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Royal Architectural Institute of Canada

Volume 2 TORONTO, JULY-AUG. 1925 Number 4

CONTENTS

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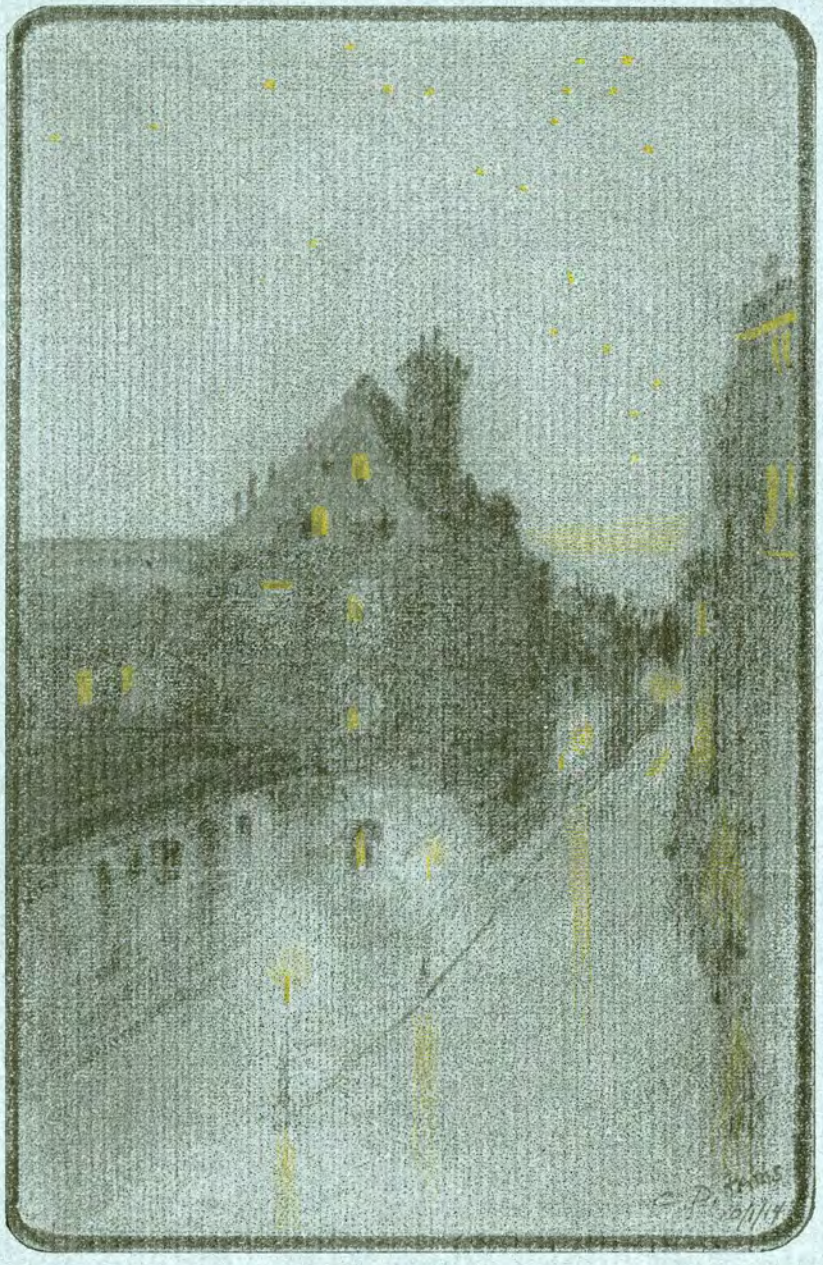


THE SENATE HOUSE BY MOONLIGHT
PARIS, JAN. 10TH, 1914.

From Pencil Sketch by Chas. Dolphin, R.A.I.C.

The Journal Royal Architectural Institute of Canada

Volume 2 TORONTO, JULY-AUGUST, 1925 Number 4

Editorial

FRONTISPIECE

THE frontispiece in this issue is a pencil sketch by Chas. E. Dolphin. Mr. Dolphin's outstanding ability as an illustrator of architectural subjects is well and favorably known. The subject of our plate is one made by Mr. Dolphin when in Europe before the war, and he has other studies of the same locality made while he was serving in the overseas forces. We hope to publish some of these in future issues of the JOURNAL.

* * *

FEATURE ARTICLE

The JOURNAL'S program of illustrating the universities of Canada has now brought us to the smaller institutions, two of which, the Western Ontario University and the Acadia University, are illustrated in this issue. It is interesting to see the development of the buildings of the larger universities and the outstanding architectural merit of many of them. It is also interesting to note that some of the universities are working towards a comprehensive plan of buildings which shows a commendable foresight and cannot but eventually lead to a development of which the community will be proud of. It is quite noticeable that even some of the smaller universities are developing along these lines.

This series of university buildings, we expect, will be concluded at an early date and will be followed by other educational buildings.

* * *

MEDAL AWARDED SPROATT AND ROLPH

The appreciation of the work of Messrs. Sproatt and Rolph, written by Mr. John M. Lyle, published in this issue, is both opportune and timely, owing to their being awarded a gold medal by the American Institute of Architects at its recent convention. This well deserved recognition of their work not only brings honor to themselves, but also to the profession in Canada and the Institute of which they are esteemed members.

* * *

AMERICAN INSTITUTE'S RECOGNITION OF SIR EDWIN LUTYENS

The JOURNAL is glad of the opportunity of bringing to the attention of its readers the work and ability of one of our confreres in England. The occasion of the recent award of the gold medal of the American Institute of Architects to Sir Edwin Lutyens furnishes the occasion to publish a reference to his work which is included in this issue. Sir Edwin Lutyens has a world-wide reputation and it is with somewhat of a sense of pride that we look upon him as one of the leaders of the architectural profession in the British Empire.

OLD FRENCH-CANADIAN ARCHITECTURE

The article on old French-Canadian Architecture which has been written by Professor Wm. Carless and which is included in this issue is the second of its kind to be published in the JOURNAL. No more interesting subject touching upon Old Canadian Architecture could be chosen, as some of the old buildings illustrated show. Every possible encouragement should be given to the preservation of historic and architectural records of buildings in the Dominion of Canada.

* * *

COMPETITIONS

Competitions, always a vexed question amongst architects, is the subject of a letter printed in this issue which is written by Chas. E. Dolphin, a member of the Ontario Association of Architects. It is difficult to understand why there should be so many competitions held in Canada which meet with unfavorable comment by members of the profession. The Institute endeavors at all times to see that competitions are arranged so that they will coincide with the conditions for competitions as laid down by the Royal Architectural Institute of Canada. Unfortunately, however, it is not always possible for the Institute to get in touch with promoters of competitions early enough or to have the committees promoting competitions to see eye to eye with the Institute or Provincial Associations. To a great extent the remedy for much of this evil is in the hands of the individual architect, who should refrain from taking part in any competitions not based on sound conditions and who should play the game by strictly adhering to the program in submitting drawings. It is hoped that members of the profession who have taken part in competitions will contribute letters to the JOURNAL giving constructive suggestions. This is a field that the JOURNAL hopes to be of particular service in, but cannot accomplish much unless through the co-operation of the membership at large pooling their experiences and suggestions, so that a true grasp of the situation may be had from which to discuss it.

* * *

EXHIBITION OF COMPETITIVE DRAWINGS BY THE ONTARIO CHAPTER O.A.A.

The exhibition of the competitive drawings for the Table Rock Pavilion at Niagara Falls, which was recently held by the Toronto Chapter O.A.A., is worthy of favorable comment. The exhibition not only attracted a large number of architects, but also drew quite a number of other people who were interested in architecture and its development. We commend this to other architects' associations, as being one form of publicity which will create a better understanding and appreciation for the profession amongst the public.

The Secretary's Page

ALCIDE CHAUSSÉ
Honorary Secretary, Royal Architectural Institute of Canada

THE Egyptian Government has opened an architectural competition, open to architects of all nationalities, for the reconstruction of the Amrou Mosque. The prizes are $12,500.00, $5,000.00 and $2,500.00. The designs to be addressed to the Minister of Cults before the 1st January, 1927. This mosque was erected A.D. 653 by conqueror Amrou.

* * *

The New Zealand Institute of Architects, Wellington, N.Z., have asked the Royal Architectural Institute of Canada to forward a collection of architectural drawings and photographs for inclusion in the exhibition of architectural drawings and photographs to be displayed by the New Zealand Institute of Architects at the South Seas Exhibition to be held at Dunedin, New Zealand, and which will cover a period opening in November, 1925, and concluding in April, 1926. A space of 20 feet by six feet has been allotted and it is expected that the Canadian Exhibit will cover this area. At the conclusion of the exhibition the exhibits will be carefully packed and returned to the R.A.I.C. If exhibits are sent, they will be forwarded to Mr. H. McDowell-Smith, Dawsons Buildings, Moray Place, Dunedin, New Zealand, who is Branch Secretary of the N.Z.I.A. The drawings and photographs will be insured by the Exhibition authorities immediately on arrival, so the approximate value of the exhibit must be declared.

* * *

Mr. Samuel Herbert Maw, No. 274 Beaver Hall Hill, Montreal, was elected an Associate of the Royal Institute of British Architects on Monday, the 8th June, 1925.

* * *

Messrs. Parry Publications, Limited, 103 Webster Building, Toronto, Ont., would like to have the names and addresses of the members of the R.A.I.C. specializing in Industrial and Municipal work, to send them a copy of a publication known as the "Manufacturers' Annual."

* * *

The International Exhibition of Modern Decorative and Industrial Arts, which was opened in Paris, France, in April last, will be closed by the end of October, 1925. The exhibition enjoys a most unique situation and stretches north and south from the Invalides to the Champs Elysées and east and west from the Place de la Concorde to the Pont de l'Alma. It includes both banks of the Seine, between these points, and the adjoining quays, the Esplanade des Invalides, the admirable gardens of the Cours de la Reine, the Pont Alexandre III and the Grand Palais itself. The following are the industries participating in the Exhibition: Group I, Architecture, subdivided in 6 classes; Group II, Furniture, subdivided in 13 classes; Group III, Wearing Apparel, subdivided in 5 classes; Group IV, Theatrical, Street and Garden Architecture, subdivided in 3 classes; and, Group V, Instruction, subdivided in 10 classes. As can be seen it is not merely an exhibition of the Fine Arts. It represents a complete picture of home and colonial industries of all countries not only artistic but also of an entirely modern character; the most simple objects have found a place for they are capable of as much beauty as the most precious works of art. Everything can be seen there which helps to render life more agreeable, more comfortable and more ornamental.

* * *

A meeting of the Allied Societies' R.I.B.A. Conference was held at London, England, on Monday, the 4th May, last, with Mr. Herbert T. Buckland (Birmingham) in the Chair, and Mr. Ian MacAlister, acting as Secretary. Eight new members were added to the membership of the Conference. The R.I.B.A. Maintenance Scholarship Scheme was considered, and it was finally resolved by a unanimous vote that the Allied Societies' Conference is cordially in favor of the scheme prepared by the R.I.B.A. Conference on Prizes and, subject to such modifications as may prove desirable, will do its utmost to ensure its success. Other routine business was considered and the Conference having met at 2.30 o'clock p.m. adjourned at 4.15 o'clock p.m.

* * *

The Associated General Contractors of America have published a "Code of Ethical Practice," which had been adopted at the sixth annual meeting of that society, in January, 1925.

* * *

The British Architects' Conference—1925, organized by The Royal Institute of British Architects, was held at Newcastle and Durham on July 8th, 9th, 10th and 11th. A very interesting programme had been prepared, consisting of a smoking concert on the first day in the Old Assembly Rooms, Westgate Road. On the second day was held the inaugural session of the Conference, a lunch, a trip down the River to Tynemouth Priory, etc., a visit to the Keep and Black Gate, the Cathedral, the Guild Hall, the Trinity House, concluding the afternoon with an "At Home" at the Art School, Armstrong College, and a Civic Reception in the evening by the Lord Mayor and Corporation of Newcastle-upon-Tyne. The third day was devoted to historical visits in and around Durham, Town Hall, Cathedral, and Castle, in the evening return to Newcastle, where a reception was held at the Conference Hall by the President of the Royal Institute of British Architects, followed by a Banquet. On the last day of the Conference informal excursions were arranged to Alnwick Castle, Cragside and Rothbury, to the Roman Wall, Chesters, Housesteads, etc., and Hexam Abbey, also to Carlisle and the Lake District.

Sir Edwin Landseer Lutyens, R.A., F.S.A., F.R.I.B.A.

THE Gold Medal, which is the highest award the American Institute of Architects can make, was awarded to Sir Edwin Lutyens at the 58th Annual Convention held

recently. This medal was established in 1906 and prior to the recent Convention had only been conferred upon six distinguished architects, viz., Sir Aston Webb, Charles Follen McKim, George B. Post, Jean Louis Pascal, Victor Laloux, and Henry Bacon.

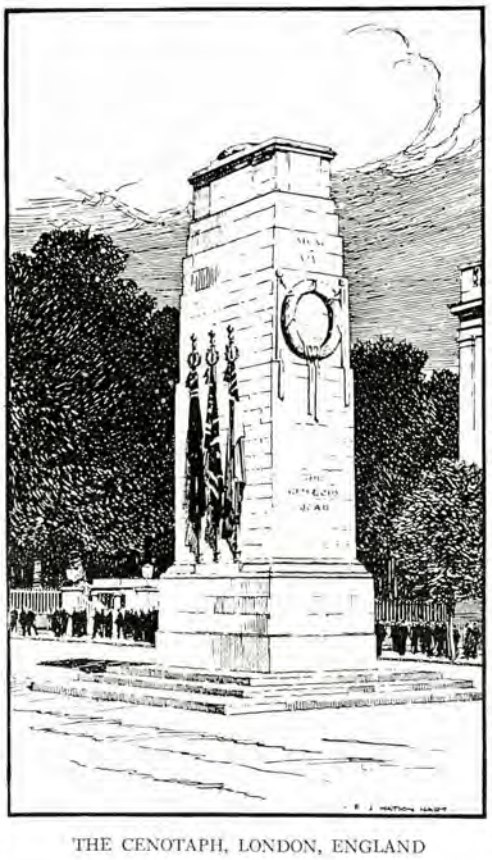
SIR EDWIN LANDSEER LUTYENS

The Gold Medal of the Institute is awarded on the recommendation of the Board of Directors, and it is rather pleasing to note that this is the second time in the history of the Institute that it has made the award to an architect of Great Britain. Mr. D. Everett Waid, President of the Institute, in presenting the 1924 Gold Medal to Sir Edwin Lutyens, said in part: "The choice was made after careful consideration of contributions which English professional men have made to modern architecture. Perhaps the one work of the genius of Sir Edwin Lutyens which architects on this side of the Atlantic recall at first mention of his name is the Cenotaph in London. The dignity of that monument, the simple composition, and the note of sadness in its lines appeal at once to the cultured and to the common people. It seems to express victory in the world and at the same time the voice of grief for the brave men who made the supreme sacrifice. That beautiful shaft somehow bears in its aspect the common grief of the great nations which by one impulse stood together in the great conflict."

Sir Edwin has by one little work, the Cenotaph, made joy in fine architecture a possession of the people. Wholly admirable as it is in its own right as a piece of austere design it is much more. It was accepted forthwith by every one, gentle and simple, by those who use strange phrases about art and by those who have

never thought of art in terms of human life, as a perfect expression of the nation's grief and thankfulness and of its pride in the glorious dead. By that one work Sir Edwin Lutyens' art has become an affair of national importance.

For all his faithfulness to tradition, Sir Edwin impresses on his work a personal quality that is unmistakeable and that eludes the copyist. He has never done "Gothic" buildings that follow text book standards because his mind does not work that way. With that reservation he has expressed himself in a variety of styles and impressed on all of them an individual quality of design.



THE CENOTAPH, LONDON, ENGLAND

There is no wonder that Sir Edwin exercises a large influence over the work of the younger generation of architects in England.

Sir Edwin was born in London in March, 1869, and was the eleventh of a family of fourteen. His father, Mr. Charles Lutyens, after leaving the army became a painter, which probably had a great influence on his son's future. Sir Edwin was educated at a private school, studied for two years at South Kensington and was for one year in the office of Messrs. Ernest George & Peto. In 1913 he was appointed architect of the Viceroy's Palace in Delhi, India. Sir Edwin has received the Gold Medal of the Royal Institute of British Architects, which has only been granted to about ten of his fellows. He has also become a full Academician, the greatest honor that can be bestowed on an architect by brother artists.

Sproatt and Rolph—An Appreciation

By JOHN M. LYLE, R.A.I.C.

IN these days of fulsome and indiscriminate praise of architectural achievement in Canada, it is a pleasure to bear testimony to the excellent work of two men—Henry Sproatt and Ernest Ross Rolph—who for the past twenty-six years have collaborated under the firm name of Sproatt and Rolph, shedding lustre on Canadian architecture.

HENRY SPROATT, LL.D., R.C.A.

E. R. ROLPH, A.R.C.A.

They have to their credit some of the finest, if not the finest, buildings in Canada; Hart House, The Memorial Tower—Toronto University; Bishop Strachan School, Victoria College, Toronto; Ridley College Chapel, St. Catharines; outstanding structures that will bear comparison with the best modern work.

Their work is stamped with the firm's individuality and is essentially personal. There is no attempt to create a new style, there is no tendency to be original or faddy—rather is there in evidence that natural and gradual development which comes from an honest solution of the problem in plan, coupled with a common sense and harmonious treatment in elevation. They are good builders, all their work is stamped with that great quality — permanency. There is none of the theatrical architectural claptrap so much in evidence throughout Canada, there is no striving for mere picturesqueness for its own sake. They treat their stone work as if they loved it and delight in texture. They love to oppose the textures of a random ashlar course of Credit Valley stone against the rubbed or tooled finish of Indiana. If, sometimes, we would like them to be a little bolder in scale, again we are charmed with the unity of that very scale—their work "hangs together."

Sproatt is the designer and Rolph the constructor, a happy combination of balanced talent. Sproatt's personal predilection leans strongly to the Gothic, and it is in the handling of this style that he has achieved his greatest success as a designer.

In 1921 the American Institute of Architects established what is known as an Exhibition Medal. It is awarded on the recommendation of a special jury for the best work shown at the National Architectural Exhibitions, arranged from time to time by the Institute in connection with the Annual Conventions. The American Institute of Architects, in awarding Sproatt & Rolph the 1925 Gold Medal for meritorious work in the institutional group of buildings, has, for the first time, officially recognized Cana-

EXHIBITION MEDAL OF AMERICAN INSTITUTE OF ARCHITECTS

dian architecture. It is very generally conceded that American architecture stands to-day at the top of the tree, so that the selection of Sproatt & Rolph as recipients of the Gold Medal, is indeed a great honour for that firm and one that the profession in Canada can heartily endorse.

Henry Sproatt, LL.D., R.C.A., was born in Toronto on June 14th, 1866, and is of English descent. He was educated in Toronto and supplemented his local training by spending several years in the best New York offices. Sproatt also spent considerable time studying in England, France and Italy. He was given the degree of LL.D. by the University of Toronto in recognition of his architectural services. He is Vice-President of the Royal Canadian Academy and a member of the Royal Architectural Institute of Canada, and the Ontario Association of Architects. He is essentially an optimist and an enthusiastic Canadian with strong Imperial views. Outside of architecture, his greatest hobbies are the collecting of old silver, china and pictures. He has lately bought a farm near Toronto and is stocking it with prize cattle and sheep. From his description of "The Farm", with its acres of fruit bearing trees, sylvan dells and lowing herds, it is quite apparent that his first love—old silver—will gradually be relegated to a secondary position in his affections.

Ernest Ross Rolph, A.R.C.A., was born in Toronto, January 21st, 1871, and is of English descent. He was educated at the Model School and the Jarvis Street Collegiate Institute. He is an Associate of the Royal Canadian Academy, and a member of the Royal Architectural Institute of Canada and the Ontario Association of Architects. Like Sproatt, he is an ardent Canadian and is blest with several hobbies, notably the collecting of pictures, prints and Chinese antiquities. His first inclination was to study painting and he spent two years under A. H. Howard, endeavouring to lay the foundations for a painter's career, but as he puts it himself—"something slipped and I became what I am." This unfortunate "slip" was really a blessing in disguise, as Canadian architecture has been the gainer in having Rolph as a collaborator with Sproatt in the erection of so many admirable buildings.

The first building of importance, erected by the firm in 1899, was that of The Lever Brother's office and factory, Toronto, to be followed by numerous residences and public buildings of importance. If one might say that any particular building was the best that the firm had executed, we might select Hart House, Toronto University, of which an illustration is given below, and of which other views were given in the Jan.-Feb. issue of the R.A.I.C. JOURNAL, as the greatest architectural achievement to their credit.

The profession in Canada hope that both these men may be spared for many years to duplicate their past successes, and to leave behind them even greater monuments than now stand to their credit.

HART HOUSE, UNIVERSITY OF TORONTO
Sproatt and Rolph, Architects

VIEW FROM BRIDGE TOWARDS MAIN BUILDING, UNIVERSITY OF WESTERN ONTARIO
John M. Moore & Company, Architects

The University of Western Ontario

WITH the opening of Summer School 1924, the University of Western Ontario occupied for the first time its new buildings and grounds situated immediately north of the City of London.

This site, conceded by many as the finest University site in Canada, consists of 260 acres, and is beautifully situated along the north branch of the River Thames. The greater part of the site is rolling ground, well covered with grand old trees, and as far as possible the new construction work, road building, etc., has been designed and constructed to fit in and conform with the landscape. A right of way from Richmond Street to the grounds proper was purchased in the early part of 1922, and this has been laid out so as to form the avenue of approach, and will be known as University Avenue.

The first stage of the building program has been practically brought to a close, and has included planning of grounds, the layout of roads, construction of new bridge, Main Arts Building, Science Building, Boiler House, Tunnel, Greenhouses, Playing Field, Running Track and Tennis Courts, together with the laying of all necessary water mains, sewers, electric service, and grading. In the laying out of the roads, planning of buildings, etc., extreme care has been taken to place the same so as to permit future development, and expansion along a fixed scheme.

A new bridge was constructed over the River Thames at the end of University Avenue, linking the City with the grounds proper. This bridge we believe is the first of its kind in this district, combining utility with beauty, being specially designed with a low setting so as to give unobstructed view of the buildings and this magnificent site. The bridge is 296′ 0″ long, and is constructed with arch shaped plate girders. These girders are encased in concrete, and have the appearance of flat concrete arches. The roadway is paved with asphalt, and the balustrade is of Cut Indiana Limestone, with turned balusters. The wing walls and standards at each end are Credit Valley Sandstone, laid up random ashlar.

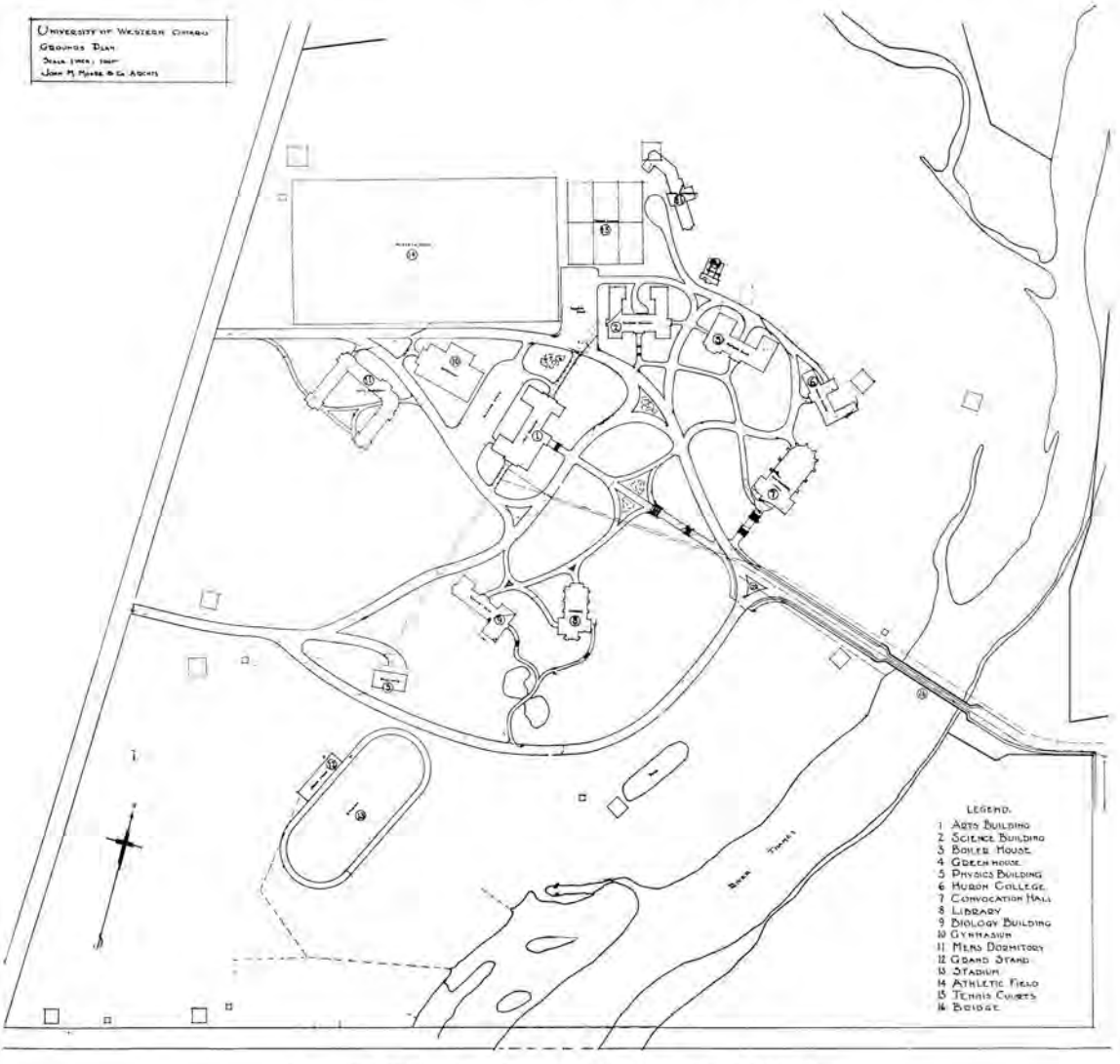
Construction work on the buildings was commenced in 1922, and while eventually it is hoped to have separate buildings for the different studies, the departments are at present housed in two buildings.

The Main or Arts Building contains the administrative Office, Auditorium, Library, and also provides Class rooms and Offices for the departments of instruction other than Science.

The second building or Science Building as it is called, provides for the five departments of Physics, Chemistry, Botany, Biology and Geology.

In the construction of both buildings a modified form of Collegiate Gothic was used, and in both buildings Credit Valley Sandstone, backed with concrete was used for all exterior walls, with trimmings, sills, etc., of Indiana Limestone. The floors are constructed of hollow tile and concrete with Terrazzo finish and base, except the Auditorium, where quarter cut white oak was used.

In the Main Building, both the Auditorium and Governor's Room are panelled in oak with beamed



GROUND PLAN: UNIVERSITY OF WESTERN ONTARIO
John M. Moore & Company, Architects

ceilings, the furniture of the Governor's Room being carved and panelled to match the room.

The tower of the Main Building rises to a height of 130 feet, and on the first floor at the entrance has been placed the Memorial Tablet, recording the names of the Middlesex County men who fell in the War.

In the Auditorium, which has a seating capacity of 650, one of the main features has been the installing of the crests of Canadian Colleges and Universities, in the stained glass windows which are fitted into the stone tracery.

In connection with the Science Building, we believe has been installed the finest and most modern laboratory equipment in Canada. The wiring and plumbing installed in connection with the laboratory equipment has been most complete, and in all cases provisions made for future expansion and development.

The Boiler House or Central Heating Plant has been located so as to be easily accessible for the delivery of coal, removal of ashes, etc., as well as being low set so as to permit the easy flow of all returns, etc. While in the Boiler House 500 H.P. in boilers has been installed, the building and chimney have been laid out to permit the total capacity to be increased to 1500 H.P. The tunnel work, piping, etc., has been installed accordingly, so that in the heating of future buildings connections need only be made to the piping in the tunnel at the nearest point.

The tunnel which is 6′ 6″ square inside, and runs from the Boiler House through the Main Building to the Science Building, a distance of 1700 feet, carries in addition, the heating lines, all water, gas, and sewer pipes as well as all electrical service and telephone lines. These pipes and wires are carried on racks so as to be easily accessible.

In order to reduce the consumption of city water, an Auxiliary Water Supply System has been installed. A well was dug and Pump House constructed close to the Boiler House where a good supply of water was obtained. From this point the water is pumped to a large storage tank placed in the upper part of the tower of the Main Building, from which elevation considerable pressure is obtained. This water is used for all purposes, except drinking, which gives a very considerable saving in

the cost of the water supply for buildings and grounds.

Greenhouses have been constructed of the latest and most modern type to accommodate the Biology and Botanical Department, these houses being slightly separated and heated from the central heating plant.

The development of the athletic side of the University has been well considered, and already a very fine playing field of approximately ten acres has been levelled and seeded, which will be available for use in the Fall.

A one-quarter-mile cinder track has also been constructed with a Rugby field in the centre. This has also been laid out according to the latest ideas, and the centre portion has been levelled and seeded and will be ready for use during the year.

In the rear of the Science Building three concrete Tennis Courts have been laid out, and constructed according to the latest and most modern ideas, being enclosed with suitable netting.

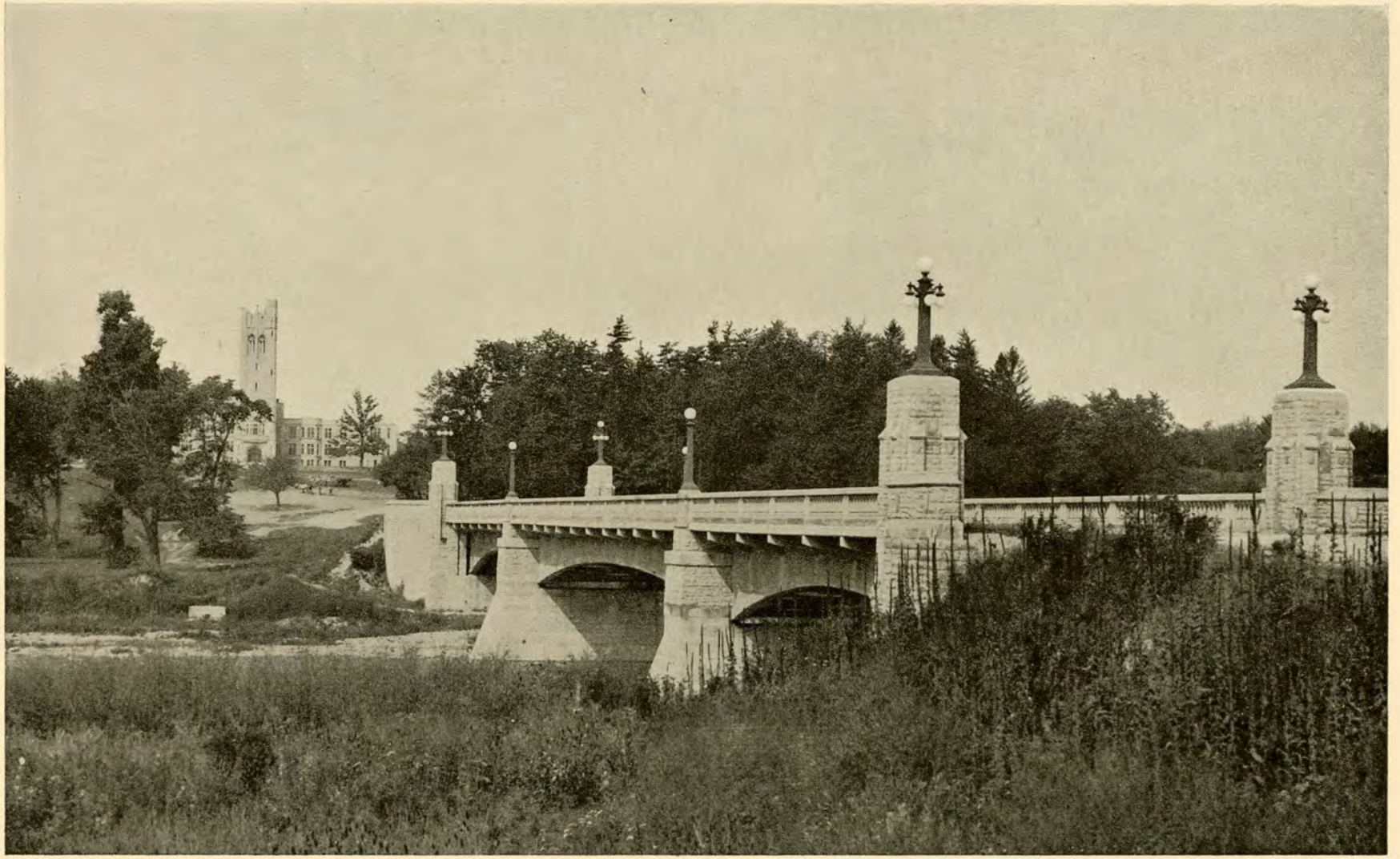
BOARD ROOM, MAIN BUILDING, UNIVERSITY OF WESTERN ONTARIO

Careful consideration has at all times been taken in the planning of the buildings, so that the future growth of the University may go forward without the necessity of extensive remodelling of any of the existing constructions.

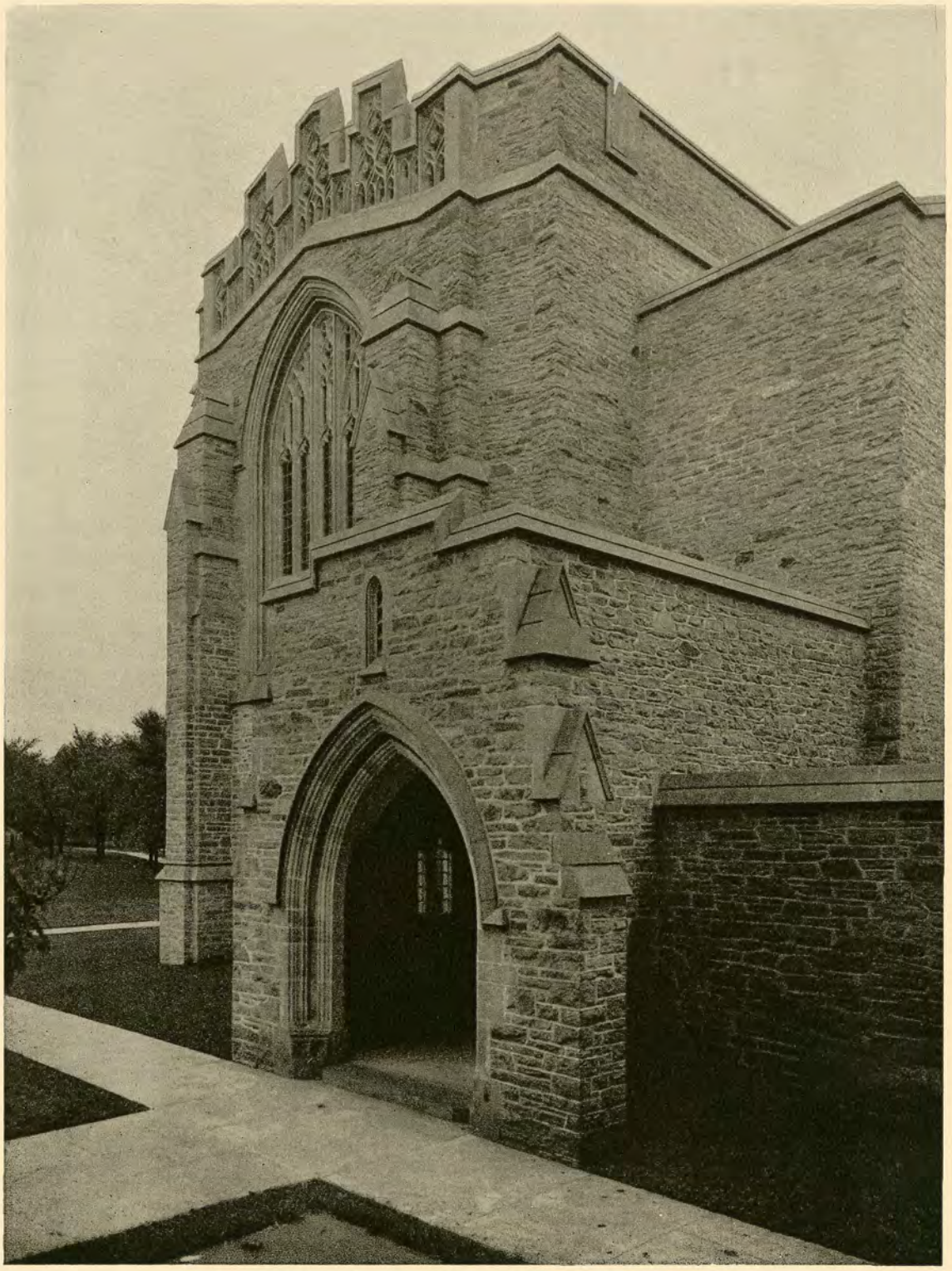
The Architects and the University building Engineers in charge of program were John M. Moore & Company of London. This firm had associated with them for the Main Building, Mr. F. H. Spier, retaining as consulting engineer, Mr. R. E. Haggarty for the structural work, and Mr. H. H. Angus for the heating and ventilating.

The Contractors for the Main Building, Boiler House and Tunnel were The P. H. Secord and Sons Construction Company of Brantford; while Mr. John Putherbough of London was the Contractor for the Science Building and Bridge.

MAIN ARTS BUILDING, UNIVERSITY OF WESTERN ONTARIO
John M. Moore & Company, Architects



WESTERN ONTARIO UNIVERSITY, LONDON, ONTARIO
John M. Moore and Company, Architects



MAIN ENTRANCE, RIDLEY COLLEGE CHAPEL, ST. CATHARINES, ONT.
Sproatt & Rolph, Architects

CHANCEL AND ORGAN SCREEN, RIDLEY COLLEGE CHAPEL, ST. CATHARINES, ONT.
Sproatt & Rolph, Architects

NEW UNIVERSITY HALL, ACADIA UNIVERSITY
Leslie R. Fairn, Architect

Acadia University, Wolfville, Nova Scotia

By F. W. PATTERSON, *President*

ACADIA University, located in Wolfville, Nova Scotia, is now entering upon her eighty-ninth year of service. During that time she has won for herself an unique place in the educational institutions of Canada. Her educational ideals have been high and Maritime Canada, her student constituency, has supplied students of capacity for higher education. To such an extent has her work been recognized that Professor Huntington of Yale, in a recently published volume "Civilization and Climate," has said that the graduates of Acadia University at Yale have made a finer record during the last twelve years than those from any other institution. In addition to the University proper, with faculties in Arts and Science, Applied Science, and Theology, there are maintained the Acadia Ladies' Seminary, which prepares girls for senior matriculation and offers advanced courses in Music, Art, and Household Economics, and the Acadia Collegiate and Business Academy, which prepares boys for college and gives a thorough Business course.

All but one of the buildings in use by Acadia University have been built within the last fifteen years, the exception being the building used by Acadia Ladies' Seminary. This building, one of the better structures of its day, was erected in 1877 and enlarged shortly after 1900. This institution will soon be housed in a thoroughly modern structure on a new site.

The Carnegie Science Building, made possible through the gift of Mr. Andrew Carnegie, is a handsome brick structure and until now has housed all of the sciences. With the completion of the new University Hall, Geology will find laboratory and class-room accommodation there. It is proposed to erect a new Biological building that will duplicate the general structure of the Carnegie Science Hall, which will then be reserved for Physics and Chemistry.

Rhodes Hall, presented by Mrs. N. A. Rhodes, of Amherst, as a memorial to her husband, Nelson A. Rhodes, is a substantial brick structure and is set apart for the work in Applied Science.

The Emmerson Memorial Library, a gift of the family of the late Rev. R. H. Emmerson, of whom the late Hon. H. R. Emmerson, formerly Minister of Railways, was a son, is one of the most handsome library buildings in Eastern Canada.

The building occupied by Acadia Collegiate and Business Academy is built of native quartzite and provides accommodation for over one hundred students.

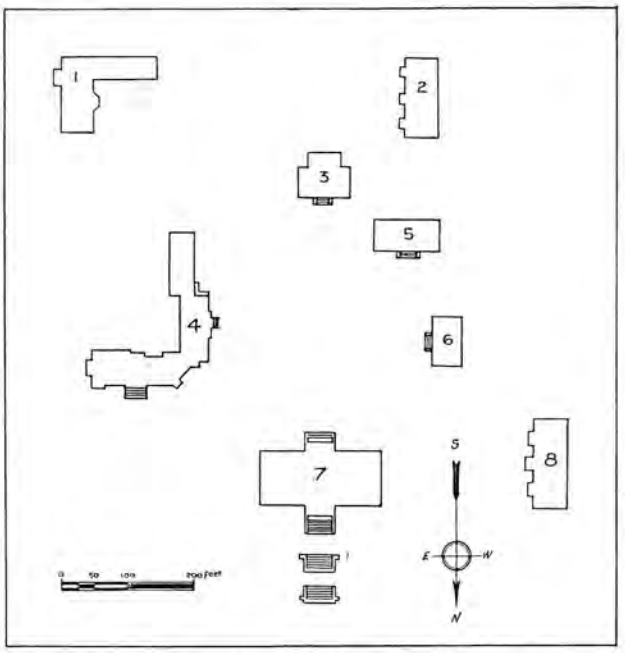
One of the most adequate buildings on the campus is the Memorial Gymnasium, also built of native quartzite. The tiled swimming pool, the largest in Eastern Canada, is in constant use. The gymnasium floor, also one of the largest, if not the largest, in Eastern Canada, is adequate in every way. This is said to be the finest university building used exclusively for Physical Education in Canada.

The College Women's Residence and Willett Hall, a dormitory for college men, are plain but substantial brick structures.

When plans for the new University Hall were under consideration a few years ago there arose a spontaneous and almost universal call on the part of former students and patrons of Acadia for a building resembling in architectural proportions the old College Hall destroyed by fire in December, 1920. There was about that "old college on the hill" a whiteness, a stateliness and an indefinable something that was typical of Acadia as many old grads were wont to remember it. The Board of Governors acceded to this request and upon a foundation of grey granite they erected a magnificent new building of Benedict stone. The Hall, though much larger, is on the site of the old one, and while it has enough of the general features of the old

structure to remind one of it, it has nevertheless a character and architectural distinctiveness entirely its own.

The interior of the building is in keeping with the architectural standards of the exterior and is designed to meet the requirements of the institution in these days of growth and expansion. The corridors, halls and classrooms convey to the most casual observer a sense of amplitude and beauty, while a closer survey discloses the thoroughness and taste with which the building has been finished and furnished to the last detail.



PLOT PLAN—ACADIA UNIVERSITY

1 LADIES' RESIDENCE
2 WILLET HALL
3 LIBRARY
4 SEMINARY
5 CARNEGIE HALL
6 RHODES HALL
7 NEW UNIVERSITY HALL
8 ACADIA ACADEMY

The new building is 189 feet long and 84 feet wide. The height from basement to top of tower is 166 feet. The height of the auditorium ceiling is 45 feet. The width of this room is 83 feet and the distance from the speaker to the back seat in the gallery is 106 feet and in the ground floor 88 feet.

The auditorium provides seating for a little under two thousand, while several hundred more could easily find accommodation in the spacious aisles. The finish throughout is of fumed oak. The seats are opera chairs of excellent quality and very comfortable. They are provided with hat-racks and every third chair is furnished with a book receptacle. The aisles, as well as the corridors outside, are covered with rubber matting and the lighting is modern and complete. The class of 1925 presented the University with a handsome brasolite electrolier and four additional lights—a gift which will perpetuate the memory of the outgoing class for many a decade.

The platform has seating accommodation for about a hundred. A temporary platform extension has been constructed, which can be set up for musical festivals and other functions where more stage accommodation may be required.

MAIN ENTRANCE, ACADIA UNIVERSITY
LESLIE R. FAIRN, ARCHITECT

The tinting of the ceiling and walls is restful to the eye, and the simple lines, with the massive cornices, leave an impression of simplicity and dignity which will make the assembly hall in itself, apart from any programme, a place of genuine restfulness and delight. At the south entrance the approach is so easy that only two upward steps are required to bring one into the foyer and thence, without an additional ascent, into the auditorium. This great hall has two additional features to commend it, namely, no less than a dozen exits and acoustics well nigh perfect.

The new building provides for university work twelve additional classrooms, varied in size, well lighted and ventilated. The rooms on the fourth floor are all lighted from above and include the Geological Laboratory and Geological Museum, the latter extending over the entire width of the east end of the building. On the second floor a room is set apart for the special use of the Faculty, Senate and Board of Governors and is designated as "Faculty Hall."

For the administrative staff there is, in addition to the President's office, situated over the front entrance, a suite of three offices for the Registrar, the Bursar, the Secretary to the President and the Secretary to the Bursar. The Superintendent of Buildings has an office adjoining this suite. The vaults are so located as to be entered from the administrative offices. Eight offices are set apart for the Provost, the deans and the faculty in arts. Another office is assigned to the Student's Council.

The buildings yet to be erected are a new Biological Building; a group of buildings for the Acadia Ladies' Seminary; additions to the College Women's Residence, the Carnegie Science Building and the Library; and probably a central heating plant.

The Architecture of French Canada

By PROFESSOR WILLIAM CARLESS, F.R.I.B.A.
Department of Architecture, McGill University, Montreal.

AS architects, it is good for us to wander occasionally to some old-world village or quiet city back-water, where in the shadow of a sheltering church or cloistered square, we can steal a glance down the vista of time. Surrounded by old memories, we can muse on our architectural inheritance, and like some true lover deceive ourselves into thinking that we alone are capable of its true appreciation. Sometimes in such a mood, the shadows of the past are reincarnate, transmuting into glowing colour and movement the records of history. Along the great river where the Quebec landscape unfolds itself, with its quaint customs and handicrafts, its picturesque churches and houses, we see the great figures of Cartier, de Chaste, Champlain, Maisonneuve, Laval, and many others who have helped to make its romantic history, pass as in some pageant before us.

FIG. 1. "ABITATION DE QUEBECQ."

A Storehouse.
B Pigeon-house.
C Building for storing arms and housing workmen.
D Workmen's quarters.
E Sun-dial.
F Building containing forge and artisans' quarters.
G Outside galleries.
H Champlain's private quarters.
I Main door with drawbridge.
L Walk (10 ft. wide) all round the building.
M Ditch surrounding the building.
N Platforms for artillery.
O Champlain's garden.
P Kitchen.
Q Terrace in front of the building on the river-bank.
R The St. Lawrence river.

From Laverdière's *Champlain* in McGill University Library.

What a flood of questions we could put to these versatile old pioneers, as ready to fight or make a settlement, as to wander off in search of some new route to China or fabulous El Dorado; and for those of us whose interest lies particularly in the old architecture of the province, how much we regret that more of them did not leave records like Champlain, in whose book we find a drawing and description of the first house built by white men in Canada. With him particularly, how interesting it would be to compare notes as to the changes in domestic architecture since July 3rd, 1608, when, as he tells us: "I looked for a suitable place for our buildings, but could not find any more convenient or better situated, than the point of Quebec so called by the savages, which is filled with nut trees and vines."

Here on a spot which is now partly occupied by the Church of Notre Dame des Victoires, and close to the market square where later stood a statue of Louis XIV, Champlain built his famous "Abitation de Quebecq" (*Fig. 1*).

"With the ship-carpenters, the wood sawyers and other workmen"—actively engaged, we find that the building consisted of three blocks of two-storey height connected together and simply roofed with chimneys in the gable walls. In the Entrance Court to the west was a dove-cote and around this and the main building ran at the upper floor level, a projecting gallery with loop-holes in it. This, as well as the gate with its drawbridge over the moat, were the usual mediaeval features of defence which in France had become obsolete. Outside the moat providing further protection were cannon. Remembering how Champlain "set all the others at clearing the land about the building, in order to make the garden plots," we can picture the busy scene with all the usual sounds and accompaniments of building operations.

On the heights above where was soon to rise the Fort and Castle of St. Louis, all that company of brave men and devoted women, the creators of New France, would come and go as the centuries passed by. In their footsteps let us travel up the mighty St. Lawrence and see with them the little villages upon its banks, their silver spires gleaming against the landscape with the immemorial Laurentians misty on the horizon.

What kind of buildings were first erected at the early trading posts is largely a matter for conjecture. Those known to date from the 17th century are few, but from the stone ones remaining we can form some idea of what the older wooden buildings were like. The Norman and Breton peasants who comprised the bulk of the early colonists were accustomed to the type of house shown in the view of one of their villages (*Fig. 2*). Here the one-storey cottage with dormers lighting the attic in the roof with chimneys in the gable-ends, show a distinct resemblance to the typical French-Canadian arrangement. A familiar example (c. 1660) from near Beauport

FIG. 2. HAMLET NEAR YERVILLE, SEINE INFERIEURE.

FIG. 3. HOUSE BETWEEN MONTMORENCY AND BEAUPORT. (c. 1660).

is shown (*Fig. 3*); this is of plastered stone, but the wooden houses also followed, for the most part, along the same lines of the old masonry traditions. The larger stone buildings, such as the Grand Seminary of Quebec, built in 1663 (*Fig. 4*), follow the simple severe lines of the old French architecture of the reigns of Henri IV and Louis XIII. Walls of plastered rubble, two or three storeys high, with dressed stone surrounds to the doors and windows, each dormer breaking the eaves in the usual early 17th century manner. They have very little ornament or architectural features whatsoever, usually nothing more than a niche for a statue or a little wooden flèche set on the steep pitched roof which is sometimes hipped.

The churches of the 17th century have practically all disappeared, simple buildings of wood they have been replaced by stone structures of a later date.

FIG. 4. COURTYARD OF THE GRAND SEMINARY, QUEBEC.

Monseigneur Laval, who did so much for the architectural traditions of the province with his two schools of "arts et metiers" at St. Joachim and Quebec, was also indirectly responsible for the building of stone churches rather than wooden ones. The Seigneurs, it seems, held the privilege of appointing the Priests to churches erected at their own expense, and as this deprived the Bishop of considerable influence, he refused to consecrate any but stone churches. To what extent this succeeded it is hard to say, but considering the havoc that fire has wrought amongst the old buildings of Quebec, it was certainly a move in the right direction.

But fire was not their only enemy, for at the end of the French Regime there were 116 parish churches on the banks of the St. Lawrence, while now it is doubtful if there is a dozen of them left that have not been hopelessly altered or "restored" out of most of their original beauty.

FIG. 5. HOUSE IN MONTREAL, CORNER OF ST. VINCENT AND ST. THERESE. BUILT 1676.

The conditions of life with the early colonists did not encourage them to use any architectural forms except those which grew from simple methods of construction adapted to the rigorous Canadian climate. The typical house plan with its entrance door opening directly into a large room the full width of the house, with two rooms leading off it and the stair in one corner, produced no rambling plan with its consequent picturesque grouping. The old builders realized, as everyone else who builds a home here soon discovers, that the best house is one with the simplest pitched roof, with its minimum of flashing and absence of valleys and other sources of trouble from ice and thawing snow.

The high parapetted gable, with its characteristic moulded corbels, was a town feature, evolved as a safeguard against fire from adjoining houses (*Fig. 5*). In the country the same form continued although the original need had gone. The house with the more complicated hipped roof, often with a cen-

tral chimney, of which there are many examples on the Island of Montreal and along the Ottawa Valley, is a later type (*Fig. 6*).

In the churches, where we might naturally expect to see more decoration than in the dwellings of a comparatively poor community, there are few signs of ornamental or stylistic forms until the end of the 18th. century. Adequate accommodation and even protection in case of hostilities were all that was considered necessary, as we can see in the early settlements, where the Church and Seigneury were contained within a fortified enclosure. Although with more peaceful conditions obtaining, there were more chances for comfort and display, the buildings were always of the simplest character showing no survival of architectural features which one might reasonably expect would have been brought from such a land of fine building as France. True, we find reminiscences of the old mediaeval tradition in such things

FIG. 6. STONECROFT FARM, ST. MARIE ROAD, ST. ANNE DE BELLEVUE.

as the rounded apse of the churches (sometimes polygonal as at Vaudreil); the steep pitch of the roof; the circular window in the entrance gable recalling the Gothic rose-window, and occasionally a suggestion of a Gothic moulding; the spirit in them is mediaeval, but generally in these early churches there is no architectural link with the land of their origin as existed in the New England States. There the early building with its wood-framed and boarded tradition is a development of that of England, one growing concurrently with the architectural development in the older country amid similar conditions of life and climate as to be at times almost identical.

In the Province of Quebec, on the other hand, with its entirely different climate to France, we find a people who although less independent politically than their New England contemporaries, produced in spite of this, and perhaps owing to their greater poverty which saved them from following current fashions at home, a far more original although less pretentious style of architecture.

The early French settlers were simple, unlettered people, dependent for the most trivial matters on a form of government paternal and aristocratic. Unlike the English settlers to the South with their free and easy self-governing methods, the French-Canadian could not even hold a meeting to consider the cost of his new church without the authority of the Intendant. Under such conditions it is not surprising to find, once the general type of building became

FIG. 7. THE DECARRIE FARM HOUSE, COTE ST. ANTOINE ROAD, MONTREAL. BUILT 1697.

established, so little individual play of fancy in design or diverging types of plan and elevation. Through the Church with its more widely travelled members and its general culture there would come influences of the artistic taste at home in France which at this period was tending more and more to a classic formalism. Of this we get a distinct echo in the strict symmetry of setting-out in the typical stone house of the French Regime, with its five openings on the ground floor and the same number of dormers over (*Fig. 7*). The general effect, too, of balanced and orderly distribution is further helped by the two chimneys (one often for effect only) equally grouped in each gable end.

In the churches again similar influences went to produce the same original treatment. As an example of the early type what could be more charming and unaffected than the old church at Cap de la Madeleine (*Fig. 8*), with its graceful tin-covered flèche sitting so easily on the steep pitched roof; or St. Louis de Terrebonne (*Fig. 9*), with its very distinc-

FIG. 8. OLD CHURCH, CAP DE LA MADELEINE.

FIG. 9. ST. LOUIS DE TERREBONNE. (DEMOLISHED 1885).

tive gable treatment composing perfectly with the turret.

These turrets are generally the most distinctive external features of the churches and possess a simple grace which has been achieved with a sureness of touch and modicum of effort which reveals the hand of the true artist. The early ones, of which there are very few remaining, were formed of one or two open arcaded stories, octagonal in plan and set so that the four points of the angles are central with the square base under. The double-curved domes of the earlier turrets developed into the slender spire finish which came into vogue after the Cession and was probably derived from contact with the New England States, with which, towards the end of the century, there was a certain amount of intercourse. From this would ensue an acquaintance with the buildings there which were carrying on the tradition of Wren and the Georgian School. This and the English government of Quebec, whose architectural tastes ran, of course, along the same lines, would be to a large extent responsible for the more ambitious type of church built during the last quarter of the 18th. century (*Fig. 10*). Another influence was the establishment of schools where instruction in architecture and the allied crafts was given, as at St. Vincent de Paul, where Louis Quevillon (1749-1823) formed an aterlier, teaching wood-carving particularly as applied to internal decoration. In consequence, the interiors of these later churches show a profusion of ornament copied for the most part from examples in Blondel's book on architecture (Paris, 1774), which ranged from the more severe style of Louis Quatorze to the florid Louis Quinze—an importation which destroyed the distinctive quality of the older interiors, where often the only decoration was the richly carved Tabernacle in gilt cedar wood, as in the example illustrated (*Fig. 11*).

The type of Church which resulted from all this is distinguished mainly by the more spacious treatment of the entrance front than was possible in the earlier single cell plan. Rising from a broad platform, we see the two western Towers surmounted by their tin-covered belfrys and spires (this characteristic roof covering was imported from France as a safeguard against fire), with entrances at the base of each corresponding to the aisles which had now become popular. Between them is the gable-end to the nave, in the centre of which is the main doorway with large window over; the whole front generally showing, in the application of a range of pilasters and rusticated basement, the influence of Vignola (*Fig. 12*).

In the architecture of French Canada there is still, in spite of demolition, repair and fire, much to inspire us; not only by its intrinsic beauty, but as the artistic expression of a distinctly individual race. To what extent it is an original style I have endeavored to suggest, but in this respect it should be remembered that no style is original in the sense that its growth was uninfluenced by foreign traditions and building conventions.

In the history of architecture, it is only the ancient styles whose development was comparatively independent of outside influences, as in Egypt for instance. All the later historic styles reflect the power of old ideals and fashions over succeeding generations, not only in direct contact but in lands often far removed. The Italian Renaissance, itself an endeavor to recapture the spirit of Ancient Rome, in turn inspired such distinctive styles as the French and English Renaissance, and these, reacting to more study and research, developed into yet further forms of expression. Those developing under more simple conditions are less influenced by current fashions and often retain obsolete methods, thus producing a growth which by its contrast is peculiarly characteristic of the locality and people. Such a form of architectural expression is generally known as a "vernacular style."

Of such a nature are the old churches and houses of French Canada. The response to the demands of an economical and industrious community, they reveal a distinct type only very slightly influenced

FIG. 10. ST. PIERRE DE SOREL.

at first by contemporary European traditions. When at length they do show signs of this, much of the vigor and truth of the early work has gone. The Classic forms and decoration which eventually became common being little more than a local copy of late 18th. century French work.

By the middle of the 19th. century what was left of the old traditions were slowly flickering out. The little wooden church of the early settlers, whose development into the twin-towered form we have endeavored to trace, left no seed for further artistic growth, or if it did modern conditions would seem to have killed it.

But before we turn away from the old examples with their quiet charm to return to the daily round of modern architecture, let us linger for a while in the beautiful Quebec landscape surrounded by those historic memories which we will hope are still with us. Through the apple blossoms showing so white against the sky, we see down below us the glorious sweep of the great River stretching almost to the horizon, while nearer to us, over the roofs of the village, the spires of the church are flashing in the sunlight.

Here all is peace; the trees that line the sidewalks stretch their branches over the road, flecking its smooth surface with a mosaic of sunshine and shadow. On either side, between the clap-boarded and older stone houses, with their over-hanging bell-cast eaves or high parapetted gables, are little gardens where old fashioned flowers speak gently of the habits of a conservative race. Big dahlias; marigolds, whose seeds were brought from France by the early settlers; china-asters, and the tall dignified hollyhocks and foxgloves, and perhaps most typical of all, the flaming sunflowers of Normandy, all take their places in the quiet scene. On their verandahs, whose doorheads mostly bear some sacred picture or emblem, sit venerable types that seem the embodiment of some old Flemish painting, with their clear wrinkled complexions and keen eyes. On a bench nearby sits some old lady knitting socks, wearing a cap the fashion of which her ancestors brought from Brittany, and lumbering past us goes some old wagon with its driver in faded blue shirt—his team of horses the descendants maybe of those which Louis XIV sent here in one of his fits of enthusiasm for his Canadian colonists.

Following the windings of the village street, we soon find ourselves at the little turf-grown square in front of the church. Its masonry is not older than the first quarter of the 19th. century, but the façade with its classic treatment of the Orders and central pediment show restraint and sense of proportion—the legacy, bequeathed through some village builder of New France, of the urbane formality of the Italian *cinque-cento*.

FIG. 11. OLD CHURCH OF ST. CHARLES DE LA CHENAYE.

FIG. 12. ST. GENEVIEVE AND TOWER OF OLD CHURCH.

From the platform in front of the church we turn and look across the river, and see faintly twinkling in the setting sun, the lights of the great city which clusters round the sprawling outlines of Mount Royal. In half an hour we shall be back there amidst the steel and concrete of modern practice—truly a contrast to the quiet stones here. Yet both are eloquent of the change and movement which accompanies all artistic growth, and perhaps the chief value to us of these old examples is that they provide an ideal which fortunately cannot be realized. Always the problem is different and the solution must always be new. True Art is a keen adventure and like the old pioneers we have tried to recall, finds in difficulties the greatest incentive to achievement.

The Bucks Society of Architects

THE Bucks Society of Architects have arranged a novel series of informal meetings which will be thrown open to the public.

The details will prove of interest to other Architectural Societies, who may be seeking fresh ideas for the advancement of the profession. A means of maintaining the attention of members and encouraging the promotion of the study of Architecture and the Building Crafts is here indicated.

The meetings are divided into two sections, the first section of three entitled "Architecture and Architects" from the viewpoints of a layman, a builder and an artist.

The second section deals with brickwork, masonry, carpentry and plumbing prefaced by an evening devoted to Estimates and Estimating. Local men actually engaged in the trades will give their experiences of difficulties met with in practice and how they were overcome—rather than any attempts at mere text-book compilation.

Questions and discussion will follow each address and every endeavour will be made to secure practical and useful results.

The Champlain Memorial

AN event of deep historic interest took place at Orillia, Ontario, on July 1st, when a monument was unveiled to the great explorer, Samuel de Champlain. The monument is to mark the advent of the white race into Ontario; and, as the inscription upon it states, it is intended to be "a symbol of good will between the French and English speaking people of Canada."

The memorial was unveiled by the Hon. Rodolphe Lemieux, Speaker of the House of Commons, in the presence of a distinguished gathering of prominent men of the two provinces.

Champlain, it will be remembered, made his journey of discovery into Ontario in 1615. That expedition was the great explorer's deepest and boldest thrust into the heart of the North American continent, and the Indian village of Cahiague, capital of the Huron nation, may be said to have been the culminating point of his explorations. It was at Cahiague, near the site of which Orillia now stands, that Champlain made his winter headquarters. There, as the guest of the Huron Chief, Darontal, he spent a greater length of time than at any other point, while in what is now the Province of Ontario.

THIS GROUP PORTRAYS A COUREUR-DE-BOIS, TRADING BEADS WITH INDIANS FOR FURS.

This monument to Champlain is of heroic proportions and was conceived and executed with rare artistry. It marks the coming of the first white man into the interior of the North American continent, and is excelled by few such memorials in either the United States or Canada. The main figure of "Champlain," twelve feet in height and weighing three and a half tons, stands atop a sixty ton boulder. At either side are large bronze groups, comprised of three figures each, representing those two objects ever near the heart of Champlain—the bringing of Christianity to the Indians, and the opening up of commerce. Each side group weighs three tons; and the total weight of the bronzes is nearly ten tons.

The rough hewn central boulder, on which the figure of Champlain stands, is of Benedict stone. The design called for a pedestal in keeping with the life of a pioneer, and typical of the early period in which Champlain made his explorations. Because of transportation difficulties and cost, it was found impracticable to carry out the artist's conception in one piece of quarried stone, and the boulder was cast on the spot in Benedict granite and tooled to the exact shape. The plinth and steps are the same material. A rich effect is given by the pink granite which enhances the appearance of the bronzes. The total weight of the stone work including the boulder is over 100 tons. The base is thirty feet square, and the whole monument stands 30 feet high.

This striking memorial stands in Orillia's famous lakeside park on Lake Couchiching. There the figure of the great explorer looks toward the "Narrows," the only definitely located site mentioned in that extremely interesting document, "Champlain's Journal." It was at the "straight" connecting Lakes Simcoe and Couchiching that the Hurons stopped to fish before proceeding on the unsuccessful expedition against the Iroquois.

The monument is the creation of Vernon March, the brilliant young English artist, whose work has been attracting widespread attention, and who recently was given high commendation for his war memorial for the Union of South Africa. Vernon March is the youngest of the famous family of seven brothers and one sister, all of whom are artists. It is doubtful if a more extraordinary family could be found anywhere; all are devoted to art. Among themselves on their own premises, they do the entire work on a monument from the initial design to the ultimate bronze.

Contributions to this national and inter-provincial monument were made by the Dominion Government and the Governments of both Ontario and Quebec. Of the total cost of $35,000, the Dominion gave $12,500, the Provinces $5,000 each. In addition the Federal Government remitted $5,000 in duty and sales tax. The remainder came from the Town of Orillia, the County of Simcoe, from citizens and other sources.

THE CHAMPLAIN MEMORIAL, AT ORILLIA, ONTARIO.

1615-1915

"Erected to commemorate the advent into Ontario of the white race, under the leadership of Samuel de Champlain, the intrepid French explorer and colonizer, who, with ten companions, arrived in these parts in the summer of 1615, and spent the following winter with the Indians, making his headquarters at Cahiague, the chief village of the Hurons, which was near this place. A symbol of good will between the French and English speaking people of Canada."

Structural Service Department

STEEL I-BEAMS HAUNCHED IN CONCRETE

By PETER GILLESPIE, *Professor of Civil Engineering, University of Toronto*

and R. C. LESLIE, *Research Assistant, University of Toronto.*

THE steel frame building having reinforced concrete floors is a recognized competitor of the building constructed wholly of reinforced concrete. In its construction, the steel is erected in the ordinary way after which the concrete floor slabs and beam haunchings are poured into forms usually supported by the steel beams themselves. The practice of supporting the forms in this way eliminates much of the shoring otherwise necessary (facilitating thereby free movement for men and materials on the floor below) and it is a saver of time and money generally. An additional economy would result were the two materials assumed to act together after the manner of reinforced concrete. This assumption, however, has not heretofore been generally made, the present practice being to consider the steel beam as supporting the entire dead and live load without assistance from the surrounding envelope of concrete. That is the attitude taken by the building departments of such American cities as Baltimore, Boston, Buffalo, Chicago, Minneapolis, Montreal, New York, Philadelphia and Toronto. In the United Kingdom also a similar custom prevails although a concession is sometimes made by allowing the haunched beam to be figured at 18,000 or 20,000 lbs. per sq. in. where otherwise 16,000 lb. per sq. in. would be the maximum permissible stress.

A series of tests on haunched beams were conducted at the plant of the Dominion Bridge Company at Lachine in 1922-23. Two floor panels, each 10 ft. by 16 ft., having a concrete slab four inches thick, reinforced with wire mesh, were constructed. These panels were supported by I-beams haunched in concrete fastened to girders by standard connections. Strain gauge readings were taken on the lower flanges of the encased I-beams before and after dead load was applied. Live load deformations were measured by Martens extensometers and deflections were observed. The two materials in these tests behaved very much as they do in ordinary reinforced concrete beams.

A test was also made in the Strength of Materials Laboratory, University of Toronto, during the winter of 1924. The beam tested in this case was an 8-inch, 18.4-pound I. The width of haunching was 8" at the bottom of the stem and 9" at the bottom of the slab, which was 20" wide and 3½ in. thick. The beam was 9' 4" long over all, with a 1¾" bearing plate at each end. The span was 9' 2" and two loads were applied at points 13 inches from either support. Loads were of equal magnitude, thus giving a uniform bending moment and zero shear between their points of application. Extensometers of the Martens type were placed on the top of the slab and also on the lower flange of the I-beam, which was exposed for the purpose, at points approximately 1' 8" from one support. The maximum load applied was 135,000 lb., *i.e.*, 67,500 lb. at each concentration.

For a load of 28,000 lb., computations based upon the observed strains between load points, gave a tension below the neutral axis of 16,770 lb. and a compression above it of 15,660 lb. of which 14,170 lb. existed in the concrete flange. The figured bending moment (14,000 < 13 in. lb.) did not agree exactly with either of the products, Tjd or Cjd where T and C denote aggregate tension and aggregate compression respectively. The area resisting horizontal shear was 9×14 sq. in., approximately, allowing for 1 in. extending past each end support.

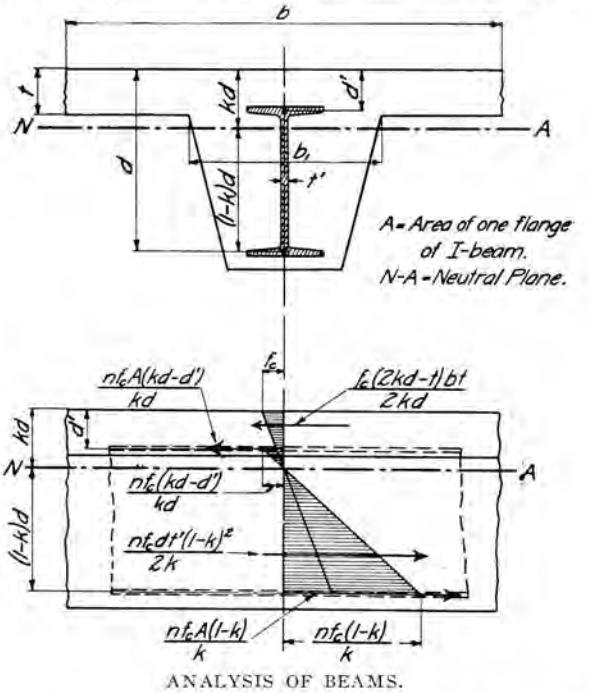
Hence, the horizontal shear,

$$f_v = \frac{14{,}170}{9 \times 14} = 112 \text{ lb. per sq. in.}$$

Assuming that as the load increases the shearing stress will increase in direct proportion, the value of f_v at maximum load, 135,000 lb., would be

$$\frac{135{,}000}{28{,}000} \text{ of } 112 = 542 \text{ lb. per sq. in.}$$

The intensity of the shearing stress for uniformly distributed loads increases uniformly from zero at the centre of the span to a maximum at the supports. In computing its value the critical area is considered as being horizontal and lying in the plane of the bottom of the slab. Failure, however, would probably take place along an area arching over the top of the I-beam flange. As this area is not much greater than that assumed, the computation is approximately correct. The following formula, assuming the neutral axis to lie below the slab, gives the maximum shearing stress for such a case:

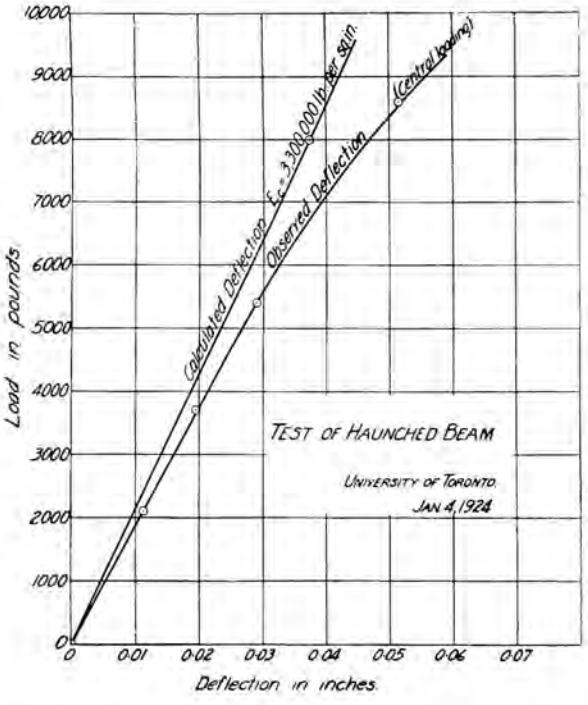


ANALYSIS OF BEAMS.

$$f_v = \frac{2bt\left\{f_c + f_c\left(\frac{kd-t}{kd}\right)\right\}}{lb_1}$$

where,

f_v = horizontal shear at end of beam,
l = span,
b^1 = width of haunch at bottom of floor slab,
t = thickness of slab,
b = width of slab acting as T-beam,
kd = depth to neutral axis, and
f_c = compressive stress in concrete at top of slab.



The test included measurements of the deflection of the beam under central load. The accompanying graphs and others studied show that the deflection of the composite beam follows the law for the homogeneous beam and that for a uniformly distributed load the following formula applies with approximate correctness:

$$\Delta = \frac{5}{384} \frac{Wl^3}{EI}$$

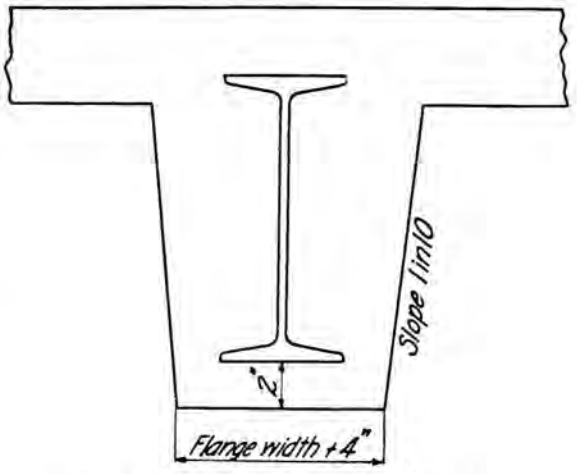
In the tables which follow there appears a coefficient of deflection, "c" for each beam. This is the deflection in inches for that particular haunched beam carrying a uniformly distributed load of one thousand pounds on a span of one foot. It is used in determining the deflection for any given span and load with the aid of the following formula:

$$\Delta = c \frac{Wl^3}{1000}$$

where,

Δ = deflection in inches,
W = uniformly distributed load, and
l = span in feet.

When the forms for concrete are suspended from the steel beams, W in the above formula will denote the live load.



Plane of bottom of floor slab cuts web of I-beam at beginning of fillet.

SUGGESTED STANDARD HAUNCHING FOR STEEL I-BEAMS

The tests cited appear to warrant the following assumptions:

(1) The two materials act together as they do in reinforced concrete.

(2) Live load deflections follow with necessary changes, approximately, the formulae for homogeneous beams.

(3) A working stress of 240 lb. per sq. in. in horizontal shear is not excessive.

Messrs. Redpath, Brown and Co., Ltd., of Manchester, England, have published tables which give the strength of I-beams surrounded by concrete. In his book, *Steel Frame Structures*, Mr. W. C. Cocking, Consulting Engineer of London, England, gives tables for safe loads for British standard beams encased in concrete. So far as the writers have been able to learn there are no available data regarding the strength of haunched beams applicable to American shapes. In the belief that present practice penalizes unduly this type of construction, that tests have warranted the assumption stated above and that results of computations for strength may be of value to the busy designer, the following tables have been prepared.

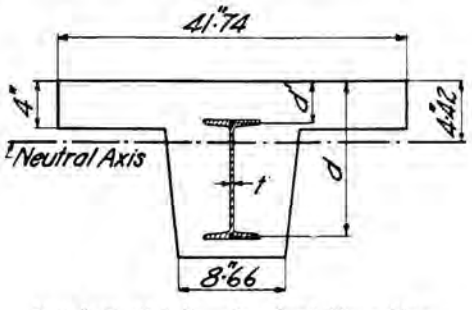
METHOD OF COMPUTATION

In figuring the composite beam it was assumed that there is no tension in the concrete, that $n=15$, and that the effective width of the slab is equal to the average width of the haunching plus eight times the slab thickness. Working stresses in steel and concrete have been held to the conservative values of 16,000 and 650 lb. per sq. in. respectively.

In the computations, the following symbols have been used:

A_s = area of steel beam,
I_s = moment of inertia of steel beam,
I = moment of inertia, in terms of concrete units, of the composite beam about its neutral axis,
A = area of one flange of steel beam,

S_c = section modulus of the composite beam (concrete),
S_s = section modulus of the composite beam (steel),
S = section modulus of the naked steel beam,
$R = \frac{S_s}{S}$,
$n = \frac{E_s}{E_c}$,
M_c = moment of resistance based on concrete,
M_s = moment of resistance based on steel,
d = depth to C.G. of bottom flange,
d' = depth to C.G. of top flange,
t' = thickness of web of steel beam,
f_s = stress in steel, bottom flange,
L = live load per beam,
D = dead load per beam,
W = tabulated load per beam.



10" I @ 25.4 lb. Standard Haunching.
I = 4384 in.⁴
Sc = 992 in.³
Ss = 35.5 in.³
Ms = 568,000 in.-lb.
Mc = 644,500 in.-lb.

When the normal forces acting on any section in the beam are equated the following, assuming the neutral axis to lie below the slab, is the result:

$$\frac{f_c(2kd-t)bt}{2kd} + \frac{f_cAn(kd-d')}{kd} = \frac{nf_cdt'(1-k)^2}{2k} + \frac{f_cAn(1-k)}{k}$$

whence

$$k^2 - \frac{2(bt+2An+ndt')k}{ndt'} + \frac{bt^2+2An(d+d')+nd^2t'}{nd^2t'} = 0.$$

In the following example, the data of a specific case are used in the solution of the above equation. The beam is a 10-in., 25.4-lb. I carrying a 4 in. concrete slab.

$d' = 3.20''$; $d = 12.64''$; $t = 4$; $t' = .31''$;
$A = 2.46$ sq. in.
$b = 9.74'' + 32'' = 41.74''$

bt	$= 41.74 \times 4$	$= 167.0$
$2An$	$= 30 \times 2.46$	$= 73.8$
ndt'	$= 15 \times 12.64 \times .31$	$= 58.7$
		299.5

bt^2	$= 167 \times 4$	$= 668$
$2An(d+d')$	$= 73.8 \times 15.84$	$= 1168$
nd^2t'	$= 58.7 \times 12.64$	$= 742$
		2578

$$k^2 - \frac{599.0}{58.7}k + \frac{2578}{742} = 0 \text{ or } k^2 - 10.20k + 3.47 = 0$$

$k = .35$ and $kd = .35 \times 12.64'' = 4.42$ in.

MOMENT OF INERTIA ABOUT THE NEUTRAL AXIS

$$I = \frac{1}{12}bt^3 + bt\left(kd - \frac{t}{2}\right)^2 + n\left\{I_s + A_s\left(\frac{d+d'}{2} - kd\right)^2\right\}$$

$\frac{1}{12}\times$	41.74×4^3	$= 222$
$167\times$	2.42^2	$= 977$
$15\times$	122.1	$= 1832$
$15\times$	7.38×3.5^2	$= 1353$
		$I = 4384$ in.⁴

$S_s = \frac{4384}{15 \times 8.22} = 35.5$ in.³ $\quad S_c = \frac{4384}{4.42} = 992$ in.³
$M_s = 16.000 \times 35.5 = 568.000$ in.-lb.
$M_c = 650 \times 992 = 644.500$ in.-lb.

The smaller of the two moments of resistance is the one governing the strength. For a bending moment of that magnitude,

$$f_c = \frac{M_s}{S_c} = \frac{568{,}000}{992} = 572 \text{ lb. per sq. in.}$$

Stress at bottom of the slab is $\frac{.42}{4.42}$ of 572 = 54 lb. per sq. in.

If the span be 120 in. and $b_1 = 10.82$ in.,

$$f_c = \frac{2 \times 41.74 \times 4(572+54)}{120 \times 10.82} = 161 \text{ lb. per sq. in.}$$

It will be noticed that in some cases the capacity of a haunched beam as listed in the tables following is somewhat less than the capacity of the naked beam as given in the Carnegie Handbook. This is true of large sections with thin slabs only. For example, the 24-in., 100-lb. I figured for a 4" concrete slab has a capacity on a 10 ft. span of 210,000 lb. The capacity of the same beam naked is 211,500 lb. This is explained by the fact that when the concrete adjacent to the steel is working at its full capacity, 650 lb. per sq. in., the accompanying stress in the steel is 650×15 or 9,750 lb. per sq. in., which is 6,250 lb. per sq. in. below its permissible value. This beam with its haunching is, however, a class "B" beam, that is, it is over-reinforced. A computation shows that for the span assumed, a dead load of 50,000 lb. might have been applied to and supported by the naked beam, and that after the concrete had set an additional load of 210,000 lb. could still be supported without overstressing either material. The obvious thing to do in such cases is to suspend the forms from the steel shapes.

In some cases it will be observed that a certain beam, when haunched is apparently stronger than the next heavier beam of the same or related class similarly haunched. In some instances the "supplementary" beams are in this category, these having profiles somewhat different from those of the

American standard sections. In some instances the apparent increase is due to the fact that while both kd and I decrease when the lighter beam is introduced, the relative reduction in the former exceeds that in the latter. This results in an increase in the concrete section modulus and its derived moment of resistance. The case of 24-in. beams weighing 85 lb. and 79.9 lb. respectively with 4½-in. slab is one in point. Passing from the heavier to the lighter, it will be seen that the depths, as defined previously, are practically the same, but that kd decreases 3.7% and that I decreases 3.2%. In consequence of this, S_c is ½ of one per cent. greater for the lighter than for the heavier beam.

SAVINGS ACCOMPLISHED BY HAUNCHING

The saving in metal resulting from using haunched beams is illustrated in the following examples:

(1) Floor panel 15′×15′ — beams framing into girders at third points.
Live load=100 lb. per sq. ft.
Thickness of slab, 3 in.
Dead load tributary to beams=60 lb. per sq. ft.
Dead load tributary to girder=concentrations +175 lb. per lienal ft.

When figured as naked beams, the following sections are required:
Beams— 9-in., 21.8-lb.
Girder—12-in., 50.0-lb.

When figured as haunched beams with suspended forms, the following sections are adequate:
Beams— 8-in., 17.5-lb.
Girder—12-in., 40.8-lb.
Total saving in weight=1.47 lb. per sq. ft. of panel.

(2) Floor panel 18′×18′ — beams as in (1).
Live load=100 lb. per sq. ft.
Thickness of slab, 3½ in.
Dead load tributary to beams=70 lb. per sq. ft.
Dead load tributary to girder=concentrations + 300 lb. per lineal ft.

When figured as naked beams the following sections are required.
Beams—10-in., 40-lb.
Girder—18-in., 60-lb.

When figured as haunched beams with suspended forms, the following sections are adequate:
Beams—10-in., 30 lb.
Girder—18-in., 48.2-lb.
Total saving in weight=2.3 lb. per sq. ft. of panel.

In a building of 10 stories, 135′× 135′ designed according to (1) the steel saved would amount to
135×135×10×1.47=268,000 lb.=134 tons.

It will be apparent that the upper flange of the steel beam contributes but little to the flexural strength of the composite beam and that it might with profit be eliminated. The steel mills were consulted to ascertain whether the T-shape could be economically rolled as a substitute for the present I-shape, if the demand were sufficiently great to warrant its production. It seems to be the opinion of those consulted that for any tee over 6″ in depth the cost of rolling would be greater than that of the I-beam of equivalent depth but that if a bulb were put on the end of the stem it might be economically produced. Such a structural shape, if used in the composite beam, would effect a saving in the weight of metal required.

Reports on Activities of Provincial Associations

EDITOR'S NOTE

Secretaries of Provincial Associations and Ontario Chapters will pleased be advised that all reports of their activities to be inserted in the next issue of the R.A.I.C. Journal must be mailed to the office of publication, 160 Richmond St. West, Toronto, not later than September 20th, 1925.

Ontario Association of Architects

Secretary
R. B. Wolsey, 96 King Street W., Toronto

OTTAWA CHAPTER O.A.A.

Secretary, B. Evan Parry, Federal Dept. of Health.

THE membership of the Chapter has been increased by graduates of architecture of McGill University, as also practising architects of the city.

At the recent annual meeting of the Town Planning Institute of Canada the Chapter was well represented by its members, the subject matter of the papers at the Convention being of distinct interest and contributed to by the members of the Chapter.

Col. C. J. Burritt speaking at the dinner, whereat representative officials of the Government, municipalities and other bodies were present, emphasized the truism that the work of the town planner was that for the improvement of areas and that the work

of the architect was to take care of the decoration of these areas. Incidental to which he stated that he rejoiced in the fact that sky-scrapers had not yet been adopted in the city of Ottawa, pointing out that land had not yet become so valuable that it was necessary to stack up forty storeys upon the streets of Ottawa.

The Chapter has, at the request of the Chairman of the Ottawa Town Planning Commission, sat in committee for the purpose of reviewing, offering criticisms, and suggested revisions to the zoning by-law for Ottawa, which by-law it is proposed will be able to be used as a skeleton standard for cities throughout the Dominion, and in the words of the President of the Town Planning Institute of Canada the by-law has been studied clause by clause by committees representing various interests such as architects, health, builders, and trust companies, which action it is predicted without hesitation will have a salutary effect ultimately upon architecture throughout the Dominion.

TORONTO CHAPTER O.A.A.

Secretary—I. Markus, 223 Howard Park Ave., Toronto

A meeting of the Chapter was held recently at which it was decided to hold an exhibition in the galleries of the Robert Simpson Company, of the competitive drawings for the Table Rock Pavilion at Niagara Falls, during the week of June 29th.

Drawings from 33 competitors were shown including those of the winners of the first award, Messrs. Findlay and Foulis of Sault Ste. Marie, the second prize winners Messrs. Sanford Smith and Everett of Toronto, and the third prize winners F. H. Marani of Toronto. Invitations to be present at this exhibition were extended to all the members of the Ontario Association of Architects and in addition to the many members of the architectural profession who came to view the drawings, it also attracted quite a number of others interested.

A request was read from the Quantity Surveyors Association asking the co-operation of the architects in offering their services to contractors desiring quantities on jobs on which they were about to tender. The Chapter promised to give this Association an opportunity of addressing their members on this subject in the Fall. It was decided to suspend the meetings of the Chapter until after the Summer season. The next meeting will be held in the early part of September.

Obituary

DONN BARBER, F.A.I.A.
(1871-1925)

The Architectural profession has lost one of its outstanding members in the person of Donn Barber, who died on May 29th last. Mr. Barber at the time of his death was President of the Architectural League of New York and took a very keen interest in the Architectural and Allied Arts Exposition which was held in New York recently.

Mr. Barber was born in Washington on October 19th, 1871 and graduated from Yale University in 1893. After taking a special course at the School of Architecture, Columbia College, he spent 4 years in Paris at the Ecole-des-Beaux Arts, from which he graduated in 1898. He received his early training in the offices of Lord and Hewlett, Cass Gilbert, and Carrere and Hastings and established his own practice in 1900.

Among the many splendid buildings designed by him are the Connecticut State Library, the National Park Bank, the Lotus Club, the Institute of Musical Arts and the New York Cotton Exchange.

ARNOLD W. BRUNNER
(1857-1925)

Mr. Brunner, who died recently, always took a keen interest in the American Institute of Architects and was at one time President of the New York Chapter. He was also a past President of the Architectural League of New York, as well as of the Fine Arts Federation. A great part of Mr. Brunner's practice was confined to governmental and institutional work.

The Post Office and civic centre of Cleveland, Ohio, is perhaps one of his most outstanding efforts. Mr. Brunner was also responsible for the designing of the Mount Sinai Hospital as well as the buildings of the Harrisburg Capitol.

Correspondence

The Journal is not responsible for statements or opinions expressed by correspondents.

All correspondence should be addressed to "The Editor, 160 West Richmond Street, Toronto," and must be signed by the correspondent. When a correspondent desires to use a non-de-plume he may do so provided he gives his name to the editor.

ARCHITECTURAL COMPETITIONS

The Editor, The JOURNAL R.A.I.C.
Dear Sir,

The subject of Architectural Competitions is of so controversial a nature that the writer must approach it with hesitation, unless prepared to declare definitely for or against competitions in general.

My belief is that under certain conditions, competitions are not only of value but absolutely essential to insure that all are accorded a fair chance of receiving the commission to carry out the work involved. This particularly applies to Governmental, Hospital, University or School work where such is a question of expending public funds, to which all contribute in part.

Unfortunately there has been so much criticism of the standing of assessors, conditions laid down, and assessors' awards, that one almost despairs of holding a competition upon equable grounds for all, but in spite of all, I do believe it is possible if the proper influence at the right time is directed at the principals concerned in the project.

The practice of indiscriminately awarding commissions, of a more or less public nature, to this architect or that should be universally condemned. The inference is generally left in the minds of others that friendly influence was the agency in obtaining the award. Were efficiency the qualifying essential all would be well. The answer is, fair competition.

As in all walks of life to-day, many of our profession served in the Great Struggle through which our Empire has just passed, and they with all other deserving ones are entitled to an opportunity to compete for any commissions involving the expenditure of any public moneys.

Competitions of a private nature are a different matter and we can but use our influence to the end that they be conducted as fairly as possible.

The query will be "how to prevent such a practice as aforementioned?"

The answer is a strong stand by the architects themselves for fair play in all matters concerning the profession, which sounds like a platitude but is far from being so. I might mention a number of past instances where abuses in competitions and private practice have occurred, wherein architects themselves were entirely at fault.

How can we educate the public in such matters of fair competition if we ourselves break the rules?

Add to this the practice of assessors in overlooking these infractions, in many cases awarding the prize to the worst offender. The result is general dissatisfaction with competitions.

Very often the assessors are all laymen, and in such cases architects should stay out of the competition, but at the same time our associations should use every endeavor to convince the principals concerned as to the reasons for holding the competition under proper conditions, and incorporate on the Board at least one professional assessor.

In order to do this our associations should immediately delegate a man of high standing, ability and tact to approach the principals and lay our arguments before them, along the following lines, i.e.:

First—A Board of Three, composed of one layman, thoroughly conversant with what is required in the new project, two architects, or one architect and one engineer, selected as to their fitness to judge the work under discussion. These last two should if possible be indemnified for their services.

Second—Conditions be clearly outlined after thorough investigation of the requirements in the new project. They should be so worded as to eliminate any possible misinterpretation as to what is desired.

Third—Strict adherence to the conditions as laid down, by the competitor before and the assessors after the designs have been submitted.

Conditions should contain the following main points—Drawings should be uniform in size, and all of same scale, except details and block plan. Rendered in ink or pencil as to plans, elevations and sections, with monotone wash and cast shadows at option of competitor. Perspective, rendered in any medium, at option of competitor.

Argument is sometimes advanced that freedom in rendering the drawings, make possible the misleading of Assessors as to the design, but the reverse is also the case, in that it often happens that a splendid and sometimes the finest design is lost by inability to render the various planes and surfaces. Also I believe that an assessor who might be mislead by a clever sketch is incompetent to serve on the Board.

A recent fine example was the competition for the Theodore Roosevelt Memorial in the United States, won by John Russell Pope. Drawings rendered by O. R. Eggers. Wash was used for building and shadows, freehand pencil for foliage. The wonderful result needs no eulogy from me.

A reverse sample was a recent competition in Canada in which only ink line drawings were to be allowed, in fact a published answer to a question stated that infraction of this rule would debar a competitor, and yet in spite of this many designs were submitted, and accepted in which actual pen and ink renderings were incorporated. As all architects are not proficient in pen and ink renderings, such a competition could hardly be fair to all.

To return to the general subject of competitions, and as regards limited competitions, in which a number of architects are selected, and paid for their sketches, this practice I am not in sympathy with, for here again the possibility of favoritism raises its head, and furthermore, who is to judge as to those qualified to compete?

All members of associations are presumed to have passed a form of examination, and are therefore competent architects, so why should they be barred?

I admit that in private practice, these latter theories will not necessarily apply.

In any case an efficient associate can always be appointed to act with an inexperienced winner.

The winning of a competition is oftimes the making of an architect, and one must not forget that the winners of the commission for the London County Council Buildings and the Liverpool Cathedral in England, were mere boys in experience as well as years.

What better way is afforded, for efficiency to display itself than in fair competitions, architectural or otherwise?

CHARLES DOLPHIN.

Sesquicentennial International Exposition

A GREAT exhibit showing the splendors and wonders of the ancient world, educational in its scope and accurate in its details, will be built at the Sesquicentennial Exposition.

The concession for this gigantic project, which will recreate upon a ten-acre plot the entire history of man from the time of the Chaldees to the fall of the Roman Empire, has been granted to a company headed by Dr. John Wesley Kelchner, noted biblical scholar and lecturer.

Bond has been filed with the Exposition calling for completion before June 1, 1926, the opening day of the Exposition, and preliminary construction work will be started upon the site immediately. The enterprise will be built after plans and models which it has taken Dr. Kelchner twenty years to complete. The awarding of the concession to him fulfills a lifelong dream of his to erect for this generation, a visible exemplification of what historians and teachers have taught for centuries.

The visitor to the enclosure, which will be constructed, will find buildings devoted to the civilization of the Chaldees, Babylon, Egypt, Greece, and Rome. A central feature will be the tower which will rise to a height of 150 feet above the ground level.

The Temple of Soloman, corresponding in every respect to the measurements and description in the Bible, will also be erected, together with the complete citadels and precincts of the ancient cities of the East, just as they appeared in biblical times.

Announcements

Mr. Edmond Latourelle, Architect, formerly of 83 Craig Street West, Montreal, announces the removal of his office to 119 Craig Street West.

* * *

Messrs. Findlay & Foulis, Architects of Sault Ste. Marie, Ontario, announce the opening of a branch office in the Dominion Bank Building at Niagara Falls.

* * *

Mr. James Govan, Architect of the Provincial Secretary's Department of Ontario, has resigned to accept the position of head of the Research Department of the Ontario Gypsum Company, Limited.

* * *

The Ontario Gypsum Company Limited, Paris, Ontario, announce the organization of a Research Department under the direction of Mr. Jas. Govan, formerly architect of the Provincial Secretary's Department of Ontario. This Research Department will be available to all architects and will welcome any enquiries regarding problems of construction, especially in the field of Insulation against transmission of heat and sound. Mr. Govan's office will be at 811 Federal Building, Toronto.

Books Reviewed

TERRA COTTA OF THE ITALIAN RENAISSANCE
National Terra Cotta Society.

This is a most interesting volume despite the fact that it is without letterpress. It presents some two hundred photographic reproductions of Italian architecture taken by A. F. Adams, A.I.A. While they are largely of well known buildings, they invariably present the subject from an unusual point of view. This volume is a most welcome one to the architect's library and the Journal congratulates its publishers, The National Terra Cotta Society, on its production. The price of the publication is Three Dollars, which we understand is just a nominal charge to cover the cost encountered in assembling and presenting the material. The size of the bound volume is 9 in. by 12¾ in.

JOURNAL OF THE TOWN PLANNING INSTITUTE OF CANADA

The June issue of the Journal of the Town Planning Institute of Canada is an outstanding number. It not only gives the proceedings of the Institute's Convention but also a resumé of many of the papers presented at the International City and Regional Planning Conference, held in New York City last April.

It also contains an article on town planning by the Deputy Minister of the Interior, W. W. Cory, and a most challenging presentation by Mr. Noulan Cauchon, of Ottawa, on Arterial Highways and Hexagonal Planning, which he delivered at the New York Convention and also in Baltimore. We regret being unable to give more space to the many interesting things on Town Planning presented in this issue.

Manufacturers' Publications Received

COPIES of the following Manufacturers' Publications have been received at this office and a brief review is printed herewith. The Journal will continue to print in each issue a review of the more important business literature of manufacturers of building material and equipment received at this office.

FAIRFACTS CO. INC., 234 West 14th St., New York City.
Fairfacts Fixtures Catalogue F, 1925, Architects Edition.
This catalogue is arranged as a unit of the American Institute of Architects filing system. It gives details of installation and illustrates the possibilities of these fixtures for service and artistic effect. Size 8½ x 11.

SARNIA BRIDGE CO. LIMITED, Sarnia.
Massillon Bar Joists. Loading Tests.
This book gives the results of tests of the Massillon Joists made by the Pittsburg Testing Laboratory, University of California, Ohio State University, Department of Public Works, Philadelphia, Toronto University and others. In addition to the Graphic Charts the book contains illustrations of the way the tests were made. Size 8½ x 11.

INDIANA LIMESTONE QUARRYMEN'S ASSN., Bedford, Indiana.
Indiana Limestone. Details and Data Sheets.
This is a series of Details and Data Sheets showing the details of Indiana Limestone Cornices, Columns, etc. These sheets also contain illustrations of different types of buildings on which Indiana Limestone has been used. Size 8½ x 11.

ONTARIO GYPSUM CO. LIMITED, Paris, Ontario.
Insulex.—Architects Book.
This book gives a very interesting description of "Insulex", the new insulating product. It contains details drawn to scale showing application of this Insulating material. Size 8½ x 11.

ACME RULER & ADVERTISING COMPANY, 337 Leslie Street, Toronto.
Stevens Unit Casement Windows.—Folder.
This folder contains a description of the Stevens Unit Casement Windows and shows details of operation, also gives a list of installations. Size 8½ x 11.