

R A I C JOURNAL

Serial No 399, Vol. 35, No 11

EDITORIAL

ARTICLES

- | | |
|---|-----|
| Acoustics in Church Buildings, <i>Eric Dowling</i> | 406 |
| The Symbol Building, <i>W. S. Goulding</i> | 408 |
| The Church and Contemporary Architecture, <i>Gerald A. Davies</i> | 415 |

ILLUSTRATIONS

- | | |
|---|-----|
| Workmen's Compensation Board Hospital and Rehabilitation Centre,
Malton, Ontario, <i>Page & Steele and Thomas R. Wiley</i> | 399 |
| Worship Houses | |
| Clairlea Presbyterian Church, Scarborough, Ontario,
<i>Somerville, McMurrich & Oxley</i> | 409 |
| St. Thomas Church, Montreal, Quebec, <i>P. Roy Wilson</i> | 409 |
| St. Mary's Cathedral, Calgary, Alberta, <i>Alfred W. Hodges and Maxwell Bates</i> | 410 |
| All Saints Anglican Church of Saskatoon, <i>Kerr & Cullingworth</i> | 411 |
| St. Anne's Church, Peterborough, Ontario, <i>O'Gorman & Fortin</i> | 412 |
| St. Matthew's Presbyterian Church, Ingleside, Ontario,
<i>Somerville, McMurrich & Oxley</i> | 413 |
| Howard Eaton United Church, Trout Mills, Ontario, <i>Gibson & Associates</i> | 413 |
| St. Anthony's Church, Chatham, Ontario, <i>Frank J. Stalmach</i> | 414 |
| Christian Science Society, North Bay, Ontario, <i>Gibson & Associates</i> | 419 |
| The Church of St. Wilfrid, Etobicoke, Ontario, <i>Cox & Moffet</i> | 420 |
| Beth El Synagogue, St. John's, Newfoundland, <i>Cummings & Campbell</i> | 421 |
| Toronto Buddhist Church, <i>Roy Matsui and George Yamazaki</i> | 422 |
| Chapel at Ronchamp, <i>Le Corbusier</i> | 423 |
| St. Louis Evangelical Church, <i>Horst, Linde, Rudolf Diehm, Erwin Heine</i> | 424 |
| Catholic Parish Church of St. Albert, Saarbrücken, Germany, <i>Gottfried Böhm</i> | 425 |
| Pugin Studentship | 426 |
| Projects | |
| Sun Life Building, Toronto, Ontario, <i>John B. Parkin Associates</i> | 428 |
| Windsor Plaza, Montreal, Quebec,
<i>Peter Dickinson Associates and Associate Architect, Max Roth</i> | 430 |

NEWS FROM THE INSTITUTE

431

BOOK REVIEW

433

NEW TECHNIQUE

433

INDEX TO JOURNAL ADVERTISERS

66

*The Institute does not hold itself responsible for the opinions
expressed by contributors*

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

EDITORIAL BOARD

ROBERT C. FAIRFIELD, CHAIRMAN
WM. S. GOULDING, ASSISTANT EDITOR

ERIC R. ARTHUR (F), EDITOR

J. D. Annett, *Edmonton*; F. Bruce Brown (F), *Toronto*; Howard D. Chapman, *Toronto*; Ronald A. Dick, *Toronto*; P. A. R. Dickinson, *Toronto*; W. W. Downie, *Halifax*; Henry Fliess, *Toronto*; D. C. Haldenby, *Toronto*; K. Izumi, *Regina*; Douglas E. Kertland (F), *Toronto*; H. Claire Mott (F), *Saint John*; Earle C. Morgan (F), *Toronto*; Forsey Page (F), *Toronto*; S. M. Roscoe, *Hamilton*; Norman C. H. Russell, *Winnipeg*; Wm. J. Ryan, *St. John's*; E. J. Turcotte (F), *Montreal*; John H. Wade (F), *Victoria*; John G. Wasteney, *Toronto*; G. Everett Wilson, *Toronto*.

J. F. SULLIVAN, PUBLISHER

All correspondence should be addressed to the Editor

EDITORIAL AND ADVERTISING OFFICES, 57 QUEEN STREET WEST, TORONTO 1

Authorized as Second Class Mail, Post Office Department, Ottawa

EDITORIAL

"Expanded embassy construction abroad is planned by the External Affairs Department, undersecretary Jules Leger told the Commons' external affairs committee today in a written report distributed to members.

"At the present time the department owns 12 chancelleries of the 59 it occupies around the world, and 15 of its 53 official residences. The department also owns 15 staff quarters and has acquired six building sites."

Building sites are under consideration for the Canadian missions in Turkey, India, Belgium, Italy and Australia.

Greater use would be made of Canadian architectural advice instead of using "locally selected architects and technical experts," and work would be co-ordinated by an advisory board comprising a senior department official as chairman, the Public Works Department's chief architect, and three architects nominated by the Royal Architectural Institute of Canada.

The board will recommend architects best qualified to design particular buildings abroad, pass on the designs for projected buildings, and report to Mr Leger. Where unanimity is lacking the board would submit both majority and minority views to the department."

Globe & Mail, August 5th, 1958.

WE SAW THE ABOVE NOTICE when we were concerned with other matters, but it is news that ranks with the most significant architectural landmarks in Canada in 1958. It is more than likely that, by the time this issue appears, the RAIC council will have named its representatives on the "Advisory Board". For some years, the U.S. State Department has employed architects or held competitions for buildings within its jurisdiction, and we remember a most exciting exhibition in the Museum of Modern Art where such buildings were displayed by photograph and model.

It has taken us some years to find out that the prestige of Canada among the nations of the world is not enhanced by putting our missions in second-hand mansions or in buildings designed for Canadian use by foreign architects. The press quotation states that, "rented premises were proving unsuitable because of high rentals and alteration costs. Moves were "undignified" and expensive since they often resulted in furnishings becoming unsuitable or surplus. Rented premises were not always adaptable to "essential security safeguards".

Buildings by Canadian architects will do much to promote Canadian interests abroad, and the fairly recent decision to distribute pictures by Canadian artists is a most commendable one. We understand that, here again, Mr Jules Leger has given leadership, and that fifteen thousand dollars have been spent this year on pictures selected from a closed competition held under the auspices of the National Gallery. Ten thousand dollars were spent on pictures in 1957, and the good work will be continued by the Department of External Affairs which buys only on the advice of the Gallery.

We would not presume to give advice to the architects who will be doing our new embassies, but the following paragraph caught our eye in a recent English *Spectator*. It was under the title "Don'ts for Diplomats" and read, "Don't give the impression that you are feeling the twentieth century. Victorian glories are defeats to others. You and your country can only afford to be modern. Nostalgia is expensive and, while you are indulging it, the Germans, from their steel and glass cities, will have got the latest contract." There seemed to us to be a lot of sense in that.

Elsewhere in this *Journal*, is the announcement of the appointment of Mr Robbins L. Elliott, as Executive Director of the RAIC. We welcome Mr Elliott most heartily and assure him of the support of all Canadian architects in the very big job that he has undertaken. If these remarks are brief, they are none the less sincere. Mr Elliott will not mind, we are sure, being compressed on this page by the claims to our notice of missions by Canadian architects in Turkey, India, Belgium, Italy and Australia.

Let us hope that so important a notice may be an auspicious entrance to the RAIC for the new Director.

"Le ministère des Affaires extérieures se propose d'accroître la construction d'ambassades à l'étranger." Voilà ce que M. Jules Léger, sous-secrétaire d'Etat aux Affaires extérieures, a déclaré aujourd'hui au Comité des affaires extérieures de la Chambre des communes dans un rapport écrit distribué aux députés.

"Le Ministère est actuellement propriétaire de 12 chancelleries sur 59 qu'il occupe dans le monde, et de 5 de ses 53 résidences officielles. Le Ministère possède aussi 15 logements pour le personnel et a fait l'acquisition de six sites à bâtir.

"On étudie la possibilité d'acquérir des sites pour les missions canadiennes en Turquie, en Inde, en Belgique, en Italie et en Australie.

"On aurait davantage recours aux conseils d'architectes canadiens au lieu de consulter "des architectes et techniciens-experts choisis sur place", et le travail serait coordonné par un conseil consultatif composé d'un haut fonctionnaire du Ministère comme président, de l'architecte en chef du ministère des Travaux publics et de trois architectes désignés par l'Institut Royal d'Architecture du Canada.

"Le conseil recommandera les architectes les plus qualifiés pour dresser les plans d'édifices spécifiques à l'étranger, transmettra les plans des édifices projetés, et soumettra un rapport à M. Léger. En cas de dissidence, le conseil soumettra l'opinion tant de la majorité que de la minorité au Ministère." (Extrait du Globe and Mail du 5 août 1958.)

NOUS AVONS LU LA NOUVELLE ci-dessus alors que nous étions pris par d'autres problèmes, mais il s'agit là d'une nouvelle aussi importante que les faits les plus saillants dans le domaine de l'architecture au Canada en 1958. Vraisemblablement, lorsque le présent numéro paraîtra, le conseil de l'Institut aura désigné son représentant auprès du "Conseil consultatif." Depuis plusieurs années, le State Department des Etats-Unis engage des architectes ou organise des concours pour la construction des édifices qui sont de son ressort; nous nous rappelons une exposition fort intéressante au Musée d'art moderne où l'on montrait des photographies et des maquettes de ces édifices.

Il nous a fallu plusieurs années pour nous rendre compte que le prestige du Canada auprès des nations du monde souffre du fait que nous logions nos missions dans d'anciennes demeures ou des édifices dont les plans ont été dressés pour les Canadiens par des architectes étrangers. Le communiqué de presse ajoute que les locaux loués "ne conviennent plus à cause du coût élevé de la location et des modifications." Les déménagements "manquent de dignité" et sont coûteux; souvent l'ameublement n'est plus utilisable ou il y a excédent de meubles. Les locaux loués ne peuvent pas toujours satisfaire aux "exigences essentielles de la sécurité."

Des édifices conçus par des architectes canadiens favoriseront beaucoup les intérêts du Canada à l'étranger. De plus, il faut féliciter les autorités de l'initiative récente qu'ils ont prise de distribuer des peintures dues à des artistes canadiens. Nous croyons savoir qu'ici encore, c'est M. Jules Léger qui a inspiré cette décision et qu'on a affecté quinze mille dollars cette année à l'achat de peintures choisies à la suite d'un concours qui a eu lieu sous les auspices de la Galerie nationale. On avait dépensé dix mille dollars aux mêmes fins en 1957 et le ministère des Affaires extérieures continuera ce bon travail, en n'achetant toujours que sur l'avis de la Galerie.

Nous n'avons pas la prétention de donner des conseils aux architectes qui construiront nos nouvelles ambassades, mais dans un récent numéro du *Spectator* d'Angleterre le paragraphe suivant a retenu notre attention. L'article était intitulé: "Ce qu'un diplomate ne doit pas faire". "Ne donnez pas l'impression que vous êtes incommodés par le 20^e siècle. Nos gloires victoriennes sont des défaites pour les autres. Vous-mêmes et votre pays ne pouvez vous permettre qu'une chose: être modernes. La nostalgie coûte cher: pendant que vous vous y abandonnez, les Allemands, de leurs villes de verre et d'acier, auront mis la main sur le contrat le plus récent." Il y a beaucoup de bon sens dans ces propos, nous semble-t-il.

Ailleurs, dans le présent numéro, on annonce la nomination de M. Robbins L. Elliott au poste de secrétaire exécutif de l'Institut Royal d'Architecture. Nous souhaitons la plus cordiale bienvenue à M. Elliott: il peut être assuré de l'appui de tous les architectes canadiens dans la lourde tâche qu'il a assumée. Ces remarques, quelque brèves qu'elles soient, n'en sont pas moins sincères. Nous sommes certain que M. Elliott ne nous en voudra pas s'il partage cette page avec l'intérêt que suscite chez nous la perspective de missions, pour les architectes canadiens, en Turquie, en Inde, en Belgique, en Italie et en Angleterre.

Souhaitons que ces importantes nouvelles soient les heureux auspices sous lesquels le nouveau secrétaire entre à l'Institut.

THE WORKMEN'S COMPENSATION BOARD HOSPITAL AND REHABILITATION CENTRE

Associated Architects, Page & Steele and Thomas R. Wiley

General Contractors, Anglin-Norcross Ontario Limited

Structural Engineers, Wallace & Carruthers

Mechanical & Electrical Engineers, Nicholas Fodor & Associates

Landscape Architects, Dunington-Grubb & Stensson

Interior Decorators, J. & J. Brook Limited

Sculpture, Mrs. H. Robertson

Photographs by Brian Shawcroft

THE REQUIREMENTS FOR THE NEW BUILDING were based on the experience gained by the Board at the old centre, which occupied wartime army barracks at Malton.

The new centre was to have accommodation for 500 beds for ambulant and non-ambulant patients, areas for physiotherapy, occupational therapy, remedial gymnasia, recreation, nurses' residence, administration, stores and services. A one level operation was requested to facilitate the movement of disabled persons. The materials were to be chosen for their resistance to abuse from which the old Malton Buildings suffered severely and also for low maintenance costs.

The site selected for the new building occupies sixty-five acres at the junction of highways 400 and 401, a location easily accessible from all parts of Metropolitan Toronto, and affording ample space for future expansion and outdoor activities. The requirements of a one floor operation necessitated a building layout in the shape of a figure eight forming two interior courts for the admission of natural light to all parts of the building and since the courts are landscaped, they have the added attraction of offering a pleasant view.

Since there was no need to connect the nurses' residence and the service building directly with the main building, they were kept separate in order to give the nurses' residence more privacy, and to keep the boiler room noises away from the hospital and treatment areas.

The nurses' residence is however connected to the main building by a covered walkway and the service building by a long tunnel of a generous scale. This tunnel accommodates all service lines (water, electricity and steam) and it also allows for transportations of goods to and from the service building in which the maintenance section is located.

The hospital wing accommodates 175 non-ambulant patients in six bed wards on its two floors. The wards are located along the outside walls of the building which has a central service core with corridors on either side. This core contains wash-rooms, utility rooms, food preparation room, stores and nurses' stations at strategic locations. Each patient can get into contact with the staff at any given time by visual or audio warning systems. In this building is also located an elaborate section for X-ray and an operating room for minor operations.

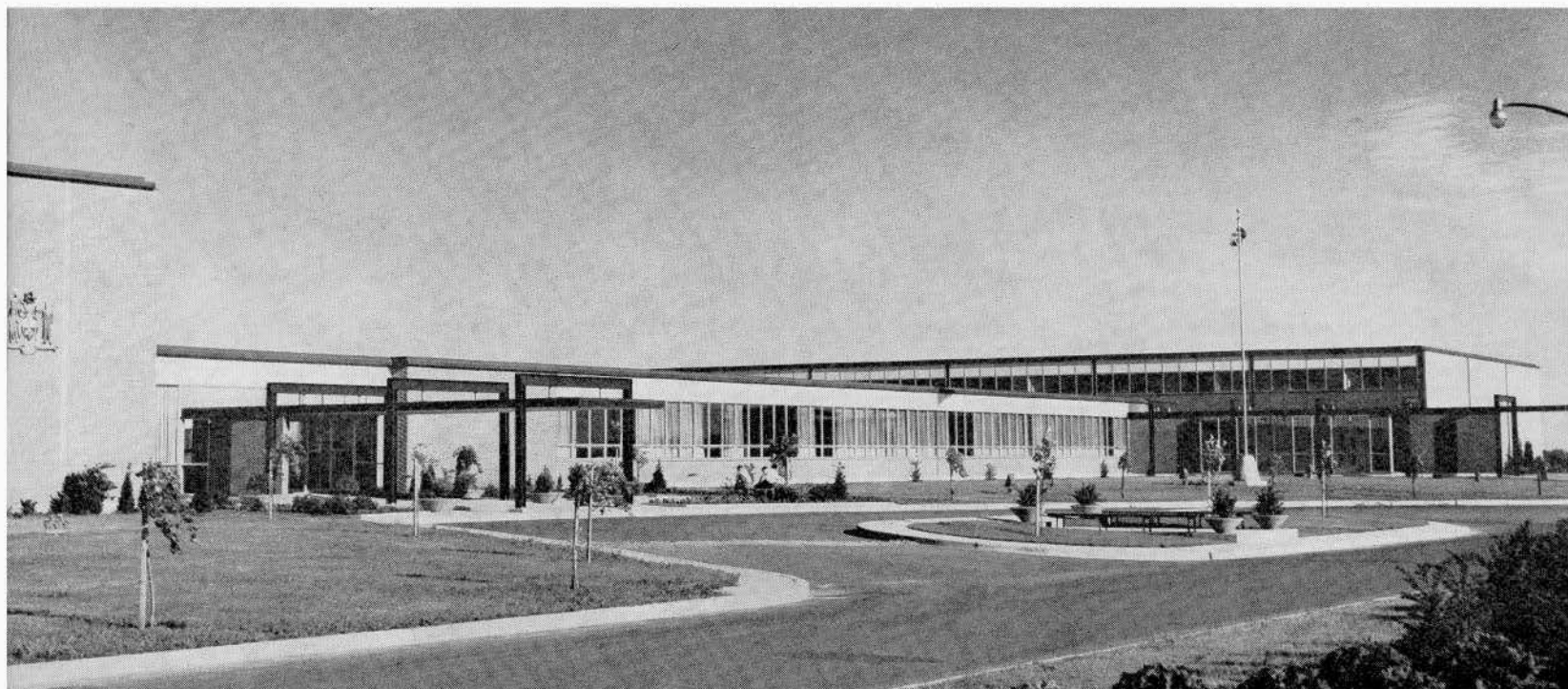
The dormitory wing accommodates 225 ambulant patients in six and eight bed wards on its three floors. The first and second floors have eight bed wards with one central corridor, whereas the third floor has a layout identical to the hospital floors; this was done because it was expected that the ratio of hospital to dormitory will change and the third floor of the dormitory may then be taken over for hospital uses. All inmates of the dormitory participate in active treatment during working hours according to their individual schedule.

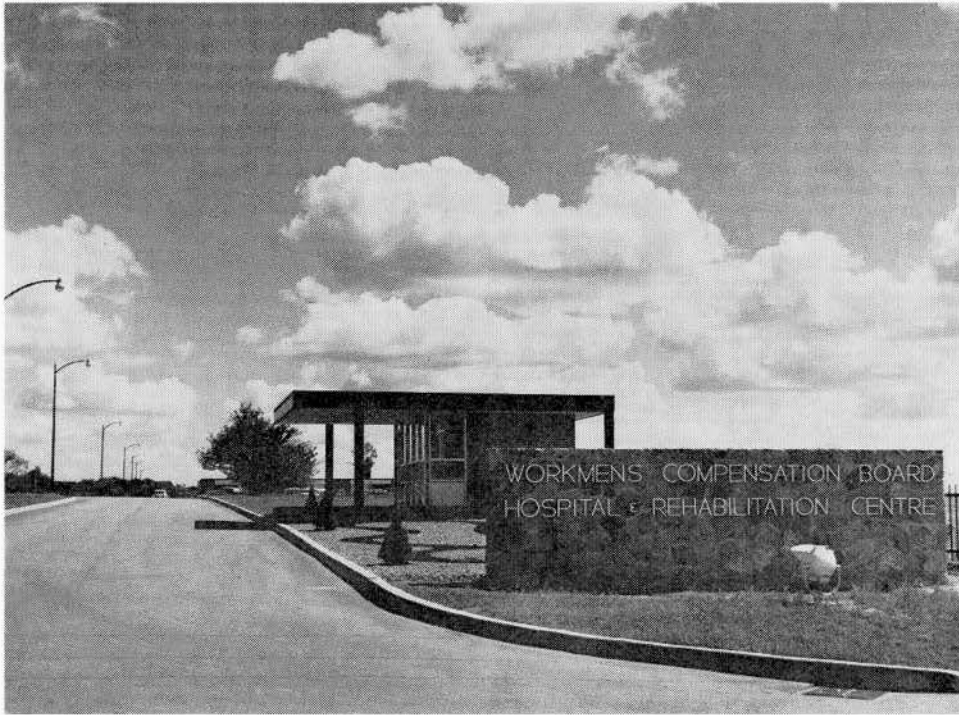
The floors in both the hospital and the dormitory are connected by self operated elevators, situated in a central location.

The treatment units are occupational treatment, physio treatment, therapeutic pool and gymnasia. These treatment units form a "T" in the centre of the building; traffic flow is easy and at the heart is the central stores section from which materials are distributed to each of these treatment units.

The occupational treatment unit is an area of 105' by 220' divided into seven equal sections by 7' high metal partitions and shelving units. In this area the patients learn to become useful again by practising their old skills or learning new skills. Instructions on weaving, metal and wood work are

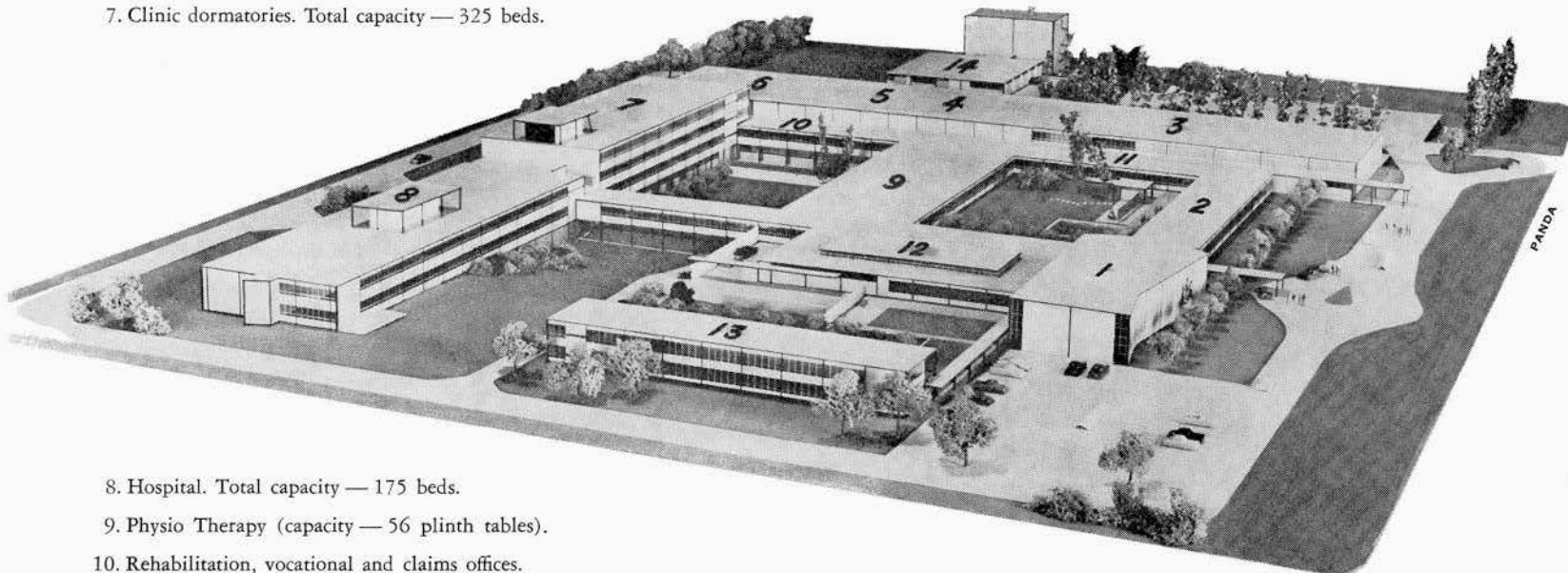
General view of main entrance facing west



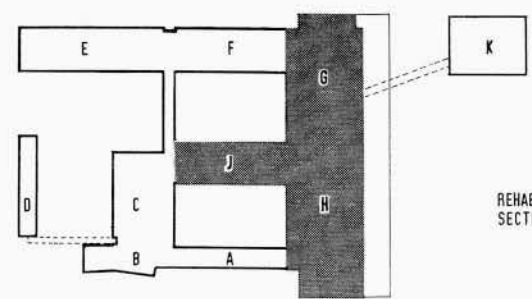
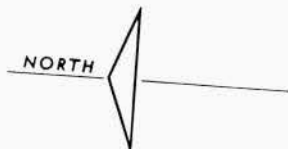


Gate house entrance from service road

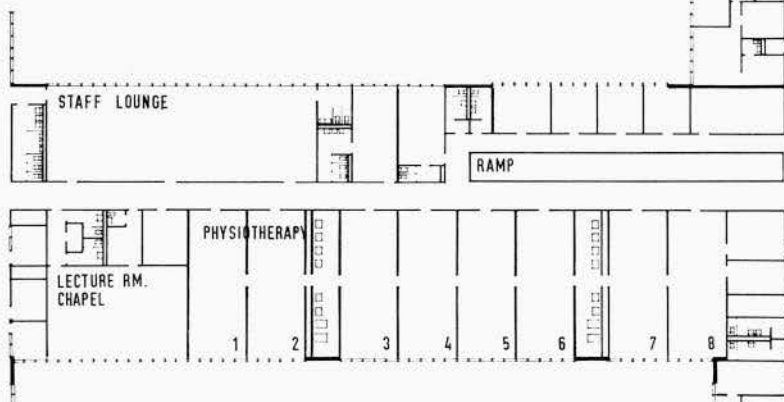
1. Auditorium (capacity — 500).
2. Administration, admitting and discharging offices.
3. Occupational therapy.
4. Central stores.
5. Therapy pool.
6. General gymnasium, amputee gymnasium, heavy resistance room.
7. Clinic dormitories. Total capacity — 325 beds.



8. Hospital. Total capacity — 175 beds.
9. Physio Therapy (capacity — 56 plinth tables).
10. Rehabilitation, vocational and claims offices.
11. Clinic doctors and secretaries.
12. Kitchen, service area and staff and patients' dining rooms.
13. Nurses' residence.
14. Garages, maintenance shops, heating plant.



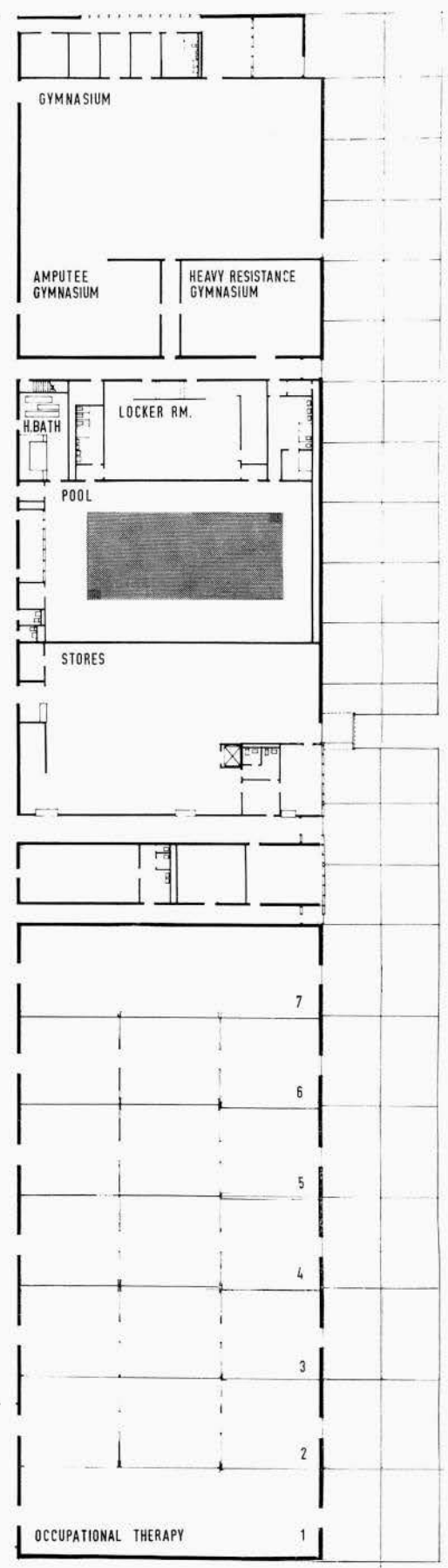
KEY PLAN



- A ADMINISTRATION
- B AUDITORIUM
- C DINING
- D NURSES RESIDENCE
- E HOSPITAL
- F DORMITORY
- G GYMNASIA & POOL
- H OCCUPATIONAL THERAPY
- J PHYSIOTHERAPY
- K MAINTENANCE BLDG.

DOCTORS OFFICES

ADMINISTRATION



ADMITTANCE & DISCHARGE

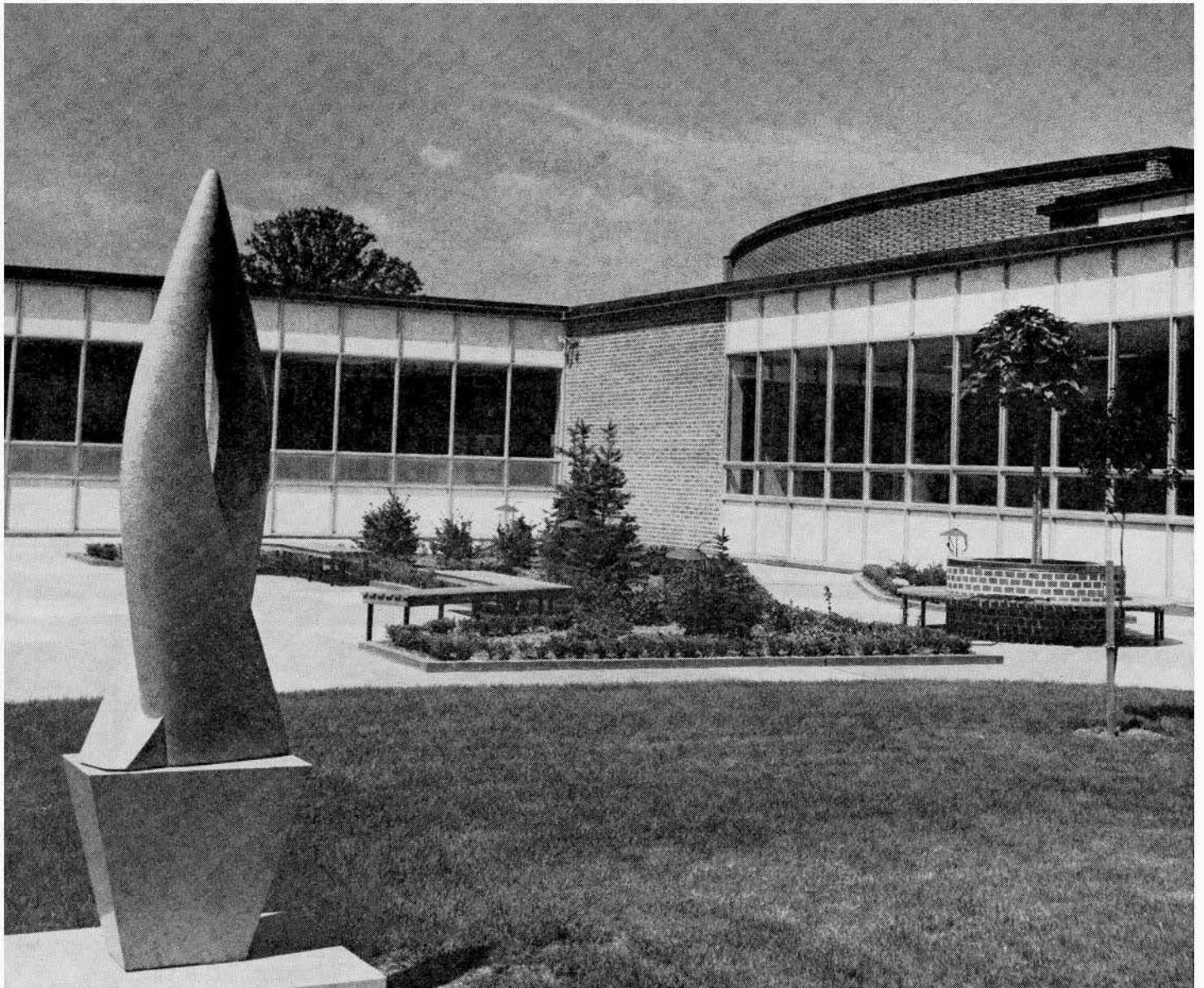
Plan showing occupational therapy and physiotherapy wings



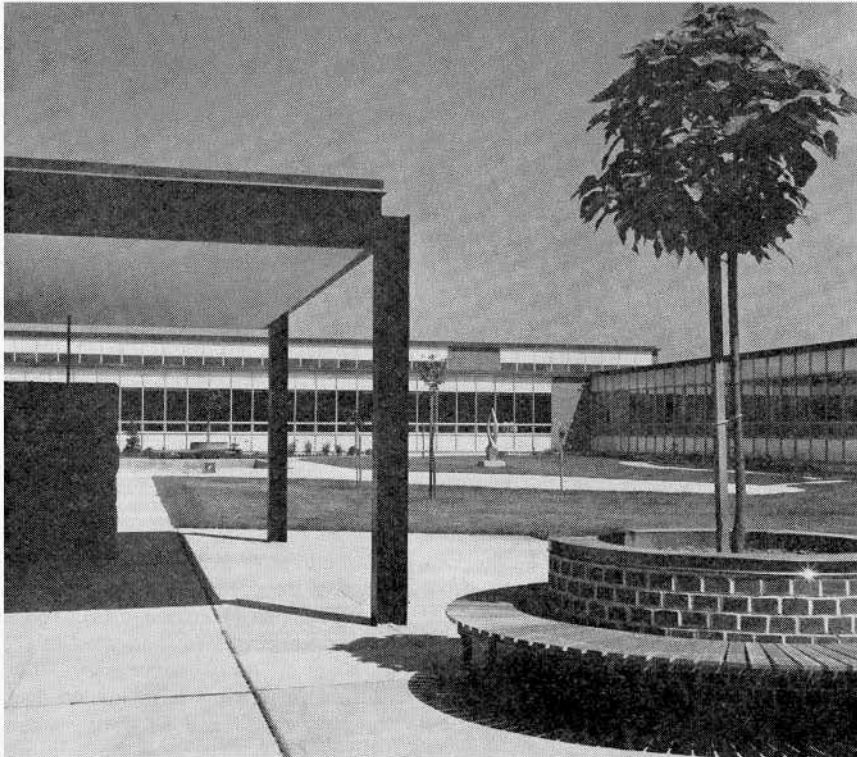
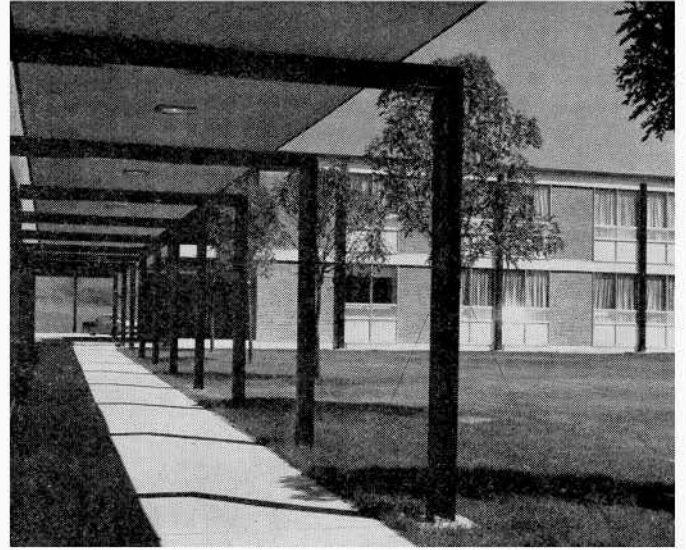
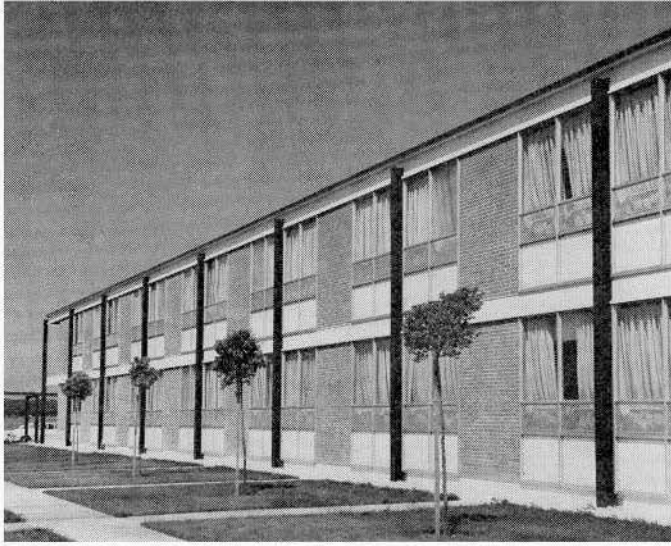
Admittance and discharge



Main entrance



Administration court

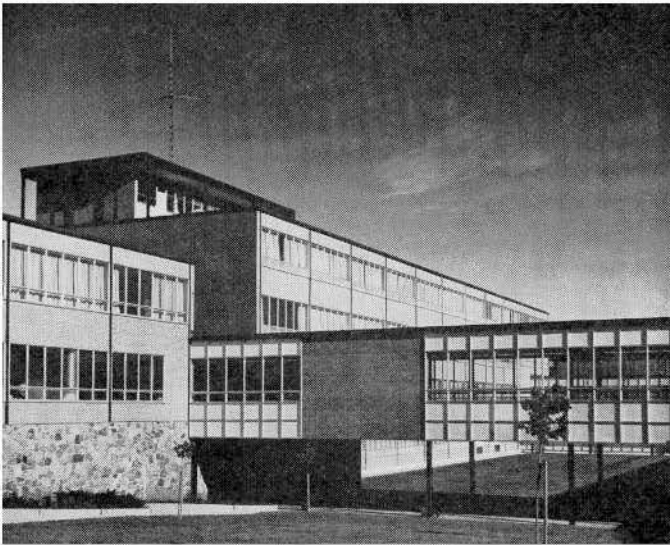


The Nurses' Residence

Garden shelter in court



Main entrance and auditorium



Hospital, dormitory wing, and bridge



Reflecting pool in court

given here, and there are facilities laying railroad tracks, digging gravel and climbing ladders and scaffoldings. To simulate actual working conditions all structure has been left exposed: concrete floors, red tile walls, steel columns, and a painted concrete ceiling with steel joists.

The physio therapy unit contains eight wards with plinth tables for individual treatment (heat and massage) and two rooms for wax and hydrotherapy.

The therapeutic pool has a tank size of 30' by 66' varying in depth from 3'-6" to 5'-6" and the water, which is level with the deck for easy manipulations of the patients, is kept at a temperature of 80°. The floor is non-slip ceramic tile and the walls are glazed ceramic tile, all in a gay multi-colour random pattern to reduce the institutional atmosphere. Three metal pan acoustic panels are suspended from the ceiling. An observation booth with double glazing allows visitors to watch the activity in the pool without disturbing the hygiene of the pool area.

The three gymnasiums are each built with a specific purpose in mind. The main gymnasium is for general use, games and normal exercises. The "heavy resistance" gymnasium is equipped with pulleys, weights, ropes and racks. With this equipment patients improve their muscle strength and control. The "amputee" gymnasium is equipped with overhead monorails and hand rails aiding the amputee who is learning to walk again.

Recreation areas are provided for in the auditorium and the games area. The auditorium situated at the main entrance, seats five hundred for movie and theatre evenings and is fully equipped for this purpose with variable width screen, hi-fi sound system, banks of lights and two 16 mm movie projectors, all operated from the projection booth on the mezzanine. The games area is situated in the basement of the dormitory block with doors opening out onto the lower court. The games area is for the use of ambulant patients after "working" hours and houses billiard tables, a canteen, shuffle board courts, a table tennis area, a card room, a library and a reading room. In addition to the games area, each floor of the Hospital and Dormitory contains a patients lounge where they can write or read or watch television, powered by a 35' television aerial on top of the Dormitory penthouse.

Food is served in the two adjoining dining rooms near the auditorium. The patients and staff dining room are divided by a wood folding door which may be pushed back to provide

one very large room for special occasions. One kitchen supplies food to the two dining rooms over two separate serving counters, and contains everything a big hotel kitchen would contain: walk-in refrigerators, a deep freeze room, can storage room, butcher, baker, pressure cookers and a large belt dish washer.

The administration wing is located between the maintenance and the patients "admitting and discharge" and contains accounting and administration offices. Other offices are located throughout the centre at appropriate places: doctor's offices with examination rooms and rehabilitation offices for the purpose of interviewing patients and finding a place for them in society.

Staff accommodations can be found in the lounges where the busy staff can relax for a moment or have discussions. The nurses' residence provides bed-sitting room facilities for resident nurses, with a bathroom between each bed-sitting room. A two-storey living room with open fireplace is located at the front door of the residence, while a "quiet" room is provided on the second floor for reading and writing. Kitchens on each floor give the residents the opportunity to prepare snacks; meals are provided in the dining room in the main building.

The service building contains the boiler room, maintenance shops and garages. The boiler room is equipped with three oil fired boilers generating 350 h.p. and an emergency power generator to take over in case of power cut off. The boiler room has a quarry tile floor and coloured glazed structural tile walls to ease maintenance problems.

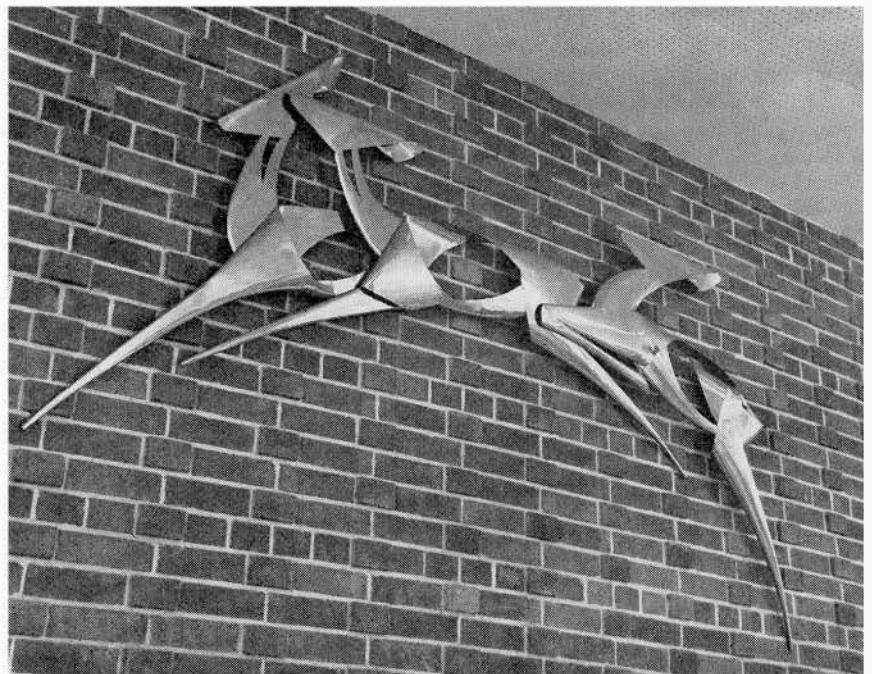
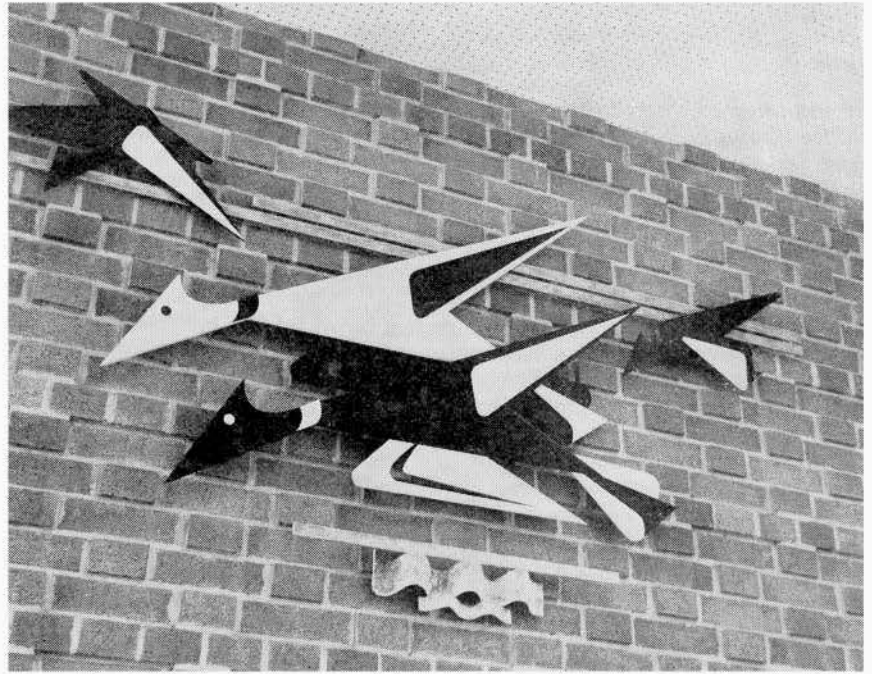
Considerable outdoor activities can be participated in due to a wide concrete apron adjacent to the occupational therapy unit and the gymnasium. Another concrete apron at the hospital enables the patients on stretchers to sun bathe and enjoy the outdoors even in their immobile state.

A feature which is not usually found in a building is the "crutch" stop on the stairs. Depending on the type of stair this may be a terrazzo hump or metal plate at the edges of the treads preventing a crutch from slipping off the tread through the railings.

The project has been an extremely interesting one, with a great many difficulties and complications to solve and integrate. But now that it is completed, we are sure that it should be a useful guide for any organization engaged in building a hospital and rehabilitation centre.

Peter Tirion, architects' representative on the site.

Main foyer



Wall decorations in foyer

ACOUSTICS IN CHURCH BUILDINGS

BY ERIC DOWLING

The following article was forwarded to the Journal with the author's note that "good acoustics do not just happen". It has been approved and copyrighted by the General Council of the Canadian College of Organists.

IT HAS BEEN BROUGHT to the attention of the executive committee of the Canadian College of Organists that there is a need for some form of guidance which would be available to church committees engaged in the erection of new buildings and the re-designing of existing buildings, regarding the problem of securing the best possible acoustics for the performance of music and speech; to meet this need the following report has been prepared.

While it is impossible to deal with such a broad subject in a comprehensive manner in a brief report, it is possible to suggest some general principles which must be considered, if a satisfactory acoustical building is to be attained.

The meaning of "Good Acoustics"

The term "Good Acoustics" cannot be defined in a brief sentence inasmuch as it suggests an ideal situation in which the acoustical properties of a building or room are ideal for whatever function that particular building has been designed to fulfil. It is therefore obvious that the term "Good Acoustics" is a variable quantity depending upon the utilitarian purpose of each individual building. For instance, the acoustical properties of a concert hall would not be ideal for a large office where many people must accomplish their own individual tasks with a minimum of noise which could distract fellow workers. It is important that sound in this case should not travel very far but should be absorbed before it has the opportunity to travel to other parts of the room. In a concert hall the situation is entirely reversed, as sound created in one part of the building must travel to people in all the other parts of the building. It must therefore be accepted that the term "Good Acoustics" is variable in its definition and depends upon each individual building and its purpose.

Good Acoustics Applied to Church Buildings

It must first be determined what acoustical situation is desirable in a building set apart for the worship of Almighty God. The building should be one which transcends the commonplace and should represent man's highest aesthetic achievement so that when he leaves the outside world for the worship of God, the building itself and the furnishings therein create the proper atmosphere. Visual aids to worship are important, but they are no more important than the aids which are auditory, such as speech and music. There must be a consistent relationship in any church building between the visual and auditory impressions received. Much of our church music was written for large buildings where height, length and volume provided the necessary resonance and reverberation to give the music its impressive quality. An acoustically dead building will make

the best performance of music unsatisfactory because of a lack of blending which only resonance and reverberation can provide, and will also take the life out of speech. No amount of beauty in the design of a building can atone for this loss.

The acoustics of a church building may be said to be good when, first, the sound is loud enough in all parts of the building and second, when the various frequencies of a complex sound are blended and enhanced by resonance and reverberation.

Factors which determine the Behaviour of Sound.

When sound waves are incident upon a solid surface, a portion of their energy is reflected in sound. Impervious, massive and rigid surfaces reflect nearly all of the sound energy, while light, porous, flexible or compressible materials absorb sound energy. If then the acoustical properties of an auditorium are determined by the behaviour of sound as it is reflected by the surfaces of walls, floor and ceiling, two factors, design and materials will be responsible for the resulting acoustical effect.

It should be emphasized that good acoustics should be secured by good design and suitable materials rather than by corrective treatment after a building has been erected. Certain materials used in furnishing, the bodies of people and the clothes which they wear are sound absorbing materials and should be taken into consideration in the original plan of the building. Frequently, what appears to be excessive resonance in an empty building, will be quite satisfactory when filled with people.

The three main factors to be assessed regarding the behaviour of sound are resonance, (which amplifies the sound) reverberation, (which prolongs the sound after the original sound has ceased) and reflection, (which assists in distributing the sound to the various sections of the building).

It must be stated that excessive resonance, too long a reverberation period and bad reflection which creates multiple echoes can be just as detrimental to the acoustical effect of a building as a lack of these factors. It is important that the church be insulated against extraneous sounds which originate outside the building and also against "Structure" noises which could penetrate into the church and distract the worshipper.

If sound is to carry throughout the building there should be no sound absorbing materials such as carpets, heavy drapes, etc. around the source of tone, for it is here that good sound-reflecting materials are necessary.

If reflecting surfaces are concave near the origin of the sound, and especially if the origin of sound is near the centre of the curvature distracting echoes will invariably result. To produce such an echo there must be a minimum path difference of approximately 50' between the direct and reflected sound waves. On the other hand if the building is rectangular in shape and has smooth reflective walls, and especially when other surfaces are absorbent, multiple or flutter echoes result. This situation is accentuated if the source of sound is located between the smooth reflective walls. In most cases of this nature it is not advisable to treat the ceiling or back wall but might easily be overcome by the installation of panels of absorbent material on the walls in an effort to break up the echoes before they become troublesome.

Regarding the Installation of the Organ.

The size of an organ which will be adequate for any building will depend entirely on four factors: —

1. The size of building taking into consideration the relation between the height, length and width.
2. The acoustical climate of the building.
3. The varied strengths and types of stops which will comprise the organ.
4. The location and placing of the organ in the building.

It is evident therefore that it is not possible to give a general rule which could be followed, as every building must be judged on its own merits or shortcomings and the final decision must not be made until the organ builder has examined the building and has made a careful evaluation of the above factors.

It is possible for an organ costing \$20,000 to sound better and be more satisfactory if it is placed out in the open in a resonant building than one costing \$50,000 placed in remote chambers in an acoustically dead building. There is always the danger of choosing an organ too small because of the reluctance of committees to spend the required amount of money and to underestimate the amount of absorption when the congregation is present.

Regarding the installation itself, there is no doubt that the more the organ is placed in the open, the better it will sound. The organ will sound much better cantilevered out from the wall than placed in a chamber which is so situated that the sound cannot get out into the building. If placed in chambers, the chambers should be inside the building and not in a room outside the building which has been added to accommodate the organ. When a new building is being planned, ample space should be provided for the organ in the best possible location where it will speak directly into the building.

The openings of the chambers should be the full height and width of the chamber itself so that the danger of pockets which hold the sound inside the chamber would not exist. Heavy grill work and cloth hangings should not be placed over the opening of the chamber, and even the familiar "dummy" pipes which are merely decoration, interfere with the sound waves. The walls, floor and ceiling of the chamber should be finished with hard, sound-reflecting material. In this regard, the following extract is taken from a joint report, prepared by a special committee consisting of a representative from the American Guild of Organists, The Associated Pipe Organ Builders of America and The American Institute of Architects.

"Any decorative Case work that is thought to be necessary in front of the organ itself, should be at least 65% free open area and any solid elements in the grillage or case work must have a minimum width and depth of 2". If fabrics are used, they must be acoustically transparent, fireproof and dustproof. Cloth of animal or vegetable fibers must be avoided. A thin mesh of glass fibre is to be preferred, or suitable metallic screen wire. The test of an acoustically successful fabric is to hold a piece approximately 4" square in front of one's face and make a hissing sound with one's tongue and teeth. If the listener a few feet in front is able to detect a difference in the quality of the hissing sound when the fabric is removed, the material is not acoustically transparent" . . .

In planning the shape of an organ chamber, W. H. Barnes, in his book "The Contemporary American Organ" suggests the following: "The ideal shape of an organ chamber should be twice as wide as it is deep and as high as it is wide." In other words the chamber should be as shallow in depth as it is possible to have it.

The space consuming components of the organ are the wind chests and pipes, and certain dimensions should be considered in providing the required space in a convenient and suitable shape. There must also be space provided for walk-boards, relays, off-set chests, tremulants etc; but these do not actually use much space. The wind chest, when installed, is usually placed approximately 3' from the floor. Some builders do not allow quite as much, but this is a safe estimate. Allow 3' from the floor to the bottom of the chest. The depth of the chest is usually 10". The standard length of a 68 note wind chest is 8' 6" and some builders will use as much as 10' 6". Each stop or set of pipes will average a width of 9" on the chest. Depending on the number of pipes or stops on the chest, the width could vary from 2' to 6'.

In planning the required space it is important to discover if there are to be any full length 16' pipes in either manual or pedal divisions so that the height of the necessary space can be ascertained. If there are to be no 16' pipes (full length) then 13' will be sufficient. If full length pipes are to be used, then a height of 22' should be made available as a full length pipe of 16' speaking length is actually 18' 6" long. If a height of 22' is available the organ could be double-decked, thus increasing the original floor area by approximately 60%.

Another way of assessing the amount of space required is in cubic feet. From the previously mentioned report published by the American Guild of Organists, the following suggestion is offered: "An average of 125 cubic feet is required for each independent stop or set of pipes in the modern organ." Also quoting from the same source regarding the size of organ, it should be borne in mind that the "Reasonable cost for an organ is 10% of the cost of the church auditorium. Inflationary conditions have affected the cost of organs as they have building costs."

Space outside the church auditorium must also be provided for the organ motor and blower. This should be as close to the organ as possible and is usually placed in the basement. This equipment should be placed in a room which is sound-proof, fireproof and dustproof. The size of the motor and blower will depend upon the size of organ to be installed. For an organ of any size up to thirty stops a minimum of 8' x 8' x 8' is necessary and preferably a room 12' x 12' with a height of 8' would be more satisfactory.

Space also in the church auditorium must be provided for the console of the organ. The smallest console for a two manual organ would require 5' 6" x 5' 6", and for a three manual console 6' 6" x 6' 6". If the console is to be recessed then 2" all around should be allowed so that the panels could be removed when servicing of the organ is necessary. The above measurements include the space required for the bench. A great deal of care is necessary when planning the location of the console. It should be far enough away from the organ for the organist to hear in balance what he is playing and at the same time to hear his choir. If the console is placed very near the pipes, it is impossible to hear anything like the general effect of the tonal balance from that point. It is also important that the choir and organ shall be located in the same section of the building if a satisfactory musical performance is to result.

Conclusions

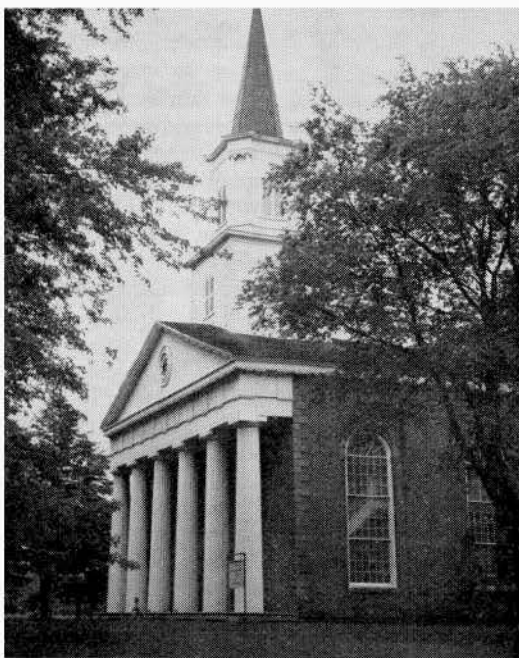
In the drawing up of plans for a new church building, it is imperative that the architect and organ builders work very closely together in order to provide a "Good Design" and to determine the materials to be used. The consideration of resonance, reverberation and reflection is a vital necessity when drawing the original plans. It must be remembered that the direct reflection of sound is desirable if not too long delayed. Reflection which causes multiple or flutter echoes, and any perceptible echo should be avoided. (Long delayed reflections of more than 1/20th of a second are detrimental to the acoustics. Reverberation should be present in the building so that there will be a satisfactory blending of music and also a reasonable amount of support for speech.

To quote again from the joint report published by the American Guild of Organists, the following reverberation characteristics may be of assistance:

Volume of Church in Cubic Feet	Reverberation time.
10,000 cu. ft.	1.1 to 1.2 seconds.
100,000 cu. ft.	1.4 to 1.6 seconds.
1,000,000 cu. ft.	1.8 to 2.0 seconds.

It should be stressed that these figures are given for 512 cycles a second, and of utmost importance to the successful performance of music is a proper relationship between the higher and lower frequencies of the tonal spectrum. Acoustical calculation should include frequencies at other than 512 cycles. Thus the need for uniformity in absorption characteristics of any artificial acoustical materials contemplated." The above reverberation periods to exist when the audience is present.

It is well to remember that artificial acoustical materials absorb much more of the higher frequencies than they do of the low frequencies, hence to secure uniformity of absorption, acoustical materials should only be used with extreme care. If the rear wall happens to be more than 40' from the source of sound and is of a reflective character, it may reflect tone back with a time lag which of course forms an echo. Such reflection should be broken up by re-shaping the wall and only in some cases should acoustical material be used.

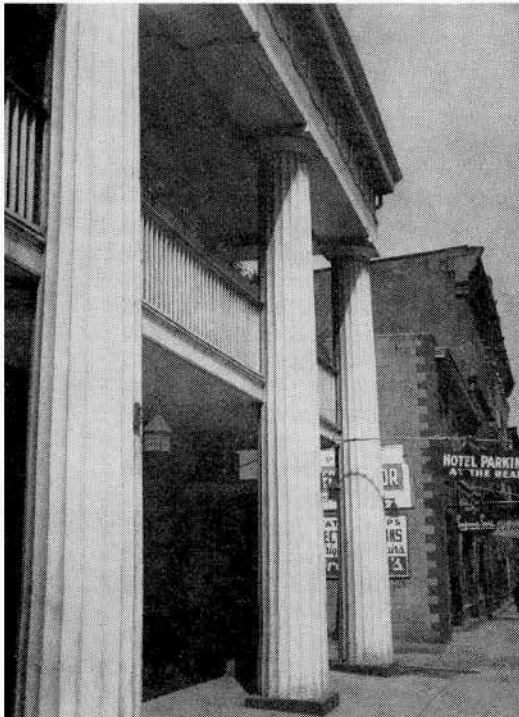


THE SYMBOL BUILDING

WHAT DOES A MID-TWENTIETH CENTURY Canadian church or temple look like? What should it look like? There seems to be an enormously wide range of answers, some of which appear on the following pages. The building may announce itself with a tower. Its roof may be dominated by a fleche; or a free-standing element, usually a cross, may describe the building's use and establish a counterpoise to the main structure. Or it may describe itself merely as a meeting house, and the elements of the structure be composed in such a way as to suggest commodity, firmness and delight. The formal symbol is reduced to an inscription or a sculpture on the building's face.

In a simpler day and age, churches reflected the Greek Revival taste with a classic portico and a spire above and behind; or the Gothic Revival taste with heavily articulated stone base and slate-covered spire and roof. Secular buildings of the time reflected in their own ways the desire for porticos or for the romantic silhouette of medieval chimneys and gables. In whatever style or taste, the single volume of the meeting room and the vertical element to hold the bell, established that this was a church and nothing else. The symbol was clear.

We now have to face the problem of church design when cultural symbols and values of all sorts are in a state of constant change. The bell tower and worship house of medieval Europe



has been translated, not only across an ocean, but into the era of electronics and suburbia. We do not get our time signals from the church bell. We probably get them from the radio or television machine. We do not build compact and easily understood communities above which the church spire could rise. We mostly build endless sprawls of little boxes, tied together only by roads. But many worship houses are going up to which the members commute by automobile. The services in which they share are little changed in many generations. The society in which they live has changed out of all recognition. Should the worship houses in our modern scene have a symbol value?

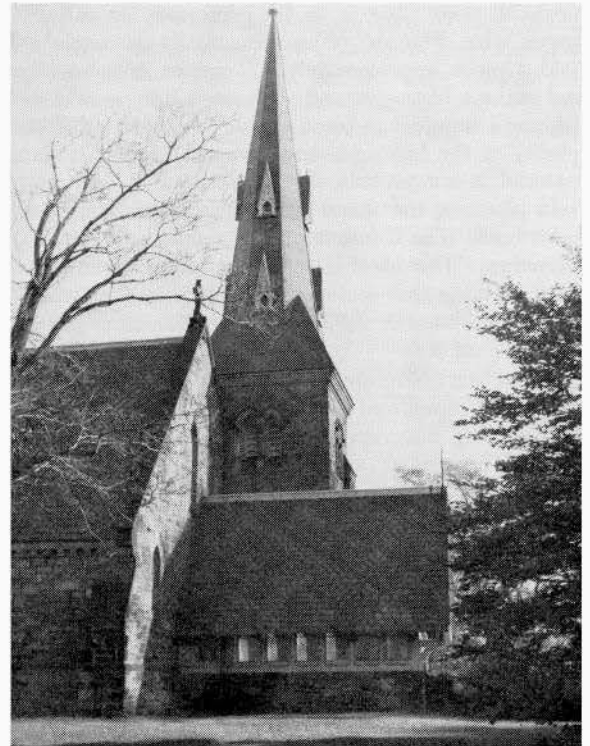
W.S.G.

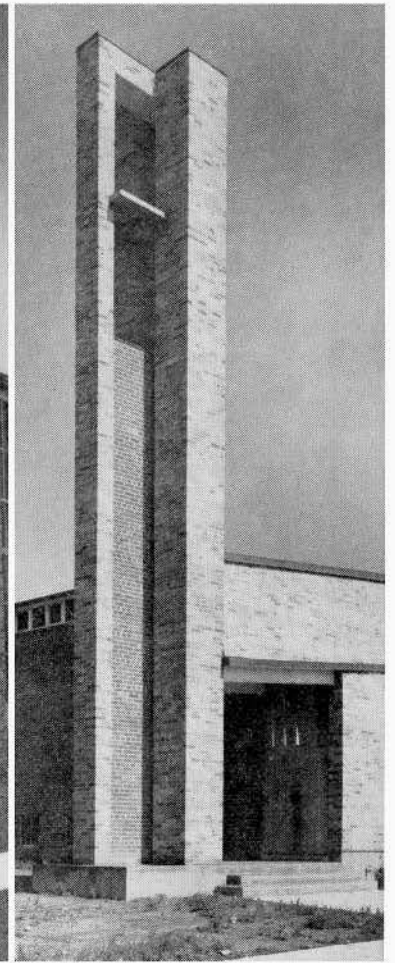
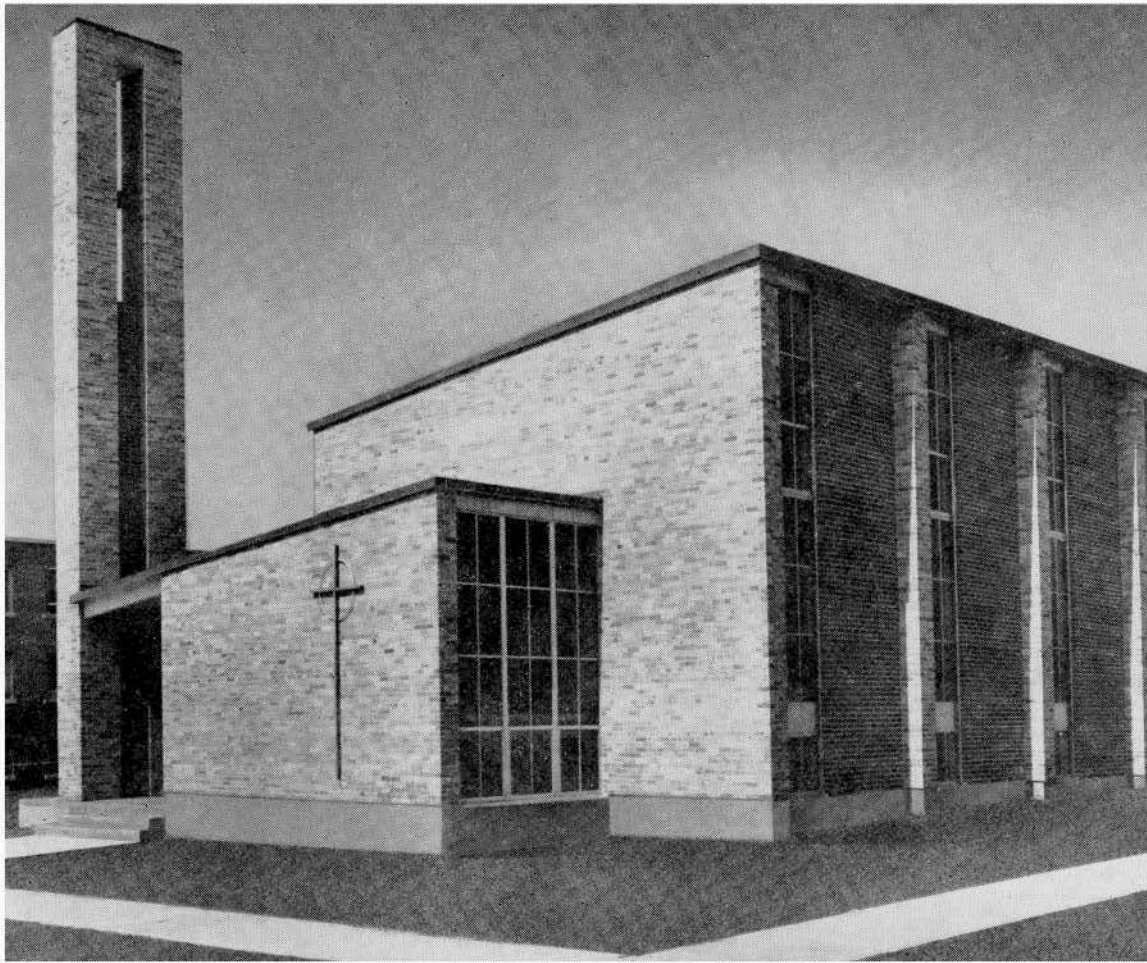
Top: Greek Revival Church, St. Andrews, Niagara-on-the-Lake

Below: Hotel in Dundas, Ontario

Upper right: Gothic Revival Chapel, St. James the Less, Toronto

Lower right: Dean's House, University College, Toronto





KEN BELL

The tower as an articulated cubist construction with opposing elements in opposing colours of brick. As one proceeds around the building the shape of the tower changes.

CLAIRLEA PRESBYTERIAN CHURCH SCARBOROUGH, ONTARIO

Architects, W. L. Somerville, McMurrich & Oxley

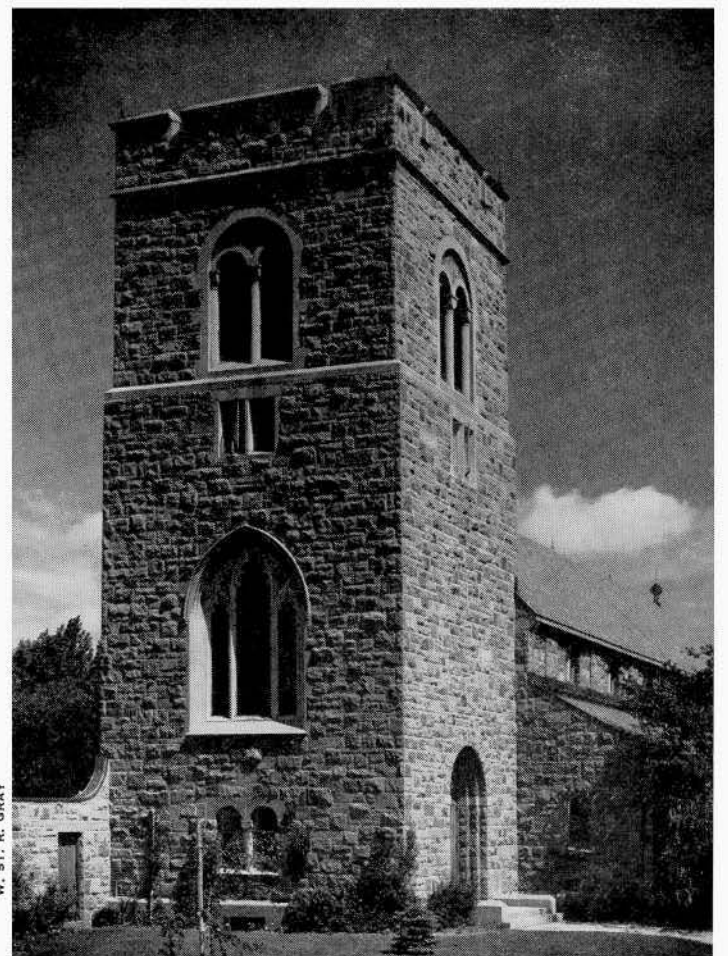
General Contractors, W. J. Smith & Son

Mechanical and Electrical Engineers, James P. Keith & Associates

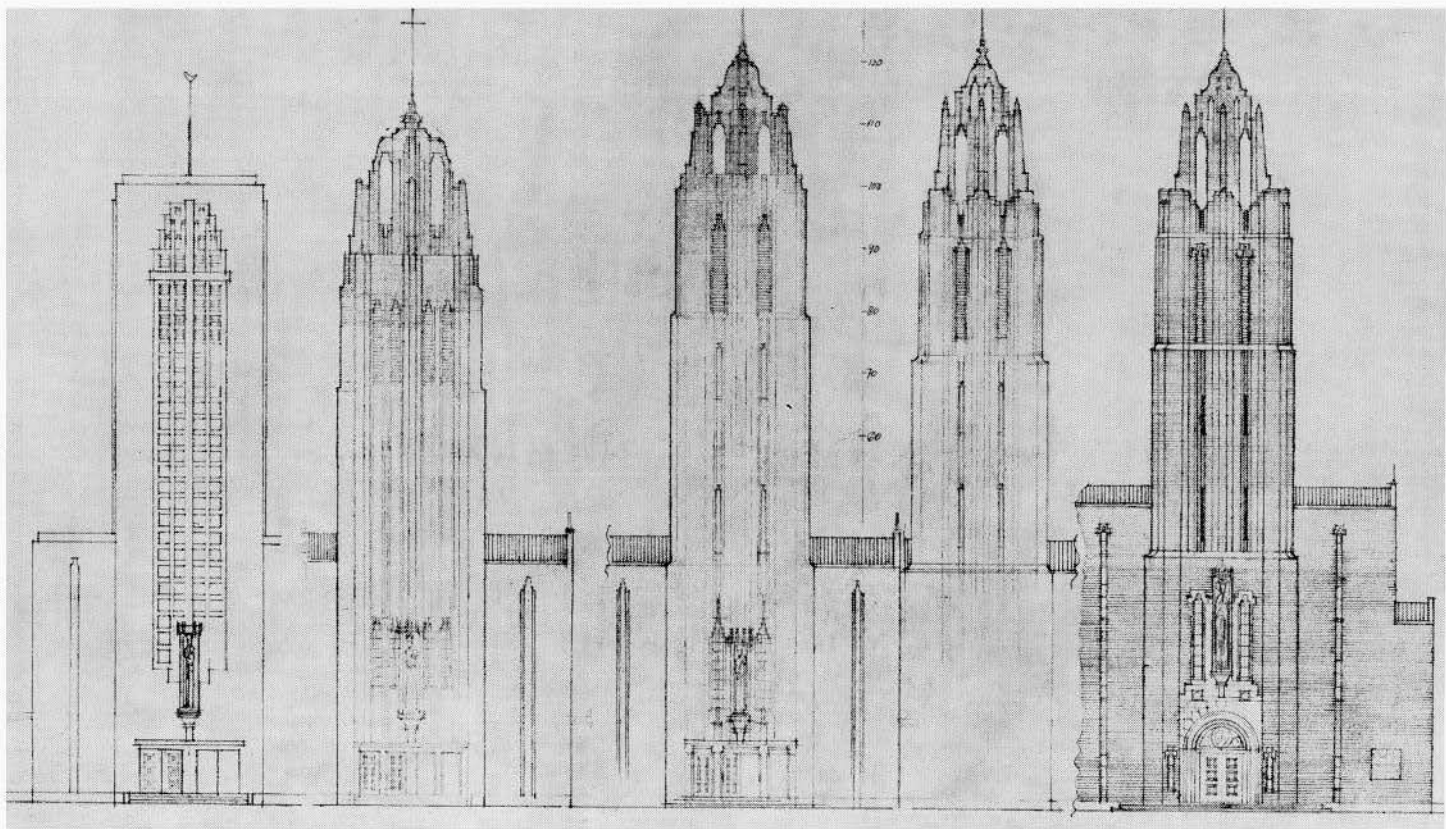
A simple stage tower expressed as a solid masonry structure; an easily recognisable symbol from the past.

ST. THOMAS CHURCH MONTREAL, QUEBEC

Architect, P. Roy Wilson



W. ST. R. GRAY



**ST. MARY'S CATHEDRAL
CALGARY, ALBERTA**

Architects, Alfred W. Hodges and Maxwell Bates

*General Contractors, Bird Construction Company Limited
Consulting Engineers, Haddin, Davis and Brown Limited*

Above, various studies of the tower; final solution at right.

Below left, the tower in silhouette.

Below centre, main doors in base of tower.

Below right, main facade which terminates the access of a major street.



TIGERSTEDT STUDIO

CONSTRUCTION

Brick with cast stone trim on steel frame. Clay tiles cover the pitched roofs. Floors throughout are reinforced concrete paved with 'Granwood' tile. Sanctuary and Baptistry are paved with terrazzo. Hot water radiant floor heating is complemented by hot water convectors and baseboard heating.

ALL SAINTS ANGLICAN CHURCH OF SASKATOON

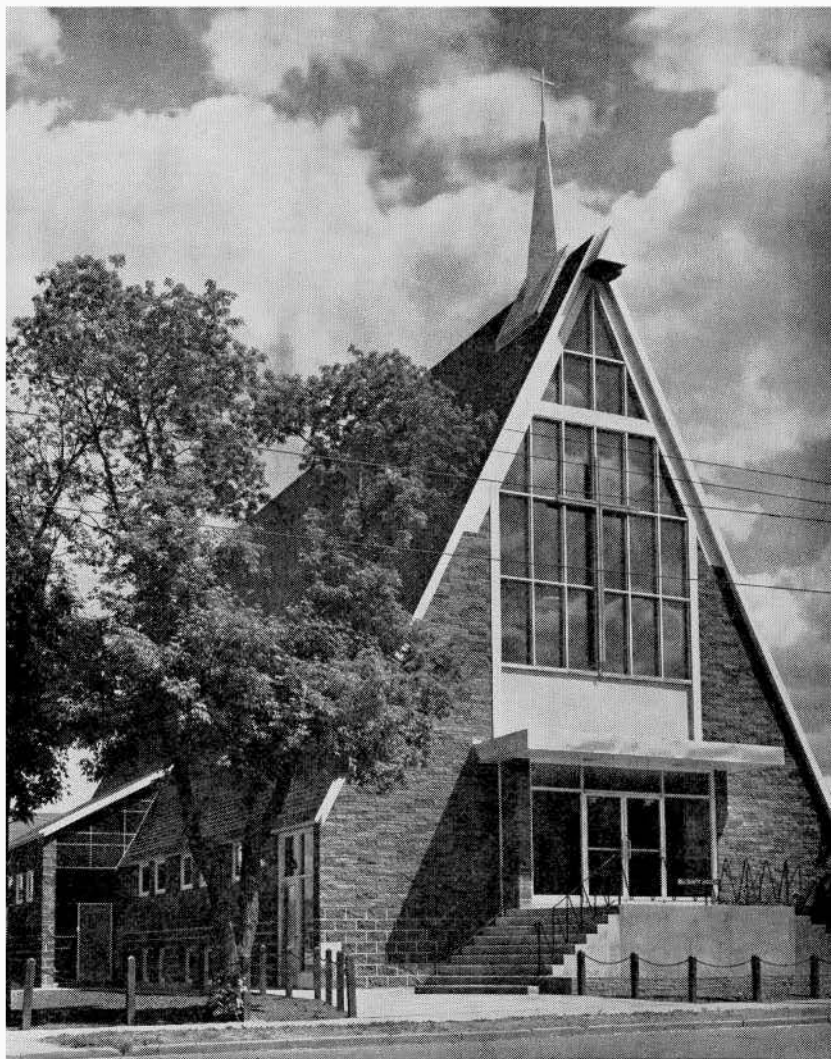
Architects, Kerr & Cullingworth

General Contractors, C. M. Miners Construction Company

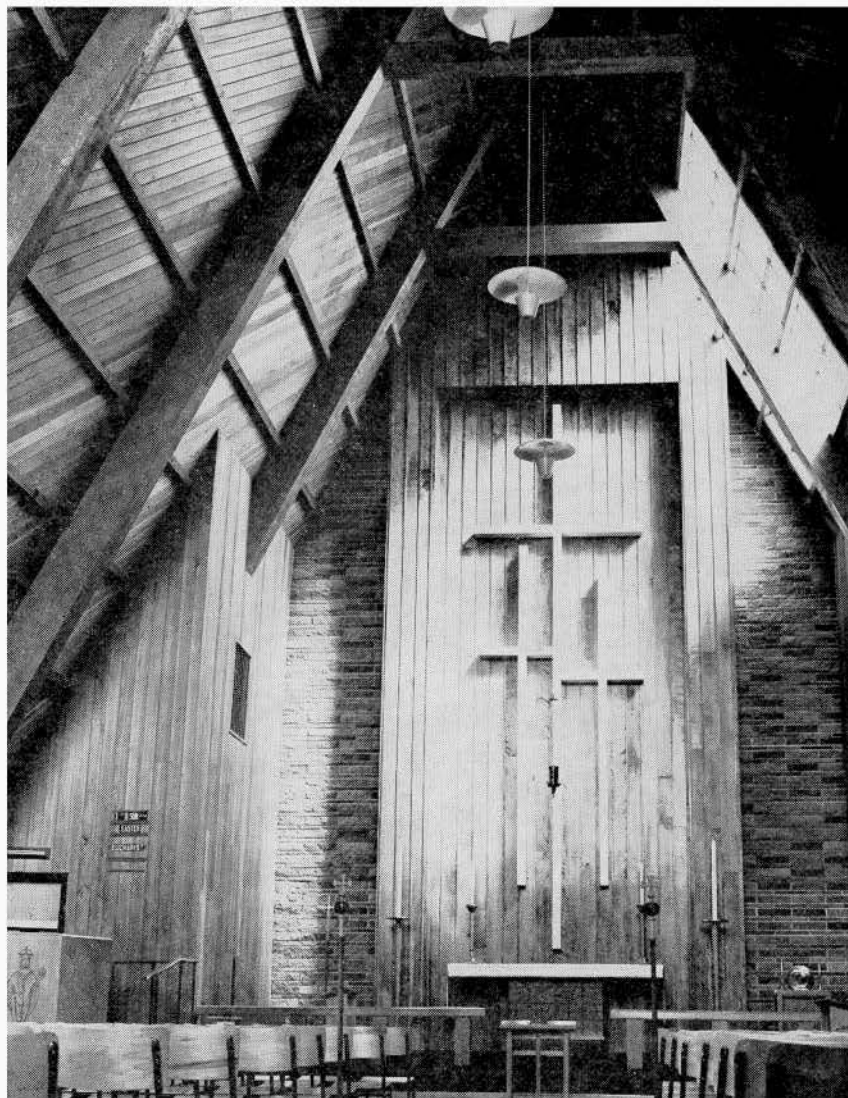
CONSTRUCTION

Main floor and basement, split block cavity walls; steel beams support main floor, wood joists span between steel beams. Roof, laminated trusses fabricated on the job with 4 x 4 purlins spanning between trusses and tongued and grooved boarding nailed diagonally over purlins. Window in roof is a random pattern of blue cathedral glass, which lights altar and reredos.

COST \$60,000

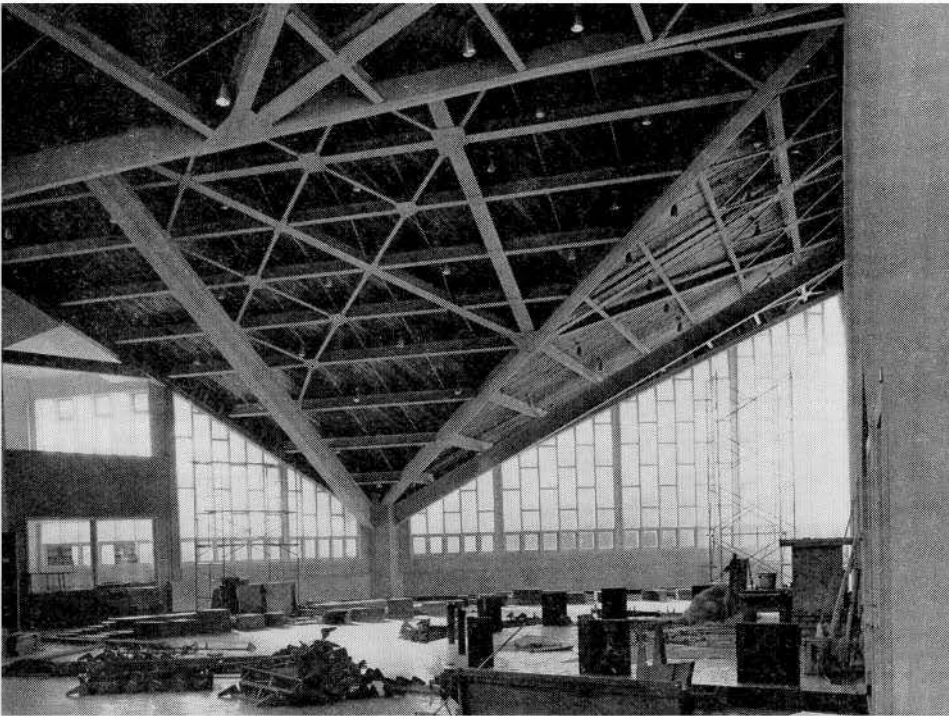
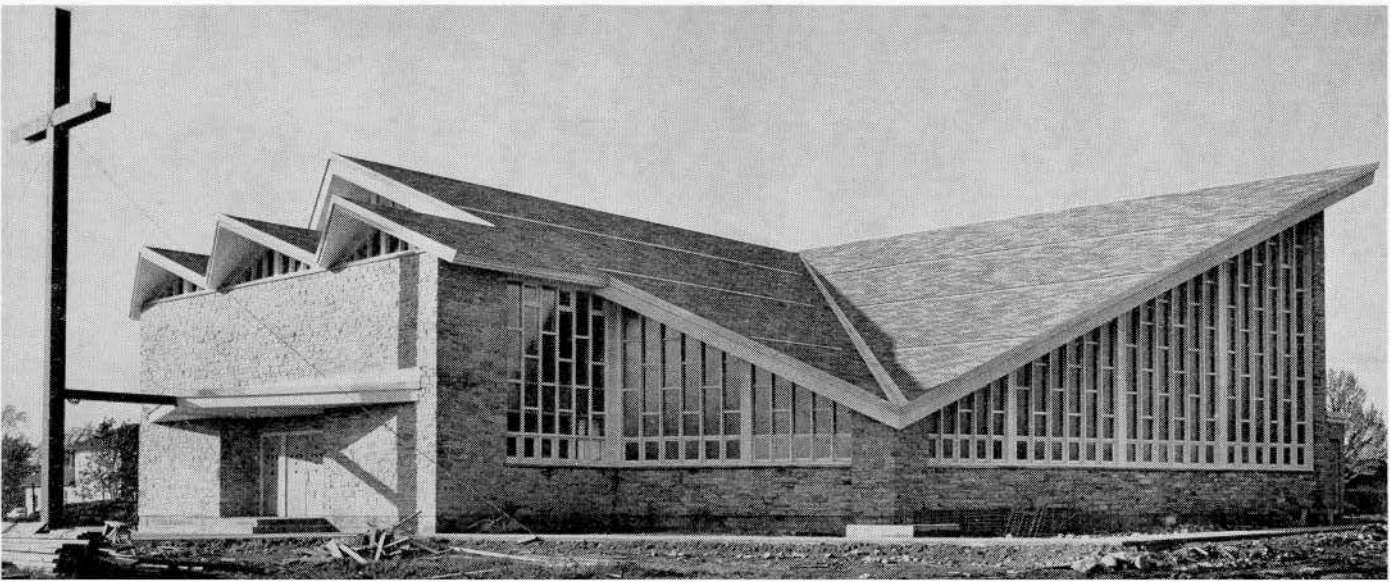


TIGERSTREET STUDIO



Above right, main facade with flèche and cross rising from roof

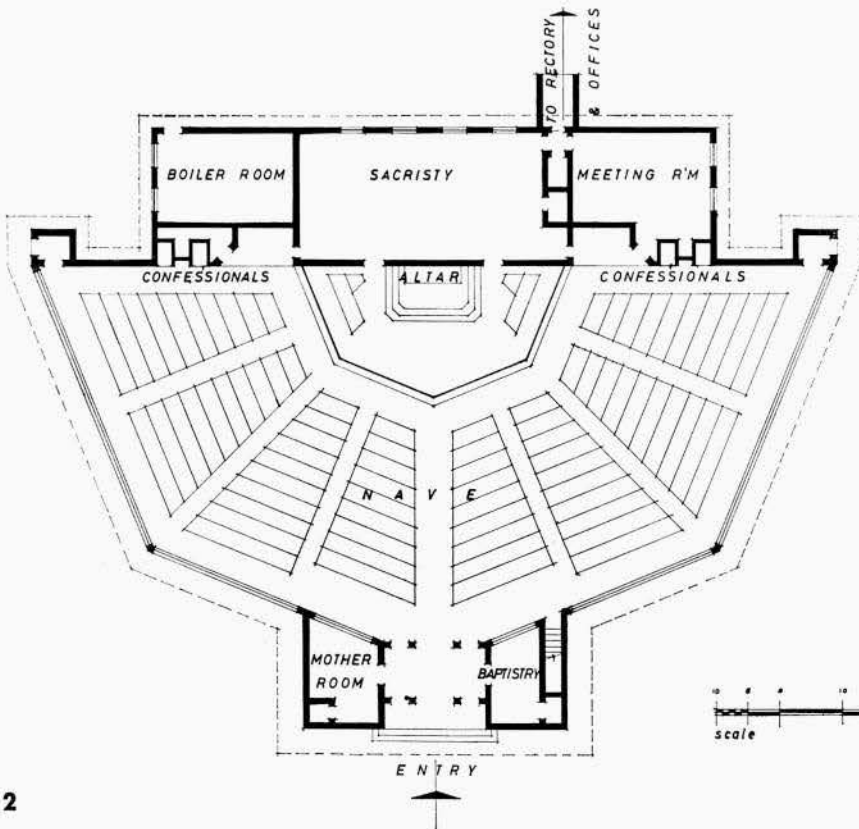
Below right, nave facing the reredos

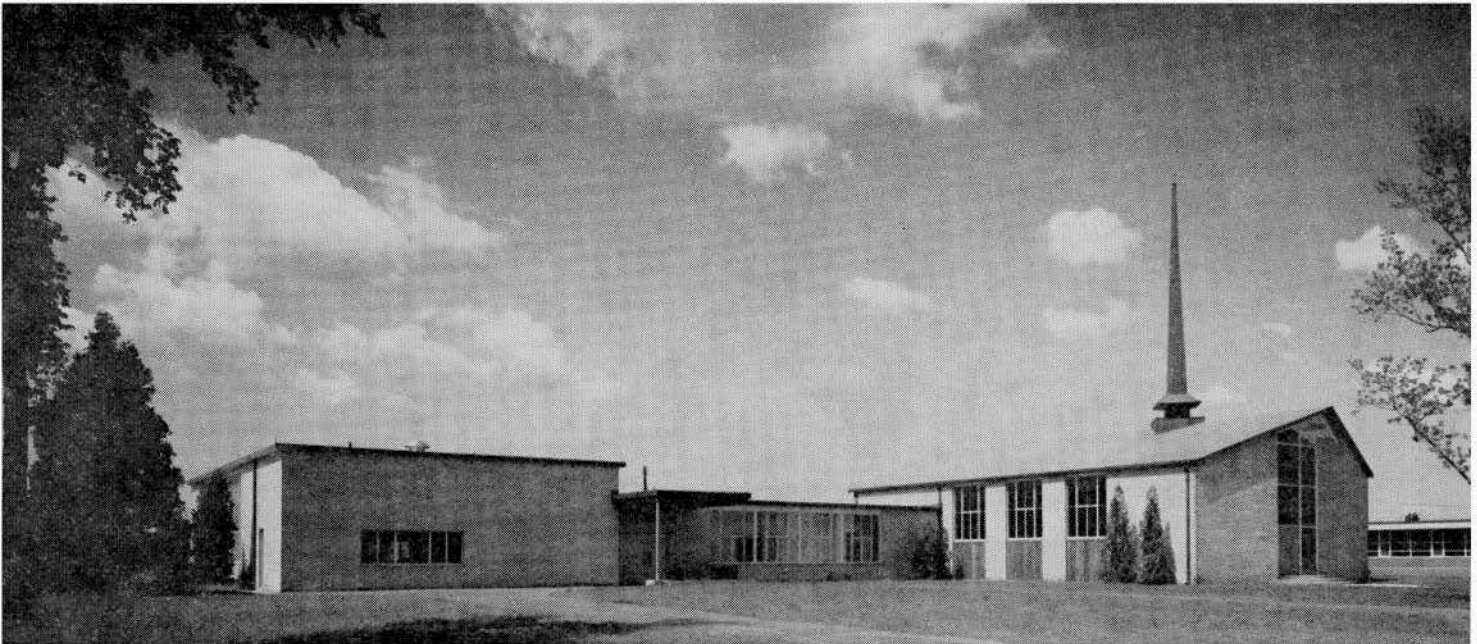


**ST. ANNE'S CHURCH
PETERBOROUGH,
ONTARIO**

*Architects, O'Gorman & Fortin
General Contractor, M. J. Finn*

WOLF





**ST. MATTHEW'S PRESBYTERIAN CHURCH
INGLESIDE, ONTARIO**

Architects, W. L. Somerville, McMurrich & Oxley

*General Contractors, Prescott Construction Company
Mechanical and Electrical Engineers, James P. Keith & Associates
Structural Engineers, Edgar Cross & Associates*

This church was built under the St. Lawrence Seaway rehabilitation programme. Ingleside is an all new town. This church replaces three churches from the same general area. The church and the cost of the architect's services were provided for the congregation by Ontario Hydro.

CONSTRUCTION:

Footings, poured concrete; foundation, concrete block; exterior wall, half-high concrete block, painted beige. The structure is Glulam post and beam. The roof two-inch red pine with box joint, Tentest insulation and bonded built-up roof. Windowall, two-inch double tongued red pine plank, glass stripping in clear and cathedral blue. Floor, concrete slab, vinyl asbestos spatter pattern; interior walls, birch and mahogany ply; chimney tower, induced draft chimney with wood cross. The lighting is Virden and Rotaflex incandescent. Heating, hot water oil fired system.

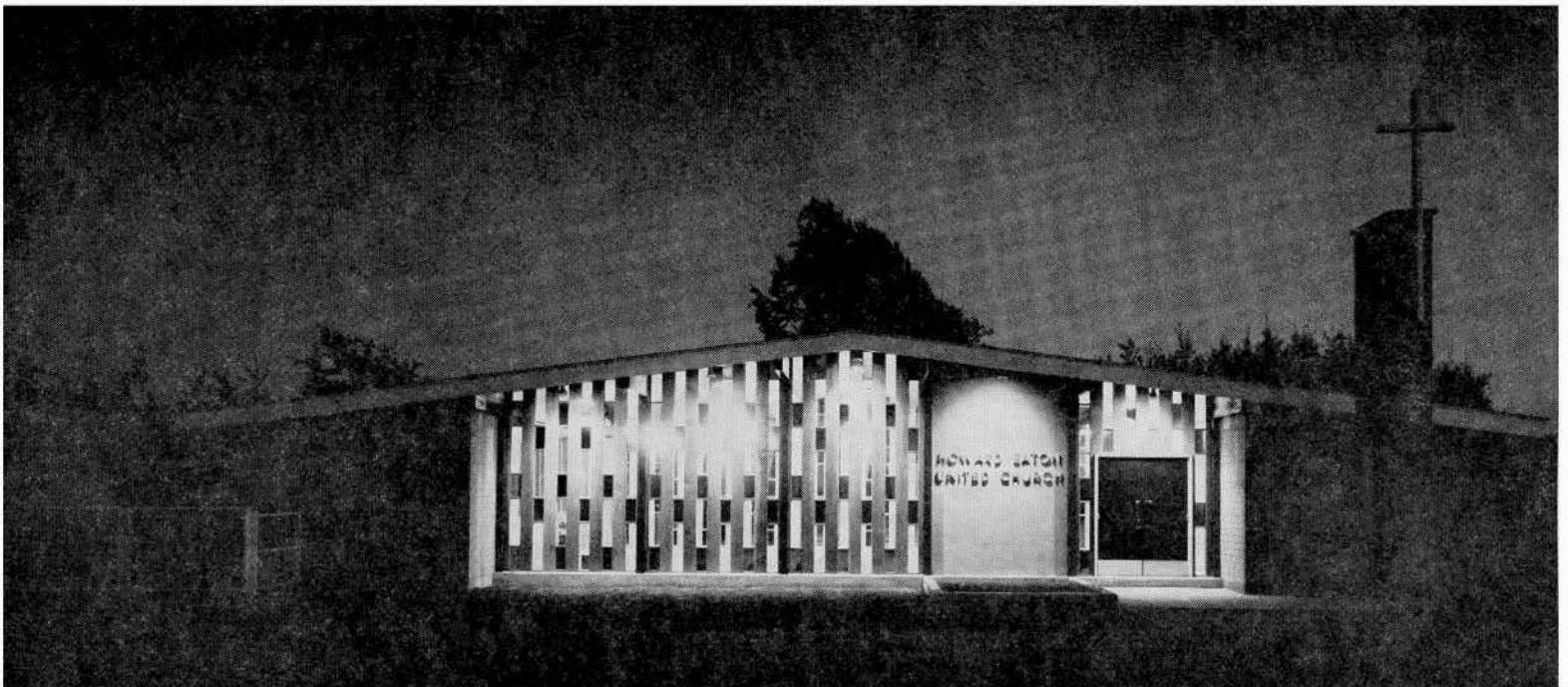
SPACE:

One hundred in the congregation, plus twenty-five in the choir.

COST: \$27,000.

**HOWARD EATON UNITED CHURCH
TROUT MILLS, ONTARIO**

Architects, Gibson & Associates





**ST. ANTHONY'S CHURCH
CHATHAM, ONTARIO**

Architect, Frank J. Stalmach

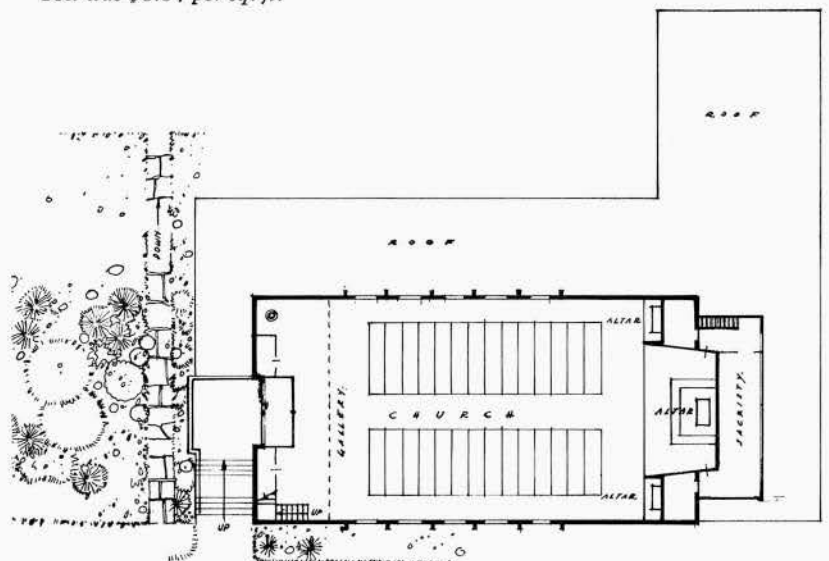
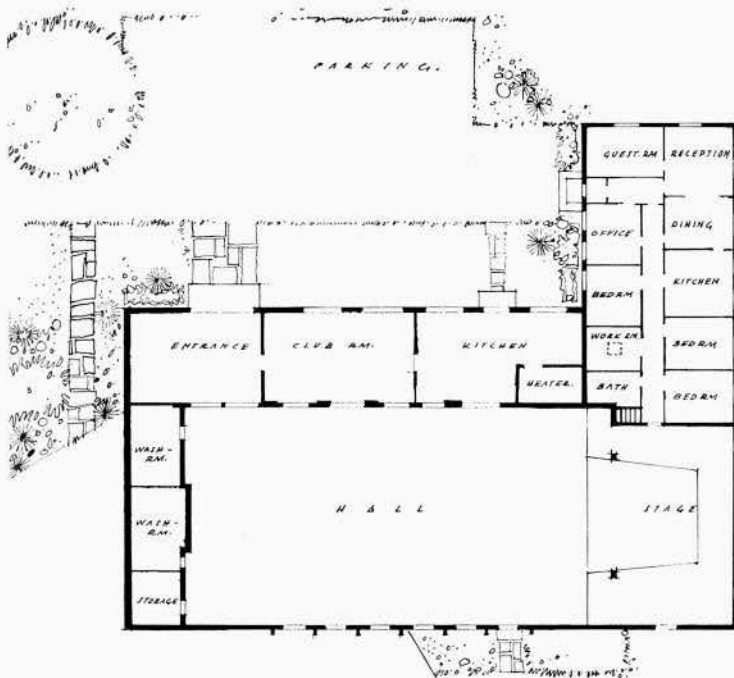
Contractor, A. Lombardo & Son

The building program required a church, parish hall, and priest's house on a lot approximately 400 ft. sq. with big old trees.

Among the problems was a site with a sub-soil unsuitable for excavating a basement, so a base structure was erected above ground, using a dark brown concrete brick, while the church itself rises as a simple surmounting cubicle. Banking produces an easy approach to the church interior. On the opposite side there are ground level entrances to parish hall, club rooms, kitchen and attached parochial residence.

The church entrance is flanked on one side by a sand-stone bas-relief of eight Czechoslovakian saints and on the other side by a seven foot statue of St. Anthony. Sculptor was G. A. Gause of Burlington.

Cost was \$8.64 per sq. ft.



THE CHURCH AND CONTEMPORARY ARCHITECTURE

BY GERALD A. DAVIES

In the course of a lengthy, illustrated and documented thesis submitted to the RIBA, Mr Davies made the following remarks, which were considered to be extremely well put and of particular interest to Journal readers.

The Gothic Revival

The Gothic Revival had many ramifications and the subject is too vast to be considered in any but the briefest terms. Nor is it proposed to discuss the importance of the effect of Gothic survival. The revival had its beginnings in the works of the 18th century poets, in particular Milton and Spencer and in the writings of such men as Horace Walpole and later, Sir Walter Scott, and was in part due to a reaction against the classicism of the Renaissance.

The first tangible evidence of the interest in mediaeval life that these literary works stimulated, was the building of sham ruins, usually built of plaster or canvas. With the establishment of this essentially romantic conception of the Middle Ages attempts were made to recapture its spirit in such buildings as Fonthill Abbey, which Wyatt originally built as a ruin for the millionaire Beckford, and which was subsequently completed as a residence with a tower 276 ft. high.

But it is with the application of Gothic to religious architecture that we are concerned here. Although many Gothic Restorations were carried out in the 18th century, few whole churches were built in that style, but this was not a period of great church building of any style although in the growing cities and towns the need for church was very urgent. However, due to the work of the Church Building Society which was established in 1818, 243 churches were built between that year and 1833, in populous districts. Of these, 174 were built in the style then known as Gothic though the basis of this choice was economic rather than aesthetic. By 1830 Gothic had been widely applied to ecclesiastical architecture with results that were disappointing even to contemporary critics.

The character of the English Church at this time (1830) is described in the "Gothic Revival" by Sir Kenneth Clark. "Chancels and altars, clergymen in surplices, anthems, frequent standings and kneelings . . . all these forms were unthinkable. To a good protestant of 1830 the least suggestion of symbolism — a cross on a gable or on a prayer book — was rank popery. All forms of ritual were equally suspect. The clergymen wore a black gown and read the communion service from his pulpit; no one knelt during the longer prayers, or stood when the choir entered; indeed the choir, if it existed at all, was hidden in a gallery . . . The old Gothic churches had been gradually adapted to suit this type of service . . . since altars were seldom used, even as tables, the chancel was either abandoned or used as a vestry . . .".

All this was to be changed by the work of two groups, whose efforts and influence were to inseparably connect the forces of the Gothic Revival with religious motives. The Oxford Movement and the Camden Society and their followers established the basis of Anglican worship as it is known to-day. Their endeavour was to bring back display and colour into religion — and to thereby 're-convert' the country. They believed that in order to revive old forms of worship it was essential to revive

Gothic architecture. Not stopping there, the Camden Society found theological reasons for selecting the Decorated style as being the most suitable for this purpose.

That the efforts of the Camden Society were successful is evinced by the fact that for fifty years almost every new Anglican church was built and furnished according to their instruction. And their influence was by no means confined to Anglo-Catholicism. For the first half of the 19th century the Non-Conformist Chapels continued to be built in some variant of the Roman or Greek styles. But, as Mr Martin Briggs has said, presumably in an effort to remove the sense of social inferiority under which they had long smarted due to the meagre character of their architecture, the Non-Conformists attempted to emulate the Anglican Church by 'Gothicizing' the exteriors of their chapels, while preserving their traditional internal arrangements.

Nor indeed was this influence solely restricted to religious architecture. Again in the words of Sir Kenneth Clark ". . . For a long time this small group (The Camden Society) furnished the Englishman's imagination in all that concerned religious architecture. The Camdenians, for complicated reasons, insisted on certain forms; and the average man, who asks nothing more than to have his forms supplied ready made, accepted them. As these shapes moulded his vision, he became uncomfortable if he did not see them everywhere, not merely in churches, but in shops and railway stations and in his own home . . .".

At a time when the engineer was opening new worlds of structural advancement, the architect — in a futile endeavour to deny the advent of the machine age — retreated into the shelter of Gothic, and its 'secular counterpart' Classic, revivalism.

Though it can no longer be said to include the field of secular architecture there is evidence that the influence of the Anglican ecclesiologists has endured until the present day. Writing of the Church of England in "Modern Church Design", Mr Richard Mellor says, "Many of our clergy are influenced by these (Gothic Revival) churches; their standards of taste and design have been affected accordingly. If this is true of the clergy, how much more so of the laity . . ." A recent manifestation of this influence among architects will be mentioned later.

The Present and the Future

The scientific conception of creation has inevitably had a profound effect on the position of the Church. It is not overstating the case to say that the future of the Church must largely be dependant on its ability to reconcile its philosophy with science. At the same time it cannot be denied that to many, at least in the Western World, a completely materialistic conception of life has proved to be unsatisfactory. This situation offers a challenge which, there is reason to believe, is being accepted. The Church at large is realising that to be an effective force in the world to-day it must act as one, rather than as a number of isolated groups. There is evidence to show that there is a new spirit of toleration abroad. Among the non-Roman churches this spirit is underlined by the Ecumenical movement which stresses co-operative unity (though not organic union) and in the formation of the World Council of Churches. From the Roman Catholic side a pronouncement was made last year laying down the lines of co-operation between Roman Catholics and other Christians.

The destruction of many churches in the last war and the creation of new residential areas will mean, when the immediate economic and building restrictions are removed, that a greater number of churches will be required than for many years past. This situation offers opportunity to the Church and to the modern architect. This thesis is written with the conviction that if the Church wishes to recapture its hold on modern society it must express itself in the architecture of that society. In a church of all buildings, honesty of expression must be the first essential. To attempt to re-capture the faith and aspiration of past ages by building churches in the image of

those to which that faith gave birth can only result in failure. This should be self-evident, yet there are many who to-day still believe that Gothic is still "the only true Christian architecture". Recent proof of this was to be found in the letters to the Editor of "The Times" last autumn, on the subject of the Coventry Cathedral Competition. One correspondent asserting that "no great architectural style can ever be said to be dead, no matter how long it has lain dormant" says that "we must continue to hope that the new cathedral will be Gothic up to date . . . Gothic with the new look". Another correspondent claims that "the modern style has the disadvantage of not having come gradually into existence by means of a slow gradual evolution as other styles have done in the past. The result is . . . a new modern architectural language having no connection with the past". The viewpoint ascribed to this school of thought is that of the Traditionalist; but this suggests a misconception of the true nature of tradition. The study of architectural history reveals that style does not "evolve" in a tidy and regular fashion, age after age respectfully "Developing the idiom" of its predecessor. The crucial birth of a new expression has never allowed itself to be cramped by undue respect for its predecessors. This is pre-eminently true of the three major expressions of 'Christian architecture', the Byzantine, The Gothic, and the Baroque. Stylistically speaking, they have only one feature in common — an astonishingly self-assured indifference to the past. The "traditional" spirit has in fact always been empirical and adventurous.

The Times correspondence mentioned above was published in the "Architectural Review" together with an article by Dr Nicholas Pevsner which took the form of a commentary on their subject matter. In a relevant passage Dr Pevsner says:—"No style is established except by revolution; yet for no style is it impossible to find pioneers and a pre-history. The Gothic and Renaissance styles were certainly not the product of evolution, as anybody can see by comparing St. Denis with any preceding twelfth century building, and the Pazzi Chapel with any preceding early fifteenth century building. Transitional and preliminary stages on the other hand were by no means lacking then, as they are not lacking for the contemporary architectural style. Dr Gideon (author of "Space, Time and Architecture") and I have tried to trace them back to the early nineteenth century, without thereby intending to belittle the revolutionary advent of the contemporary style."

The conscious adoption of the Gothic style for church architecture in the last century was, up to a point, understandable, since it was a period of stylistic revivals, devoid of a genuinely contemporary architecture. To-day that situation does not exist. Even the most reactionary critics do not deny that there now exists a contemporary architectural language (whatever their opinions of it may be) and it is between this and eclecticism that the choice must now be made.

Functionalism and Monumentality

One quotation untingly used by those who declare that the modern movement, by its basic philosophy, must necessarily be incapable of producing a genuine religious architecture, is the famous "a house is a machine for living in" which appeared in Le Corbusier's "Towards a New Architecture" published nearly 30 years ago. From this definition they deduce that to a modern architect a church would be "a machine for praying in" — a philosophy which, reasonably enough, they utterly reject. But in this deduction a misunderstanding is implicit. Corbusier's book, in addition to the above remark contains such sentences as "the business of Architecture is to establish emotional relationships" and "passion can create drama out of inert stone".

Functionalism was stressed by the pioneers of the modern movement. At a time when they were fighting a battle against period revivalism and seeking to close the gap which existed between architect and engineer, the establishment of a functional discipline was essential. But they always knew that the vocabulary of an architecture based on this alone would have the most severe limitations, and be capable of expressing little

but utilitarian ideas. In the last decade circumstances of war, and later, economy have largely confined building in this country to these utilitarian types and this has retarded the development of a richer vocabulary in which emotional and monumental qualities can be fully expressed.

The minds of many modern architects are to-day concerned with the achievement of these qualities in contemporary architecture. It is recognised that many of the institutions of a democratic civilisation have no aptitude to the Monumental, but of those for which its expression in architecture would be either valid or desirable, the Church must be the foremost. It is somewhat difficult to arrive at an exact definition of monumentality other than in terms of emotional quality, but it is not used here in the deliberate Teutonic sense of sheer size (as distinct from an increase in scale) which usually results in pseudo-monumentality, nor is it meant to refer to the unconscious or accidental monumentality which is sometimes apparent in large scale engineering works. What form will a future monumental architecture take? In an article entitled "In Search of a New Monumentality" which appeared in the *Architectural Review* for September 1948, such men as Professors Gideon and Gropius were not able to make any but the most tentative suggestions. Landscaping and Town Planning were two of the suggested fields through which a desirable monumentality might be approached. Both subjects have application to this thesis and will be discussed later. But it was made apparent that only after a great deal more serious thought, and what is more important, a great deal more building have taken place, that a clear picture can begin to emerge.

The critic who would say that — since this quality is apparently so elusive, no experimental attempt should be made to achieve it through contemporary architecture, is commended to study the work of two Scandinavian architects, Eric Bryggman and the late Gunnar Asplund — the Abo. Chapel in Finland by the former and the Forrest Crematorium, Stockholm by the latter. It has, unfortunately not been possible to obtain illustrations of Asplund's crematorium, but, in terms of architecture and deliberate landscaping, this building, together with Bryggman's chapel which, in contrast utilises the natural beauty of its site, convincingly proves the ability of contemporary architecture to give beautiful expression to monumental and emotional qualities.

Granted that the enduring quality of a church must be dependant on the extent to which it succeeds in eliminating time, an architect can only design within the limitations which his own time imposes. Timelessness cannot be achieved by the use of forms which in sentiment and association seek to recall past ages.

The architect who, accepting these limitations, bases his approach on a contemporary expression of liturgical requirements is more likely to produce an enduring church than he who attempts its achievement by using past forms — no matter how new the look of his Gothic may be.

The Church as the Centre of the Community

Since the beginning of this century there has been a continuous trend towards de-centralization of population. In the first place, improved communications offered to city workers a chance to escape from the overcrowded central areas to the comparative spaciousness of the suburbs. This tendency was initially confined to the more wealthy classes, but during the inter war years the slum clearance and re-housing schemes caused a rapid growth of the suburban areas and the creation of large housing estates. In the layout and planning of these estates little thought was given to anything but the provision of the maximum number of houses. Most of the estates consist of a vast collection of isolated units each living its own life with little or no community sense and lacking the vitality of a social unit. Such facilities for social intercourse as do exist are usually provided by the 'pub' or the occasional school that is used as a community centre. On many estates the absence of church buildings has forced a generation, whatever their desires may have been, to grow up without facilities for Christian

worship. Many of the church buildings which were built were ill-conceived and poorly constructed and the Barlow Report referring to the situation speaks of "asbestos and corrugated iron huts . . . which still serve many areas for churches and halls" as "standing reminder of the neglect of the spiritual and social side by those mainly responsible for development". The failure of the suburbs to provide a balanced and co-ordinated way of life is generally recognised to-day, and in contemporary town planning the careful zoning and layout of neighbourhood units recognises the value of an active communal life as distinct from a mere crowding together of individuals. In the provision of this community life, particularly in the New Towns and residential units now being built, the Church can play an important role. For it is here that most of the new churches will be built.

The report of the Ecclesiastical Commissioners Advisory Panel (published 1946) states that one of the main post-war aims of the Church must be to take its place at the centre of community life. The Non-Conformist Church appears to be particularly aware of the problem and the opportunity of the present day and the scope of their church work has been rapidly developed so that to-day, a typical building programme calls for accommodation to provide for the cultural, recreational and social in addition to the devotional aspects of church life — in short, a Community Church.

Such a church, properly related, physically and spiritually, to its environment could have much to give towards building up the social organism. It would constitute one of the "Communities within the community" that are so essential to healthy, full-living societies.

It is not proposed to deal here with detail planning since this must obviously be dependant on local circumstances, finance and site, but it is of interest to examine one or two of the post war projects which have been designed to meet the needs of the Community Church. Broadly speaking this need can be said to resolve the plan into three main areas: —

- 1). The area reserved for the places of formal worship where a formal, meditative atmosphere is required.

- 2). The places reserved for religious instruction in which a semi-formal atmosphere is required.

- 3). The places where informal discussions and social activities take place, for which an informal atmosphere is needed. With regard to (2) and (3) there must obviously be cases where economic limitations — or individual preference — will mean that some rooms must serve a dual purpose and for this reason flexibility of planning is essential. Indeed in some cases economic circumstances may necessitate the adoption of the 'dual-purpose' or 'two-way' church, with a sanctuary at one end and a stage at the other, both capable of being screened off from the nave which contains reversible seating. But this cannot be a permanent or satisfactory arrangement if the spiritual life of the parish is deep — the atmosphere of a church is not acquired by opening folding doors and revealing an altar or table in a recess.

The Parish Church of St. Nicholas, Coventry, by the Arcon Group, results from the progressive policy of the Parish Council. Their wish was that the new church, which will replace the original destroyed by enemy action, should be conceived as the social centre of the district . . . The approval of the Diocesan Advisory Committee has been received and licences are now being sought.

The church and church hall share the main entrance since they are not considered separate entities. Flexible planning was considered important and all general amenities are shared by the buildings in the group. The Main Church is designed for a congregation of 600 with a Lady-Chapel for an extra 50, with vestries and churchwardens' room. The church hall, which is to be used for dancing, plays and cinema shows, will accommodate 350. In addition to kitchen and two large committee rooms there is accommodation for a boys' club, a gymnasium, billiards, a library and a reading room. Later developments will include a caretaker's lodge and a creche.

The planning of churches such as these is tangible evidence of the effort that the Church is making to once again become a significant factor in the every-day life and interests of the people. That it should be employing reputable contemporary architects to achieve this purpose is significant and heartening.

The Importance of the Site

Churches such as those mentioned above, which are to replace destroyed buildings, must obviously accept the limitations imposed by the existing site. But where opportunity of choice does exist, as presumably it will in newly created areas, the selection of the site must be a matter for great thought. For a church wishing to become an important element in the life of a community, its physical relation to that community is obviously of first importance. In addition, the profound effect which the character of the site, (ie., change of levels, trees, planting, etc.) can have is well demonstrated by the chapel at Abo, in Finland illustrated later in this thesis. Careful consideration will be required in the overall placing of the communal facilities provided in the centres of the New Towns and Neighbourhood Units. Those facilities provided by a church should be considered not only in relation to such secular facilities as will exist, but also with the programmes of other denominations. In this respect when, after four centuries of divisions, the leaders of the various denominations are coming together in stressing the ideals and aims which they hold in common, there exists a great opportunity to express this desire for co-operation in tangible form.

The idea of a grouping together of churches is not without precedent. *The Builder* of December 5th, 1941 illustrated a scheme by Mr H. V. Molesworth Roberts, for a grouping together of three churches of different denominations. The idea resulted from a suggestion by the late Canon H. R. L. Shepard, and was an attempt to overcome the problem of providing for different denominations in new residential areas. The author's realisation of the conception is admittedly tentative, but the basic idea is immensely interesting. The scheme provided for the three buildings to be grouped onto one site, the largest being for the majority denomination (which would usually be the Church of England) with a Roman Catholic Church and a Free Church, in addition, a Non-Liturgical block for the Society of Friends, together with the vicarage, the presbytery and the manse. Circulation was planned to mix the respective congregations. A development of this would be to plan certain of the facilities for communal use. This, while respecting the desire of the members of the various denominations to worship according to their own beliefs, would provide an opportunity for mixing on the recreational and social level. A somewhat similar idea was incorporated in Sir Giles Gilbert Scott's rejected design for Coventry Cathedral.

This conception may appear to be too idealistic — but it would be a sure way of spreading, through their members, the co-operative policy now advocated by the leaders of the various branches of the Church. Such a grouping of the denominations, properly planned and related to their environment, would do much toward the effort of the Church to re-establish itself in modern society; and, in a purely architectural sense, would become an important factor in the civic scene.

The Church Interior

Setting aside ancillary accommodation and also the particular offices used by the clergy only, it is proposed to discuss in this chapter the main body or compartment of the church interior. At the outset it is essential to stress that the basically important achievement in contemporary architecture is the general return to the age old principle of exterior form as the aesthetic resultant of interior space. The Romans separated themselves fundamentally from the architecture that preceded them by their preoccupation with interior space as a determining factor in their baths and basilicas. The logical aesthetic development of this revolutionary idea was largely responsible for all great church architecture down to the decline of mediæval culture. Contemporary architecture, of the significant kind, has returned to and developed this concept.

The quality of a church is that of a holy enclosure and it is the interior space that is of primary importance. A church in a particular sense therefore, should be designed from the inside out, the interior determining mass and form, with the exterior a resultant harmonization of the building elements. The starting point must be the building plan, for in that lies the intellectual basis around which interior space is evolved. Here the serious limitations of a thesis which is attempting to discuss church architecture in general terms become apparent. For the plan of a church must be the result of an analysis of the requirements of ritual and the Liturgy. This is true of all religious building from the simplicity of a Meeting House to the complexity of a Roman Catholic Church. Within the three main church bodies in this country, the Roman Catholic, the Church of England and the Non-Conformist, there are, at least in the latter two – and particularly in the Church of England, many divergencies. In his introduction to "Post War Church Building", Mr John Rothenstein writes, "Non-Conformist and Roman Catholic Churches both represent an outlook more sharply defined and consistently held than that of the Established Church, of which comprehensiveness has been a steadily pursued ideal. The Church of England may be said to include – so far as it is consistent with the rejection of Papal Supremacy and the retention of the Episcopalian form of government – every shade of religious conviction. It has need therefore, of the widest variety of churches ranging from those to which men go to participate in a sacrifice to those to which they go to hear a sermon. The one will therefore, have the altar for its centre – and the other the pulpit. . . ."

Whilst it is true that the Non-Conformist service is essentially centred on the Preaching of the Word, there appears to be a growing tendency to give more consideration to the relationship of the pulpit to the communion table or altar, and there are a number of unsolved problems and many possible solutions.

The Roman Catholic Church, in which the altar is the centre of worship, is well established in its liturgical and basic architectural tradition and it is perhaps because of this that it feels free to introduce variations and versions of the basic theme. Certainly there is a high proportion of original design in new Catholic churches.

At the risk of appearing to beg the question it is not proposed to examine in detail the separate plan function of each denomination. For such a course must involve considerable discussion of the historical and theological causes of their evolution. Here is the dilemma. For it cannot be overstressed that no architect can hope to design a church of any but the most superficial value if it is not based on a true understanding and interpretation of the facts of the Liturgy. Yet to undertake an examination of the liturgical and ritual requirements of all the branches of the Church and to consider constructively the cause and effects of the last four centuries of Reform and Dissent is clearly not within the scope of this thesis. Fortunately a number of excellent books are available on these and allied subjects, in so far as they are related to architecture, notably "The Architectural Setting of Anglican Worship", "Puritan Architecture and its Future", "The Methodist Church Builds Again", "Modern Church Design", "Sanctuaries and Sacristies" and "Commonsense Church Planning". Research on these and other references has led to the following general conclusion. That, without denying their manifold differences, an objective analysis of the present position within the various branches of the Church, while obviously producing no unified synthesis, does indicate a generally advocated desire for a move forward to a more unified conception of interior space. If this thesis is to serve any constructive purpose, it is essential to emphasize that which is held in common, rather than the points on which there is difference. It is hoped to establish that there is shared, by what might be broadly termed the Protestant and Catholic outlook, a common architectural tradition; a tradition based initially on the Primitive Church's conception of plan function and, later, as the layman's participation in worship became more active, an increasing desire for the unification of the church interior.

Included as an appendix to Mr Davies' thesis, was the following charming quotation, part of a sermon on Religion and Architecture, preached by His Grace the Archbishop of York, the Very Reverend C. F. Garbett.

ARCHITECTURE is not something which is abstract and impersonal; it is the outcome of the mind, the ideals and the needs of living men and women. Their ideals and needs enter the mind of the architect and are transformed and expressed by him in tangible and visible form. The architect is limited by the conditions of the period in which he lives, by the lack of appreciation of beauty, or by the absence of patrons, but he can do much to create and educate public opinion so that it becomes sensitive to the distinction between good and bad building, ready to praise what is beautiful and well proportioned, and to condemn what is vulgar or ugly.

But if the architect is to create a discriminating public opinion, he himself must possess certain moral and spiritual qualities over and above the necessary technical knowledge. Three of these seem to be essential – vision, reverence and patience.

He must have vision; without it he will become a mere copyist, following conventional patterns, repeating himself again and again, without variety or originality. Vision does not come to most men naturally; to the genius it may come as a sudden revelation, but to most of us vision is the result of training and self-discipline; of preparation and expectancy. A modern educationalist writes: "The most indispensable viaticum for the journey of life is a store of adequate ideals; and these are acquired in a very simple way, by living with the best things in the world – the best pictures, the best buildings, the best social or political order – the best human beings". This familiarity with the best things of life, in literature, in painting and in buildings, gives us the gift of vision, and thus taught by the work of others we in our turn become creative.

With vision there must go reverence. This follows from what I have just said. The study of the best things in life gives reverence for the achievements of the past. There are periods when the past becomes a dead hand, stifling all originality; but there are also periods when all that is old is regarded as worthless, to be swept away if it interferes with the latest demands of progress. A melancholy record could be made of ecclesiastical and secular buildings demolished or ruined by so called restoration in the interests of modern comfort and business. In town and village alike, buildings have been destroyed or fatally injured where they might have been preserved and widely restored for the use and enjoyment of the present and future. The architect should have an instinctive reverence towards the work of the past and not allow the urge for originality to lead him recklessly either to despise or to destroy it.

And the third quality is patience; patience with the client, whether an individual or a public authority, who does not at once accept the proposed designs; patience with the critic who may be converted from a foe into an ally; patience during the tedious period of waiting, so frequent in these days, before work can be begun on the site; and patience in planning for a future which the planner may not live to see.

So thanking God for the great heritage of good building we possess in this country, and for the great multitude of known and unknown architects, builders, artisans, craftsmen and mechanics who have added loveliness to our land, we pray that with wisdom, strength, and beauty, and out of a knowledge of the past – the architects of today may by their work enrich our towns and cities and thus fulfil their obligations both to the present and the future.

CONSTRUCTION:

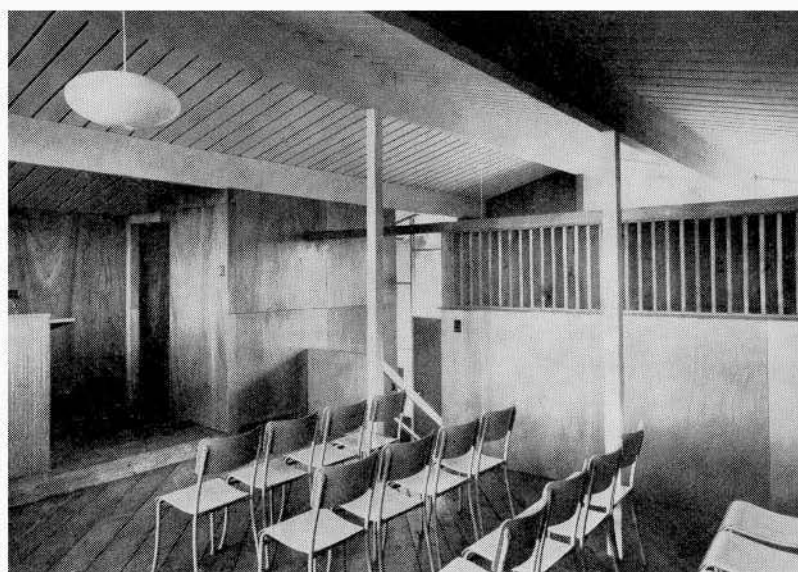
Footings, concrete pegged to rock; foundations, concrete block; exterior walls, brick veneer; structure, fir post and beam. The roof is pine with Tentest insulation, and bonded built up roof. Window-wall, fixed double glazing; interior walls, birch and mahogany ply; floor, concrete slab and asphalt tile. The lighting is Rotaflex incandescent; heating, perimeter hot air in slab, oil fired.

SPACE:

Forty people in chapel, forty in Sunday school, plus public reading room.

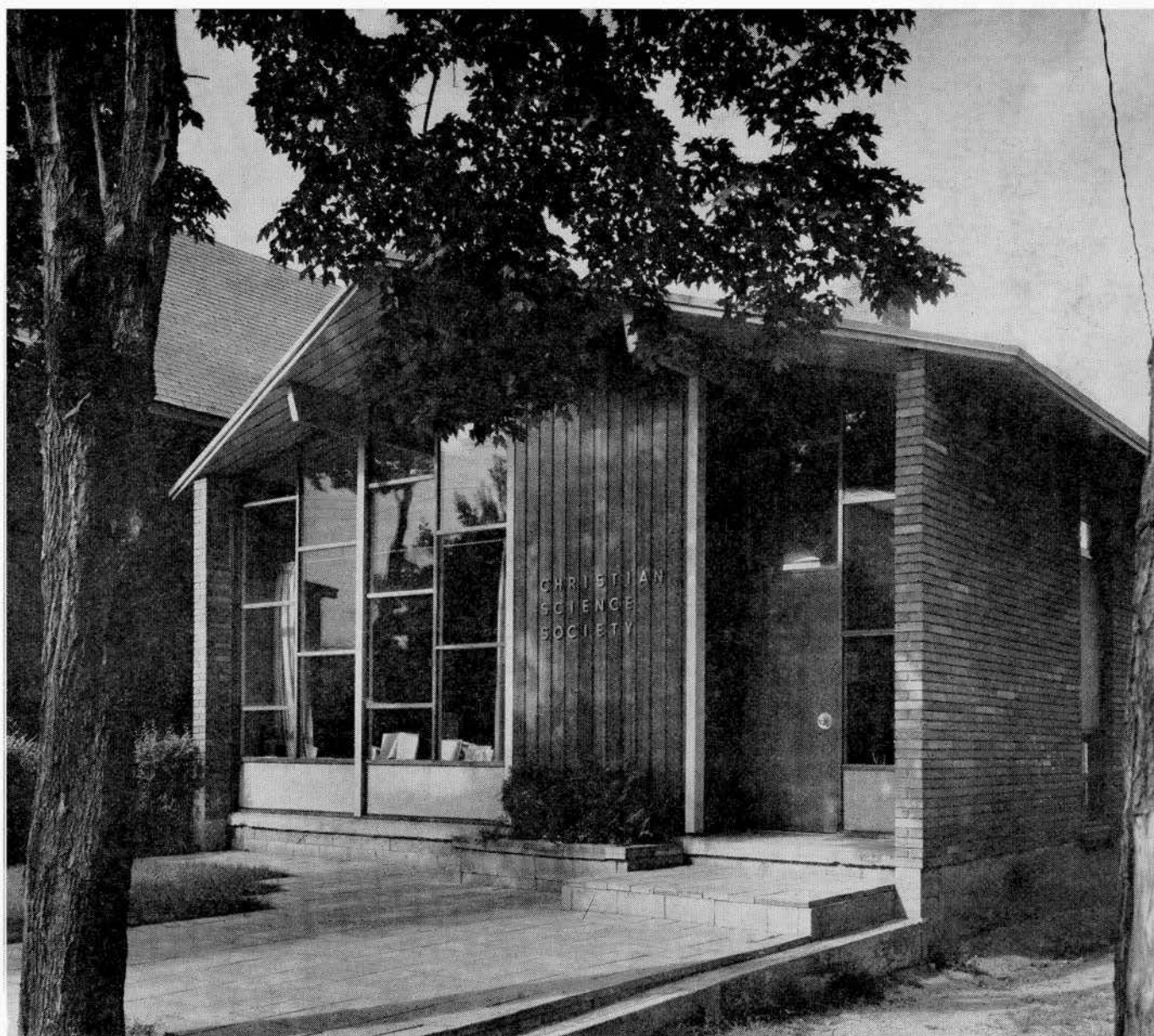
COST:

\$6,000 for materials, labour by congregation in two-year program.



**CHRISTIAN SCIENCE SOCIETY
NORTH BAY, ONTARIO**

Architects, Gibson & Associates



**THE CHURCH OF ST. WILFRID
ETOBICOKE, ONTARIO**

Architects, Cox & Moffet

General Contractor, W. J. Lee Construction Limited

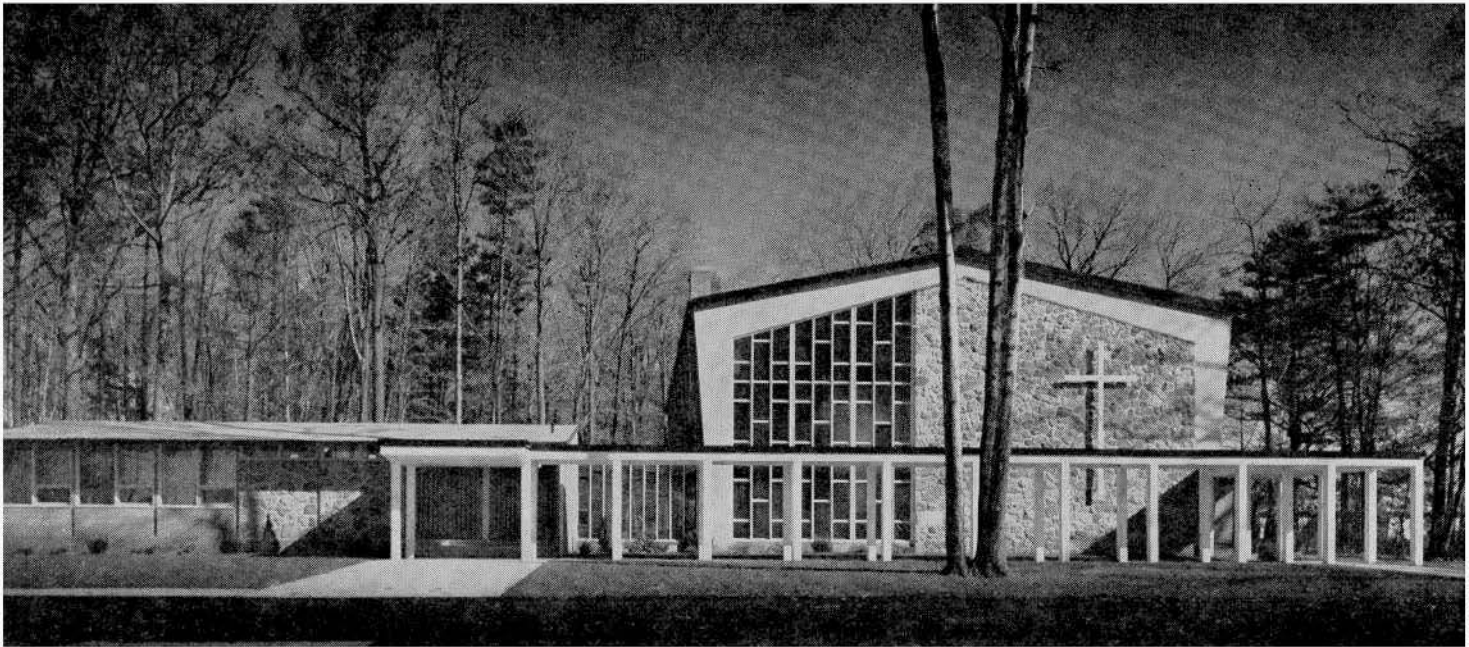
CONSTRUCTION:

Foundation, reinforced concrete; walls are buff faced brick; arches and beams are precast concrete. The roof, precast concrete slabs and the floors wood joists on steel beams. Interior walls, mainly face brick, contrasting with light grey concrete arches and beams and a painted ceiling.

SPACE:

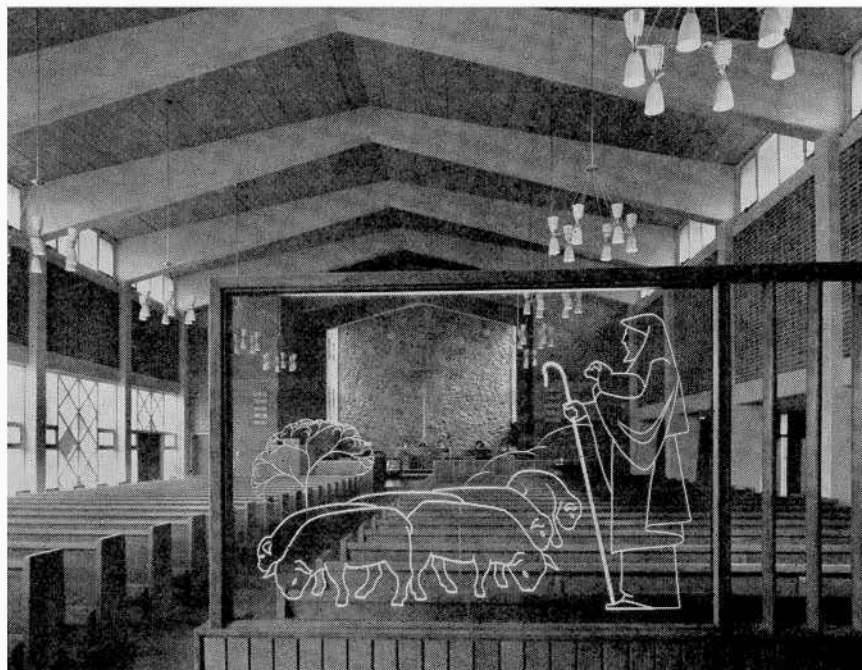
Main church will seat 325 people. There is also a sanctuary with Sunday school below and a connected building containing entrance lobby, church offices and rector's office.

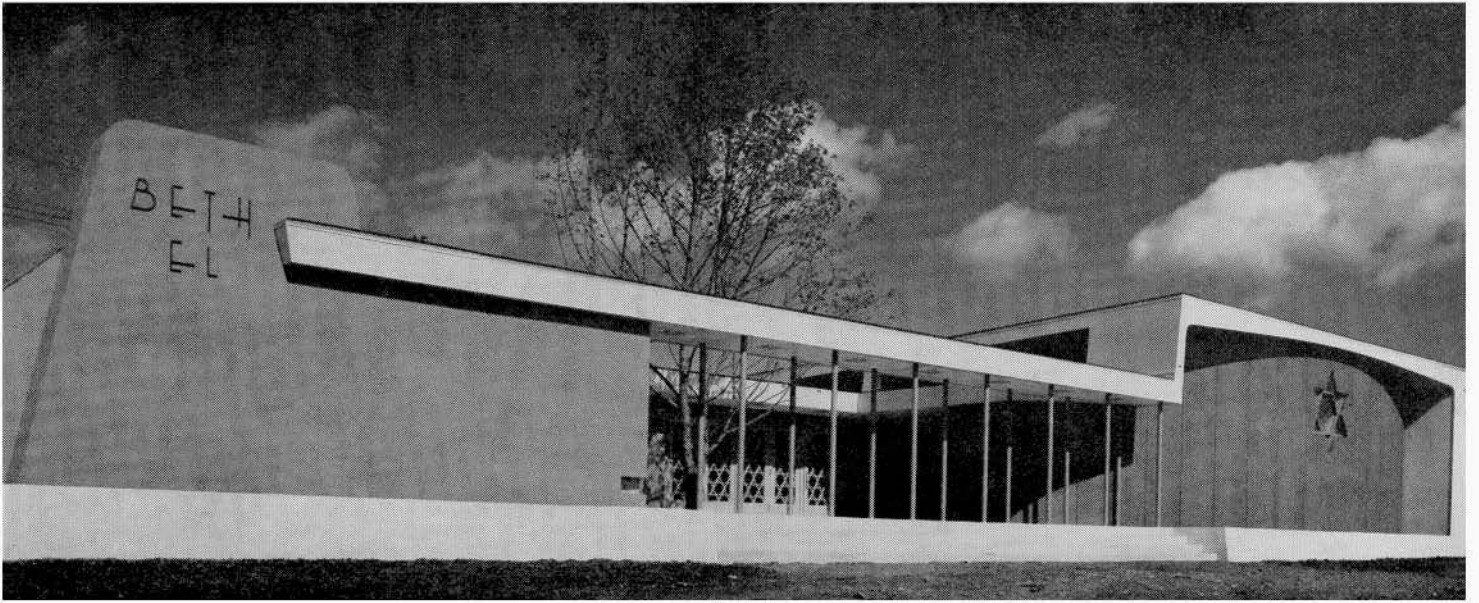
COST: \$216,200.



Church offices and lobby at left, nave at right. The concrete canopy will terminate on a bell tower at far right.

Nave of church seen through sculptured glass panel in narthex screen





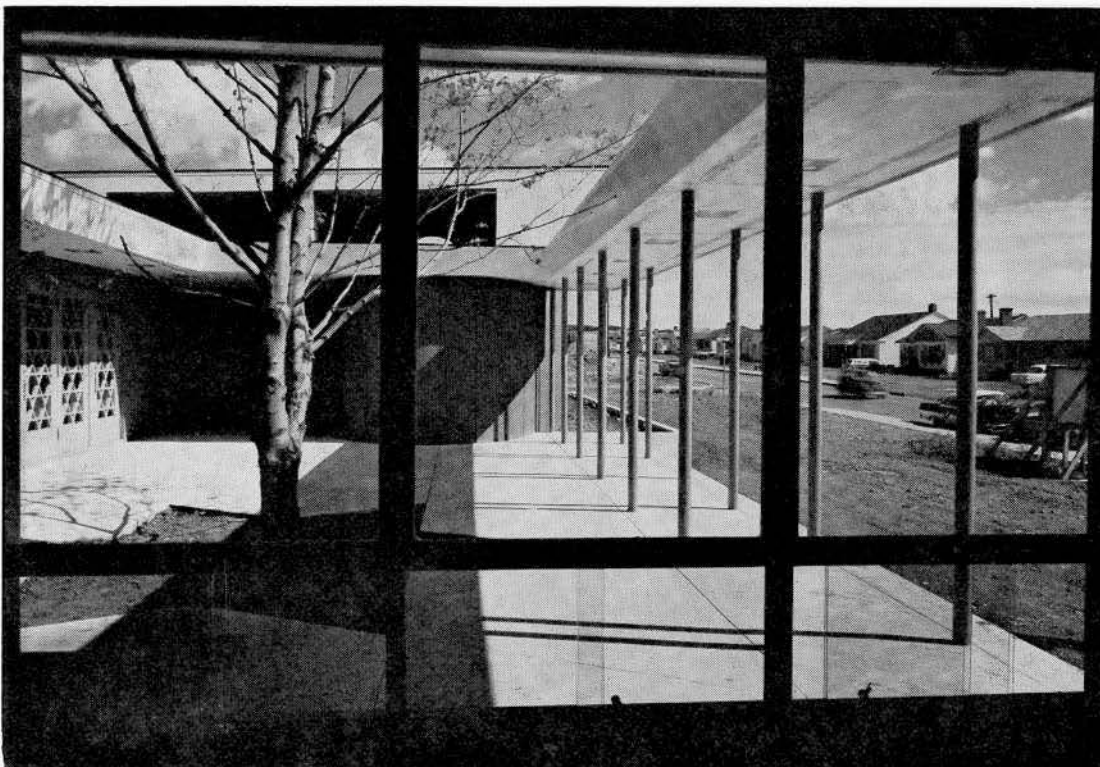
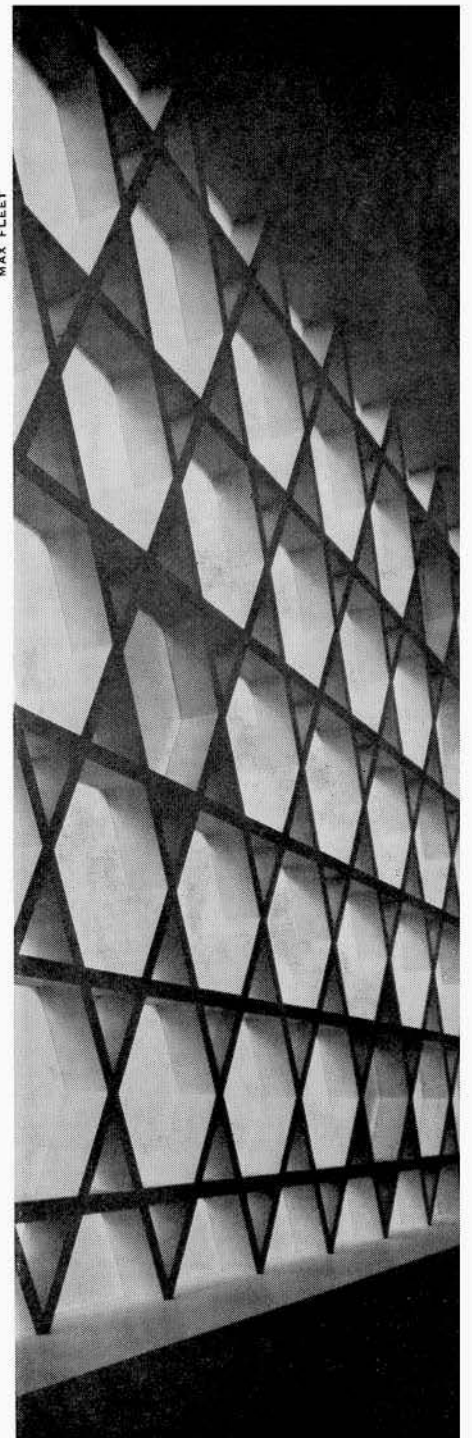
**BETH EL SYNAGOGUE
ST. JOHN'S, NEWFOUNDLAND**

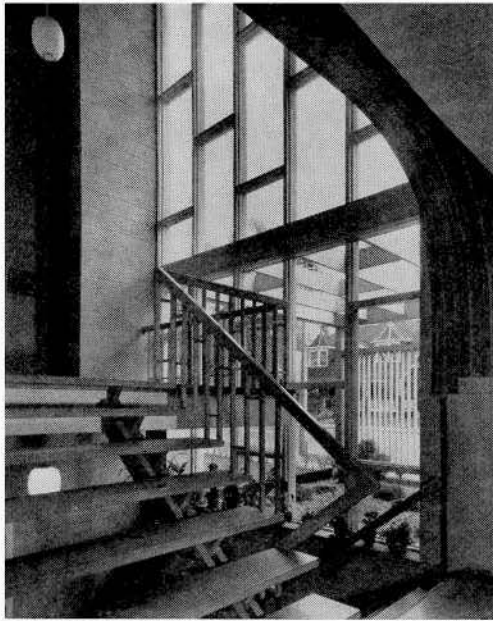
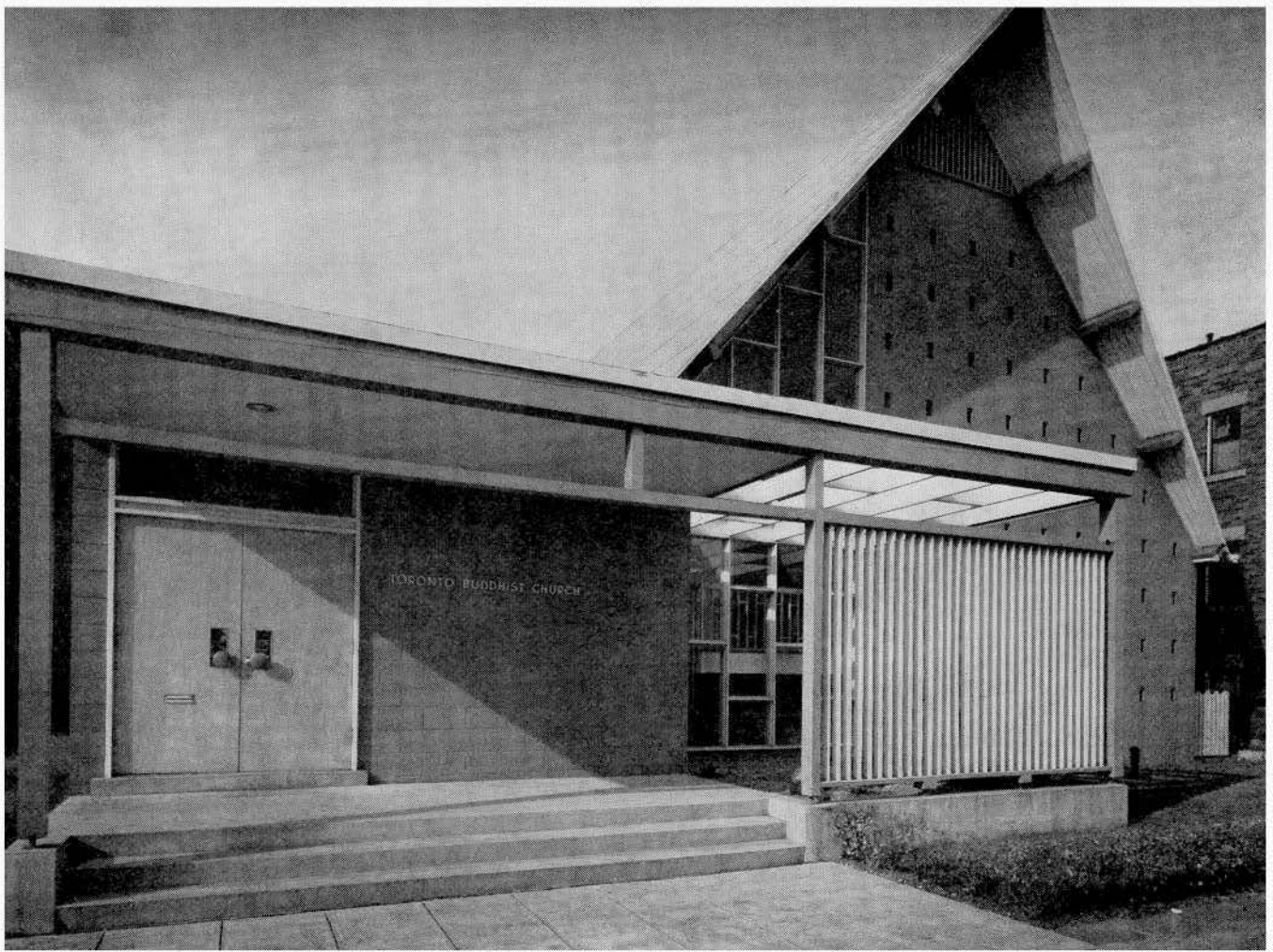
Architects, Cummings & Campbell

Above, street facade leading into entrance court

*Right, rear window of sanctuary. Frame is wood; glass is
obscure and coloured yellow and white*

Below, entrance court





TORONTO BUDDHIST CHURCH

Architects, Roy Matsui and George Yamazaki

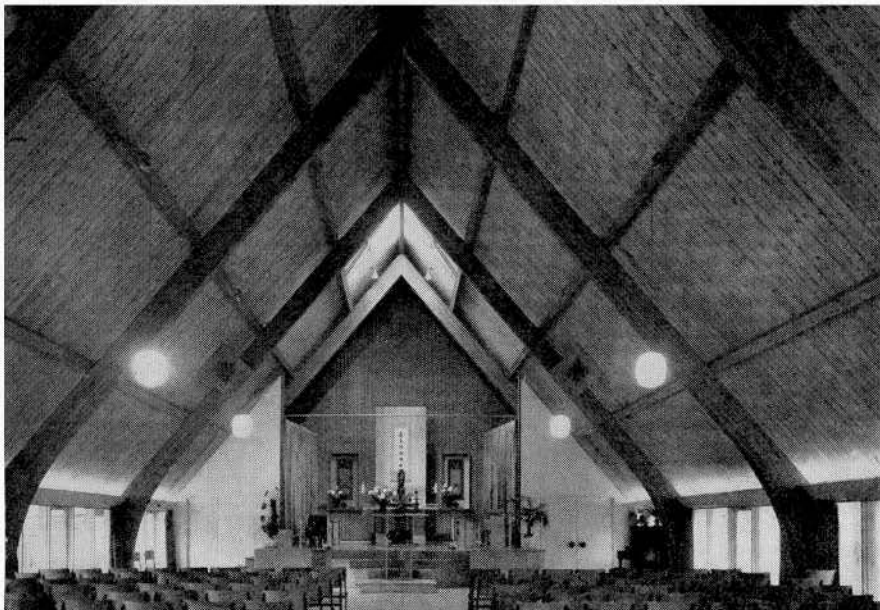
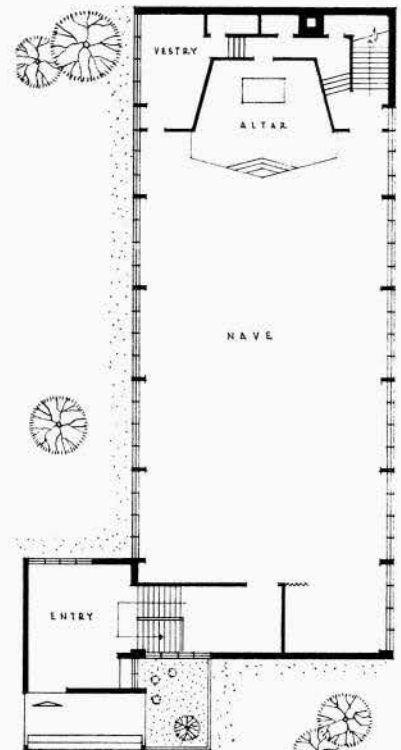
N & S General Contractors

CONSTRUCTION:

Foundations, concrete block; basement is framed in steel; exterior walls, concrete block; floor, hardwood on wood joists; arches, laminated wood. Roof, wood purlins, wood deck, insulation and asphalt shingles. The heating is forced warm air and there is special four-level lighting.

SPACE:

Nave seats five hundred. Basement contains offices, classroom area, and kitchen.

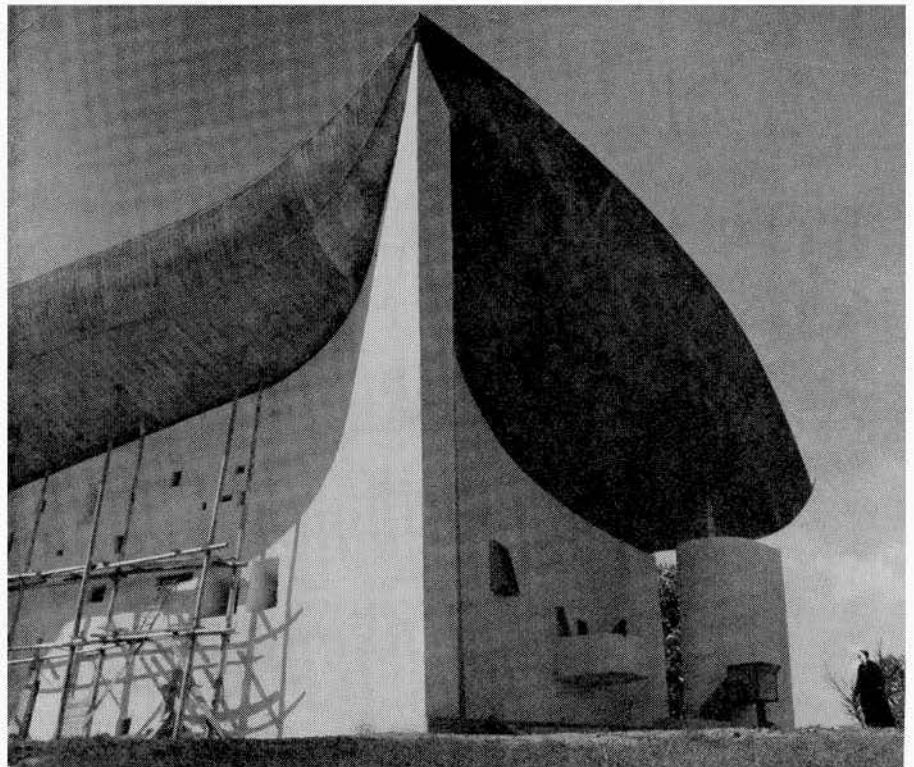


CHAPEL AT RONCHAMP

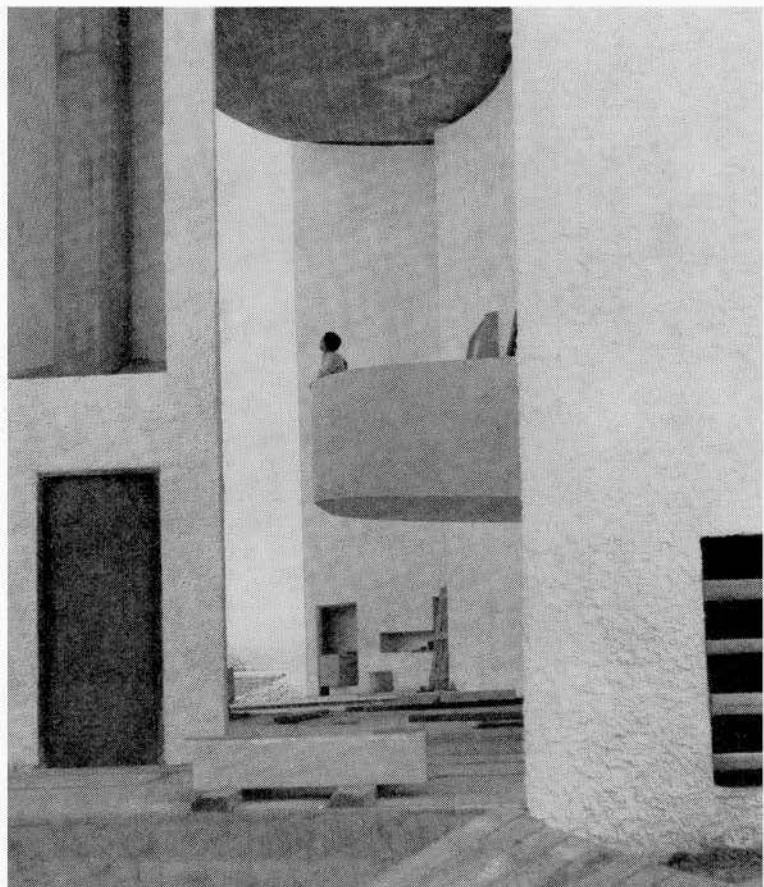
Architect, Le Corbusier

CONTEMPORARY CHURCH BUILDING on the continent shows its sharpest divergence from Canadian practice in its preference for concrete structure. This is, of course, a kind of regionalism, if you like. Cheaper on site labour makes possible the development of all sorts of sculptural forms in concrete which very few clients in this country could afford, and which very few architects are prepared to design. Regardless of their aesthetic, our worship houses appear to be more rectangular with their laminated wood or steel frames and their walls of brick or stone. This familiarity of material makes them more easy to comprehend. The pleasant domestic scale of the little building shown opposite, houses the worship services of a group of Toronto Buddhists. The highly dramatic and complex shapes of the Ronchamp chapel on this page house celebrations of the Roman Mass. French villagers, living the central tradition of the medieval church, proceed quite happily to service in the bowels of Le Corbusier's plastic expression of a stranded whale.

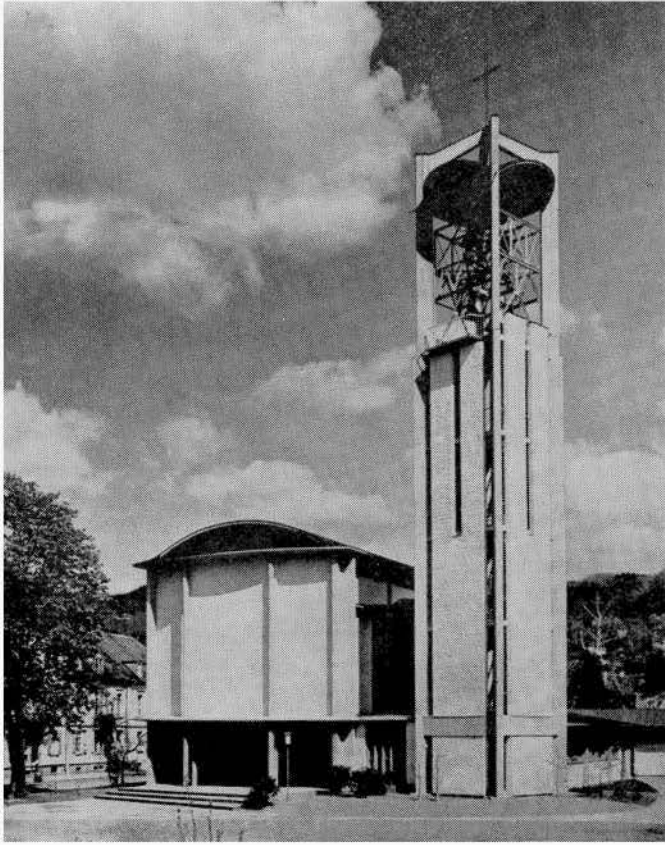
Could one say then that the design of worship houses has become so fragmented, that almost any kind of worship could go on in almost any kind of building. Provided the architect has talent and an understanding of building techniques, the symbol building may be beautiful and appreciated by many people, but it will be a symbol only of himself.



PAUL ARTHUR

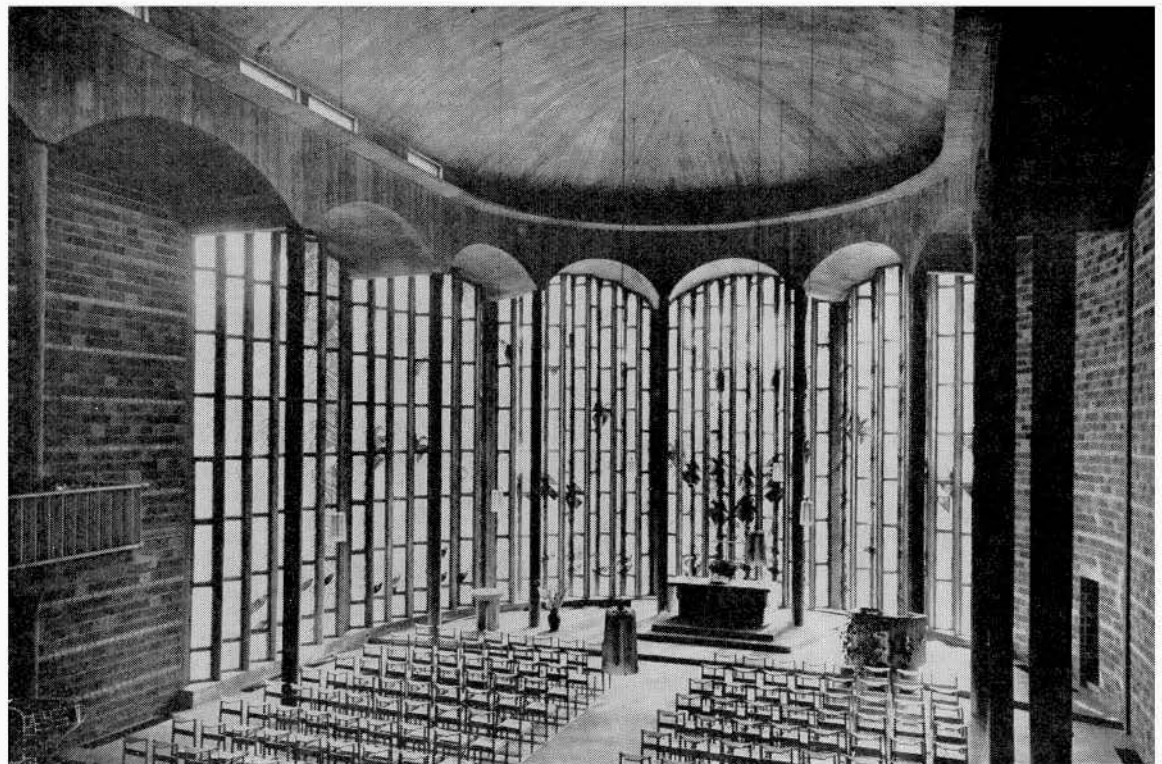


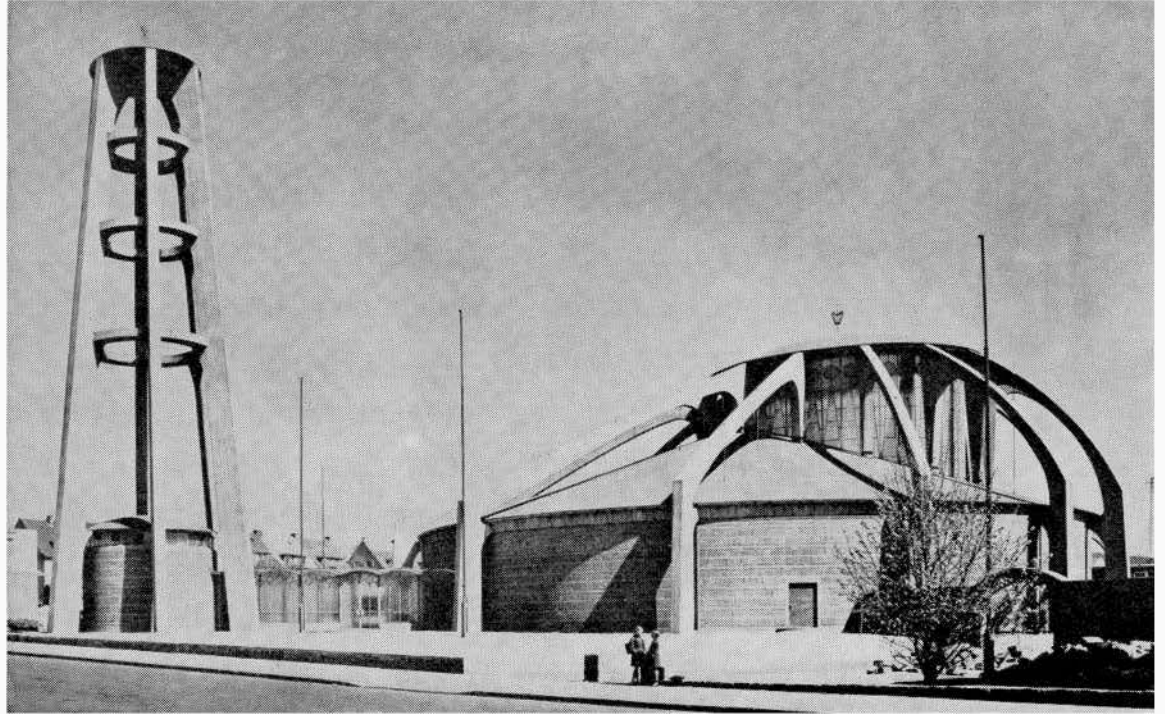
PAUL ARTHUR



ST. LOUIS EVANGELICAL CHURCH
FREIBURG/BREISGAU, GERMANY

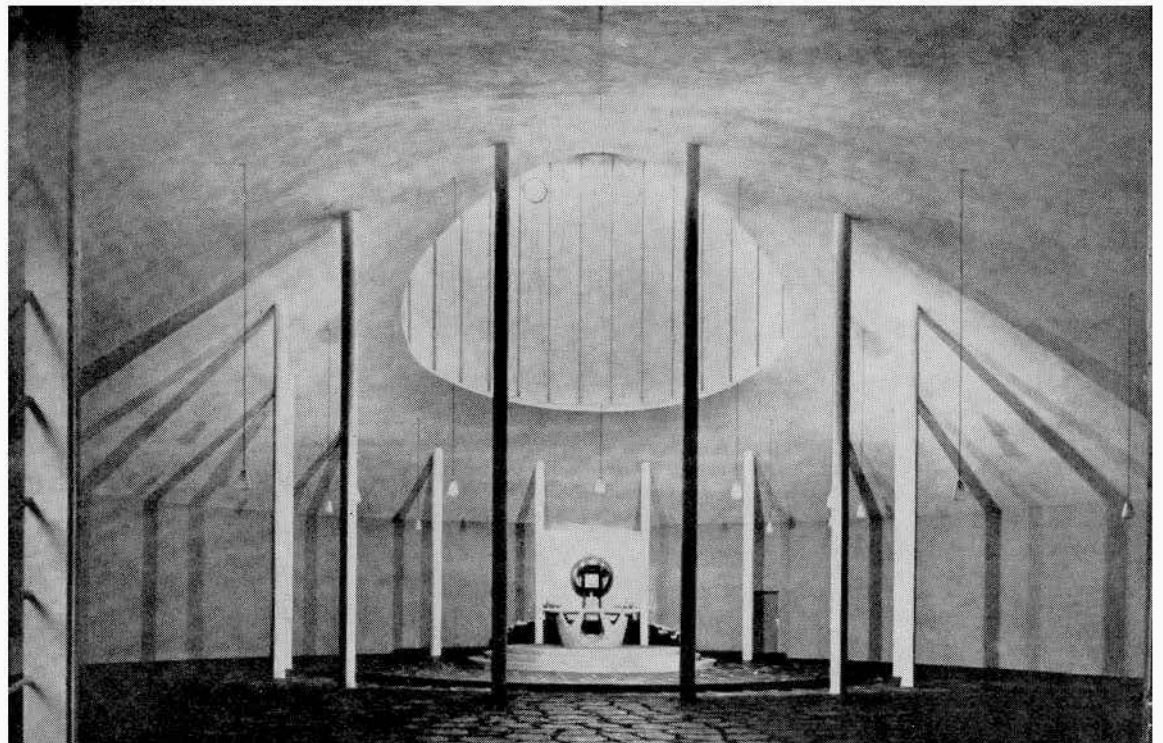
Architects, Horst Linde, Rudolf Diehm, Erwin Heine






CATHOLIC PARISH CHURCH OF ST. ALBERT
SAARBRÜCKEN, GERMANY

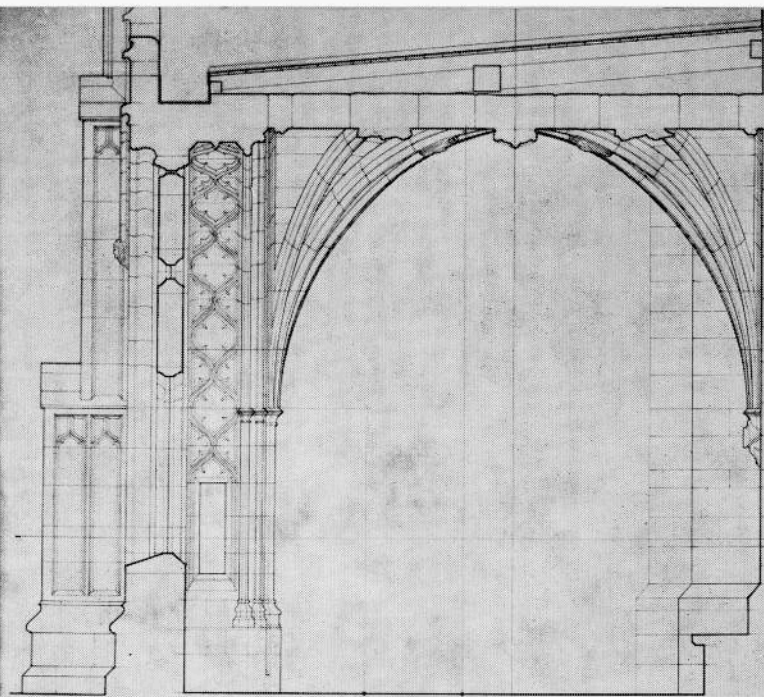
Architect, Gottfried Böhm



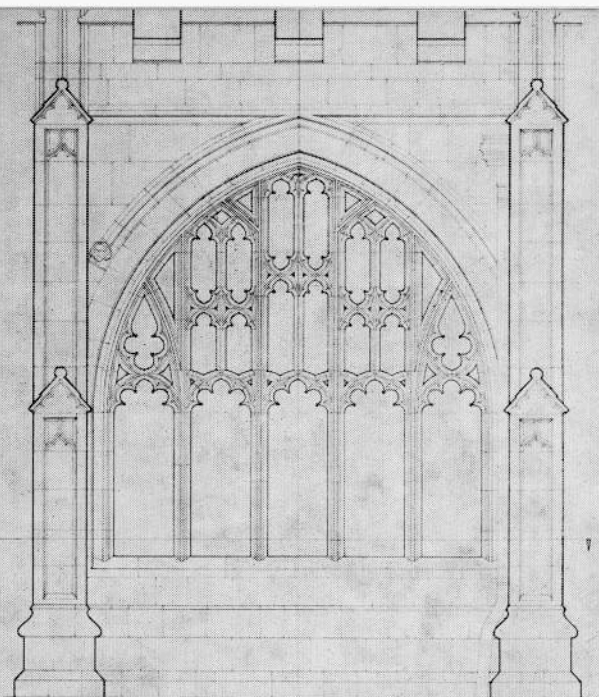
mong the major competitions offered by the Royal Institute of British Architects is the Pugin Studentship, awarded once every two years since 1865 for the study of mediaeval architecture in the United Kingdom. Its purpose is to foster the study of Gothic buildings and to increase the student's powers of observation; for the regulations stress the importance of measured drawings and perspectives of an analytical rather than of a pictorial nature.

Edward L. Preston, a recent graduate of the School of Architecture, Birmingham, England, the holder of the 1958 award, studied for his submission:- Evesham Bell Tower, the Watching Chamber in St. Albans Cathedral, the windows and stained glass at Fairford Church in the Cotswolds, the exterior of Worcester Cathedral, and the cloisters at Worcester and Gloucester Cathedrals.

The illustration is part of the last study sheet. The interior perspective is of Gloucester cloisters and the measured drawings of those at Worcester. An interesting point arising from this comparison is that the fan vaulting at Gloucester was in the course of erection at the same time as the rib and panel vaulting at Worcester, not thirty miles away, the one said to be the logical outcome of the other. Also, it may be noticed by careful inspection of the boss details in the bottom right hand corner, that the mediaeval craftsmen actually carved the heads of several figures contrary to their bodies, in their endeavours to achieve unity with the figures of the centre boss.



WORCESTER SECTION AA



WORCESTER ELEVATION OF ONE BAY

PUGIN STUDENTSHIP



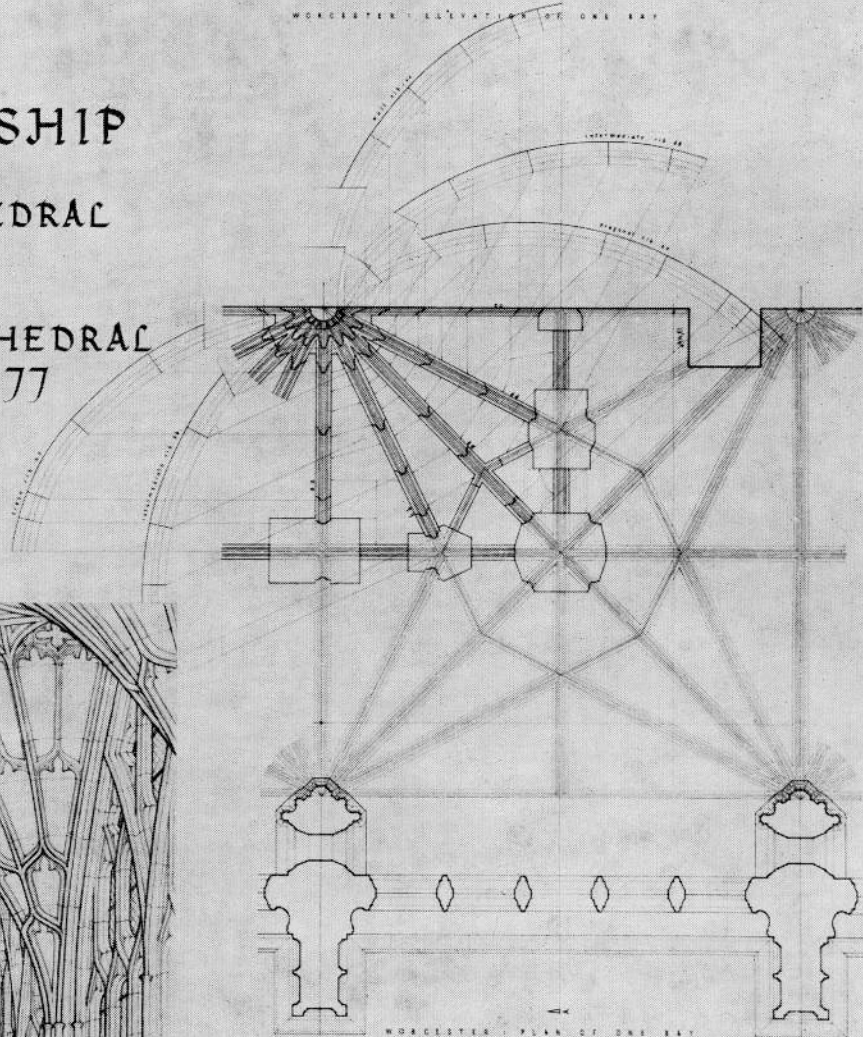
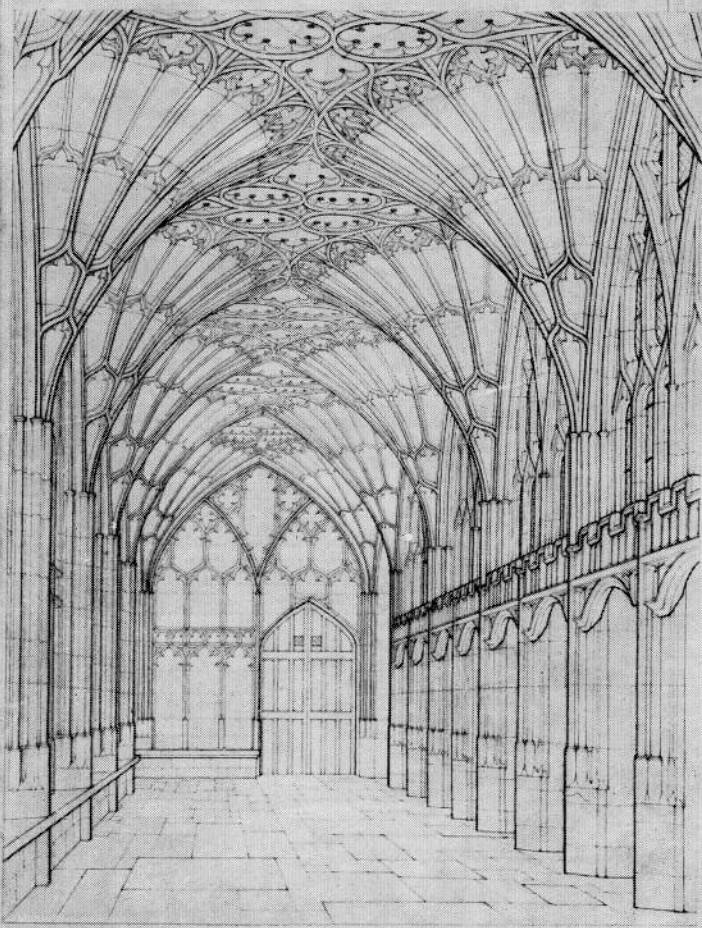
WORCESTER CATHEDRAL
CLOISTERS 1372



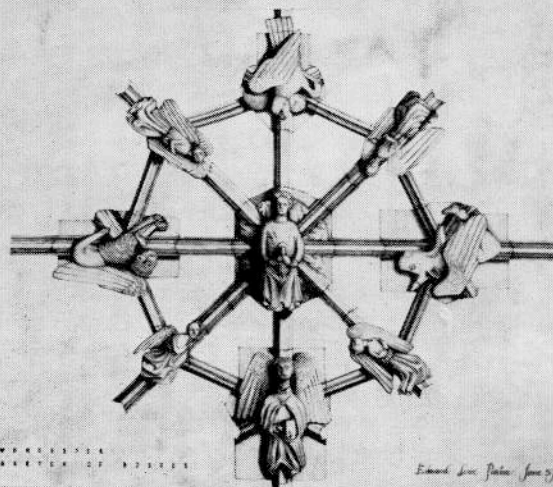
GLOUCESTER CATHEDRAL
CLOISTERS 1351-77

DESIGNED AND DRAWN BY EDWARD LEE PUGIN

ALTHOUGH THIS DRAWING DOES NOT SHOW A STRICT CORRELATION OF THE
PLANS OF THE CLOISTERS OF WORCESTER AND GLOUCESTER CATHEDRAL,
REMARKING AS TO THE ARCHITECTURAL MANNER, WAS IN THE CATHEDRAL
OF GLOUCESTER AT THE SAME TIME AS TO THE PLAN, UNDER THE
FOLLOWING PARTS OF THE DRAWING ARE OF GLOUCESTER CATHEDRAL.
THE DRAWING IS IN THE ORIGINAL WORK OF EDWARD LEE PUGIN
OF THE SAME TIME AS TO THE PLAN.



WORCESTER PLAN OF ONE BAY



WORCESTER CAPITAL OF ARCHES

Edward Lee Pugin June 57.

PROJECT

SUN LIFE BUILDING
TORONTO, ONTARIO

Architects, John B. Parkin Associates

Consulting Architect, A. J. C. Paine

Structural and Mechanical Engineers, John B. Parkin Associates

General Contractors, Perini Limited

Main Entrance from University Avenue

PANDA



As originally proposed

This fourteen storey building will serve as the Ontario headquarters for the Sun Life Assurance Company. Located on one of the most important thoroughfares of the city, it will form an interesting backdrop to the city's commercial centre with its curtain wall construction, sheathed entirely in polished plate glass and anodized aluminum.

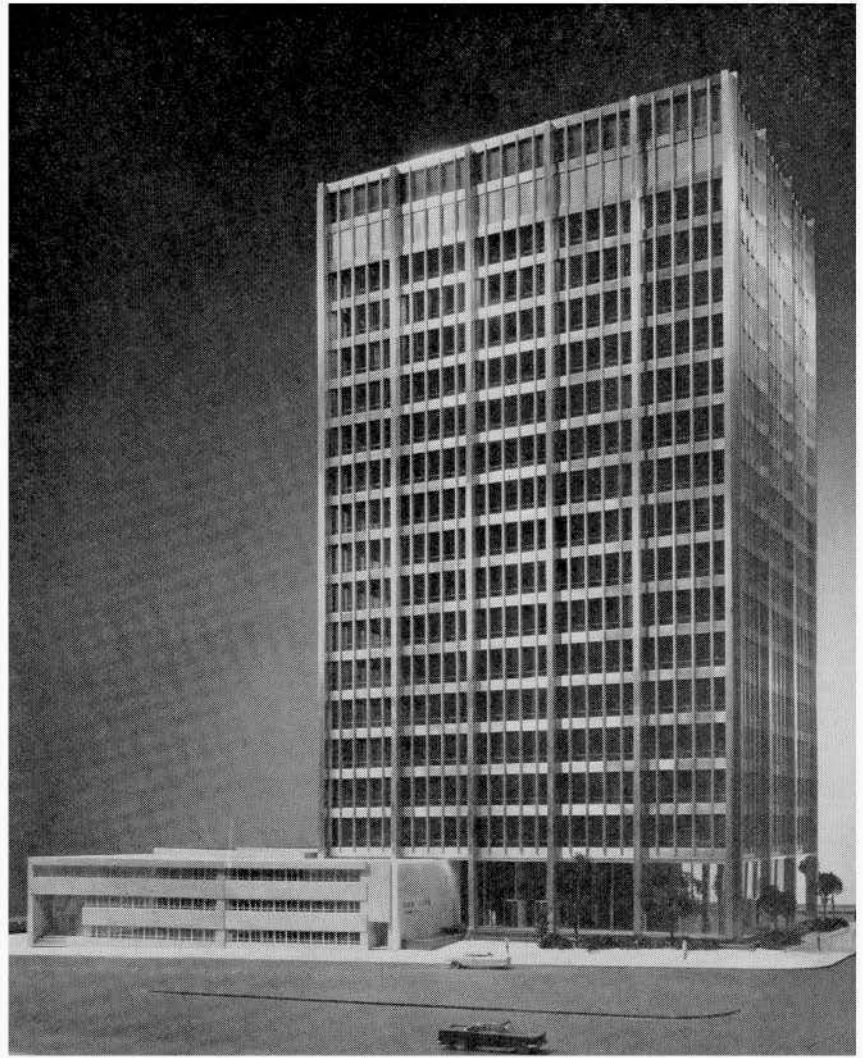
Inside maximum flexibility is achieved by central service core type plan and modular design, which is expressed externally by the vertical pattern of window mullions.

At the main entrance a paved forecourt will create a pleasant environment for visitors as well as passers by.

Sealed double glazed windows will not only provide complete sound control but combined with the full air conditioning system, will ensure maximum temperature control with dustproof interiors.

One of the main changes which occurred in the development of this project was the decision to wreck the small building on the left hand side of the site, which is shown in the upper photograph. Although it was only four years old, it was discovered that the construction of the major building on the same site caused so many problems that it became uneconomic to preserve it.

As will be built





MAX FLEET

WINDSOR PLAZA MONTREAL, QUEBEC

Architects, Peter Dickinson Associates

Associate Architect, Max Roth

The area of Windsor Plaza is in excess of two acres.

The total floor area of the ultimate project will be some 1,000,000 square feet and the estimated cost of the whole building development is \$45,000,000. The estimated cost of the Canadian Bank of Commerce building is \$22,000,000; the net floor area of the bank building is 515,000 square feet.

The building is fully air conditioned with a year round heating and cooling system with individual control for perimeter offices and zone control for the four exposures. The building is serviced by fifteen high-speed elevators in banks of three, one at 500 feet per minute and two at 800 feet per minute. The cars are large size cabs with autotronic controls and master-minded by a traffic computer which directs the cars to where they are most needed in peak periods.

The lighting is maintained at 35 foot-candles. There are acoustic tile ceilings throughout. The floors are finished with vinyl asbestos tiles, and there is a complete underfloor duct

system throughout for Bell Telephone installation and inter-communication systems. Perfect daylight conditions exist all around the core and there is maximum flexibility in layout for all office uses.

The exterior of the building is clothed in split green slate and softly tinted green plate glass framed in vertical fins of granite; both windows, walls and fins will be washed from an electric gondola which runs on a track around the roof.

The frame is of reinforced concrete and steel and will be raised at the rate of two floors a week. Approximately 3,000 tons of steel and 20,000 cubic yards of concrete will be used. A special self-hoisting climbing crane unique in Canada, will be used to erect the frame.

The foyer and banking hall will be enclosed in bronze frames and plate glass, the doors being touch-type automatic, of bronze and toughened glass. The whole plaza and existing sidewalk will be paved in a grey-green slate.

NEWS FROM THE INSTITUTE

CALENDAR OF EVENTS

Architectural Institute of British Columbia, 1958 Annual General Meeting – Hotel Georgia, Vancouver, B.C. December 5th and 6th, 1958.

Province of Quebec Association of Architects, 1959 Annual Meeting – The Alpine Inn, St. Marguerite, P.Q. January 29th, 30th and 31st, 1959.

Ontario Association of Architects, 1959 Convention and Annual Meeting – Royal York Hotel, Toronto, Ontario. February 5th, 6th & 7th, 1959.

Alberta Association of Architects, Annual Meeting, Palliser Hotel, Calgary, Alberta. February 6th and 7th, 1959.

THE PRESIDENT

Maurice Payette, our recently-elected President, needs very little formal introduction to members of the Institute. Born in Montreal, the son of a well-known architect, he was, more or less, brought up in the profession which, no doubt, influenced his subsequent career in many obvious respects. With this advantageous background, the pattern of his activities inevitably followed closely the well-trodden path to the Presidency which, by no stretch of the imagination, can be associated with primroses and whose average length is around the quarter of a century mark.

This retrospective view of our highest office is something to bear in mind when estimating professional values, not to mention the accompanying abnegation. However, having known our subject intimately during these years of distinguished service, we have no doubts concerning his qualifications.

We have oftentimes envied his seemingly tranquil approach to problems arising, as well as the modest expressions which accompanied achievement in so many diversified aims, with the will to serve at all times predominating.

His general deportment and polished mannerisms with which we are all familiar, are, no doubt, a gift from his distinguished racial derivations while his canny diplomatic approach and measured judgment could be ascribed to familiarity with the Quebec Civil Code, assisted by his close association with legal advisers!

To supplement his own natural abilities, his scholastic attainments include courses at the Ecole Polytechnique and the Ecole des Beaux Arts in Montreal, with an additional term at the New York City College.

In due course he was admitted to membership in the Province of Quebec Association of Architects and following some experience on the Council, he served as Honorary Secretary for a period of seventeen years, being elected to the Presidency after an additional term as Honorary Treasurer.

In other professional spheres, he is a Fellow of the Royal Architectural Institute of Canada and an Honorary Fellow of the American Institute of Architects.

At different times he has been actively interested in the development of his native city, while serving as a member of Committees on City Planning, Housing, and the Building Code. In recognition of his worthiness in so many respects, he was awarded the Medal of Merit by his mother Association. Interspersed with these many activities, his architectural accomplishments are by no means inconsiderable, comprising practice with his father, association with others, and on his own behalf, a wide variety of building.

In review, the past record of our new President gives every promise that during his term, the best traditions of the office and of the Institute, should be well maintained.

SALUT! M. le PRESIDENT.

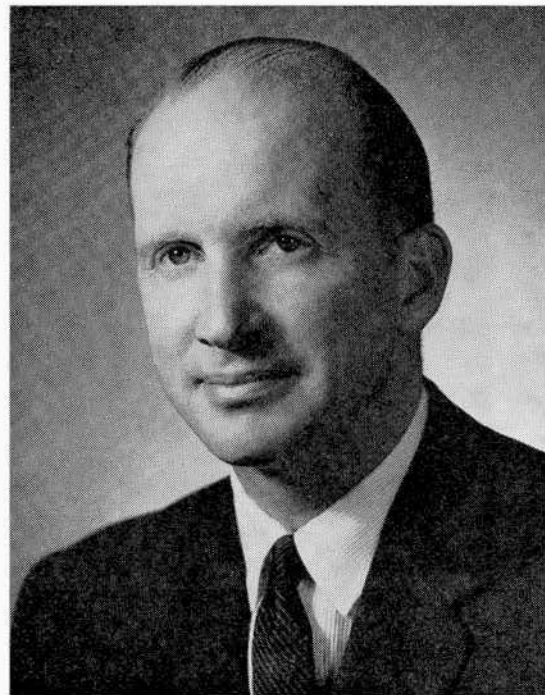
J. Roxburgh Smith, Montreal

EXECUTIVE DIRECTOR

The appointment of **Robbins Elliott** to the new post of Executive Director of the Royal Architectural Institute of Canada, effective November 1st, has focused attention on the need for a full-time senior Executive to unify the efforts of the Institute Headquarters staff and the *Journal* staff and create a single organization. In taking this action, the Institute has recognized the urgency of providing a closer identity of interests between the Component Associations, the Institute, the *Journal* and the general public.

Mr Elliott will be responsible for administration of all Institute activities, for maintaining and expanding the public relations efforts of the Institute and co-ordinating and controlling the operations of the *Journal*. It has been felt for some time, that the public has an inadequate appreciation of the role being performed on our national stage by the architectural profession. The Institute hopes that the appointment of an Executive Director with broad terms of reference will lead to the general public having a better knowledge and understanding of architecture and architects, and also that stronger links between the National Office and the Provincial Associations and Chapters may be forged.

The Executive Committee states that Mr Elliott's appointment should result in a much greater flow of information concerning architectural activities between Institute headquarters and outside centres. In addition to maintaining the records of the Institute and establishing liaison with other Associations, the new Executive Director will assist provincial groups in organizing Assemblies and Exhibitions. He has expressed a hope to make an annual visit to Provincial Assemblies in order to meet with architects at the Assemblies and visit architectural offices.



Mr Elliott will direct the affairs of the *Journal* through periodic visits, and by review of monthly operating reports. Commencing in December, a monthly article will appear in the *Journal*, over the Executive Director's signature, outlining

the activities of the Institute and forthcoming events of interest.

The new Executive Director, a native of Wolfville, Nova Scotia, assumes his new duties after more than eleven years of experience in an administrative capacity with the Federal Government of Canada. Mr Elliott's appointment resulted from a widely advertised competition. He has vacated the post of Director of Personnel in the Federal Department of Public Works. Previously, he served as Assistant Director of Property and Building Management and Executive Assistant to the Hon. Robert Winters, former Minister of Public Works.

Earlier, Mr Elliott was employed for short periods on the Editorial staffs of the Halifax Chronicle Herald and the Windsor Daily Star.

A Canadian Army veteran, Mr Elliott served for three and a half years in the United Kingdom and Western Europe during World War II. After graduating in Arts from Acadia University, he took a Master's degree in Economics at the University of Toronto.

MR MURRAY BROWN'S BEQUEST

The *Journal* has received word from the Chancellor of the College of Fellows of the Royal Architectural Institute of Canada, A. T. Galt Durnford, F.R.A.I.C., A.R.I.B.A., R.C.A., of a bequest of one thousand dollars from the estate of the late Murray Brown, F.R.A.I.C., of Toronto, for the College of Fellows Scholarship Fund.

Mr Brown was always interested in the College, attending the Annual Meeting and Convocation whenever possible, and was elected Chancellor a few years ago at a meeting in his absence. However, much to the regret of the Fellows, he later refrained from accepting the honour that had been paid him.

The Officers and the Fellows of the College are extremely grateful and most appreciative of the receipt of this bequest.

THE FELLOWS' SCHOLAR 1958



Richard E. Tustian was born in Simcoe, Ontario. He graduated from the University of Toronto in May 1952, and, with the exception of one year, was honour student throughout the course. He was very active in extra curricular activities and became President of the Architectural Society in his last year.

Mr Tustian has worked in Toronto, in the offices of S. R. Kent; Parrott, Tambling & Witmer and Page & Steele, and in Vancouver, in the office of Thompson, Berwick & Pratt.

He proposes to use the Scholarship Award to obtain the degree of Master in City Planning at MIT. Before going to Boston, Mr Tustian proposes to travel in the United States and Mexico, and after the Scholarship, to go to Europe.

ONTARIO

All men who strive toward perfection in the assembly of today's building materials into architectural expressions of ever greater beauty can take comfort and solace from the fast growing number of buildings in many countries which portray an honest and imaginative approach in this direction. Western Germany revisited impresses generally with the high standard of architecture in its rebuilt cities, which is evident almost everywhere while the peerless masterpiece of the Hansa Viertel in West Berlin is probably unique as an example of collaboration between local planners and the individuality of approach to design which one is not surprised to find when the cream of the crop of architects from so many countries display their best. The teachings of Peter Behrens, Walter Gropius, Marcel Breuer and Mies van der Rohe have borne fruit to an extent which even the most enthusiastic of their followers did not dare hope for when the Bauhaus intelligentsia were so many criers in the wilderness.

The new Vällingby Centrum in Stockholm, a copy of the North American shopping centre surrounded by humdrum low, medium and high rise buildings bears out that mediocrity, however much it co-operates is no substitute for individual peak performance and that when, as in this case, it tries to prove a political doctrine it can achieve the opposite end. The way in which the Stockholm subway programme has been planned and achieved however is exemplary and could well be an object lesson for those here responsible for the creation of the Metro rapid transit system if they would but go and see for themselves; and when in Europe, they should also visit the City of Elberfeld in the Ruhr and its monorailway which has operated successfully for nearly 50 years and could provide all sorts of valuable data gained from actual experience in moving people.

Of the many wonderful sights beheld at the Brussels Exposition, none was more fascinating than the Brazilian Pavilion, entered at its top level and arranging its exhibits along a spiral ramp downwards and thus negotiable with welcome ease. The examples of Niemeyers work in Brazilia and elsewhere displayed in this Pavilion show the eminence and originality of the mind of this great architect coupled with quite outstanding lucidity of planning and unequalled comprehension of structural factors.

While a great deal of traditional architecture continues to replace bomb destruction in the core of London, some buildings of excellent design are taking shape, combining the best in contemporary thought with a great deal of sensitivity directed toward avoiding the creation of sore thumbs. Thus, English architects pursue the maxim "festina lente", tread the path of evolution with caution and apply the new when it has proved its worth elsewhere.

In the face of so much progress, the painful sterility of the proposed development of the south side of Toronto's Queen Street is quite deplorable and one can only hope that the political bickering which seems to destroy most constructive approaches to Toronto's development problems will for once serve a useful purpose and scotch the execution of the plan as presented so reminiscent as it is of the bombastic architecture of Fascist Italy at its worst. To do justice to the outstanding merits of the winning design for the new Toronto City Hall, the planning of the surrounding City Hall Square frontages should be entrusted to Mr Rewell or alternatively, should be made the subject of another architectural competition. The costs of such competition to the taxpayer will be small compared to those caused by, for instance, the years of delay in deciding to proceed with the Bloor Subway or by the incorporation of stipulations in the Toronto Zoning By-Law resulting in stultifying the re-development of obsolescent areas by private enterprise to name only two of the many blunders of the past. One cannot help concluding that indeed a number of \$18,000,000 structures could have been erected for the money so lost.

Peter Caspari, Toronto

BOOK REVIEW

THE STRUCTURES OF EDUARDO TORROJA by Eduardo Torroja, foreword by Mario Salvadori. Published by F. W. Dodge Corporation, New York. Price \$8.50.

I rank it as one of the most interesting books written on structure. Books on structures for architects generally have one of two failings: either they are books of illustrations with an accompanying text that explains nothing except the most obvious. The other alternative is a very technical book that is beyond the architect's comprehension.

This book of Torroja's achieves the ideal balance. The main structural principles are clearly and interestingly described and in enough detail so that the main problem of the structural design and detailing are comprehended and the methods of achieving them in practice explained.

The design of the Madrid race course is analysed from the first intuitive design concept through the evolutionary process of the design as the problem is further considered until the final design development is reached. The book covers the designs of aqueducts, bridges, water tanks, churches, hangars and other buildings, both in concrete and steel.

Torroja, like Nervi and Maillart, is an engineer with a strong aesthetic intuition, and his selection or rejection of a structural solution is often based on aesthetic as well as structural reasons, particularly where a number of alternative solutions present themselves.

Torroja's intuition is based on sound theoretical knowledge combined with practical experience. Mr Salvadori, in the introduction, stresses this. I am sure this commentary applies to architectural design as well.

Henry Fliess

ANNOUNCEMENTS

PARTNERSHIP

Mr Gerard Diamond and **Mr Donald Clarke** have formed a partnership at 11536 Jasper Avenue, Edmonton, Alberta, under the title of **Diamond-Clarke & Associates**, Architects & Engineers. They will be pleased to receive catalogues and samples.

POSITION VACANT

A senior architectural assistant is required by established Toronto architectural firm. Graduate architect, age about 30-40 years. Eight to fifteen years' experience embracing design, specifications, working drawings, supervision. English-speaking preferred. Objective eventually to assume partnership responsibilities. Write stating history of education, experience, and relevant matters care of the *Journal RAIC* 57 Queen Street West, Toronto.

ENGINEERING CONSULTANT

Specialist in the complete design of all types of sound proof rooms (reverberation to anechoic) for testing of hearing in hospitals, clinics, and doctors' offices; for research, and for industrial noise control; inclusive of complete specifications and drawings, both mechanical and electrical. Design of auditoriums, theatres, lecture rooms, as well as specifications for control of acoustics in existing churches, auditoriums, theatres, factories and other similar locations.

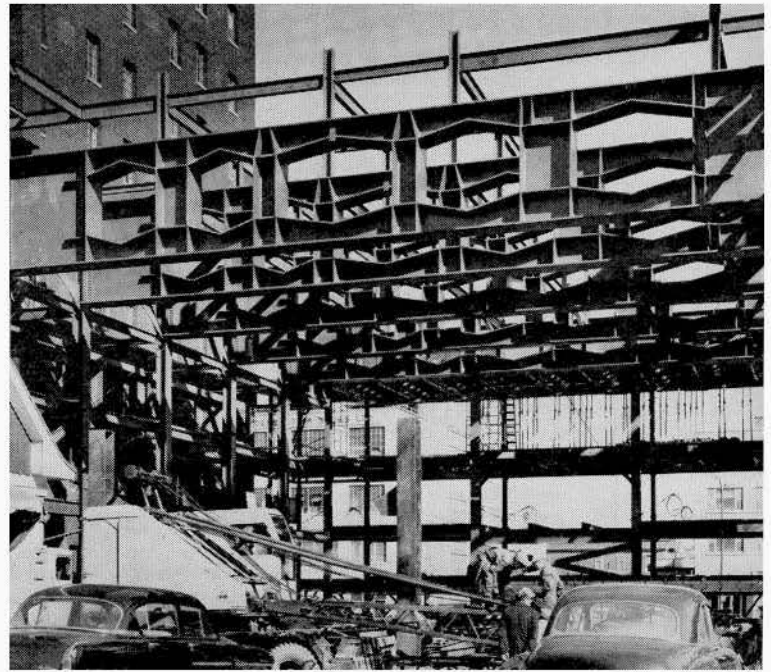
For further information, reply to **W. E. Hodges**, P.Eng., Suite 204, 755 Avenue Road, Toronto. Telephone HUDson 8-2942.

NEW TECHNIQUE

SPANNING THE THREE-STORY AUDITORIUM of an addition to the Canadian Broadcasting Corp. building in downtown Montreal are these five unusual 36-ton beams, fabricated entirely by manual arc welding of heavy plate sections. They are 68 ft. 5½ in. in length, 10 ft. in depth, with flanges 30 in. wide. The latter are of 1½ in. plate, the web of 1¼ in. plate and vertical stiffeners of both 1½ and 1¼ in. material.

One striking feature is the provision of five hexagonal cut-outs in the web, considerably lightening the dead load and providing through access for maintenance personnel, as well as accommodating heating and air conditioning ducts, utility lines and other facilities. There is only one story above these beams but the design provides sufficient strength to accommodate an additional six stories at a later date.

Openings in the beam are framed with 1¼ in. plate, the upper and lower portions being hot formed to a 100° angle before being welded to the stiffeners while the web plates rested in the flat position.



The fabricating process in the plant of B. & H. Metals Industries, Ltd., Montreal, called for nominal precautions in layout and welding sequence to avoid warpage or distortion. Welds were balanced about the center line, alternating from one side to the other, with lengthy welds being back-stepped.

For maximum soundness, penetration and speed of welding, a low-hydrogen, iron powder type electrode was employed, specifically Jetweld LH-70 (AWS equivalent E-7016), furnished by Lincoln Electric Company of Canada Limited. Shop equipment capacity limited maximum electrode size to ¾ in. diameter, requiring as many as six passes on ¼ in. fillets for the heavier plates. Metal deposition rate of 4-5 lb. per hr. per man was realized.

Each beam called for 83 ft. of butt welds, using a double-vee joint with 60° included angle. Fillet welds were all ¼ in., a total of 740 ft. per beam. Electrode consumption on the five beams aggregated 5500 lbs.

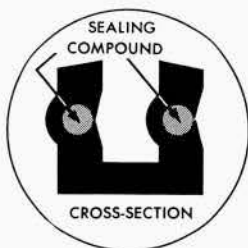
*T. R. Hatch, Welding Specialist
Lincoln Electric Company of Canada Limited, Montreal*

F A C T S A B O U T G L A S S

Vol. 7 No. 5

SEALANTS

(Continued from Vol. 7 No. 4)



Wet Seal Channels

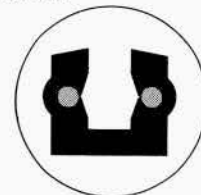
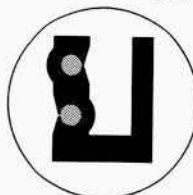
—for all glass thicknesses and every type of spandrel panel.

Although industrial construction involving prefabricated panel sections lends itself to the use of the standard extrusion cross sections, this ideal can hardly be expected in monumental construction where varying physical

requirements demand individual design treatment. It is well,

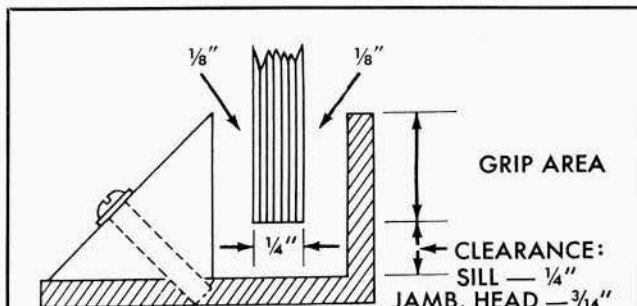
under these circumstances to fully recognize the flexibility of the extrusion process—to develop just the right cross section channel design to do almost any specific job.

DESIGN VARIATIONS:



Design Considerations

Design considerations for a compression sealing system involve no greater complications than those for any other method of sealing.



1. Sealant space need not exceed 1/4" at sill and 3/16" at head and jamps with gripping surface of 1 1/2 to 2 times the thickness of glass or panel, and minimum of 1/8" width for Channel legs.
2. Application and control of pressure through moveable stops or pressure strips must consider:
 - a. Basic panel material and its industrial tolerances as well as its rates of expansion and contraction in relation to adjoining materials.
 - b. Panel size as well as material for wind deflection under maximum area conditions.
 - c. Pressure to permit up to 15% deformation of extruded channel.
 - d. Proper framing design.

Material Considerations

Material considerations also have a direct bearing on design of the extruded channel cross section. Several types of rubber have been evaluated for possible use as sealing gasket material.

However, where the channel itself is responsible for the seal and where advantage is to be taken of the efficiency and economy of the compression seal, NEOPRENE is by far the preferred elastomer. Neoprene can be compounded to have a very low modulus to permit easy initial deformation. Its excellent compression set characteristics enable it to continuously provide back pressure. This enables it to "live" with the many dimensional changes forced upon it.

Members and references are those of Pawling Rubber Corporation, Pawling New York and distributed in Canada by Pilkington Glass Limited.

A practical acceptance of tolerances and construction variations can be effected in extruded Neoprene channels by a combination of both cross section design and proper selection of hardness of stock. The recommended durometer range (Shore A) is from 70 to as low as 25. In general, higher durometer permits greater design flexibility but less deformation; with lower durometer, the reverse is true. In practice, a 50 durometer stock has provided an excellent combination of characteristics. However, where tolerances and variations are known to be great, a lower durometer is used to provide greater bulk area and deformation potential. Again—the wisdom of close cooperation between all parties concerned during the early design stages is obvious.

Neoprene's excellent resistance to oxidation and weathering is a matter of recorded 25 year history.

For Neoprene under stress, the most reliable data presently available appears in a paper on the creep of Neoprene in shear. Representing nearly eleven years of research it clearly indicates that Neoprene vulcanizates can be designed with creep resistant properties equal to or superior to those of natural rubber. This fact, coupled with the excellent resistance of Neoprene vulcanizates to oil, heat, ozone and natural aging clearly recommends Neoprene for use in the Construction Industry.

The sealing compound used (see illustration above) is an 1/8" cord of non-drying butyl based material. It does not attain its full adhesive characteristic until it has been under compression for at least 24 hours.

Cost Comparisons

Cost comparisons between the compression sealing system and other methods of sealing, glazing or caulking can only have meaning if they refer to total "Installed" cost—to include all factors of cost up to the completed seal. They must also consider the relative duration and effectiveness of the ultimate seal obtained.

The obvious savings in job site labor using compression seals are reflected in reported cost comparisons with high quality sealing methods.

Should no cost differential exist at all, the efficiency, speed and control of this Sealing System well justifies whatever design alterations might be necessary to accommodate it.

Specifications for Neoprene Stock

Original properties—	
Durometer (Shore A)	— 50
Tensile	— 1600 psi
Elongation	— 350%

PILKINGTON GLASS LIMITED

HEAD OFFICE 165 BLOOR ST. EAST, TORONTO

BRANCHES COAST TO COAST