

ENTRANCE HALL.

each side of the stairways facing the elevators are placed two carved marble benches which fit into a recess especially made for this purpose. Directly back of the stairways and in front of main hall entrance are placed the two elevators furnishing access to all floors. The bronze grill work is designed to conform to the classic treatment around the door, which is in itself somewhat refined by the long slender brackets; thereby maintaining a harmonious scale between the bronzework and stone.

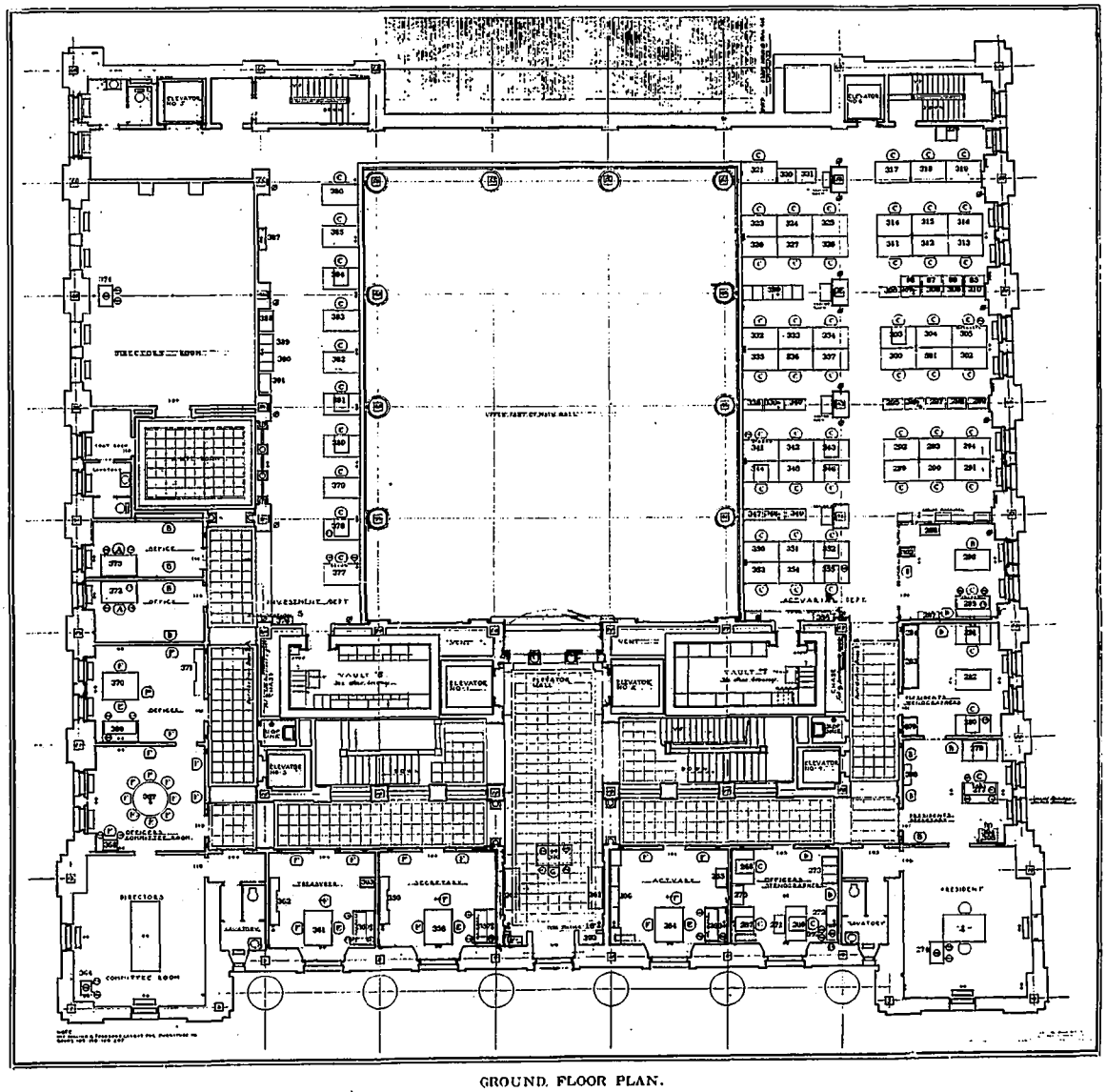
The main hall is entered through a double colonnade of highly polished syenite marble, the gener-



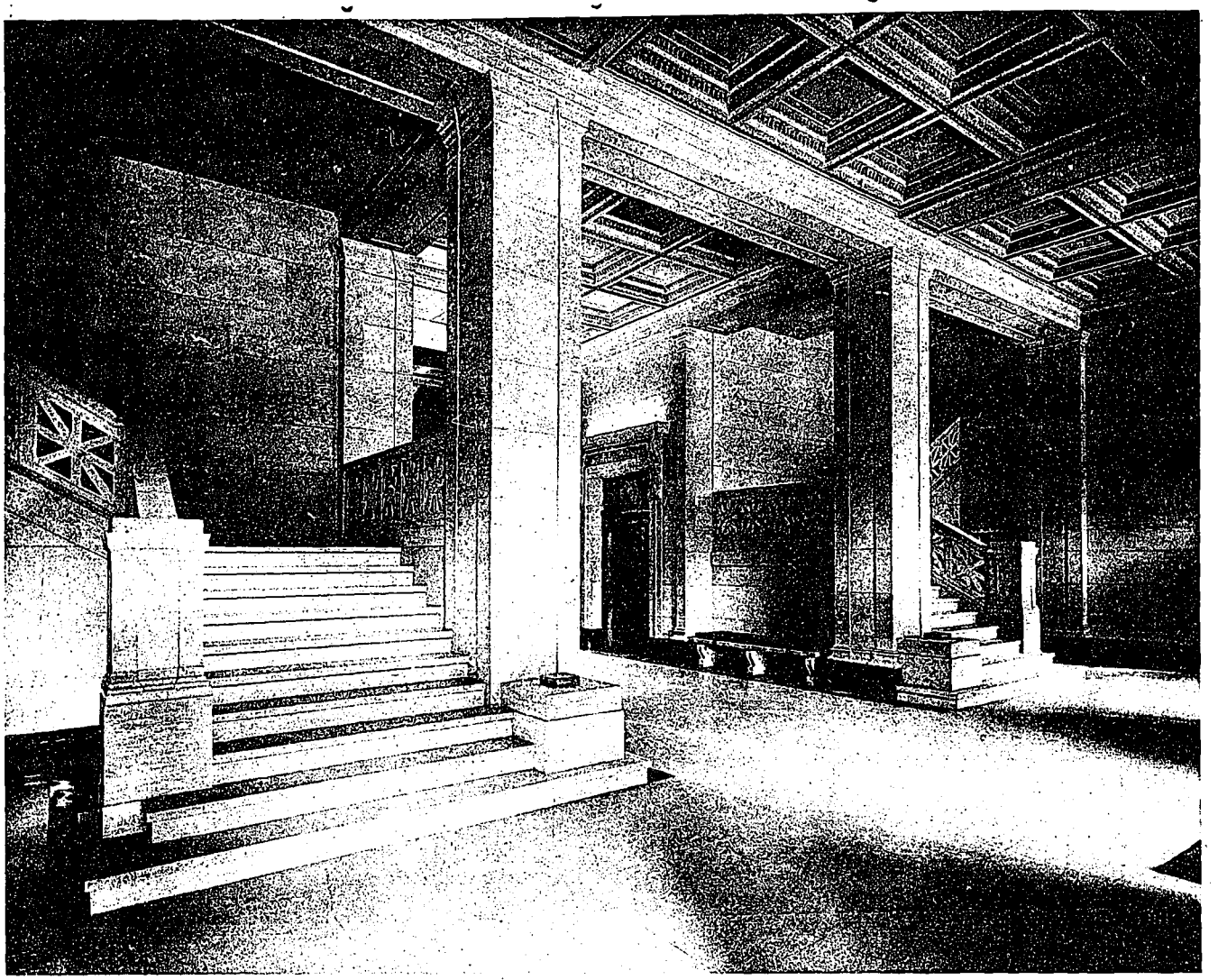
FIRST FLOOR PLAN.

al effect being of a darkish green with a underlying golden tone. It is interesting to note how the two main divisions on the ground floor are linked together in color. In the first place the dark green Sevanto marble which forms the floor border around the entrance hall continues by the elevators and culminates in a rather large square at the opening to the main hall; from which it branches off and encircles the large public area composed of marble slabs two feet square with a deeper shade of pink than the walls. The same rich depth of green is preserved in the counter as well as the columns. Else-

FIRST FLOOR CORRIDOR.



GROUND FLOOR PLAN.



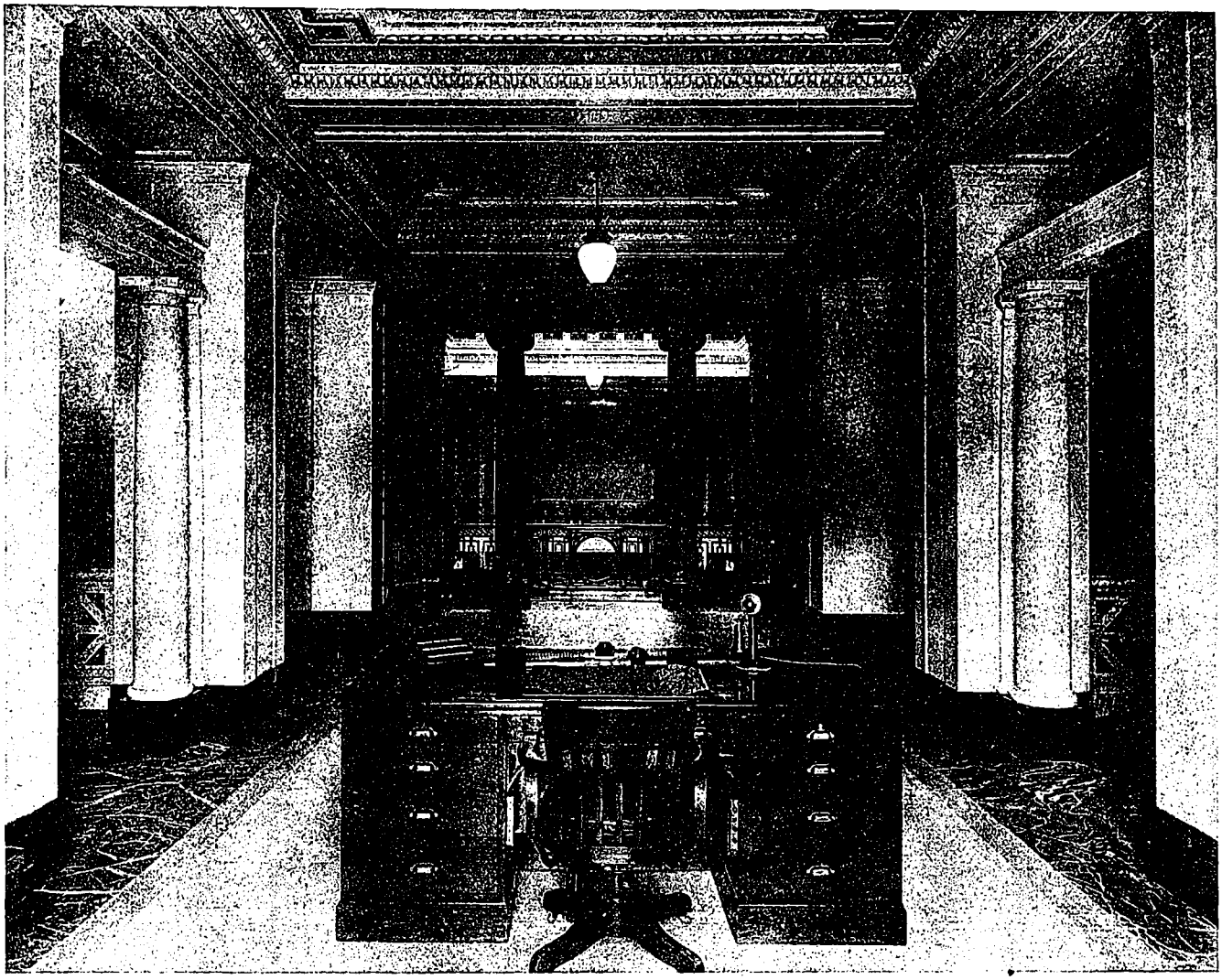
ENTRANCE HALL.

where the restful and delicate shades of pink decorate all surfaces below the ceilings. The universal golden hue is enhanced by the gilded ornament in the panelling of the mezzanine ceilings and also those directly over this section; as well as in the gilded capitals of the large columns and the bronze railing encircling the central portion of the room.

The one outstanding feature of this main office chamber aside from its general effect of grandeur and loftiness is the square consisting of the ten large columns in deep olive green syenite marble. To say it was a daring stunt is expressing it mildly. Picture to yourself each one of these columns rising to a height of thirty-two feet, measuring three feet two inches in diameter and consisting of five drums. Then, remembering that each column is fluted throughout, try to imagine the skill necessary to make each line of the twenty four nosings between the curved spaces hit exactly the corresponding one on the drum above and below; at the same time keeping in mind that there is a slight convex curve to be considered in each vertical line. It seems unreasonable and beyond the skill of man to accomplish this successfully, especially with a material so hard to cut and finished with a polished surface. Still the work has been done and so carefully executed that not one observer in a thousand will ever give it a second thought or appreciate the delicate and expensive undertaking so minutely and properly handled.

At the top of each column is a gilded Corinthian cap supporting an ornamental entablature which builds up into the mouldings of the ceiling that go to provide the proper setting for the large skylight. Here the subdued yellows, greens, blues, unite to give a mellow amber effect.

The large clerical space behind the counter contains massive piers, walls, floors, etc., of the same pinkish marble, while the counter itself is designed in panels of Sevanto deep green and red marble with pilaster divisions and base of the Belgian black. A cashier's bronze cage, tastily designed and presenting an appearance of stability extends along the central portion of the counter. This room is well screened from the outside by the exterior balustrade, the top of which is approximately six feet from the floor.



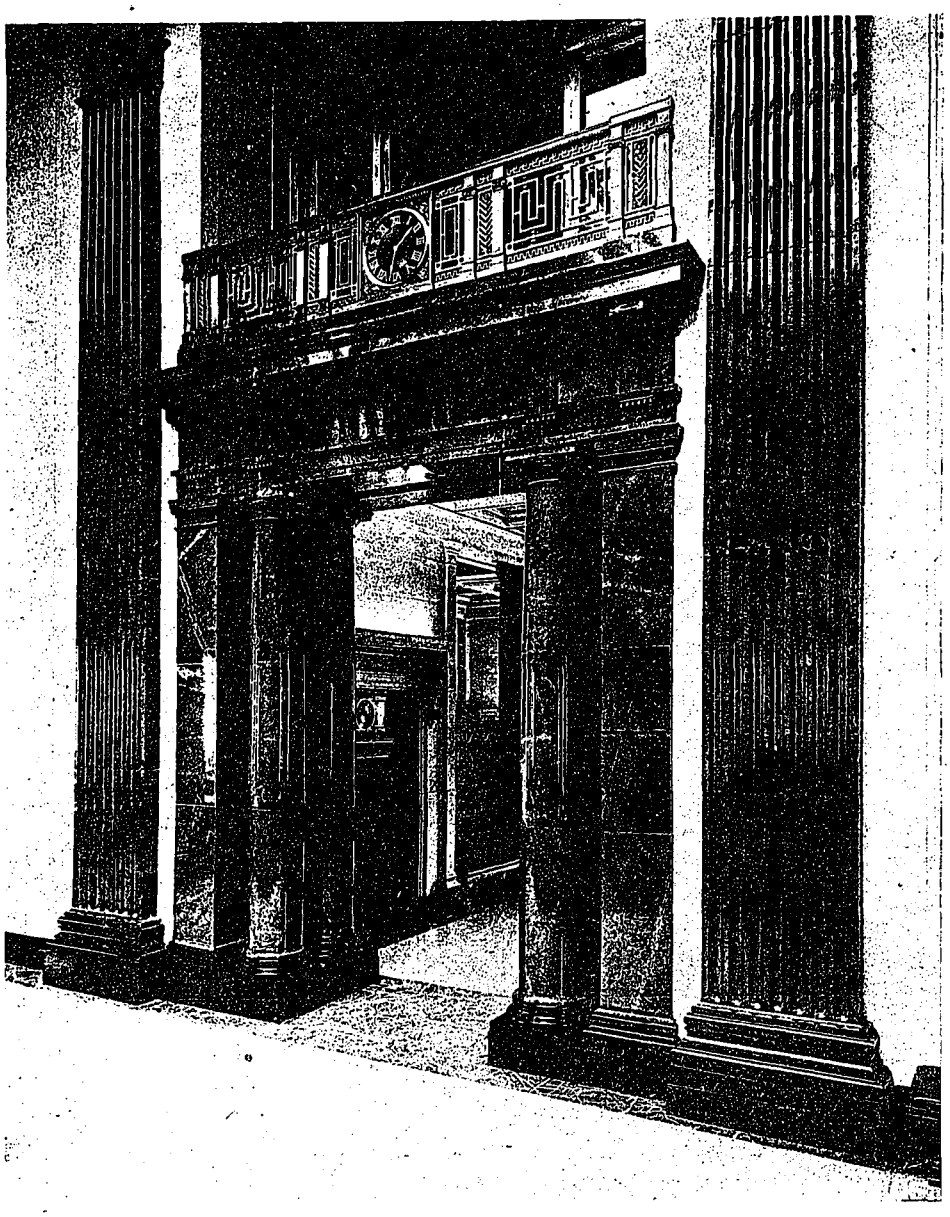
ENTRANCE TO EXECUTIVE OFFICES ON FIRST FLOOR.

The effect of this main hall at dusk when the lights are on is as near to the soft mellow glow from the setting sun of early Fall, as is possible to be obtained by the handiwork of man. The extensive stretches of the pinkish marble, the ornate capitals and gilded panels, the stained glass and warm shades in the ceiling, all melt into a rich golden hue under the influence of the many indirect hanging lights.

One of the few large vaults in Canada is located in the basement of the Sun Life Building. It measures upon the inside thirty-eight feet by thirteen and one half and has eight feet clear from floor to ceiling. This chamber is finished with steel grey with white ceiling. On all sides are steel compartments protected by grill work. The entrance to the vault is a circular door seven feet in diameter, two and one half inch lining of steel armour plate. The outer half of the door is formed of steel casting containing reinforced concrete and metal section; while the inner part is constructed of alternating two inch, five ply, tool-proof chrome-steel sections, low steel sections, and steel bolt frame cast solid with the door. The walls have a total thickness of twenty-six inches consisting of shock and drill-proof chrome and low steel interlocking sections, reinforced with monolithic rock concrete twenty-two inches thick strengthened with double rows of 100 pound steel railroad rails. On the inside is a two and are half inch lining of steel armour plate. The vault is equipped with electrical protection systems which control gongs outside and inside the building as well as patrol and police service. Well lighted patrol passages surround the vault with mirror devices to permit of observations on all sides, back and top.

The first floor is given up to the executive offices including the President's suite, committee and board rooms. The prevailing treatment is light fumed oak panelling with bronze indirect lighting fixtures. Windows have polished marble sills and facing with marble grills beneath where are concealed the radiators. The furniture is mahogany tables and sea green leather chairs.

The corridors above the first floor has a light mahogany dado with greenish tinge and rough plaster effect above finished in a green-cream tone. The only exception to the four foot marble dado is on the sixth floor where the fac-



DOORWAY BETWEEN ENTRANCE AND MAIN HALL.

ing is seven feet high. All doors and windows off the corridors are of hollow steel cleverly executed to imitate mahogany woodwork. The second, third, fourth and fifth floors are planned to accommodate the general offices.

On the sixth floor is located the main and private dining rooms, library, smoking quarters for the men and rest room for the women. The corridor leading from the elevator lobby is finished in oak with light green burlap forming the dado panels and rough plaster above. In the main dining-room the slope of the roof furnished a difficult problem, but was well thought out in its treatment as shown by the illustration. The general design for the corridor prevails in the main dining room except the floor consists of nine inch square tiles.

Structural Features

In excavating for the building, the first ten feet below the surface was sandy soil, after which was found a very compact gravel and boulder deposit averaging 28 feet deep. Concrete caissons 6 ft. 6 in., in diameter were sunk to rock through this deposit, 26 feet below the basement level, and 38 feet below grade.

The exterior retaining walls below grade were built of concrete, reinforced against earth and water pressure and waterproof by the addition of a paste to the mixture.

The building is supported upon a steel frame, designed for a possible extension and an addition of eight stories to the existing eight. The floors are constructed of terra cotta floor arching supported on steel beams, and all steel is fireproofed either with terra cotta or concrete. The sloping and deck roofs are constructed with the metropolitan fireproof slab system, thus ensuring lightness of material in construction.

Stanstead granite is used for the exterior wall on the north, west and south elevations, the granite being backed up with brick in cement mortar and furred with terra cotta. The east or rear elevation, which will be removed when the building is extended, is faced with a light cream colored brick.

All sloping roofs are covered with sheet copper weighing 24 ounces to the square foot; and all deck roofs are waterproofed with 7 ply roofing felt and compound, protected by 6″ x 9″ x 1″ hard burnt roofing tile.

The windows throughout are of the double-hung type having bronze covered frames and sashes. A special feature is the hanging of the sashes up ratcheted bars, and the hinging of the inside stops to allow each sash to be lowered into the building out of the frame in a horizontal position for cleaning purposes. Interlocking weatherstrips out of rolled bronze sections also form part of the window equipment. All glass is polished plate of British manufacture, with the exception of the court elevations where wired glass is used.

Mechanical Equipment.

Three watertube boilers of 225 horsepower each, occupy the greater part of the boiler room space which extends from the sub-basement to

the ground floor through a height of 28 feet. The boilers are of ample capacity for the proposed extension, and for an electrical power generating plant if desired. The boilers are equipped with stokers which consume bituminous coal with little or no smoke. The stokers feed the furnaces automatically, the control being operated by a horizontal bar running the full length of the front face of the stokers, to which each stokers is attached at will by movable links. The bar is operated by a small steam engine at one end, with an electric motor standby service at the other. The boilers and stokers are set in fire brick encased in a 3/16 sheet steel covering. The chimney is of sheet steel lined with fire brick, running up through the building, and is 140 feet high.

A coal storage room of 350 tons capacity is provided in the sub-basement. The room is filled from dump hoppers in the driveway to the north of the building by means of an electrically operated coal conveyor, which when reversed reclaims the coal through ports in a tunnel below the floor of the room, and transfers it to a steel bin running above and along the full length of the stokers. From the bin the coal flows by gravity to a weighing hopper from which it is transferred to the stokers.

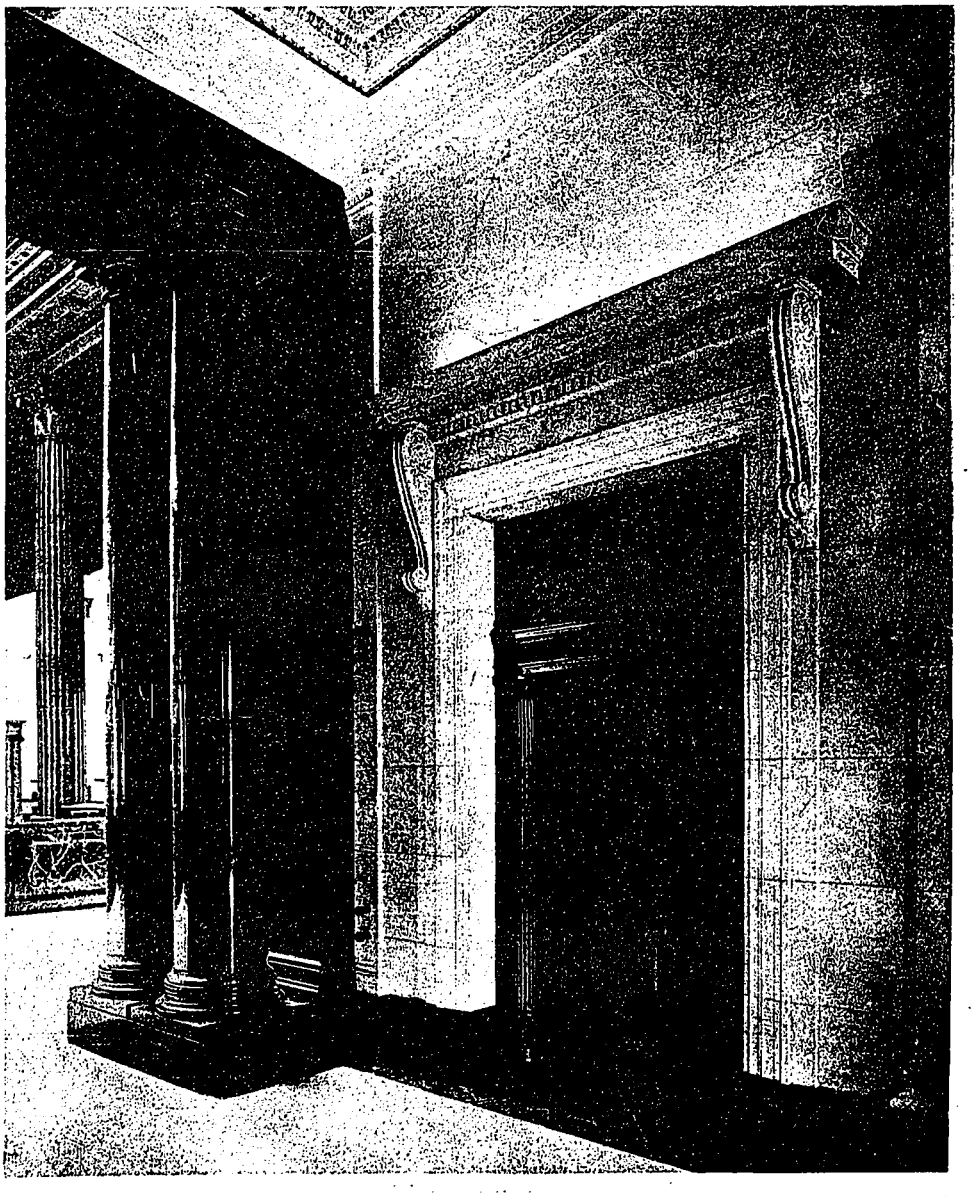
An electric chain hoist and trolley line transfers ash cans when filled to an hydraulic elevator operating in a shaft outside the building from the sub-basement to the delivery driveway.

Direct radiators throughout are heated by hot water. Two hot water heaters supplied by a low pressure steam main, reduced direct from the high pressure steam lines, are connected to the heating mains through the two steam turbine driven circulation pumps. There is also a high pressure water heater with a circulation pump, motor driven, for emergency service; and also for use when there is a sudden drop in temperature on the outside.

A complete fresh air supply and foul air exhaust ventilation system is provided throughout the building. Fresh air through an inlet on the north side passes through a pre-heating steam radiator stack to an air washer in the sub-basement, which removes all impurities and provides adequate moisture to maintain the proper percentage of relative humidity through the building. From this point the air passes through a re-heating steam radiator stack, thermostatically controlled, is heated to the required temperature and is circulated by the main supply fan through ducts to the various departments and rooms.

A separate fan supplies the boiler room, and auxilliary fresh air supply system is situated on the seventh floor, supply the upper floors. The main exhaust fan for the lower floors is situated in the sub-basement, those for the upper floors being on the seventh floor. Separate fans exhaust from the dining room and kitchen, and from the lavatories.

A compressed air system consisting of three



ELEVATOR DOOR.

compressor units and three storage tanks maintaining different pressures, but connected together through pressure reducing valves, supply air for the pneumatic tube carrier system, for the elevator door operating devices, and for sewerage ejectors. Automatic controllers start and stop the motors of the compressor units so that each tank maintains a constant range of pressure.

A vacuum cleaning system with a capacity of four sweepers at a time is installed in the sub-basement, with mains and risers throughout to inlet valves conveniently situated in all corridors.

UPPER CORRIDOR.

Refrigerating and Water Cooling Plant

An ammonia compressor refrigerating machine with a brine cooling tank is also part of the sub-basement equipment; a brine circulation pump and riser conveying the cooled brine to a refrigerator room, counter refrigerators and an ice making tank in the kitchen on the sixth floor, and to a refrigerator in the janitor's dwelling on the seventh floor.

There is also a drinking water cooler installed in the refrigerator plant room in the sub-basement, with a circulation pump, which ensures a constant supply of chilled water at the drinking fountains that are located in all corridors on every floor.

All cold water supplies and all fire mains and risers are of extra heavy galvanized pipe and fittings. The drainage vent and rain water piping throughout, is standard weight, galvanized, with galvanized recessed drainage fittings, in the case of drainage and rain water piping, the hot water piping and fitting throughout being of copper.

Miscellaneous Features.

There are twenty-four toilet rooms and lavatories throughout the building, all equipped with the highest grade British manufactured vitreous china and porcelain fixtures with nickel plated fittings. All drainage above the basement floor flows direct into the sewers; the drainage from the basement lavatories being collected into two 100 gallon pneumatic ejectors situated in the sub-basement, which operates automatically and ejects direct into the sewer lines.

Hot water for domestic use is supplied from a sub-basement storage tank containing a steam coil. A direct flow riser to distributing mains on the seventh floor, supplies all lavatories. Return circulation pipes from lavatories unit together and are returned to tank in sub-basement.

All water used in the building passes through a mechanical sand filter and is stored in two tanks of a combined capacity of 9,000 gallons on the seventh floor. Distributing mains on this floor supply water to all risers throughout the building, a city pressure of 140 lbs. at the basement level ensuring a constant supply throughout the system.

In the sub-basement is also a seepage pit equipped with two 150 gallons centrifugal pumps, automatically controlled, which takes care of the sub-soil drainings and waste water.

Snow melting pipes with steam connections are installed in all areas, roof gutters and balconies to prevent the collection of snow and ice,

A combined fire alarm and night watchman's system is installed with stations on all floors and an alarm gong and enunciator in the basement, as well as direct connection to the offices of a local accident and guarantee company giving protective service. This means of protection is further supplemented by stand pipes and hose valves in the corridors on all floors.

Elevators.

The elevator equipment consists of two passenger cars, speed 300 feet per minute, capacity 2500 lbs; one small hand operated car, speed

150 feet per minute, capacity 1500 lbs.; two automatic push button cars, capacity 1500 lbs. each; and one combined freight and passenger car of a capacity of 5000 lbs. The hand operated elevator and automatic push button cars, are used entirely for inter-department work by the staff. All cars are provided with approved safety devices and are protected against excessive speed and any danger of over running the travel limits.

The enclosures on the hatchways of cars 1, 2, and 3 are operated by pneumatic door control devices with a hand lever and foot button placed alongside the car controller. Interlocking switches makes it impossible to start the car when any enclosure door is open. These cars have illuminated thresholds which facilitate the locating of the car platform in relation to the floor landing. Flashlight signals indicates the direction in which the cars are travelling and notify the operators where to stop. Mechanical dials indicating the location of cars in hatchways are also provided on each floor.

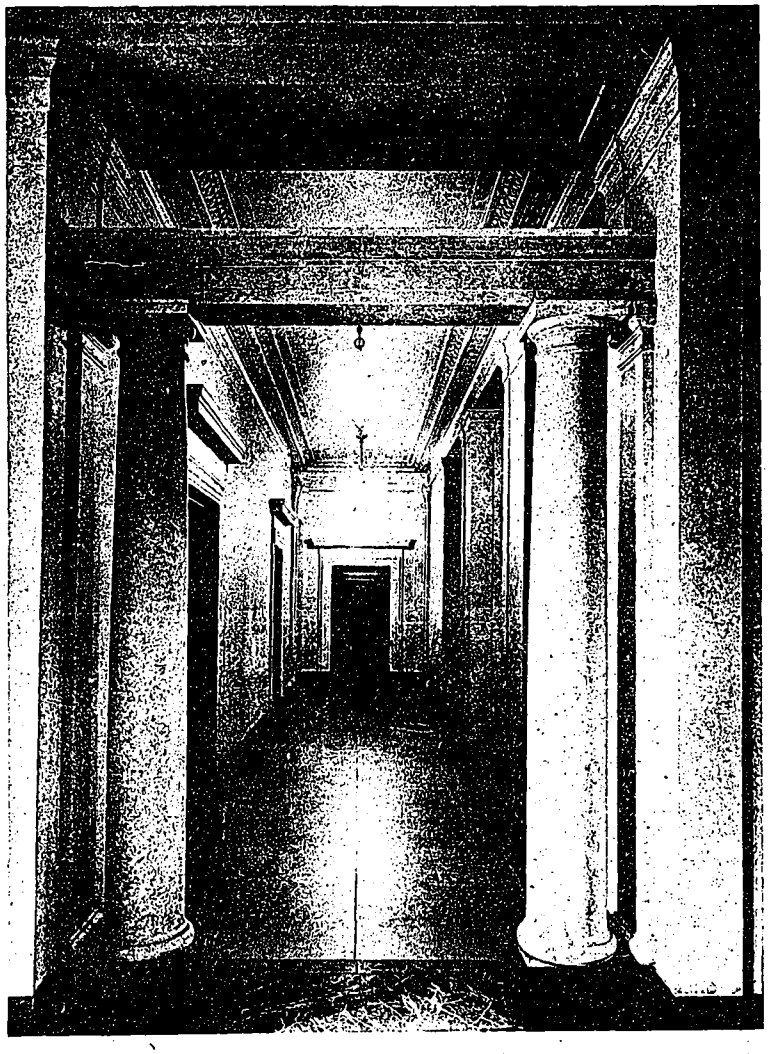
Kitchen Equipment.

The kitchen on the sixth floor is provided with gas ranges, toasters, broilers and friers; steam tables, vegetable boilers and warming closets; steam heated coffee and water urns and with refrigerator and ice making rooms and counter refrigerators. The staff is supplied with lunch on the self service system, the kitchen equipment being specially adapted for this purpose. A steam service is provided for the kitchen in the summer time, and also for the hot water tank, from a 7½ H.P. boiler in the sub-basement. The firebox of the boiler is equipped as an incinerator.

Electrical service for lighting is provided by two separate services of 2200 volts a.c. direct to the primary switch board in the transformer room in the sub-basement. From the transformer room the two services are run to the main switch board where they are connected to the distributing panels in such a way that should one service fail, the other can be brought into immediate use throughout the building. Normally the load is distributed between the two services.

A direct current service of 250 volts is provided for all motors throughout the building. Two motor generator sets in the switch board room, together with a storage battery on the seventh floor, supply low tension current for the signal systems.

For wiring purposes each floor is divided into two sections, north and south. A panel board in each section controls all wiring in that section. It contains a lighting panel box, a low tension box, a telephone box and miscellaneous section. Each section in the panel box is connected with the corresponding sections in the floors above and below and cross tied with the opposite side of the building, Floor and base outlets both for lighting and low tension work, are conveniently located in every room in such a manner that exposed wiring around mouldings is obviated.

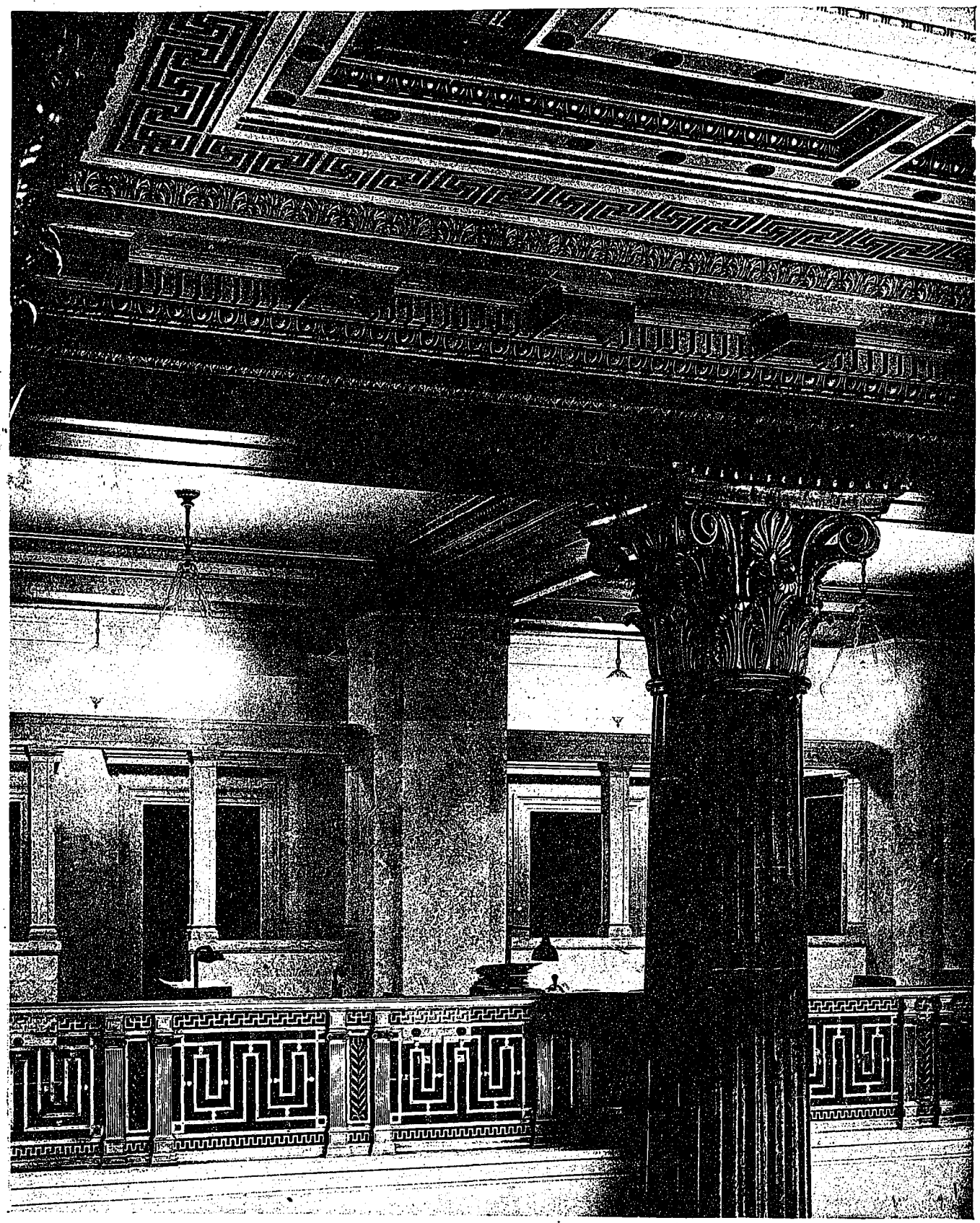


UPPER CORRIDOR.

Description of Security Vault.

The exterior dimensions of the vault are 42 ft. 5 inches deep by 17 ft. 11 inches wide, by 12 ft. 11½ inches high. The interior dimensions are 38 in. deep, 13 ft. 6 in. wide by 8 ft. 4 in. high in the clear.

It is located in the basement of the building, upon a heavy concrete foundation slab, the full size of the vault, and is independent at all points of any of the building construction. It is open to patrol service at front, rear and both sides, and the entire top, which is a considerable distance below the basement ceiling, is brilliantly illuminated and can be readily observed in its entirety by means of inclined mirrors set



DETAIL OF CEILING TREATMENT, MAIN HALL.

THE NEW SUN LIFE BUILDING, MONTREAL, QUE.

DARLING & PEARSON, ARCHITECTS.

against the basement ceiling above the main door.

The room in which the vault is located is composed of heavy masonry walls and its single entrance is guarded by a mob-resisting door and exceptionally heavy steel grilles.

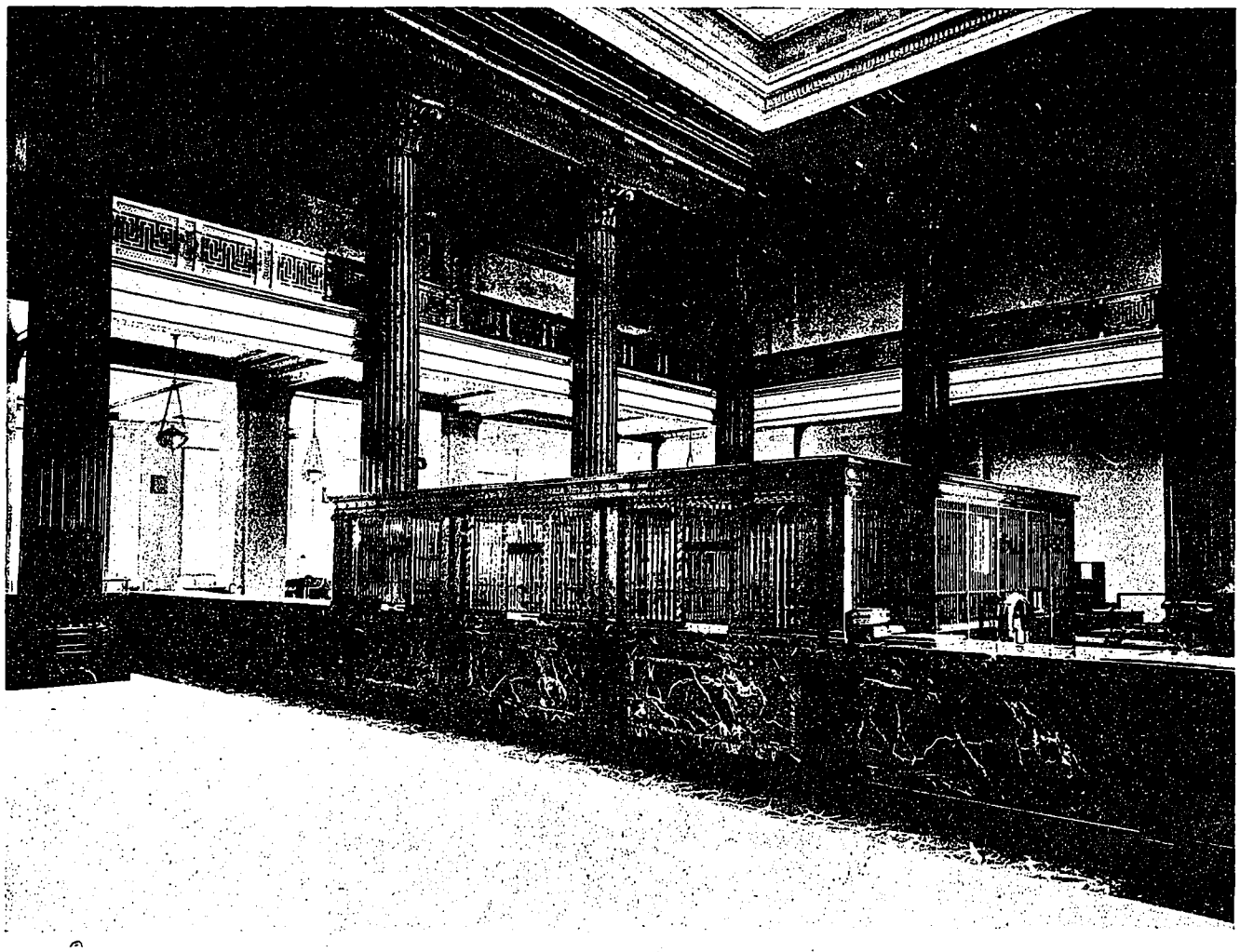
CONSTRUCTION.

The vault walls are 26½ inches in thickness, built up of 2½ inches of shock and drill proof steel lining, arranged in large, over-lapping sections with widely broken joints, and secured with 1-¼ inch diameter, twisted chrome steel bolts; the construction approximating as nearly as practicable a solid box to afford a maximum resistance to all known methods of attack, and it includes the element of slight resilience as one of the shock resisting factors.

The exterior surfaces of this lining are heavily waterproofed and surrounded with concrete walls approximately two feet in thickness of a 1:2:4 mixture, placed directly against the steel lining and door frames, embedding a re-enforcing steel grillage of one hundred pound railroad rails, set in double sections throughout the entire concrete work, spaced approximately on 9 inch centres; the sections being off-set and the corners inter-locked and secured with double and triple rows of heavy angles in addition to double rows of 1 inch tie-rods running continuously around the vault on approximately 2 ft. centers. The top re-enforcement, in addition to the rails, contains 20 inch one hundred pound "I" beams upon approximately 2 ft. centers. These beams not only re-enforce and help to carry the top concrete, but by means of embedded bridge work suspend and re-enforce the steel ceiling and further provide additional resistance to shock of falling walls or other heavy bodies, in the event of fire or accident to the building.

There are two openings to the vault, a main entrance at the front and an emergency entrance at the rear. The doors to each of these entrances are among the heaviest that have ever been built; they are 2½ ft. in thickness, the main door weighing upwards of thirty tons.

The doors are both circular in shape, of composite construction, the outer halves being formed of steel castings containing concrete composed of hydrolithic cement, and a non-hygroscopic aggregate, embedding inter-laced refactory steel members and oxy-acetylene cutter-burner-proof metallic sections. The inner halves are constructed of 2 inch five ply chrome steel plates, low steel sections of similar thickness and solid cast steel bolt frames. The time



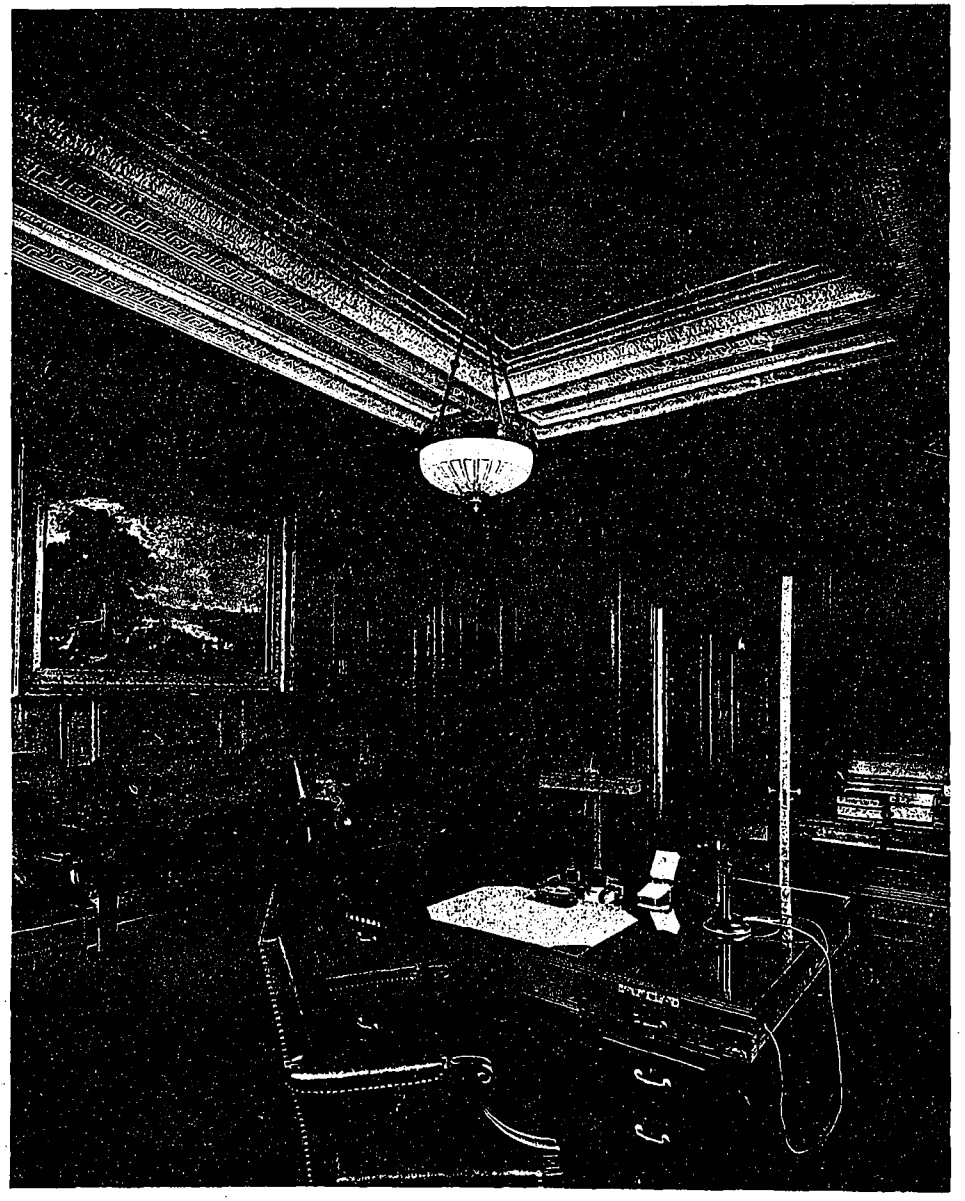
MAIN HALL.

required to penetrate these doors in burglarious or mob operations is so great as to be an absolutely unknown factor. The entire absence of the usual rebates or stepping at the door joints has permitted of the grinding of the doors into the frames, as glass stoppers are ground into bottles, and results in absolute protection against the use of nitro-glycerine or other liquid explosives which, even if they could be introduced into the joints, would find no seats upon which the force of an explosion could act.

Another feature of interest is the locating of the combination locks and bolt throwing mechanism upon the door jambs and the time locks upon the doors proper, and any attack upon this mechanism would require the penetration of both the door and jamb in order to reach all of the dogging devices. This arrangement doubles the usual amount of time required for such purposes, and further provides solid doors without spindle holes.

All time-locks, combination-locks and bolt-throwing and dogging mechanism upon the doors and jambs, are housed in with heavy steel plates to obviate the almost universal weak condition in so called standard work, where the putting of a small hole through the vault wall would provide direct access to the locking connections.

A substitution for the usual combination dials, consists of a steel cylinder, super-imposed anglewise upon the front jamb pressure housing; the forward end of which is provided with an oval glass window located at the normal line of vision and behind which, at a distance of some eight or nine inches, appears an electrically illuminated dial, provided with two revolving pointers which are operated by knobs located on the side of the pressure housing, and synchronized with the driving mechanism of the combination locks, to which they are connected through steel spindles. This device is not only one of convenience, but prevents any un-authorized observation of the setting up of the combination numbers. The locking devices on the main door check the operation of twenty locking bolts, 4½ inches in diameter, which are set radially and operated simultaneously.



PRESIDENT'S ROOM.

These devices upon the emergency entrances, checks an action of so-called gun-breech inter-locking steel rings.

Each door is swung upon massive polished steel crane hinges provided with ball and roller bearings; rolls upon the main door hinge ware in double cages around both upper and lower hinge pins, the rolls being ¾ inch diameter, and each cage approximately 6 inches long. The hinge pins, which are 9½ inches in diameter, and the bore of the housings, are provided with hardened, ground and lapped sleeves and bushings to take the thrust of the rolls which are also hardened, ground and lapped.

The vertical moment of the weight of the door is taken between the hardened, ground and lapped flat surfaces of two discs, upon approximately fifty hardened steel balls 1¼ inches diameter; the under face of the lower disc is slightly crowned to allow for auto-

matic compensation of possible errors in alignment. The element of friction has been so nearly eliminated that the main door can be easily swung with one finger.

The doors are provided with a pressure mechanism operated by hand-wheels through a series of worm and bevel gearing to force the doors tightly into their seats and against a gasket of Usudurian packing which, with the otherwise tight door joints, doubly insures entrances which are water and steam tight.

The floor line of the vault is set level with the floor line of the vault room and the door-pit is bridged with counter-balanced foot plates and lowering platform sections to provide a clear, level walkway into the vault. The lowering floor sections are operated by hand, and brought back to the floor level when the vault door is open or closed, and furnish a complete floor surface.

The exterior of the vault is provided with a panelled steel cladding of ½ inch bars and ¼ inch panel plates with base and cornice and is finished in gun-metal color.

This panelling provides a physical protection for the delicate electrical alarm covering and furnishes an architectural treatment in keeping with the strength of the vault construction.

Ventilation.

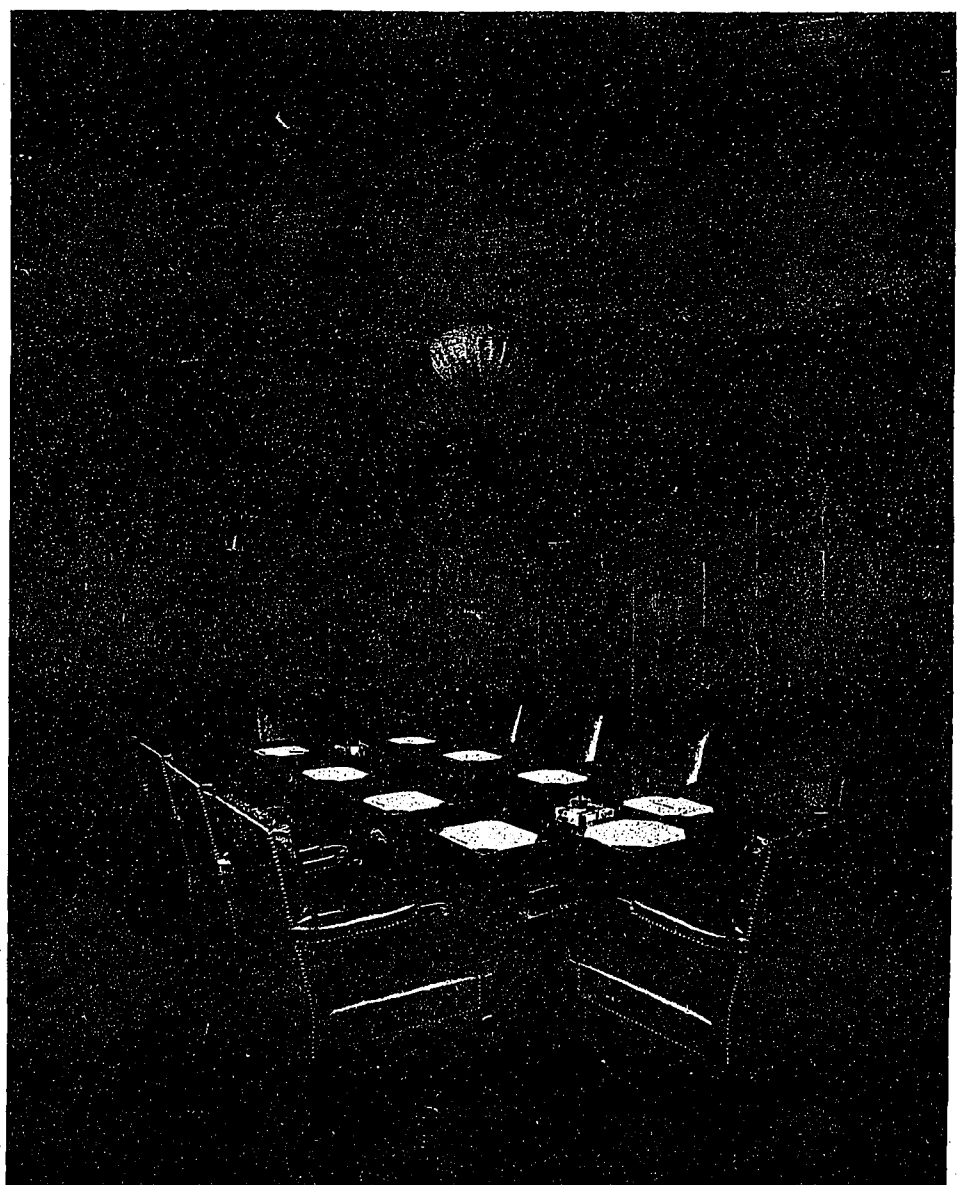
The section of the patrol passage at the rear of the vault is enclosed with glass panelled doors, which form, with the surrounding walls, a plenum chamber into which air is forced from the ventilating system of the building. From here it finds its way, when the vault is open, through the emergency and ventilating entrance into the vault, where its current is expanded and accelerated by open fans, the exhaust taking place through the main vault door; the arrangement being such that all portions of the vault interior are constantly swept with fresh air.

Electrical Protection and Equipment.

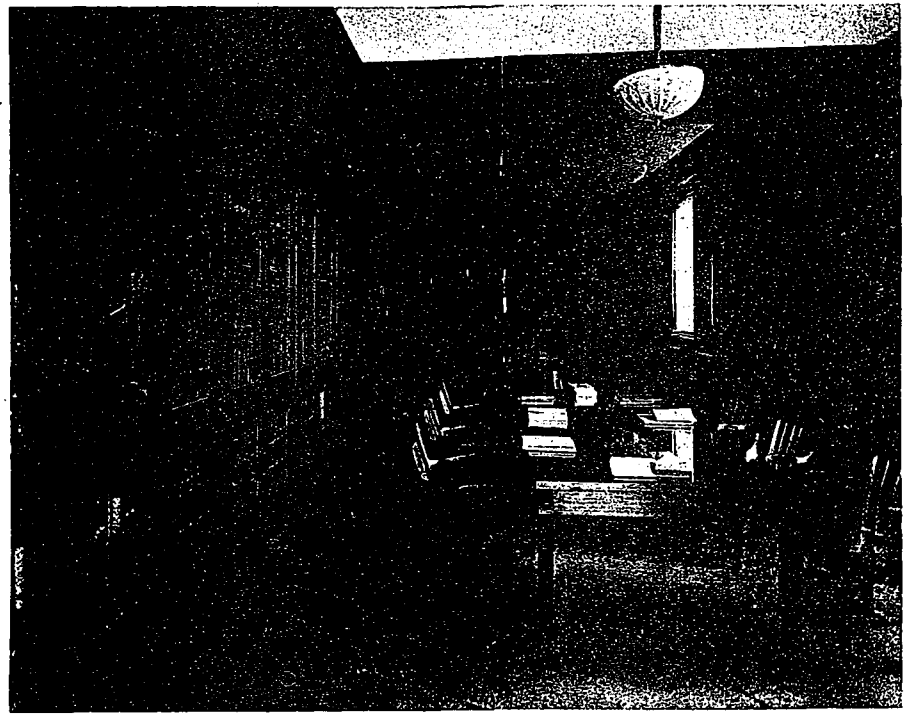
Notwithstanding the intrinsic strength of the vault, its physical resistance elements have been reenforced with two separate systems of electric protection, an isolated or individual alarm system, which in case of an attack would sound upon 12 inch gongs in the building and 24 inch gongs located high upon the Dominion Square facade of the building, and a central office connection with the local electric protection company. These systems are both independent and inter-related so that under normal conditions both would respond immediately to any attack, or if one system were to accidentally go out of commission, the other would give notice.

These systems independent or together, give alarm not only in event of attack by burglars or mob, but effectually prevent employees of the company from entering the vault out of office hours without giving alarm.

The interior of the vault is electrically lighted through individual wiring circuits built through the vault construction in a complicated course at the bottom of the work; the lights being operated with standard push button



BOARD ROOM.



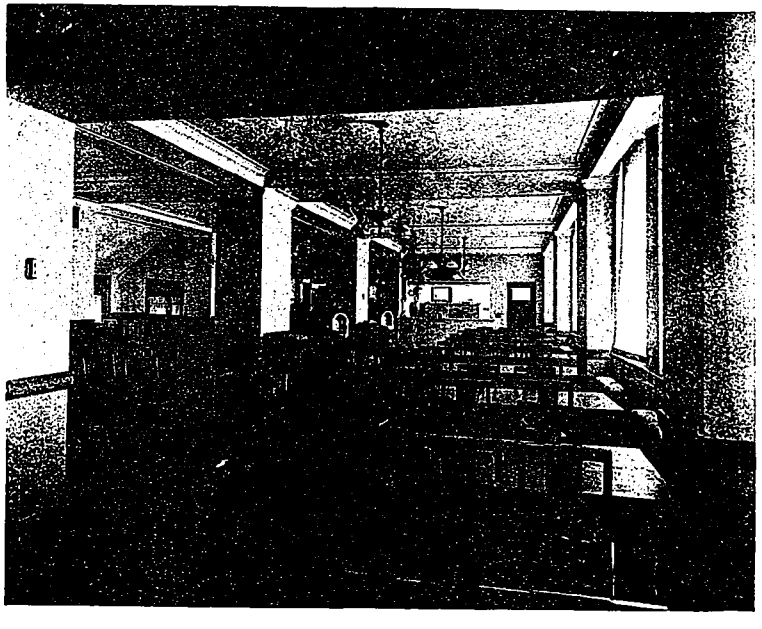
VIEW LOOKING INTO LIBRARY.

GIRLS' REST ROOM.

MAIN DINING HALL.

The Sun Life Building Montreal

DARLING & PEARSON, ARCHITECTS.



CHIEF CLERK'S DINING HALL.

switches, checked by pilot lights near the front entrance.

The interior ventilating fans are operated from the lighting circuits and in additions, messenger calls have been installed, also trouble alarm buttons to bring watchmen throughout the building to the vault if necessary.

A telephone has also been installed within the vault for use during the day and also as a means of outside communication for any person who may become accidentally locked within the vault at night; and in this connection, because such accidents have occurred in the past, a warning alarm bell rings during the operation of closing the doors. Notwithstanding this precaution and the routine patrol of the vault at closing time, in case a person should be locked in, he would find a pair of lights burning all night, and would receive telephone instructions which would permit of his being liberated in a very short time, as he would be able to unlock the time lock dogging devices from the inside, and the officers would operate the combination locks and affect his release, after which the time-lock would automatically re-set and the combination would be locked.

All interior surfaces of the vault are painted upon rubbed filler, the ceiling being finished in stippled zinc white and the walls, including the exposed surfaces of the interior safes, are painted in pearl grey with rubbed varnished surfaces, and the floor is finished with cork tile and cove base, medium shade.

Interior Equipment.

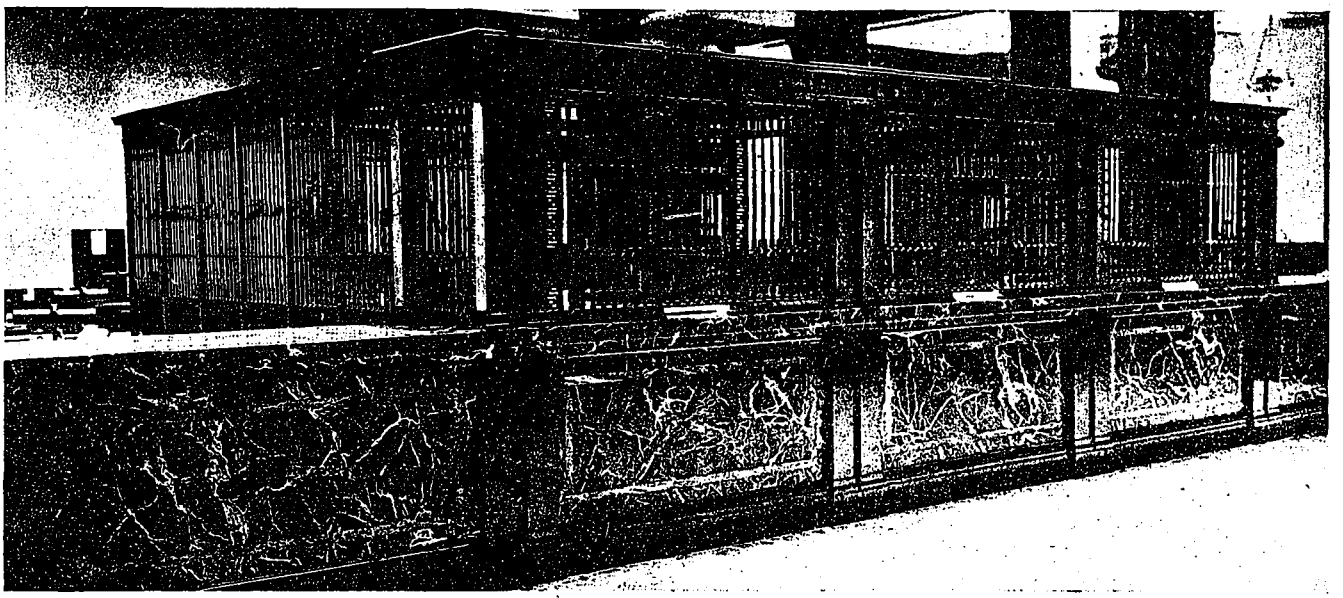
Both main and emergency entrances are guarded with heavy polished steel grill gates and the forward quarter of the vault is divided from the rear three-quarters by a steel grill and gate of similar design. The present equipment consists of a series of full height safes, containing security files, shelving, etc., arranged to store the company's securities in the most convenient manner. These safes are locked with heavy bolt work, and double custody combination locks, and includes all of the up-to-date principles and devices known to the safe making art.

Equipment Features.

In the evolution of the floor plans and arrangements of the departments, of course consideration was given to the relation of one department to another and convenience of the public.

The basement contains supply and receiving departments, security vault and examination rooms, vault for old records, locker rooms and toilets. The ground floor contains the departments to which the public have constant access.

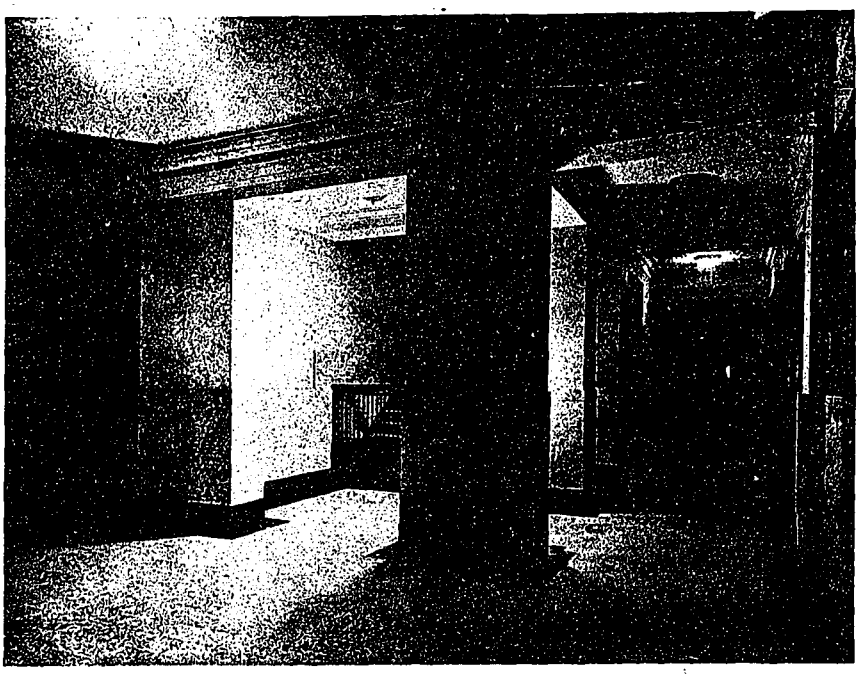
The first floor includes the executive officers rooms, board room and actuarial departments; on the next floor are the policy and premium departments together with smaller associated divisions; the third and fourth floors house nonforfeiture, legal, library, mailing, agency, etc.; on the sixth floor are the kitchens and dining rooms for officers and employees and welfare and rest rooms for both sexes.



COUNTER IN MAIN HALL.

From the basement to fifth floors inclusive in each wing have been built continuous fire-proof vaults, which gives each floor two vaults, approximately 19 ft. by 8 ft., some of them two floors high (where height of ceilings permit) in which are stored important documental records. The record vault in the basement is 43 ft. x 11 ft. and is three tiers in height. In this vault are housed the older records of the company to which inspection is not frequent but security and accessibility are necessary.

In front of the vault space running through the floors, are located the central pipe chases



TYPICAL UPPER CORRIDOR.

from which practically all miscellaneous services radiate.

The furniture has been manufactured from the latest and most-up-to-date designs. All desks are constructed on the sanitary principle with working surfaces of cork which make the most durable and satisfactory top. The filing cases, bookcases, etc, are built in units in order to lend themselves to future expansion and readjustments which are constant factors to be considered.

Examination of the exterior of the building will indicate the intention of a future addition to complete the edifice covering the entire block. The ultimate scheme has been kept constantly in mind in the planning of the present building mechanically, as well as architecturally, and provision has been made in the present structure with this end in view.

Very careful thought has been given to the convenience of the public and the company staff. Bookkeepers' desks are provided with fireproof safes underneath to carry the current records; this is advantageous in several ways; no time is lost in the transportation of books to and from the vaults each day; if a clerk is obliged to stay late to complete a record, he is not keeping the main vaults open and he has no access except o his own books.

All locks on groups of furniture to which an officer or employee have access are controlled by the same key, so that he has but one key to carry, a feature that required very careful study and attention in planning and manufacture.

Where occasion required it, specially designed unit cases were installed to file records and blanks in quantities, in order that all possible floor space might be conserved.

The natural light of the building is exceptional, there being practically no dark spaces, the building plan and location producing this ideal condition.

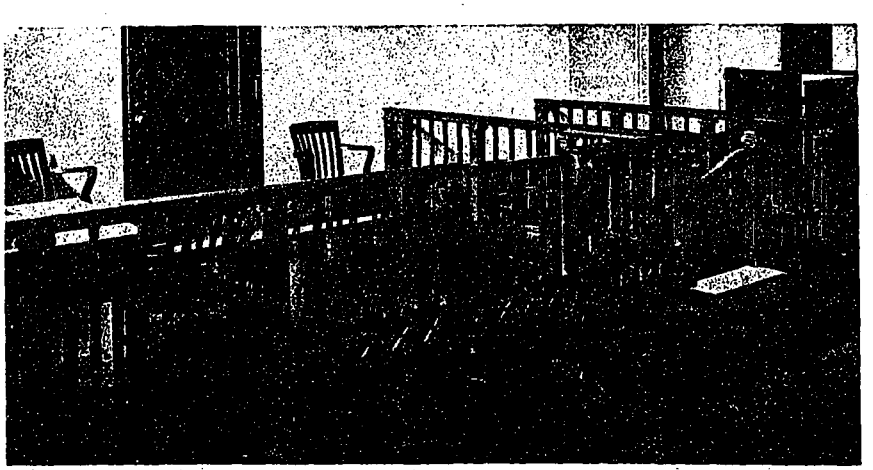
The low tension equipment consisting of telephones, push buttons and annunciators, is the latest model and the best of all previous installations together with additional improvements.

The telephone service is interior communicating or exterior, and a possible combination of both over the one instrument. This is accomplished by means of push buttons located in the desk tops. Every telephone instrument may be connected to every other instrument or any instrument installed in future without any change in the present wiring.

The push button and annunciator system is capable of any expansion in the future or any changes in the present equipment at a minimum of expense. A desk may be disconnected electrically at one location in one minute and relocated in any other department in the building and given immediate service in the new location, the mechanic making the electrical change doing his work outside of the offices.

The power is supplied by duplicate sets of storage batteries alternated every six hours, the testing and recharging of low voltage cells being accomplished through an automatic switchboard.

The plan of the building is also ideal in that it made possible an installation of electrical subjunction and distribution boxes on each floor and furniture outlets so lo-



DETAIL OF BRONZE RAILING.

cated that they will accomodate any reasonable relocation of furniture in the near future. A study of accompanying portions of electrical plans illustrate the various possible locations of furniture to secure service from the existing outlets.

HEATING APPARATUS AND CIRCULATING PUMPS.

The offices equipment and facilities for the accurate housing of policy and other records formed a very important consideration in the planning of the Sun Life Building. In order that no detail would be overlooked, experts were engaged by the architects to cooperate in determining the requirements of each officer and clerk. As the result of this the necessary equipment in the case of each department and individual has been worked out and standardized according to a carefully prepared schedule, producing in its final effect a uniform, symmetrical and businesslike arrangement.

Steel equipment and furniture is used throughout the scheme, even to the desks and minor accessories. The essential governing conditions made it necessary in working out the arrangement to consider not only the number of square feet to be occupied by each clerk and the position of the various desks, chairs and filing cabinets, but also the elevations and construction details of each article so as to obtain a general harmonious result.

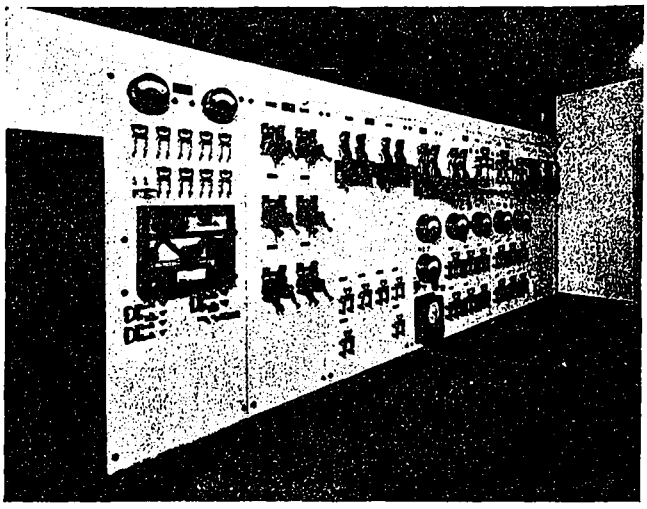
Besides the adaptability of steel for the protecting of valuable books and documents, the improved method of giving it the character of a wood finish enhances its use for this purpose. An evidence of this is seen in the pedestal of the desks, which perfectly match the solid mahogany tops. In these desks the pedestal contains a number of drawers, or in the case of the book-keepers, is locked by heavy doors forming a safe and convenient place for their records and making it unnecessary for them to cart heavy books back and forth from the vaults.

The idea of steel is also carried out in reference to the twenty-one vaults, the largest one of which, in the basement, being used for the storage of old records. The shelving and filing cases here are all accessibly arranged for speedy reference to records which have ceased to be active. These vaults are continued on each floor of the building.

All the shelving is adjustable on inch centers, and the filing cabinets, some of which are arranged in the vaults, are built on the unit principle, so that at any time the rearrangement of the vaults become necessary, the entire equipment is flexible and permits of such adjustments as changing conditions may require.

Over four hundred clerks altogether are em-

ELEVATOR AND COMPRESSED AIR EQUIPMENT.



MAIN SWITCHBOARD.

BOILER ROOM.

ployed in this institution, and each one has his own individual steel locker arranged in the centre of the washrooms. Besides, each clerk has his own individual umbrella rack, which is made of steel and equipped with an ingenious device whereby the umbrella is securely locked and a metal check automatically released which is kept by the clerk until such time as his umbrella is required.

Other features of the equipment consists of steel trucks for the moving of heavy records from one department to another, and such minor accessories as the waste paper baskets, which are also made of this material.

The entire installation represented in all twenty-five carloads of furniture and equipment, all of which was made in Canada and represents a very high standard of workmanship.

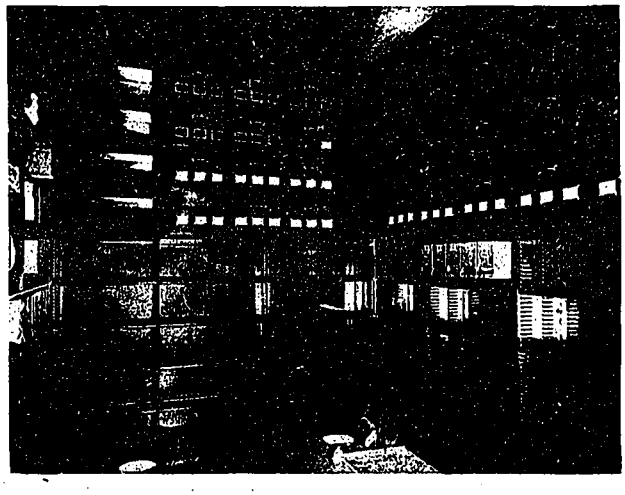
Plastering on Concrete

Plastering on concrete is materially different from plastering on other surfaces, as the expulsion of the surplus water during crystallisation and drying out, together with insufficient adhesiveness, serves to break the bond set up under the trowel. Good bond plasters are specially compounded so that the usual expulsion of surplus water during crystallisation is controlled and the bond with concrete is not materially injured. Although no plaster can successfully withstand the expulsion of the moisture during the drying out of concrete which occasionally brings with it an efflorescence which is deposited on the surface of the concrete, yet special bond plasters are fairly reliable in this regard.

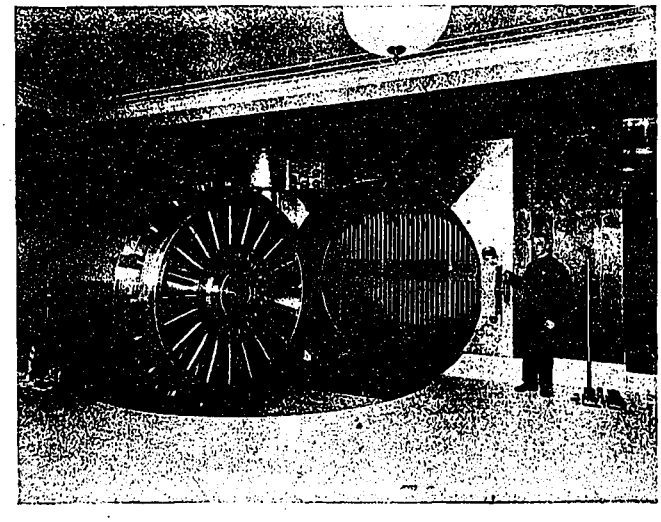
A well-known construction company recommends the following method of attaching plaster to concrete:—

Make the concrete as porous as possible by omitting sand from the mix and by not spading the concrete to the forms. Where plaster is required underneath a floor or roof, if the forms are sprinkled with ½ inch stone before the concrete is placed, a rough surface will be obtained to which plaster will key nicely.

To attach Portland cement plaster to smooth concrete, hack the surface with a point, brush the surface thoroughly to get the dust out, wash it, and in every case make sure that the under concrete is thoroughly wet before the plaster is



STEEL SHELVING AND VAULT EQUIPMENT.



SECURITY VAULT.

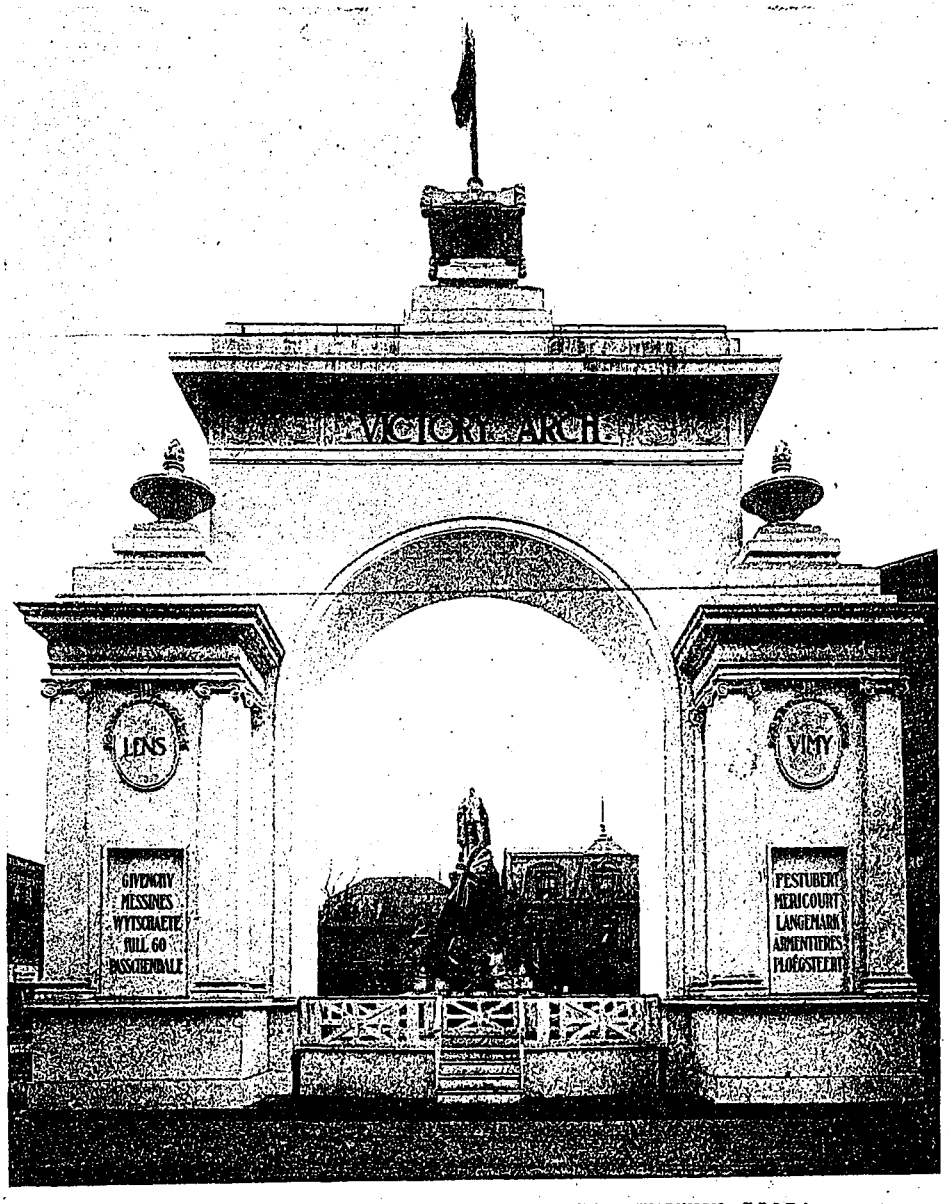
applied, otherwise the water will be soaked out of the plaster and the plaster will not adhere. Wash the surface with grout just ahead of the plaster and make sure that the plaster is applied before the grout has time to set.

Victory Loan Arch, Montreal

The arch shown in the accompanying view was built in Montreal as a part of the decorations during the recent Victory Loan Campaign in Canada. It was dedicated by the Bishop of Montreal on November 11th, and by a fortunate coincident word was received on the morning of the dedication that the Armistice was signed.

It was erected in lath and plaster and the total height from the base to the top of the flag staff was 70 feet. There is a proposal before the city to re-erect it in marble in which case the design will be considerably modified and given more thought.

The design was given to the Victory Loan Committee by the architect and the work and modelling were carried out at cost by well known local contractors. The arch stood facing St. Catherine street from Phillips Square, and on the four sides of its post were inscribed the names of the many important and historic engagements in which the Canadians fought.



VICTORY LOAN ARCH, MONTREAL, DESIGNED BY SEPTIMUS WARWICK, F.R.I.B.A.

Ontario Housing Essays

Mr. Albert H. Leake and Mrs. James Elgin Wetherell have been named as first and second prize winners, respectively, in connection with the essays submitted on the best solution of the housing problem in Ontario. The competition which showed wide interest and considerable study of the subject, was judged by Mr. C. H. Acton Bond, President of the Ontario Association of Architects, Rev. Peter Bryce and Dr. Horace L. Brittain of the Bureau of Municipal Research.

Registration List—Ottawa Conference

Association of Canadian Building and Construction Industries

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John Foley	Ottawa Construction Co.	Ottawa.
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James A. Hughes	James A. Hughes	Welland.
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Thos. Painter	Thos. Painter & Sons	Toronto.
F. N. Paulin	Canadian Engineering and Contracting Co.	Hamilton.
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E. E. Poole	Poole Construction Co., Ltd.	Regina.
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W. A. Quinlan	Quinlin & Robertson, Ltd.	Montreal.
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Wm. J. Hynes	W. J. Hynes, Limited	Toronto.
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D. M. Rowe	D. M. Rowe & Co.	Toronto.
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A. J. Brennan	Municipality of Welland	Welland.
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James A. Burnard	Seaman Kent Co.	Meaford.
A. K. Cameron	Metal Shingle & Siding Co.	Montreal.
Thos. M. Burkett	Thos. M. Burkett	Ottawa.
C. A. Chilver	Merle, Merle & Ray	Walkerville.
C. A. Chilver	C. A. Chilver Co., Ltd.	Walkerville.
Arthur Cope	A. Cope & Son	Hamilton.
Chas. V. Clark	Darling Bros., Ltd.	Montreal.
David J. Davidge	Toronto Builders' Exchange	Toronto.
A. M. Davis	McAuliffe, Davis Lumber Co.	Ottawa.
J. P. Dupuis	J. P. Dupuis, Ltd.	Verdun.
Robt. F. Dykes	T. A. Morrison & Co.	Montreal.
John Eadie	Dingwall, Cotts & Co.	Vancouver.
E. R. Eaton	J. R. Eaton & Sons, Ltd.	Orillia.
Gordon C. Edwards	W. C. Edwards & Co.	Ottawa.
F. W. E. Smonder	Gurney, Massey Co., Ltd.	Montreal.
W. F. Evans	Baines & Peckover	Toronto.
K. H. Falkiner	Allith Manufacturing Co., Ltd.	Hamilton.
O. Forest	Ottawa Fireproof Supply Co.	Ottawa.
P. A. Galarneau	Citadel Brick Co., Ltd.	Quebec.
F. A. Gillis	F. A. Gillis Co., Ltd.	Halifax.
G. B. Greene	General Supply Co. of Canada.	Ottawa.
J. Fraser Gregory	Murray & Gregory, Ltd.	St. John.
R. A. Hanraker	Can. Johns-Manville Co., Ltd.	Montreal.
D. P. Hatch	The Barrett Company, Ltd.	Montreal.
Sackville Hill	Sackville Hill	Hamilton.
J. D. Johnson	Canada Cement Co.	Montreal.
John S. Hooper	Winnipeg Builders' Exchange.	Winnipeg.
Mayor J. M. Hughes	Municipality of Kingston	Kingston.
Geo. C. Keithering	Industrial Board	St. Thomas.
T. Sidney Kirby	T. Sidney Kirby Co.	Ottawa.
John F. Lawson	Pedlar People, Ltd.	Oshawa.
Geo. J. Lipnert	Municipality of Kitchener.	Kitchener.
J. M. C. Lockerby	Alex. McArthur Co., Ltd.	Montreal.
J. A. Lafres	Canada Cement Co.	Montreal.
Chas. Lowrey	Queenston Quarry Co.	St Davids.
Thos. McCord	S. McCord	Toronto.
D. B. McCoy	Steel Company of Canada, Ltd.	Hamilton.
F. B. McFarren	Interprovincial Brick Co.	Toronto.
E. F. McGovern	Northern Electric Co., Ltd.	Ottawa.
D. J. MacKenzie	D. J. McKenzie & Co.	Ottawa.
D. J. MacKenzie	National Brick Co. of Lanrairie	Montreal.
Norman McLean	Contractors Master Builders Assn.	Vancouver.
H. P. McMahon	Municipality of St. Thomas	St. Thomas.
J. Arthur Marrier	Marier & Tremblay, Ltd.	Quebec City.
Geo. M. Mason	Geo. M. Mason, Ltd.	Ottawa.
W. G. Massiah	Sherwin-Williams	Ottawa.
Capt. F. G. Moseley	Canadian Fairbanks-Morse Co.	Montreal.
W. H. Murphy	Pease Foundry Company	Ottawa.
John Newstead	Municipality of Guelph	Guelph.
G. Barclay Nicol	General Supply Co. of Railway Contractors & Mill Supplies.	Ottawa.
J. P. O'Shea	J. P. O'Shea & Co.	Montreal.
O. N. Parent	Canadian Yale & Towne, Ltd.	St. Catharines.
Hugh Peel	Pedlar People, Ltd.	Ottawa.
Chas. T. Penn	Indiana Quarries Co.—Cleveland Stone Co.	Toronto.
W. E. Ramsey	Pedlar People, Ltd.	Montreal.
E. Ramus	Builders' Sales, Ltd.	Ottawa.
Wm. Rutherford	Wm. Rutherford & Sons Co.	Montreal.
R. G. Saville	Port Hope Sanitary Mfg. Co.	Montreal.
A. G. Rose	Jas. Davidson & Sons	Ottawa.
J. H. Shaver	C. A. Dunham Co., Ltd.	Toronto.
Jas. G. Shearer	Jas. G. Shearer Co., Ltd.	
C. F. Smallpiece	Taylor Forbes Co., Ltd.	Montreal.
	Sumner & Co.	Moncton.
G. J. Steele	Standard Brick Co.	Toronto.
J. F. Tilton	W. H. Thorne & Co., Ltd.	St. John.
Gerald H. Watkinson	Taylor Forbes Co., Ltd.	Guelph.
A. H. Webster	Webster & Sons, Ltd.	Montreal.
F. W. White	McDougall, Limited	Ottawa.
Geo. H. Whitlock	Whitlock-Marriet, Ltd.	Moose Jaw.
Geo. H. Whitlock	Moose Jaw Bd. of Trade	Moose Jaw.
Walter H. Wickware	Walter H. Wickware	Ottawa.
R. Wright	Wright & Co.	Ottawa.

DELEGATES AT THE OTTAWA BUILDING CONFERENCE AT WHICH THE ASSOCIATION OF CANADIAN BUILDING AND CONSTRUCTION INDUSTRIES WAS ORGANIZED.

The Ottawa Conference

The large number of delegates registering together with the prominence and standing of the firms represented, not only made the Ottawa conference a notable event, but placed the newly formed association of builders and supply dealers on a thoroughly national basis right at the very start.

In fact the conference resolved itself into a very busy three days period, which crowded into the several sessions a thorough discussion of all matters up for consideration. Enthusiasm characterized the proceedings throughout, reflecting great credit on those in charge of the preliminary arrangements as well as denoting a spirit of unity and co-operation which speaks assuringly of the association's success as a useful and influential body. Beside the business transacted during the sessions, addresses were delivered by a number of Cabinet Ministers who by virtue of their high official position gave evidence of a cordial attitude on the part of the government in reference to the purpose and objects of the meeting.

The conference opened with a short morning sessions in November 26th, following the late arrival of the train carrying the Toronto delegation. This meeting was devoted entirely to the selection of temporary officers and the appointment of the various necessary committees. The work of organization was expeditiously carried out, due to a programme worked out at a meeting held on the previous day by the committee in charge of preliminary arrangements.

A resolution was adopted that the conference be called the "Conference of Canadian Building Industries," and divided into three sections, viz., general contractors' section, sub-contractors' section and building supply section.

Mr. Anglin, Montreal, was elected chairman of the conference; Mr. F. Armstrong, Toronto, Vice-Chairman; Mr. A. H. Dancy, Toronto, Hon. Secretary; and G. A. Crain, Ottawa, Hon. Treasurer.

It was also decided to include in the executive the following as ex-offico members: Mr. W. A. McLean, Vancouver, temporary chairman of the general contractors' section; W. A. Mattice, Ottawa, temporary chairman of the sub-contractors' section; and W. E. Ramsey, Montreal, temporary chairman of the supply dealers' section.

Hon. A. K. McLean, chairman of the Reconstruction Committee of the Privy Council addressed the delegates at the first day's luncheon, following a brief speech by Mayor Fisher welcoming the delegates to Ottawa which as the capital of Canada, he said, belonged to all sections of the country. In the course of his remarks the Mayor facetiously referred to the condition whereby the Government was placed under the necessity of renting buildings to house various of its department, stating that he hoped that the day was not very far distant when suitable structures would be erected, in keeping with the dignity and purpose for which they were to serve. The question of housing was

Conference Committees

Building Situation.

M. P. Davis, Ottawa (chairman); W. A. Mattice, Ottawa; James G. Shearer, Montreal; F. A. Gillis, Halifax; H. H. Vaughan, Montreal; H. Hayman, London; Ed. Cass, Winnipeg; J. D. Johnston, Toronto; Norman McLean, Vancouver; John Foley, Ottawa; W. A. Wilson, Regina; Col. J. A. Little, Port Arthur; A. Dinnis, Toronto; Claude F. Secord, Brantford; F. W. Paulin, Hamilton; J. Mantel, Hamilton; F. McCausland, Toronto; M. Gibson, Toronto; W. Palmer, Chatham; J. Douglas, Ottawa; F. Armstrong, Toronto; F. B. McFarren, Toronto; C. T. Pearce, Hamilton; W. F. Evans, Toronto; Robt. F. Dykes, Montreal.

Business Relations.

Gordon C. Edwards, Ottawa (chairman); E. E. Poole, Regina; Jos. Gosselin, Jr., Quebec; J. W. Litton, Kingston; H. Elgie, Toronto; W. A. Chestnut, Toronto; J. F. Gregory, St. John, N.B.; Stewart Hughes, Toronto; G. A. Perrier, Halifax; H. Dancy, Toronto; J. A. Grant, St. John; W. M. Irving, Montreal; W. Doran, Ottawa; Ed. Cass, Winnipeg; W. S. Bellows, Fort William; A. Matthews, Toronto; J. Ritchie, Ottawa; W. A. Mattice, Ottawa; G. Oakley, Jr., Toronto; A. Nobbs, London; C. T. Pearce, Hamilton; Capt. F. Moseley, Montreal; A. Cameron, Montreal; M. Gibson, Toronto; E. C. McGovern, Ottawa; W. Dillon, Toronto.

Points of Order.

E. R. Dennis, London (chairman); R. F. Dykes, Montreal; Walter Davidson, Toronto.

Finance.

G. A. Crain, Ottawa (chairman); Alex. Bremner, Montreal; W. A. Mattice, Ottawa; Geo. E. Stocker, Toronto.

Publicity.

E. A. Saunders, Halifax (chairman); G. B. Greene, Ottawa; J. S. Hooper, Winnipeg; Norman McLean, Vancouver; E. R. Dennis, London; H. P. MacMahon, St. Thomas; Weston Wrigley, Toronto; Major L. C. Reynolds, Toronto; A. E. Jennings, Toronto; R. H. Parson (official stenographer), Montreal.

Permanent Organization.

Geo. Oakley, Jr., Toronto (chairman); W. E. Ramsay, Montreal; C. Smallpiece, Montreal; E. R. Reid, St. John; E. A. Saunders, Halifax; W. A. Wilson, Regina; Geo. Hayman, London; Thomas Chick, Windsor; John Eadie, Vancouver; A. Matthews, Toronto; G. H. Whitlock, Moose Jaw.

Resolutions and Order of Business.

C. T. Pearce, Hamilton (chairman); Col. J. A. Little, Port Arthur; E. E. Poole, Regina; Albert Tomlinson, Chatham; P. A. Galarneau, Quebec.

Attendance, Membership and Welfare.

Martin Lindsay, Toronto (chairman); J. S. Hooper, Winnipeg; F. B. Locker, Montreal; E. R. Reid, St. John; N. K. Reid, Toronto; C. T. Penn, Toronto.

Conference Arrangements.

W. A. Mattice, Ottawa (chairman); J. R. Douglas, Ottawa; G. A. Crain, Ottawa; Hugh Peel, Ottawa; G. H. Watkinson, Ottawa.

Legal Affairs.

J. A. Grant, St. John, N.B. (chairman); Ed. Cass, Winnipeg; Jno. V. Gray, Toronto; E. E. Poole, Regina; W. Dillon, Toronto; James Phinnemore, Toronto; Geo. Oakley, Jr., Toronto; Daniel P. Hatch, Montreal; W. P. Baxter, Montreal; W. F. Evans, Toronto.

Labor Conditions.

G. A. Crain, Ottawa (chairman); D. K. Trotter, Montreal; W. A. Quinlan, Montreal; J. R. Douglas, Ottawa; J. F. Schultz, Brantford; W. J. Green, St. Thomas; Alex. I. Garvock, Ottawa; Wm. Weller, Toronto; Jno. W. Litton, Kingston; F. C. Woodroffe, Montreal; Thos. Painter, Toronto; W. S. Bellows, Fort William; Jos. Gosselin, Jr., Quebec; W. A. Wilson, Regina; J. Phinnemore, Toronto; H. Palmer, Chatham; A. Tomlinson, Chatham; N. K. Reid, Toronto; J. T. Blyth, Ottawa; G. F. Frankland, Toronto; E. R. Dennis, London; J. Mantel, Hamilton; G. Perrier, Halifax; A. Matthews, Toronto.

Code of Ethics.

A. K. Cameron, Montreal (chairman); G. H. Watkinson, Ottawa; J. H. Shaver, Toronto; Geo. E. Stocker, Toronto; C. A. Chilver, Walkerville; W. Doran, Ottawa; J. W. Seeus, Montreal; E. Geery, London; J. A. Hughes, Toronto; N. K. Reid, Toronto; C. A. Gardner, Toronto; Geo. A. Perrier, Halifax.

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also a difficult problem, but with the present high cost of materials and low interest on investment, he could hardly see how conditions would be immediately improved without government assistance.

Other guests present at the luncheon were Architect John A. Pearson, Toronto, at present in charge of the reconstruction of the Parliament buildings, and Mr. Richard Wright, Chief Architect of the Department of Public Works.

In introducing Hon. A. K. McLean, Mr. Anglin stated that as a result of the conference the interests which it represented would be in a position to co-operate fully with any department of the government in reference to all questions affecting the building industry. Moreover, this willingness to help would apply to any policy which the government might initiate whether it referred to the housing problem, a general survey of the building situation in Canada, or whether it related to any demand for the supplying of building materials to the devastated areas abroad.

Hon. A. K. McLean's Address.

In addressing the delegates, Hon. A. K. McLean laid emphasis on the importance of the conference by stating that next to agriculture the building trades employed more men than any other industry. Canada has just passed through a trying period, but her resources in financing both war requirements and trade were equal to the emergency. The transitions from war to work would not likely be as difficult as the transition from work to war had proved. One of our attributes was a capacity to develope and with vast resources at our command, we should face the future with courage and confidence. Undoubtedly immigration would flow in shortly, in vast numbers. The debt of Canada was exceedingly large for a small country, but with the incoming of new settlers that would become less per capita as the population increased, and when we came to have a population of twelve million, the national debt would be reduced to one half.

The paramount issue at the present was the problem of reconstruction. Huge quantities of materials would be required in restoring the destroyed portions of Belgium and France. It was estimated that ten billion dollars will be needed to re-establish France alone. Neither of these countries were in a position to finance the cost, so the matter had resolved itself into

J. P. ANGLIN, PRESIDENT

FRED ARMSTRONG, VICE-CHAIRMAN.

A. H. DANCY, HON. SECRETARY.

OFFICERS ELECTED BY THE NEWLY FORMED ASSOCIATION OF THE CANADIAN BUILDING AND CONSTRUCTION INDUSTRIES.

an inter-allied problem. Canada as a participant in the war, also had a right to share in the business resulting from that source. Already the government has made representations to the various powers who will assist the devastated countries, of our ability and capacity to supply some of the materials which will be needed, as well as our ability and willingness to finance these people at least to the extent of what we may supply them in materials. One assurance was that large quantities of lumber would be purchased by these countries for building purposes. While the arrangements being made could not at present be disclosed, as far as firms dealing in this class of materials were concerned, they were sure to find a big market.

In England they proposed to deal with the housing situation by the erection of between 300,000 and 400,000 buildings, not all in one or two years, but that was the program laid out. The manufacturers of building products in Canada could look to participate in the demand for materials necessary to this great development. In fact, as regards the field outside of Canada we can count on a large share of business that will contribute to our prosperity and help solve any problem arising from the demobilization of our soldiers and war workers.

Referring to the effects of the war on construction, the Minister said that these could be summarized as follows: First, an increased demand for houses; second, cessation in the repair of buildings and structures of all kinds; third, an increase in the cost of building and interest rates; and fourth, a lessened supply of building materials with a consequent increase in prices. Available statistics showed that in 1912 thirty-five cities in Canada spent $185,000,000 on building construction, quite apart from undertakings in the nature of railway work, dock and wharf improvements or similar public projects. For the year 1913, the same cities spent $165,000,000; while the expenditure for the last three or four years has not exceeded $40,000,000 annually. Taking these figures into consideration, the deferred building projects during the period mentioned, amounted to at least $100,000,000 per annum, or speaking more generally, including Canada at large, of postponed work representing approximately one billion dollars. Much of this work would presumably be gone ahead with and would result in an activity which promised more prosperous times for the building trades.

Referring to Mayor Fisher's suggestion that as an immediate remedy the government should go on building and should lend money for this purpose to others, he did not totally commit himself to this, but believed that it should be considered and even favored within certain restrictions. It would prove an easy solution, if practicable. Material and labor were both available and that fact that we have the capital necessary for any problem of construction was shown by our last Victory Loan. He believed that capital should be available for any investment of a safe character. Unfortunately as regards the building industry there was one deterring factor, and that was the probable loss for three, five or seven years, covering the depreciation from the present abnormal building costs. Building, however, should not cease on that account. There could not be any rapid decline in prices in this country or in the world. The prices of food would remain where they were for sometime. Never has such a shortage of food existed as at present, and

this would play an important part in the prices of building materials and other commodities.

While the increased cost of construction was undoubtedly a serious disadvantage, he was not prepared to offer a solution of the problem, if indeed it should ultimately prove a problem. He understood that certain committees were to be formed to discuss these problems, and he hoped arrangements would be made for the various members of the government to meet the committees and receive any viewpoints of the conference as to how these problems might be solved. Every one should assist in so important a matter.

In the building programme, the governments, provincial and local, which have deferred construction programmes, should resume them at once. There was no restrictions to-day as regards the issuing of securities, so that these bodies were at liberty to procure the money for any work they were contemplating. Moreover it was the duty of all representative bodies to lead the people of Canada in the present unsettled state of affairs.

In conclusion, Mr. McLean declared that the war had taught us the value of standardization, economy, up-to-date machinery, co-operation and organization. Our industries were perhaps not subject to criticism for the lack of these qualities before, for we could not look for these factors to be very prominent in so young a country. But by applying these factors which had contributed so much to our recent success, to the industries of peace we cannot help but benefit, even to a degree which might absorb in efficiency and improved methods much of the enhanced cost of today. Canada had learned to run the war while waging it, and we would learn to meet and solve our problems as the days go by, particularly if we make up our minds to meet them successfully.

AFTERNOON SESSION, NOV. 26th.

Business of the conference was resumed at three o'clock. A number of communications were read by Mr. Anglin, congratulating the conference and heartily approving its objects. These included a letter and telegram from President Garber of the Associated General Contractor of America, recently formed at Chicago, expressing a desire for affiliation between the two bodies. Also a telegram from President Ouelette of the Royal Architectural Institute of Canada assuring the support of the Institute as regards the protest it understood the conference was going to make to the Government against the employment of alien architects and contractors on Canadian work.

At this meeting, Mr. Fred Armstrong, Vice-Chairman, was requested to preside. This session resolved itself into a short period consisting mainly of the business of appointing three committees coming under the respective headings of Legal Affairs, Code of Ethics, and Labor Conditions.

Mr. Ramsey of Montreal, proposed that the conference adopt the slogan of "Build, Boost, or Bust," which he said had been suggested to him by Hon. A. K. MacLean. It certainly typified the spirit of the meeting and was unanimously approved.

The general meeting was then adjourned to to permit the committee members of the three sections to meet separately to prepare their reports and recommendations. The temporary officers chosen in relation to the various sections were as follows:

General contractors: Chairman, Mr. Norman McLean, Vancouver; Vice-Chairman, W. S. Bellows, Fort William; Secretary, E. R. Reid, St. John.

Trade Section: Chairman, W. A. Mattice, Ottawa; Vice-Chairman, W. E. Dillon, Toronto; Secretary, E. R. Dinnis, London.

Supply Section: Chairman, W. E. Ramsey, Montreal; Vice-Chairman, M. F. Gibson, Toronto; Secretary, W. P. Evans, Toronto.

MORNING SESSION, NOV. 27TH.

In calling the conference again to order in general session, the Chairman, Mr. Armstrong, urged upon the meeting the necessity of having all delegates present owing to importance of the various sub-committee reports to be considered.

A preliminary report was presented by Mr. Grant, Chairman of Committee of business relations, recommending that a committee be appointed by the conference to draft a suitable cost plus form of contract. This was adopted and Messrs. Grant, Elgie, McGovern and Poole were appointed for this purpose. It was also recommended that the conference as a whole should consider the question of foreign competition, as well as a memorial which the Ontario Builders' Supply Association had prepared on this subject.

The report of the committee on Permanent Organization embodied the four following resolutions:

REPORT ON PERMANENT ORGANIZATION.

Resolution 1.

Whereas there is at the present time no central organization in Canada having the interests of the building and construction business under its hand and

Whereas we believe that for this reason no stable conditions exist in this business, such a situation resulting in the failure to build up a reliable and virile profession,

Then be it resolved that for the betterment of these industries such a national organization shall be formed, whose duty shall be to establish and promote a new standard in the various phases of construction enterprise and,

That it is desirable that the headquarters of the proposed organization shall be the city of Ottawa,

That the name of the proposed organization shall be the Association of Canadian Building Industries,

That all individuals, firms or corporations, engaged in any branch of building industry, having their permanent offices in the Dominion of Canada shall be eligible for membership,

That the compiling of the by-laws and constitution of the association be left in the hands of the National Council.

Resolution 2.

Whereas we assembled here for the purpose of forming a national organization of Canadian building industries, fully recognize the existence of many Builders' Exchanges and kindred organizations throughout Canada, which are doing excellent work of local interest in the various cities and towns in which they are active, and;

Whereas the desire of this national organization is to assist and encourage their work for the betterment of interests involved;

Therefore be it resolved that all existing Builders' Exchanges, associations and bodies composed of similar interests, and in the absence of such, that the Board of Trade of any locality be invited to affiliate and co-operate with this national body;

That the assessment of annual fees relating to existing co-operative organizations, as well as individual firms and corporations be determined by the National Council.

Resolution 3.

That the executive of this national association be composed of a minimum of twenty-five members, selected by geographical location and embracing every section of the Dominion, including in its body a president, first vice-president, second vice-president, honorary secretary, honorary treasurer; with power to add to its membership as necessity demands.

That the proposed by-laws provide that the office of president shall be filled by a general contractor, first vice-president, a sub or trade contractor, and second vice-president, a supply dealer or manufacturer.

Considerable discussion followed in reference to the above resolutions. Some of the delegates were of the opinion that the name of the organization should be more comprehensive so as to cover the entire construction field. Mr. Sparling, Toronto, made a motion to this effect, seconded by Mr. Painter, Toronto, and an amendment was accordingly made inserting the words "and Construction" after the word "Building" in the name of the association.

Another point raised was the exact meaning of "permanent offices" in clause 4 of Resolution 1. It was felt that this term should be clearly defined. Mr. Oakley explained that the intention was not to keep firms of other countries from coming into Canada, but to see that when they did come, they would become permanently established here.

Clause 2 of Resolution 1, was also made more specific on motion of Mr. Baxter by substituting the words "the section of the Board of Trade relating to building and construction industries" instead of "Board of Trade."

Mr. Dillon, Toronto, strenuously objected to the clause in Resolutions 4, restricting the office of presidency to a general contractor, and this was amended on his motion so that all members of the association would be eligible to any office.

The above resolutions were adopted in their amended form.

Additional discussion ensued in reference to the preamble of resolution 1. Mr. Norman McLean, Vancouver, urged that the wording of the preamble be enlarged to include the words "and for the purpose of aiding the government in all matters relating or pertaining thereto." This the chair held was already implied as the duty of every citizen, and was ruled against as unnecessary.

Supported, however, by Mr. G. B. Greene and a number of others who felt that no doubt should exist implying selfish motives, a motion, duly seconded, was put to the conference, providing that the preamble of Resolution 1 be referred back to the committee for further consideration, and was lost by a very close vote.

The report of the Building Situation Committee was presented by Mr. Arthur Dinnis, Toronto and included the following recommendations;

REPORT OF BUILDINGS SITUATION COMMITTEE.

1. That a committee wait on the Minister of Public Works and advocate the use of Canadian materials in the erection of all public buildings.
2. That the Department of Public Works be asked to commence operations on all delayed public works as soon as possible.
3. That the Government call for tenders in the usual way on stated plans and specifications for all works let under the Dry Dock Subsidy Act.
4. That the Government grant substantial federal aid for the purpose of constructing permanent national roads and that such work be let by tender.
5. That any work for the Federal or Provincial Governments, municipalities, railways, corporations, etc., be let and executed under statutory form of contract.
6. That where commissions are appointed to undertake housing operations the Association of Canadian Building and Construction Industries shall have representation on the commission.
7. That the sub-committee be instructed to discuss with the Minister of Public Works the advisability of proceeding at once with the housing propositions now before the Government, with a view of providing proper accommodation for industrial workers, and eliminating slum districts in large centers.
8. That the development of the natural resources of Canada be subsidized wherever necessary to compete with foreign materials.
9. That this conference pledge itself never again to use German or Austrian made goods.

This report was received and adopted after a few minor changes in reference to certain clauses.

Mr. Oakley enquired whether the recommendation advocating the use of Canadian in the erection of public buildings, referred to raw or finished products. Mr. Dinnis explained that it covered both, as it was felt by the committee that the fullest encouragement should be given to the development of Canadian resources. As regards the cut stone industry in which he was interested, Mr. Oakley said that he believed that nine-tenths of the firms engaged in this line would be forced out of business if restricted to the use of Canadian stone, which he held was less adaptable as a material than the stone imported from Ohio and Indiana. Steel was also cited as a material to which such a restriction would apply.

Mr. Charles Lowery on the other hand claimed that Canadian quarries are lying idle while great quantities of stone are being imported, and he advocated the development of domestic resources.

Mr. Rutherford of Montreal, offered a possible solution to the difficulty by suggesting that the words "wherever possible" be inserted, and a motion to this effect was carried.

In reference to the clause relating to the cal-

ling of tenders under the Dry Dock Subsidy Act, Mr. McLean, Vancouver, explained the practice of the Government had been to call for plans and specifications along with the tenders. This involved considerable expense and represented a direct loss to any firm who failed to get the contract. The fair way was for the Government to furnish the plans and specifications and to invite tenders in the usual way.

The sentiment of the conference fully supported the recommendation in regards to pledging the members never again to use German or Austrian goods. It was deemed advisable, however, that any action taken should be governed by the attitude of Great Britain at the coming peace conference, and the proposal was therefore declared by the chair to be of a political character, and was ruled out of order.

ADDRESS OF MINISTER OF PUBLIC WORKS.

Following the Wednesday morning session, a luncheon was held at which Hon. Frank Carvell, Minister of Public Works, was the guest of honor. Hon. C. C. Ballantyne was also to have been present to address the delegates, but was called away from Ottawa owing to the illness of his brother, a well-known contractor of Montreal.

The Minister of Public Works, in his address, dwelt mainly on the period of reconstruction now at hand, stating that at no previous time had the country faced such great problems. The meeting of these problems, he said, involved a responsibility which should be shared jointly by the Government and the people. While the national debt had doubled and it still remained necessary to raise large revenues, he felt the great resources of the country would enable us to pull through all right and that in a year or two we would witness a greater expansion than ever before.

In reference to housing, which he understood the conference was discussing, this was something with which the Government proposed to deal, although it still remained to be determined as to what policy it would adopt. It was frequently asked as to what the Government proposed to do to tide the country over this trying period. As far as his department was concerned ,they had, up to the present, been putting on the brakes hard, but now, with the war over, it was possible to look at the question of public expenditure from an entirely different standpoint.

Personally, he believed that the Government would be justified in undertaking any work of economic advantage, even if it entailed increased costs. The amount that the Government was at present paying for rented buildings throughout the Dominion totalled up to a staggering sum. In fact, in nearly every case they were paying in rentals more than the interest and depreciation would amount to on buildings of their own. His own convictions were that even before the country got back to normal, it would be an economic expedient to provide government owned buildings for this purpose. This would, of course, represent a big building programme, and it would be given serious consideration, but he was not prepared to make a statement as to just what would be done.

Regarding the question of letting public work done by tender, he was a firm believer in the principle that this should be the basis in awarding all government undertakings. During the tenure of his office, only two exceptions have been made to this rule. The great difficulty in giving out work on force accounts was that the workmen got that easy, comfortable government feeling, and he would be glad if any one could tell him how to correct that feeling so as to produce greater energy in those thus employed.

Mr. Carvell did not feel that he could discuss the Government policies further than this, other than to say that it was a duty to provide as much employment as possible. Moreover, he urged it as the duty of every manufacturer and employer of labor to see that men are employed, even if it is necessary to take contracts at less profits than in ordinary times.

There would be certain difficulties in the way of construction work during the next year or two. To begin with, there would be the cost of labor, but this would be based on the cost of living, which was abnormally high. The cost of labor would not go down until the cost of living decreased, and the cost of materials and building would be governed accordingly. Living expenses would probably go down by next spring, but the decline would be very gradual. In view of present conditions it was imperative to give work to as many as could be employed and at as good a wage as possible. This was a national duty and one which, if properly recognized, would be the means of successfully tiding us over our present difficulties.

AFTERNOON SESSION, NOV. 27TH.

At the afternoon session, November 27th, permanent organization of the general contractors, trade and supply sections was effected, the following being elected officers for the ensuing year:

General Contractors Section—Chairman, A. I. Garvock, Ottawa; Secretary, G. A. Crain, Ottawa.

Trade Contractors Section—Chairman, W. A. Mattice, Ottawa; Secretary, E. R. Dennis, London.

Supply Section—Chairman, W. A. Ramsey, Montreal; Secretary, W. Frank Evans, Toronto.

Several of the western representatives

placed certain views before the conference at the opening of the meeting. Mr. Norman McLean, of Vancouver, complained that in calling for tenders the Government did not give the western contractors sufficient time to submit their bids. He also felt that the Federal authorities could do a great deal more to benefit the lumber interests of British Columbia by further development of the export trade.

These views were supplemented by the remarks of Mr. John Eadie, also of Vancouver, who spoke in regard to the need of greater port development on the Coast, stating that it was a matter of national rather than local importance, and urging the delegates to lend their support in the efforts of Vancouver to have its harbor facilities extended.

Mr. Poole, Regina, also spoke suggesting that the question of a uniform contract, together with the matter of securing uniformity of lien laws and workmen's compensation acts in the various provinces, was something which should be taken up by the conference.

The conference decided to make Ottawa the permanent meeting place of the National Council to be formed, stating that it should meet as the occasion required and assist, whenever possible, the Government, Boards of Trade, and related organizations in all matters pertaining to the building industries.

An early adjournment was taken in order to permit the three sections to meet separately for the purpose of discussing their own individual problems.

EVENING SESSION, NOV. 27TH.

At this meeting, which was largely attended, the delegates had the opportunity of listening to a very interesting address by Mr. Francis Hankin, of Montreal, general secretary of the Canadian National Reconstruction Groups, in which he referred to the duty of the individual in the problems of re-establishment now confronting the country. There was great need, the speaker said, for thorough co-operation of everyone, as well as the necessity of considering industry as a unit rather than as two opposing sections consisting of employers and employed. In England, which has given more thought to after the war problems than any other country, a very progressive policy was now taking shape. Recommendations have been made by the sub-committee appointed by the Minister of Reconstruction, providing for the establishing of trade parliaments having equal representation of employers and labor. Moreover, in the matter of technical education legislation has been passed making it compulsory in Great Britain for all between the ages of sixteen and eighteen to attend trade schools during working hours, it being obligatory on the part of employers to allow the necessary time for this purpose.

As far as Canada was concerned, Mr. Hankin outlined what was being accomplished, stating that National Reconstruction Groups were being formed in all sections of the country. These groups consisted of from ten to fifteen members, including a representative of returned soldiers and labor. It was the aim to bring about a better understanding whereby employers and employees would unite in greater co-operative effort, and this would best be realized through a sense of personal responsibility on the part of everyone in helping to solve the problem with which we are now called to deal.

Another speaker was Mr. J. Grove Smith, who presented some very alarming figures as to the enormity of the annual loss in this country from fires. Mr. Smith's talk represented a very able address in every way, which drew from a fund of first hand information gathered in the preparation of a book on this subject for the Commission of Conservation, and which is one of the most complete and authoritative works of its kind published. The reason why fire prevention measures had not been more successful, he said, was due to the shifting of responsibility on the part of federal, provincial, and municipal governments. As regards fire prevention associations, such bodies served a very important purpose, but lacked co-ordination and plan of attack. Legislation more than education is what was really needed to overcome the heavy losses now sustained. In conclusion, he urged that building codes should be standardized, and dwelt on the necessity of town planning and of the regulation of the development of our towns and cities with a view to reducing fire risks.

Letter from Town Planning Adviser

A letter from Mr. Thomas Adams, town planning adviser, addressed to Mr. Anglin, was then read by the Chairman, and was substantially as follows:

Mr. Adams expressed pleassure that the conference was to discuss industrial houses, building by-laws and kindred subjects, and regretted that appointments away from Ottawa prevented him from being present to emphasize the need of something being done to promote co-operation and to provide leadership from some central authority in regard to the housing problems in the Dominion.

Without entering into the question of the relative degree of responsibility that may attach to the federal or provincial governments, he felt that he would be echoing the unanimous views of those who have considered the housing problem in stating that some form of centralized machinery was needed to stimulate and direct

building construction, particularly in connection with the building of small houses for working men. There was need of a greater degree of research into the numerous technical problems in connection with building, many of which have been the subject of little scientic study in the past, as well as a need for some method to so marshal and disseminate the knowledge accumulated that it will be accessible to all who could make practical use of it.

Mr. Adams expressed approval of the scheme to create a bureau to carry out this work. Such a bureau should also give expert advice on questions of planning the land, streets and houses, and of administration of public and private schemes. At a time when we were passing through a transition in our industrial life, such expert advice would be most valuable.

It also appeared likely that for a time, at least, some form of public contribution would have to be made, either as grants or loans, to assist municipalities, and the different forms of private enterprise through the municipalities, to carry on building until capital becomes more plentiful and private investment in building becomes more secure.

The housing question was considered one of national importance in Great Britain and the United States, and its solution in this country seemed to necessitate action on the part of all three governments—federal, provincial, or municipal—the action being primarily advisory on the part of the federal government and executive on the part of the municipalities, although to make it efficient certain functions would have to interweave the whole machinery from top to bottom.

The conference was undoubtedly aware of the important connection between the method of developing the land—including the metho dof planning and the constructing of streets—and the building operations which were carried on. The long experience of England in this matter, Mr. Adams said, has produced the general conviction that the solution of the housing problem requires that it be dealt with simultaneously with the control of the land and the provision, wherever necessary, of the means of transportation. If the best results were to be obtained from the efforts of the builders to provide houses at an economical price or rent, there must be more economical methods of planning the land and less waste of our substance on land speculation.

Following the reading of Mr. Adams' letter, the business of the conference was resumed by the presentation of the report of the Committee of Business Relations, which consisted of the three following resolutions:

BUSINESS RELATIONS COMMITTEE REPORT.

Resolution No. 1.

This committee, after carefully considering (a) Percentage, (b) Cost plus fixed sum, (c) Lump sum methods of payments, recommend that a standard form of contract be framed by a suitable committee appointed by the permanent executive.

Resolution No. 2.

Whereas it is vital to the interest of contractors that their business should be stablished, and whereas the competition of incompetents is not only disastrous to the legitimate contractor, but is also detrimental to the public interest;

And whereas the present system of awarding contracts does not encourage the best work;

It is therefore resolved that advertisements for tenders for public works should state the time and place for a public opening of said tenders and before any tender be accepted that qualifications of the tenderer from the standpoint of experience, ability and equipment, be ascertained, and that a copy of this resolution be forwarded to all Departments of Public Works, Federal and Provincial, and to leading Municipal and Industrial Corporations.

Resolution No. 3.

That the Conference be asked to consider the question of foreign competition, and also the Memorial prepared by the Provincial Association of Contractors of Ontario.

While the first two resolutions were unanimously adopted, the third one relating to foreig competition failed to meet with the endorsement of the conference. The memorial was read by Mr. Elgie, Toronto, and as originally drafted was as follows:

MEMORIAL TO THE GOVERNMENT.

Memorial—to the Rt. Hon. Sir Robert L. Borden, P.C., G.C.M.G., K.C., LL.D. And to the Hon. the Members of the Government of the Dominion of Canada:

This Memorial Humbly Sheweth: Upon behalf of the contractors of the Dominion of Canada, we, the undersigned, respectfully request no public works of any nature should be undertaken in the Dominion of Canada except by Canadian contractors, and, that this also apply to all concerns acting for the Government or operating under Dominion incorporation. In support of that request, we beg to set before you the following consideration:

(1) The Canadian contractors have demonstrated over and over again their ability to erect structures of any kind whatsoever required for the purpose of their own country.

(2) Canadian contractors are interested in the welfare of Canada, and contribute to its taxes and to its growth, whilst contractors of other countries merely make money in Canada for the purpose of spending it in the country to which they may happen to belong. They also have a tendency to recommend and use foreign materials which is an injury to Canadian industries.

(3) Canada has made such generous contributions towards the successful prosecution of the war that the Government of the country should see to it that every line of activity is safeguarded, because it is becoming more and more evident that one industry of our country cannot suffer without every other industry suffering with it.

(4) Patriotic contractors, as well as architects and engineers of military age have volunteered to fight at the front and for other duties in the war, and thereby have established a claim for consideration towards their fellow contractors.

(5) The business of contractors has been greatly interfered with by the patriotic necessities occasioned by the war, so that the work to be done, even if executed by Canadian contractors alone, is not more than sufficient for their needs.

Respectfully it is submitted that if due weight is given to the above considerations, one course only will commend itself to you and to other members of your Government, namely, to take every pains to see that the construction of public buildings is entrusted to Canadian contractors and to them only.

Mr. J. Fraser Gregory, St. John, stated that the supply section had carefully considered the memorial, and that in view of the remarks of the Minister of Public Works, at their luncheon, and the thorough, sympathetic and Canadian

attitude which he displayed, it was ill-timed, uncalled for, and beyond the scope and desires of the conference. Canada could not expect to build up a big foreign trade and at the same time deny other countries the privilege to sell in our market. To adopt this policy would be to keep others out, and hem ourselves in. He felt assured that preference would be given by the Government to Canadian and Canadian materials whenever possible, without any question, and that in view of this he believed that it should not be considered by the conference.

This pretty much represented the sentiment of the meeting. Mr. Norman McLean, Vancouver, said that the fault in the past was due, in most cases, to the employment of foreign architects, who, knowing nothing of our resources and materials, naturally specified the materials with which they were most familiar. Canada, as a whole, he declared, was bigger than any provincial matter. Instead of passing the memorial, he felt that it would be possible to get the same results in a better way by protesting against the employment of foreign architects. The Canadian architects could be entrusted to give the work to Canadian contractors, and thus the object in view could be secured more harmoniously.

Subsequently, the memorial was taken up clause by clause, each being carried with the exception of the second one, which the conference decided to eliminate. It was then resolved that the memorial, as amended, be adopted and presented to the Premier.

MORNING SESSION, NOV. 28TH.

Thursday morning, November 28th, was devoted to a consideration of reports submitted by the committees on Labor Conditions, Legal Affairs, and Code of Ethics.

The report of the committee on Labor Conditions stated that the avenues which presented themselves as to how labor could be improved was based on the following considerations:

The following is the text of resolution which your committee has to submit for the consideration of the conference.

Be it resolved that the executive of this association do appoint a permanent committee to be called a committee on labor, which shall have the following duties assigned to it.

(1) To consider all legislative matters in the Dominion Parliament and the provincial Legislatures affecting labor in the building and construction industries.

(2) To foster and aid all the movements and activities which will directly or indirectly increase the efficiency of labor, physically and mentally, and improve its quality, particular attention being given to the following:

(a) The housing of the worker.

(b) The development of the apprenticeship system.

(c) The immediate establishment and furtherance of technical education throughout Canada.

REPORT OF SUB-COMMITTEE.

To the Chairman, Committee No. 14:

We beg to submit the following memorandum re position of Dominion Government towards technical education, as containing data for the preparation of a memorial by Committee of the Association of Canadian Building and Construction Industries to be presented to the Dominion Government.

(a) Up to the present time the Dominion Government has not given any financial assistance to the promotion of technical education.

(b) The activities of the Dominion Government in this matter have consisted in the appointing of a Commission, under Dr. J. W. Robertson to make a thorough investigation of technical education. In 1913 this Commission submitted a report. This report was published and has had wide distribution.

(c) Financial aid or assistance has been granted by the Dominion Government, firstly, one million dollars ($1,000,000,000) per annum, for the furtherance of agricultural education; secondly, a substantial amount yearly for the furtherance of education in the Fisheries Branch; and, thirdly the sum of ninety thousand dollars ($90,000.00) annually for the promotion of industrial research.

(d) The recommendation for financial assistance by the Dominion Government for technical education made in Dr. Robertson's report, consisted of the following, the sum of three million dollars per annum for a period of ten years, and the sum of three hundred and fifty thousand dollars per annum for pre-vocational work in the schools.

(e) It is to be noted that this recommendation was made prior to the war, and it is the opinion of this committee that, provided the amounts asked for in Dr. Robertson's report will take care of the requirements of Canada in technical education in co-operation with the provincial and municipal governments, conditions in Canada to-day warrant and imperatively called for the making available immediately of a vastly greater initial sum of money so that an immediate stimulus may be given to this vital matter and the young soldiers returning to civil life, can be benefited thereby.

(f) It is a matter for the expresion of great pleasure that in the late conference between the Dominion Cabinet and the premiers of the various provinces this question of technical education was fully discussed and that warm interest was shown by the members of the Dominion Cabinet.

(g) It should be emphasized in this memorial that for the upbuilding of Canada, it is just as vitally necessary that the Dominion Government provide money for technical education of the workers of Canada as they should provide for the upbuilding of the ship-building industry or provide credits for the sale and export of agricultural or live stock products.

(Signed) J. T. Blyth
G. F. Strickland
Sub-Committee.

COMMITTEE ON LEGAL AFFAIRS REPORT.

The committee on Legal Affairs submitted the following resolutions, which were referred to the executive:

(1) That the executive appoint a standing committee to investigate the feasibility of standard building by-laws throughout Canada and to consider ways and means to carry same into effect.

(2) In view of the difficulty in connection with the variation of the lien laws to the different provinces at the present time and the serious difficulty caused by unfamiliarity with existing laws, that the executive have a pamphlet prepared for distribution to members of this association describing the various lien laws in the different provinces.

CODE OF ETHICS.

Recommendation made by the committee on the Code of Ethics were as follows:

1. When general contractors submit their tenders to the architect or owner, the general contractor should list the names of the sub-contractors whose tenders he used and advise the sub-contractor. In the event of his tender being accepted, the general contractor should notify his sub-contractor immediately. The same conditions should obtain with respect to sub-contractors and their respective supply men.

2. It is recommended that the sub-contractors shall receive payment in the same proportion and substantially at the same time as payments are received by the general contractor.

3. That the matter of bonds, bonus and penalties, as between general and sub-contractors be left to their own individual arrangements to suit specific conditions, but when requested, shall be on a proportionate basis.

4. Zones of operation.—In view of the fact that in several districts of the Dominion there are at present no branches of this association or duly representative bodies,

we recommend that the appointment and location of zones of operation be deferred until representative sections have decided to co-operate.

Nominations were then made with the result of the following being elected to office for the ensuing year.

EXECUTIVE.

Association of Canadian Building and Construction Industries.

J. P. Anglin, President, Montreal.
Fred Armstrong, Vice-Chairman, Ontario.
J. C. Harvey, Vice-President, Nova Scotia.
To be appointed, Vice-President, Prince Edward Island.
J. A. Grant, Vice-President, Quebec.
P. A. Galarneau, Vice-President, Quebec.
E. Cass, Vice-President, Winnipeg, Manitoba.
W. A. Wilson, Vice-President, Regina, Saskatchewan.
J. E. McKenzie, Vice-President, Calgary, Albert.
Norman McLean, Vice-President, Vancouver, British Columbia.
G. A. Crain, Hon. Treasurer, Ottawa.
A. H. Dancy, Hon. Secretary, Toronto.

A. D. Smith, Amherst, N.S.; E. R. Reid, St. John, N.B.; J. F. Tilton, St. John, N. B.; Jos. Gosselin, Levis, Que.; W. H. Ford, Montreal, Que.; Wm. Irving, Montreal; Que.; James Ballantyne, Montreal, Que.; Wm. Rutherford, Montreal, Que.; Geo. A. Perrier, Halifax, N.S.; W. E. Dillon, Toronto, Ont.; Walter Davidson, Toronto, Ont.; James Phinnemore, Toronto, Ont.; George Oakley, Jr., Toronto, Ont.; Stewart Hughes, Toronto, Ont.; J. F. Schultz, Brantford, Ont.; A. T. Enlow, Hamilton, Ont.; H. Hayman, London, Ont.; K. R. Geikie, Oshawa, Ont.; A. C. Nobbs, London, Ont.; Thos. Chick, Windsor, Ont.; Col. J. A. Little, Port Arthur, Ont.; H. T. Hazelton, Winnipeg, Man.; T. R. Deacon, Winnipeg, Man.; W. P. Alsip, Winnipeg, Man.; one to be appointed by the Builders' Exchange, Winnipeg, Man.; Duncan Smith, Saskatoon, Sask.; E. E. Poole, Regina, Sask.; W. R. MacKenzie, Regina, Sask.; G. H. Whitlock, Moose Jaw, Sask.; Chas. Forbes, Moose Jaw, Sask.; four to be nominated later for Province of Alberta; four names from British Columbia to be furnished by Mr. McLean, who will notify these four B.C. members by letter; Geo. A. Perrier, Halifax, N.S.; members ex-officio: A. I. Garvock, Ottawa, chairman General Contractors' Section; W. A. Mattice, Ottawa, chairman Sub Contractors' Section; W. E. Ramsay, Montreal, Chairman Supply Section.

The register showed a total attendance of one hundred and ninety-one delegates at the conference, comprising sixty-five general contractors, ninety-two supply men and thirty-four sub-contractors.

DELEGATION MEET GOVERNMENT.

At the close of the session, which ended the business of the conference, the delegates were accorded an interview with members of the Federal Cabinet, at which the first eight recommendations embodied in the report of the committee on Building Situation were presented. This interview took place in the Railway Commission offices, where the delegates were received by Sir Thomas White, acting Premier; Hon. F. B. Carvell, Minister of Public Works, and Hon. J. B. Reid, Minister of Railways and Canals.

President Anglin explained that this was the first time that the contracting and supply interests had met as a national body, and that they did not come in a spirit of criticism, but with the desire to offer their services in any way conducive to the best interests of the country during the reconstruction period.

The requests incorporated in the resolution presented were then briefly explained by Mr. Armstrong, and were listened to attentively by the Ministers.

Sir Thomas White, in reply, referred to the present time as a very critical period, and said that there might be considerable unemployment. It was hoped, however, to devise some means whereby this, to a great extent, would be avoided. One way to help the situation was to obtain large export orders from Belgium and France. Another expedient would be to undertake domestic work extensively. Railways were run down and industrial plants were suffering from the lack of repairs, and he believed that the business which would result from overseas and domestic reconstruction, would absorb a very considerable amount of labor. In reference to housing, Sir Thomas stated that he appreciated the seriousness that this problem involved. The premiers of the various provinces met recently at Ottawa and this was one of the subjects discussed. He had seen some difficulties in the Government going into the housing business as a national undertaking, although it was desirable that something should be done. It was undoubtedly a matter with which the provincial and municipalities could most effectively deal, and at the recent meeting of the premiers they had been advised that if any financial assistance was required to meet their needs, the Government would be willing to help them out. Regarding the use of Canadian materials, the Minister assured the delegates that their recommendations would be given sympathetic consideration, both on account of financial reasons and because the request was economically along sound lines.

Hon. F. B. Carvell, Minister of Public Works, emphasized his remarks of the previous day by again stating that his department would not hesitate to make expenditures on reasonably useful projects. As regards the use of Canadian materials, he said that he had always adhered to this in the past and did not intend to depart from that principle. There was nothing in his department which gave more trouble than Canadian marble and stone. Regarding the Dry Dock Subsidy Act there seemed to be misunderstanding, as this provided for the subsidizing of private firms who built dry docks on their own plans and specifications. In the case of government built docks, plans and specifications were prepared and tenders called for in the manner suggested.

Hon. J. B. Reid, speaking for his department, stated that for the past four years the railways had been allowed to run down and that a large amount of materials would be required to again put them on an efficient basis. Already the matter had been taken up and the representatives

Concluded on page 408.

New Canadian Northern Terminal Vancouver

The new station recently erected by the Canadian Northen Pacific Railway Company at False Creek, right in the centre of the city of Vancouver is fireproof and up-to-date in all respects. It has been designed along dignified classic lines, with a strong central arched feature and supporting features at the extreme corners of the building. The total frontage is 321 feet with a depth of 105 feet, with basement and three storeys above street grade.

The ground floor contains the large general waiting room and ticket lobby, immediately adjacent to which and entering directly from it are waiting rooms for men and women, dining and lunch counter, barber shop, ticket office for rail and steamship, commercial telegraphs, hand baggage, general baggage, government mail, express and sleeping and dining car departments.

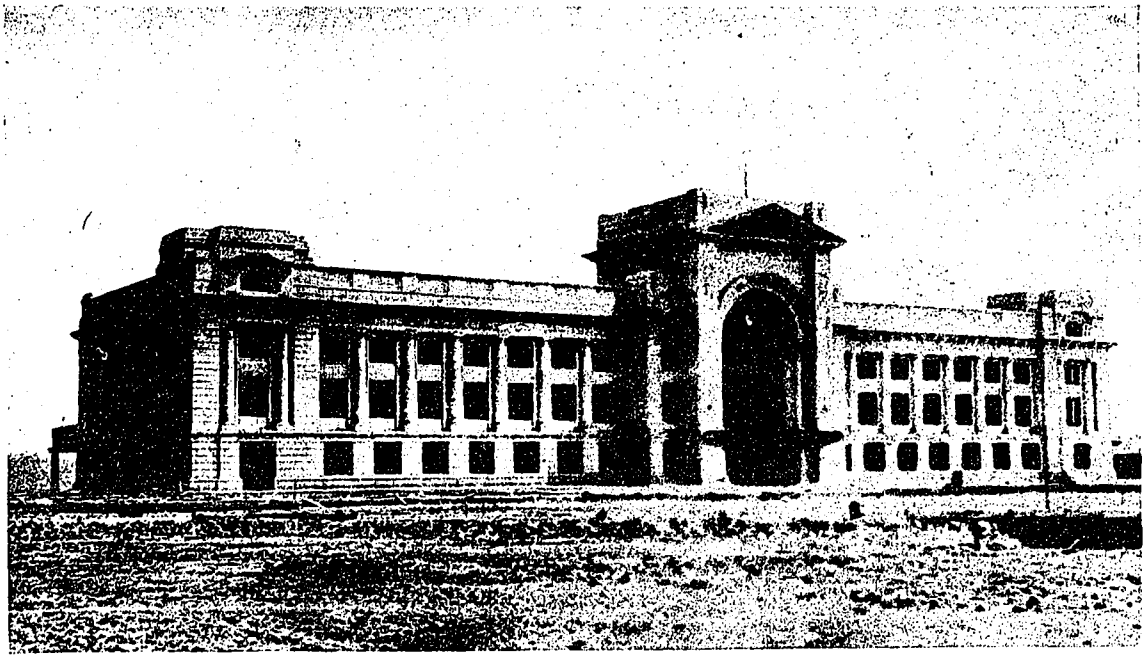
The two upper floors accommodate the general offices of the Canadian Northern in Vancouver, the entrance to these offices being kept distinct from that to the station proper, and elevator service provided to all floors.

Directly in front of the main entrance on the opposite or rear side of the station are situated the doors leading to a covered concourse 50 feet in width, running along the entire length of the rear of building. From this concourse access to the various train platforms is had; these platforms also being covered. In all there are 16 tracks leading into the station, the average length of the platforms being about 1200 feet.

As designed, the building is amply supplied at all points with natural light and ventilation, the form of the building on upper floors permitting of direct light and air to all rooms and corridors. The large waiting room which has a lofty ceiling, is lit not only from the top, but also by means of clear storey lights on three sides, which windows also afford splendid means of natural ventilation.

Externally the front and both side walls are constructed of granite up to base, and above, in stone, both of which materials were procured locally.

The general waiting room is finished in marble about 6 feet up, above which caen stone is used to the ceiling, the latter being panelled in ornamental plaster. The floors are finished in terazzo. Marble is used in all corridors and toilets, with terazzo floors.



NEW CANADIAN NORTHERN TERMINAL, VANCOUVER.

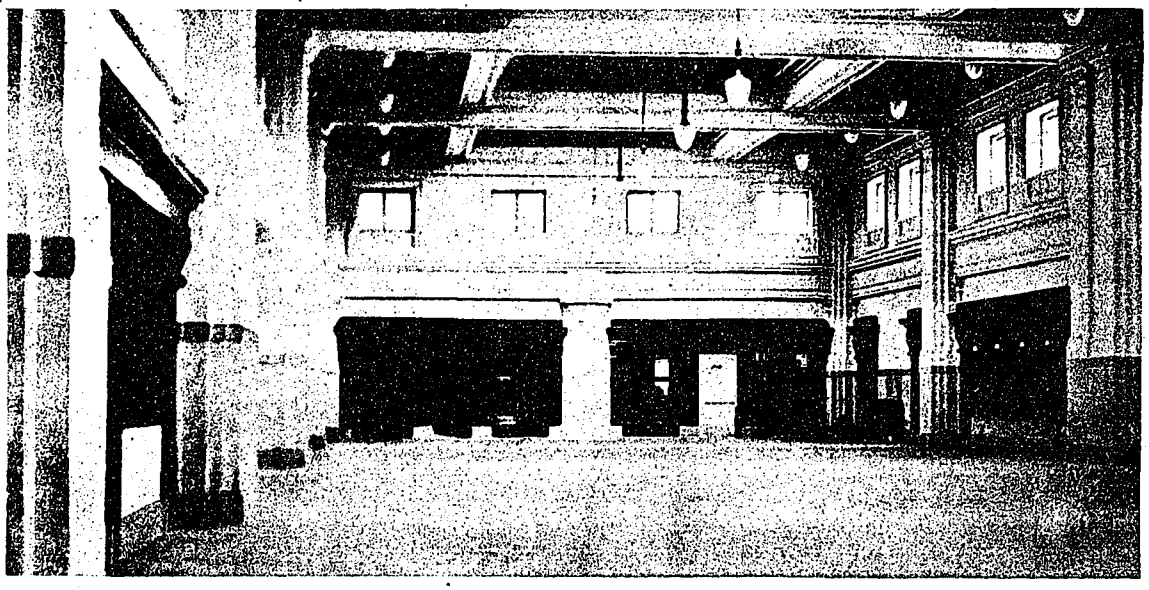
The cost of the passenger station with its concourse and platforms, total about $1,000,000.

The new freight offices and sheds occupy a two storey block, having a frontage of 100 feet and a depth of about 55 feet, giving ample accomodation for the various departments. The building is designed along simple but attractive lines, its exterior walls being constructed generally with brick and having stone dressings and features. The floors except basement are constructed of timber finished with maple, the basement floor being cement, finished on concrete slab. Sufficient toilet accomodation is provided for both men and women, on each floor, and ample light and ventilation is available in all parts of the building. The building is supported on pile foundation.

The freight shed, constructed immediately

east of the freight office block is 40 feet wide and 800 feet long, supported on pile foundations. The roof is supported on steel columns and constructed of steel trusses carrying wood purlins and covered with 2 inch plank finished with tar and gravel roofing. The floors are of heavy timber construction finished with 2 inch rough and 7-8 inch finished flooring. The walls to level of door heads are constructed of studding with 7-8 inch sheeting outside and inside. The outside surface is finished with galvanized corrugated iron. Along the entire length of building above door heads is a continuous glazed transom light. On the track side of shel, doors are alternate and on teaming side, doors occur only in alternate 16 foot bays. The shed has been divided into four compartments by the introduction of three 13 inch fireproof walls at equal intervals along the length of shed. Provision is also made at the extreme east end of shed for cold storage, and at the west end (that is at the end nearest the freight office block) rooms are provided for the shed foreman, porters, and for staff toilets. About midway up the shed is located the Customs Office.

Electric light will be used in both freight offices and shed.



PUBLIC SPACE, NEW CANADIAN NORTHERN TERMINAL, VANCOUVER.

Along the track side of shed will be run three lines of tracks, and beyond the farthest out of these tracks, will be run a distributing platform 13 feet wide, the platform being continued along the entire length of the shed.

These buildings have been designed by the company's architects, Messrs. Pratt & Ross, of Vancouver and Winnipeg, and the cost, exclusive of tracks and teamways, will probably run to about $150,000.

Destruction of Architectural Monuments in France

A correspondent to the New York "Times" commenting on the destruction of architectural monuments in the fighting zone, and with particular reference to the neighborhood of Soissons, writes:

"Since their defeat by General Mangin the Germans have undertaken the destruction of the architectural masterpieces of Soissons. With the methods previously employed in burning or blowing up every structure in the region out of which they have been driven, they are proceeding with the demolition of churches and other edifices in this town, rich in specimens of the best work of the architects of the thirteenth century.

"The Cathedral of St. Gervais is now the principal target. Enormous breaches have been made in the splendid facade. The upper gallery is three-quarters destroyed, while the lower gallery has been wrecked. The statues fall one by one from the tower.

"The ancient Abbey of St. Jean-des-Mignes, in which Thomas a Becket spent several years, is also gradually crumbling. Both towers have been decapitated, while the facade has been pierced in many places. The vault has fallen in, and the rich ornamentation of the left tower has disappeared, with the exception of the statues of two saints that remain facing the enemy."

CONSTRUCTION

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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 returned.

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Taking Up the Labor Slack

A well thought out editorial in the "Engineering News-Record, N.Y.," advocates a speedy resumption of all public works as a means of taking up the labor slack which will result through the shutting down of war industries and the return of soldiers to civil life.

"Each day," says our contemporary, "that labor is unemployed there is an economic loss to the community. Every man not employed is either a public charge or an idle-producing unit, and since it is certain that return to peace basis will take some time, public works should absorb labor as fast as possible, even under conditions which might seen uneconomical on account of high wage scales and high prices of materials. Even if the public pays a greater price for public improvements, it prevents the economic loss due to idle man-power. If, to prevent unemployment, the army is demobilized slowly, the public pays for the maintenance of the soldiers. It would be better to demobilize as promptly as the military situation permits, increasing the amount of public work to such an extent as to prevent unemployment. Such a course would mean permanent and substantial returns for the money spent, whereas the maintenance of men in camp after the military necessity ceases is a dead loss."

This represents careful and progressive reasoning. It coincides with the attitude of the Association of Canadian Building and Construction Industries at the Ottawa conference in urging the Dominion authorities to commence operation as speedily as possible on all delayed government work. A resumption of activities along such lines would create a decided feeling of confidence and give employment to thousands of men. Moreover, it would go a long way in acting as a stimulus on private enterprise, besides being a potential factor in stabilizing business conditions both as regards manufacturing and mercantile lines.

The United States government has already decided to follow this course in its plan of re-establishment; and unless similar action is taken in this country, we are liable to encounter a somewhat serious and undesirable condition. The announcement from Ottawa that immediate employment will be found for four thousand men in completing the construction of Welland canal, however, may be taken as a hopeful sign. It offsets in a measure an earlier news despatch indicating that only a limited amount of work would be gone on with, and that the government did not propose to start operations merely to give employment. Work for four thousand men will at the best take up only a small portion of the slack. It will be necessary to find employment for many more, and public improvements is one of the best channels through which this can be done. Moreover, it can be done by confining the whole thing strictly to legitimate enterprise, and without resorting to the "pork barrel" principle which represents the expenditure of public funds in the way of political patronage.

The immediate program of the United States government even extends to the development of irrigation projects. It is perhaps hardly necessary for Canada to go this far, but it is important that all unfinished public work and all contemplated necessary improvements, should be authorized to start without delay. The statement made by the Minister of Public Works and other Cabinet members to the delegates at the Ottawa Building Conference, that the Government would proceed with any undertaking of real economic value, at least gives promise that some sort of schedule will be formulated.

The Ottawa Conference

Continued from page 404.

of the government railways were now trying to work out some policy which would result in the utilizing of considerable labor. An effort was also being made to do something in reference to the government canal systems, and this also would be the means of giving employment.

After the interview the final luncheon was held, after which the delegates were shown over the new Parliament Building by Mr. John Pearson, the architect. The guest and speakers at the luncheon were: Senator Gideon Robertson, Minister of Labor, and Mr. Thomas Moore, President of the Canadian Trades and Labor Congress. Other guests were Mr. H. B. Thompson, chairman of the Canada Food Board; Dr. McGill, of Winnipeg, Grain Commissioner; and Mr. H. Daley, Director of the Repatriation and Employment Committee of the Cabinet.

New Theories of Ventilation

The Editor of Construction,

Sir.—The two articles on ventilation that appeared in your November issue, viz. "Developments of the Theory of Ventilation" by Charles L. Hubbard and "Elimination of Mechanical Ventilation of New York Schools," make reading as interesting as it is important.

In both articles many pet theories of the past are thrown on to the scrap heap as a result of experiments, the conclusions from which leave but little room for doubt. On the other hand, there is in both instances an entire absence of constructive endeavour. Mr. Hubbard leaves the impression that it matters little whether we breathe foul air or pure, (surcharged with the supposedly harmful Carbon dioxide or almost free from it on the one hand, or reeking with all kinds of mal-odors or sparkling as mountain or sea air on the other), the two all-important provisions for health and comfort being a correct temperature and moderate humidity, and yet he lays down no rule for determining what is correct in temperature and humidity, and leaves the reader in entire ignorance of how to obtain the desired conditions.

The second article seems to prove first, that the open window method of ventilation is superior to that of mechanical movements of the atmosphere, and second, that respiratory diseases do not result from an excess or lack of humidity. These are certainly illuminating facts, but what is the poor reader to decide when Mr. Perry West states with emphasis that the comparative conditions upon which the above results were based, were not similar and therefore did not necessarily lead to logical conclusions?

A further discussion of this all-important subject of ventilation on scientific lines would be interesting to your readers, and especially so if it results in the laying down of some practical hygienic rules and the outlining of suggestions as to practical methods of applying them to residences, offices and buildings where large numbers of persons come together.

H. K. S. HEMMING.
274 Beaver Hall Hill,
Montreal.

Dec. 10th, 1918.

CONTRACTORS and SUB-CONTRACTORS

As Supplied by the Architects of Buildings Featured in This Issue.

SUN LIFE BUILDING, MONTREAL.

General Contractors, P. Lyall & Sons Construction Co.
Bronze Railings, Architectural Bronze Co.
Boilers, Babcock Wilcox & Co.
Stokers, Detroit Stoker Company.
Boiler Feed Pump, Peacock Bros.
Casements, bronze covered, McFarlane-Douglas Company.
Clocks, Wm. A. Shall, Toronto.
Decorations, Mack, Jenny & Taylor.
Electric Fixtures, Robt. Mitchell & Company.
Electric Contractors, Philip Lahee.
Elevators, Otis Fensom Co.
Elevator Equipment, Canadian Elevator Equipment Co.
Fire Alarm System, Ontario May Oatway Co.
Fire Hose, W. J. McGuire.
Furniture, Bells Galleries and Bromsgrove Guild.
Furniture (Steel) Steel Equipment Company.
Glass (Stained), N. T. Lyon Glass Company.
Grilles, Tuttle & Bailey Company.
Hardware, Springer Lock Company.
Heat Regulating, Johnson Temperature Regulating System.
Hardware (Furniture), Yale & Towne Mfg. Company.
Hollow Tile, National Fire Proofing Co., Ltd.
Interior Woodwork, Geo. Roberts.
Interior Woodwork (Special Rooms), Randall & Company.
Kalamine Doors & Hollow Sheet, McFarlane-Douglas Company.
Kitchen Equipment, Prowse & Company.
Lockers and Umbrella Stands, Steel Equipment Company.
Marble Corridors, Mississiqui Marble Company.
Marble Entrance Hall and Stairs, Smith Marble Company.
Marble Counters and Walls, Main Hall, Mariotti Marble Co.
Pneumatic Letter Carriers, Standard Store Service Co.
Plaster, Geo. Hamilton.
Plumbing Fixtures, Cluff Bros. (Twyford's make).
Radiators, Steel and Radiation, Ltd.
Roofing, composition roof, copper covered, McFarlane-Douglas Company.
Stone, Granite Columns, etc., Norcross Bros.
Vacuum Cleaner, Spencer Turbine, Bennett & Wright.
Ventilation Fans, Canadian Sirocco Company.
Valves, Jenkins Bros.
Vault (Security Doors), York Safe and Lock Company.
Vault Doors, J. & J. Taylor, Limited.
Motors, Canadian Westinghouse Company.
Generator, Holtzer Cabot Electric Company.
Electrical Equipment, Cutler Hammer Company.
Recorder, Bristol Recorder Co.
Pumps, Eynon Korthing Company.
Heating Contractors, W. J. McGuire & Company.
Plumbing Contractors, The Garth Company.
Terra Cotta, Exterior, Federal Terra Cotta Co.
Refrigerating System, Canadian Ice Machine Company.
Glass, Pilkington Bros.
Revolving Doors, Dominion Revolving Door Co.
Window Shades, Lavigne Window Shade Company.
Vault Fittings, shelving, trucks, etc., Steel Equipment Company.
Heaters, Canadian Fairbanks Morse Co., Ltd.
Centrifugal Steam Pumps, Morris Machine Co.
Cochrane Heater, Canadian Allis-Chalmers Co.
Steam Traps, Canadian Allis-Chalmers Co.
High Pressure Valves, Nelson Valve Co.
Terra Cotta caps for columns, John Lindsay.
Marble Columns, Ardolino Bros.

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