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CONSTRUCTION



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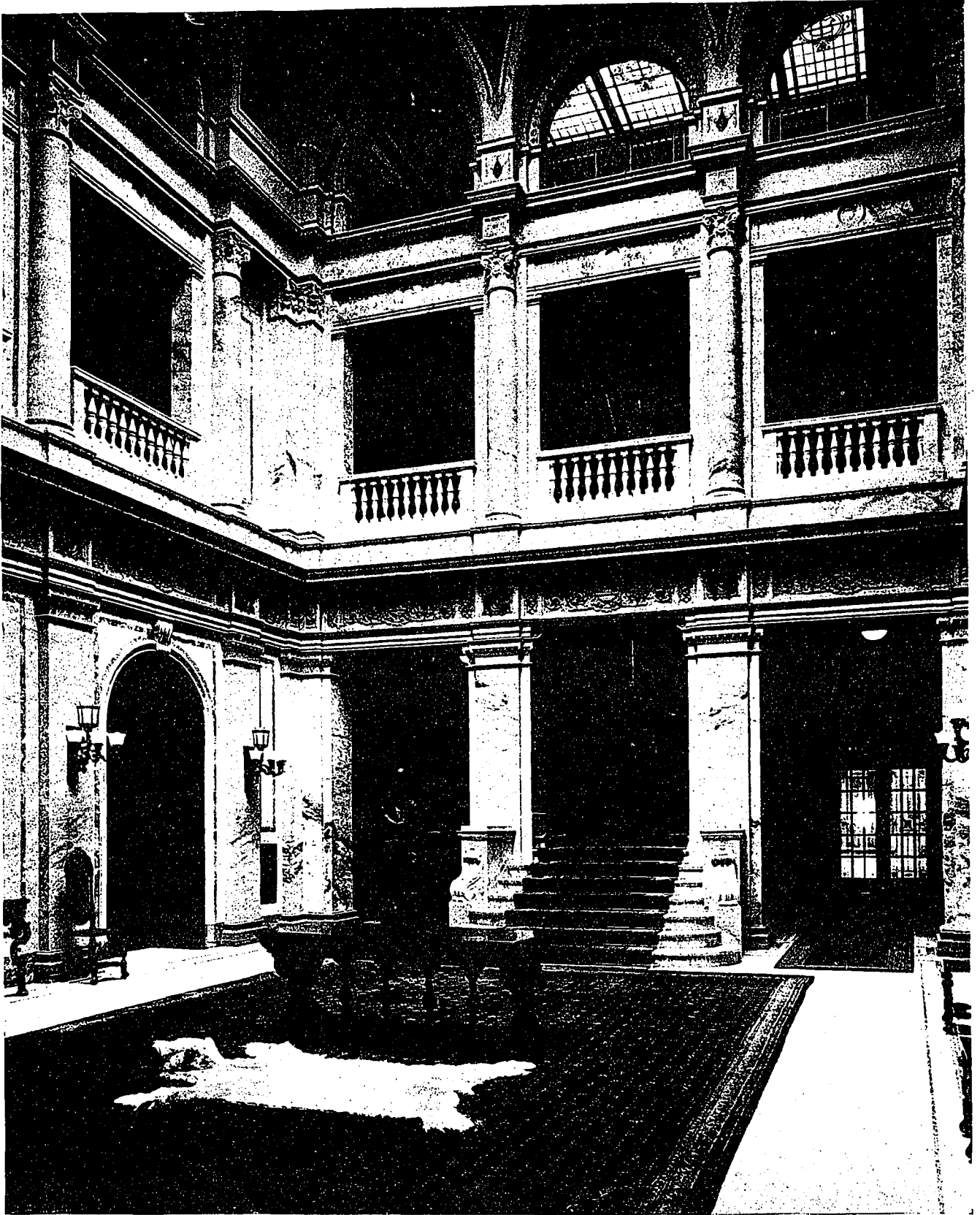
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NEW YORK



THE ATRIUM WITH MARBLE FLOOR, WALLS,
PILASTERS, COLUMNS, BALUSTRADING—
ONTARIO'S NEW GOVERNMENT HOUSE.

F. R. HEAKES, ARCHITECT.



Ontario's New Government House

Chorley Park, Rosedale, Toronto, The Site of The Lieutenant-Governor's Palatial Residence



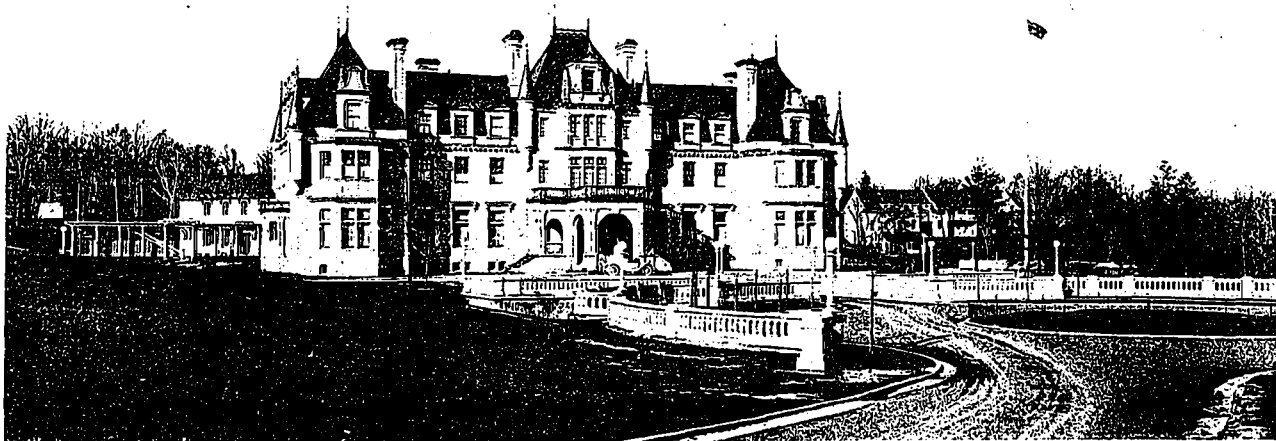
ELMSLEY HOUSE OCCUPIED AS A GOVERNMENT HOUSE (1813-1862).



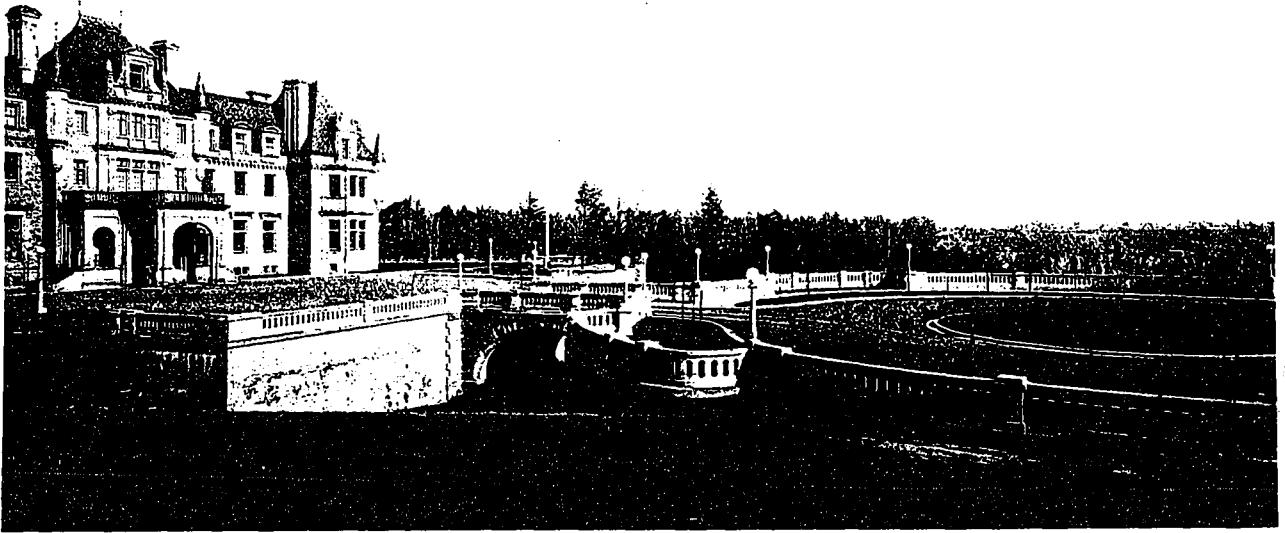
ONTARIO GOVERNMENT HOUSE (SIMCOE AND KING STREETS, TORONTO, 1867-1912).

DESIGNED after the French chateau style, the new official Government House of Ontario is a splendid example of the architecture of the period of Louis XVI. In it the architect has produced a gem which will stand as a durable monument to his skill. The touch of the master craftsman is everywhere in evidence, from the lodge at the main entrance, over the artistically planned grounds, throughout the harmoniously designed and equipped residence, to the greenhouses and garage on the north side. Every feature betokens an inspired ideal, which from its inception to its creation has been closely and cleverly adhered to. This impression is gained from a visit to the grounds and is intensified by a glimpse at the interior of the residence. The citizens of Ontario have reason to be proud of the official home they have created for the King's representative.

This is the third Government House Ontario has had during the past hundred years. In the time of Governor Simcoe, who came to York to found the new Capital for the Province of Upper Canada, his home was first a canvas house, once the property of the famous Captain Cook. Later he decided to build a house on the west side of the Don River, two miles from the Bay. Into this building which was called Castle Frank, he moved in January 1794. It was a one-storey, clap-boarded house about thirty by fifty feet with a facade in front consisting of four large columns, the trunks of unbarked pine trees, reaching to the roof. This house contained but two rooms. Later during the regime of Sir Francis Gore who came in 1806 the Governor's residence consisted of a group of low one-storey cottages built of logs. These were burned in 1813.



VIEW FROM CENTRAL COURT—ONTARIO'S NEW GOVERNMENT HOUSE.



CONCRETE COURT BRIDGE AND WALL—ONTARIO'S NEW GOVERNMENT HOUSE.

To provide for quarters for the Lieutenant-Governor the Province purchased Elmsley House situated on the corner of King and Simcoe streets. It was a comfortable and roomy

frame and roughcast building after the style of many of the old-fashioned houses of the better class of the period. Additions were made to this house from time to time as increased ac-

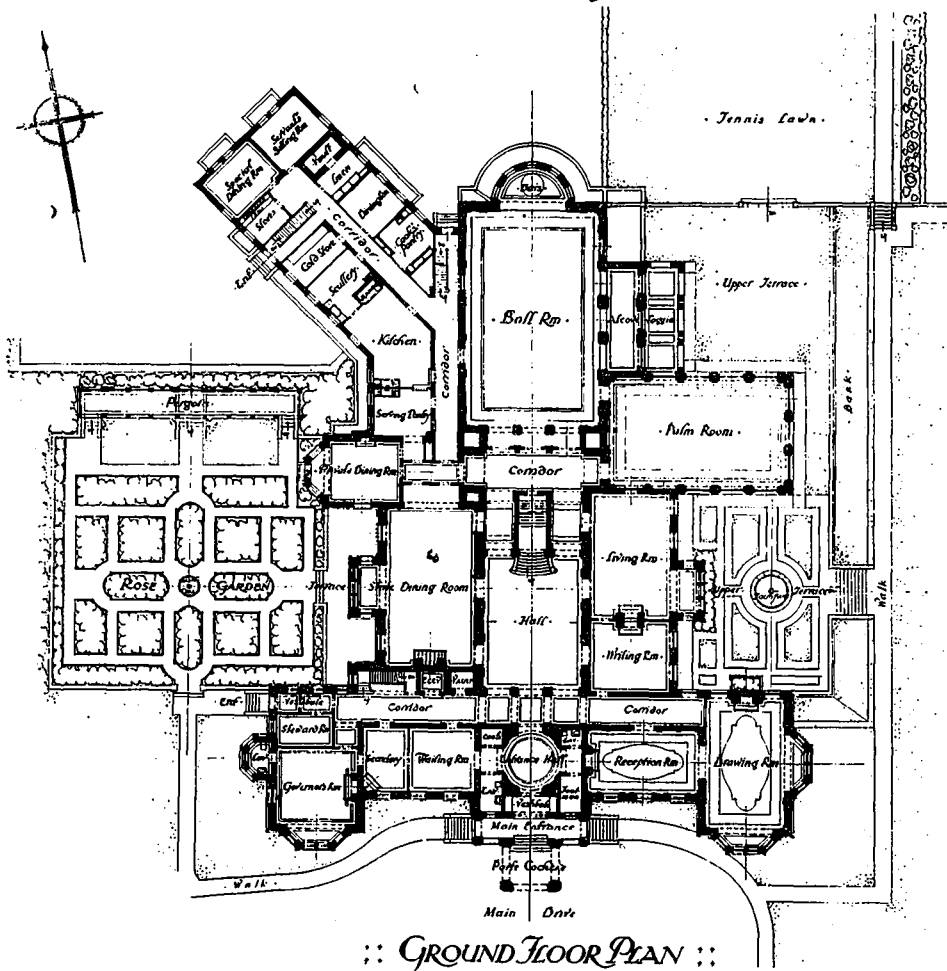
commodation was needed until the removal of the seat of Government from Toronto to Kingston, in 1841. In 1846 the building and grounds were used for the holding of an exhibition of agricultural products. Later in 1855 the Government offices were again moved to Toronto and Elmsley House was re-furnished and put into habitable condition. This building was destroyed by fire in 1860.

After the passing of Confederation Act in 1869 plans were prepared for the erection of an official home for the Lieutenant-Governor, a new building being erected on the grounds of old Elmsley House.

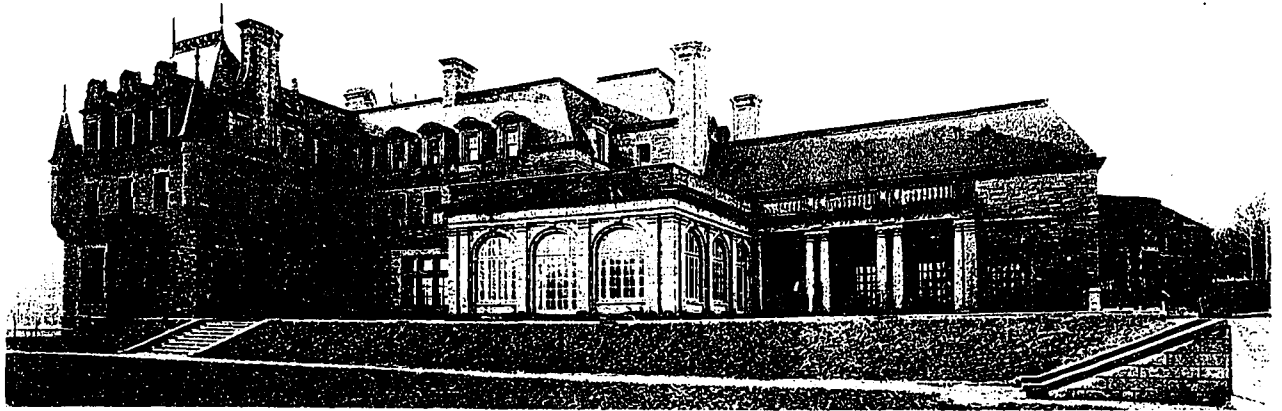
The structure was of red brick, three storeys in height, the upper one a mansard with a tower in the centre and a pretentious porte cochere over the main entrance. This building was for 45 years the chief social centre of the City of Toronto.

The new Government House in Chorley Park

:: *NEW GOVERNMENT HOUSE* ::
 :: *ROSEDALE TORONTO* ::



1869 A.S.C.



EASTERN ELEVATION—ONTARIO'S NEW GOVERNMENT HOUSE.

by a curious coincidence has been erected within a few hundred yards of the spot selected by Governor Simcoe nearly 120 years ago. Just before the New Year it was occupied by Sir John Hendrie, and will no doubt continue for generations to come be the official home of Ontario's Lieutenant-Governors.

The residence is built of fireproof construction throughout. The foundation walls are built of concrete to the ground line; above this of Credit Valley grey stone. The roofs are built of steel and concrete, faced with red tiles, the apices and ridges are of copper. The floors throughout are constructed with terra cotta arches supported on steel beams.

The main portion of the building has a frontage of one hundred and fifty-six feet by a depth of two hundred and three feet, with an extension wing, forty-three feet by seventy-three feet, in which are located the kitchen, servery and pantries, cook's room, servants' dining and sitting rooms, bedrooms and bathrooms.

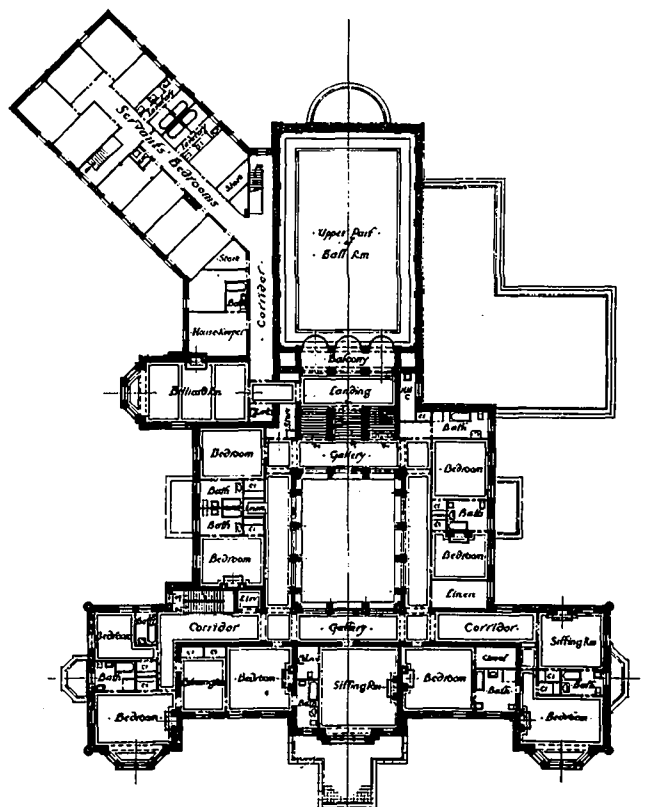
The main entrance is in the centre of the front facade, and is approached by a massive port cochere, leading to a stone vestibule, which is connected with a circular lobby finished in Caen stone and marble, with fluted pilasters and enriched capitols, the floor being of marble. The porter's room, cloak room and lavatories are located off this lobby. Adjoining to the west is the waiting room, secretary's office and the Lieutenant-Governor's office, all en suite. The latter is a particularly handsome room, finished in oak with richly carved doors. The main corridor is entered from the lobby and extends nearly the full width of the building; beyond this is the atrium, or grand hall, which is designed in Louis XVI. style, and finished in marble, with marble pilasters, columns and balustrading extending the full height of the three floors of the building, terminating in a groined ceiling with panelled skylight, which is brilliantly illuminated at night by electric light obscured from view. The floor of this hall and the main corridor is of marble.

The main staircase which is located at the end

of this hall, immediately opposite to the entrance is also of marble all the way up to the top floor, leading to the galleries on the two upper floors, extending all around the grand hall, with balconies overlooking the same, the entrances to the various rooms on the upper floors leading from these galleries.

The reception room and drawing room are to the right of the main entrance. These rooms are designed in Louis XVI., finished in old ivory, with furnishings to correspond. The

:: *NEW GOVERNMENT HOUSE* ::
 :: *ROSEDALE TORONTO* ::



:: *FIRST FLOOR PLAN* ::



LODGE AND GENERAL VIEW—ONTARIO'S NEW GOVERNMENT HOUSE.

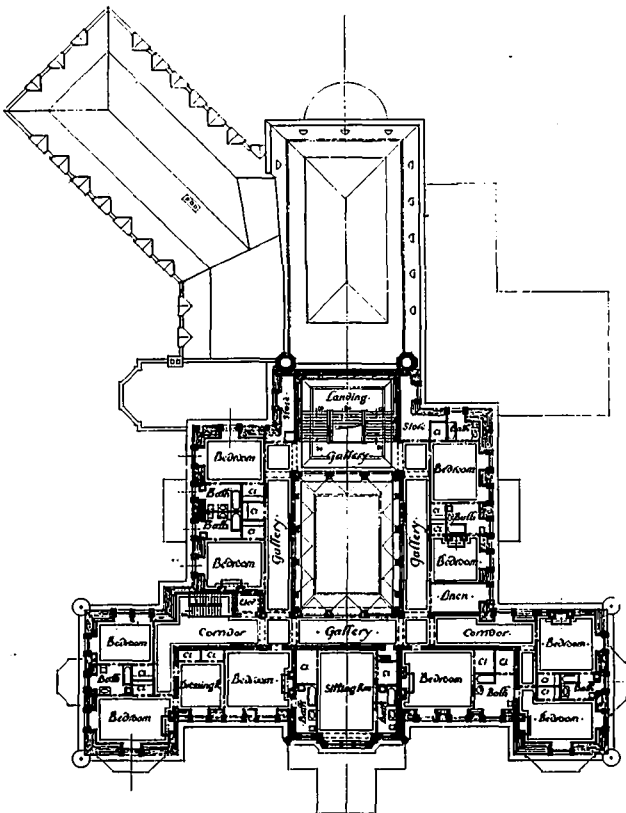
writing room and living room are located to the right of the grand hall. The latter is a particularly handsome room, with enriched beamed ceiling, the woodwork being in oak with carved panelling over the doors; French casements opening on a court paved with stone and brick, with fountain in the centre. Beyond this court

is a terrace and lawn overlooking the beautiful ravine to the east. This room is also connected with the palm room, which also adjoins the ball room. On the west side of the grand hall is the state dining room, twenty-four by forty-eight feet, designed in the Jacobean style, the walls panelled in fumed oak, richly carved, the ceiling beamed and plastered, with corresponding enrichments. The outstanding feature of this room is the massive Caen stone mantelpiece on the south end, which extends from floor to ceiling, richly carved, with the Ontario Coat-of-Arms in the centre. Close by this room is the private dining room, which, by way of contrast, has been designed in the Adams style, has a beautiful outlook over the rose garden and pergola. Beyond this is the service wing, containing the servery, or butler's pantry, kitchen, scullery, pantries, etc.

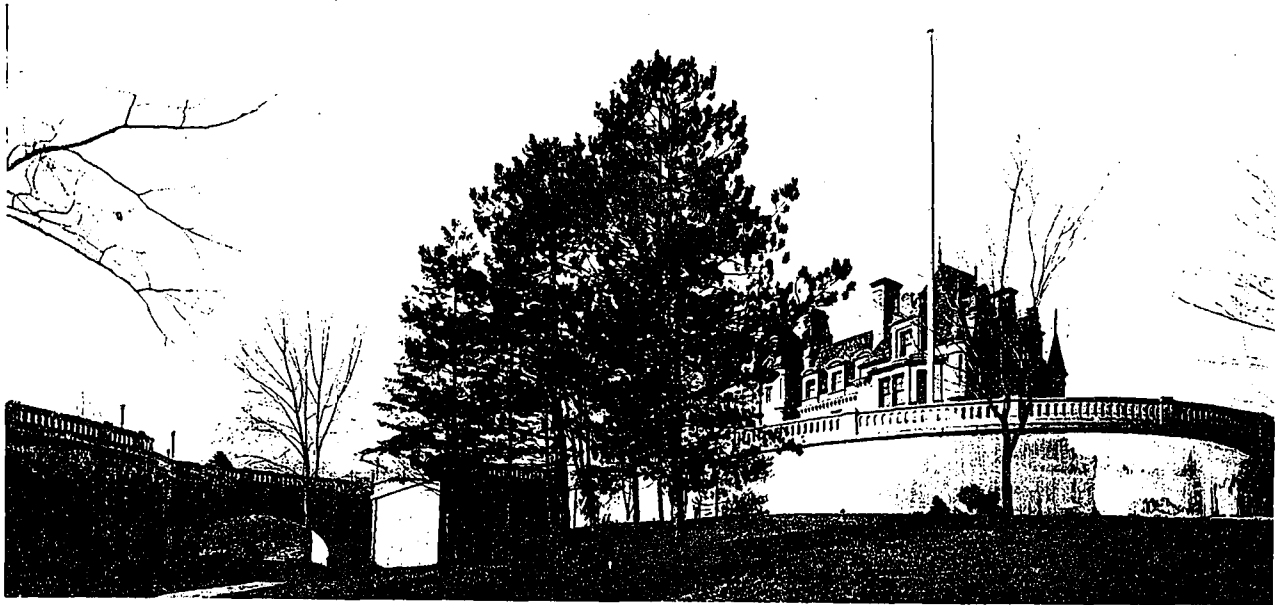
The ballroom is situated immediately beyond the grand hall and stairway, and is separated therefrom by a lobby leading to the palm room on the east and to the private dining room on the west. This room is forty feet by sixty-five feet, designed in Louis XVI., about thirty-eight feet from the floor to glass dome ceiling. The wood and plaster work in dome are finished in old ivory, the walls being painted in imitation of silk. The room is lighted in the day time by the ceiling, which is all of glass, in white and amber tints in a simple geometrical design; at night it is brilliantly illuminated by four crystal and gold chandeliers and by gold brackets on the pilasters. Alcoves are provided at side for resting, and at the end of the room for a dias to be used on state occasions. The ballroom will also be used as a banqueting hall on state occasions.

The first floor, with the exception of a large sitting room over the main entrance, is divided into bedrooms, dressing rooms and bathrooms. The royal suite is located to the right of this sitting room, and the Lieutenant-Governor's

:: *NEW GOVERNMENT HOUSE* ::
 :: *ROSEDALE TORONTO* ::



:: *SECOND FLOOR PLAN* ::



CONCRETE WALL AND BRIDGE—ONTARIO'S NEW GOVERNMENT HOUSE.

suite to the left of it, facing south, east and west, consisting of bedrooms, dressing rooms, bathrooms and boudoirs. Off the main hall there are two bedrooms on either side, connected with bathrooms. All these rooms are designed in the Adams style, the woodwork being finished in white enamel and furnished accordingly, including all the electrical fixtures, carpets and furniture generally.

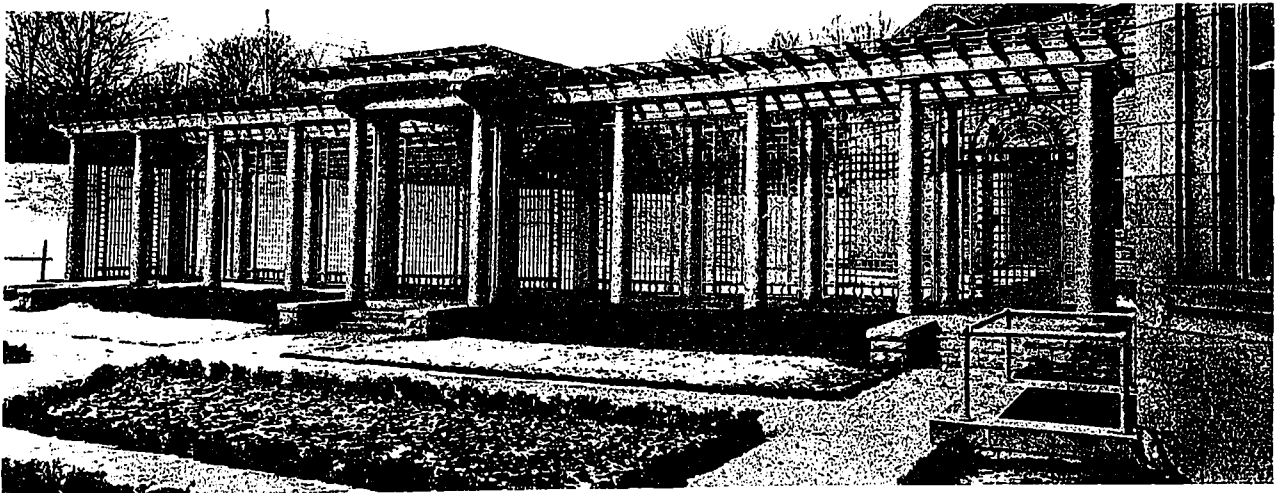
The servants' wing is entered from the lobby of the landing on the main stairway, in which are located seven bedrooms for maids and five rooms for menservants, with separate staircase leading to each.

The billiard room is also very interesting, is entered from this lobby off the landing of the main stairway, is designed in the Jacobean style, with walls panelled in oak, the ceiling beamed to harmonize with the walls, and the mantelpiece being of Caen stone.

The upper floor of the main building is planned somewhat similar to the one below, and includes eleven bedrooms with bathrooms

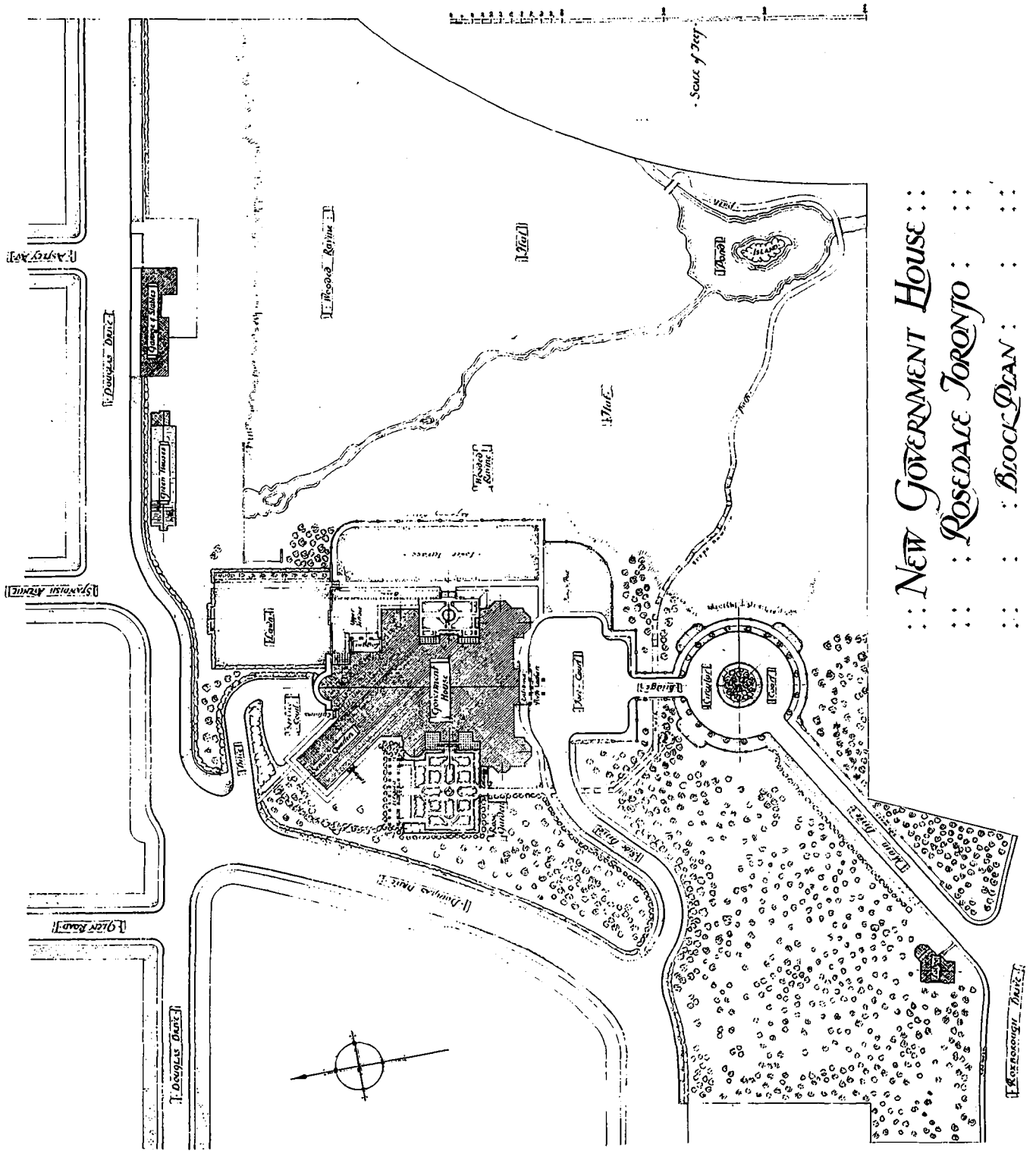
en suite, and one sitting room, and is also designed in the Adams style. All the doors throughout the upper floors are of mahogany.

In planning the house the architect has been very successful in combining all the essentials of a home with the requirements of a place for entertaining and accommodating the guests of honor. No detail is wanting in the equipment to make the building up-to-date and self-contained in every way. To give an idea of the mechanical part of the equipment it might be mentioned that the heating is all by steam generated in two boilers in the basement, which also supply steam to heat the greenhouse, garage and stables and the living quarters. The ventilating plant, operated by electricity, works in conjunction with the heating apparatus. The fresh air is drawn through a large heating coil by an electric fan, through a water curtain which eliminates all impurities from the air, then through another heater, and is distributed by means of ducts to the various apartments in the building. The heating of the ground floor is

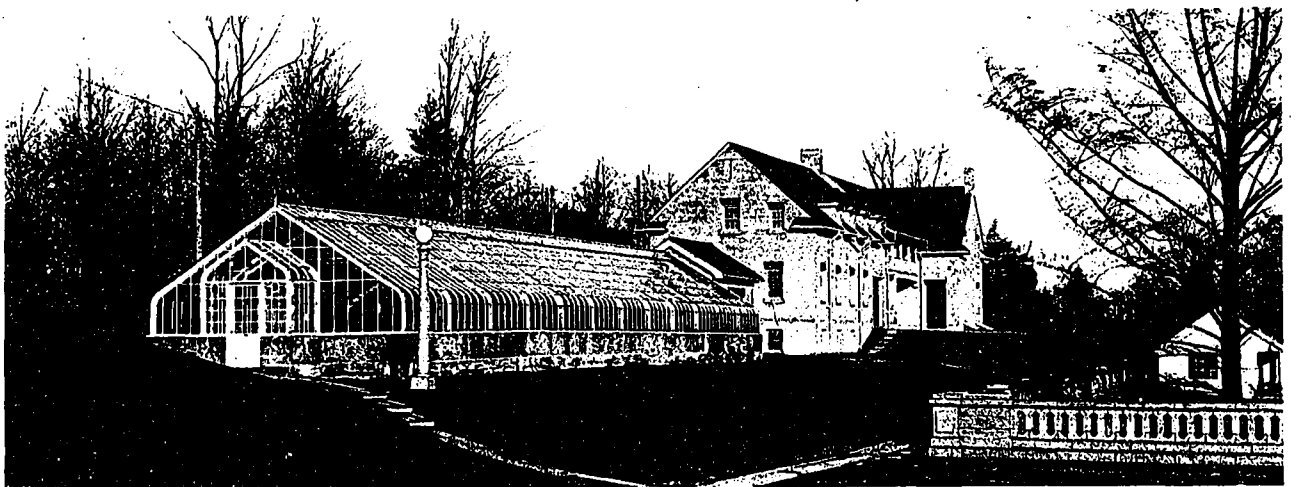


PERGOLA IN ROSE GARDEN—ONTARIO'S NEW GOVERNMENT HOUSE.

CONSTRUCTION



NEW GOVERNMENT HOUSE ::
 ROSEDALE TORONTO ::
 BROOK PLAN ::



GREENHOUSE AND GARAGE—ONTARIO'S NEW GOVERNMENT HOUSE.



A SPECIMEN OF PURE ARCHITECTURE, LOUIS XVI. PERIOD.

all indirect radiation, no radiators being seen. The rest of the building is by direct radiation. The foul air is exhausted by means of electrically driven fans and forced up through a large flue extending far beyond the roof. Both the heating and ventilating apparatus are operated by thermostatic control, so that the temperature can be regulated to any degree required in any of the apartments. A vacuum

system, electrically operated, for cleaning carpets, rugs, etc., has been installed in the basement, and tubes leading to the different floors. A cold storage plant, also electrically operated, is located in the basement with the ice-making machine, which is connected to refrigerator near by and the refrigerator in the pantry adjoining the kitchen. A water filter is provided, attached to the water supply, so that all water is filtered before reaching the faucets. Incinerators are provided to consume all garbage, and an electric passenger elevator located near the main entrance extends to the upper floors, and a hydraulic lift conveys the ashes from the boiler room. The buildings are lighted by electricity, the Hydro system supplying current for light and power. An auxiliary system of gas lighting is also provided, to be used in case the power is shut off at any time.

The building was designed by the Provincial Government architect, Mr. F. R. Heakes, and carried out under his supervision.

GROUNDS

The property comprising the grounds consists of fourteen acres, bounded by Douglass Drive on the north and west, Roxborough Drive on the south, and Don Valley ravine on the east. The residence is located on the northeast angle of the site facing south; the main entrance to the grounds is from Roxborough Drive, the lodge being located at the southwest corner. A driveway twenty feet in width, with walk at side, leads to the outer circular court, in the centre of which it is intended to place at a future date a fountain. Beyond this is the fore court in front of the building, the two being connected by a handsome stone bridge over the gully leading to the lower flat. The fore court is connected with a broad terrace, extending the full depth of the residence on the east side. A handsome cement stone balustrade is continued alongside the main drive and around the courts,



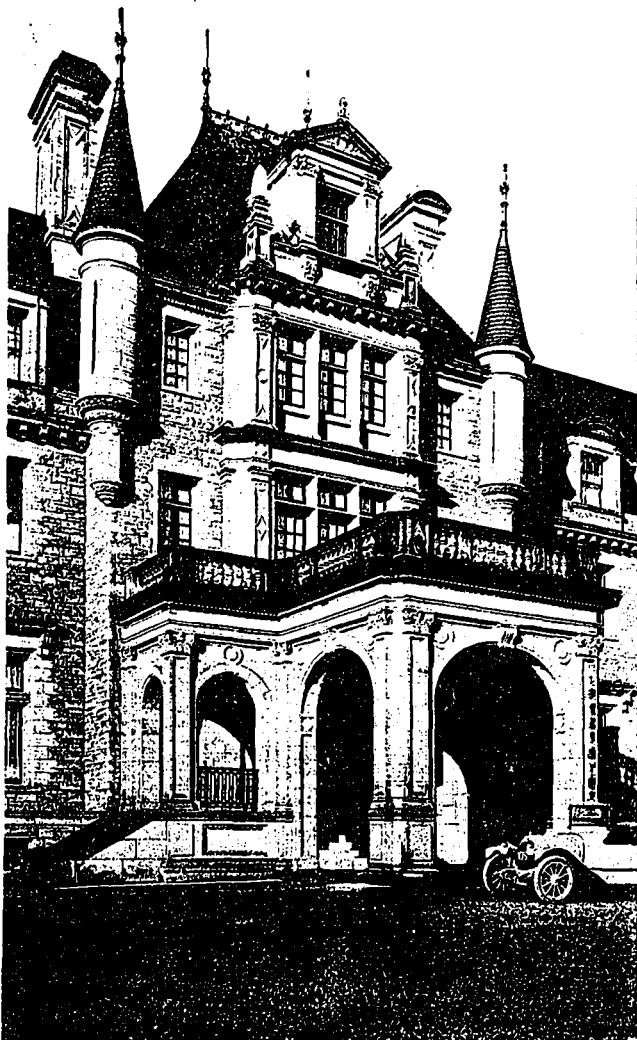
TENNIS LAWN TERRACE—ONTARIO'S NEW GOVERNMENT HOUSE.

with electric light standards at intervals on the pedestals. The service drive and court is located at the north end of the property, with an entrance to Douglass Drive, with paths from same to the greenhouse, garage and stables, which are located to the north and east of the service court. The conservatory is an example of the modern greenhouse adapted for private residences. The type is known as the flat rafter curved eave type. In this house the maximum of light, and therefore the maximum of efficiency, is obtained by placing the gutter on the masonry wall. A special plate of cast iron is made to fit the masonry wall and to which the superstructure is bolted. This plate also contains the gutter for rain and a small gutter inside for the water of condensation. All the wood used is of the best grade of cypress, while the metal superstructure is of mild steel, angle iron being used for the purlins. Every member is designed for strength and lightness. All of the driveways and courts are laid in macadam, with top dressing of trap rock, the walks being laid in cement and bricks, this work being done un-



SOUTH-WEST FACADE.

der the supervision of the highway branch of the Public Works Department. The side entrance is from Douglass Drive by a curved road and walk, with a gentle incline leading to the fore court. A rose garden, with pergola at the north end, has been constructed to the north of this road, with a path leading from same to a flight of stone steps leading down and under the bridge to the ravine. On the east side a rock garden has been built at the foot of the steps, a fountain dripping down through the plants and rocks with a pool at the bottom. A beautiful park is located to the west of the main driveway from Roxborough drive extending from Roxborough drive to Douglas drive. The slopes at the sides of the driveways and to the west and north sides of the property will be planted in shrubbery with herbatia beds at intervals. The plateau, or lower level at the bottom of the ravine, will be laid out in gardens with small lake, or lily pond, fed from a creek which runs through this part of the premises. Rustic steps leading to same have been constructed from the upper plateau. The grounds when completed will be one of the finest in the city.



MAIN ENTRANCE, CENTRAL FACADE.

Heating, Ventilation and Mechanical Equipment of New Government House

By RICHARD RUPPEL

HEATING SYSTEM.

For the generation of steam required for the heating of the building and domestic steam usage there is installed in the basement two horizontal return tubular boilers and one vertical tubular boiler for domestic steam service during the non-heating period. This arrangement lending itself to the most economical method for the production of steam under varying demands.

The heating plant also furnishes steam to the greenhouses, stable and caretaker's quarters, by means of an underground conduit.

The heating system for the main building is what is known as a two-pipe up feed steam circulating system. Direct radiation being provided in the rooms, consisting of cast iron surfaces. In the master's quarters the direct radiation is supplemented by indirect re-heater stacks located in the basement, and thermostatically controlled from individual rooms. These indirect stacks acting as a supplementary measure, in the preheating of the air required for proper ventilation. (See description under sub-section entitled Ventilation).

The decorative scheme worked out by the Architect in connection with the radiators has made possible the elimination of much of the inornate effect usually produced by even the most carefully worked out pattern of radiators. In order to eliminate the unsightliness of valves

on the main floor, moreover, to localize the trouble and to eliminate the inconvenience of mechanics, the controlling valves are all located in the basement for the first floor radiation. In like manner the controlling valves for all rising lines are similarly located in the basement.

The piping arrangement has been laid out with the utmost regard for simplicity, combined with the most efficient method of distribution; and generally under the control of the operating force from the basement. All condensation from the heating system is carried back to an automatic pump and receiver, where it is delivered to the boiler for re-evaporation.

BOILERS.

Each of the two horizontal tubular boilers are 78 inches in diameter by 18 feet long and have a rated capacity of 160 H.P. each. The shells are suspended from a gallows frame consisting of 8-inch diameter cast iron columns 13-8 inch thick supporting a pair of 15 inch, 60 lb. I-beams, in the front and rear sections. By this method of support the entire weight of the boiler is thrust upon the columns; and the brick work merely acting as an enclosure for the setting. For uniformly distributing the load at the base of each of the four columns there is installed a re-enforced concrete grillage consisting of one-inch Ransome bars, set on 6 inch centres in both directions and located in the upper and lower



PORTE COCHERE.

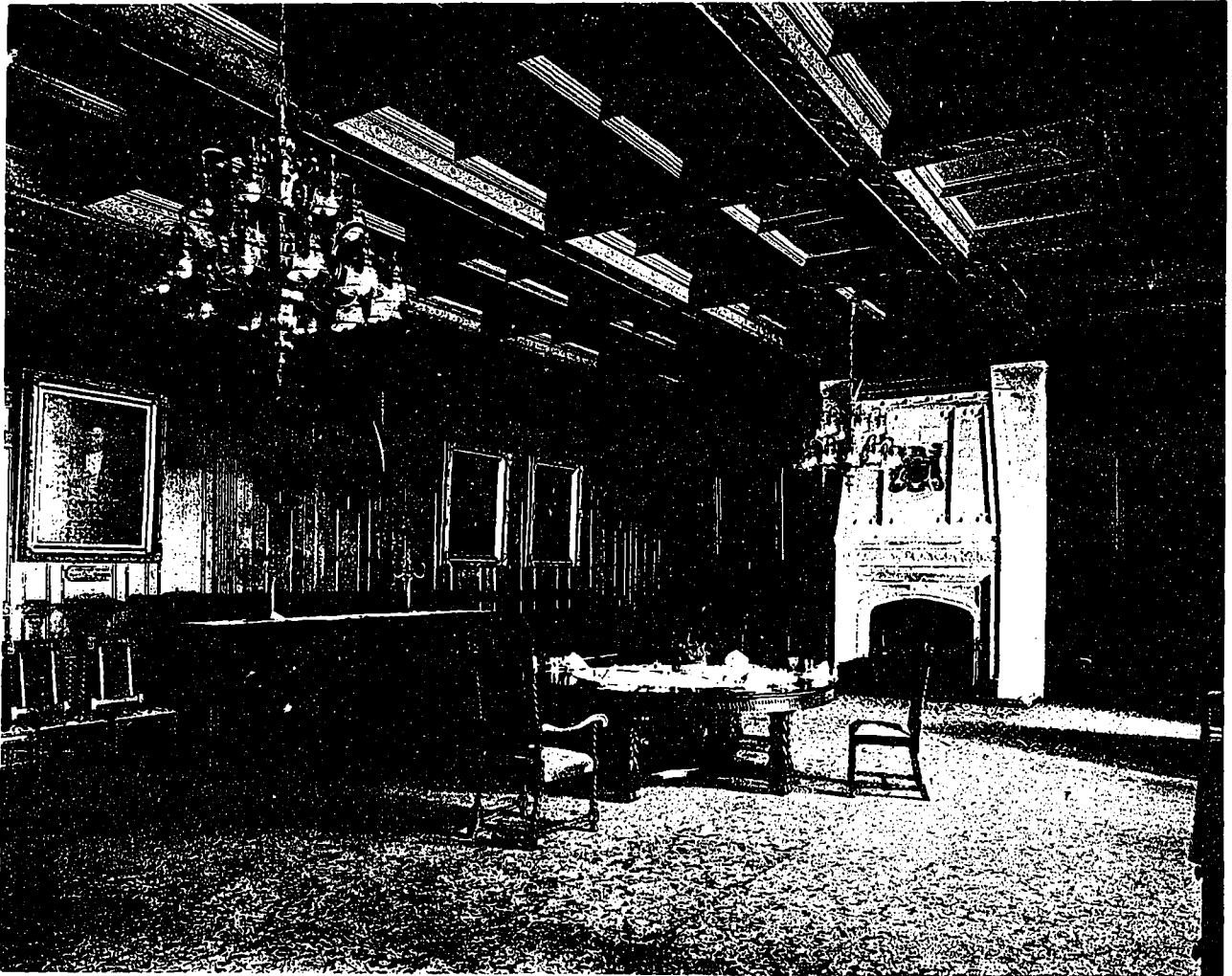


FRONT VIEW FROM EAST.

sections of the slab for tension and compression respectively. The exposed walls are faced with white enameled front brick, the top being paved over with common hard burnt brick and finished with 2 inch, 85 per cent. magnesia blocks. The furnace and all parts acted upon by fire are lined with No. 1 fire brick set so as to be easily removable. The fronts are made of cast iron with two firing and two ash pit doors for each boiler. For the convenience and economical operation of the boilers the brick work is stayed by means of 6 inch cast iron buck-stays. The whole setting being made as compact as the limited space assigned for the boilers, made necessary.

be observed that the arrangement is such as to reduce the pressure of the live steam to that practical for domestic steam usage; through pressure reducing valves. In like manner the reduction of pressure is affected for the distribution of steam for the heating plant. By this arrangement it is possible under light load condition to function steam for heating purposes in mild weather at or below atmospheric pressure.

The exhaust steam from auxiliary apparatus, such as pumps, compressors, etc., is made available for heating purposes by the introduction of back pressure valves and oil extractors; so that there is no wastage of steam in any part of the



STATE DINING ROOM—ONTARIO'S NEW GOVERNMENT HOUSE

The horizontal return tubular boilers are equipped with the necessary fixtures including two safety valves for each boiler, one of the pop safety type, the other of the lever type; feed, drain, blow off, and other connections complete, and the necessary gauges, etc., for the satisfactory operation of the plant.

The arrangement of the coal bunker in relation to the firing space and the removal of ashes has been made most convenient for the operating force.

By referring to the basement plan and more particularly the piping in the boiler room, it will

plant, or of any condensation, which is all arranged to be brought back to the boilers. It is likewise possible to bring back all of the condensation used for domestic purposes as cooking, etc., during the non-heating period.

THERMOSTATIC SYSTEM.

This system essentially consists of diaphragmatic regulating valves controlling the steam supply to the radiators from a thermostat located in the various rooms. A metallic element capable of certain ranges of adjustment within predetermined temperature readings, controls the supply of air to the diaphragm

valves and by its contraction releases the pressure on the diaphragm and permits the additional supply of steam made necessary by the drop in temperature. By this arrangement it is possible to keep the temperature in the rooms within 1 deg. of the predetermined temperature.

A small electric driven compressor automatically maintains a pressure of 15-lbs. in a storage tank located in the basement for constantly controlling these various diaphragms' supply valves.

HEATING GREENHOUSES, CARETAKER, ETC.

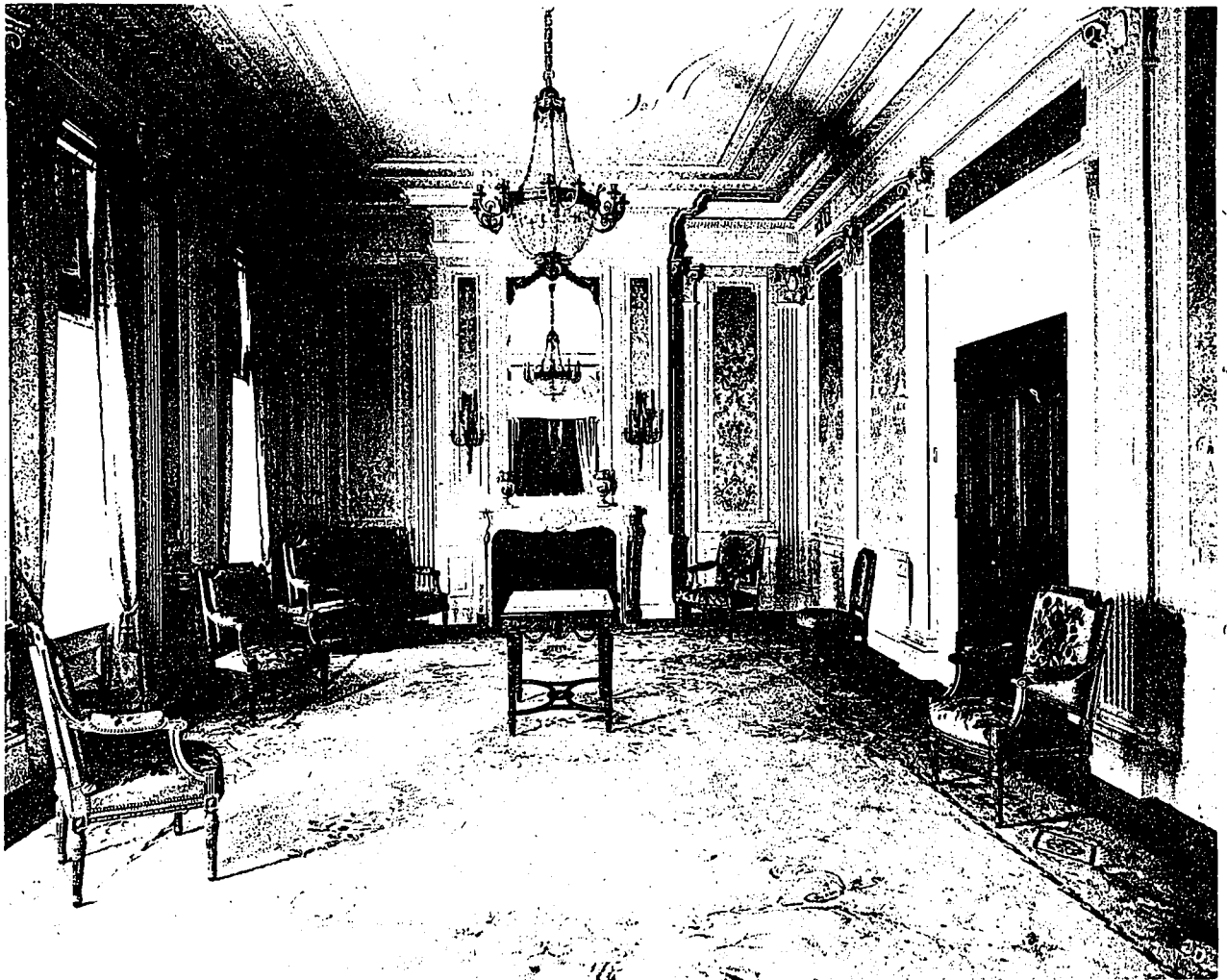
These buildings are heated by means of live

(3) Exhaust ventilation independently operated for all of the bath and toilet rooms.

(4) Exhaust ventilation for the laundry, kitchen and serving pantries.

SUPPLY VENTILATION.

For furnishing an adequate supply of fresh air in the rooms enumerated under system No. I, there is installed in the basement a complete supply ventilating equipment consisting of air tempering stacks, air washer, heater stack, humidifier (under construction) and variable speed blower. From the discharge of the blower



A RECEPTION ROOM—ONTARIO'S NEW GOVERNMENT HOUSE.

steam connections run underground in a concrete conduit to a hot water converter from whence the hot water piping distributes hot water as a circulating medium to the various radiating surfaces, the condensation from the converter being returned back to the boiler room.

VENTILATING SYSTEM.

The ventilation is essentially sub-divided into four systems.

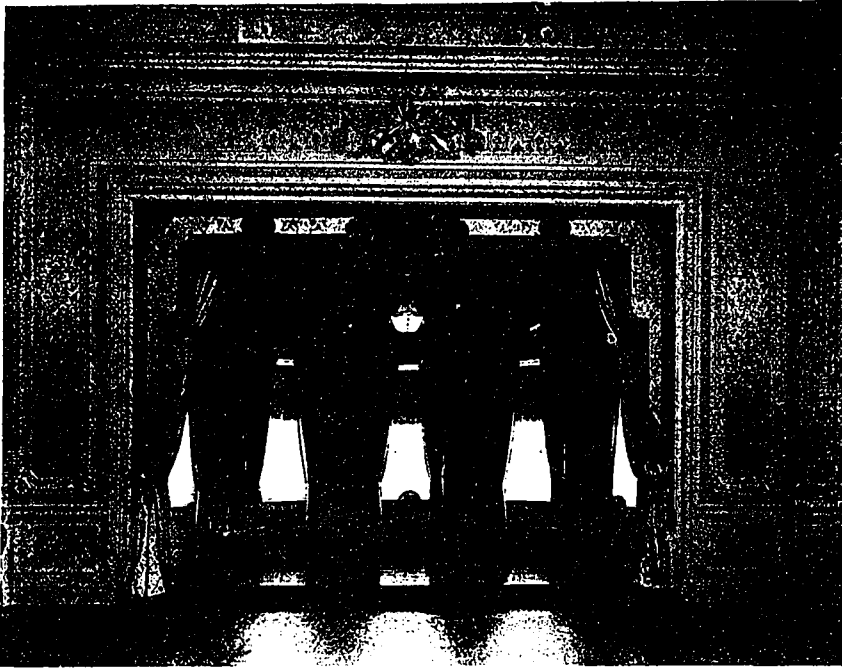
(1) Supply ventilation for all of the master's quarters excepting the bath rooms.

(2) Exhaust ventilation for all of the same rooms mentioned under system one.

and as more clearly shown on the basement plan, distributing ducts lead to the various vertical flues and from thence to the register outlets in the rooms.

TEMPERING STACK.

This apparatus is nothing more than a large heater which pre-heats the air as it comes from outdoors so as to maintain a temperature on the intake side of the air washer, so as to prevent freezing of the circulating water used in the washer. From the tempering stack the air is passed on, to the air washer.



ALCOVE IN BALL ROOM.

AIR WASHER.

The function of this apparatus is to eliminate the dust held in suspension and incidentally purifies and partially humidifies the air. A large receiving pan for holding water is located at the floor level. From this receiving pan through a system of strainers the water is recirculated by a centrifugal pump which discharges the water through a specially designed "rain curtain." Through this rain curtain all of the air drawn by the supply blower must pass on its way to the distributing system. In order to eliminate the saturated moisture from passing on, a system of baffle plates is encountered by the air, where most of the moisture is precipitated. In order to take care of the proper heating of this large volume of air, there is installed what is known as a heater stack.

HEATER STACK.

In this apparatus the air is heated automatically to that temperature required for satisfactory distribution and for maintaining the balanced temperature of 70 degs. indoors when the weather conditions on the outside are at zero.

HUMIDIFIER.

For maintaining a proper degree of humidity in the air delivered by the supply ventilating system, there is now under construction a humidifier which automatically vaporizes water located

in a pan on the suction side of the supply blower.

SUPPLY BLOWER.

For the convenience of compactness and securing the maximum economy in operation there has been installed in the basement, and as more clearly shown on the plan, a multi-vane (or what is sometimes termed a squirrel-cage wheel) wesign blower. This blower has a capacity of 31,000 cub. ft. of air per minute against a static pressure of 5-8 of an inch. For draining this fan there is provided a 15 h.p. belt-driven motor.

MAIN EXHAUST SYSTEM.

This equipment consists essentially of a system of ducts running from the main rooms and connected to an exhaust fan having a capacity of 32,000 cub. ft. of air per minute, against a static pressure of 5-8 of an inch. A 20 h.p. motor is provided for driving this fan. The discharge of this fan is carried above the roof so that it does not in any way interfere with the fresh air intake.

BATH AND TOILET ROOMS EXHAUST SYSTEM.

For exhausting the air from baths and toilet rooms there is provided in the attic space, an exhaust fan having a capacity of 8,800 cubic feet of air per minute against one-half of an inch static pressure, belt driven by a three horsepower motor. Discharge of this fan is likewise carried above the roof. This fan is mounted on



BALL ROOM.



MARBLE MANTEL IN DRAWING-ROOM.

a cork foundation for taking up the vibration. On the suction side of this fan a canvas bellows connection is made in order to absorb any vibration between the fan and the duct system.

LAUNDRY AND KITCHEN EXHAUST SYSTEM.

For removing disagreeable odors generated in the laundry, kitchen and serving pantries there is provided an independent duct system terminating in an exhaust fan located in the basement. This fan has a capacity of six thousand three hundred cubic feet of air per minute against 5-8 of an inch static pressure, and is belt-driven by a three horse-power motor.

MOTORS.

All of the motors are of the slip ring design, with short-circuiting secondary windings. The larger motors for the main supply and the main exhaust systems are provided with drum type variable speed, non-reversible controllers, the smaller units being provided with oil switches.

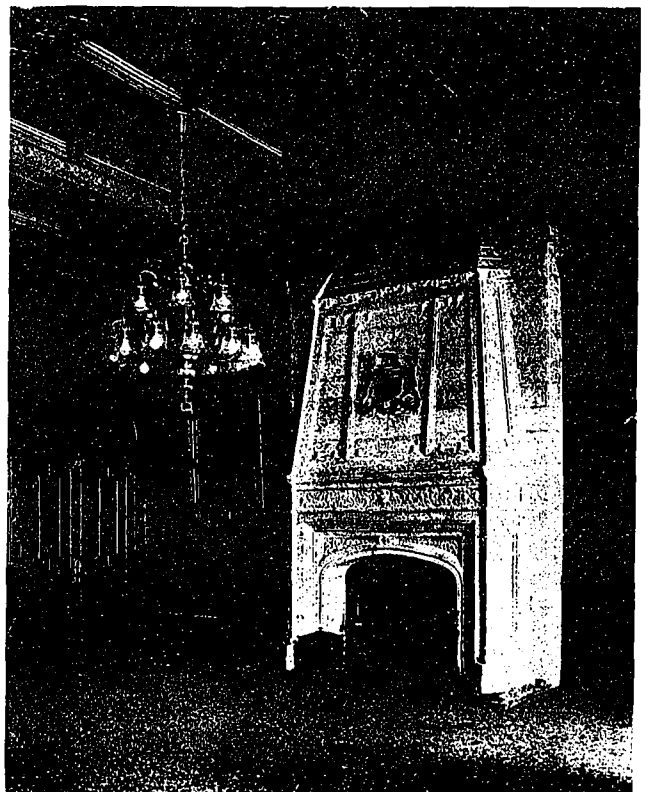
SEWERAGE EJECTOR SYSTEM.

On account of the elevation of the main sewer and the inability to flow by gravity to any satisfactory disposal basin, the problem of getting rid of this sewerage became an important factor in the design of the mechanical equipment, inasmuch as any mechanical contrivance demanded absolute reliability of operation without any intermission. Toward this end the engineer designed an apparatus wherein none of the moving parts came in contact with the sewerage. By referring to the detail plan the method

of handling this sewerage will no doubt become obvious to the reader.

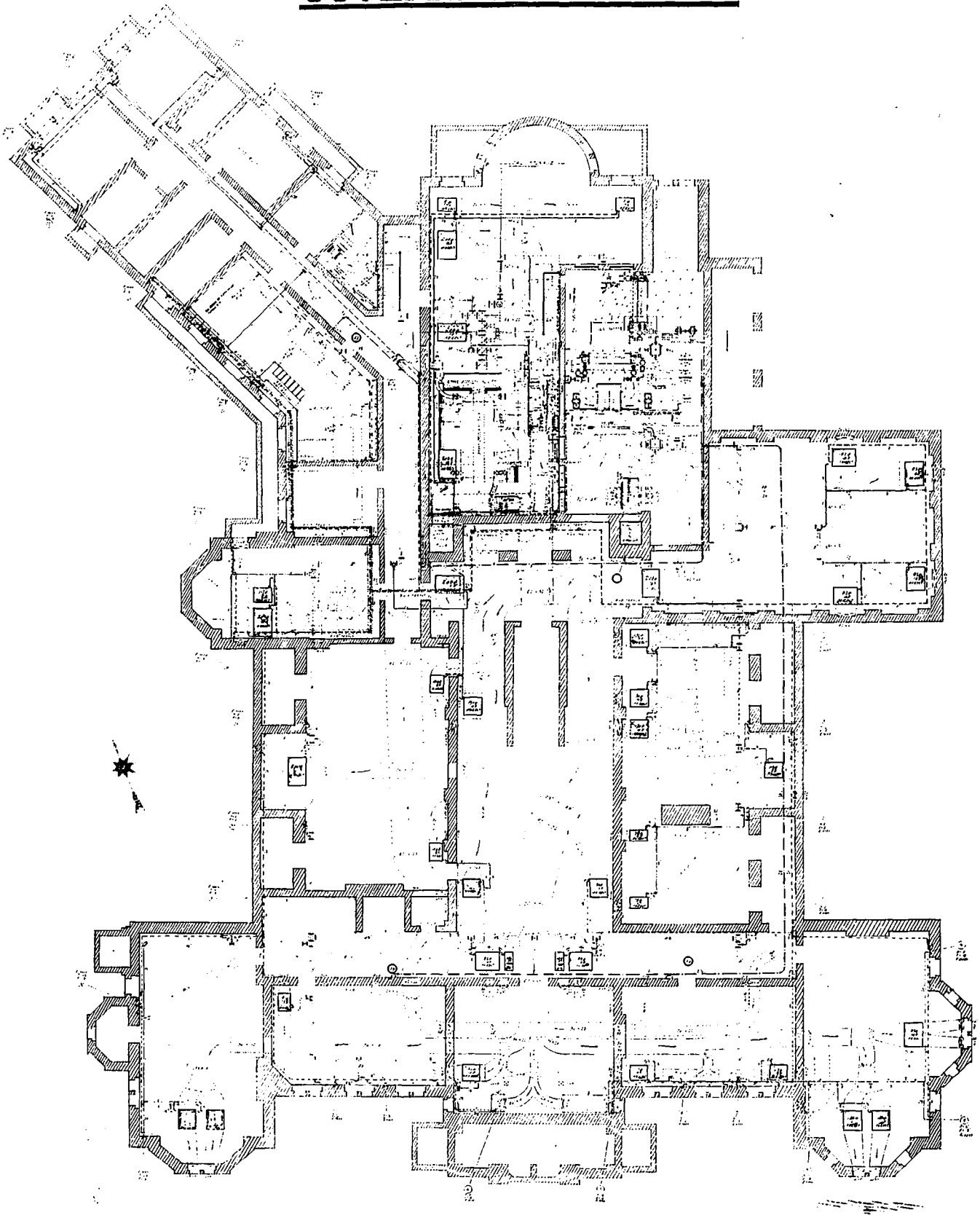
Briefly, however, the method is as follows: The liquid and solid matter is ejected from the bell receivers by the expansive force of compressed air. Sewerage gravitates into the ejector through a check valve, and in doing so expels the air contents of the ejectors through the exhaust pipe to the atmosphere above the roof. When the sewerage has risen about twelve inches above the mouth of the air bell the pressure of the air in this bell is transmitted to the diaphragm of the pilot control valve, permitting a small quantity of air to pass from the air supply main into the base of the motor cylinder. This cylinder being of a greater diameter than the air admission valve, causes the piston to rise and closes the exhaust passageway, which admits air into the ejector. The air is admitted to the ejector cylinder for a predetermined interval of time, thereby insuring the highest efficiency in operation by securing the maximum utility of the expansive force of the compressed air. When the air has completely displaced the contents of sewerage, the pressure is reduced to less than that required to hold the exhaust valve to its seat. The exhaust valve thereupon opens, admitting the air exhaust and the ejector to re-fill.

The same cycle of operation is thereupon continued, excepting that the apparatus is arranged in such a manner that the pilot valve of No. 1 ejector will automatically step in in case of failure on the part of the other pilot to



CARVED STONE MANTEL PIECE IN STATE DRAWING-ROOM.

GOVERNMENT HOUSE.



BASEMENT HEATING AND VENTILATING PLAN.



PALM ROOM.

function. By referring to the detail plan it will be observed that the entire apparatus is completely enclosed in a steel tank, the general arrangement being such as to permit ready accessibility to all parts without coming in contact with the sewerage. Both steam and electric driven air compressors furnish the necessary compressed air automatically at all times. This system has been satisfactory in every way, there having been no interruption in the service.

The office of J. Beyers Holbrook was associated with Mr. Heakes, of the Department of Public Works, for the design and supervision of the mechanical equipments.

STUDYING CANADA'S FORESTS

The Norwegian Government will send out an expedition next spring to the Pacific coast for the purpose of studying the evergreen trees of the Pacific coast. The members of that expedition will travel up through Oregon, Washington and British Columbia. They will investigate the forests of the country with a view to compiling data enabling their government to carry out reforestation of the barren Norwegian coast line and the islands there. They will spend six months on the Pacific coast.

CANADA'S TIMBER SUPPLY

According to R. H. Campbell, Director of the Dominion Forestry Branch, Canada's present supply of commercial timber has been variously estimated to be between five hundred and seven hundred billion feet, board measure, and to cover an area of approximately 170,000,000 acres. This estimate of quantity and area refers only to timber of commercial value as saw-timber. It does not include pulpwood, firewood, tie and pole material nor small timber of any description, although this has undoubtedly a very large commercial value.

The Commission of Conservation is engaged

upon an investigation of the forest resources of Canada, which, when completed, will furnish the basis for a more accurate estimate of the amount of timber in the various sections of the country than has previously been practicable.—*Conservation.*

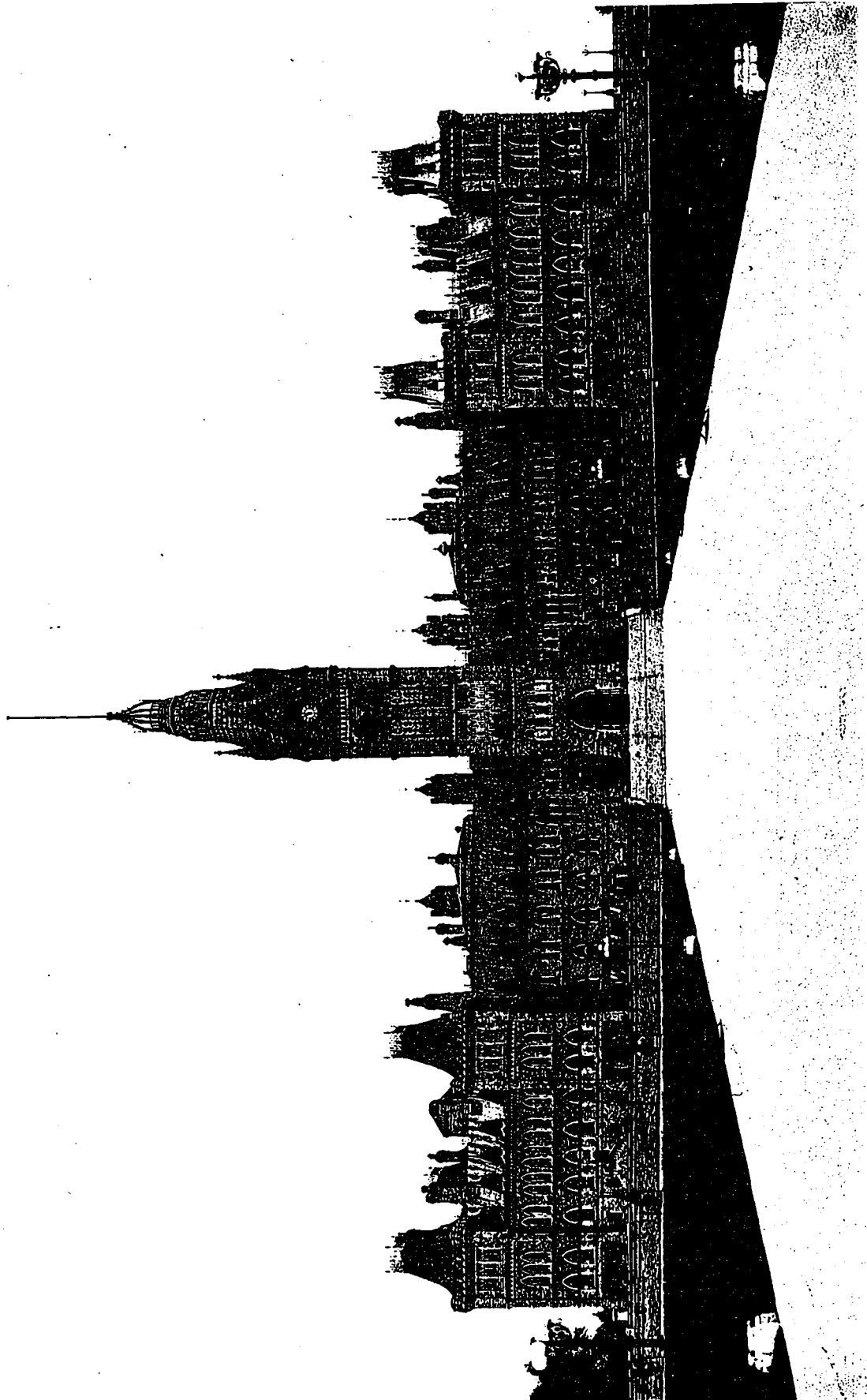
HOW SANDSTONES DIFFER

The products of rock decomposition may be reconsolidated either by great pressure or by the injection of cementing materials, or by both. Thus sands are formed into sandstone, clays become shales, and calcareous deposits yield limestone. Aside from their cementing materials, sandstones differ in composition exactly as did the sands of which they are composed. Sandstone, according to the United States Geological Survey, may be nearly pure quartz, or quartz and feldspar, or quartz, feldspar and mica, and it may vary in texture from the fine to the coarse.

Some sandstone is so coarse that it will hold 6 quarts of water to the cubic foot, and underground deposits of such sandstone form excellent reservoirs, which may yield a never failing supply of water. An arkose sandstone from the quicksilver region of California, made up of granite detritus, was found to contain quartz, orthoclase, oligoclase, biotite, muscovite, hornblende, titanite, rutile, tourmaline and apatite. In short, all the rock-forming minerals which can in any way survive the destruction or grinding up of a rock may be found in sands, and therefore in sandstones.



DOOR WAY DETAIL.



THE CANADIAN PARLIAMENT BUILDING DESTROYED BY FIRE ON FEBRUARY 3RD. IT WAS THE CENTRAL AND MOST IMPRESSIVE OF THE GOTHIC GROUP COMPRISING THE HOUSES OF PARLIAMENT AT OTTAWA. IT WAS DESIGNED BY THOMAS FULLER, R.C.A., AND CHILTON JONES AND WAS OPENED IN 1865.

Canadian Parliament Building Destroyed

Most Picturesque Public Building in North America in Ruins

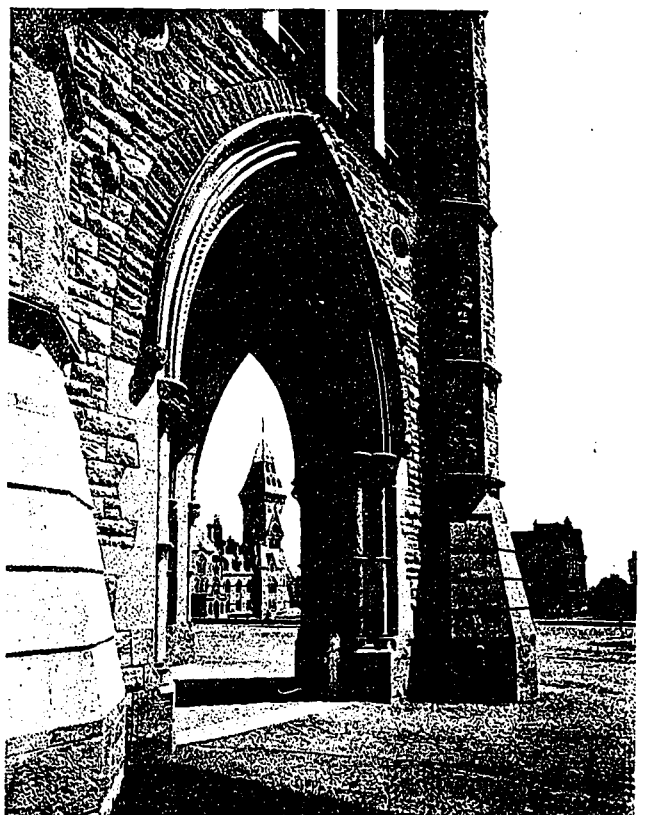
ON the evening of February third, when Parliament was in session, a fire commenced in the centre of the building, to the rear of the entrance tower, sweeping westward through the Commons chamber, the lobby, the apartments occupied by members as recreation and smoking rooms, the press rooms and telegraph office and the offices of the Prime Minister and leader of the Opposition. Later, the flames spread eastward to the Senate wing, leaving the entire building a heap of ruins and unfortunately resulting in the loss of seven lives. It precipitated a dramatic ending to the Commons sitting, when great walls of smoke rolled into the Chamber, causing the members to flee for their lives, and in many instances escape being miraculous. Evidence since the fire seems to indicate that it was the result of an incendiary act on the part of alien foes.

The burned building was the Central, the largest and most impressive of the group of Gothic buildings comprising the Houses of Parliament at Ottawa. The Canadian Parliament buildings were remarkable examples of twelfth century Gothic architecture of unusual charm and beauty. The Central building was designed by Thomas Fuller, R.C.A., and Chilion Jones, and was opened in 1865. It had a front 472 feet long, with a depth of approximately 200 feet, and contained the Chambers, with their appendages of lobby, with telegraph and other public offices in front and corridor, with the reading, smoking and other private rooms for members at the back. The Chambers, each of which was 47 ft. x 88 ft., were set with the long dimensions running from front to back. They were two storeys high. The upper storey was a very graceful arcade of clustered marble shafts and pointed arches carrying a sky-lighted ceiling. Behind the arcade was a gallery all the way round, subdivided for the various classes of auditors, including the Press, whose gallery was located behind the Speaker. These galleries were represented on the ground floor by a corridor surrounding the Chamber. At the front of the Chamber, that is, on the side towards the facade, the corridor was extra wide because it included the width of both the galleries above and the passage which was between the gallery and the offices along the facade. On the ground floor this double-width corridor made the public lobby.

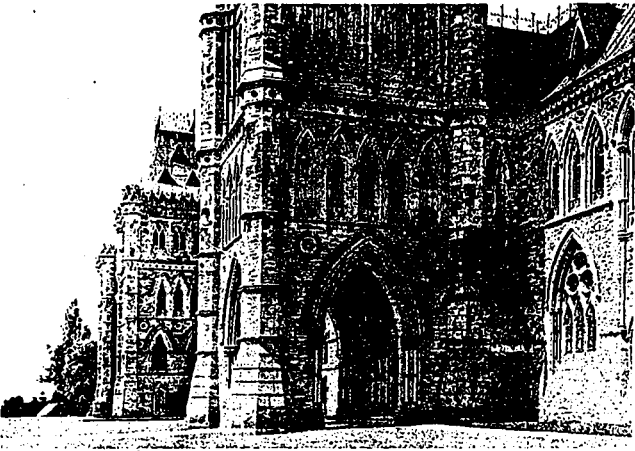
The length between the tower and the nearest pavilion on each side, as shown in illustrations.

represent the width (100 feet) devoted to each Chamber and its appendages. The pavilion blocks on the two ends contained the offices of the permanent staff connected with Parliament. On each side of the tower are to be seen the raking windows which represent a staircase. This is the external manifestation of a two or two-and-a-half storeyed entrance hall, with a great stone stair ascending on each side, on the right hand to the Senate and on the left hand to the Commons. These stairs landed at the lobbies of the respective Houses. People having business there entered by the small doors at the flight of steps on each side of the Victorian tower and ascended by an elevator, which was evidently not working when the occupants of the building attempted to escape. The main entrance was under the Victorian tower, which was, in fact, a *porte cochere*, as will be seen from the illustration.

The style of this building was no doubt decreed, and was the fruit of the Gothic revival in England and Sir Charles Barry's success with the Palace of Westminster, which was nearly completed at the time this building was commenced. The uniform and distinctive ma-



BASE OF VICTORIA TOWER WITH THE EASTERN BLOCK SEEN THROUGH THE PORTE COCHERE UNDER IT. PATENT OFFICE IN THE DISTANCE.



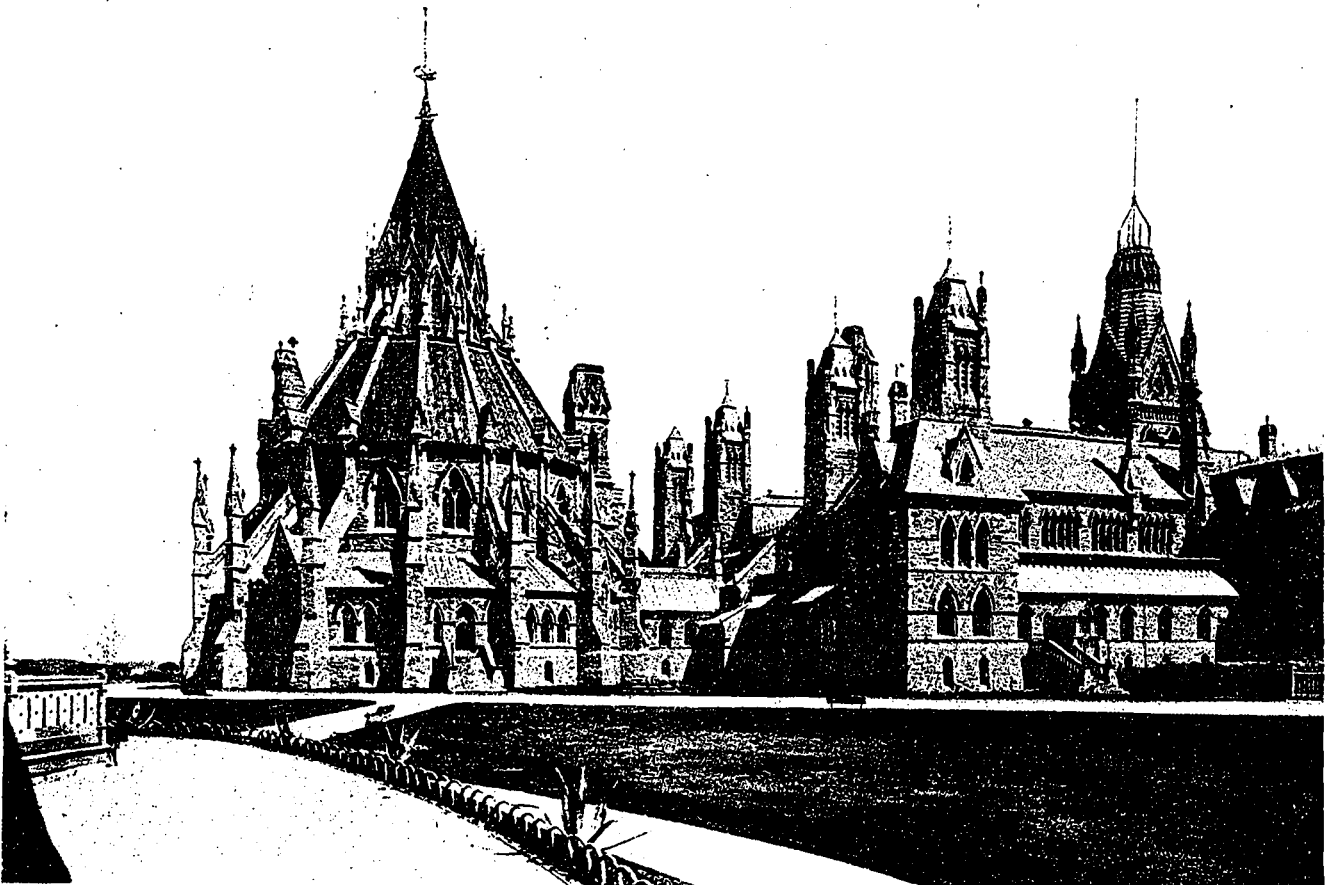
BASE OF VICTORIA TOWER, GIVING ALSO A NEARER VIEW OF THE WINDOW FORMS AND DETAILS, AND OF THE RICH UPPER STOREY OF THE PAVILIONS WHICH BOUND THE END BLOCKS.

terial used throughout the group of buildings had much to do with their harmonious appearance.

The rubble walling was of sandstone from the Napcan quarry near by, its general tone being buff varied by brighter tones, and the cut stone work was of Ohio sandstone, while the relieving arches were of red Potsdam sandstone. The spandrels were filled with bright-colored pieces fitted together in a patch-work Mosaic. There is no church window Gothic about the work of the designer, who worked freely in the

style that Mr. Fuller had studied and practiced in England when the Gothic revival was in its full tide of enthusiastic hope, and his career began by winning the competition for the Cathedral at Antigua. The English Church architect's models had little influence upon this building, which, if it is indebted to the old world at all, got its inspiration from the Gothic civic buildings of Italy and the Netherlands, where a feeling for the horizontal is a conspicuous characteristic of the design. The windows of the principal floor had a peculiarity in the low springing line about the middle of the total window height, which materially helped this horizontal effect. In a general way this building was remarkable, in spite of its numerous windows, with their coupling and tracery, for an effect of solid wall, which, particularly in view of the interesting character of the stone employed, seemed most appropriate.

Sir Robert Borden has appointed Architects Pearson of Toronto and Marchand of Montreal to make an investigation of the walls of the central building now standing, to determine whether or not they could be used for the new building. The architects are planning to use the shell of the old structure in the re-building of the new. The walls are of great thickness and strength. Practical builders say they are as



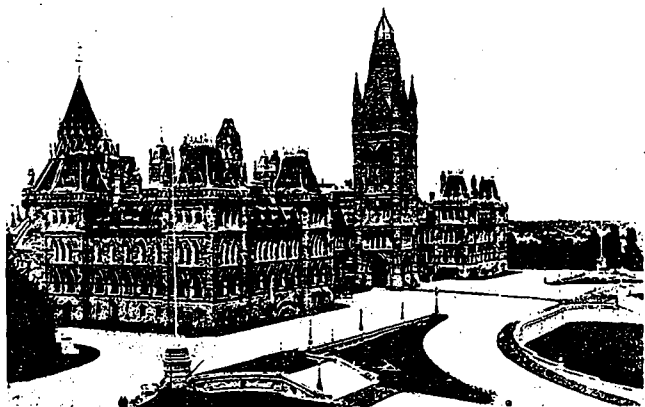
THE LIBRARY WHICH FORTUNATELY WAS SAVED. THE VENTILATING TOWERS MARK THE CHAMBERS OF THE COMMONS (NEAR) AND THE SENATE (FAIR). RESIDENCE OF SPEAKER OF COMMONS AT END OF WING ON THE RIGHT.

good as ever and capable of carrying whatever weight would be likely to be placed on them in the reconstruction of the interior. This weight would not be too great in view of the fact that it is proposed to put up inside the old walls a new framework of steel and concrete, which would carry its own weight. In this way the Gothic beauty of the famous facade would be preserved.

COMPRESSIVE STRENGTHS OF MORTARS AND CONCRETES

Contractors, engineers and users of cement will be interested in a publication recently issued by the United States Bureau of Standards on the compressive strength of Portland cement mortars and concretes.

Concrete differs from most structural materials in that it is not manufactured at a mill or plant according to chemical formula under the observation of skilled specialists, subject to rigid inspection and test and such control as to produce a uniformly homogeneous product; nor is the process of manufacture completed in a few hours or days, as in the case of steel products. Furthermore, concrete is made from materials obtained from sources differing widely in characteristics which affect its quality. The proportions of the ingredients; the amount of water used in mixing; the thoroughness of mixing; the manner of placing; the atmospheric



THE CENTRAL OR PARLIAMENT BUILDINGS ON A WIDE TERRACE SHOWING THE NUMEROUS AND PARTLY CONTINUOUS WINDOWS WITH DEEP MOULDED JAMBS, AND EFFECT OF SOLID WALL WITH RICH HORIZONTAL DECORATION.

temperature and humidity; exposure to sun, rain and wind; immersion in fresh water, sea water, or other natural solutions—all affect the quality of the concrete.

This paper contains the results of some 20,000 tests. It shows the general effect of variation in the methods of preparing the concrete and suggests the proper methods to follow in order to obtain the best quality.

Copies of this publication, *Technologie Paper No. 58*, may be obtained by application to the Bureau of Standards, Washington, D.C.



THE BURNED PARLIAMENT BUILDING AT OTTAWA AS IT APPEARED ON THE AFTERNOON OF FEB. 4, ABOUT SIXTEEN HOURS AFTER THE FIRE.

Thirtieth Convention of Civil Engineers

THE Thirtieth Annual Convention of the Canadian Society of Civil Engineers was held at the headquarters of the Society in Montreal from January 25th to the 28th. The chair was occupied by Mr. F. C. Gamble, President. After the reading of the minutes a resolution was proposed by G. R. G. Conway and enthusiastically carried:

"That this meeting extends to Sir John Kennedy, past president; Sir Collingwood Schreiber, honorary member, and Sir Alexander Bertram, member, its heartiest congratulations upon the Order of Knighthood recently conferred upon them by His Majesty the King. The Society also wishes to place upon record its appreciation of the Royal and public recognition the engineering profession has received by the honors placed upon our distinguished members, who have always maintained the highest ideals of our profession. We recognize in the bestowal of these honors the growing public recognition of the engineers' influence not only in the arts of peace but also in the great ordeal the Empire is passing through at the present time."

This was acknowledged by Sir John Kennedy, who stated that the honor was a recognition of the engineering profession.

The report of the Council showed that 14 members, 66 associate members, 2 associates, 23 juniors and 42 students had been added to the roll during the year, bringing the total membership to 3,076. There had been killed in France 12 members of the Society. Branches had been opened at Regina and at Vancouver. It is proposed during the approaching session of Parliament to have a Bill introduced defining the term Civil Engineer. Recently the Society has become more alert to the fact that publicity for the profession is worthy of consideration and this has been given some attention. The financial statement showed a revenue of \$22,079, annual expenditure \$19,774, leaving a balance of \$2,304 on hand.

This was followed by a report giving a comparative statement of the cost of maintaining the Society, which showed a low cost, satisfactory to the members.

One of the outstanding features of the convention was the discussion on the amendments to the by-laws. In this connection Sir John Kennedy made some notable remarks. He emphasized the fact that the main intention of the Society was educational. It could not be a trade union; could not secure positions for its members and could not hold them in positions. Continuing, he said: "In many other ways the activities of the Society cannot be exerted with dignity. The revision of by-laws is a perennial subject in all societies, and so is the question of

smaller unity within societies. Engineers are specializing to-day, and each specialty has its own subjects to discuss, and this has at times led to the formation of separate specialized societies in which to discuss them. Such units are more practical than the dividing of a national organization into provincial or district organizations. In Canada, it is better to have one broad national society at present, divided neither by geographical lines nor by specialties, although a certain amount of splitting up of the activities within the Society is inevitable and desirable. The machinery for this exists to-day, in the various sections within the Society. At the Montreal meetings, the electrical section has a paper one time on electrical subjects, the mining section another time on mining subjects, etc. This has really kept the Society together, by enabling each to follow out its specialty, yet all meetings have been attended by all members in general, with the result that it has broadened all of our views. It has resulted in a certain amount of overlapping, but even that is good, as it is desirable to interchange ideas. The railroad man, for example, should have some idea of the problems encountered by the waterworks engineer, and vice versa. The Society is a centre of information, and while none can expect to be advanced individually by it without his own efforts and worth, yet all can derive much benefit from it." Sir John said he had in his lifetime received a carload of books from the various societies to which he belongs, and that he had obtained a wonderful lot of information of value from them. He said that he hoped the provincial idea will not grow too strong. The Society's efforts should not be localized too much. For instance, while proud of membership in a national institution like the I.C.E. of Great Britain, he would not care about belonging to a localized society of Irish engineers, or Welsh engineers.

In view of the importance of this subject it was decided to elect a committee to study the organization and by-laws and to advise concerning any necessary changes in same.

The Portland cement specifications committee handed in their report which was adopted as the official specifications of the Society. They were ordered printed and distributed to the members.

In the evening an interesting smoker was held at headquarters. The plant of Vickers Ltd., was visited on the morning of the 26th and in the afternoon the meeting continued. The report of the Committee on Conservation was given by James White in which he pointed out that the yearly fire loss in Canada was \$35,000,000, of which \$10,000,000 represented forest fires. In part he said:

"Conservation means national efficiency, and perhaps the Commission of Conservation should have been called the Commission of National Efficiency.

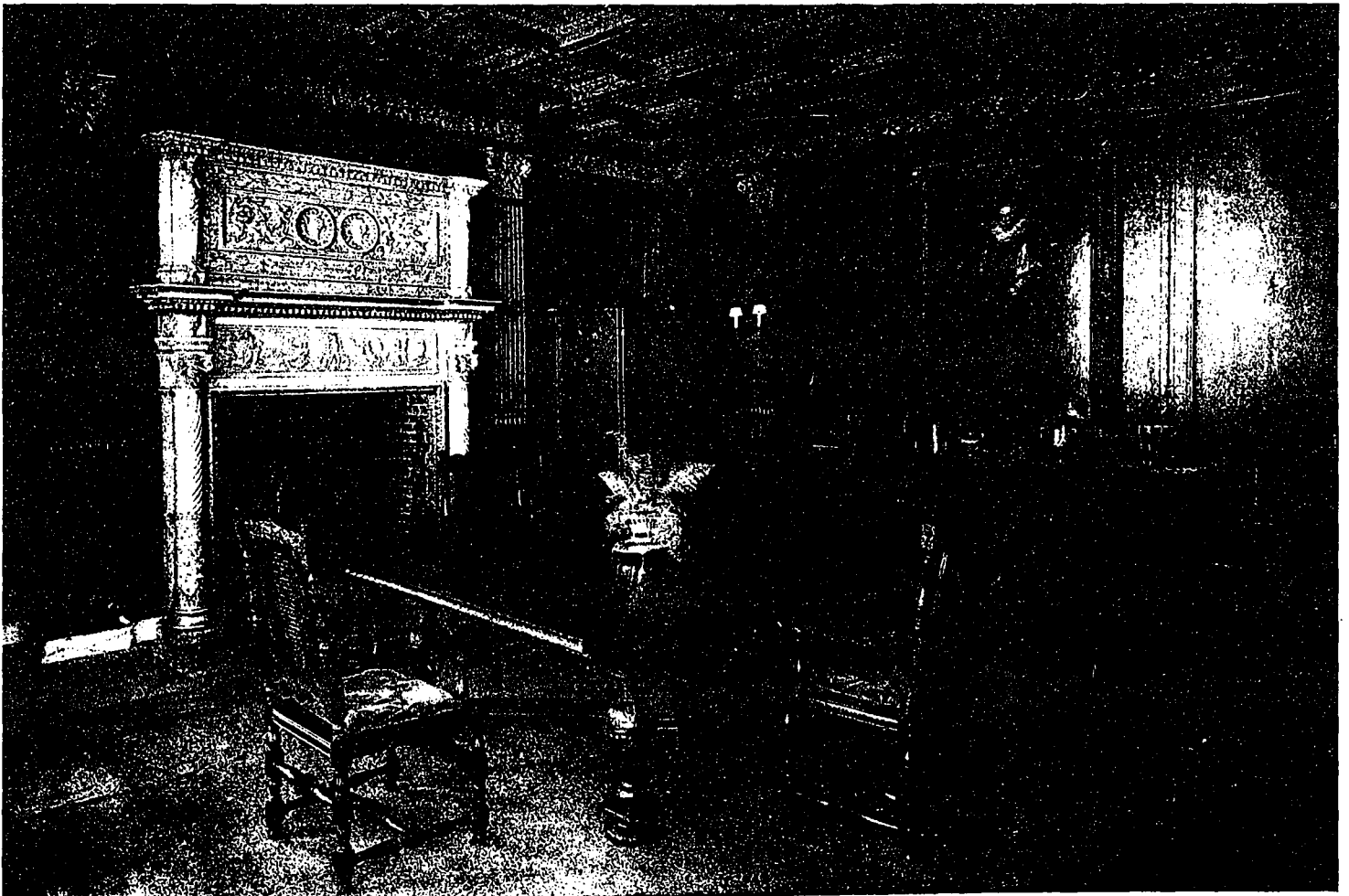
"Substantial progress has been made by the various organizations of the Dominion and Provincial Governments in investigating the water resources of the Dominion. The only province that is not now provided with some form of water resources investigation is New Brunswick, but negotiations, now under way, will probably lead to some satisfactory arrangement in the near future. Manitoba, Saskatchewan, Alberta and British Columbia have permanent systematic hydrographic organizations under the direction of the Minister of the Interior. Ontario is gradually being covered by the hydraulic division of the Ontario Hydro-Electric Power Commission. Quebec is being looked after by the Quebec Streams Commission and the chief engineer of Hydraulic Forces. In Nova Scotia there is a co-operative agreement between the Dominion Water Power Branch of the Department of the Interior and the Nova Scotia Water Power Commission. The field investigations are being published in a very satisfactory form, although there has been some delay in publishing the data promptly, following the

completion of the calendar or water year, as the case may be. The chief engineers of the above organizations have had several informal conferences with a view to co-ordinating, systematizing and standardizing their work, and also to facilitate the publication of the data in a uniform way and promptly. The net result of these informal discussions will be that, in the near future, Canada will be completely covered by efficient and effective organizations charged with the responsibility for investigating, in the most complete and comprehensive manner consistent with the dictates of economy, the water resources of the Dominion."

The reports of the Electro-Chemical Committee and that of the Steel Bridge Specification Committee were received and the committees continued.

President F. C. Gamble then delivered his retiring address in which he said in the preface:

"The past year has been one of stress and anxiety. The British Empire has been engaged for eighteen months in the greatest struggle in the history of the world with a nation which for over forty years has been unsparing in preparation for imposing upon the world by force its system of civilization and "Kultur." Notwithstanding the serious handicap of unprepared-



A DINING-ROOM IN THE ITALIAN STYLE, PANELED THROUGHOUT IN CIRCASSIAN WALNUT.

An unusual feature of this room is the caisson ceiling, in the central panel of which a family crest is worked into the design.

ness under which the Empire entered upon this war, the British Army under the unsurpassed guardianship of the Grand Fleet, and supported by contingents from the Overseas Dominions, has withstood the violent attacks of the enemy in Flanders and France with courage and valour. It is not too optimistic to say that the ultimate end shall be the triumph of British principles of liberty and justice. To assist loyally in the task thus imposed upon the Empire three hundred and sixty-three members of our Society (ten per cent. of the total membership) have given their services freely, of which number thirteen have so far made the supreme sacrifice. We honor those who have died that the Empire may live, and extend to their relatives an expression of our admiration and deepest sympathy. While the memory of their deeds will remain in our hearts as long as we live, it is but fit and proper to commemorate by a tangible token their noble patriotism and unselfish surrender of their lives.

"In one way the Society has already marked its appreciation of this by remitting the annual dues of members actively engaged at the front. This should meet with the unanimous approval of members.

"We have to mourn the loss by death during the past year of sixteen members, including juniors and students. Of these thirteen were killed in action, to which a previous reference has been made. Of the others special mention should be made of the late Mr. T. C. Keefer, C.M.G., first and tenth president of the Society and afterwards Honorary Member, and of Sir Sandford Fleming, who became a member in 1896, and was made an Honorary Member in 1908. These gentlemen conferred a marked distinction upon the Society, having acquired by probity, eminent ability and usefulness, world-wide reputations. Their careers must be an inspiration to the younger generation.

"There are many Civil Engineers living in the Dominion of marked ability who still hold aloof from us. These can only be induced to join by raising the Society to its proper plane of usefulness, and increasing its sphere of influence. Solicitation to join us must be avoided as an undignified and weak expedient. It is quality not quantity that is desirable. A most essential factor in bringing about the increase in our membership, attracting to us the most accomplished Civil Engineers, is the firm and courageous carrying out of "The Code of Ethics" adopted by the Society.

"The profession of Civil Engineering, owing to its somewhat uncertain position, having no legal standing, differs from other professions which enjoy the law's protection, and, therefore, there is the greatest necessity for members to practise the virtue of loyalty to each other and to the profession. If each member realizes his responsibility in this respect public esteem and confidence will increase.

"The Council during the past year has been active in bringing to the attention of governing bodies, Federal, Provincial and Municipal, matters of importance and intense interest to the profession of Civil Engineers practising within the bounds of the Empire. Although no direct beneficial results have been achieved so far, we have no reason to be discouraged. In the coming year, if the past representations are firmly and fearlessly persisted in, some measure of success will without doubt attend our efforts. We are not demanding anything unreasonable or beyond our rights as citizens. We should resent firmly any adverse inference to be drawn from the continued indifferent treatment meted out to the profession by public bodies in Canada. The amelioration of the disabilities under which we labor at present is one of our just demands.

"The Society, through the Council, might well direct its energies towards securing the adoption by governments, for Civil Engineers in the public service, of a standard of qualifications not short of that required by the Society for Associate Members. The Institution of Civil Engineers took this question up with the Imperial Government, meeting with a sympathetic response, and this Society should not hesitate to move in the same direction. It is unfortunately a fact that many positions requiring proper engineering qualifications have been filled by men who have never had either engineering education or experience.

"It would be well also to follow the example of the Institution in another direction. A Civil Engineers Appointment Board, while in no sense to be part of or associated officially with the Society, might be established with the full sympathy of the Council. The Board established in London on these lines has proved useful to engineering employees and younger members of the profession.

"The speaker is of the opinion that this Society, through the Council, should make strong recommendations to the Government of Canada with regard to such of our members who are eminently fitted by age, attainments and experience for commissions in the Corps of Canadian Engineers. There are many whose professional knowledge is more or less wasted in infantry battalions as officers and privates at the present time. In England the Imperial Government has consulted with the Institute of Civil Engineers with regard to members eligible for commissions in the Royal Engineers, and the recommendations of the Institute have been successful. Why should not this Society and the Government of Canada work together in the same most desirable manner?"

After hearing the president's address the meeting adjourned until 10 a.m., Thursday, January 27th.

In the evening a dinner was given at the Engineer's Club, the visiting members being the

guests of the Montreal members. Informal speeches reflected the brotherly feeling underlying the relations between all members regardless of occasional differences of opinion.

The amendments proposed by the Western members were defeated in a decisive manner as was shown by the scrutineers' report on Thursday.

The officers elected for the coming year were: President, G. H. Duggan, vice-president and general manager, Dominion Bridge Company, Montreal; Vice-president, T. H. White, chief engineer, C.N.R., Vancouver; Councillors, J. R. W. Ambrose, chief engineer, Toronto Terminals Railway Company, Toronto; H. Donkin, deputy minister, Department of Works and Mines, Halifax; A. E. Doucet, Quebec; W. J. Francis, consulting engineer, Montreal; E. D. Lafleur, chief engineer, Department of Public Works of Canada, Ottawa; D. O. Lewis, district engineer, C.N.R., Victoria; D. A. Ross, consulting engineer, Winnipeg; H. R. Safford, chief engineer, G.T.R., Montreal.

G. R. G. Conway presented the following resolution which was seconded by G. A. Mountain and unanimously adopted:

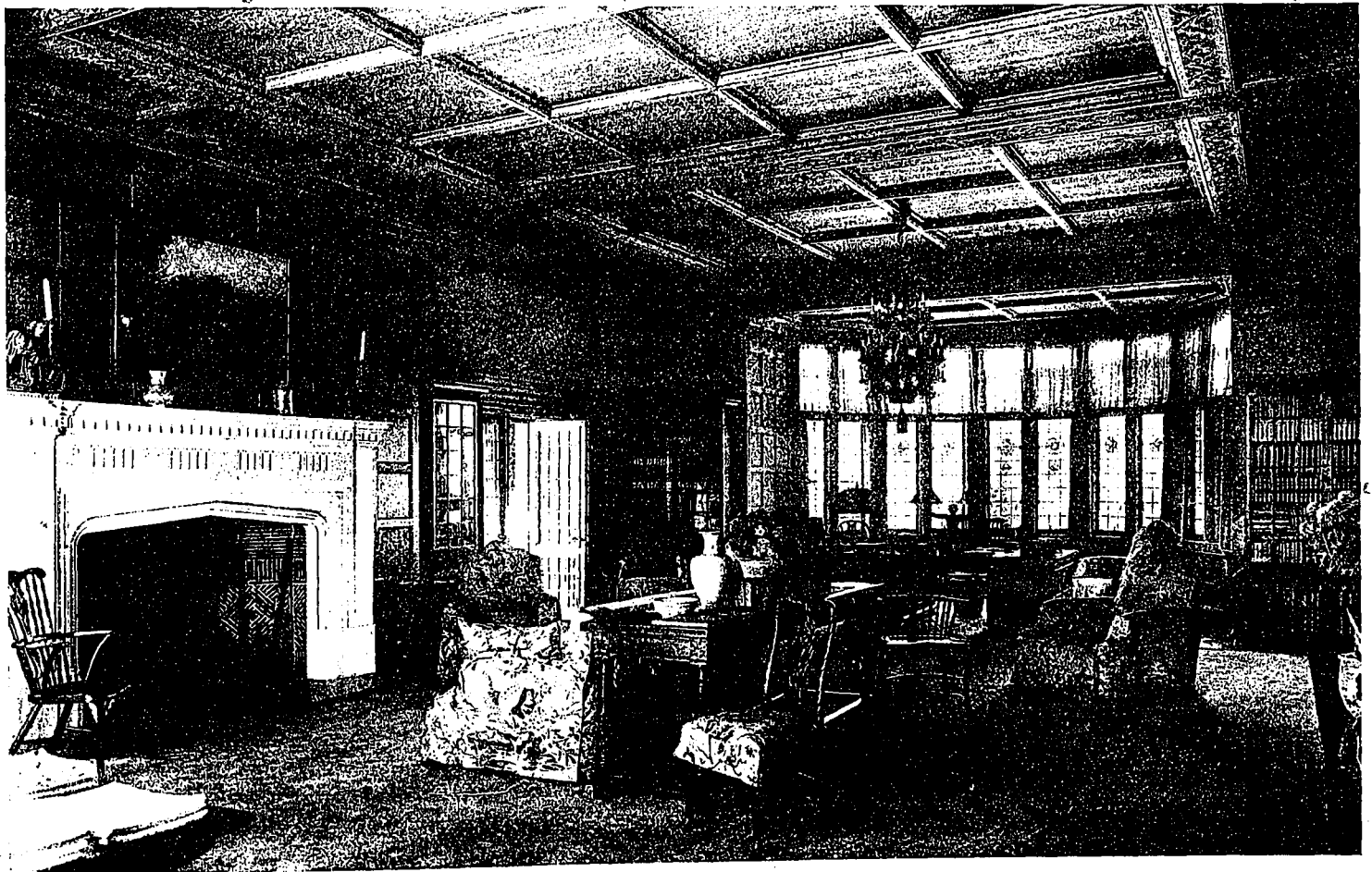
"That the Canadian Society of Civil Engineers, assembled at their annual meeting, and including representatives from all parts of

Canada, realizing that the work of the trained engineer is becoming more and more of vital importance for the successful termination of the present war, desires to place at the disposal of the Dominion Government its organization for the purpose of assisting and co-operating, by every means in its power, in properly training competent officers for the engineering branches of the service.

"This meeting believes that by the hearty and loyal co-operation of the Society, which its members are anxious to give, the Dominion Government would have available for advice and assistance at all times, the organized services of the best and most highly-trained engineers in Canada.

"The Society would draw attention to the fact that already about twelve per cent. of its membership have volunteered for the defence of the Empire, but feels that the services of these men have not been used to the best advantage, as many of them have been drafted into other branches of service than the engineers. The Society would impress upon the government the importance of requiring that all engineer officers should have had practical engineering training before receiving commissions."

There were two hundred and eighteen members in attendance, which was less than usual.



A LIVING-ROOM, EXTENDING ACROSS THE WESTERN END OF THE HOUSE, FINISHED IN BUTTERNUT.

The oak bookcases are reproductions of the famous ones of Samuel Pepys which are now carefully treasured at Cambridge.

CONSTRUCTION

A JOURNAL FOR THE ARCHITECTURAL
ENGINEERING AND CONTRACTING
INTERESTS OF CANADA



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

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

FRASER S. KEITH - - - EDITOR AND MANAGER

Vol. IX Toronto, February, 1916 No. 2

UNFAIRNESS OF ARCHITECTURAL COMPETITIONS

In the last issue of CONSTRUCTION reference was made on the editorial page to the ridiculous circular issued by an Ontario school board, calling upon architects to compete for a possible prize. In this connection a letter was received from Mr. F. S. Baker, architect, of Toronto, in which he says:

Your editorial in the current number of "Construction," headed "A Rich Prize," and referring to the advertisement of a school committee in an Ontario town, for designs for a new school building, which you call a joke, is really a very serious matter for the architects of Ontario, and should not be lightly passed over. On the same page you report the very simple and dignified legislation by which the architects of the State of New York have succeeded in protecting themselves against such atrocious belittling of the ancient and noble art of architecture.

If the architects of Ontario wish to present to the Legislature of Ontario absolute evidence of the real necessity of proper protection for the title "architect" in Ontario, and the

natural and proper method of obtaining this protection, they could not do better than present to the Government page 25 of the current issue of your journal "Construction." The whole matter is there set out in a nutshell, and for my part, personally, I again urge, as I have urged on numerous occasions, the desirability of the Ontario Association of Architects taking immediate and definite steps to place the profession in Ontario at least on a par with surrounding Provinces and States, nearly all of which have now obtained protection for the title of our honorable profession.

In this country we are in the habit of accepting the rulings of majorities, and with all due respect to the no doubt good intentions and genuine arguments from their point of view, put forward by those members of the profession who object to any form of government control, I submit that the time has come when common sense and the safeguarding of our inherent rights demand that immediate action be taken to place ourselves in the position that we have undoubtedly earned through the years of hard work, involving many sacrifices, which has brought the architecture of Ontario up to the standard which to-day exists.

I am taking the liberty of sending a copy of this letter to the President of the Ontario Association of Architects.

The architects have it in their own hands to make it impossible for a competition to take place under the circumstances referred to, by absolutely refusing to have anything to do with anything of that nature. There is evidently not the greatest co-operation nor the closest spirit of unanimity among the members of the architectural profession. This accounts, to some extent at least, for the fact that advantage is taken of the individual architect who is not in sympathy and harmony with his confreres.

A suggestion was made regarding competitions by a Fellow of the Royal Institute of British Architects, who proposed that members should be free to submit designs in competition where regulations are drawn up by a professional adviser of standing—who shall also act as assessor—when the amount to be expended is not less than one hundred and twenty-five thousand dollars. The number of competitors should be narrowed down to say six, each of whom should receive a premium of not less than say five hundred dollars (to be increased on a sliding scale in proportion to the amount to be expended). This reduction might be arrived at through some such means as (1) a preliminary competition with only rough pencil sketches to a small scale (one plan of each floor, one section and one perspective sketch); (2) an inspection of existing buildings or photographs of buildings by intending competitors; or (3) by ballot. Then each of the six competitors, being guaranteed a premium, should develop his design more elaborately for the final competition. It was further suggested that if a competition were called for involving a smaller sum it be ignored by all architects, unless say not more than three named architects be invited to compete and a premium paid to each.

There never was a better time for the architects of Canada to obtain recognition than at the present. The popular mind is filled with the idea of public safety in building requirements, and it is obvious that a proper recognition of the architects and the establishment of a proper status will have an effect for good in this direction. It will require, however, a united effort calling for closer co-operation by the architects than they have apparently been willing to adopt in the past.

OUR NATIONAL LOSS

There are two redeeming features to the calamity which overtook this country when the classic central building of the Canadian Parliament group at Ottawa was destroyed by fire on the evening of February the third with its tragic loss of life. One is the safety of the architecturally unique library, with its priceless historic volumes. The other is that a similar loss will not occur again. The new building will be made absolutely fireproof in every detail. If the lesson has been learned—and there is every reason to believe it has—there will be nothing inflammable about the building to be erected to take the place of the one now in ruins, except perhaps some of the equipment, so that a fire started would be confined to the room of its origin. Advantage should be taken of the occasion to make the other buildings, and particularly the library, as nearly fireproof as possible, even if it means tearing out a large part of the interior, and the further precaution of installing complete sprinkler systems would do much to prevent the eastern and western buildings from sharing a like fate.

It takes just such a sledge-hammer blow as this to awaken the consciousness of those in responsible places to a realization of the necessity of safeguarding the lives of those who work or congregate in public buildings. That the blow should come by the destruction, accompanied by loss of life of the most important public building in Canada, makes the lesson all the more severe, yet all the more likely to produce beneficial results.

By a strange evolution of circumstances the Commission of Conservation, created by the Dominion Parliament, and working under its jurisdiction, with headquarters at Ottawa, is at present engaged on the problem of drafting a standard building law for the whole of Canada. It is little short of criminal that the enormous fire losses in this country have reached such enormous proportions. The economic waste is appalling. During the past five years the fire loss has averaged twenty-three million seven hundred and twenty-two thousand two hundred and forty-six dollars a year, of which at least seventy-five per cent. is the result of personal carelessness. The total charges attributable to fire losses and maintenance of fire protection amount to forty-five million dollars per annum, which is six dollars for every man, woman and child in this country, or thirty dollars for every family. There is ample food for serious reflection for Canadians in the fact that Canada's fire loss per capita is five times greater than that of any European country. This is a tremendous handicap in our competing in the world's markets for world business. Canada cannot afford to continue on in this way, burning up her resources, great though they are, when by the exercise of

proper precaution the loss could be largely avoided. Particularly at this time should the lesson be brought home with striking force to everyone.

Heretofore the Commission of Conservation has proven itself to be, as Mr. White, its deputy head, stated at the recent convention of the Canadian Society of Civil Engineers, a "Commission of Efficiency." In the drawing up of standard building laws for the Dominion the Commission has an opportunity of performing a public service greater than any it has yet achieved. Obviously one standard cannot meet all requirements, but a high standard, with the predominant idea in view of safety, will meet with universal support. The opinion of the best architects in the country should be secured; in fact, a Commission composed of eminent architects should be chosen to collaborate with the present Commission towards this end. If such were done, and the standard recommended by the Commission adopted by the enactment of a Dominion statute compelling Municipal Governments to maintain the standard, or standards, as outlined, human life would be better safeguarded, with the resultant possibility of a large part of the enormous fire loss done away with.

CANADA PAYS THE PENALTY

An analysis of the fire losses in Canada during 1914 discloses some interesting conditions. This statement substantiates and verifies the charge that carelessness is the cause of seventy-five per cent. of Canada's fire loss.

It would naturally be expected that the greater number of fires would be in factories using power or fires for manufacturing processes, and where accumulations of shavings and other waste are exposed to fire from friction, spontaneous combustion, or other causes.

Such is not the case. By far the greater number of fires were in buildings in which none of these risks occur. Factories contributed only 59 fires; various mills only 12; laundries, 5; engine houses, 1; machine shops, 3; sawmills, 12; foundries, 2; while power-houses, blacksmith shops, canneries and others had a clean record.

Against this and constituting a record which should be a disgrace to any country, were 676 fires in dwellings, 138 barns and stables, 384 stores, 46 hotels, 44 business sections and blocks, 26 warehouses, 18 offices, 11 schools and colleges and 29 sheds.

Some of the causes of the fires were: Electrical defects, 55; lamps and lanterns, 20; defective and overheated stoves, furnaces and chimneys, 113; sparks from chimneys, 41; candles, etc., 6; ashes, 8; matches, 69; cigar and cigarette stubs, 15; defective gas appliances, 21; oil stoves upset and exploded, 13; spontaneous combustion, 18.

Architectural Digest

Articles of More Than Passing Interest From Our Contemporaries

THE AMERICAN BUILDER.

It is a great pleasure to be with you and have an opportunity to speak to the builders who are gathered here, and it is a privilege and an honor to represent the American Institute of Architects on this occasion. From the derivation of this word the architect is a master builder, and you also have been called master builders; and yet neither of us can really lay claims to-day to that title. It is possible, though not probable, that in the past, when the building operations were simpler than they are to-day, there may have been, here and there, individuals who were justified in calling themselves master builders; men of imagination to design and plan, and knowledge to construct and execute, but to-day no one man can perform all this. Co-operation is the keynote of the work which jointly we bring to completion. Competition and strife there will be also; these have their places and must always exist; but it is co-operation, the unselfish working together, not competition and strife, the selfish struggle, which should control and harmonize our work.

We are members of one great organization. Labor, the strength and the skill of hand which realizes our visions; administration, the executive ability which organizes all the intricate machinery; vision which, with quickened imagination, conceives the whole. These three are all essential to building, and unless all play their part and do their share no work will be even approximately perfect.

The architect stands in a peculiar position of responsibility and trust. He is employed and paid by the one who provides the capital for the undertaking, but his duties and responsibilities toward the builder are equally exacting. There was a time, not so long ago either, when the architect contented himself with making a few drawings and a sketchy specification, and relied on a builder in whom he had confidence and who was familiar with the office, to supply what was lacking in plans and specifications. If an owner desired competitive bids, none was invited to bid but those who knew the office and what it expected, and would figure accordingly. Occasionally an owner might insist that a builder outside this favored group should figure, and possibly he might be sufficiently simple-minded to figure only what was shown on plans and called for in the specifications. Thus he might win the contract. When the work was finished and his losses counted, he would wisely forget them, and make friends profitable for the future. You all know these things as well as I. You all know those comfortable blanket clauses under which the architect, generally ignorant or incompetent, sought to protect himself. The city of Boston, in this case the owner, not the architect, had at one time in its contract not only the usual provision, so that anything that appeared either in the plans or in the specifications was included, but also a provision that everything necessary to carry out the full intent and meaning of the building, whether or not it was called for, was included. The owner and the architect were the sole judges to decide what was covered under this clause, and the contractor's only chance was that the city would not enforce such an agreement.

In all such matters of right and of wrong, of justice and of fair play, the architect has had a very serious duty to perform, and it is only of recent years that the profession generally has realized its responsibility. Toward the owner the architect necessarily assumes a position of trust. He is on his honor to see that the money put in his hands is expended wisely. It is no easy task, for economical building is difficult. Toward the builder the architect has still graver duties, because less clearly defined, and because he is here performing a service paid for, not by the builder, but by the owner. Yet he must many times, in holding the balance true, give his opinion against the owner and for the builder. There are times, too, when he ought to give his judgment for the builder and against himself. How often the architect has failed in those grave duties you know as well as I. If to-day architects are more fully alive to their responsibilities, it is the first step toward discharging them, and they will turn to the builders for help. Not one of us can work well without the help of others. It is builders, not other architects who will help us to make our drawings complete and accurate, our specifications correct and in accord with the best modern methods and practice. Half our troubles are eliminated by complete and accurate documents on which to base the contract.

Co-operation, then, is the plea which the institute makes to the builders. Trust in each other and an earnest desire to work together for the good of all. For the past six years the institute has been working on a form of agreement and the general conditions of the contract to replace that which was issued some twenty-five years ago, and has now outlived its usefulness. A first attempt was made three years ago, and an edition published. The old organization which joined with the institute in the first agreement, the National Association of Master Builders, was no longer active, and this first edition was put on the market with very little help or advice on the part of the building trades. The new "Standard Documents" met with very little success and with a great deal of adverse criticism. Some of this was merited, but much was merely the result of misunderstanding. The institute at once began a revision, and this time made definite agreements for consultation with builders in various parts of the country. The result is the agreement and general conditions now published which bears the endorsement of many strong organizations representing the building trades. I earnestly urge you to adopt and use these forms, but them to be the best, study and constructively criticize them. They are not complete, are not perfect, but they are far better than anything we have had before. Here again let me urge co-operation.

After all co-operation means consideration of others and the recognition of the work of others. Understanding and appreciation are at the root of any effective work. The whole is greater than any part, artist, engineer, builder, skilled mechanic and unskilled laborer, all have their part to play in the complete building. All are interested and interdependent. I almost hesitate to touch upon one, almost the gravest of our responsibilities, that toward organized labor. So long as the labor unions stand only for their best ideals, good service for good pay, shorter hours and more efficient work; things which make of the men better citizens, more fit to assume and bear their share in the common burden of government, just so long will the union receive the full support and encouragement of every

right-minded citizen. But the moment this or any other organization, whether of labor or of capital, works for selfish aims and against the good of the community, then it is evil, not good, a curse and not a blessing. You know as well as I that the great bulk of the men who belong to the unions in the building trades are competent, reliable and honest, and that the danger lies in those indifferent mechanics fatally gifted with fluent tongues, whose one stock-in-trade is trouble, and whose one object is to stir up strife. Help them to see that it is not strife but co-operation that will most surely give labor the honorable position to which it is entitled.

The architect's position in all these relations is a peculiar one of responsibility and trust. His is a difficult position to fill. Without the help of the builders, it is impossible to fill it. On behalf of the American Institute of Architects I ask your help and your co-operation in the great work which both of us have at heart.—Address before American Builders' Week Congress, San Francisco, by R. C. Sturgis, President A.I.A.

THE PROPER USE OF MATERIALS.

In the same way that no color can be said to be impossible, so no material is really unsuitable if treated in the proper manner and used in the right place. But there is no choice upon which an architect has to deliberate which makes greater call upon his sense of fitness and appreciation of the meaning and significance of inanimate things. It involves a sense of color and texture, and when choosing materials which are made in standard sizes, a very precise feeling for scale.

The rage for variety has produced a flood of new materials, mostly artificial, some of which establish themselves permanently, while the majority disappear.

Meanwhile the genius is finding for himself new ways of using old materials. In recent years he has discovered that it is possible by using selected or mixed clays to obtain tiles and bricks of colors and textures more harmonious than the heavy tile or the terra-cotta brick, that by a promiscuous interspersing of tiles with the brickwork either in bands or for arches, or to level up courses, he can obtain a more interesting wall, especially if at the same time he eliminates the series of hard parallel lines produced by the struck cut joints of the pointing, and merely wipes the mortar off flush. He knows now how to get the most value out of the grain even of pine, by eschewing paint, using either stain or rubbing the wood with lime and varnishing with flat varnish to give it the pearly grey tone which is so pleasing. He has called into his service such materials as chalk rock, quartz flint, white tiles, and bricks made by dipping in white sand before the last burning, and many other neglected natural materials. He finds uses for all kinds of rejected or dis-used objects, such as millstones, cobbles, bedposts, lead cisterns, etc., and even incorporates with his fabric parts of ancient buildings, such as panelling, staircases, beams, doors and carvings, to such an extent that dealers in these wares have sprung up all round us.

The rage for the antique is due to the excellence of the workmanship for everything made in the Augustan age of England, the sixteenth, the seventeenth and the eighteenth centuries; when time was no consideration and perfection "the only wear," bears the hallmark of genuine craft upon it, and the material was always of the finest and selected with great skill for the purpose intended. To-day it is difficult to get even faithful copies made of these objects; our wood is not usually so fine or so well seasoned, and the number of artificers who take a pride in their work for its own sake is so few, for the methods of Curtain-road, with the ubiquitous glue-pot and screw, have pervaded the whole trade.

We have only ourselves to thank for all this, for price governs these things entirely, and for the man who will pay there is still the patient worker, with all his great tradition behind him and a careful hoard of selected wood. These are the men who should be encouraged to do their best, and to school others to work as well, so that in spite of other influences we may continue to hold our land the world over.

But, however that may be, it is certain that an intuitive feeling for the medium in which one works is essential to the attainment of fine architecture.

Be the proportions or details ever so fine, they lose their charm if executed in cold, unsympathetic material, or in other material too restless, perhaps. Sometimes there is no choice, though normally we are fortunate in this country in having a very wide range to choose from; our geological formation gives us every conceivable variety of stone, clay, etc., and our central position every possible timber and metal, so no excuse can be found for the incongruities or violent contrasts which so often show themselves.

The ancients understood all this, but to-day we are faced with different problems. The French have taught us many lessons in modern expression through new materials, as in their inimitable way of designing steel girders and framework, their use of ornamental lead and zinc work, etc., but they seem nevertheless to have failed to keep their hold on the old problem of harmonizing materials with their surroundings, and we find surprising instances in which through want of this, as in many of their modern country houses, they have produced effects far from sympathetic.

This is the sphere in which our English domestic architects have shown their superiority. They have adopted the principle of harmony instead of that of contrast, with the result that their work is sought for by enlightened housemakers, not only at home but in almost every country where quiet and restful buildings, without violent effects or jarring notes, are sought after.

There is range enough of new material here at our feet to please the most fastidious, though frequently we hear of great exercise of ingenuity to avoid anything new and draw from outside sources such coveted relics as old tiles, old Horsham slates, old oak, and old stone.

Although this country is rich in natural building materials, invention has been busy in devising new ones, some of which are of considerable merit owing to the fact that they are more impervious to atmospheric influence than are natural materials. Among these we may mention terra-cotta, Carrara ware, falience, and a number of serviceable roofing materials, one advantage of which is their extreme lightness.

Now, apart from the axiom which dictates the use of local materials wherever possible, we think the climate of this country is so versatile that, to get good effects, materials should be used which reflect these changes and show evidence of weather while retaining their structural integrity. That involves, for the most part, the use of natural products and a close study of their properties. Nature's colors are never garish, but must be rightly used, and the texture of each will determine the way in which they shall be worked. It is painful to see the sturdy English oak with its large fibre reduced by machines to delicate mouldings more suited to crystalline substances like marble; the same applies to a coarse-grained stone. It is equally painful to see a metal run into moulds as cast-iron or lead, as if it were ductile, and vice versa; also to see highly-glazed, unresponsive surfaces, with no absorption or breathing power, as it were, except where necessary in exposed positions, or for radiating light or other special purpose; also for a plastic material like plaster to be treated like soap or wax by pressing it into moulds; also the practice of enamelling slate and iron.

The great exception to this general principle is for buildings in cities. While smoke still refuses to abate itself, impervious materials must be considered for their brightness and cleanliness, and such materials as Carrara ware are likely to be used. It is an unresponsive material, and its aspect never changes; and in that respect it is inhuman; incidentally also these materials bring opportunities to Philistines to do things they could not do without, such as the perpetration of a canary yellow or chocolate brown front on our streets. Such materials necessarily require the greatest care in design if they are to be used to full advantage and effect, but in the right hands they give the architect exceptional opportunities.

The Nature School will no doubt agree with all this, and possibly even protest against the final reservation, pointing out the peculiar bleaching properties of Portland stone in support of their objection, but highly conventional buildings, such as railway stations, hospitals, markets, etc., require special treatment as the hygienic considerations predominate, and the artificial material fulfils necessities which the natural materials fail to meet.

A sense of the "fitness of things"—the old qualification for a gentleman, by the way—settles everything. Climate, position and purpose will, if well thought out, give the key to a wise selection, but if ignored will ruin the finest design ever conceived.—"The Builder."

THE WORLD'S LOVE OF STONE.

When the wires flashed the news that the cathedral at Rheims was destroyed, a protest of pain and disapproval swept the art-loving world. A short time ago, Maurice Maeterlinck issued a round robin, signed by a multitude of artists and architects in both Europe and America, pleading for the stored monuments in stone; and to this appeal a vast number of people—not only scholars, but simple working folks, even as you and I—responded in sentiment.

We love these noble monuments in stone, because they represent the best work of heads, hands and hearts now stilled for ever. The unknown barbarian who fired the Alexandrian Library won the lasting execration of mankind. And the soldier who gave the order to bombard the Parthenon lives disgraced for this alone.

History is written in stone; and well did Hugh Miller, that stonemason who became a great geologist, write his immortal book, "The Testimony of the Rocks."

Stone is Nature's own building material. For it there is no satisfactory substitute. Wood, concrete, brick, terra-cotta—all are building materials of worth and merit, but each represents a certain use in itself. Peary and Cook found ice a satisfactory building material up to a certain point, but for continual use it had its limitations.

Herbert Spencer speaks of there being in history a very small and select class of educated men who in knowledge, efficiency and insight are beyond the rest of mankind. All education is comparative.

There is no end to education. But in the very high and select class of educated men Herbert Spencer named the following: Socrates, Pericles, Aristotle, Pliny, Michelangelo, Leonardo da Vinci, Alexander Humboldt.

It is no mere coincidence that each, all, and every one of these men were workers in stone and all studied the testimony of the rocks. Socrates was a stonemason by occupation. He evolved in to a sculptor, and only quitted the hammer and chisel to become the schoolmaster of Athens.

Pericles built the city of Athens, the most beautiful city the world has ever seen, and he built it of stone with the help of Praxiteles, Phidias and Ictinus, who were all artists in the use and manipulation of stone. Pliny, the Roman soldier, was a deal more interested in geology and in cataloguing the different kinds of stone than he was in hunting out and destroying the enemy. And this fact was a talent levelled at his good name.

But while the world has had a vast number of soldiers, it has only had a few men who ranked in the class with Pliny as lovers of Nature. Aristotle wrote a hundred essays on natural history, and several of these books were on the subject of stone.

Aristotle was the world's first geologist. He made lists of the various kinds of stone, and named them, and some of the names he supplied still endure.

Michelangelo was apprenticed to a stonemason when he was fourteen years of age. When nineteen his nose was flattened to his face by the mallet of a rival. He carried with him to the day of his death the marks of the hammer of hate. The hammer had its vogue with artists, even then.

Every great man who does anything for the world carries with him evidence of the world's inappreciation and ingratitude. These are his credentials.

Nevertheless, in the long run the hammer is not wholly bad. It trims, embellishes, strengthens—when it does not kill.

Saint Peter's, Rome, was designed by Bramante. The building had been going on for many years, and different architects had successively changed the design. Arrived at the point where it became necessary to roof the central mass, Michelangelo took up the work, and the famous dome of cut-stone which resulted is a monument to his skill.

Of course, he didn't risk his reputation on any single performance. The "Moses" in marble in the church of St. Pietro in Vincoli in Rome is an enduring monument to the genius of this wonderful stonemason.

Then there is the "David," housed in the Chapel of the Medici in Florence. The noble youth of colossal proportions stood and challenged the seasons for a century out of doors.

When you see the chapel of the Medici, the attendant will allow you to climb upon a ladder to look at the top of the head of "David," and you will discover that the statue is not finished.

The head is flattened and shows the sure signs of the natural stratum. Michelangelo was too great an artist to obliterate this mark of the natural stone, as it once existed in the quarry.

Michelangelo once said, "In every block of stone there is an angel, and the work of the artist is to liberate it."

His "Night" and "Morning" and "Il Penseroso" have been an inspiration to hundreds and thousands of artists. More especially have these heroic figures inspired Rodin, that master stonemason of modern times. No man has done more for the lovers of stone than Rodin. Many of his finest pieces carry the idea of incompleteness. They are suggestions rather than finished products. Rodin leaves something for the imagination. Out of the rough broken block emerges a face, a form, a hand, a foot, and you get a poem in stone. No other medium but marble would suffice.

The inspiration that fired the brain of Michelangelo was the marble of Italy. And the inspiration of Auguste Rodin was Michelangelo.

Well could the mountain say to mankind, "Before you were, I was." The basis of the soil from which man gets his food is the disintegrated rock. Unlike wood, stone is comparatively without limit. The forests have been devastated, and the trees, to a degree, obliterated. But the mountains have not yet really been sampled.

Man leaves the history of his race engraven on the quarried blocks that form his home, his palaces and his temples.

Our minds naturally revert to the Jewish Temple par excellence—Solomon's. Conceived by David, it was put into operation by Solomon and took seven years to build. Hiram, King of Tyre, supplied the craftsmen, the cedar wood, and the stone, and Solomon furnished some of the laborers and the cost of construction.

It was a noble structure, occupying the summit of a hill, and rising like a pyramid from the plateau—strong, stable, and secure—a fitting sanctuary for Israel's God. In material and craftsmanship Solomon's Temple will ever be associated with the noblest and best.

At the corner of Wall and Broad streets, in New York City, is a new building recently erected by J. P. Morgan & Co. It seems like a simple little building compared with those around it. It is only three stories high. It is built of stone, carved and cut by the hand of artists. The artificial and the substitute played no part in the construction of this building. It was the intent of the owners and builders to erect a building that would endure long after every man now living has turned to dust.

The building must typify honesty, solidity, genuineness; also, it must symbol beauty. One material only could be used—stone. In the finest residences now being built, stone and marble are the materials. They token leisure, endurance, and all that makes for permanency and worth.

Athens was a little city, a city of only one hundred and fifty thousand people, but Athens will be reproduced again and again in stone, a lasting monument and memorial to the good taste and lofty ideals of the nations.

As the world's protest against war and waste increases, so will grow the search for beauty and the appreciation of the materials in the untouched quarries of the everlasting hills.

The difficulties of handling stone and carving it into shapes of use and beauty are too great for the average dabster in art. Marble can never be cheap and commonplace. It will always be a luxury—it is the aristocrat of stone—and it will ever be a chosen medium for the bodying forth of the ideals of the sculptor and architect.

Isolated monumental efforts, while appealing to the people in degree, do not have the same hold upon them as beautiful architecture. Stone has ever been recognized as the ideal material with which to build. It is durable and dignified, and lends itself to its subject in a manner that imitation stone or concrete never can.

The Egyptians built for eternity. Their belief was that the present life was but a moment in comparison with eternity—that the body must be preserved for the soul to inhabit. And this was responsible for the architecture of their tombs, the massive pyramids and temples of stone.

While many many think that these huge stone structures are not architecture in its aesthetic sense, one thing at least is certain: the technical perfection with which these huge blocks of stone—squared and polished and inscribed with complications—have been used, has never been surpassed.

The Chaldeans, Assyrians and Phoenicians had the same idea, and their structures were of carved stone.

The Greeks developed an architecture of noble simplicity and dignity, in part derived from the Egyptians. Their earliest efforts were rough and coarse—huge boulders piled on top of one another.

But in the Age of Pericles Greek architecture attained its greatest perfection, with Phidias, Ictinus and Callicrates as its great master stonemasons and designers. The Parthenon at Athens was one of the most remarkable edifices ever built, characterizing beauty, grace, harmony and simplicity in the highest degree.

The Romans under Caesar Augustus reached a high point in architecture. "I found Rome mud and left it marble," was his proud boast.

Stone and marble were used in all its great buildings—temples, aqueducts, amphitheatres, baths, villas, arches and monumental pillars.

The mighty ruin of the Colosseum gives us an idea of the bold and comprehensive spirit that penetrated the stonemasons of that period. With the decline of the Roman Empire came the destruction of the ideal of this noble work. But above the ruins of empire the church was preserved; as witness the magnificent piles of St. Sophia, Constantinople; Santa Maria, Cologne; the Duomo, Milan; and the Cathedral of Mainz.

At this time the Byzantine period began. The Church of Sophia at Constantinople built by Justinian, and St. Mark's in Venice are striking examples—beautiful examples—of the adaptability and suitability of stone as an ideal building material.

Then came the Gothic style—than which no other art has so beautifully reproduced flowers and foliage in stone. Hence Gothic architecture found its highest development in churches and cathedrals. The Cathedrals of Amiens, Cologne, Rheims and Notre Dame de Paris excel as examples.

The Renaissance superseded the Gothic. It was a revival of the Classic style of Rome and had as its votaries Michelangelo, Raphael and Bramante. St. Peter's in Rome, St. Paul's in London, the Louvre in France and the White House, Washington, are in this style.

Since the Renaissance period there has been no special architectural development. The practice has been to modify or develop one of the prevailing styles, according to taste. And the result of this mingling of styles and clashing of different tastes and fancies has been very curious. Grecian, Roman and Gothic all had their votaries.—Elbert Hubbard.

Construction News

The following information is obtained from our correspondents, from architects, engineers and local newspapers. These items are published in our Daily Report Service, and are herein compiled for the use of subscribers to the monthly issue of "Construction". Should any of our readers desire this information daily we will be pleased to submit prices upon request.

BUSINESS BUILDINGS.

ELMIRA, ONT.—Wm. Moser is calling tenders on a brick business block, 50 x 38.

TORONTO—The Canadian Bank of Commerce are remodeling their offices at 35 King street west; cost \$12,000.

TORONTO—Clinton and Russell have awarded the following additional contracts in connection with the new Imperial Co. building on Court street: Glass, Joseph B. Freeland Co., Brooklyn, N.Y.; marble, Mississquoi Marble Co.; iron and bronze, Architectural Bronze and Iron Works.

CIVIL ENGINEERING.

CHILLIWACK, B.C.—Tenders will be called shortly for sewer work, to cost \$20,000; clerk, P. J. Brown.

LACHUTE, P.Q.—Tenders open for steel bridge over North River; secretary, J. H. Rice.

MINNEDOSA, MAN.—Tenders are open for the erection of a steel bridge; clerk, Herbert Thompson.

NANAIMO, B.C.—The city propose erecting a new steel bridge.

NEW GLASGOW, N.S.—The Dominion Government are calling tenders for a new lock gate; plans and specifications from resident engineers at Toronto and Montreal.

NIAGARA FALLS—The city will repair and install new water mains.

PORT DOVER—The Department of Public Works will spend \$50,000 on harbor improvements.

QUEBEC, P.Q.—The Provincial Government will spend five millions on road improvements.

SACKVILLE, N.B.—The town propose laying new pavements; cost \$20,000; Thomas Murray, clerk.

ST. JOHN, N.B.—The Provincial Government has awarded Power & Brewer the contract to erect a steel bridge over the Waweg River.

ST. MARY'S, N.B.—Department of Public Works, Fredericton, N.B., is calling tenders for steel bridge over Nashwaak River.

SUDEBURY—A by-law has been passed to instal sewers, waterworks and electric extensions; cost \$45,000.

TORONTO—C. S. Townsend has been awarded the contract for the erection of Mount Pleasant road bridge in concrete; cost \$40,000.

WINDSOR—Merlo & Ray have received the contract to build the new storm sewer; cost \$38,190.20.

CLUBS, HOSPITALS, THEATRES AND HOTELS.

FERGUS, ONT.—T. D. Hume, of Milton, will remodel the Argo Block into a picture theatre.

HAMILTON—T. H. Pratt, chairman of the Mount Hamilton Hospital Board, has recommended an addition to cost \$25,000.

HAMILTON, ONT.—McPhie, Kelley & Darling have prepared plans for a new clubhouse to be built at the beach; cost \$20,000.

MONTREAL—U. Lajeunesse, C.P.R. Building, will erect a new theatre, for which he has plans, on Ontario and Orleans streets; cost \$100,000.

ST. JOHN, N.B.—The Dominion Government propose erecting a detention hospital and warehouse; cost \$180,000.

TORONTO—E. L. Ruddy, new owner of the Majestic Theatre, will spend \$75,000 on improvements.

TORONTO—Eden Smith & Sons, 199 Yonge street, Toronto, have prepared plans for a theatrical studio.

TORONTO—C. H. Reid, architect, Confederation Life Bldg., who is associated with H. Crane, of Detroit, as architect on the new Princess Theatre, is calling tenders for the steel work. The building will cost \$125,000.

VANCOUVER—Alex. Pantages has plans prepared for a new theatre to be erected on Hastings street; cost, \$250,000.

WINNIPEG, MAN.—L. F. Alard, Strand Theatre, will erect a new theatre with seating capacity of 2,000.

WINNIPEG, MAN.—Commissioner Sowton, of Grace Hospital, has proposed an addition to cost \$30,000.

ELECTRICAL CONSTRUCTION.

OTTAWA, ONT.—Chas. MacNab, secretary of the County Council, is calling tenders for lavatory equipment, electric wiring, etc., for the jail.

SEAFORTH—Tenders are open for extensions and repairs to the McKellop Telephone System.

PLANTS, FACTORIES AND WAREHOUSES.

ESQUIMALT, B.C.—The Esquimalt Brewery was destroyed by fire; loss \$20,000.

HAMILTON—Kent-Garvin Co., 18 Catherine street, will rebuild their factory recently destroyed by fire.

KINGSVILLE—Brown-Wigle Woollen Mills Co. have received concessions from the town to erect a factory; cost \$10,000.

LANIGAN, SASK.—Lanigan Creamery Co., Limited, secretary, W. Chadlock, are calling tenders for a brick factory.

MONTREAL—Work has started on the five-storey factory for Williams Mfg. Co.; cost \$60,000.

MONTREAL—Bourassa Bros., 1495 Notre Dame street, are erecting a \$3,000 factory addition.

MONTREAL—Heptwin Bros., Long Point, are erecting a factory, 50 Notre Dame street; cost, \$12,000.

MONTREAL—The Imperial Munitions Committee will erect a time fuse factory, to cost \$15,000, in Notre Dame de Grace Ward.

MONTREAL—The Imperial Munition Board, Mr. Decarey interested, will erect a time fuse factory in Notre Dame de Grace, to employ 3,000 men.

MONTREAL—The Imperial Munition Board have completed plans for a time fuse factory to be erected at Verdun, 1,000 x 250 feet; cost \$500,000.

OTTAWA—Grant, Holden & Graham will rebuild their factory recently destroyed by fire.

PORT DOVER, ONT.—James Loudon & Hertzburg, 79 Adelaide street east, Toronto, have prepared plans for a waterworks system; cost \$50,000.

QUEBEC—Quebec Abattoir Co. have started work on new plant; cost \$35,000.

REGINA, SASK.—The Imperial Oil Co. have commenced work on their new million-dollar refinery.

SUDEBURY—Sudbury Construction Machinery Co., Limited, have plans for large plant.

SUDEBURY, ONT.—Ellis & Ellis, architects, Manning Chambers, Toronto, are preparing plans for a large factory, to cost \$70,000.

THOROLD—The Ontario Paper Co., Ltd., have awarded the contract for a new sulphite mill to the Chicago Bridge and Iron Works, of Bridgeburg.

TORONTO—C. Goldberg, 46 Berkeley street, has plans for a factory; cost \$3,000.

WELLAND, Ont.—Canada Steel Foundries will erect new foundry; cost \$100,000.

WINDSOR—The Maxwell Motor Co., of Detroit, propose erecting a large factory in Windsor.

TORONTO—The city is calling tenders for a cattle shed at the abattoir; W. W. Pearce, city architect.

WESTPORT, ONT.—Electric Light and Milling Co. will erect a new plant to replace that destroyed by fire.

TORONTO—National Equipment Co., 1 Wabash avenue, are erecting a galvanized iron building; cost \$16,000.

VANCOUVER, B.C.—The American Can Co. have plans for a brick addition to their factory, 125x150, to cost \$75,000.

TORONTO—The Canada Pipe and Steel Co., 28 Atlantic avenue, are erecting a galvanized iron factory; cost \$4,000.

WINDSOR—The newly incorporated Canadian Chalmers Auto Co. will erect a large factory in Windsor or Ford City.

TORONTO—V. Long & Co. have awarded the contract on their new factory, at 721 King street west, to W. Jessery, Elliott House.

TORONTO—The Canada Metal Co., Fraser avenue, have awarded the Ontario Wind Engine Co. a contract to erect a steel shot tower.

TORONTO—The Overland Automobile Co. contemplate erecting an addition to the Russell Motor Co. building, which is calculated to be three times the size of the present building; cost \$500,000.

TORONTO—F. S. Baker, architect, has awarded the following contracts on the new factory for the Martin Corrugated Paper Co., Pape avenue: Masonry, H. W. Dancy; carpentering, A. Weller; roofing, Feather & Roadhouse.

TORONTO—Max Dunning, architect, 35 Dearborn street, Chicago, has awarded the contract for the new Robert Simpson building on Mutual street, to Wells Bros., who in turn will sublet all trades except the masonry and reinforced concrete skeleton.

PUBLIC BUILDINGS AND STATIONS.

BURFORD—A new drill hall costing \$10,000 is proposed.

BEVERLEY, ALTA.—A by-law to erect a public library will be voted upon February 16th.

BRANTFORD—The Department of Militia and Defence will erect a new drill hall to cost \$75,000.

DAUPHIN, MAN.—The Provincial Government will erect a new stone jail, to cost \$80,000.

DUNDAS—R. W. Karch, chairman of the Building Committee, is calling tenders for a civic storehouse.

HALIFAX, N.S.—Architect S. P. Dumaresq is calling tenders for all trades to complete the market building.

HARRISTON, ONT.—The town hall, which was destroyed by fire, will be rebuilt.

MONTREAL—Tenders are open for a civic pumping station and pump, to be erected on Connaught avenue.

MONTREAL—Montreal Jockey Club are building a concrete addition to grand stand, with ornamental ironwork used.

NEW WESTMINSTER, B.C.—Competitive plans are being called for a new market building.

ORILLIA—Burk, Horwood & White, Ryrie Building, Toronto, are revising plans for the municipal buildings.

OWEN SOUND—Foster & Foster, 887 Second avenue, are calling tenders for a new county registry office.

OTTAWA—The Department of Public Works will erect a new addition to the customs house, to be used as a Senate and Commons chamber.

PORT ARTHUR—The Walsh Land Co. will re-erect the office building recently destroyed by fire.

RENFREW—South Renfrew Agricultural Society, W. E. Small field, secretary, propose erecting a brick machinery hall to cost \$4,000.

STANSTEAD PLAIN, P.Q.—Loomis & Dakin have the contract to erect the new registry office; cost \$10,000.

TORONTO—The Dominion Government propose erecting a post office in Earlscourt.

TORONTO—A new bathing station will be erected by the Harbor Board at Sunnyside in the spring.

TORONTO—W. Williams, 137 Beach avenue, has been awarded the contract on the temporary post office on Front street; cost \$20,000.

VANCOUVER, B.C.—The G. N. Railroad is calling tenders on the concrete foundation and pile-driving for the new station; architect, F. L. Townley.

RESIDENCES, STORES AND FLATS.

AMHERSTBURGH—Charles Hackett is having plans prepared by J. C. Pennington, architect, of Windsor, for a new \$6,000 residence.

BRANDON—Doig, Rankin & Robertson will start work immediately on the erection of a new store building to cost \$75,000.

FERGUS, ONT.—John Paton, R.R. 4, Fergus P.O., is calling tenders for a new residence.

EDMONTON, ALTA.—G. Race, Indian agent, Edmonton, Alta., is calling tenders on twenty houses.

LONDON—J. H. Wilkey, 537 Ontario street, has plans for a residence; cost \$3,500.

LONDON—A. Dickenson, Duchess street, has plans for a brick veneer residence to cost \$2,500.

LONDON—D. C. McNaughton McCormick Manufacturing Co. is having plans prepared by Watt & Blackwell, architects, for a residence to cost \$4,500.

MONTREAL—R. McKay, 631 Sherbrooke street, has plans for a new residence.

MONTREAL—O. Roberts, 112 Addington street, is erecting four residences; cost \$7,000.

MONTREAL—J. A. Poiment, 1396 St. Laurent boulevard, is erecting three brick veneer residences; cost \$4,500.

MONTREAL—A. Germain, 76 St. Catherine street, is erecting two residences on St. Catherine street; cost \$5,000.

QUEBEC—J. Julien, La Montagne avenue, has started work on a \$6,000 residence.

QUEBEC—L. Marcoux, Marie Louise street, is erecting a residence; cost \$3,500.

TORONTO—R. Doherty has plans for a \$3,000 residence on Summerhill avenue.

TORONTO—The Health Department is calling tenders for plumbing work on several houses.

TORONTO—M. Arnold, 182 Kingston road, is erecting a two-storey brick residence; cost \$2,500.

TORONTO—A. L. Sanagan, 134 Balsam avenue, has plans for a residence on Balsam avenue; cost \$4,000.

TORONTO—J. F. Moore, 30 Bertmont avenue, is erecting a \$3,000 residence on Silver Birch avenue.

TORONTO—J. H. McKnight, 88 St. David street, is erecting a residence on Aberdeen avenue; cost \$3,000.

TORONTO—Ellis & Ellis, Manning Chambers, Toronto, are preparing plans for two residences; cost \$7,000.

TORONTO—H. B. Jackson, Bracken avenue, has plans for a \$3,000 brick residence to be erected on Beech avenue.

TORONTO—W. Radcliffe, 94 Leuty avenue, has plans for a new store front for Hoberlins, Limited, Yonge street.

TORONTO—A. R. Richards, 33 Westminster avenue, is erecting a brick residence on Glenholme avenue; cost \$3,500.

TORONTO—The Reliance Building Corporation, Royal Bank Building, is erecting a brick residence on Glenmount Park road; cost \$4,000.

TORONTO—A. Lamante, 894 Queen street east, has awarded J. Allin, 119 Riverdale avenue, the contract to erect a store and residence at 722 Queen street.

SAULT STE. MARIE—F. M. Stafford will erect a new store on Cedar street.

SAULT STE. MARIE—C. R. Parker is having plans prepared for a two-storey store, 28 x 100 feet, to be erected in the spring.

WINDSOR—A. B. Bowlby has plans for a new bicycle and motor cycle store, with a white tile front.

WINDSOR—Laybourne & Sewell, architects, are calling tenders for the erection of a residence for William Weir.

SCHOOLS, COLLEGES AND CHURCHES.

BETHANY, MAN.—The Ewens and Hulker Memorial Church will be erected in the spring.

BIRCHCLIFFE, ONT.—The congregation of St. Nicholas' Church will erect a new and larger building; chairman, A. E. Harries.

CAVAN TOWNSHIP—Secretary T. Newman, Omeme, Ont., is receiving tenders for a new school.

CHARLOTTETOWN, P.E.I.—The Valley City Serting Co., Dundas, have been awarded the contract for furniture in the Methodist Church.

EAST TORONTO—Greenwood avenue Presbyterian Church will erect a frame Sunday school; D. M. Ramsay, pastor.

GALT, ONT.—The Central Presbyterian Church, R. G. Struthers, chairman of Building Committee, will erect an addition to the church; cost \$2,500.

HALDIMAND TWP.—A by-law has been passed to erect a new school for S.S. No. 2; clerk, J. Blacklock, Cobourg; cost \$3,000.

HALIFAX, N.S.—W. J. Bush has been appointed architect on new school to be built on Young street; cost \$70,000; chairman of School Board, Ackhurst.

HAMILTON—Gordon Hutton, architect, has been appointed to prepare plans for a four-room addition to the Robert Land School.

HAMILTON—Architect Wardrop is preparing plans for a new Sunday school for St. Luke's Church, Macaulay street; C. E. Riley, rector.

LAMBTON MILLS—Ellis & Ellis, architects, Manning Chambers, Toronto, have awarded the general contract to R. Midgall, C.P.R. Hotel, Yonge street, for the erection of the Lambton school.

LONDON—The Salvation Army propose new interior fixtures and alterations to their temple.

MELVILLE, SASK.—The Union Church, which was destroyed by fire, will be rebuilt.

MOUNT DENNIS—S. B. Coon & Son, architects, Ryrrie Building, Toronto, will call tenders shortly for the new school; cost \$15,000.

PEMBROKE, ONT.—A new school will be erected in the West Ward.

PORTAGE LA PRAIRIE, MAN.—Architect Frank Evans, of Winnipeg, has prepared plans for a new school; cost \$50,000.

PORT COLBORNE—C. M. Borter, architect, Niagara Falls, is calling tenders for a new church to be erected at Port Colborne; cost \$15,000.

QUEBEC, P.Q.—The Provincial Government propose erecting a normal school.

SARNIA—Separate School Board have awarded W. D. Shaw the general contract on the new school; Watt & Blackwell, architects, London; cost \$20,000.

STRATFORD—St. Andrew's congregation, Rev. Finlay Matheson, pastor, will remodel the old church, to be used as a Sunday school.

SYDNEY, C.B.—The School Board will erect a new school on Aryle street to cost \$30,000.

TIMMINS, ONT.—The School Board, A. Allard, secretary, will erect a four-room school.

TORONTO—Morley Avenue Methodist Church, Rev. R. Hobbs, pastor, contemplate erecting a new church.

TORONTO—S. H. Locke, chief librarian of College street library, has recommended a \$40,000 addition to the present College street building.

TORONTO—C. J. Reid, architect, Confederation Life Building, has awarded the following contracts on schools for the R. C. School Board:

St. Clare's School—S. Young, Jr., mason work; D. & M. J. Madden, carpentering; Wm. Brimblecombe, concrete; G. E. Wilkes, roofing; A. Richards, painting; Hepburn & Dister, structural steel; Fred Armstrong Co., heating and plumbing; E. F. W. Salsbury, electric work.

St. Anthony's (two-room addition)—M. Manley, mason work; D. & M. J. Madden, carpentering; Wm. Brimblecombe, concrete; A. Matthews, roofing; A. Richards, painting; Hepburn & Dister, structural steel; D. Glynn & Son, plumbing; Thos. E. Regan, heating; Toronto Electrical Co., electric work.

St. Joseph's (two-room addition)—W. Weale & Son, mason work; D. & M. J. Madden, carpentering; Douglas Bros., roofing; T. J. O'Connor, painting; W. J. Ryan, plastering; Hepburn & Dister, structural steel; Fred Armstrong Co., plumbing and heating; Geo. Beattie, electrical work.

WALKERVILLE—The First Presbyterian Church, J. M. Young, chairman, will build a Sunday school.

WEST FLAMBORO TWP.—J. A. Armes, architect, 68 Federal Life Bldg., is calling for tenders on a brick school.

WINNIPEG—Point Douglas Presbyterian Church has been destroyed by fire; loss \$25,000.

MISCELLANEOUS.

DAVIDSON, SASK.—Wilkie will erect a garage in the spring, brick construction; cost \$6,000.

HAMILTON—The city is calling for the supplies for the year 1916, including rubber boots and hose, stone, asphalt, hardware, etc.

MERRITT, B.C.—The Middleboro Collieries, Limited, suffered a \$10,000 fire loss.

MONTREAL—The city is calling tenders for refined asphalt; L. N. Senecal, secretary.

OTTAWA—Engineer R. L. Haycock is calling tenders for supplies of lead pipe, pig lead, oils, grease, castings and valves.

TORONTO—J. J. Taylor have received the contract for safe door in connection with the Imperial Oil building, Court street.

VICTORIA, B.C.—C. C. Worsford, engineer of dredging fleet, is calling tenders for supplies, including chains, hardware, paints, valves, pipe, etc.

WINGHAM—O. M. Crawford will erect a brick garage work, to start immediately.

Architects, engineers and contractors are invited to contribute information on construction work, whether it be proposed or in progress, and such information will be published in these columns.

INCREASED B.C. EXPORTS TO UNITED STATES.

The annual report of Mr. R. E. Mansfield, American Consul-General at Vancouver, showing big gains in exports from that Province to the United States during 1915, and indicates a much improved business situation at the Pacific Coast. The exports during 1915 exceeded by \$14,083,922 in value those of the corresponding twelve months of the previous year. The territory over which Mr. Mansfield has jurisdiction includes Victoria, Fernie, Nanaimo, Cumberland, Prince Rupert and Whitehorse.

CLAY PRODUCTS ASSOCIATION CONVENTION.

Annual Meeting of Canadian National Clay Products Association
Held at Toronto.

Over one hundred delegates from various parts of the Dominion assembled at the fourteenth annual convention of the Canadian National Clay Products Association, held at the King Edward Hotel, Toronto, on January 18th, 19th and 20th. The chair was occupied by President J. E. Frid, of the Geo. Frid Brick Company, Limited, Hamilton, who gave an address of welcome which was followed by an official welcome on behalf of the city from Mayor Church. Hamilton was chosen as the place for the convention next year. Officers elected for the coming year were: President, J. E. Frid, Hamilton; First Vice-President, A. F. Greaves-Walker, superintendent Sun Brick Company, Toronto; Second Vice-President, Thomas Kennedy, Dominion Sewer Pipe Company; Third Vice-President, Wm. Burgess, Don Valley Brick Company; Secretary-Treasurer, G. C. Keith, Toronto; Councilors, C. B. Lewis, A. Graham, W. Clark, R. N. New, H. Desjardins, A. Neill, D. A. Lochrie and J. S. McCannell.

At the Wednesday morning session instructive papers were delivered by Wm. Burgess on "Operating Clay and Shale Pits in Canada"; J. P. Hynes, of Hynes, Feldman & Watson, on "Brick," and Jos. Keele on the "Application of Salt and Quick Lime in Drying Clay Products."

In the afternoon, W. W. Pearce, city architect of Toronto, gave an address in which he thanked the clay workers for the information supplied to him in compiling data on bricks to be used in connection with Toronto's building by-laws. Mr. Pearce asserted that it was extremely difficult to obtain necessary information on building materials in Canada based on tests, asserting that the aid of the Government was needed in this respect. He pointed out that as a result of tests made he learned that the brick manufacturers in Toronto were as good, if not better, than those made in the States. Following Mr. Pearce's suggestion, and showing the interest the association took in the matter a resolution was passed as follows:

"Resolved, That we, the Canadian National Clay Products Association, urge that the Dominion Government, through the Commission of Conservation or other branch of the public service, extend the work they are carrying on at McGill University, Clay Testing Laboratories at Ottawa, etc., so that they can establish a central bureau and supply accurate information on Canadian building materials to all municipalities requiring same.

"Hollow Ware Dies, Troubles, How to Correct Them," was the subject of an interesting paper by E. F. Greaves-Walker.

In the evening a banquet was held at the Prince George Hotel, when Mr. John McCannell, of Milton, acted as toastmaster. The toast, "Canada and the Empire," was proposed by Mr. Joseph Russell, M.P.P., and replied to by Mr. D. O. McKinnon and City Architect W. W. Pearce; that of "Toronto" was introduced by Mr. D. A. Lochrie and Walter Clark, of Sarnia, and was replied to by Alderman Maguire; that of "Our Sister Cities," which was proposed by Mr. T. Kennedy, was very ably responded to by Mayor Walters, of Hamilton, who assured the delegates that they would be welcomed to Hamilton, where the next convention will be held; and that of "Our U. S. Cousins" was proposed by Inspector Millar, and replied to by P. W. Donahoe, the editor of the "Canadian Clay Worker." Trustee Dr. Steele, of the Toronto Board of Education, gave a short, interesting address on "Technical Education."

On Thursday morning, Chas. A. Miller, inspector of clay products plants under the Workmen's Compensation Act, gave an address on "Safety in Clay Products Plants," in which he gave statistics on accidents during the year 1915. A lively discussion followed, dealing with the companies' relations to the Act.

"The Future of the Face Brick Industry in Canada," by F. R. McCannell, managing director Milton Pressed Brick Company, Milton, was a paper of great importance to brick manufacturers. The future of face brick depends on how good a product can be manufactured at as low a cost as possible. Manufacturers should keep an accurate cost system in the plant to see that they are getting the proper amount of work in the different departments for the given expenditure, establish standard methods wherever possible and form a central bureau, employing a competent man to look after credits and collections. The discussion hinged largely on the relative merits of rough and smooth-face brick. Rough-cut brick, which has been in popular favor for some time, composes about 75 per cent. of the United States face brick. But the death knell of rough-cut brick in the east has been sounded. The fact that it collects dirt overcomes its advantages in color range, and it is not a brick for down-town sections. The trouble in the brick business, especially in the States, is the hobby for something new, different from the last type used. The salesmen advocate a change, the owner calls for something different, and the manufacturer loses money because he cannot use standard methods and manufacture one kind straight ahead.

The paper on "The Clay deposits of Southern Saskatchewan," was a report on the valuable clays of that district, their occurrence, uses and exploitation, by N. B. Davis, of the Mines Branch, Ottawa. With the decreasing supply of clays in Ontario and Quebec, attention naturally turns to the Western Provinces. Have they a supply to fall back on? It is quite evident from Mr. Davis' paper that they have. There is an abundance of refractory clays for stone wares and white wares, as well as for burned clay products, in Saskatchewan.

The afternoon session on Thursday was given over principally to a discussion of the business end of clay-working plants. Professor Wiggins, inspector of boilers, gave the delegates an instructive address on the steam end of a clay-working plant; how to overcome waste, increase the efficiency, and lower overhead charges.

Mr. Greaves-Walker read an instructive paper on "Clay Preparations for Stiff Mud Products," prepared by Prof. Roy T. Stull, ex-director of Ceramics, University of Illinois. A product is no better than the material it is manufactured from. Of course, a poor man may spoil good material, or an expert may make a fairly creditable product from a poor material. In the clay industry, following this idea, great care should be taken from the time the clay is mined till it goes into the machine, to get a uniform grade of texture. Prof. Stull advocates storage.

On Thursday afternoon the delegates as guests of Dr. A. C. MacKay, principal of Toronto Technical School, visited the new clay products and construction laboratories, where the machinery used was inspected. A theatre party at Shea's Theatre arranged by the Entertainment Committee, concluded a very successful convention.

NICKEL REFINERY.

The establishment of a nickel refining industry in Canada will be undertaken by the International Nickel Company on the suggestion of the Government. This will make Canada independent of the United States, which up to the present has refined all the Sudbury mineral.

WORKING BACK TO A SOUND FOOTING.

G. F. Benson, retiring president of the Montreal Board of Trade, at the annual meeting of the board, said:

"My personal experience, in several lines of business that have received no benefit from the so-called war orders, is that commercial and manufacturing business generally has worked back to a sound footing, due, undoubtedly, to the improved business situation generally."

C.P.R. MAKES FINE SHOWING IN DECEMBER.

Canadian Pacific Railway statement shows the remarkable increase in net earnings of \$3,502,797, or 159 per cent., over the corresponding period a year ago, total net being \$5,702,321. Gross earnings were \$12,705,673; working expenses, \$7,003,352. For six months ended December 31 figures are: Gross earnings, \$66,470,164; working expenses, \$36,845,977; net profits, \$29,624,187. In December, 1914, net profits were \$2,199,524, and for the six months ended December 31, 1914, \$19,673,576.

QUEBEC ARCHITECTS MEET.

The annual meeting of the Quebec Association of Architects was held at Quebec City on January 15th. The chair was taken by Mr. Hugh Vallance, in the absence of President J. Perrault. The secretary, Mr. J. Emile Vanier, in his report, stated that the year had not been a propitious one on account of the war, and that the lack of new buildings had adversely affected the profession. In Quebec, however, the annual report of the Quebec section stated, the depression had not been felt to any extent. The association had lost three members by death—Mr. R. P. LeMay, Mr. David Ouellet and Mr. A. I. Richardson, the last-named being killed at Langemarck, and the association passed a special vote of condolence with Mr. Richardson's family. On motion of Mr. J. Lebon, seconded by Mr. J. P. Ouellet, it was decided to write the Department of Public Works, Ottawa, asking that members of the association be employed on Government buildings in the Province of Quebec, and that the legal fees be paid. It was also decided that the association should not apply to the Quebec Legislature for charter amendments. The usual banquet was not held owing to the war, and the members further decided not to celebrate the twenty-fifth year of the association's existence. The following officers were elected: President, Mr. E. B. Staveley, Quebec; First Vice-President, Mr. Hugh Vallance, Montreal; Second Vice-President, Mr. G. A. Monette, Montreal; Treasurer, Mr. N. MacVicar, Montreal; Secretary, Mr. J. Emile Vanier, Montreal; Council, Messrs. M. Eug. Payette, Frank Peden, Alph. Piche, H. J. Asselin, J. Lebon; Delegates to the Royal Architectural Institute of Canada, Messrs. Joseph Perrault, Alcide Chausse, D. R. Brown, Jos. P. Ouellet, A. Beaugreand-Champagne.

TORONTO BRANCH CAN. SOCIETY C. E.'S ANNUAL.

That the Toronto branch of the Canadian Society of Civil Engineers is in a flourishing condition was shown by the secretary's report at the annual meeting. The membership is now 344, an increase of 40 over the year 1914. During 1915 contributions by way of papers presented were made by a number of civil engineers, including Mr. W. McNab, Mr. T. T. Black, Dr. J. A. Amyot, Mr. H. S. Van Scoyoc and Mr. J. A. D. McCurdy. The annual excursion of the branch consisted of an inspection tour of the construction work of the new Welland Ship Canal. Various reports were presented by the different committees which had been appointed earlier in the year for this purpose, and these reports were forwarded to Montreal for incorporation in the general report to be presented at the annual meeting of the Canadian Society of Civil Engineers in Montreal on January 25, 26 and 27.

The following officers were elected for the coming year: President, Mr. G. A. McCarthy, engineer of railways and bridges of the city of Toronto; Secretary-Treasurer, Prof. Arley, department of applied science and engineering of the University of Toronto. Executive Committee—Messrs. E. W. Oliver, assistant engineer C.N.R.; A. H. Harkness, consulting engineer; A. L. Mudge, consulting engineer, and H. G. Acres, hydraulic engineer Hydro-Electric Power Commission of Ontario. During the past year the Toronto branch of this society has shown very effective evidence of a determination to make the operations of this branch an essential part of the proceedings of the parent society.

RED PINE DEALS REQUIRED IN SOUTH AFRICA.

A Durban firm, who are the largest lumber importers in South Africa, are desirous of making a small trial purchase of Canadian red pine deals, so states Mr. H. K. MacMillan, Special Trade Commissioner, in a communication to the department. The object of this purchase is to determine if these deals will be as satisfactory in the Durban market as Swedish deals. The shipment received about ten years ago was unsatisfactory, and since that time this company has purchased no red Canadian deals. Red Canadian deals are, however, now readily accepted at Cape Town, and should be quite as saleable in the Durban market.

This company wish to secure from a very reputable Canadian exporter, ten standards of red deals, 3-inch by 9-inch, in the usual Canadian assortment of length, and equal in grade to Swedish No. 3. They also wish to secure ten standards of red deal, 3-inch by 9-inch, assorted lengths, 20 feet and up. For this small shipment they are willing to pay £20 per standard c.i.f. Durban, and will accept up to the end of March loading.

The shipper may draw at sight upon the company for payment in full.

This trial order, though small, is of great importance in opening up the Durban and Johannesburg market, and the firm exporting should write to this company, giving information as to the possibility of developing an export trade in deals.

Canadians interested may obtain the name of the firm in question on application to the Department of Trade and Commerce, Ottawa.

IMPROVED CONDITIONS IN BRITISH COLUMBIA.

In British Columbia there are evidences of improved conditions in business. Shipbuilding is the latest development under way at the Pacific Coast. This week a despatch from Vancouver stated that at a meeting of manufacturers held recently it was decided to form a company immediately for the purpose of building sailing vessels, to be operated solely in the lumber trade of British Columbia. Steamships are also to be purchased if they are available, with a view to assisting the exportation of lumber. Capital to cover the initial expenses was subscribed at the meeting, and an effort probably will be made to get some Provincial Government support for the enterprise by the guarantee of bonds.

BILLION DOLLAR GRAIN CROP.

The total value of the field crops of Canada is given as eight hundred millions of dollars. In a statement issued by the census and statistics branch of the Department of Trade and Commerce. Revised figures of the grain crops place the wheat yield at 376,303,600 bushels, as compared with 161,280,000 in 1914. The average yield for all wheat was 28.98 bushels to the acre, compared with 15.67.

The reports speak of the yield as the most abundant grain crop in the history of Canada. The quality was higher than any in the last five years, and the price was ten cents above the quinquennial average. The wheat crop amounted in money to \$312,569,400, and the oat crop to \$176,894,700. The three Prairie Provinces produced 342,948,600 bushels of wheat.

LARGE BOND SALES.

Reviewing the bond market of last year, Mr. E. R. Wood, of the Dominion Securities Corporation, finds that Canada's total bond sales for 1915 amounted to the sum of \$342,000,000, distributed as follows:

Canada	\$150,000,000
United States	144,000,000
Great Britain	48,000,000

He states: Canadians may well feel a pardonable pride in having in 1915 furnished \$150,000,000 out of a total of \$342,000,000 borrowed by the Dominion, or nearly 44 per cent. Thanks to our abundant harvests and industrial activity, we were able to respond to the appeal of the Finance Minister last November and provide him with over double the \$50,000,000 asked for as a domestic war loan. Apart, however, from this display of practical patriotism, the response to our ordinary bond offerings by Canadians has been very gratifying, and indicates to what extent the country generally is saving and economizing.

ANNUAL MEETING OF TORONTO BUILDERS' EXCHANGE.

The annual meeting of the Toronto Builders' Exchange was held in their offices in the Goodyear building, January 17, 1916.

The retiring president in his address outlined the work of the past year, which included the securing of amendments to the Companies' Act. Regarding the Board of Education's tenders, where in the past all parties submitting tenders were required to have a surety company sign same, at a cost of \$5.00, for which there was no return, arrangements have been made so that this will only be necessary in the case of the successful bidder.

Reference to the contribution of over \$7,500.00 by the Toronto members to the recent campaign for patriotic purposes was made.

The uniform form of contract arranged by the Exchange in co-operation with the architects is now in use throughout the Dominion.

The honor roll of those members now on active service was read.

A satisfactory financial report was given by the treasurer. Delegates from the Exchange will attend the annual convention of the Provincial Association in Hamilton, February 22 and 23.

A vote of thanks was tendered to Secretary A. E. Flower for his services during the past year.

The following officers were elected: President, S. R. Hughes; First Vice-President, W. E. Dillon; Second Vice-President, W. Davidson; Treasurer, J. Aldridge; Secretary, A. E. Flower; Directors, F. Armstrong, E. Gearing, G. Gander, C. Bulley, N. D. Grant; Auditors, J. Munro and J. Barnes.

Five additional directors, representing each section of the Exchange, will be elected at a future meeting.

THE IMPORTANCE OF PUBLICITY FOR THE ENGINEER.

Why should we engineers be interested in publicity? Is there good reasons for departing from the time-honored precept that our achievements are sufficient witnesses to their creator's ability?

The country is burdened with wastefulness where engineering skill might save vast sums. For instance, it is planned to spend a hundred million dollars on highways in New York State without adequate provision for maintenance. It is hardly possible that such a proposition would have been seriously entertained if the public had waited for the opinion of the engineering profession before making a decision. Again: Recently a proposition to spend fifty million dollars on good roads in Ohio was voted upon without any preliminary studies or surveys as to how the money was to be spent. Had the proposition been approved, the money would have been largely wasted under the direction of jockeying politicians.

There is a vast national field for furnishing engineering information to the public, which can be taken care of only by a permanent national information bureau conducted by engineers.

We have technical and research societies without number—so many that the public can hardly be blamed for believing that we are interested in material things only. Perhaps we need a national bureau to conduct and cultivate business relations with the public, including inter-society relations, publicity, employment and legislation.

All over the country there is a growing protest against the direction of municipal affairs by the lawyer and the politician. The administration of municipal business is largely a function of engineering. Why not enable the public to see this situation in its true light and thereby perform a public benefaction, as well as advance our own interests? Positions for engineers would increase in number, and compensation likewise.—C. E. Drayer, before the Engineering Section of the Chicago Association of Commerce.

Contractors & Sub-Contractors

As Supplied by The Architect of the Building Featured
in This Issue

THE GOVERNMENT HOUSE.

Brick, the Don Valley Brick Company.
Boilers, Purdy-Mansell, Polson Iron Works.
Carpets and rugs, T. Eaton Co.
Concrete work, Thompson Bros.
Electric fixtures, Robt. Simpson Co.
Electric wiring and apparatus, Department of Public Works.
Elevators and hoists, Otis-Fenson Elevator Co., Ash-Turnbull Elevator.
Flooring, Hoidge Marble Co., L. S. Lindsay, Italian Mosaic and Marble.
Furniture, T. Eaton Co.
Glass, ornamental, Consolidated Plate Glass Co.; stained, R. McCausland.
Greenhouses, Glass Garden Builders.
Hardware (brand), Springer Lock Manfg. Co., Belleville, Ont.
Heat regulating system, Johnston-Templeton, Toronto.
Interior fittings, cabinet, woodwork and decoration, W. J. Trick, Oshawa, Ont.
Inter-phone system, Bell Telephone Co.
Kitchen utensils, Geo. Sparrow Co.
Marble, The Ontario Marble Co., Bancroft, Ont.
Ornamental iron, Canadian Ornamental Iron Co.
Plumbing, The Purdy-Mansell Co.
Plaster work (ceiling), Hoidge Marble Co., W. J. Hynes.
Refrigeration equipment, Griscom-Russell Co.
Power machinery, The Purdy-Mansell Co.
Radiators, The Dominion Radiator Co.
Roofing (tile), Douglas Bros.
Stone, Fred Holmes & Sons.
Stone (Credit Valley), Britnell Co.
Structural iron and steel, Canada Foundry Co.
Terra cotta (porous), Don Valley Brick Co.
Tile, The T. Eaton Co.
Vacuum cleaners, "Tucc," 159 Richmond street west.
Vaults, J. J. Taylor.
Ventilating system, Purdy-Mansell Co.
Contractors, Fred Holmes & Sons, Limited.

COMING CONVENTIONS.

AMERICAN CERAMIC SOCIETY'S annual convention will be held at Cleveland, Ohio, February 21 to 24.

AMERICAN CONCRETE PIPE ASSOCIATION—Annual convention to be held in Chicago, February 17 and 18, 1916. Secretary, E. S. Hanson, 538 S. Clark street, Chicago, Ill.

CANADIAN LUMBERMEN'S ASSOCIATION—At Ottawa, February 18, 19 and 20, 1916. annual convention. Frank Hawkins, secretary, Ottawa.

NATIONAL BRICK MANUFACTURERS' ASSOCIATION will hold its annual convention at Hotel Statler, Cleveland, Ohio, February 21 to 26.

NATIONAL BUILDERS' SUPPLY ASSOCIATION will hold its annual convention at Hotel Statler, Cleveland, Ohio, February 17, 18, 19.

THE COMPLETE BUILDING SHOW will be held for the first time from February 16 to 26, at the Coliseum, Cleveland, Ohio.

WESTERN ONTARIO CLAY WORKERS' ASSOCIATION will be held at London, Ont., February 23 and 24.

BUILDERS' EXCHANGE MEETING.

On January 24th the Montreal Builders' Exchange held the annual meeting in their quarters, 52 Victoria square, with Mr. John Quinlan in the chair.

Mr. Quinlan referred to the difficulties experienced during the past year in the building trade, and the energy and ability which have been required to enable a contractor to maintain even the least degree of successful business. He predicted a successful manufacturing future for Montreal and spoke of the city's need for more public buildings, such as a central library, a museum, and a public hall suitable for great political meetings. He concluded with a reference to the need for the extension of industrial education along the line of technical schools.

The secretary, Mr. D. K. Trotter, gave the annual statement, which was satisfactory. He suggested that means be taken to strengthen the Exchange by the addition of new members and the affiliation of various organized trades. The following officers were elected: President, Mr. John Quinlan (re-elected); First Vice-President, Mr. E. W. Sayer; Second Vice-President, Mr. J. P. Anglin; Directors, Messrs. Walter Bonnell, representing general contractors; Alex. W. Brenner, suppliers of building materials; Alex. Charette, master plumbers; Robt. F. Dykes, cut stone contractors; J. W. Graham, mantle and tile dealers; John H. Hand, Wm. Irving and W. C. Munn, general contractors; W. E. Potter, master painters; W. E. Ramsay, suppliers of roofing materials; J. J. Roberts, carpenters and millmen; and J. E. Walsh, master plumbers. The trade representatives in the above are Mr. Alex. Charette, representative director appointed by Master Plumbers' Association, and Mr. J. W. Graham, representative director appointed by Mantle and Tile Dealers' Association.

TORONTO BUILDING OUTLOOK GOOD.

The coming spring will witness the inception of the largest building year that Toronto has enjoyed for some time. There are a dozen buildings promised for the spring, upon which work will start within two months, and whose aggregate cost will approach \$12,000,000. These include the Union Station, Robert Simpson warehouse, Upper Canada College, Overland Auto factory, St. Andrew's College, Trinity College, Goodyear factory and Imperial Oil building.

When it is taken into consideration that the total permits for 1915 were about \$6,000,000, and that building activities are indicative of financial conditions, everyone should feel optimistic.

TO REFINER COPPER IN BRITISH COLUMBIA.

The newly appointed Minister of Mines of British Columbia has announced that the Government propose erecting a copper refining plant at an early date in the vicinity of Vancouver to smelt and refine the copper ores. When it is realized that at the present time nearly all the copper produced in the Province is shipped to refineries in New Jersey, it will be seen what a boom this will be to the Province. It is believed that such a refinery could handle the Province's business and ship refined copper direct to the East and to Old Country manufacturing plants.

PHENOMENAL EARNINGS OF C.P.R.

The report of the net earnings of the Canadian Pacific Railway Company for December showed that in the first six months of its 1915-16 fiscal year net figures were \$20,624,000. Fixed charges, figured on the same basis as the preceding year, would be \$7,646,469, leaving for dividends on common stock \$21,977,708. This is equal to 8 1/2 per cent. on the outstanding issue. On this basis the road in the six months earned the full year's 7 per cent. dividend out of the railway account. These figures are of course only approximate, as they are subject to revision for the special income amount. It is quite evident, however, that the half-year's result was nothing short of spectacular.

TECHNICAL SOCIETIES.

ALBERTA ASSOCIATION OF ARCHITECTS.—President, Jas. A. Henderson, F.R.I., B.A., Edmonton; Hon. Secretary, W. D. Cromarty, Edmonton.

ARCHITECTURAL INSTITUTE OF BRITISH COLUMBIA.—President, R. Mackay Fripp; Secretary, Fred L. Townley, 325 Homer St., Vancouver, B.C.

CANADIAN CEMENT AND CONCRETE ASSOCIATION.—President, Peter Gillespie, Toronto, Ont.; Secretary-Treasurer, Wm. Snaith, The Thor Iron Works, Toronto, Ont.

CANADIAN CLAY PRODUCTS' MANUFACTURERS' ASSOCIATION.—President, J. E. Frid, Hamilton; Secretary-Treasurer, G. C. Keith, Toronto.

CANADIAN ELECTRICAL ASSOCIATION.—President, Col. D. R. Street, Ottawa, Secretary, Alan Sullivan, Confederation Life Building, Toronto.

CANADIAN FORESTRY ASSOCIATION.—President, William Power, M.P., Secretary, James Lawler, Journal Building, Ottawa.

CANADIAN GAS ASSOCIATION.—President, Arthur Hewitt, General Manager Consumers' Gas Company, Toronto; John Kellor, Secretary-Treasurer, Hamilton, Ont.

CANADIAN INDEPENDENT TELEPHONE ASSOCIATION.—President, W. Doan, M.D., Harrietsville, Ont.; Secretary-Treasurer, Francis Dagger, 21 Richmond street West, Toronto.

CANADIAN INSTITUTE.—198 College Street, Toronto. President, J. B. Tyrrell; Secretary, Mr. J. Patterson.

CANADIAN NATIONAL ASSOCIATION OF BUILDERS' EXCHANGES.—Western Section—President, C. R. Frost, 609 Second St., Edmonton, Alta.; Secretary-Treasurer, A. M. Frith, 224 McDougall Ave., Winnipeg. Eastern Section—President, Geo. Gander, Toronto; Secretary-Treasurer, P. L. Fraser, Builders' Exchange, Toronto.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—President, G. H. Duggan, Montreal; Secretary, Prof. C. H. McLeod, Montreal.

LONDON BUILDERS' EXCHANGE.—President, A. C. Nobbs; Secretary-Treasurer, F. S. Barclay.

MANITOTA ASSOCIATION OF ARCHITECTS.—President, Col. J. B. Mitchell, Winnipeg; Secretary-Treasurer, R. G. Hanford.

MONTREAL BUILDERS' EXCHANGE.—President, John Quinlan; Secretary, D. K. Trotter.

ONTARIO ASSOCIATION OF ARCHITECTS.—President, C. H. Acton Bond, Toronto; Treasurer, J. P. Hynes, Toronto; Secretary, R. L. Wolsey, Toronto.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.—President, E. B. Staveley, Quebec; Treasurer, N. MacVicar, Montreal; Secretary, J. Emile Vanier, 5 Beaver Hall Square, Montreal.

QUEBEC BUILDERS' EXCHANGE.—President, J. A. Marier; Secretary-Treasurer, Alf. Cote.

ROYAL ARCHITECTURAL INSTITUTE OF CANADA.—President, H. C. Russell, Winnipeg, Man.; Hon. Secretary, Alcide Chausse, No. 5, Beaver Hall Square, Montreal Que.

SOCIETY OF CHEMICAL INDUSTRY.—Wallace P. Cohoe, Chairman; Alfred Burton, Toronto, Secretary.

TECHNICAL SOCIETY OF PETERBORO.—Bank of Commerce Building, Peterboro. President, N. C. Mills, P.O. Box 995, Peterboro, Ont.

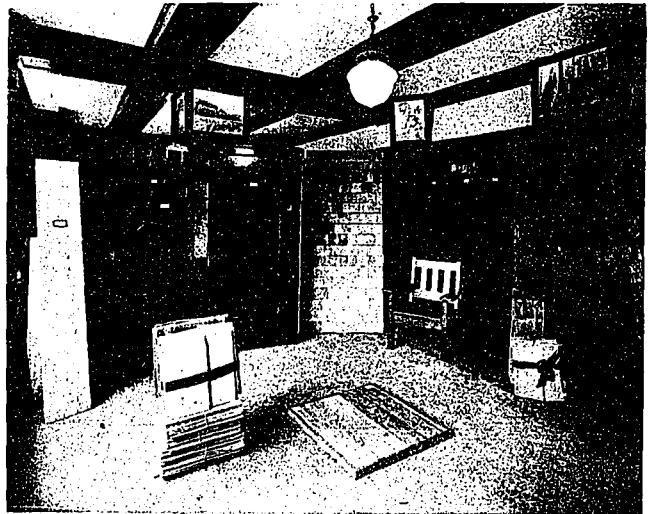
TORONTO BUILDERS' EXCHANGE.—President, S. R. Hughes; Secretary, A. E. Flower.

UNION OF CANADIAN MUNICIPALITIES.—President, T. L. Church, Mayor of Toronto, Ont.; Hon. Secretary-Treasurer, W. D. Lighthall, K.C. Ex-Mayor of Westmount; Asst. Secretary, G. S. Wilson, 402 Coristine Bldg., Montreal.

BRITISH COLUMBIA FOREST SERVICE.

The British Columbia Government made a wise decision when they decided to bring the Eastern part of Canada into closer touch with the matchless forest products of the Pacific Coast Province.

Along the line of the newly adopted policy of the British Columbia Forest Service, an office has been opened in the Excelsior Life Building, Toronto, managed by L. B. Beale, of the B.C. Forest Service. Here, architects and builders have an opportunity of seeing and studying the excellent effects produced by the use of the superb woods exhibited. An illustration is shown of part of the exhibit, in which the wall panelling comes in for particular attention. This is in Douglas fir, the beautiful effects produced being a revelation to those not already acquainted with the adaptability of this wood for high-class interior decoration. Different finishes are shown, from the natural wood to the highly finished product. Further examples are shown, in the nature of Douglas fir doors; Western red cedar and Douglas fir base trim framing and mouldings; Douglas fir flooring; dimension stock of B.C. spruce, Western hemlock, red cedar and Douglas fir; B.C. red cedar shingles and shingle bolts. This exhibit is attracting much attention, and has already done much towards educating the people in Toronto and Ontario regarding the forest products of British Columbia.



BRITISH COLUMBIA FOREST SERVICE.
PERMANENT EXHIBIT, EXCELSIOR LIFE BUILDING, TORONTO.

Additional Service

Along the line of "CONSTRUCTION'S" policy, to be of the greatest possible service to its readers, we have included, starting with the December issue, and will continue to publish the principal items of our Report Service dealing with new construction throughout the Dominion. These news items give the reader a good idea of what is going on in the building field, and from the expression of approval received since its inauguration, we feel that the decision to include it will meet with the hearty approval of all our readers. Another feature adopted with the January issue, and which will be continued, is an Architectural Digest in which other articles of interest, both to the architect, contractor and the engineer, will be published each month. These are taken from our exchanges, and will give our readers a service such as they could only get by taking a large number of similar publications.

It is further intended to improve the value of "CONSTRUCTION" by embodying departments dealing with fire-proofing, heating and ventilating. Arrangements have also been made for a number of special articles to be published during the year dealing with such subjects as lighting, sanitary equipment and power-house features of large modern buildings, as well as articles on the various materials and equipment, being embodied in all structures from houses to skyscrapers.