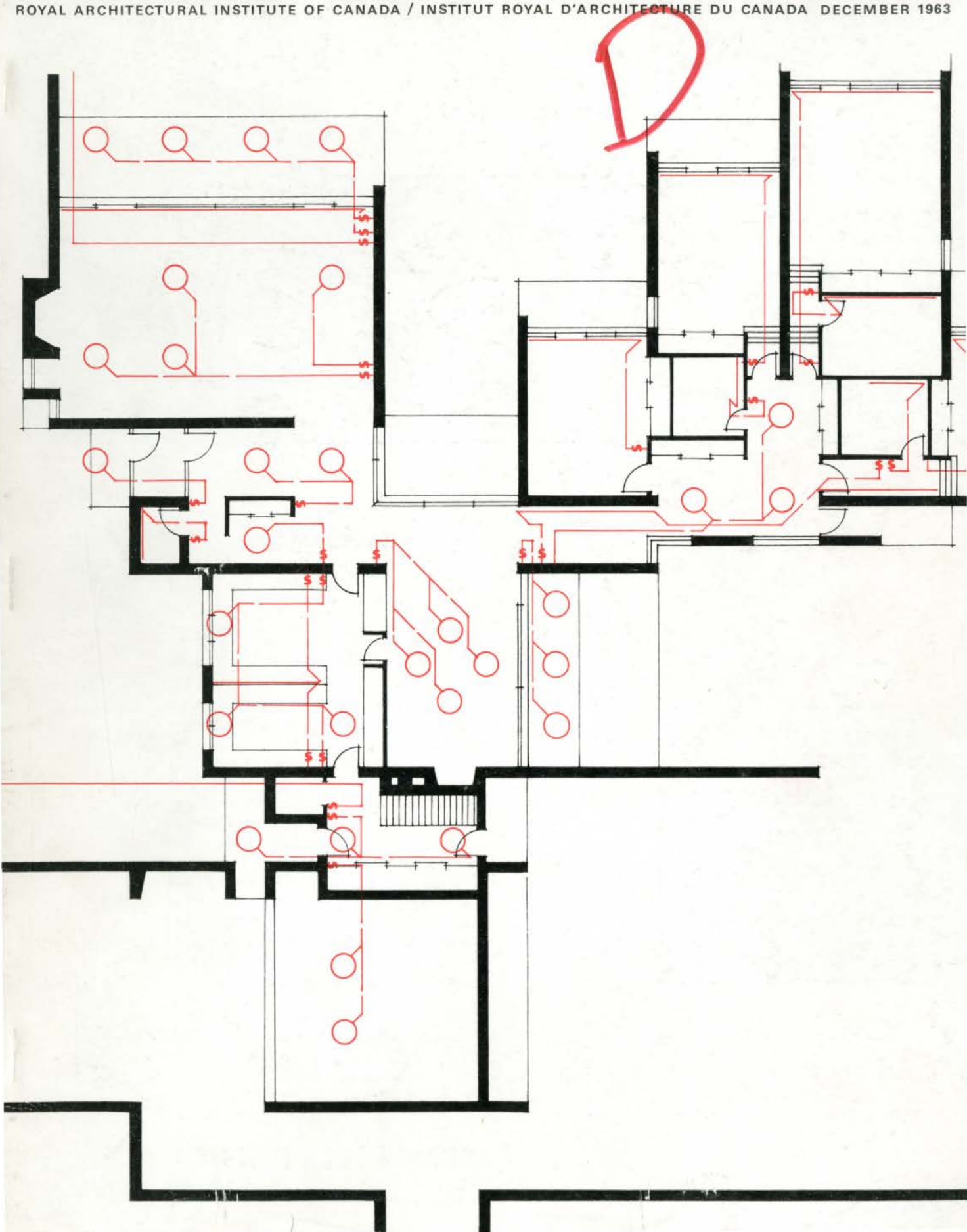
RAIC JOURNAL

ROYAL ARCHITECTURAL INSTITUTE OF CANADA / INSTITUT ROYAL D'ARCHITECTURE DU CANADA DECEMBER 1963



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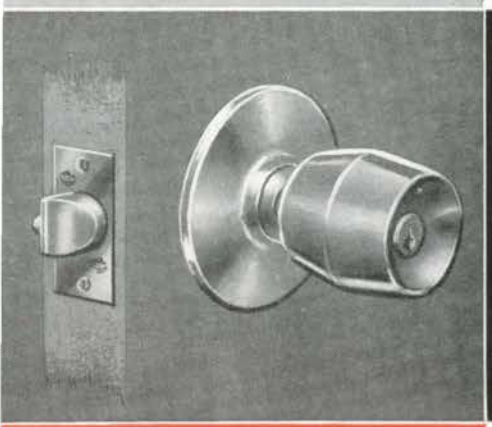

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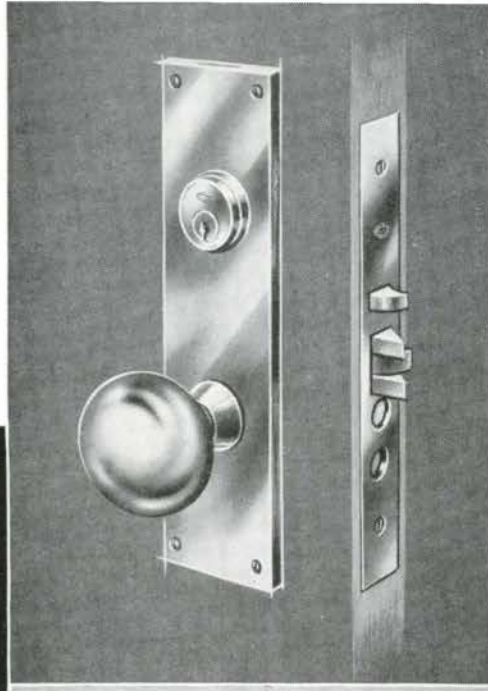

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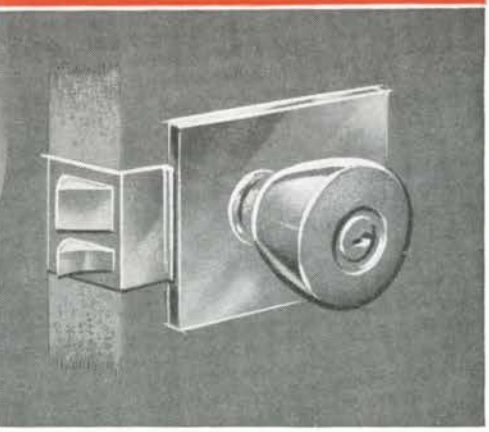

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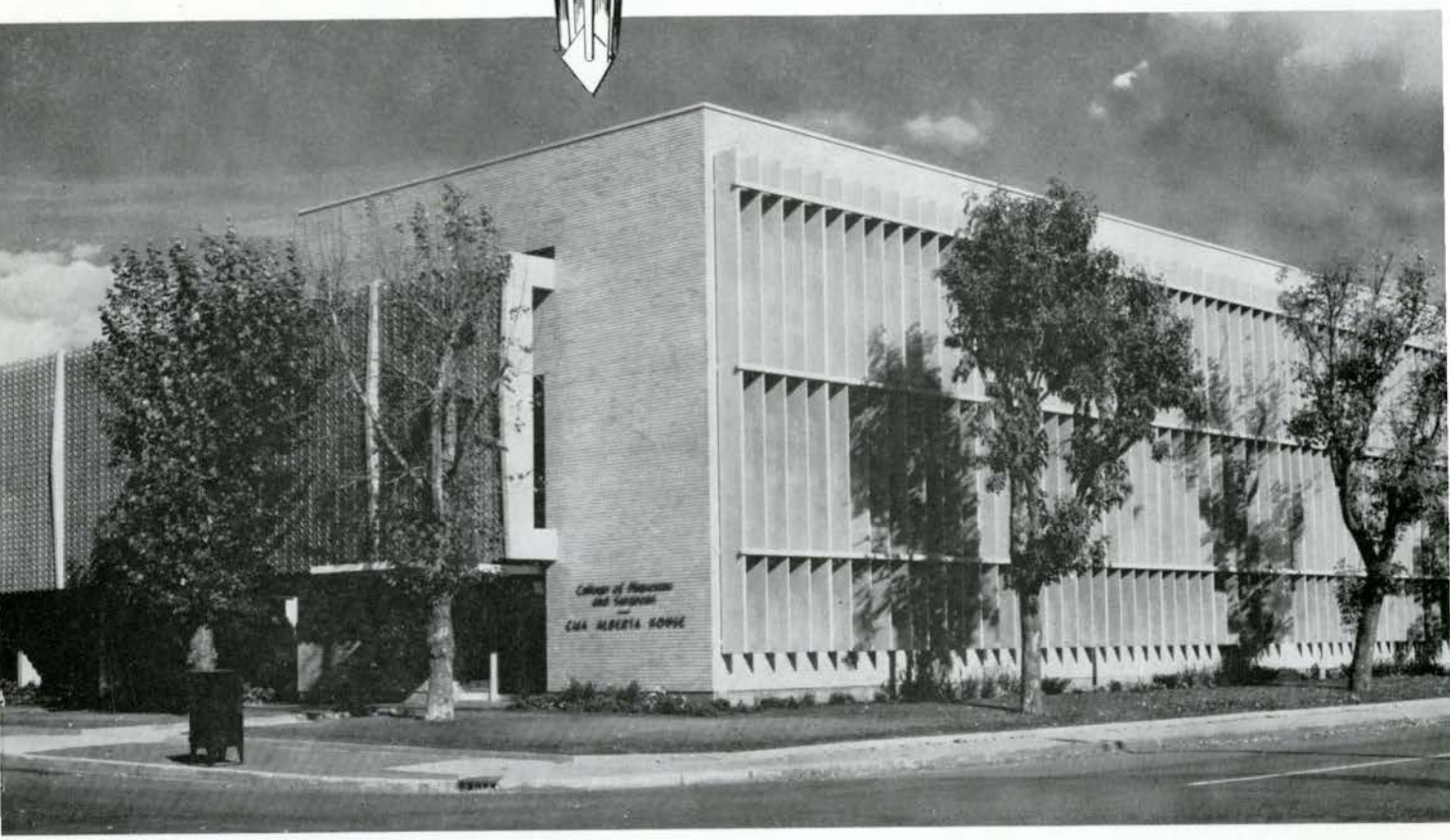

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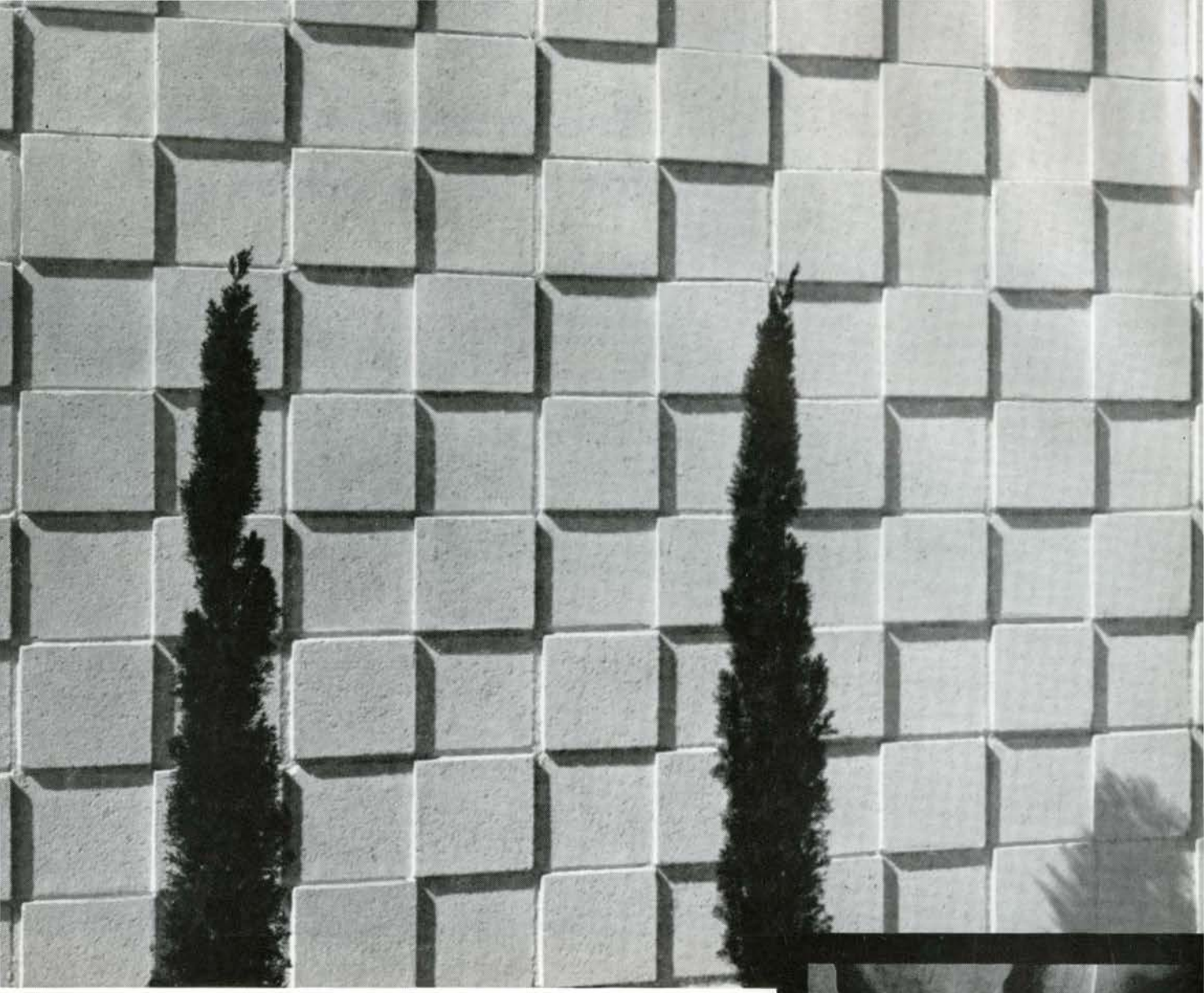

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Serial 460 Volume 40
Number 12

RAIC Journal

DECEMBER 1963

COVER: Project. Architects/Gordon S. Adamson & Associates. From a plan showing the architectural, mechanical and electrical relationships. See page 48.

Published at 160 Eglinton Avenue East, Toronto 12, Ont. Telephone HU. 7-4714. Advertising Office: Telephone HU. 5-6561. Montreal Office: 2950 Masson Street, Montreal 36, P.Q. Telephone: 721-6700. Western advertising representative: Vatcher, Porter and Associates, Suite 203, 1104 Hornby St., Vancouver 1, B.C. Telephone: 684-3528. Subscriptions: Canada, Commonwealth and U.S. (12 issues) $7.00 Foreign $8.00. The *Journal* and the RAIC do not hold themselves responsible for opinions expressed by contributors. CCAB Member. Authorized as 2nd Class Mail, P.O. Dept. Ottawa , and for payment of postage in cash.

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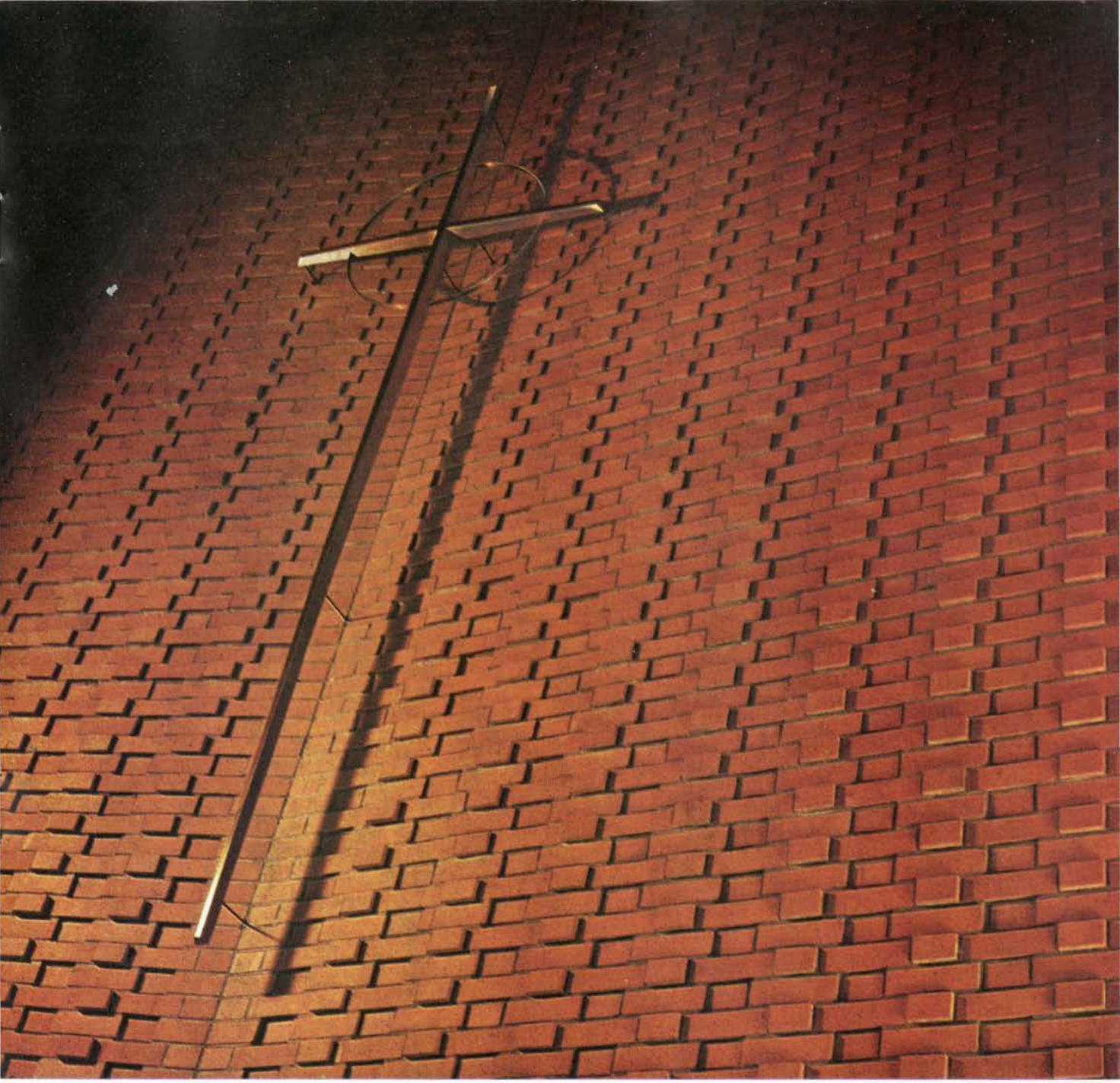

St. Peter's Anglican Church, Calgary
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THE COMMONWEALTH ASSOCIATION

For almost all of its life the Royal Architectural Institute of Canada has been an allied society of the Royal Institute of British Architects, undoubtedly to our great advantage, but it appears that the time has come for a change in the form of this association.

The 24 allied societies in Great Britain and 5 of the 12 overseas allied societies, including the RAIC, are represented on the council of the RIBA. However, the RIBA Council is becoming increasingly busy with the affairs of the Institute in Great Britain, and it is difficult for them to deal with the many problems concerning Commonwealth Societies. Also, for political reasons, it is sometimes not possible for architectural associations in newly developing Commonwealth countries to enter into an alliance with the RIBA under a system which might possibly seem to have remnants of imperialist overtones.

Nevertheless many of these associations are anxious to maintain Commonwealth ties and needs and are willing to accept help in overcoming many difficult problems. In some countries the work of the architect is not fully understood and a great majority of buildings are designed by others. For example, in Pakistan less than thirty architects are serving a population of one hundred million people.

In many countries the growth of the architectural profession has been very rapid and, for example, in Nigeria, the association membership has trebled in three years. More training facilities must be provided in new schools and in existing schools overseas. The majority of architects were traditionally trained in British schools but some are already being trained in Australian and Canadian schools and the planning department at the University of British Columbia is aiding in the development of the new planning department in Ghana.

At informal conferences held in England in 1960 and 1961 it was recommended that the present system of allied societies with representations on the RIBA council be replaced by a new organization and at the Commonwealth Conference held in London in July of this year it was proposed that a new Commonwealth Association should be formed. The new association is to be on a professional basis without distinction of politics, race or religion and its aims should include:

> Better recognition by people and governments of the status and contribution of the architect.
> The development and co-ordination of architectural education and standards of professional competence and conduct.
> Greater efficiency of the profession and of professional organization.
> Improvement of cultural contact through architecture.

The RIBA has graciously agreed to provide a temporary secretariat to the new association but as soon as possible a secretary will be appointed to act as a centre for advice and information and to take executive action. One of the first actions will be to try to ensure that a higher proportion of 'technical aid funds' is made available for architecture as a prerequisite to the expansion of building and town planning programmes.

The question has been raised about a possible conflict between the new Commonwealth Association and the International Union of Architects, but Sir Robert Matthew, chairman of both groups, has stated that there should be no conflict and in fact the Commonwealth Association can be of great help in IUA affairs.

Our alliance with the RIBA has been of longer standing than that of any other overseas society and in fact of half of the societies within Britain itself, and we will be sorry to see the end of this traditional relationship. However, I am sure that all Canadian architects will recognize our obligation to the newer members of the Commonwealth and the part we can and must play in this new association—more realistic—more productive—more in tune with the changing times.

John L. Davies (F), President

ASSOCIATION DU ROYAUME-UNI

Depuis 1909, soit pratiquement depuis le début de son existence, l'Institut Royal d'Architecture du Canada est affilié au RIBA. Il est évident que cette affiliation a été très utile à ce moment, mais avec les changements de politique ou autres qui ont surgi depuis quelques années, ce système d'affiliation semblait devoir être modifié.

On compte sur le Conseil du RIBA des représentants de 24 associations affiliées en Grande-Bretagne, et de 5 des 12 sociétés affiliées d'Outre-Mer, y compris l'IRAC.

Plusieurs associations, considérant que le temps était venu de reviser cette situation et de former un organisme où toutes les sociétés seraient sur un même pied d'égalité, on décida de convoquer une conférence des différentes sociétés. Cette dernière eut lieu au cours du mois de juillet à Londres, Angleterre, et elle avait été convoquée par l'Institut des architectes d'Angleterre.

Jusqu'à ce moment, plusieurs associations s'adressaient au RIBA pour régler plusieurs de leurs problèmes, cependant, il devenait parfois impossible pour certaines d'entre elles dans les nouveaux pays, de conclure une affiliation, leur permettant des échanges culturels, et surtout l'obtention de directives qui auraient pu devenir nécessaires. Or, plusieurs de ces associations désirent maintenir des liens avec le Royaume-Uni, et sont prêtes à accepter des conseils pour la solution de plusieurs problèmes difficiles.

Dans certains pays, le travail de l'architecte n'est pas compris, et la majorité des édifices sont sous la direction de gens non qualifiés.

Pour ne citer qu'un exemple, disons qu'au Pakistan, il y a moins de 30 architectes au service d'une population de 100,000,000. Par contre, à certains endroits, la croissance de la profession a été excessivement rapide, et on trouve des situations comme au Nigeria où le nombre de membres de l'association des architectes a triplé en trois ans. Inutile de dire que dans un cas comme dans l'autre, les problèmes auxquels on a à faire face sont complexes et nombreux; aussi, tient-on à maintenir certaines relations avec d'autres associations professionnelles, qui peuvent leur venir en aide, soit par l'expérience acquise ou par tout autres moyens. C'était donc là le but de la conférence de Londres.

La tradition voulait que la plupart des architectes de ces pays fassent leurs études, dans des écoles anglaises, mais on peut constater depuis quelques années, la tendance de plus en plus accentuée vers les écoles d'Australie et du Canada.

L'Université de Colombie-Britannique, par l'entremise de son ministère de la planification, participe actuellement à l'organisation du nouveau ministère de la planification de Ghana.

Déjà à deux reprises, en 1960 et 1961, lors de réunions intimes en Angleterre, on avait recommandé de modifier le présent système de représentation au conseil du RIBA, par un nouvel organisme et, lors de la conférence du Royaume-Uni, au cours de juillet, il fut proposé et adopté de former une nouvelle association du Royaume-Uni. Cette association est formée sur une base exclusivement professionnelle sans distinction de politique, de race ou de religion, et ses buts sont les suivants:

> Obtenir une meilleure reconnaissance par les peuples et les gouvernements du statut d'architecte, et de ce qui peut contribuer à l'avancement des pays.
>
> La promulgation et la coordination des études architecturales et des standards d'éthiques professionnels.
>
> Un meilleur coefficient de rendement pour la profession et les organisations professionnelles.
>
> L'amélioration des contacts culturels, par l'entremise de l'architecte.

Le RIBA a gracieusement accepté de fournir un secrétariat temporaire à la nouvelle association, mais aussitôt que possible, un secrétaire sera choisi pour prendre charge d'un bureau permanent. Un des premiers gestes que la nouvelle association doit poser, est de s'assurer qu'un plus gros pourcentage de "fonds d'aide technique" soit mis à la disposition de l'architecture, comme une nécessité préalable au programme d'expansion de la construction et de la planification civile.

On a signalé qu'il n'y avait aucun conflit possible, entre cette nouvelle association et l'Union Internationale des architectes; bien au contraire, l'association pourrait sûrement aider l'Union Internationale. Nous croyons avec les autres délégués qui ont assisté à la conférence, que cette nouvelle association sera utile à plusieurs points de vue, non seulement pour les nouveaux pays, mais aussi pour nous du Canada qui pouvons toujours bénéficier de l'expérience des autres.

Gérard Venne (A)

LETTERS

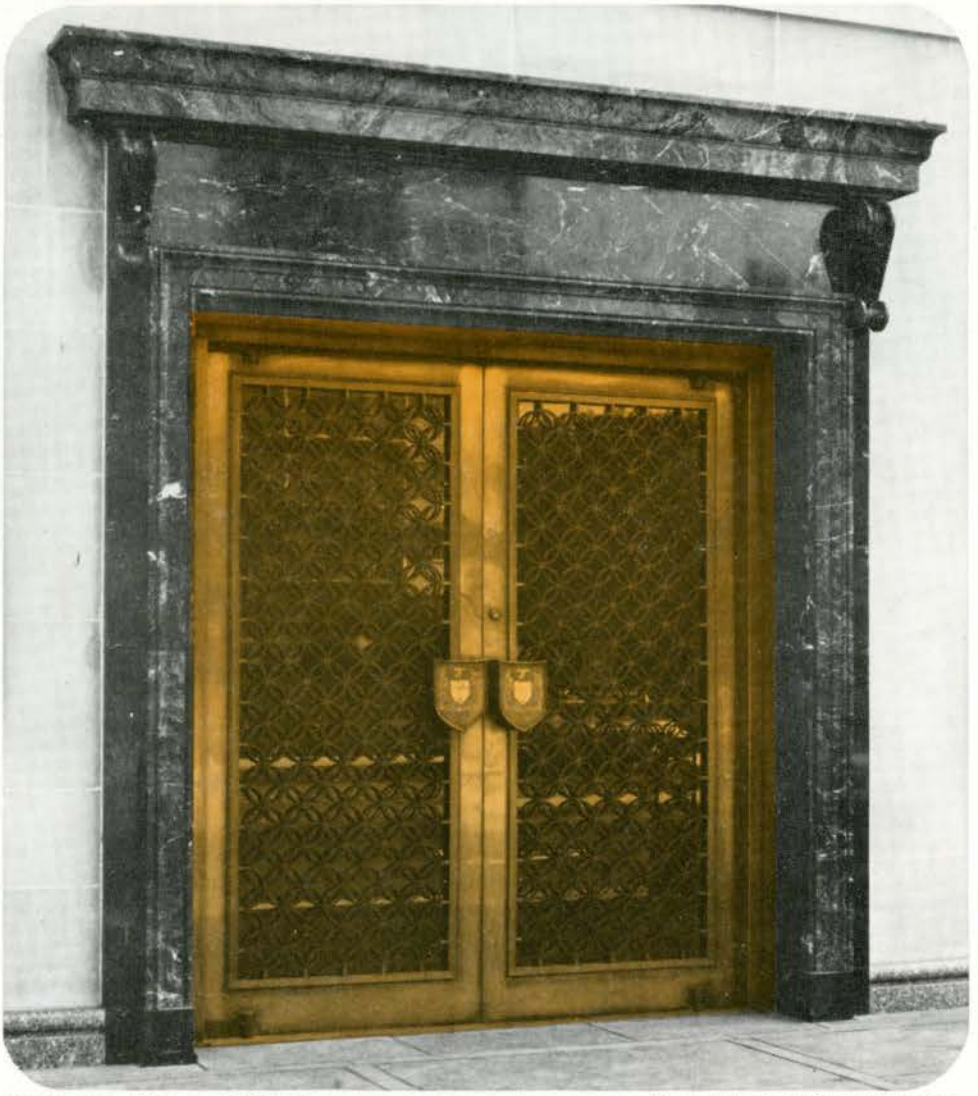
Editor, RAIC *Journal*,

Your recent edition on precast concrete was of considerable interest to all designers concerned with the judicious use of this wonderfully versatile material. Unfortunately you did not give us a glimpse of the odd skeleton in the precast concrete cupboard. To envelop the subject only in beguiling glossy praise is to do the material a disservice in the long run. Precast concrete, especially cladding, must be designed into the building it graces and must not be regarded as something tacked on. Cladding and structure are inextricably interwoven and to by-pass the structural engineer (and so economize on his fee) can be a dangerously false saving.

As Christine said to John and Ivan et al, you cannot always have everything. So it is with any building material, precast concrete included. If there were a universal building material replete with all the desirable virtues and free of every defect, all buildings would be built of it. Precast concrete comes closer to this ideal than most of its competitors. But like birth and death, wealth and taxes, advantages and disadvantages are consequential and inseparable. It is in fact a compliment to precast concrete that unreasonable demands are placed on it by the uninitiated.

The local art of building with precast concrete is, despite rapid advances, still in its infancy compared with European achievements. The design, detailing, and fabrication of this material demand conscientious attention to detail, particularly to inserts for abutting materials, end connections, erection and fabrication tolerances, and accommodation of thermal and stress deformations. Here there is no easy path to perfection. Care, sweat, and toil are essential. The early development of precast concrete locally has been bedevilled by some inferior connection design but a mounting fund of experience and continuing close co-operation between designers and fabricators are reducing the incidence of the shortcomings of the pioneering stage. The Canadian precast concrete industry is deeply conscious of its responsibility to the building industry and is sponsoring a standard manual of recommended practice for precast concrete which is the first of its kind in America. Constant feedback between the site and design office is the key to continued progress in the use of this versatile building material which presents exciting challenges to the ingenious designer and

(Continued on page 13)



ARCHITECTS—Brennan and Whale; ORNAMENTAL BRONZE FABRICATOR—Kendall Bronze & Iron Works Ltd.

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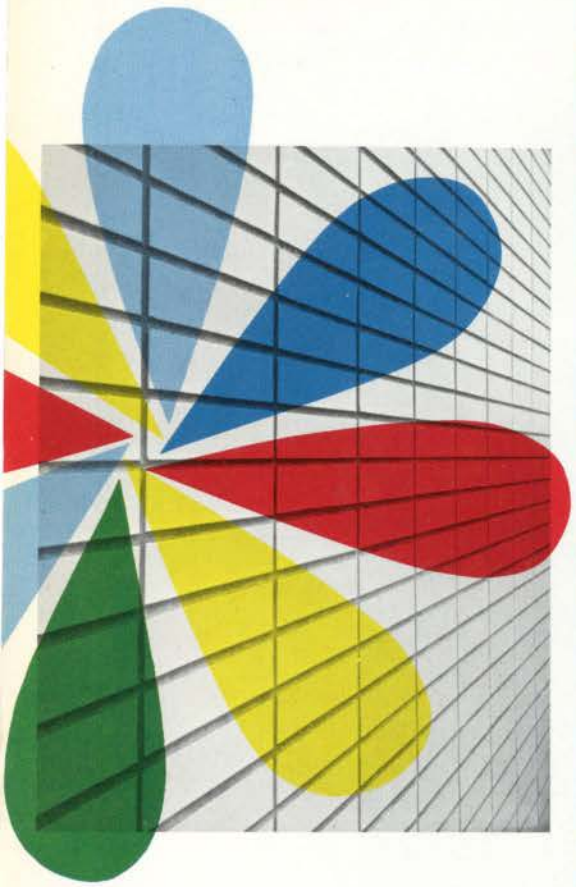

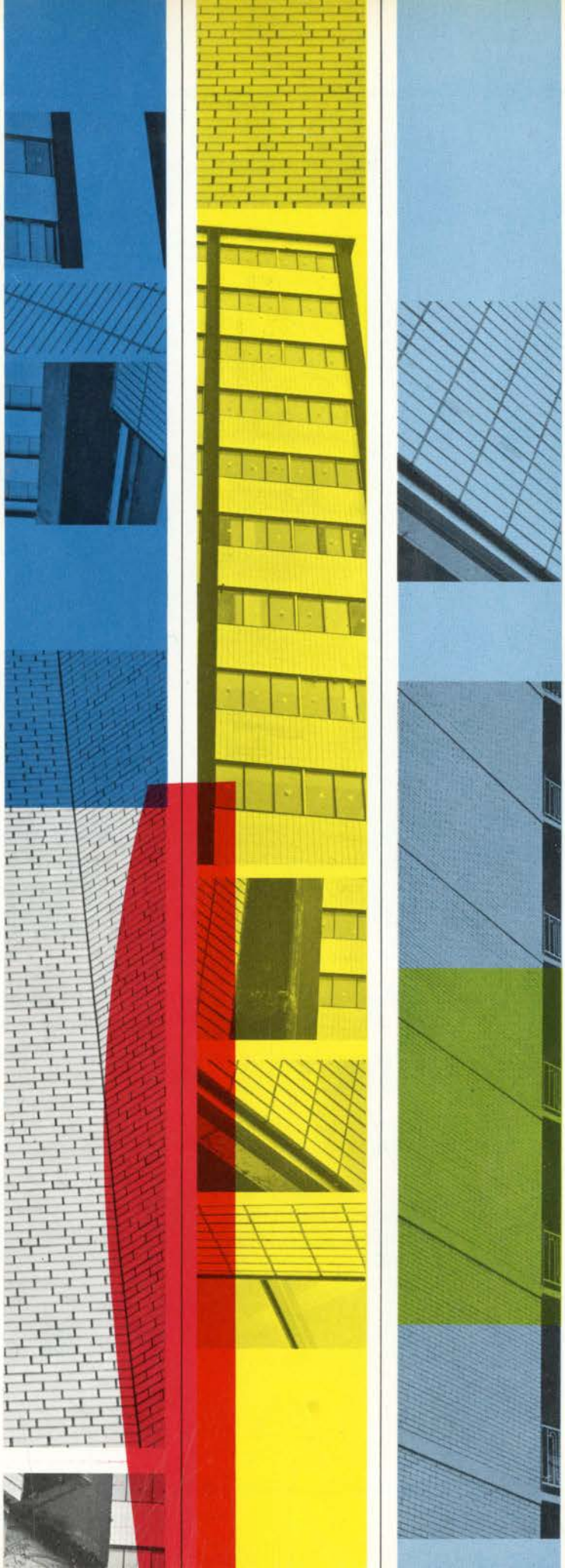

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(Continued from page 10)

which is so well fitted to meeting his demands.

Much of the harassment presently being suffered by the precast concrete industry is due to its anxiety to dispense free engineering and to persuade the architect that precast concrete can be tacked on or that design can be left to the fabrication stage. Unhappily forgotten is the fact that the structure must be designed and detailed to receive it and that structure and cladding are a single entity. If the precast concrete industry finds itself suffering as a result of this increasingly wide-spread malpractice, it must not look to consulting engineers to bail them out or to rush to their aid.

A. A. Goldes
A. A. Goldes & Associates Ltd.

Editor, RAIC *Journal*,

I wonder if you can help us in this?

We are seeking sources from whom we might purchase copies of slides, films and filmstrips on industrial design, product design, historical product design and other related design subjects. We would also like to include some representative examples of Canadian architecture and of world architectural periods.

Such material will be for the purpose of setting up a design library of visual aids in preparation for the opening of a permanent Design Centre in Toronto in February 1964.

Slides, films and filmstrips in the Design Library would be used in conjunction with design conferences, lectures, educational courses and similar design promotional programs.

I would much appreciate your co-operation if you would kindly forward any relevant information by way of material description, slide catalogues and prices for duplicate material to: *C. J. Lochnan, Director, National Design Branch, Department of Industry, Ottawa.*

Thank you.

Dennis W. Shimeld,
Design Information Officer,
National Design Branch.

Editor, RAIC *Journal*,

During the next few weeks more than a few construction jobs in Canada will be plagued with problems resulting from frost action in the soil. All of these problems could be prevented at little cost but once they occur, the worry and expense are often enormous.

Most engineers are well aware of the reasons for frost heaving. Problems develop not necessarily from lack of knowledge but from lack of attention to detail. A job may be designed in July when freezing appears to be remote but executed in January when the ground may be heaving at the rate of an inch a week. In most cases the damage is immediately recognized but sometimes it is apparent only when the ground thaws in the spring.

The best way to prevent these serious and costly failures is to draw attention to them by publicizing actual cases. This letter is to solicit the co-operation of architects and engineers in collecting information on frost action failures. The writer would be pleased to receive details and photographs (if possible) of particular cases and these will be assembled and published for the general benefit of the profession. If reference to a specific case record may cause undue embarrassment it will be documented anonymously.

Carl B. Crawford, Head, Soil Mechanics Section, Division of Building Research, NRC, Ottawa.

1

FEATURES

It is a pleasure to have things that are right, yet difficult to believe when it happens in situations so independent of one another.

Transcendence by Jack Harman (1) enhances the entrance way to the Thea Koerner House at the University of British Columbia and with the environment created by the mountains, the sea, the tall pines and a successful pedestrian setting — it is no wonder that the sculptor raised his arms and blessed it.

The second success is probably the most difficult of all since, once the sun goes down, if indeed one is aware it is up, there is little help from nature. And in the brutal cold of the long,

2

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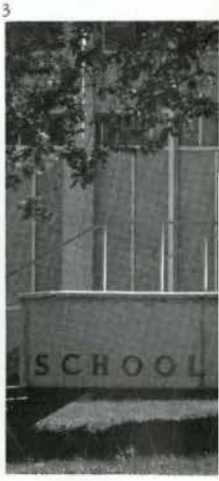

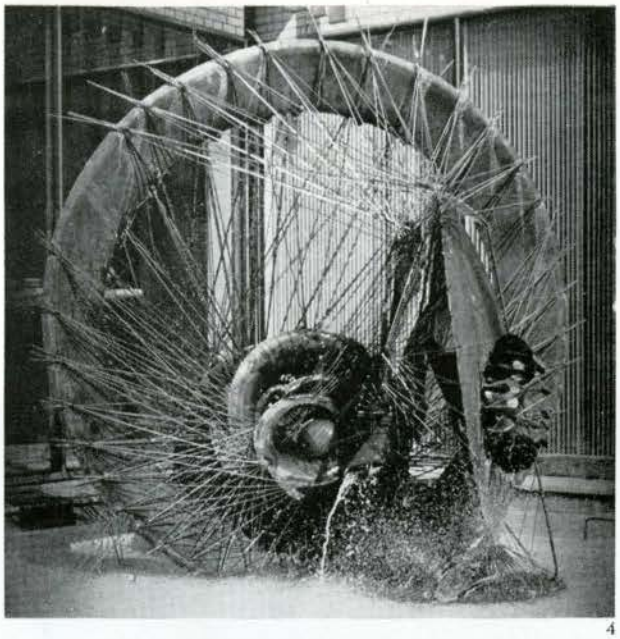

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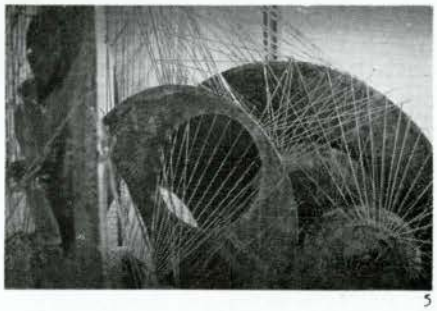


5

long winter, Cecil Richards' *Night and Day* (2, 3) gives the prairies a mountain of warmth and kisses. This work, on the entrance podium of the School of Architecture at the University of Manitoba, will cause instant radiation for those whose head is tilted above their coat collars.

Gerald Gladstone's *Venus Probe #4 Optical Orbital* sits in front of the new glazed white building of the TELEGRAM (4, 5) just across from acres of railway yards. Surrounded by fields of industry in skies of smoke it reminds us of our long forgotten Toronto water front, and suggests that the science of space may rid us of the madness of the never-ending misuse of human liberty. *NH*

LEGAL NOTES

A CASE COMMENT

by Norman Melnick

The case to be discussed deals with a mechanics' lien situation and also introduces the next main topic which I propose to discuss in this column, namely, what is meant by "substantial completion" of a contract.

In this case*, a number of subcontractors to a construction project signed written acknowledgments that they had completed their contracts. This was done in order to satisfy the architect that there was "substantial completion" of the job and accordingly, that he was in a position to issue his final certificate. However, liens were subsequently filed against the owner's property and the question arose as to whether or not the subcontractors in question had filed their liens within the time limit prescribed under the Ontario Mechanics' Lien Act.

In fact, all of the subcontractors did perform additional work after the date on which the written acknowledgments were signed and their liens were filed within the prescribed time limit from the date of last work done, but beyond the time limit as calculated from the date on which the acknowledgments were written. Their lien claims were dismissed on the grounds that the written acknowledgments that their work had been completed precluded them from maintaining that their lien rights ran not from that date but from the date they actually did their last work on the project.

On appeal to the Supreme Court of Ontario, it was held that the subcontractors were not so precluded and that time did not begin to run, for the purpose of lien rights under the Mechanics' Lien Act, until actual and final completion and not "substantial completion".

On a further appeal to the Supreme Court of Canada, the appeal was dismissed. The Court confirmed that time did not begin to run until it could actually be stated that the subcontractor had done all that he was supposed to do, and until he was in a position to virtually sue for the payment in full of his work. The Court held that the doctrine of substantial performance had no relevancy to the mechanics' lien situation and the defence of *estoppel*, by virtue of the written acknowledgment, was rejected. The Court would not allow the construing of the acknowledgment as an agreement that the work had been completed and to set this up as a waiver of lien under the Act.

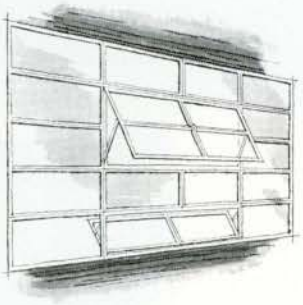
This decision is in apparent conflict with the so-called doctrine of substantial performance as it applies to the right of an architect to issue a final certificate when he has satisfied himself, in his expert opinion, that all but some minor portion of the work remains to be completed. Owners are inclined to exaggerate the importance of alleged defects or of unnished work in order to delay payment and thus the doctrine of substantial performance comes into play and should prevail.

What the Court is saying in this case is that the rights of lien holders under the Act must be strictly interpreted and that no rough rule of thumb will apply in testing their validity.

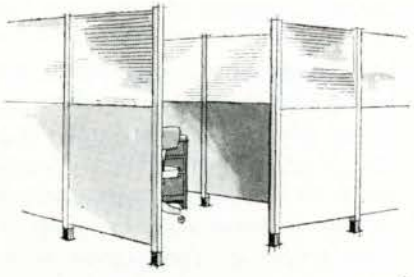
It is proposed in the next article to deal with substantial completion as it affects the architect's right to issue a cerificate.

**Lampton (County) v. Canadian Comstock Co.*, [1960] S.C.R. 86, 21 D.L.R. (2d) 689, affirming 10 D.L.R. (2d) 583

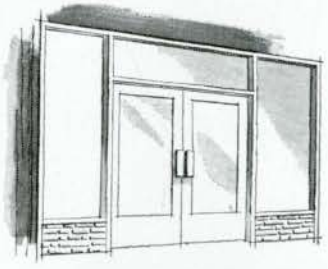
LOCKERS



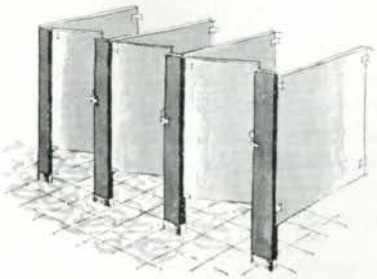
STEEL OR ALUMINUM WINDOWS



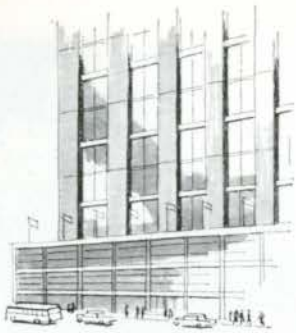
FREE STANDING OFFICE PARTITIONS



HOLLOW METAL WORK



TOILET
COMPARTMENTS



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PLANNING THE 1964 RAIC ASSEMBLY

The President, Mr John L. Davies *(F)* and the Executive Director, Mr Fred Price, visited the Maritimes in November to meet members of the Nova Scotia Association in Halifax and afterwards, on the 22nd, to attend a meeting of the 1964 RAIC Assembly Planning Committee in Moncton. Photographed at the Moncton meeting were, left to right, the chairman of the committee, Jacques Roy, the President and the Executive Director; Gerald Gaudet, President of the New Brunswick Association of Architects, and T. W. Bauld, President of the Nova Scotia Association of Architects. The Assembly is to be held at the CPR Algonquin Inn at St Andrews, NB, Wednesday to Saturday, June 17-20. Final details of the program will be settled at another meeting of the Assembly Planning Committee in Halifax and will be announced in the February *Journal,* but the Assembly theme will be "The Architect in a Changing World".

CENTRAL MORTGAGE AND HOUSING CORPORATION APPOINTMENTS

Ian R. Maclennan *(F)* has been appointed an executive director of the Central Mortgage and Housing Corporation. Previously Mr Maclennan was chief architect and planner at CMHC's head office.

Mr Maclennan is a native of Regina. He received his Bachelor of Architecture degree from the University of Toronto in 1950. Later he undertook post-graduate work at Columbia University in New York City. From 1950 to 1952, Mr Maclennan was employed by the firm of Vorhees, Walker, Foley and Smith in New York and later spent some time in Venezuela in an architectural capacity. During the War he was a pilot in the RAF and RCAF and was awarded the Distinguished Flying Medal. He was retired in 1945 with the rank of Flight Lieutenant. Mr Maclennan joined CMHC in 1955 as chief architect and planner.

David Ellis Crinion succeeds Mr Maclennan as chief architect and planner. Mr Crinion was born in Oldham, Lancashire, England. He was awarded the Ravenhead Fellowship in 1948 (Italy) and the Holt Travelling Fellowship in 1950 (Denmark). In 1951, Mr Crinion graduated from Liverpool University School of Architecture with a Bachelor of Architecture degree. He was awarded the Pilkington Travelling Fellowship (England) in that year. In 1945, he entered private practice as an architect. In the latter part of that year Mr Crinion was awarded a Commonwealth Fund Fellowship which enabled him to visit a number of American universities to study housing problems. He joined CMHC in 1956 and was named Assistant Chief Architect and Planner.

OBITUARIES

G. N. WILLIAMS

George Norman Williams, 72, retired deputy minister of public works and chief architect for Ontario, died at his Hillhurst Blvd home November 10.

Mr Williams was an internationally-known designer of mental hospitals. He helped design the Ontario Hospital at Whitby, Guelph Reformatory, the Bowmanville Boys' Training School, the Girls' Training School at Galt and other institutions at Cobourg, Kingston and North Bay.

He retired because of ill health 10 years ago after 44 years in the Ontario public service.

Mr Williams was born and educated in Toronto. After four years as an architectural student in Buffalo, he served with the John M. Lyle firm for another four years. He was an expert on heating, lighting and ventilation systems. He was a member of the Ontario Association of Architects and an honorary member of the Royal Architectural Institute of Canada.

He is survived by his wife, the former Mabel Florence DeFoe, and two brothers, Charles R. and Arthur Williams both of Toronto.

R. E. McDONNELL

Mr R. E. McDonnell of Hamilton died suddenly on September 8, 1963. He was born in England, and studied architecture with F. W. Simon of Liverpool, who later won the competition for the Manitoba Parliament Buildings in Winnipeg. Mr McDonnell came to Canada in 1911, and became a member of the Alberta Association of Architects in 1913. He began practice in Calgary where he won the competition for the Ranchman's Club. He then went to Montreal and practised with Harold Little and around 1930 came to Hamilton where he was in partnership with F. W. Warren and later with Charles Lenz. He was retired at the time of his death.

Mr McDonnell was a Member of the Ontario Association of Architects, and a former member and treasurer of the Council. For many years, he was active in the Hamilton Chapter. *Charles Lenz*

NOMINATION A L'INSTITUT D'URBANISME DE L'UNIVERSITE DE MONTREAL

L'Université de Montréal annonce la nomination de M. Jean Alaurent au poste de directeur de l'Institut d'Urbanisme. M. Alaurent succède à M. Benoît Bégin qui reprendra, avec ses fonctions d'enseignement et de recherche, ses activités professionnelles.

A Montréal depuis septembre 1962, ayant été nomme professeur agrégé à l'Institut au printemps précédent, le nouveau directeur est diplômé de l'Institut d'Urbanisme de l'Université de Paris, breveté du Centre des Hautes Etudes Administratives, ancien élève de l'Institut de géographie, notamment.

M. Alaurent a occupé les fonctions d'administrateur civil en d'urbaniste en A.E.F., de chef de la section "Urbanisme-Habitation" à la direction du Plan 45, de conseiller technique à la direction de l'Aménagement du Territoire, M.R.L. et de Directeur des Etudes, C.E.I. avant de créer un bureau d'étude d'urbanisme en 1960.

PRACTICE NOTES

Alan Vanstone, MRAIC, ARIBA, has commenced practice in the Province of Saskatchewan at 4428 Acadia Drive, Whitmore Park, Regina.

The firm of Leblanc & Gaudet announce the appointment of Jacques Roy and Peter Siemers as partners and the firm will practise as Leblanc, Gaudet, Roy, Siemers, at Suite 306, 1111 Main St, Moncton, N.B.

The partnership of Craig, Madill, Abram and Ingleson has been dissolved with Mr Craig moving to Ottawa to join Mr M. W. Kohler in a new partnership under the name of Craig and Kohler, Architects at 75 Albert Street, Ottawa.
Mr Abram and Mr Ingleson remain in Toronto under the firm name of Abram, Ingleson and Associates. Associates are H. H. Madill, W. T. Bleakley Jr and J. J. Nowski. Their address is 290 Merton St.

Smith and McCulloch of Vancouver and Trail will now practice separately, with Paul D. Smith in Vancouver at 1101 West Broadway, and Alan J. G. McCulloch in Trail at 860 Eldorado Street.

ERRATUM:

In the appraisal of Massey College by Peter Collins on page 40, of the October *Journal,* the address by Robertson Davies in 1960 was given to the OAA and not the RAIC.

TEL AVIV-YAFO COMPETITION RESULTS

The results of the Townplanning Competition for the Tel Aviv-Yafo Central Area Redevelopment Project were announced recently. The first prize of I£ 50,000 (approx. C$18,000) was awarded to two German architects from Munich. They are Alexander Frhr. V. Branca and Fred Angerer.

The second prize of I£ 30,000 (approx. C$10,800) was awarded to Jan Lubicz-Nycz of San Francisco.

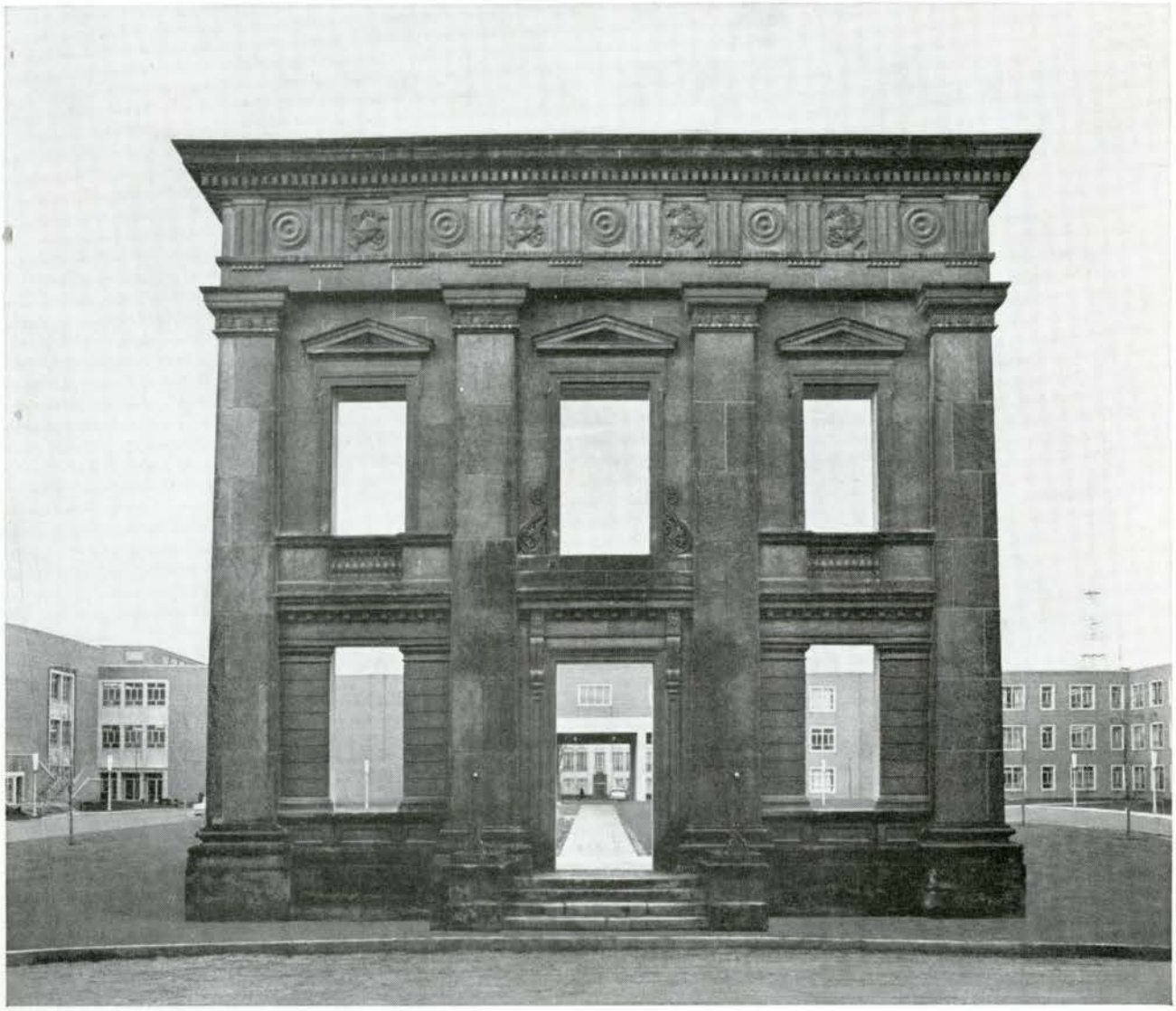
No Canadians were among the finalists.

COMING EVENTS

A conference on snow removal and ice control will be held on the 17th and 18th of February, 1964 at the National Research Council, Sussex Drive, Ottawa. It will be sponsored by the Sub-committee on Snow and Ice of the NRC Associate Committee on Soil and Snow Mechanics.

On February 13th and 14th, the Division of Building Research of the NRC will hold a building science seminar at the Building Research Centre in Ottawa.

All of the windows in the new Ryerson Institute are equipped with Kirsch Heavy Duty Drapery Hardware



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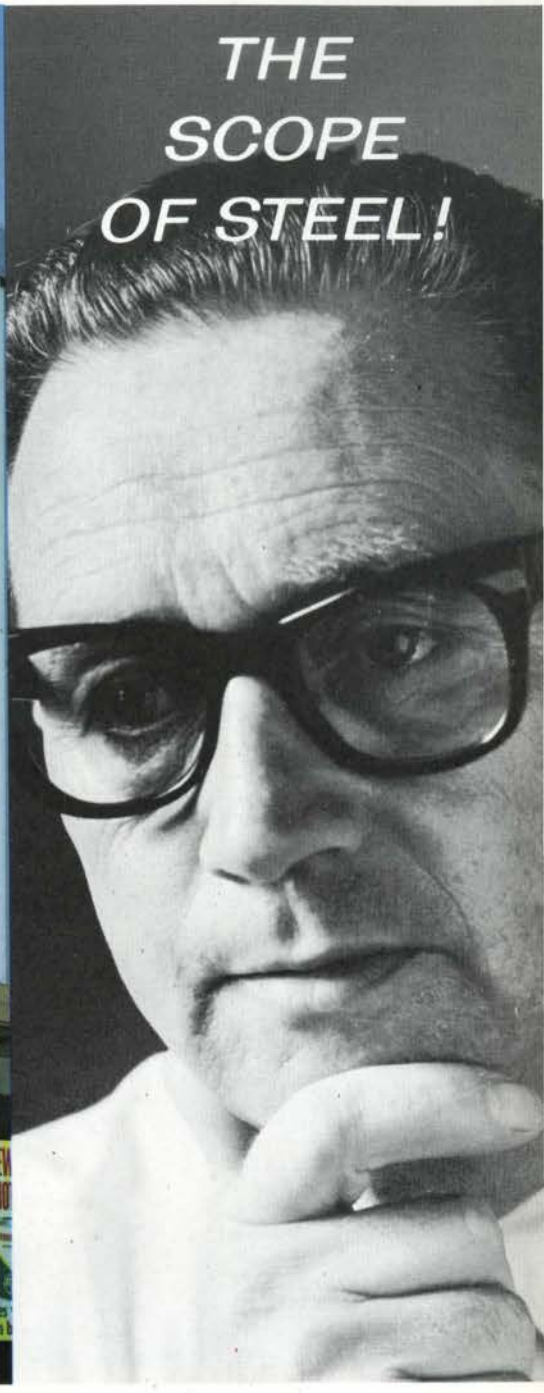

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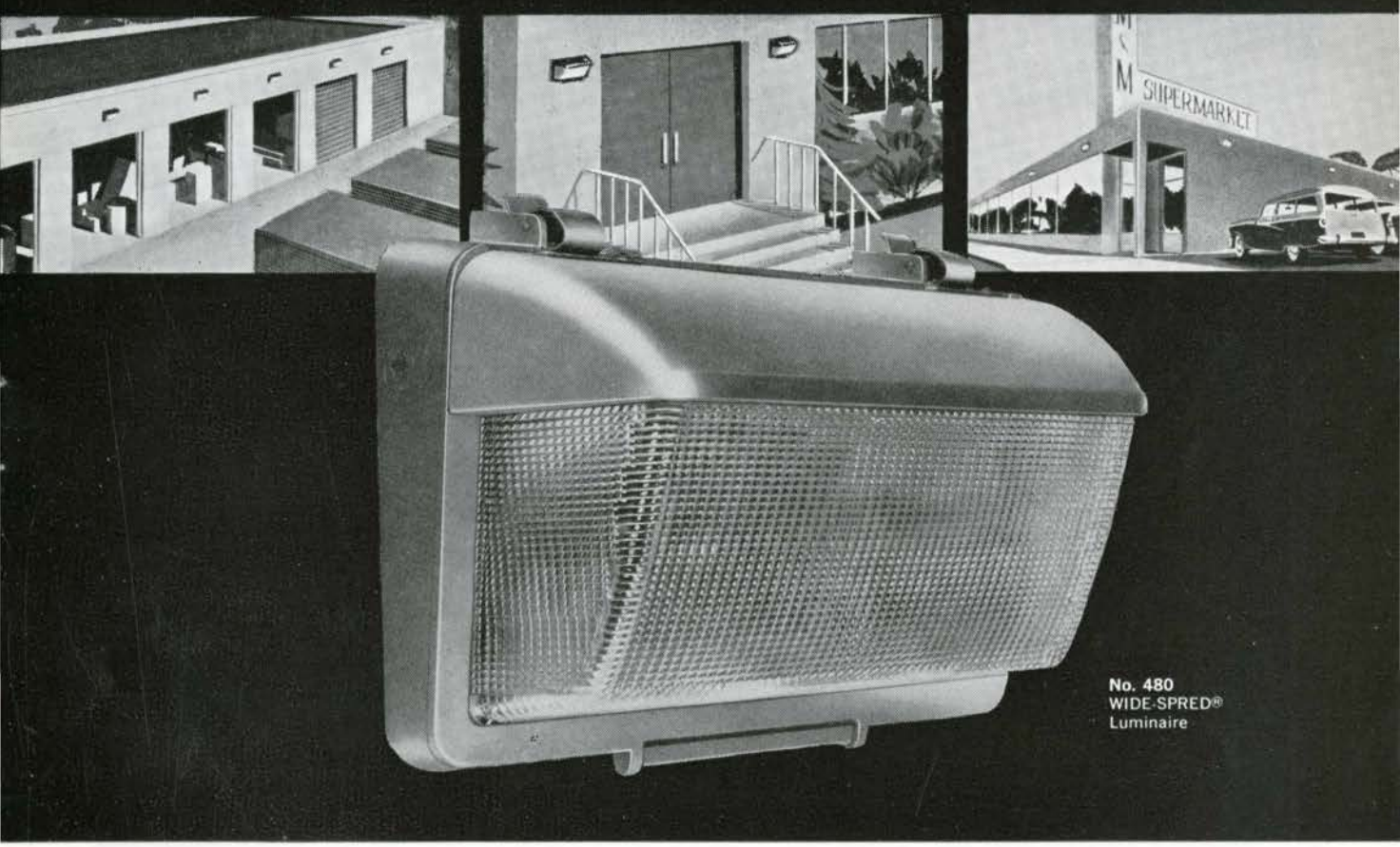

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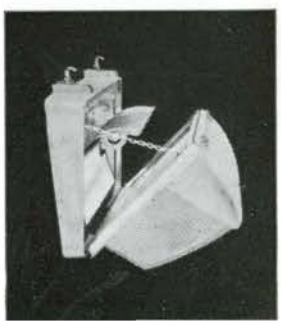

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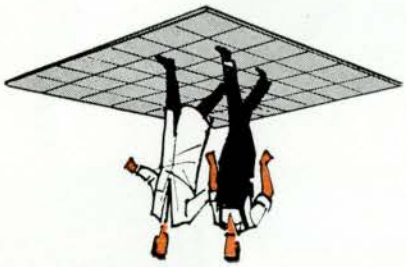

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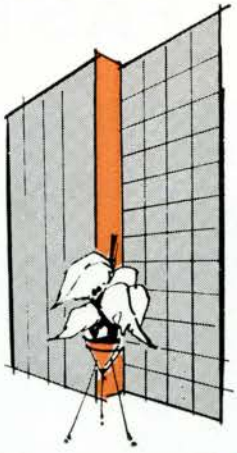

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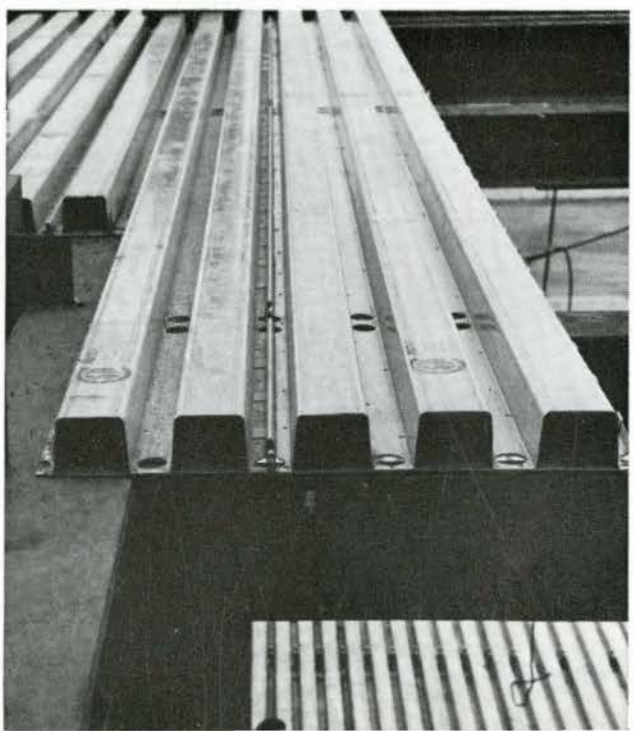

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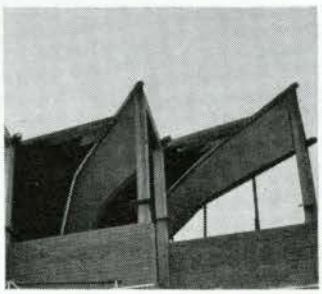

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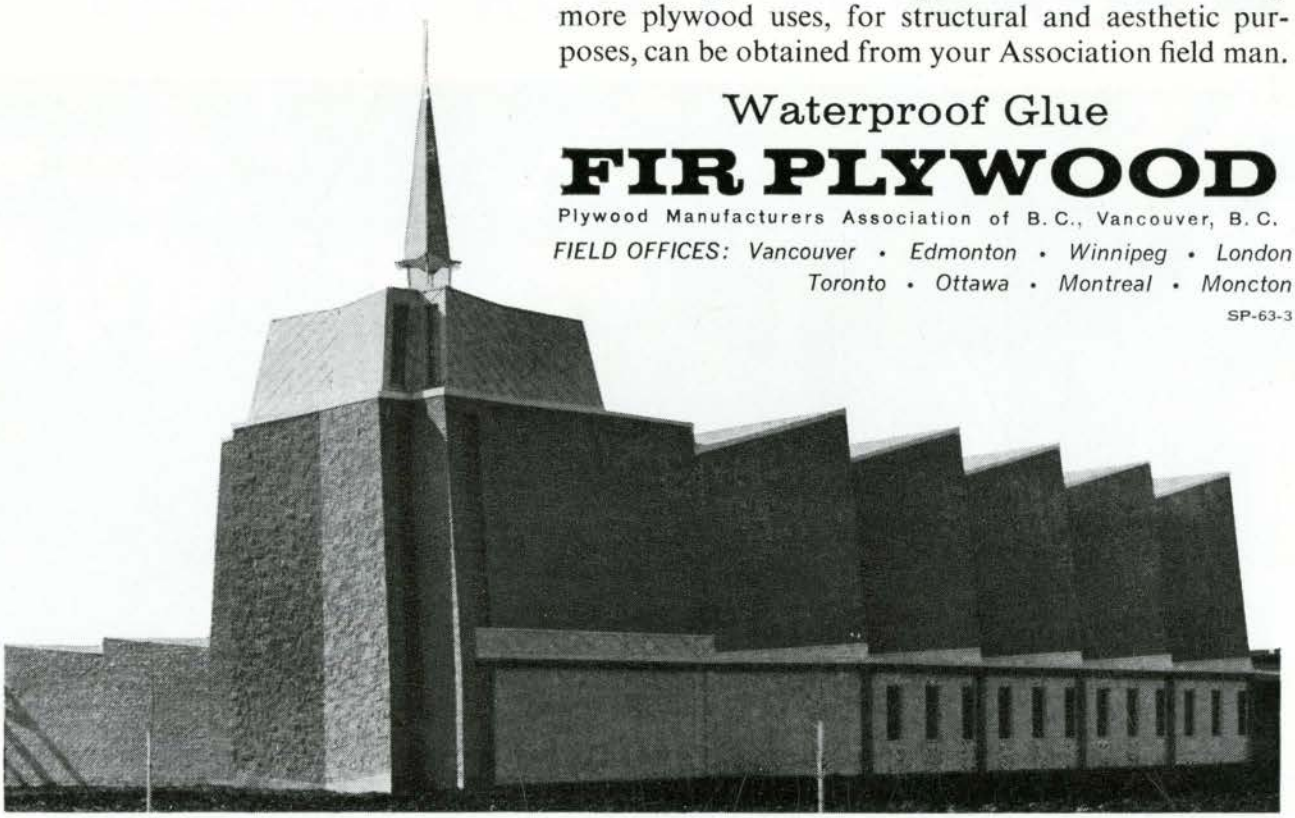

St. Andrews United Church is the work of D. M. Campbell & Associates, consulting architects, and Tottrum & Associates, consulting engineers.

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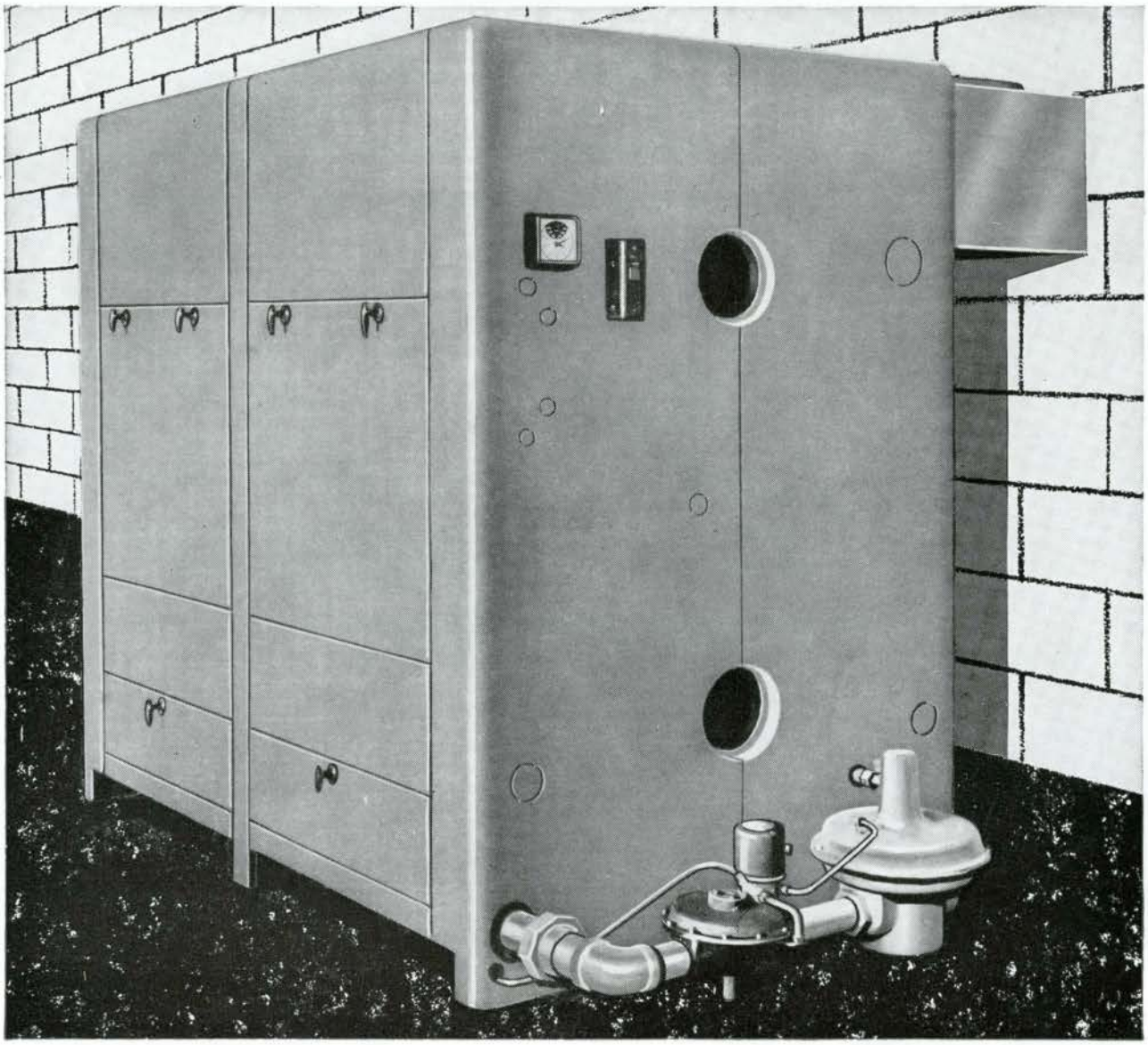

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Congrès et Assemblée Annuelle
Exposition d'architecture et des matériaux de construction

Hôtel Reine Elizabeth, Montréal, du 16 au 18 janvier, 1964

LE JEUDI JANVIER 16 JANUARY THURSDAY

Réunion du Conseil — Salle Richelieu	10.00 a.m.	Council Meeting Salon Richelieu
Ouverture officielle de l'Exposition-Place de l'Exposition	12.00 noon	Official Opening of Exhibition Exhibition area
Déjeuner de l'Industrie du Bâtiment — Salle Marquette	12.30 p.m.	Luncheon of Building Industry Salon Marquette
Première réunion d'affaires Salle Duluth	2.00 p.m.	First Business Meeting Salon Duluth
Réception — AAPQ Place de l'Exposition	5.30 p.m.	PQAA Reception Exhibition area
Allocution de M. Robert LeRicolais Professeur Structural Research, University of Pennsylvania Salle Duluth	6.00 p.m.	Address by Mr Robert LeRicolais Professor of Structural Research University of Pennsylvania Salon Duluth
Réception: Section Montréalaise — Bureaux de l'AAPQ	7.30 p.m.	Montreal Society Reception — PQAA Headquarters

LE VENDREDI JANVIER 17 JANUARY FRIDAY

Forum: Expo 1967 et Architecture	9.00 a.m.	Seminar Theme: Expo 1967 and Architecture
Prèmiere session du Forum Salle Joliette Sujet: La Ville et l'Exposition	9.30 a.m.	First Seminar Period Salon Joliette Topic: The City and the Exhibition
Déjeuner — Allocution de Col. Churchill — Salles Duluth & Mackenzie	12.30 p.m.	Luncheon — Speaker: Col Churchill Salons Duluth & Mackenzie
Deuxième Session du Forum Salle Joliette Moderateur: Harry Mayerovitch Sujet: L'Exposition et l'Architecture	2.00 p.m.	Second Seminar Period — Salon Joliette Moderator: Harry Mayerovitch Topic: The Exhibition and Architecture
Danse: Salles Duluth, Mackenzie & Joliette	9.00 p.m.	Dance Salons Duluth, Mackenzie & Joliette

SAMEDI JANVIER 18 JANUARY SATURDAY

Dernière réunion d'affaires Salles Mackenzie	10.00 a.m.	Final Business Session Salon Mackenzie
Départ: Visite du site de l'Expo Mondiale '67	12.00 noon	Leave for Fair Site
Déjeuner des membres	12.30 p.m.	Members Luncheon

Province of Quebec Association of Architects

Convention and Annual Meeting
Architectural Exhibition and Trade Show

Queen Elizabeth Hotel, Montreal, January 16-18, 1964

The Royal Commission of enquiry into the teaching of architecture in the Province of Quebec asked the PQAA to establish a sub-committee to determine the opinion of its membership on the question: "Is the graduate architect sufficiently well qualified to meet the needs of the profession; if not, what should the schools of architecture do to remedy the situation?"

In general the sub-committee found that its members did not think the graduate was sufficiently well qualified, and that the fault lay with the independent schools who failed to stress the technical aspects of their training. It strongly recommended that these schools be integrated with the universities and that the selection of both students and teachers come under closer scrutiny.

The sub-committee also recommended that special consideration be given to the talented student who may lack the necessary qualifications to enter the course. *Ed.*

Commentaire Presenté par la Commission Royale d'Enquête sur l'Enseignement de l'Architecture dans la Province de Québec

Le memoire suivant a été présenté le 15 novembre 1963 à une audition publique de la Commission Royale d'Enquête sur l'Enseignement de l'Architecture nommée par le gouvernement de la Province de Québec.

Représantants de l'A.A.P.Q. étaient M. Francis J. Nobbs, président; M. Gilles Marchand, vice-président et M. Jean D. Damphousse, président du comité sur l'enseignement de l'architecture.

Préambule:

Faisant suite à l'invitation reçue de la Commission d'enquête de présenter un rapport sommaire sur le sujet précité, l'A.A.P.Q. confiait à un sous-comité le soin de solliciter les opinions des membres sur la question suivante: "L'architecte diplômé est-il bien préparé à répondre aux exigences de la pratique actuelle; si non, quelles mesures les Ecoles d'architecture devraient-elles adopter pour remédier à la situation?"

Les opinions quelquefois violentes que nous avons reçues rejoignent dans leur ensemble celles que partage le Conseil et elles peuvent, sans risque de méprise, être considérées la réflection des vues générales de la Profession.

Les commentaires énoncés ci-dessus s'inspirent dans une large mesure des opinions exprimées par les membres de l'Association et ils ne veulent en aucune façon déprécier ou critiquer qui que ce soit.

Opinion de l'A.A.P.Q. sur les Ecoles:

L'A.A.P.Q. est convaincue que les Ecoles d'architecture de la Province ne parviennent pas à donner à leurs diplômés la formation suffisante nécessaire à l'exercice de la profession, sans qu'il devienne essentiel pour eux de compenser pour les lacunes par une période de cléricature d'au moins cinq années.

Les insuffisances que nous discernons dans l'enseignement ne sont pas l'apanage exclusif des écoles d'architecture et nous croyons que le défaut de base a trait aux structures d'un autre âge de nos institutions; elles ne répondent plus aux besoins actuels et elles ne sont apparemment pas orientées pour pouvoir traduire autrement que par un académisme persistant les tâtonnements et l'hésitation d'une civilisation nouvelle. On veut bien accepter volontiers de modifier la façade de l'édifice, mais pas le fond.

Les procédés appliqués à la sélection des candidats aux études sont fautifs de la même façon et pour les mêmes motifs qu'ils le sont ailleurs; on n'accorde pas suffisamment d'attention aux valeurs morales des candidats, on néglige de considérer leur aptitude à penser et à travailler et l'on se satisfait trop aisément d'une sélection qui s'apparente à une ségrégation quant aux qualités souvent questionnables des diplômes obtenus.

On ne semble pas réussir à développer chez l'étudiant l'esprit scientifique qui doit de toute nécessité s'allier à celui de l'artiste pour qu'il devienne véritablement un architecte; ceci en dépit de prospectus optimistes des écoles, lesquels promettent, par le nombre d'heures et de cours qui y sont inscrits, des études scientifiques quelquefois supérieures à celles des écoles de Génie, en ce qui a trait du moins au bâtiment.

La connaissance des principes de la pratique professionnelle, sans laquelle l'architecte ne peut acquérir l'intégrité et la maturité nécessaire pour protéger le public et mener à bonne fin ses réalisations, est laissée au hasard d'une courte clérícature chez un patron qui a lui-même eu le même choix . . .

Il résulte inévitablement de la faiblesse et du manque général de préparation que le diplômé, lorsque sa clérícature est trop écourtée, acquiert aux frais du public et du bon renom de sa profession la connaissance que l'école avait le devoir de lui dispenser.

Pouvoirs et privilèges de l'A.A.P.Q.:

L'Association des architectes existe et détient ses privilèges et prérogatives uniquement en vue de la protection du public; cependant sa charte ne lui permet pas d'accomplir seule et dans l'harmonie, l'action qui s'impose depuis longtemps vis-à-vis des Ecoles d'architecture; après avoir demandé à plusieurs reprises l'aide du Législateur, elle est heureuse de constater aujourd'hui qu'il est lui aussi conscient des problèmes auxquels nous avons à faire face.

L'A.A.P.Q. désire préciser qu'en vertu de sa charte, elle ne possède aucun droit de regard ou d'examen sur les écoles établies dans la Province et qu'elle ne peut leur dicter aucune ligne de conduite; elle est de plus obligée d'admettre dans ses rangs tous les diplômés, pourvu qu'ils aient subi avec succès l'examen de l'Association imposé par elle. Cet examen porte sur la pratique professionnelle et ne permet pas une appréciation juste des candidats.

En 1961, le Conseil en vue d'améliorer la situation a décrété une prolongation dans la durée de la cléricature pour les futurs diplômés, il porta celle-ci à deux années au lieu d'une; cette décision valut à l'Association des ennuis judiciaires.

Les malaises aussi qui retardent le progrès de la Profession sont attribuables à des facteurs sérieux qui n'ont aucun rapport avec l'enseignement; il y a lieu de mentionner les faiblesses de la législation sur la construction; la main-mise néfaste de l'intermédiaire grossier et véreux qui mine la confiance et sème la confusion dans le cadre des professions et métiers du bâtiment.

Mentionnons entre autres la contradiction flagrante qui existe entre les articles 1688 et 1689 du Code Civil, relativement à la responsabilité conjointe et solidaire de l'architecte et de l'entrepreneur, grâce à la possibilité qu'il a de s'incorporer, ce qui est refusé à l'architecte. Considérons l'effarante obligation pour l'architecte d'endosser une double responsabilité dans le cas de travaux publics en assumant la responsabilité du premier venu qui s'intitule entrepreneur, incorporé ou non, même s'il est reconnu incompétent et insolvable. Comment ne pas s'émouvoir de ces diverses structures légales, créées au gré du hasard et sans liens précis entre elles, des écoles d'architecture, de l'A.A.P.Q., des autres professions à fonctions superposées par rapport à celle de l'architecture et qui sont particulières à notre Province. Il n'y a certes pas à être surpris des griefs, revendication et du désordre qui règne dans cette tour de babel que représente la construction dont le niveau de rendement et de qualité va constamment en s'abaissant. Les architectes se doivent d'affirmer que, face aux exigences d'une époque dans laquelle l'homme pourrait aisément être dégagé des contraintes misérables d'autrefois, l'architecture subit une accélération de son évolution sous la poussée de sciences nouvelles et de nouveaux besoins humains qui en modifient et le sens et les dimensions. Il n'est plus possible d'escompter que la routine et le hasard opèreront les redressements nécessaires au bonheur des humains.

CONCLUSIONS ET RECOMMANDATIONS:

Enseignement scientifique:

Le Conseil de l'A.A.P.Q. ne croit pas qu'il soit possible pour les écoles à structure autonome de dispenser efficacement et économiquement l'enseignement scientifique indispensable à l'architecte d'aujourd'hui. En conséquence, il recommande fortement que cet enseignement soit confié aux diverses facultés universitaire compétentes en la matière, quel que puisse être le principe administratif adopté pour ces écoles. Il est cependant recommandable pour plusieurs raisons d'intégrer ces écoles au campus universitaire. Devant les exigences accroissantes de la pratique architecturale, il devient essentiel, pour la protection du public, que les étudiants acquièrent davantage de connaissances et de compétence dans les sciences et dans les techniques multiples de la construction, lesquelles tendent à être considérées, comme réservées exclusivement à d'autres professions.

Admission aux études:

L'admission aux études devrait s'inspirer davantage de principes démocratiques; la valeur morale et l'aptitude à la réflexion devraient être soigneusement considérées chez les candidats et seuls des examens sévères devraient servir de critères d'admission.

L'A.A.P.Q. recommande la création d'une classe préparatoire pour les candidats méritoires mais insuffisamment préparés pour les études d'architecture.

L'on devrait favoriser l'accès aux écoles pour ceux qui sont munis de talent exceptionnel et qui tentent d'accéder à la profession par la méthode incomplète de l'étude dans les bureaux. Nous croyons que le principe des prêts remboursables aux étudiants est meilleur que le principe des bourses car il encourage l'étudiant à développer son sens de responsabilité et de solidarité vis-à-vis ceux qui lui succèderont.

Recrutement des professeurs:

Le recrutement des professeurs sera davantage dans l'intérêt de l'étudiant s'il s'effectue par la voie démocratique de concours ou d'autres méthodes recommandables.

Il est souhaitable que les professeurs soient mieux retribués même si leur nombre devait en être diminué pourvu cependant qu'ils puissent enseigner avec compétence plusieurs matières au programme.

Le recrutement futur des professeurs devrait être prévu au niveau même des études et l'on devrait accorder tous les avantages possibles aux étudiants qui se destinent à l'enseignement.

On devrait aider les professeurs à se perfectionner et à suivre les progrès de l'architecture en leur accordant des bourses d'étude pendant les périodes de vacances.

Responsabilités et devoirs de l'A.A.P.Q.:

En vue de la revalorisation de l'enseignement et de la pratique de l'architecture, il est recommandable que les écoles à structure autonome soient dirigées par un bureau de direction libre de toutes attaches politiques dont l'A.A.P.Q. serait membre avec droit de vote.

L'A.A.P.Q. devrait être tenue par la loi, de faire subir des examens complets aux diplômés des écoles.

Objectifs culturels:

L'architecture s'avèrera dans l'avenir, le meilleur stimulant culturel et le plus puissant catalyste du sens civique chez nous; il faudra alors former une quantité beaucoup plus considérable d'architectes. Il importe en conséquence de procéder à la planification de nouvelles écoles d'architecture et de préparer, dès maintenant, les effectifs pédagogiques.

Souvenons-nous, qu'au cours des années "20", des sections d'architecture aux écoles des Beaux-Arts de Montréal et de Québec sont dues à des hommes de vision; sachons aujourd'hui consolider leur oeuvre dont le but était de remplacer l'architecture dite d'entrepreneur de cette époque par une architecture véritable, laquelle se matérialise maintenant dans la Province.

The Ontario Association of Architects' Convention and Annual Meeting will be held at the Royal York Hotel in Toronto from Thursday to Saturday, February 20th to 22nd, with Dr Vincent J. Scully Jr, Oakah L. Jones, J. Alphonse Ouimet and Professor John Bland for special speakers, as well as business sessions, cocktails and dinners, special events for the ladies (including a theatre party at the Royal Alex) and a manufacturer's exhibition. All architects are invited. Programs are available upon request from the OAA at 50 Park Road, Toronto 5.

OAA

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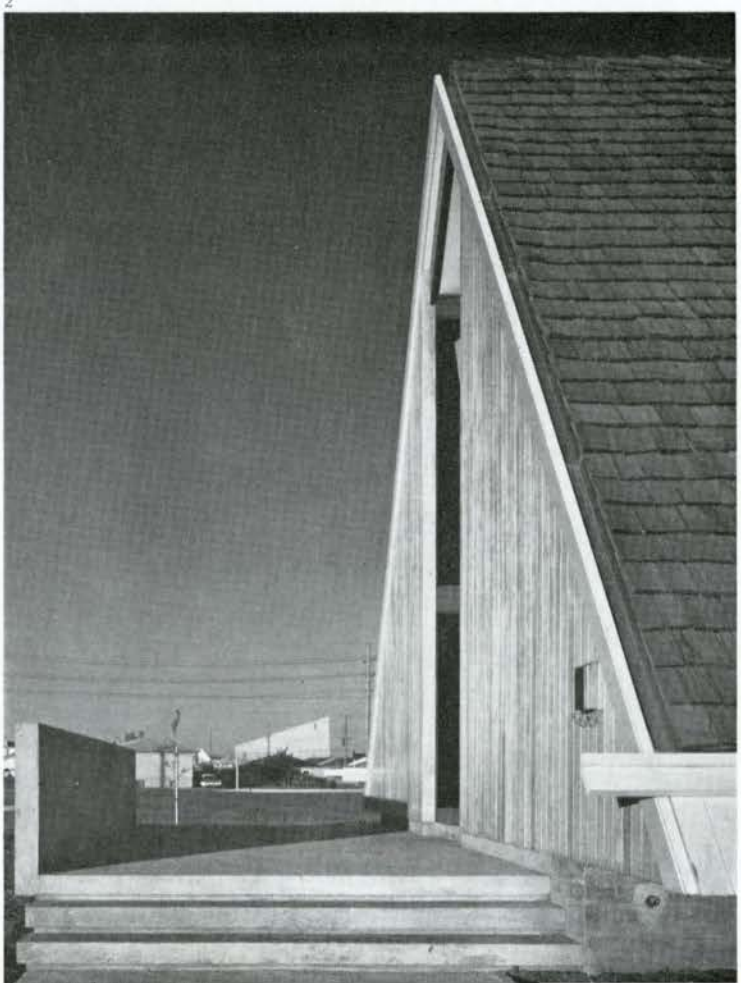

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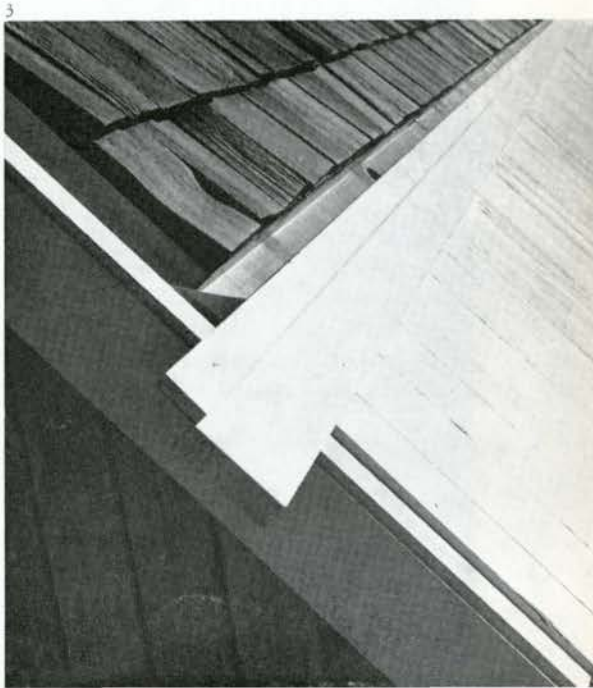
Hill Avenue
Mennonite Brethren Church
Regina
Architect • Clifford Wiens



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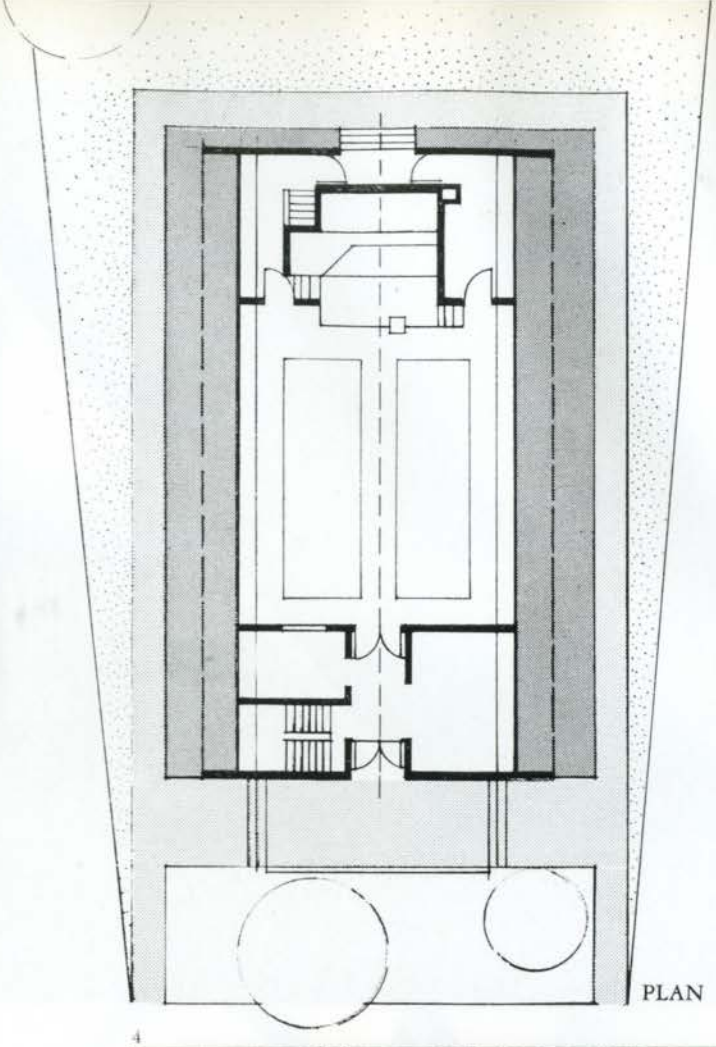
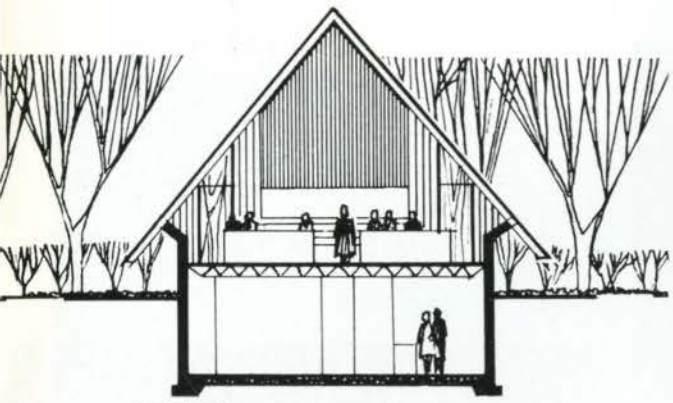
Most of the churches built by Mennonites in the past have been small, simple clapboard structures, often only one step removed from being a house and certainly without the benefit of architects. Thus a commission was somewhat of a departure for this congregation.

My solution was an attempt, therefore, to maintain a simplicity in the building which would convey a feeling of shelter, not only from the elements — but from the world which is so much an underlying theme in the Mennonite way of life.

The interior is scaled to the small congregation. The sloping wall taking the thrust of the roof gives a feeling of space not apparent from the exterior. The almost total absence of windows completes the feeling of shelter. Details were carefully considered such as a continuous recessed gutter to drain the roof on all edges which follows up to the peak and isolates the roof from the building so that it gives a feeling of being draped over the roof like a blanket. Inside, the roof is carefully joined at the peak to gain a decorative element from a junction that would otherwise be crude and awkward. I had the opportunity later to design the pulpit and the pews which helped considerably to unify the design. Landscaping is yet to be completed. *C.W.*



PLAN



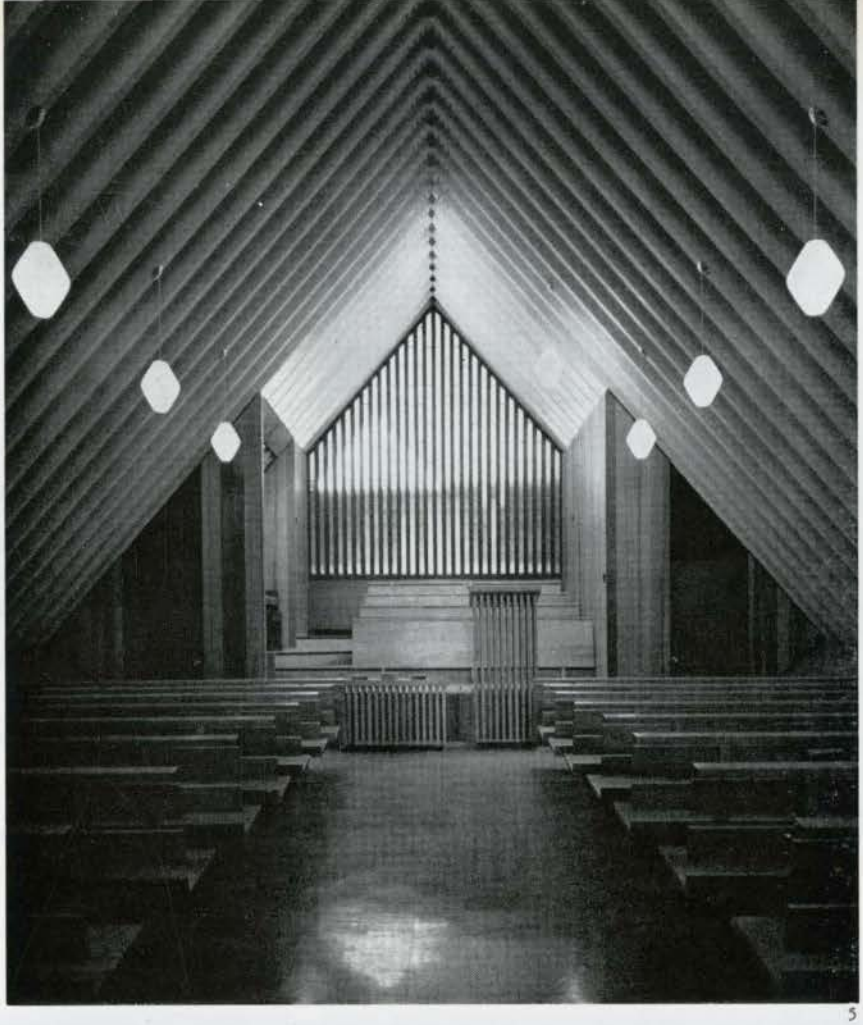
SECTION

Construction

Foundation, walls and lower floor/reinforced concrete; upper floor/concrete on steel joists; roof/trofdek painted white, 2" stramit, strapping and cedar shakes; vertical walls/tongue and groove cedar on wood frame; flooring/vinyl asbestos; glazing/amber cathedral glass; cost/$38,754.

Contractor/Joseph Heir

1. View from Hill Avenue. 2. Entrance Platform.
3. Detail of Roof.
4. Junction of roof and wall.
5. Nave. 6. Sanctuary.
Photos by Henry Kalen.



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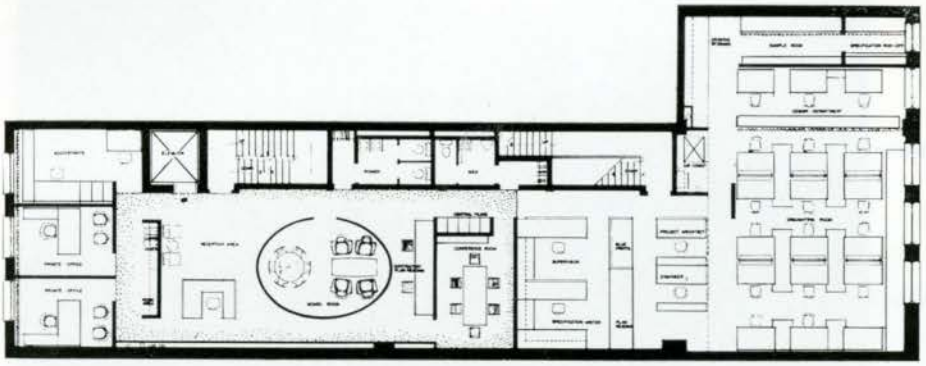
6

Office for the Architects
Libling, Michener & Associates
Winnipeg



PLAN

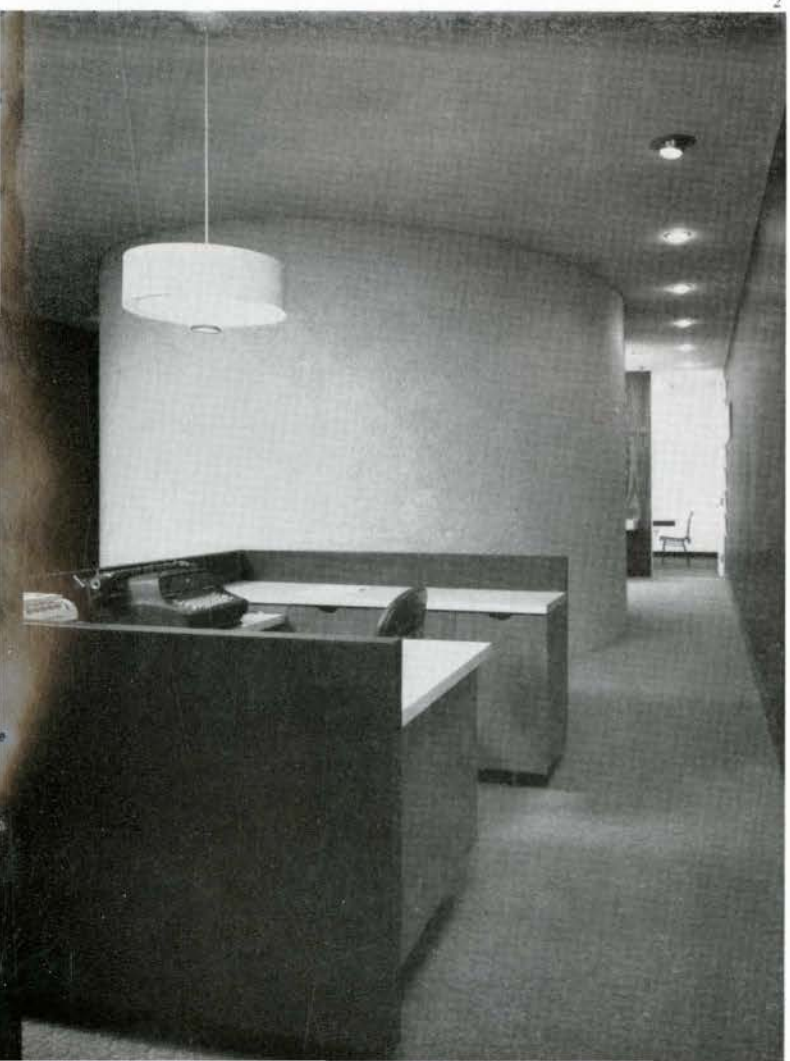
1

The offices of Libling, Michener & Associates are located on the third floor of an old office building in downtown Winnipeg. The materials used in the renovation were wood, rough plaster, paint and carpeted flooring (in the public areas). The elevator service opens directly into the reception area. The drawing areas are divided by drapery, and painted white with suspended fluorescent lighting.

1. Reception area.
2. Looking towards board room and drafting area from receptionist's desk.
3. Contractor plan reading area.
4. Board room.

3

2



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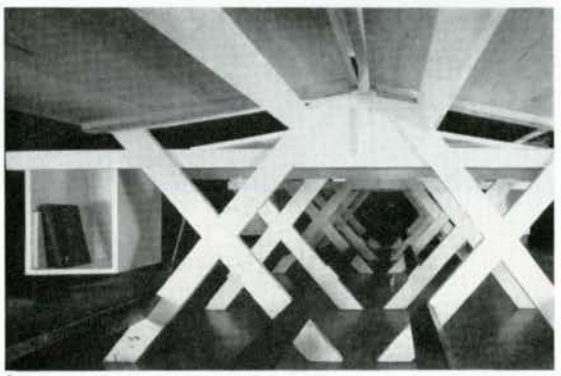

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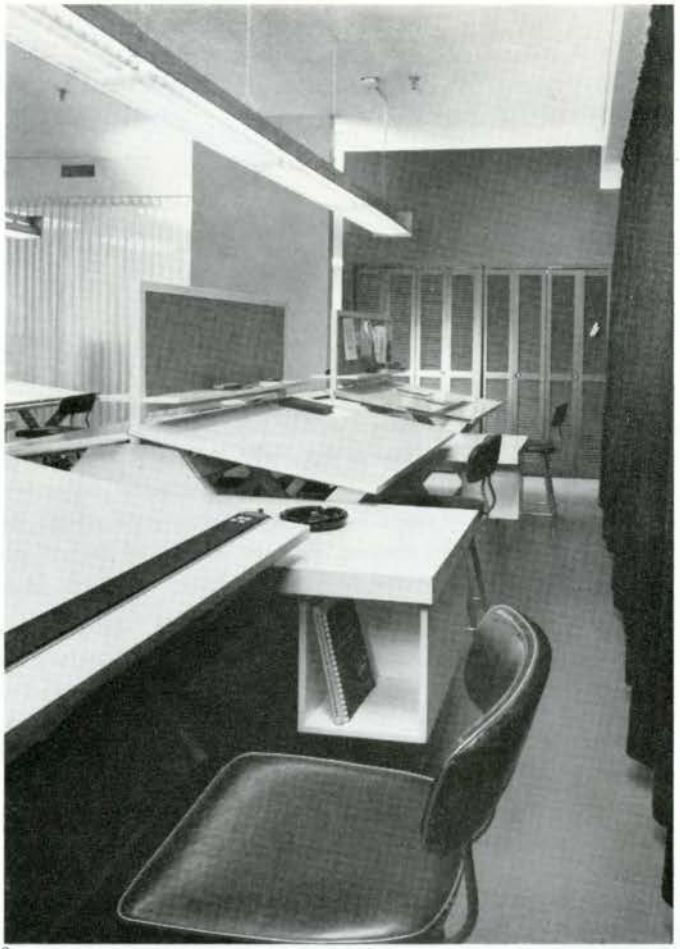

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5. Private office. 6. Drafting tables.
7. Conference room. 8. Drafting area.
9. Plan reading room looking towards drafting area.
Photos by Henry Kalen.

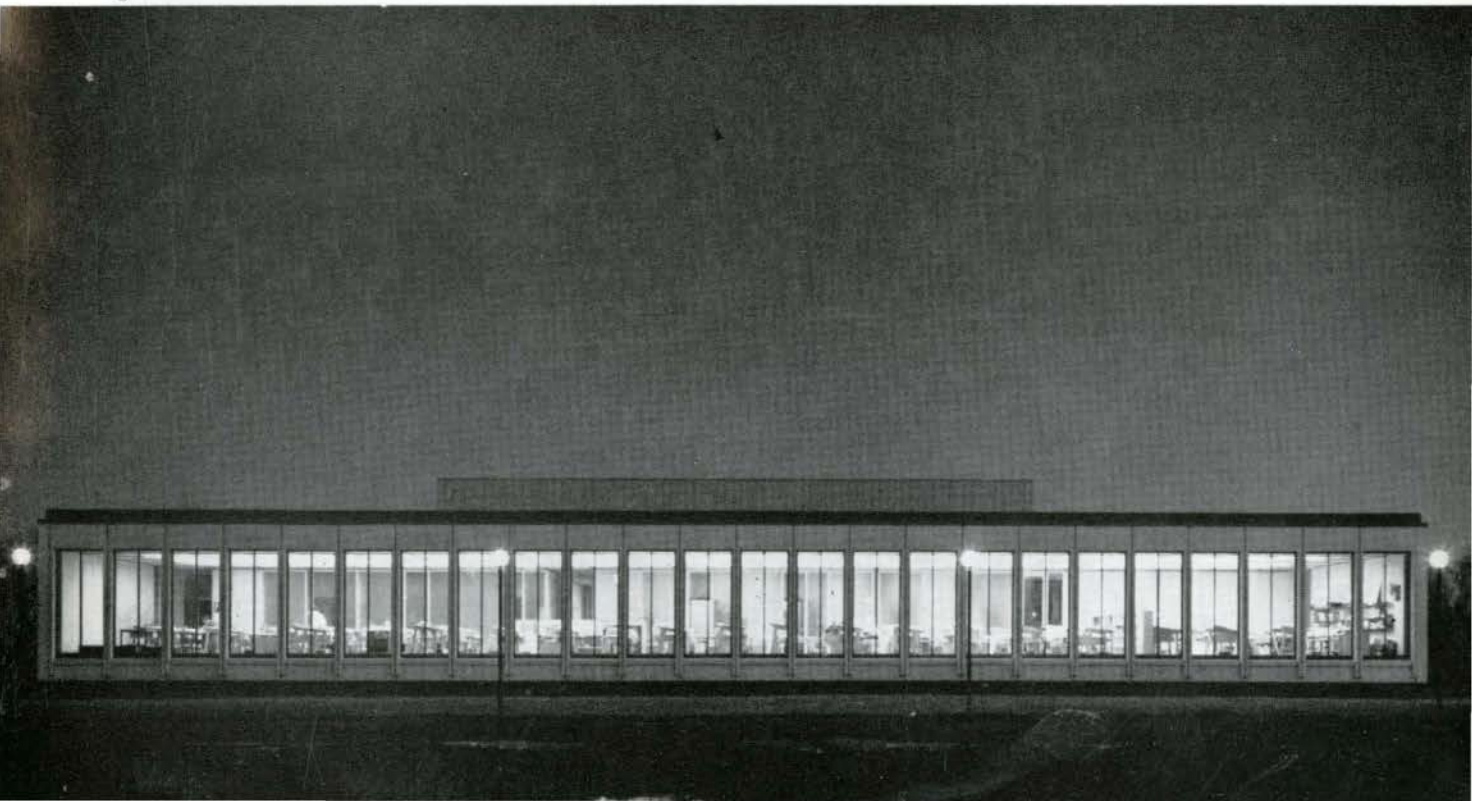
7

9

1

Head Office for
Smith Carter Searle Associates
Architects and Consulting Engineers
Winnipeg

2



The building, 127 ft long by 90 ft wide, is a fully modular structure, completely air conditioned and fully adaptable to future expansion and possible plan change. The module used throughout is 5 ft 2 in., with corridors, partitions, floors, ceilings and exterior walls, based on this module. The building is steel frame with columns at 15 ft 6 in. on centre, along the length of the building, and divided laterally into three spans.

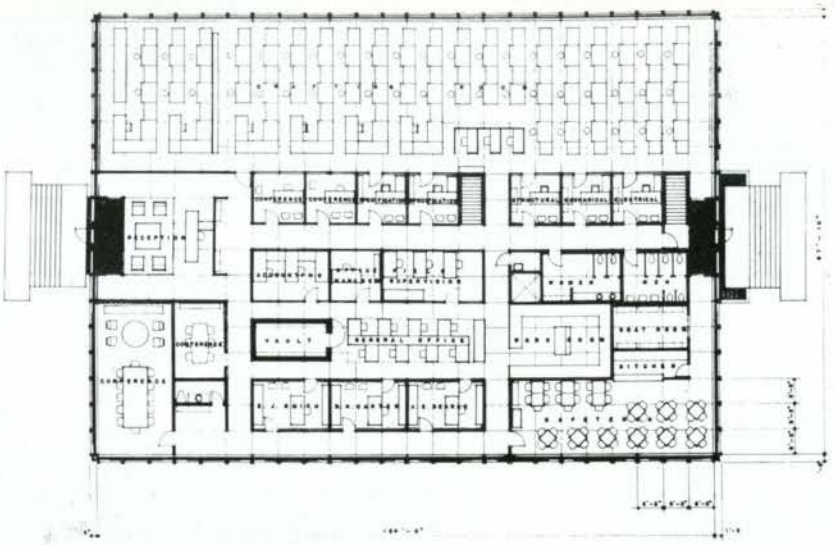
The exterior walls of the building are precast concrete frames (white medusa, with Manitoba limestone exposed chips) which have either black precast concrete panels or solar grey hermetically sealed glass as an infill. Where glass is used it is glazed into the precast concrete frames by means of structural rubber gaskets. The infill precast concrete panels have a dark granite chip aggregate and are secured to building frame by welded clips. The inside of these panels are insulated and finished. The canopies, steps and entry platforms at either end of the building are also precast concrete.

Interior partitions running north-south are wood stud covered in either gypsum wallboard, or in tentest, over which has been stretched, natural colored Irish linen usable for display of drawings and photographs. The partitions running in the east-west direction are floor to ceiling, clear or obscure glass in wood frames.

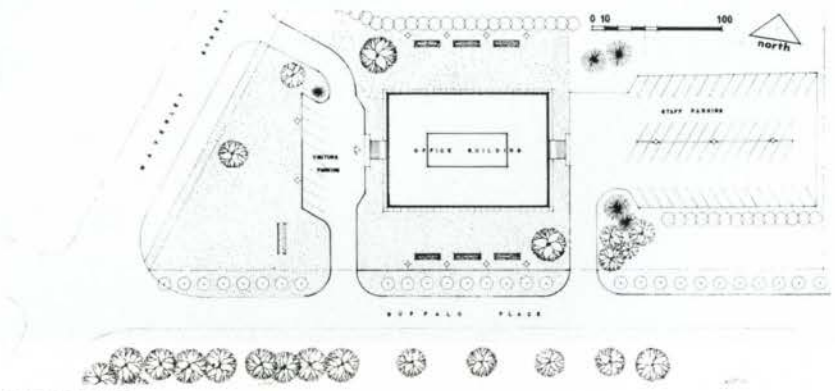
The module is also expressed in the integrated ceiling system. The main suspension runners are of slotted aluminum extrusion sections which also serve as the main supply and return of air for the air conditioning system. The lighting system employs fluorescent, vinyl faced fixtures, suspended in the aluminum grid. Vinyl faced fibreglass acoustic panels are used in non-luminous areas. Speakers are recessed in the acoustic panels at intervals throughout the building for the paging system and for music reproduction, played at a low intensity during working hours.

At the east end of the building there is a partial basement (half the area of the ground floor) which houses the mechanical area, storage space, model making rooms, telephone room, electrical room, and a large multi-purpose area which is used for full-sized mockup models of interior and exterior building details and furnishings.

The building interior has a neutral treatment with accent colors picked up in such areas as the stenographic pool and cafeteria. Special furnishings such as reception chairs and counter, partners' desks and cabinet work, and board room table, were designed by the architects.



MAIN FLOOR PLAN



SITE PLAN

3

4

1, 2. (page 43) South and north elevations respectively.
3. West (main entrance) elevation. 4. Reception area.
5. Corridor looking towards cafeteria.
6. Corridor behind reception area looking south.

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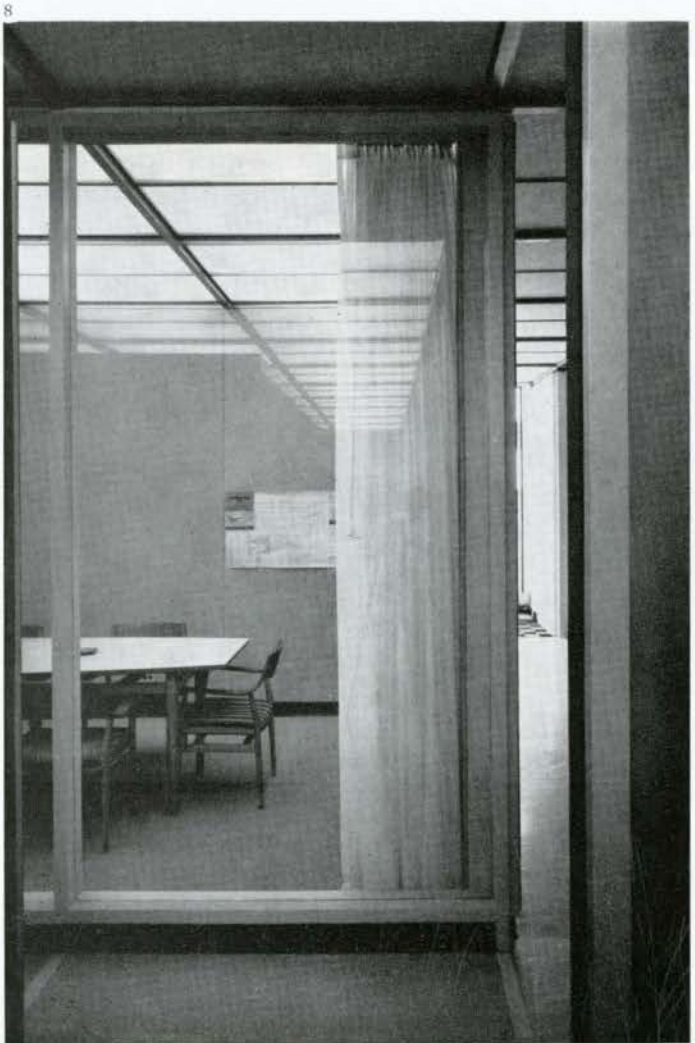

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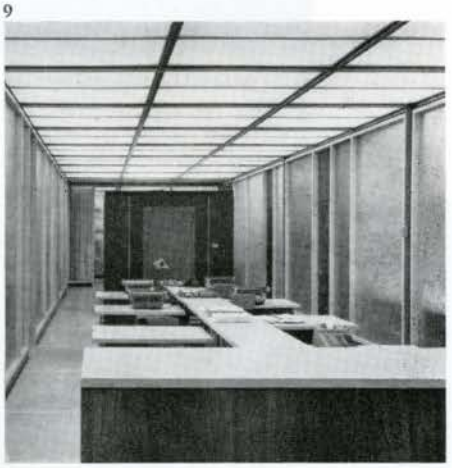


7. Main conference room.
8. Secondary conference room.
9. General office area.
10. Drafting room.
11. Specifications.

Photos by Henry Kalen

10

11

The *Journal* asked a group of eminent consulting engineers to collaborate on a series of articles on the electrical and mechanical aspects of building construction in relation to design and structure. The introduction, "The Architect as Chairman of the Design Team", is by Peter Allward, MRAIC, of the *Journal's* Editorial Board, in collaboration with Donald Angus of H. H. Angus & Associates Ltd, and Robert L. Booth of C. D. Carruthers & Wallace Ltd who planned and co-ordinated the series. Electrical services are dealt with by Donald McGregor of McGregor Associates Ltd, with G. Mulvey of G. E. Mulvey & Co. Ltd and J. Chisvin of Jack Chisvin and Associates. The article on climate control is by E. J. Okins of Okins, Leipciger, Cuplinskas & Associates Ltd, Richard Gole of H. H. Angus & Associates Ltd, and J. R. Petrinec of Shore & Moffatt & Partners. The article on heating is by Lionel Ginsler of Rybka, Smith & Ginsler Ltd, with S. Hudson of R. P. Allsop & Associates Ltd, Carl Stockman of Nicholas Fodor & Associates Ltd, and Edward Matthews of H. H. Angus & Associates Ltd.

The Architect as Chairman of the Design Team

by P. A. Allward, D. Angus and R. L. Booth

When one assesses the relationship of mechanical, electrical and structural components to today's overall cost of building, it becomes obvious that the role of the consulting engineers must be brought into clearer focus; that these consultants must assume their proper standing in the team concept of planning and design. Because he is interested in the work of all the consultants, the architect is best suited to organize this relationship, and it is he who is responsible for co-ordinating all decisions into a finished design.

Far too frequently, the mediocrity of today's architecture can be traced almost directly to the fact that a plan, a design, indeed a whole concept is brought to preliminary completion without sufficient thought being given to the client's requirements for mechanical and electrical services, let alone, the structural implications of the design. At this stage, the consulting engineer is summoned and is requested to "air condition this area, heat this area, build this long impossible span within these impossible clearances". Indeed, the role of the consultant becomes impossible, and because of the enormity of the task confronting him, the consultant himself may tend towards mediocrity.

To accomplish the team concept in design the architect must divest himself of the attitude, built up over the years, of "hiding his engineers away in a back room". At the time an architect is awarded a commission the consulting mechanical, electrical and structural engineers should be appointed. From this point on, the consultants should be keenly aware of the design philosophy of the building. This awareness can only be developed by attending all meetings with the client who will be glad to discuss any problems the project may present. A budget should be established and the costs assessed for the various elements of the building. By comprehensive planning the money available can be more intelligently spent and mediocrity avoided.

Some compromise may be necessary by both engineers and architect. Once the philosophy of the building is determined, teamwork must be maintained until completion of the project. Too often the architect's image is dulled by his attempts to supervise the work of the structural, mechanical and electrical trades. For this reason, the supervision should continue to be a team approach. Regular site visits by all members will help to coordinate their efforts and the project will develop as a unit rather than as a series of isolated efforts to correct or change existing plans. This concept can be of assistance to an architect, since it makes available at the earliest stages of the program the special knowledge of many individuals. Because of the inherent complexity of a modern building it is impossible for one individual to cope with all the problems involved and the team approach will get the client the best value for his investment.

Electrical Services

by D. McGregor, G. Mulvey and J. Chisvin

The electrical systems within a modern building are such that they require the services of a competent consultant to properly integrate them within the building structure. This assumes that he will have the necessary knowledge and experience of lighting, power and communication as they affect the building design. He will have in common with the mechanical engineer, the desire to serve the welfare and efficiency of the occupant and parallel responsibilities in his relationship with the architect.

The electrical engineer should participate in preliminary design discussions, for if it is true that the electrical design elements have less direct relationship to the basic structure and generally occupy less space than their mechanical counterparts, it is also true that they are often ignored or neglected until too late in the design period.

Consider a building in which pre-cast concrete construction is being used with cellular pre-cast floor slabs between outer and corridor walls of concrete block. It is common in such buildings to have walls and ceilings unfinished and an opportunity is offered to conceal the major portion of the electrical conduits by using the cellular slab as a raceway. This requires proper access to the ends of these cells from the corridor ceiling space. Such access may or may not be available under the proposed structural design concept.

One of the first questions posed by the architect or owner is whether the utility will supply the transformers. In most cases this can be determined on the basis of the anticipated load which can be estimated once the preliminary design is set. The engineer should specify at this time any unusual electrical load requirements for process equipment or tenants' use of power together with the degree of allowance to be made for future expansion. If the anticipated demand is above a certain minimum value set by the local utility it is compulsory for the owner to provide his own transformers. What gives rise to some misunderstanding is the fact that there is considerable variation from place to place in this minimum load at which the ownership becomes mandatory. Thus a building in one area may have the transformer supplied by the utility, while in another area the local utility may require the ownership of transformers for an identical building.

There is also the question of whether or not the so-called "vault" construction will be required in the transformer room. This is worthy of comment because the use of vault construction has become less frequent in the past decade and will probably continue to do so. The requirement exists where standard oil-filled transformers are used, and since the oil will burn in air mandatory Electric Code regulations govern the special building construction for such areas. The added cost to the building occasioned by these requirements at to-day's building costs is considerable, and it is important to consider this in examining alternatives. The transformer room with its overhead copper buswork, open insulators, three separate transformers and extensive screening has now virtually disappeared. In its place there are modular components of unit "dead front" construction which do not require screening since they are metal enclosed. These units are factory manufactured and result in greatly reduced labour on the job making it economical to consider their use. The transformer used in this arrangement is usually air-cooled, eliminating the necessity for vault construction.

If the experience of the past ten years is any criterion, the architect should be prepared to increase space requirements for all electrical equipment. In support of this a modern office building will likely be designed for 100 F.C. lighting level. Less than ten years ago 50 F.C. was an accepted standard. Double the lighting level requires double the capacity in the transformer and power distribution system. Power consumption in Canada has doubled since 1950 and with the continued increase of light levels and the growth of power requirements for air-conditioning and ventilation further significant increases may be safely predicted.

The integration of a modern lighting system into contemporary structures so that the architecture is enhanced rather than offended is a challenge to both architect and engineer. In the team relationship it should be understood that lighting is as much an art as a science.

The lighting of the structure should start at the exterior where depending on the structural material, its colour and texture, floodlighting may use incandescent, fluorescent, mercury, sodium vapour or even the newest commercial light source, the sodium iodine cycle lamp. Luminaires using this source are generally smaller physically than other sources and produce a very white light. Exterior brackets are available in a variety of aesthetically pleasing shapes and may be provided as luminaires, decorations or for functional purposes. The parking lot may now be lighted with luminaires which provide greater light per unit, and therefore fewer standards are required.

In the lobby, some of the new flangeless recessed incandescent luminaires may be set in plaster ceilings with wall washers providing uniform vertical surface illumination on the walls. These are available in sizes up to 500 watts but require considerable recessing as do luminous ceilings in ground floor banking areas and in elevator lobbies.

For show windows and for highlighting displays, track-mounted display units sized to use reflector lamps from 30 to 500 watts are used. These are in various shapes, colors and finishes, and are keyed for colour or heat filters. The track may be recessed or surface mounted.

European glass and metal ware have contributed to aesthetics in shop, restaurant and even executive areas. While plastic materials have been used extensively as diffusing media in fluorescent luminaires, these must be applied with extreme care in order to ensure that direct glare is not excessive when modern levels are installed.

It is because of these levels that in some cases the inside source heat pump has succeeded

in heating structures more economically than systems using fossil fuels. This has been a by-product of modern lighting.

It seems logical that with modular construction air diffuser and luminaire should be combined into one unit and this has been done. These recessed fluorescent troffers may be used as supply diffusers, or heat removal troffers. The troffer itself may be louvered and have a baked enamel or Alzak-aluminum finish. These are designed for installation in each of the ceiling types used in construction.

There are also new types of universal mounting exit lights available using 50,000 hour lamps and low voltage miniature luminaires with miniature lamps.

The selection of lighting fixtures having been made and the distribution equipment sized does not imply that the electrical design for a building is complete. Modern technology requires the architect and engineer to provide much more than a space which is adequately illuminated. Communications systems complicate building design.

It is almost inconceivable today that a building would not require a telephone. The designer must determine how large the installation will be, and consequently how large a wireway must be provided. The telephone system could consist of a simple, single outlet with a single half inch conduit or an involved multi-outlet system requiring switching equipment of considerable size and a complicated network of raceways. Such switching equipment must be housed in a room whose thermal environment is far more critical than that required for human occupancy.

Satisfying the outside telephone requirements is relatively simple compared to determining the internal communication systems. Will the building require a P.A. system, an intercomm system, a local integral telephone system, a locator system, a call system, a radio system, a T.V. system, an alarm system, or a clock indicating system? With few exceptions every building will require one or more of these facilities. Again the designer must ask, what kind of system should be provided, where shall it be located and perhaps most important in the architects' opinion, what will it look like?

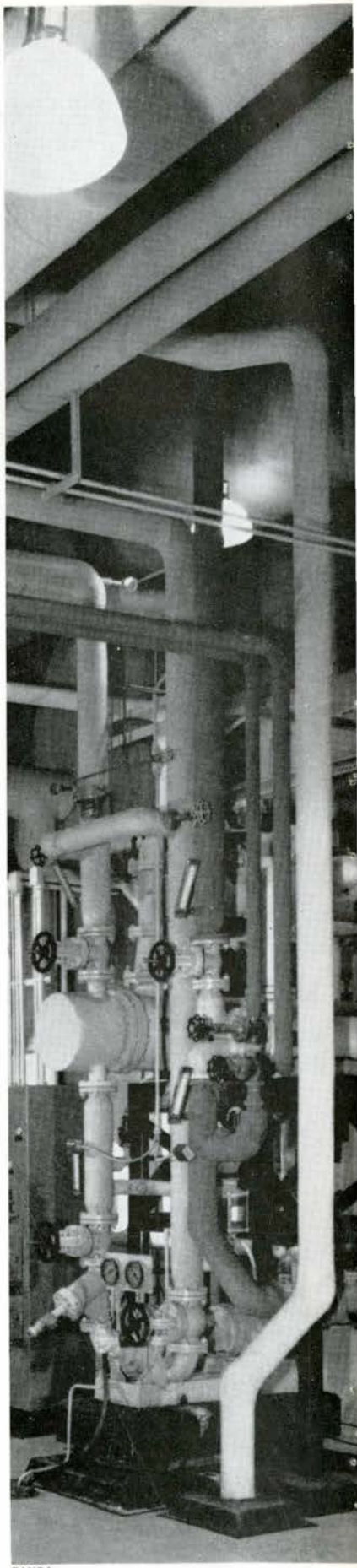
A fire alarm system is now mandatory in virtually all buildings used for public assembly and buildings of multi-occupancy be they residential, institutional, commercial or industrial. The specific type of fire alarm system is governed by municipal codes and regulations as well as the requirements of the local fire prevention authority. Common to all fire alarm systems are ugly local pull stations and even uglier signal devices such as bells or horns usually in greater number than the stations. Automatic detectors on the ceiling are required for certain institutional buildings, and most systems will have an annunciator finished in your favourite colour, fire engine red, inconspicuously mounted in the main lobby.

Schools are rarely designed without P.A. and intercom systems. The school communication system started as a convenient method for the school administration staff to broadcast a message to all students and teachers, and has developed to the point where it now incorporates as many as fifteen functions including distribution of educational television. P.A. and intercom systems similar to those designed for schools are applicable in most institutional buildings and generic versions are used in commercial and industrial areas.

In a hospital communication is essential between patient and nurse, nurse and doctor, doctor and technician, technician and central supply, and so on. A well designed hospital should have a doctor's paging system, central dictation, inter-department and intra-department communication, a nurses' call system suitable for use by patients, central clock system, T.V. antennae distribution and in larger hospitals many specialized systems to assist in an efficient operation. It is interesting to note that just as audio-visual nurses' call systems have replaced the visual only systems, so in the not too distant future, electronic monitoring of a patient's well-being may replace the nurse. Such a device could record body temperature, heart beat, and respiratory rate with greater precision and accuracy than the best trained nurse.

It is the responsibility of the building designer to ensure that essential power and communication systems remain in service under the most adverse conditions. To this end many buildings are provided with auxiliary power supplies, usually batteries, or diesel generators, which have a wider application than batteries. A diesel-generator set is man sized machinery and together with its fuel supply system and cooling requirements is worthy of space consideration at the initial planning stage for it cannot be easily tucked away under a stairwell or in a corner of a room.

It is evident that the overall complexity of the electrical system has been increasing and will continue to do so. So also will its space requirements, design time and construction cost be likely to increase. It can only be integrated with the design and building of the structure through a close liaison between the architect and engineers at all phases of the project.



PANDA

Heating

by Lionel Ginsler,
S. Hudson,
Carl Stockman,
Edward Matthews

The advantages of integrated architectural and engineering design can be exemplified by the Roman Baths of 2,000 years ago with their hollow tile hypocaust heating systems which not only maintained satisfactory room temperatures but formed an actual part of the building structure. The development of such designs could only have resulted from constant and close communication between the various designers during the initial and final preparation of the plans. The effective result of such teamwork can be witnessed to by the many buildings actually still in use.

While we can admire the ingenuity expressed in the past, we must be ready to adapt to the expression of modern designers who have available to them materials evolved only yesterday. The application of new materials and new structural developments, which allow dramatic departures from the past can only be applied and provide satisfactory results with the close co-ordination of all the required features of modern day buildings and this necessarily requires the emphasis to be on the "team" concept. Heating in Canada must be considered a very essential part of any building and the heating engineer must be conscious of the need to maintain close temperature control with draught free conditions.

The introduction of large expanses of glass, overhung office sections, and slab on grade applications have all challenged the heating designer. By and large these problems have been satisfactorily resolved but only with the close co-operation of the designers with recognition by each of his own responsibilities as well as a respect by each for the requirements of the other team members.

The heating engineer must determine at a very early stage, what sources of energy are available and which is most suitable; the medium of distribution to be used for the heating system; the location and type of plant and finally the degree of temperature control expected. Each basic decision requires careful study and discussion with the other group members if the proper choice is to be made.

Just a few years ago, the fuel for a sizeable building would likely have been coal; today, efficient firing, modern equipment and design makes possible the use of oil, gas or electricity. The fourth choice, electrical energy, is growing in favour, due to a large extent to the flexibility provided and the suitability for integration with the architectural treatment. Research is being done and technical papers written on the possibility of using solar energy and atomic energy for the heating of commercial and institutional buildings, but this must be considered still in the experimental stage as yet and not suitable for application in the commercial field.

The choice between fuels on the basis of cost per Btu per pound, gallon or cu. ft. as the case may be, is strongly influenced by many other factors requiring careful study. Coal, must be carefully fired to prevent smoke and soot and it usually involves elaborate storage, handling and burning equipment with building space to house it. The economic advantages of coal can even be submerged on occasion due to the difficulty in obtaining operating personnel. Heavy oils require complicated and sensitive firing equipment for efficient usage plus the additional operating costs of heated lines and short-lived large oil tanks, pumping sets, gas ignition. etc., and considerable daily attention if full utilization of the

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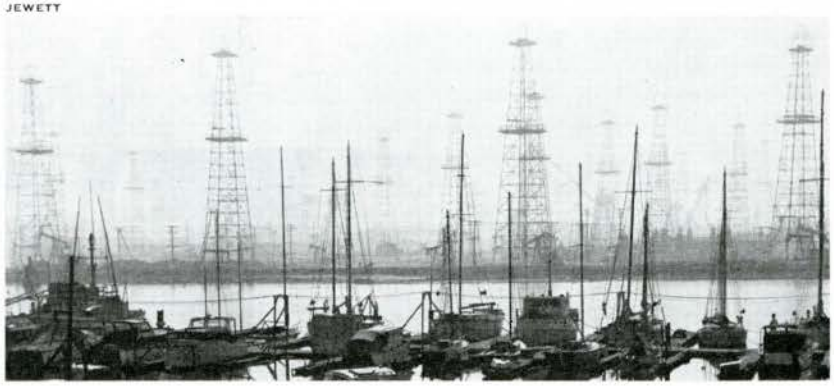

oil is to be obtained. The capital cost outlay is reduced (along with maintenance) where lighter oils are fired but on larger installations this is more than off-set generally by the higher cost of the oil. Natural gas piped to the building, requires no special storage or handling facilities and, therefore, it has a capital cost advantage over the solid and liquid fuels and can, on occasion, off-set its higher cost per heat unit, particularly where "interruptable" contracts are made available. This simplicity of integration and the introduction of very economical individual gas fired equipment in recent years has led to its wide-spread acceptance in the construction industry, particularly where low initial cost is of paramount importance. It has also led to somewhat startled expressions when the uninitiated observed the number of flues on the roof upon completion of the project. In many instances, the geographic location of the building will make it impossible to obtain certain fuels. In other cases, a penthouse or third level basement boiler room location involves, with coal, the use of bulky and expensive equipment and restricts its use.

Electricity for conventional heating is slowly gaining acceptance in areas where rates are favourable, but these buildings usually require heavy insulation as well as double glazing to help keep fuel costs down. The additional outlay to insulate buildings heated with electricity can sometimes be off-set by the saving accrued in eliminating the boiler room.

More and more use is now being made of the total energy concept in which oil or gas is used for electrical power generation and the waste heat from the generator driver used for building heating and/or cooling. This type of system is more complex and requires better qualified operating staff. The introduction of such designs with increased capital cost and floor space requirements calls for close co-operation between the building designers to properly evaluate capital outlay and return expected because of the improved thermal efficiencies.

In the final selection of fuel, the owner's preference must be given every consideration and his appointed representative must be considered an essential member of the team. He may often provide useful information if kept informed of the designer's plans. This is important where the buildings will house specialized or sensitive equipment such as would be used by a telephone company or a manufacturing process requiring the removal of noxious fumes and acidic wastes.

Where a building has a large internal heat gain, coincident with a small heat loss, the much talked about heat pump system may have economic advantages. The absence of a satisfactory heat gain/heat loss ratio could offset any gains because of the need to purchase other fuels.

In heating system distribution design there are two main objectives:

(1) To efficiently distribute heat provided by the primary source to all areas with a minimum of imposition on the architectural treatment.

(2) To maintain the required temperatures with such uniformity as is consistent with the function of the heated space.

Steam heat is generally used at pressures between atmospheric and 15 p.s.i. since higher pressure systems require better qualified operating staff. Where high pressure steam is available from a central plant, it is often used at pressures of 40 to 50 p.s.i. to take advantage of the economies which result from the reduced pipe and equipment sizes. Subatmospheric steam may also be used by the application of vacuum pumps. In modern buildings, with large expanses of glass, the extensive concealed piping systems which are required to supply a direct perimeter heating system, the consequent corrosion problems and the considerable pipe slopes required, make the use of steam impractical, as a direct heating medium. The major function of steam in the heating of present day buildings is, therefore, to heat air in duct systems.

Most heating in buildings is provided by pressurized water systems operating between 150°F. and 200°F. terminating with heat transfer devices. The use of water gives greater scope to the architect and engineer in that there are fewer limitations with regard to offsets and slopes.

Heating the air is accomplished by passing water or steam through tubing where fins can transfer heat to the air and at the same time generate convection currents. Unit heaters provide an economical means of heating secondary areas of the building such as shipping and receiving areas, equipment rooms, etc., where high air velocities and noise levels are not a serious factor. Forced-flow convectors are often useful in lobbies and other entrance areas, where restricted physical space and high out-put are required. The cast iron radiator, with its large volume of water and material has considerable thermal inertia, which is undesirable for close temperature control. This fact combined with their bulk and high installation costs has largely eliminated their use in major present-day construction.

In a perimeter induction unit, air passes through the heating coil by a

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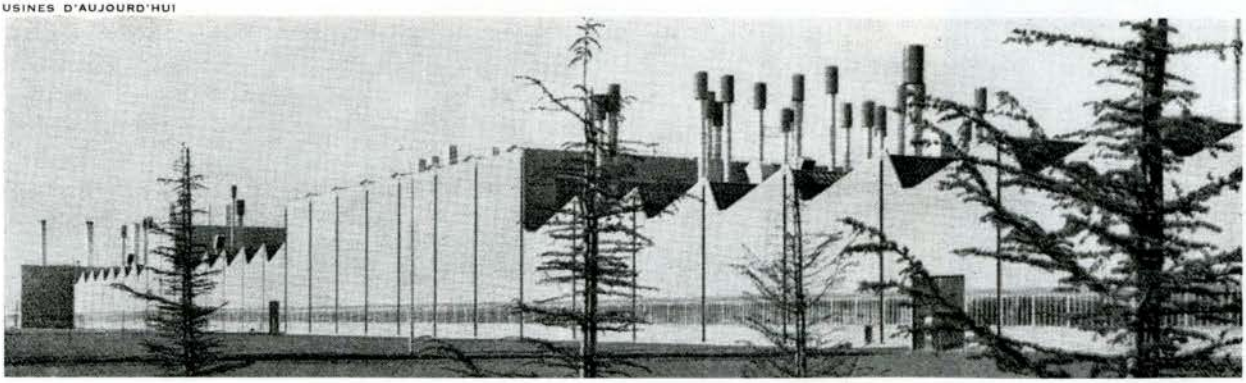


venturi action which is developed by introducing a small quantity of ventilation air through specially designed nozzles in the unit. All-air units perform their heating function by mixing the correct proportion of air at a temperature above normal with a quantity of air below room temperature all under a thermostat control.

Most heating units including convectors, wall-fin unit heaters, and air heating coils, are also available as resistance heaters using electric power. In such units, the finned tubing, required for the circulation of water or steam, is replaced by finned electrical resistance heaters, otherwise the systems are the same.

One valuable asset provided in the team approach is the competitive atmosphere created by the members in their attempts to evolve a design compatible with their own interests. Although each has his own special field, he has of necessity acquired a familiarity with all the aspects of construction and can, on occasions, in order to defend his own design suggest avenues of investigation which might otherwise be overlooked. It is frequently in this charged atmosphere that the final design begins to take form and the merits of glass and masonary areas evaluated.

The location of the heating and refrigeration plants and ancillary equipment requires careful scrutiny since these are generally the largest single items within the entire structure and affect every phase of the building design. It is the professed claim of every consultant to provide the most economical, efficient, compact and serviceable plant commensurate with its use and economy. With the introduction of air conditioning in most buildings, it has emphasized to owners and architects, the amount of capital tied up in the central equipment, and where once the general philosophy was to hide this necessary evil in some dark corner of the basement, modern plants have become show pieces with glass panelled walls and observation platforms.

Most heating plants are designed so that in the event of failure of some major equipment such as boilers or heating pumps, stand-by equipment is provided. Full capacity stand-by on such equipment is not necessary except for essential services and generally two thirds is considered sufficient for heating systems. In addition to boilers, the central plant will normally house such equipment as heat exchangers, circulating pumps, domestic hot water storage tanks, expansion tanks.

When coal was the primary fuel in use, this meant that the central plant was located in the basement with the chimney being carried up through the building to dispose of the flue gas. The height and size of this chimney was generally established by the draught required for the satisfactory operation of the boilers, and in many cases, unfortunately, became the most prominent feature of the buildings. However, with the introduction of pressurized firing to boiler equipment, the designer has been given the choice of locating the plant in the basement or on the roof of the building since the chimney no longer is the main source of draught. The requirements for height of the chimney are, therefore, usually dictated by local by-laws and the proximity of ventilation air intakes and other buildings.

While a roof top plant allows the space taken for a chimney to be deleted, with an increase in rentable areas, it does introduce certain other problems. One main problem is the mounting of equipment to prevent vibration and noise transmission to the building. If heavy oil is fired, special care must be taken to keep the lines passing up through the building, warm at all times, and this can be an expensive proposition. Consideration should be given to the replacement of any major portion of the penthouse plant as heavy costs will be incurred in hoisting, particularly in high rise buildings where elevator shafts are too small. Other items which may affect the engineer's decision on plant location are additional structural costs, soil conditions and the value of basement areas to the client. In general the engineer will still locate the plant below grade.

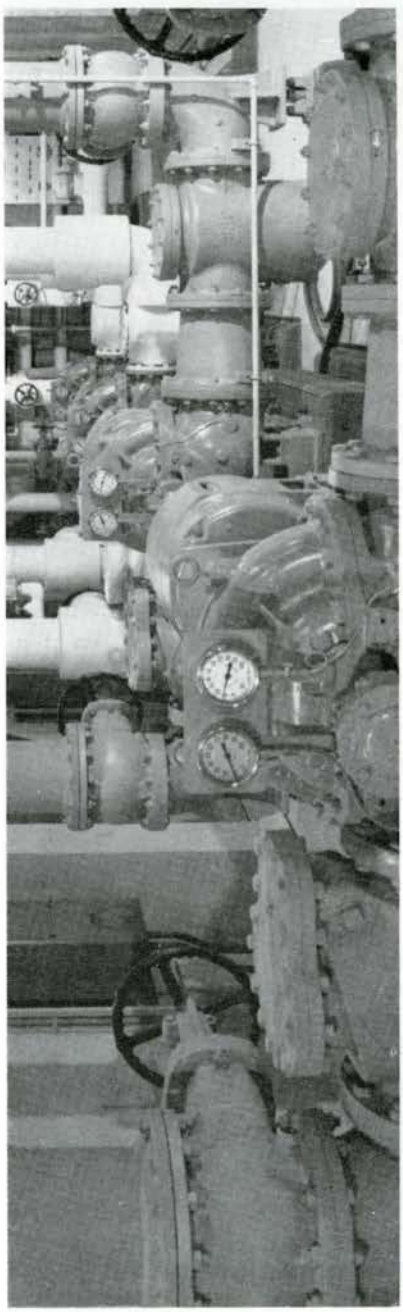
New provincial and local regulations governing safety standards for central plants and equipment are becoming highly involved. Fresh air intakes which affect the exterior treatment must be located in accordance with several regulations involving dimensions and relationship to grade as well as to the firing equipment itself. These regulations are under constant revision, particularly in the last few years and require careful study by all the parties concerned to ensure that all requirements are met.

A flame failure protection system is necessary on every boiler installation firing oil or gas and in the event of a flame-out, it must shut off the fuel supply immediately to prevent the accumulation of fuel or explosive gases in the combustion chamber. The proper timing for purges and ignition and interlocks with other safety devices are designed into the flame failure system. The manufacturers of flame equipment have evolved in the last decade sophisticated, compact, reliable and economical systems to aid the engineer in this problem. Combustion control systems for most plants are electric. Basically they proportion the supply of air and fuel so as to maintain the required steam pressure or water temperature while firing efficiently. During the last decade, all major communities have recognized the problem of air pollution, and many require smoke detectors, usually equipped with an alarm, to warn the operator when poor combustion conditions exist. Codes are being more rigidly enforced each year and so most modern plants have a device to monitor the intensity of smoke. Even with such controls, it must be understood that efficient plant operation ultimately is the responsibility of the operating personnel. This emphasizes the need for personal supervision and instruction by the engineer responsible for the design. One proposal for the elimination of individual heating plants in this country is the wider use of district heating. It has proven very successful in some major cities in the United States but has had only limited acceptance in Canada. An encouraging step is the introduction of such a system for the City of Toronto.

Temperature controls have advanced from "putting another log on the fire" to the sophisticated pneumatic and transistorized systems which can automatically maintain, log, scan, alarm and reset to suit almost any requirement. There are even controls to correct for the lag in body adjustment with rapid variations in outdoor air temperatures. Future installations of thermostats may allow the control instruments to be completely concealed and integrated without a reduction in sensitivity.

Climate Control

by E. J. Okins,
G. Granek,
R. Gole
J. R. Petrinec



To today's discriminating and demanding individual, year-round, properly controlled air conditioning is no more a luxury than is indoor plumbing. Taking into consideration the health, efficiency and well-being of the occupants and the need for air purification and reduction of extraneous noise, a building cannot be successfully designed without effective climate control. With co-operative architects' design, engineering ingenuity, recent technological advances, and the competitive market in contracting and manufacturing, today's capital cost of good climate control systems has not risen within the last decade, in spite of increased overall construction costs.

What is air conditioning? As defined by the A.S.H.R.A.E. Guide "Air conditioning is a process by which, simultaneously, the temperature, moisture content, movement and quality of air in an enclosed space intended for human occupancy may be maintained within required limits." Optimum indoor design conditions for normal occupancy are from 72°F to 78°F with relative humidities ranging from 40 percent to 60 percent; 15 to 45 feet per minute permissible air motion at occupancy levels; and with a minimum 0.10 c.f.m. of fresh air per square foot of floor area. The noise contribution of the system to the occupied space should not exceed the recommended noise criteria.

To ensure the achievement of proper building climate control, the role of the engineer in the design and construction of a building is one with manifold responsibilities and duties, which may be briefly outlined as follows:

(1) An appraisal of the architectural design and its effect on the air conditioning system, along with a study of the integration and modular co-relation of structural, electrical and additional mechanical services with the air conditioning design. The consulting engineer must be a forthright critic during the preliminary discussions about such items as fenestration, building orientation, insulation, building materials, structural design, lighting design. He must advise if any would adversely affect the design, operation, flexibility and cost of the air conditioning system. Every 100 square feet of glass along south, east or west elevation will increase the cost of air conditioning system by $1,000. The building fabric must be selected only after economic evaluations of the use of air conditioning as an integral part of the building design. The extent and type of wall and roof insulation should be studied in order to determine the optimum efficiency. The advantages of double glazing to provide winter humidification without condensation, to reduce winter heat loss, and to improve thermal environment by raising inside surface temperature, must be weighed against increased cost of the windows, and often of the air conditioning system. (With reduced heat loss windows with a southern exposure will require more air to maintain cooling requirements during solar peaks in October.) Placing the long axis of a rectangular building in an east-west direction may change the cooling peak from August to October. Often a small change in the floor plan may result in an appreciable reduction of air conditioning outlets. Similarly, a more expensive structural floor or framing system may result in a net overall saving due to extensive savings in easily routed ducts and piping.

Indirect lighting, using incandescent lamps, may provide a desirable atmosphere, and lighting intensities of 200 ft candles give a very startling effect. A quick translation of watts to Btu to space to volume to dollars per square foot, then equating dollars per square foot in budget against dollars per square foot required, may indicate a startling and sobering deficiency.

(2) The second function of the air conditioning engineer is as an advisor in the evaluation of various methods of climate control. There are many systems available for office buildings, and the advantages and disadvantages of each must be given full consideration by the engineer.

For the building interior (spaces within ten to fifteen feet of the exterior wall) year-round cooling is required. Low or high velocity duct distribution to ceiling or wall outlets may be used with a simple single zone control. Other systems will also apply if the interior areas are to be subdivided. For the exterior zone of the building, which is subject to varying solar loads, temperatures, and wind effects and where private offices are normally located, more complex systems with more elaborate controls are required. The following are a few such exterior systems:

(a) Unitary fan-coil heating-cooling units provide the function of heating dur-

ing the winter and cooling in the summer. The intermediate season control is not too satisfactory unless the system is modified by providing warm and chilled water at all times or by supplementing with sufficient conditioned air to match cooling requirements, after shut-down of refrigeration machine. The fan coil units may be installed with either standard cabinets or furred-in to suit architectural requirements. The space required does not exceed that required for direct radiation. Periodic maintenance of the individual fans, motors, three-speed switches, in addition to automatic valves and filters, and the rated life of moving parts should be considered.

(b) The high pressure induction unit consists of a special air chamber with acoustic lining, a heating-cooling coil, lint screen, arranged within a decorative enclosure. Special air nozzles produce a venturi effect behind the coil to induce room air across the unit, discharging the resulting room and primary air mixture upwards. Either warm or cold primary air is supplied to these nozzles from a central high pressure fan system. Either hot or chilled water from a central system is pumped to the coils. The venturi effect produced at the air nozzles eliminates the need of individual circulating fans at each unit, thus requiring no moving parts within the enclosure. With the two different temperature media (air and water) available at each unit, it is possible to maintain adequate control, not only during summer and winter, but also during the in-between seasons when heating may be required for the northern exposure of a building and cooling simultaneously for the southern exposure.

(c) The air mixing unit of a double-duct system usually consists of controlled air valves in an acoustically lined sheet metal box to mix cool with warm air. In this way a constant volume of air at varying temperature is supplied into a conditioned area to maintain specific conditions. The air for these mixing units is supplied from a central fan system through "hot" and "cold" ducts respectively. These units thus eliminate chances of freeze-up and/or leaks in occupied spaces. The hot and cold ducts will be either of a high or low velocity design, depending on space conditions and power limitations. However, compared with *(a)* and *(b)*, this system requires greater horsepower and additional space for ducts and for air handling equipment.

(d) Although the systems under *(a)*, *(b)* and *(c)* are most commonly used, many others, such as radiant panel, terminal reheat induction, multi-zone or a combination of many systems can be used effectively and each may give best results for a specific case.

(3) The next function is a cost analysis of the various methods of climate control: As part of the architect-engineer team planning, a budget must be prepared, based on past experience and a preliminary load study. Before making final choice of a system, not only the initial cost must be considered, but also a study should be made of operating and maintenance costs. Although the key word is generally "initial cost", the owner should be aware of operating cost and the life expectancy of system components. Accessibility of system components and the effect on maintenance should be carefully evaluated. The local regulations for plant operators, the cost of filters and their maintenance, the cost of standby equipment and the use of small machines at partial load, the cost of summer reheat, the cost of running the refrigeration machine past the summer months in order to achieve unidirectional control without changeover, are among factors which must be considered.

(4) Determination of optimum space requirement and the location of equipment.

Perhaps the most difficult task of the engineer is often the acquisition of adequate space for the installation of air conditioning equipment. This applies to clear spaces above ceilings, duct and pipe risers on each floor and finally equipment rooms for all the prime equipment (including necessary clearances for proper maintenance) such as supply and exhaust fans, compressors, cooling towers. This duty is not always fully appreciated since the satisfactory end result is one that generally can be felt rather than seen. The engineer, however, must call upon his knowledge and experience in practical and economical location of shafts and mechanical equipment rooms, along with architectural conformity. With space at a dollar premium, it has become extremely important to place the mechanical equipment and shafts at proper locations in order to minimize "lost" floor area. With the emphasis on the overall cost of the building and with building zoning restrictions, the floor-to-floor heights have been reduced to the minimum ceiling space required to contain the mechanical services.

Should all equipment, including compressor and fans be located on the roof? *(Desirable locations for equipment are discussed in 'Heating' by Lionel Ginsler).*

In order to ensure a successful interpretation and execution of plans and specifications, a qualified and reputable air conditioning subcontractor is essential. In all cases, the architect and engineer must retain the right in screening and selection of the subcontractor. The architect's and engineer's responsibility to the client have not terminated upon the award of the contract. One of the most critical stages for the engineer begins with the actual construction of the building. Complicated and costly air conditioning systems, common in present-day buildings, although well designed, become the victim of poor co-ordination between the associated contractors in the field. To avoid any misinterpretation of the intent of contract documents, the system designer must be given the opportunity to inspect the installation and safeguard his design.

The satisfactory handing over of the building system cannot be accomplished without proper balancing, testing and instructions to qualified personnel.

It is at this crucial stage that the engineer's role of designer-inspector-advisor may be misinterpreted by an inept or indifferent contractor. The architect-engineer is too often called upon to become expediter, technician, contractor and finally educator, if he wants to ensure speedy completion, a satisfactorily operating and operated system, and a contented client.

Since we have no control over the outdoor climate and must perform our daily functions within artificial shelters, it is essential that we control the indoor climate. Until the advent of magic "instant cooling", this will have to be accomplished by conveying fluids through equipment pipes, ducts and wires. To achieve this without being seen, heard, felt, or scented is the air conditioning engineer's prime function. His success, of course, depends on the understanding of, and co-operation with, the rest of the architect-engineering team.

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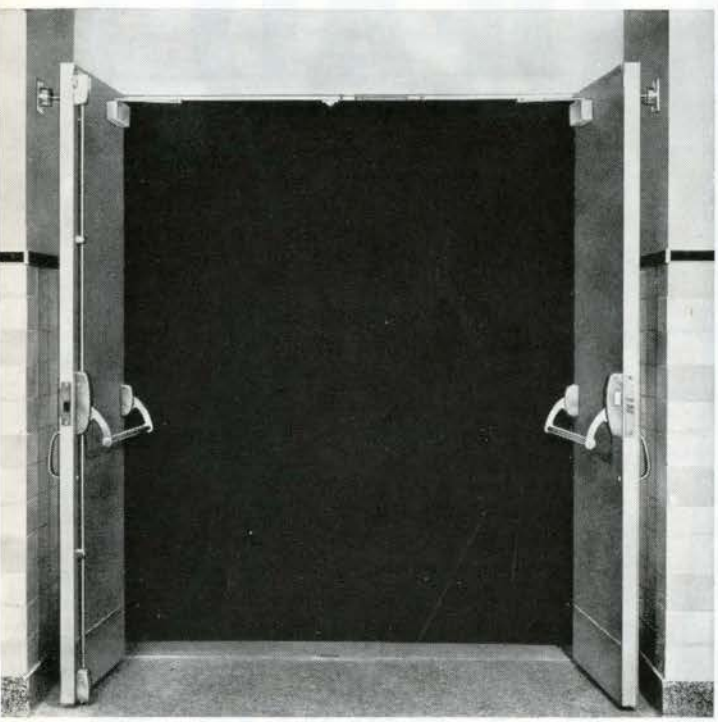

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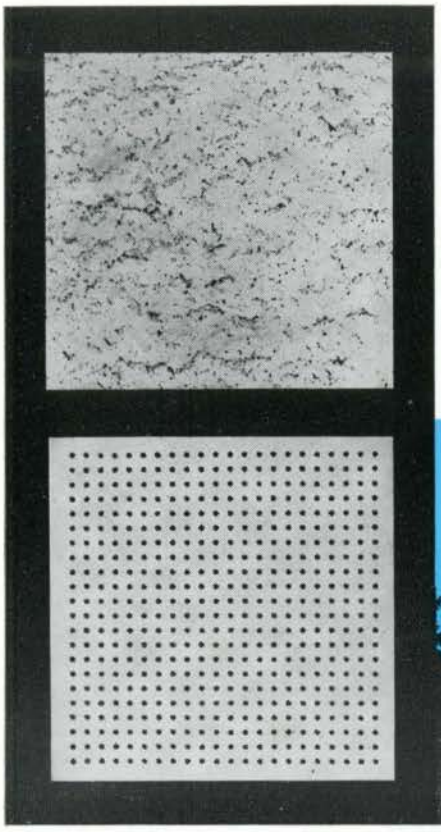

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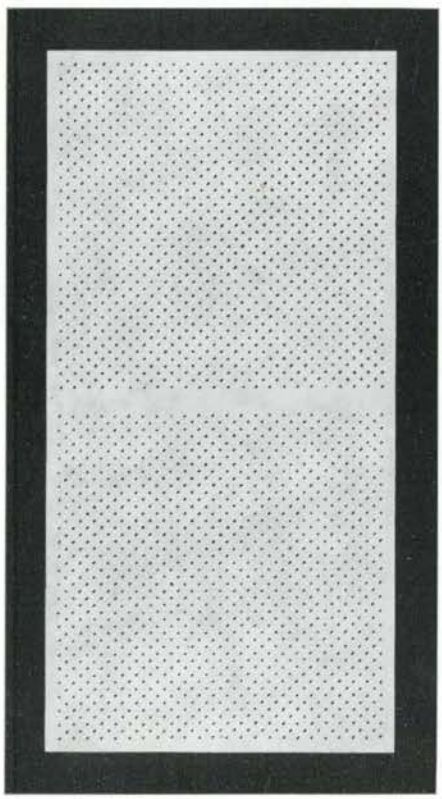

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Catalogue no. 92-570, Facts You Ought To Know About Packaged Air-Conditioning, from Acme Industries, Inc.; includes specification tables. *Aldite Corp., Ltd, 22 Howden Road, Scarborough, Ont.*

Booklet on Protexol, a fire retardant treatment for wood. RAIC file no. 19-A-33. *Canada Creosoting Company Limited, Division of Dominion Tar & Chemical Company Limited, Toronto, Ont.*

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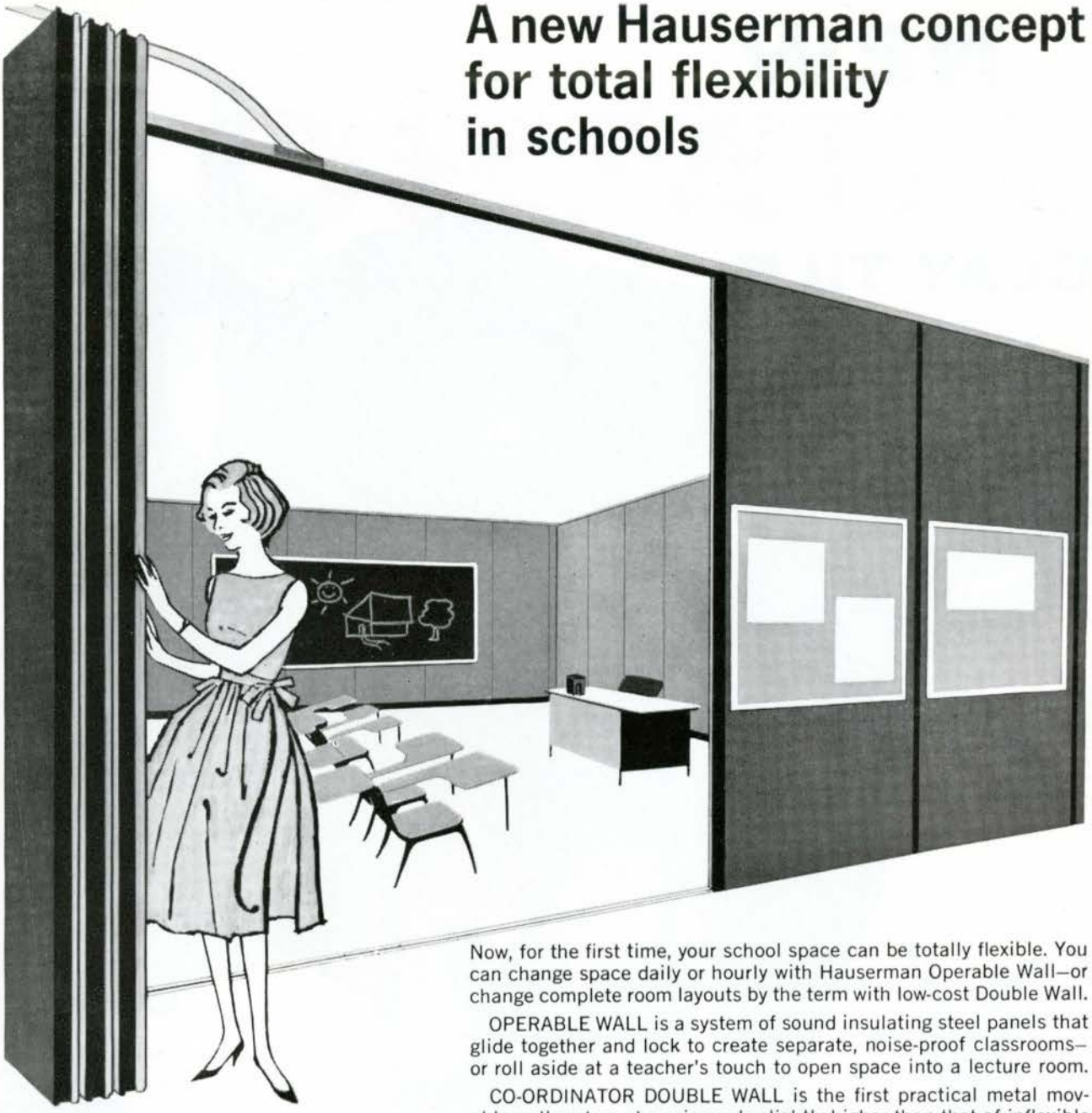

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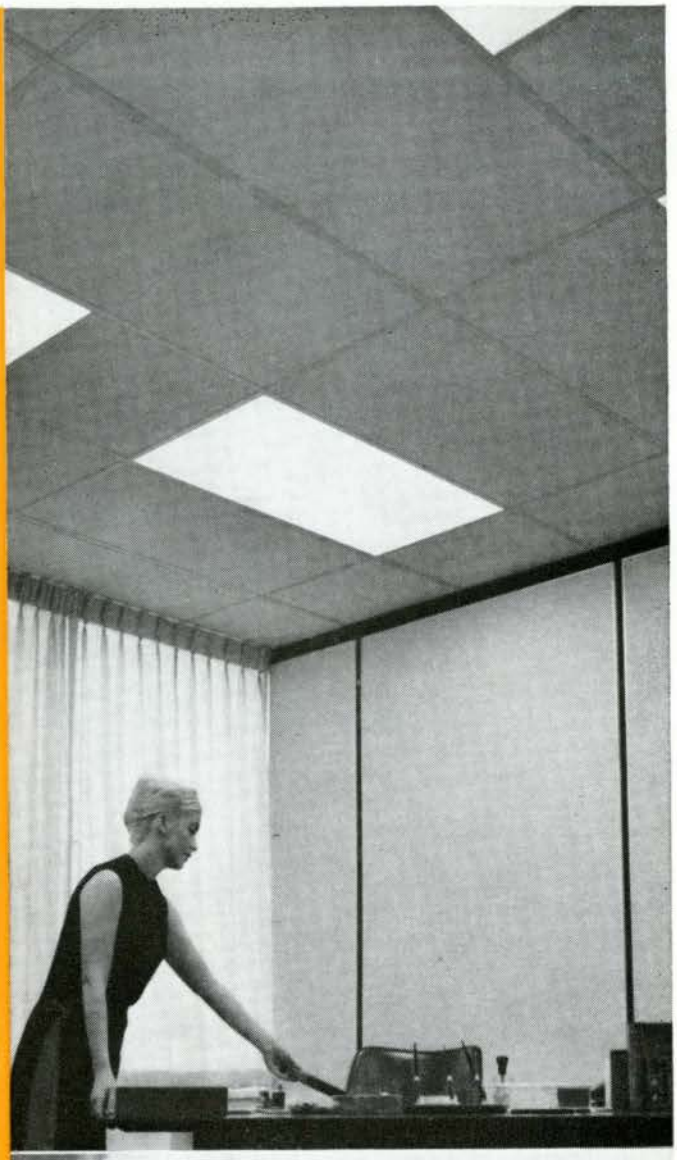

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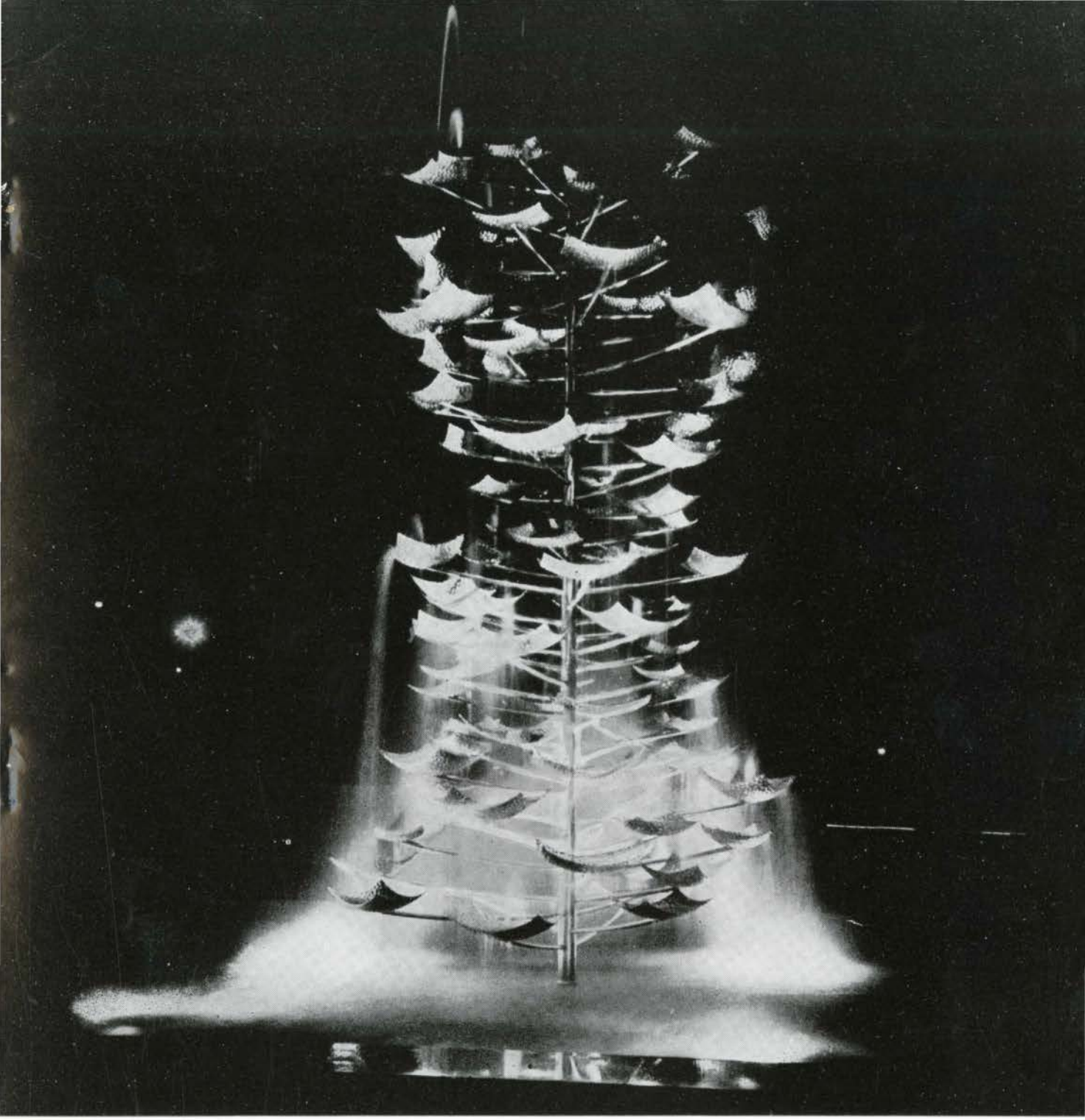

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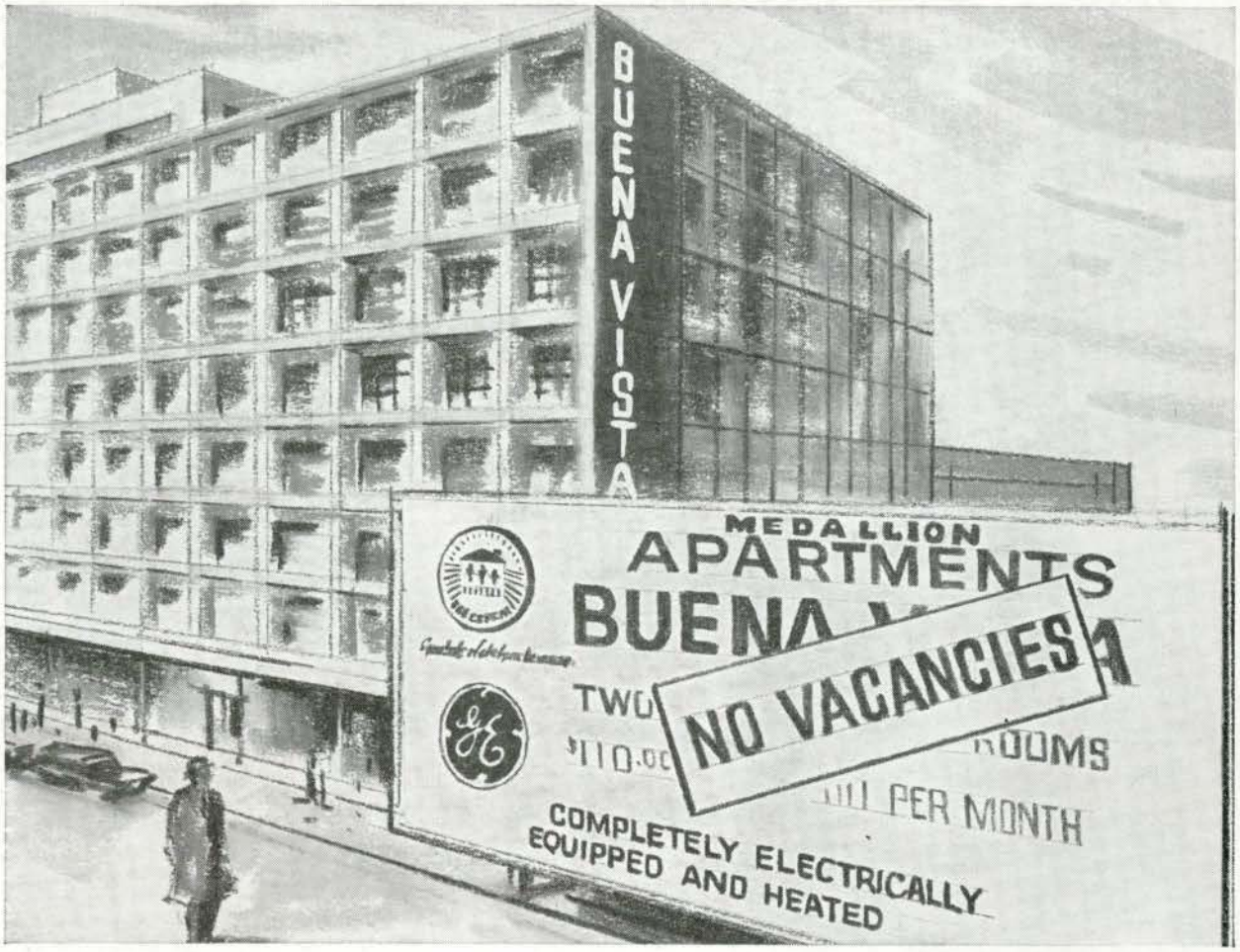

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