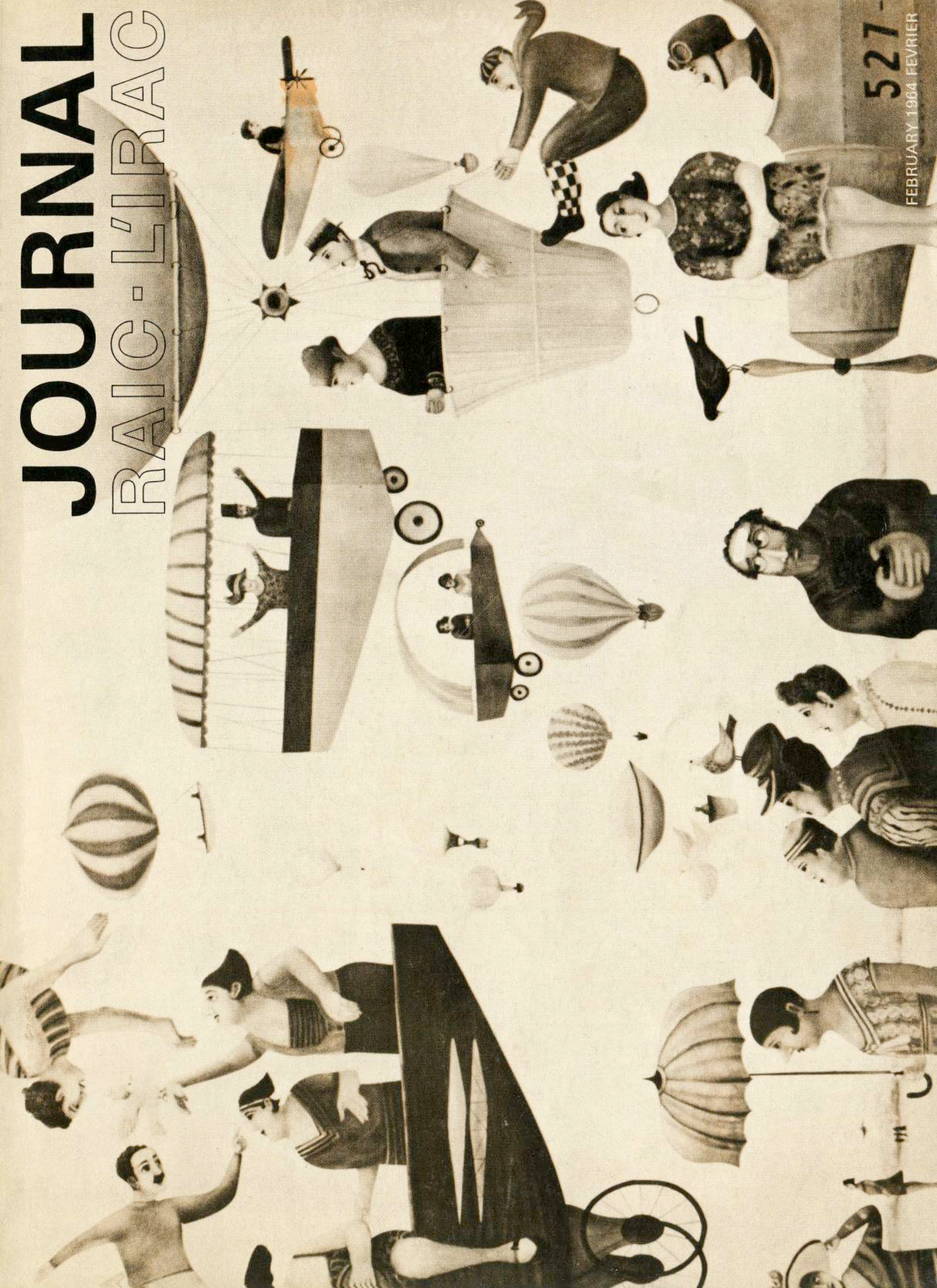


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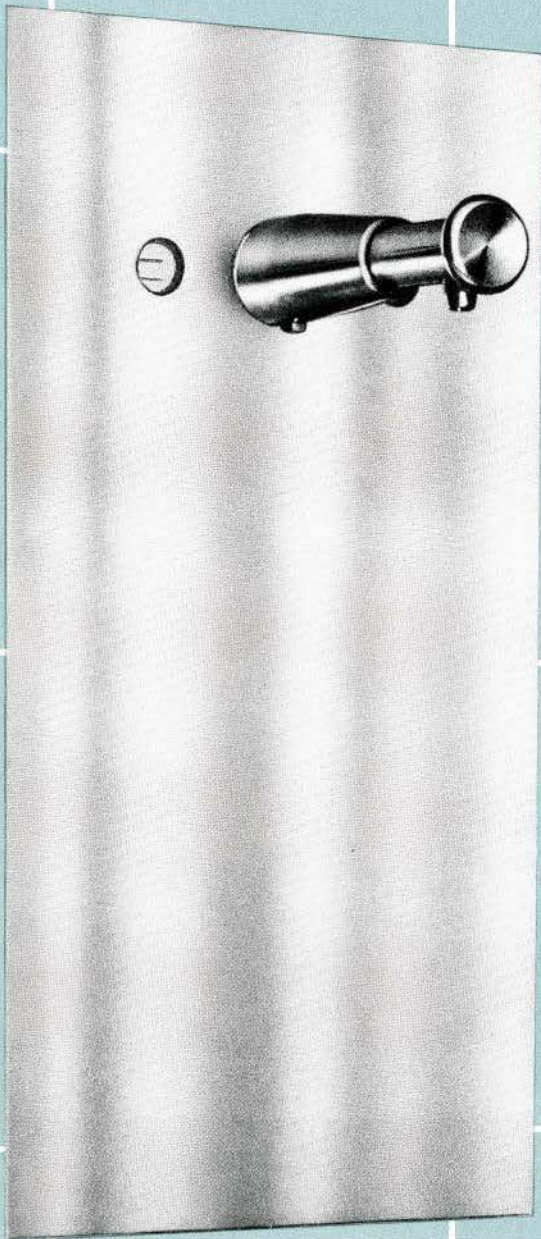
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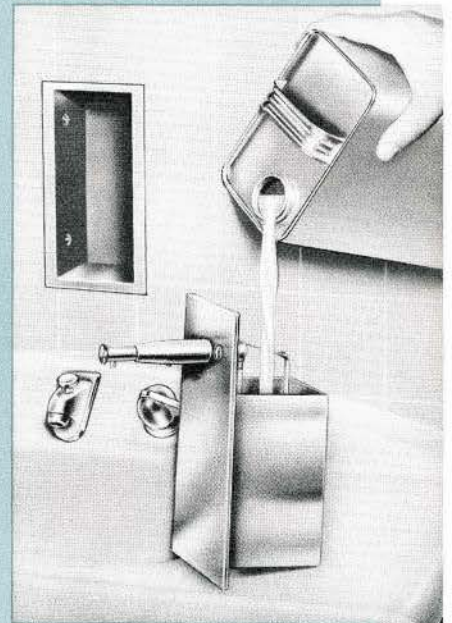


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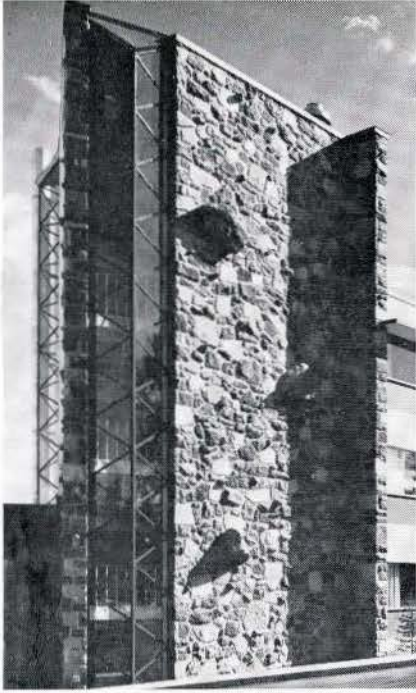
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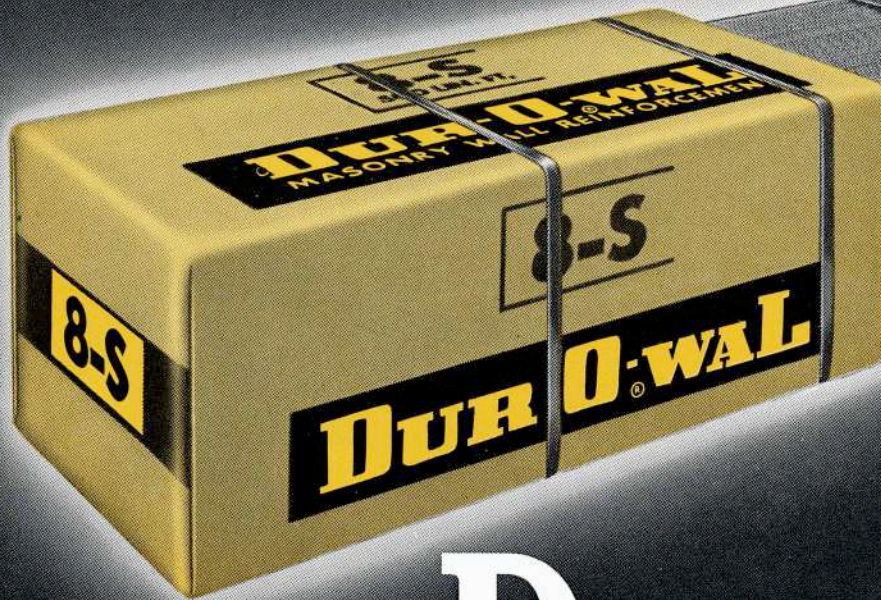
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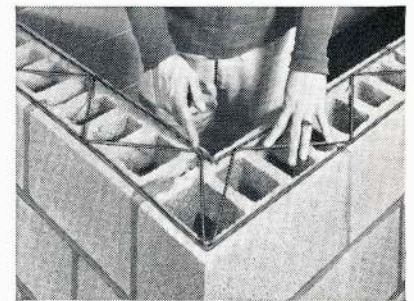
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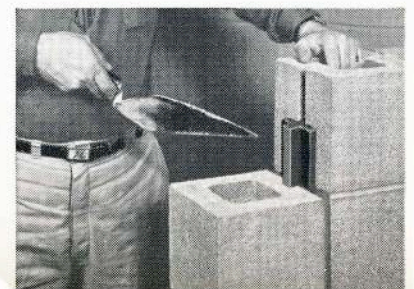
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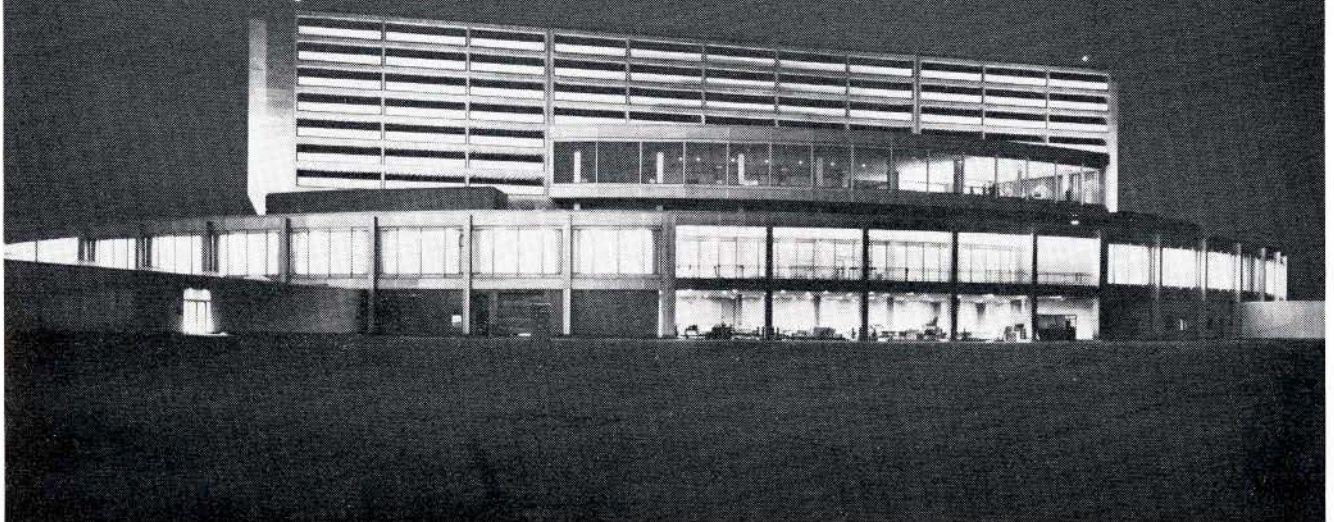
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# Institute News

Last November, we had the unhappy mission of sending this telegram to our colleagues of the AIA in Washington, on behalf of the RAIC: "The architects of Canada offer deepest sympathy in national tragedy and join you in mourning the loss of President Kennedy".

AIA President J. Roy Carroll Jr., has asked us to express the appreciation of his colleagues for our expression.

The AIA Memo shortly afterward, in a commemorative issue, reprinted the special citation awarded to President Kennedy in May 1963 "in recognition of his leadership in the encouragement of excellence in the design of buildings and other structures for the public need . . .".

The Memo also quoted Mr. Carroll's remarks on that occasion: "But you, sir, are the first President of the United States — except, possibly, the first and third ones — who has had a vision of what architecture and its allied arts can mean to the people of the nation, and of what the careful nurturing of the architecture of the city of Washington can mean to the millions who come here to pay homage to the heart of their country."

Canadian architects and construction people are being asked to examine the new Construction Specifications Institute Format for Building Specifications, developed by an AIA-CSI group. A second conference on the subject was held in Washington on Feb. 24. The RAIC and the Specifications Writers Association of Canada were represented at this conference, with a view to considering its adoption as a standard index for construction specifications in Canada.

The first annual conference of the newly-formed Canadian Building Officials Association will be held in Halifax, April 8-10. "Redevelopment" and "Rehabilitation" will be the keynote topics for the program, sponsored by the Associate Committee on the National Building Code. Details are available from the Associate Committee, c/o National Research Council, Ottawa.

The Canadian Federation of Mayors and Municipalities presented a full submission on community development to the federal cabinet in Ottawa on November 15th. The report covered urban renewal, housing, transportation, economic devel-

opment, schools, hospitals, recreation and open space. The submission is well worth the attention of our members, and more information is available from RAIC Headquarters or from the CFMN office, Mount Royal Hotel, Montreal.

We have received from Warnett Kennedy, professional advisor, the report of the board of assessors for the Simon Fraser University Architectural Competition. This volume sets a high standard for such reports, giving the objectives of the competition, an assessment of each of the prizewinners, and the architects' entry plans — all reprinted clearly and attractively.

"Designing for the Disabled", the first comprehensive information manual on planning homes and buildings for disabled people, is now available from The Building Centre, Store Street, London, WC1, England. Published by the RIBA Technical Information Service, it is the report of the research project directed by Selwyn Goldsmith, ARIBA, and has been prepared primarily for the architect at his drawing board.

The Canadian Corporation for the 1967 World Exhibition has announced the formation of an advisory committee on architecture to make recommendations on the architectural and other related elements which will reflect the characteristics and esthetic qualities of the



Prime Minister Lester B. Pearson, who will be guest speaker at the annual dinner at the 57th RAIC Assembly at St. Andrews, NB, on June 20th. An Honorary Fellowship will be conferred on Mr. Pearson at the College of Fellows Annual Convocation the same day.

Exhibition. These recommendations will cover every stage of design.

Chairman is John C. Parkin (F), Toronto. All parts of Canada are represented in the committee, which includes Claude Beaulieu, Guy Desbarats (F), and John Bland of Montreal; Gilles Côté of Quebec; Douglas Shadbolt of Halifax; Walter M. de Silva of Charlottetown; James E. Secord of St. Catharines; K. Izumi of Regina; Etienne Gaboury of Winnipeg and Geoffrey Massey of Vancouver.

This committee is an outcome of the recommendations made by an advisory committee of architects and engineers, formed last spring on RAIC initiative, and chaired by E. A. Gardner (F). Mr. Gardner is also continuing in an advisory role to the Exhibition.

The Union Internationale des Architectes lists the following competitions as not complying with its regulations, and requests our members not to participate: Addis Ababa — new buildings for Ministry of P.T. & T.; Tronchetto, Venice — town plan.

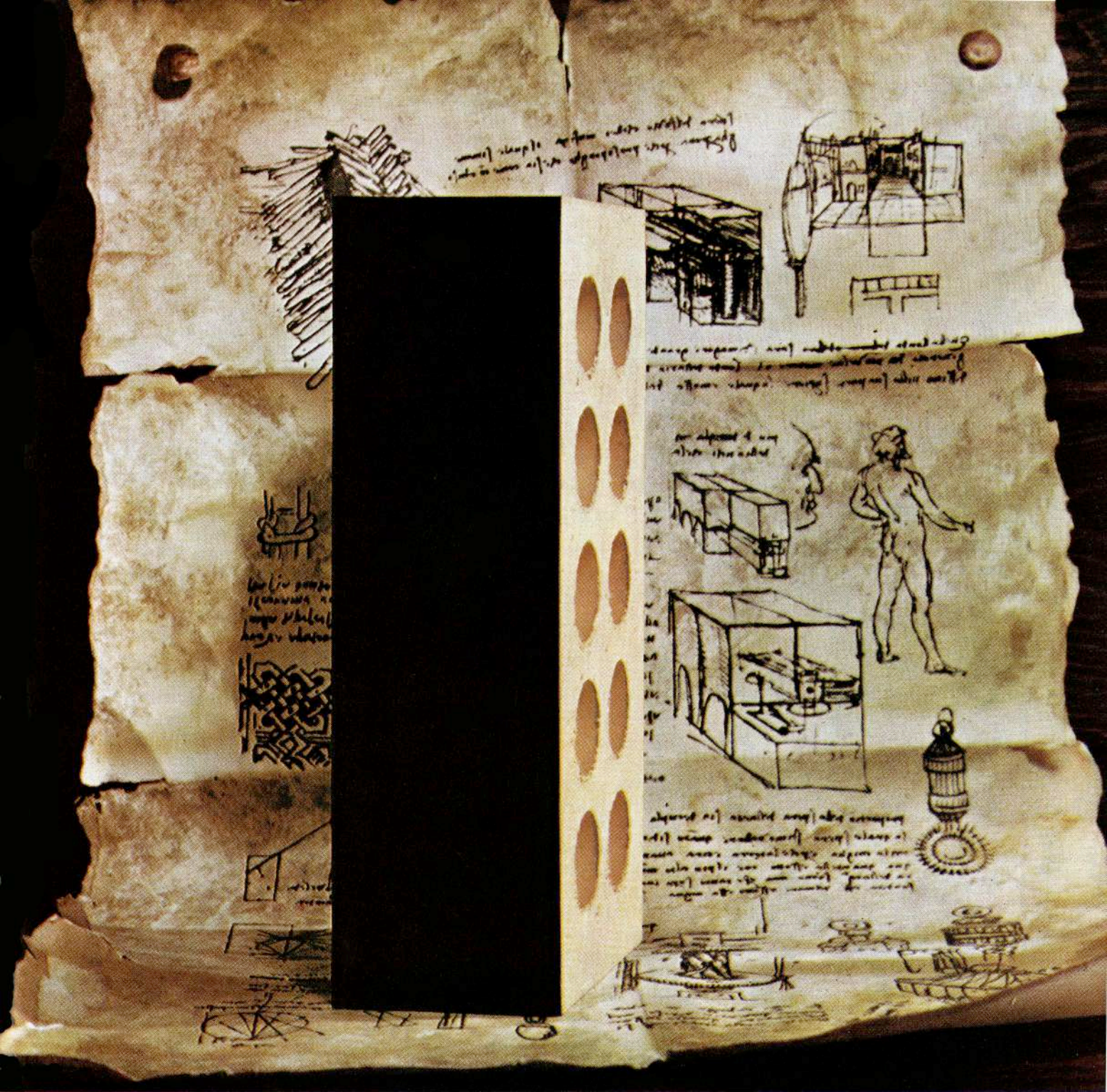
The RAIC Certificate of Membership is now available from RAIC Headquarters — 22" x 15", suitable for framing, at \$5.00. Please give your name as you wish it to appear on the certificate.

## RAIC BRIEF ON INCOME TAX

A brief recommending that the Income Tax Act be amended in order to permit registered architects to average their income over a period of more than one year, for tax purposes, was submitted to the Royal Commission on Taxation by the RAIC on January 23. James W. Strutt (F), Ottawa, Honorary Treasurer of the Institute, presented the brief, which pointed out that an architect might earn in one year a relatively high income, necessitating payment of a heavy tax, while in the following year his income may be relatively low. Larger projects often involve him in work extending over more than one year. He is thus placed in an unfavorable position as compared to other taxpayers whose salaries are more stable. The brief noted that the principle of averaging income in this manner is recognized and approved by the Department of National Revenue in the case of certain classes of taxpayers, and said that if the principle could be extended to include architects, without the necessity of an amendment to the act, this would satisfy the RAIC recommendation.

Fred Price





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## INTERNATIONAL DESIGN COMPETITION

An international design competition for the construction of three single family residences in Hollywood has been announced. The competition is open to all architects, associations of architects, and designers belonging to the UIA.

Prizes total \$50,000 and are awarded (one in each category) as follows:

First Prize — 3 of \$10,000

Grand Prize (to be awarded to best of three first prizes) \$5,000

Second Prize — 3 of \$2,500

Third Prize — 3 of \$1,000

Fourth Prize (two in each category) 6 of \$500

Fifth Prize (five in each category) 15 of \$100

In addition to the awards made to the winner of the Grand Prize, he will receive fees of 12½% of the cost of construction for complete architectural services necessary.

For conditions of entry and registration forms apply to: Professional Advisor, Mr. George Vernon Russell, Mount Olympus Homes Competition, 410 North Rosenell Terrace, Los Angeles 26, California, USA. Registration forms must be received before March 20, 1964.

### NEW MEMBERS

The following were admitted as members of the NSAA at recent meetings of the registration board: Mr. John Fowlie, 3366 Connaught Ave., Halifax; Profs. O. Biskaps, Anthony Jackson and Arthur James Donahue all of the School of Architecture, Nova Scotia Technical College, Halifax.

The following new members were admitted to the Ontario Association of Architects at recent meetings of the registration board:

*Henno Sillaste*, B Arch, 161 Lauder Ave, Toronto; *Philip Mackenzie*, B Arch, 656 Belmont Ave, Westmount, PQ; *H. M. Tolchinsky*, B Arch, 5810 Cote St Luc Rd, Montreal; *Bruno Apollonio*, B Arch, 90 Mason Blvd, Toronto 12; *Gordon J. Smedley*, B Arch, Rounthwaite & Associates, 369 Queen St E, Sault Ste Marie, Ont; *Bernard J. Gillespie*, ARIBA, 204 Three Valleys Dr, Don Mills, Ont; *Hans L. Stutz*, 5 Burbank St, Ottawa; *Edgar Tornay*, B Arch, 1745 Cedar Ave, Montreal 25; *Andre Vecsei*, Architect, 5485 Sherbrooke St W, Suite 204, Montreal 28; *John Caulfield Smith*, Architect, 1255 University St, Suite 705, Montreal 2; *Luc Durand*, Architecte, 5450 rue Isabella, Montréal.



### ARCHITECTURAL SECTION IN RCA EXHIBITION REVIEWED

The architectural display contained in the 84th Annual Exhibition of the Royal Canadian Academy is one in which architects can take pride.

We are greatly indebted to Robert Hume, installations officer of the National Gallery, for an artistic, sensitive and logical display. It is one that can set a standard for future architectural exhibitions in Canada.

It is the first time the Academy has permitted the architectural section to depart from the requirement of each submission having a picture frame and glass. Credit is due to Gordon Adamson, chairman of the RAIC committee which organized the architectural show, and Eric Arthur, for their persuasive powers in having this ruling rescinded. Other committee members were Hugh Allward and John C. Parkin.

Having been given this freedom, Mr Hume set about the formidable task of designing the display by first determining the size of the various enlargements from the 8" x 10" glossy prints previously accepted by the jury, which consisted of John Bland, John C. Parkin and Leonard E. Shore.

The photographs are placed on the walls to emphasize their architectural quality, with high rise buildings accentuated by placing them above eye level, and the opposite for photographs looking from above down on to a subject.

A clever use of panels hung from the ceiling at right angles to the walls separate various building groups. These panels with photographs on one side are backed by either orange or yellow and thereby provide color and contrast to the black walls on which the exhibit is mounted.

Each architect has been asked to describe briefly the building and design problems he faced in the execution of the project submitted. This, along with the name of the architect and the photographer, is on the wall adjacent to each exhibit. Plans, when required to explain a project, are enlarged and located near the photographs. Some are set out on a sloping shelf for variety and easy reading. One excellent model was submitted by F. H. Marani, and is a central feature in the display. The only criticism of the exhibition is that there are not more models. Models create great interest (reference is not made to the "38-24-38" variety) — they have a fascination of their own; this is why fathers play with their son's trains or mothers like dressing dolls for little girls. Let's have more models next year. They enhance any architectural exhibition and fascinate the public.

*H. Gordon Hughes (F)*

### RCA ELECTIONS

Gordon F. Adamson (F), Toronto, was elected vice president of the Royal Canadian Academy at the annual meeting on January 25.

The president, Harold Beamen, also announced that A. T. Galt Durnford (F), RCA, Montreal, and Dr. Eric R. Arthur (F), ARCA, Toronto were elected to the council for two year terms. John C. Parkin (F), ARCA, Toronto, was elected academician and Richard Bolton (F), Montreal was elected associate. The Architectural Committee, Gordon A. Adamson, chairman, H. L. Allward (F) and John C. Parkin, was re-appointed, and a new member, A. T. Galt Durnford, was added.





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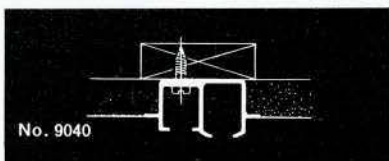
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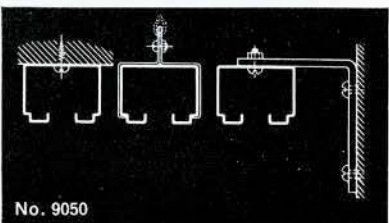
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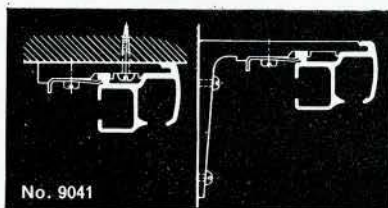
Cord traverse dual channel Architrac has ball bearing carriers in front channel to pack back closer, help hold headings up. Ball bearing master carriers and cords slide drag-free in back. Masters tip in after plastering or mounting. With auditorium track, drapery carriers have unlimited overlap.



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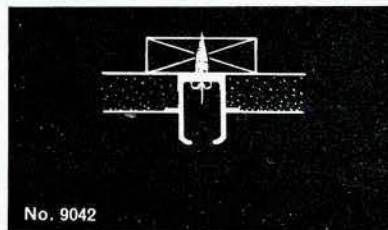
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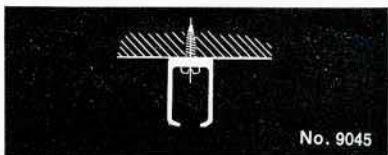
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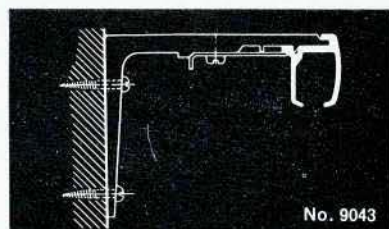
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## OBITUARY

In the sudden passing on December 12, 1963 of Robert E. Bostrom, FRAIC, the profession, particularly in the Province of Quebec, suffered a very definite loss. Born in 1882 in Newman, Georgia, he received his early schooling in the city of Atlanta which was followed by a course at the University of Sewanee in Tennessee where he obtained his degree in architecture.

After acquiring some experience around Chicago, he came to Canada in the year 1911 and began to practise privately in Montreal where he specialized to some extent in the industrial field.

He was a past president of the Quebec Association of Architects and during his term was active in revisions to the charter and bylaws while also serving on a committee appointed to bring the building code of the city of Montreal up to date in relation to the many changes developing in the industry.

By way of relaxation, he was a golfer of some repute in the Kanawaki Golf Club and, at the same time, a devoted member of the Arts Club being twice elected to its presidency.

During these latter years he spent much of his time visiting sick friends in hospital and in their homes.

He was predeceased by his wife, the former Eva Young, and survived by his daughter Mary. *John R. Smith*

## PAN PACIFIC CITATION

The AIA has announced that the 1963 Pan Pacific Architectural Citation of the Hawaii Chapter, American Institute of Architects has been awarded to Kiyonori Kikutake, 35, a Tokyo architect.

The Pan Pacific Citation is an annual award given an outstanding architect from one of the countries bordering the Pacific for his accomplishment in the field of architectural design.

The 1962 winner was Arthur C. Erickson, assistant professor of architecture at the University of British Columbia.

## RAIC DOCUMENTS AVAILABLE

The following RAIC documents are available in French or English, to RAIC members at prices listed below: No. 6AQ — Client-Architect Agreement Form 10¢. No. 10 — Construction Tender Form 10¢. No. 12 — Construction Contract — Stipulated Sum 25¢. No. 13 — Construc-

tion Contract — Cost Plus Percentage of Fixed Fee 25¢. "A Suggested Guide to Bidding Procedure" 25¢.

RAIC Headquarters also have a few copies, at \$3.00, of "The Architect and His Office", published by RIBA.

## RESEARCH GRANT

Prof. Harold Kaplan of the Political Science Department, York University, Toronto has been granted \$480 by the Canadian Council on Urban and Regional Research to make an analysis of the forces that determined the present pattern of public transit in Toronto.

## HRA SHOW

The annual National Heating, Refrigeration and Air Conditioning Show will be held April 20 to 22 in the Automotive Building, Exhibition Park, Toronto.

## PRACTICE FOR SALE

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*(Continued on Page 77)*

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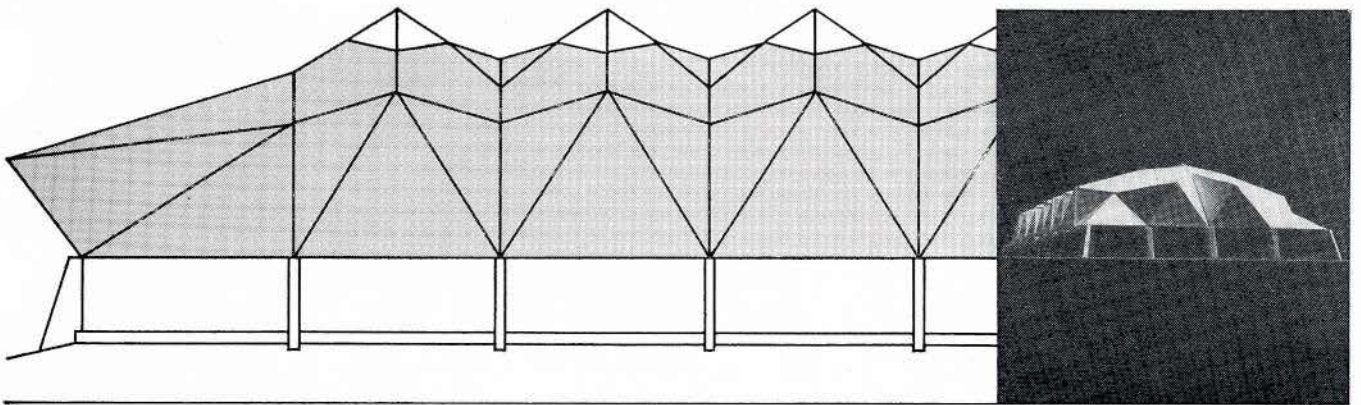


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An imaginative adaptation of the plywood stressed skin panel is displayed in the roof design for the new plywood testing laboratory in North Vancouver, B.C. The roof utilizes 86 plywood panel components in triangular and trapezoidal shapes, covering a total area of 7,200 square feet. From an exterior view, the roof presents an intricate pattern of light and shadow, while inside it inspires a sense of soaring space. Within the open area of the laboratory the repeated peaked arches of the roof system add a richness of design unusual in a large spanning structure of this type.

Aside from its aesthetic appeal, the roof is designed to take advantage of plywood's structural properties.



## VARIATIONS ON A PANEL COMPONENT

The plywood panel components are partially self-supporting, serving to strengthen the light glue-laminated arches spanning the roof area. Components were largely preassembled, with a glass-reinforced plastic coating applied in the plant. Translucent skylights were added at peaks after the components were installed.

The variety of shapes utilized in the laboratory roof indicates the design possibilities of plywood panel components. Information on new uses of waterproof glue fir plywood, in component and other forms, is available from your Association field man.

*The plywood testing laboratory is the work of: J. O. McCutcheon, M.Eng., consulting engineer; R. J. Thom, MRAIC, consulting architect; F. R. Brown, P.Eng., consulting electrical engineer.*

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# Provincial News

## Congrès et Assemblée Annuelle de l'AAPO

Le Congrès et l'Assemblée Annuelle de l'AAPO se sont tenus au mi-janvier à Montréal. Quelque deux cents membres y étaient inscrits. Le programme était partagé entre les réunions d'affaires, celle du jeudi après-midi où l'on a discuté, entre autres, du code d'éthique et plus particulièrement des conditions dans lesquelles la critique architecturale est permise; le texte adopté précise que la critique ne doit pas être telle qu'elle porte atteinte à la dignité de la profession, qu'elle ne doit pas servir des intérêts personnels, ni être faite par personne interposée, son auteur en assumant toute la responsabilité; celle du samedi après-midi où furent adoptées des résolutions faisant suite aux séances d'études de la veille. Ces séances étaient consacrées à l'Exposition et à l'architecture. Jeudi soir, M. Robert Le Ricolais, Professeur à l'Institut de Recherches Architecturales de l'université de Pennsylvanie, prononçait une brillante conférence intitulée "Expo et cité; une liaison aérienne" dont le texte illustré sera publié in-extenso dans une prochaine livraison du *Journal*. Les membres se rendirent ensuite au siège social du Bd Dorchester où l'Association et la Société des Architectes de Montréal les avaient conviés à un buffet aussi copieux qu'exquis, arrosé d'un vin dont le moins qu'on puisse dire est qu'il était inépuisable. Le programme des dames comprenait, entre autres, une visite de la Grande Salle, Place des Arts. Le premier déjeuner était réhaussé par la présence de M. John Lovatt Davies, président de l'IRAC. Il rappela dans

son allocution que bien qu'il soit inévitable que le succès de l'Exposition Universelle dépende largement des efforts de la ville qui la recevra, il soit tout aussi essentiel qu'elle demeure une oeuvre d'envergure nationale comme on l'a confirmé récemment en déterminant la composition du Comité de Consultation en Architecture. M. Davies n'a pas caché ses craintes qu'à la suite du rejet d'un symbole "de premier ordre" on ne soit les témoins de retards et de brimades opposés à ceux qui s'efforcent d'assurer la qualité de l'Exposition. Le conférencier souligna le paradoxe que représente la création de l'emplacement de l'Exposition dans un pays aux espaces illimités. Il rappela d'abord le danger de s'éparpiller et de rendre ainsi pénible la visite et ensuite l'intérêt d'occuper un emplacement compact, pour l'Exposition elle-même et pour l'utilisation éventuelle du site. Et la commémoration de la Confédération Canadienne, de conclure M. Davies, ne devrait pas tant rappeler les oeuvres du passé que le brillant avenir qui est offert ici à tous les hommes.

Le second jour, le Colonel E. Churchill, Directeur de l'Aménagement de la Compagnie Canadienne de l'Exposition Universelle de 1967, dégagea les grandes étapes de l'exécution du Plan Directeur. Il évoqua les recherches en cours dont certaines portent sur un système de transport en commun composé de trois réseaux complémentaires à vitesses de croisière différentes. Il souligna l'apport des architectes aux stades de la composition et de l'exécution des aménagements

de l'Exposition.

Au terme de l'Assemblée Annuelle, M. John Lynch-Staunton, pro-maire de Montréal recevait à déjeuner les membres de l'Association au Restaurant Hélène de Champlain. Il rappela le vif intérêt de la municipalité pour la grande manifestation de 1967, les valeurs humaines que le thème illustrera et l'apport de l'architecture.

### 1ère SEANCE D'ETUDES

La Ville et l'Exposition.

Cette séance groupait, sous la présidence de M. Gilles Marchand, M. Edouard Fiset, architecte-en-chef de la Compagnie de l'Exposition, M. Guy Legault, surintendant de la division de l'aménagement du service d'urbanisme de la Ville de Montréal, le Professeur John Bland, directeur de l'Ecole d'Architecture de l'Université McGill et M. John J. O. Moore, directeur de l'Ecole des Sciences Sociales de la même université.

M. Fiset, avant de décrire le site et de présenter le Plan Directeur de l'Exposition, commença son exposé en ces termes. Jusqu'à ce jour les expositions universelles ont été conçues presque exclusivement en vue de mettre en valeur les réalisations des diverses nations, principalement dans les domaines scientifique, technique et artistique. Chaque nation élevait donc un pavillon dans lequel elle exposait, de la façon la plus convaincante possible, toutes les réalisations qui faisaient son orgueil. Ces pavillons faisaient l'objet d'une recherche architecturale toute particulière, mais malgré de nombreuses et indéniabes réussites, ils assimilaient davantage à des prouesses où les diverses techniques jouaient un rôle de premier plan, qu'à des oeuvres d'art de caractère permanent.

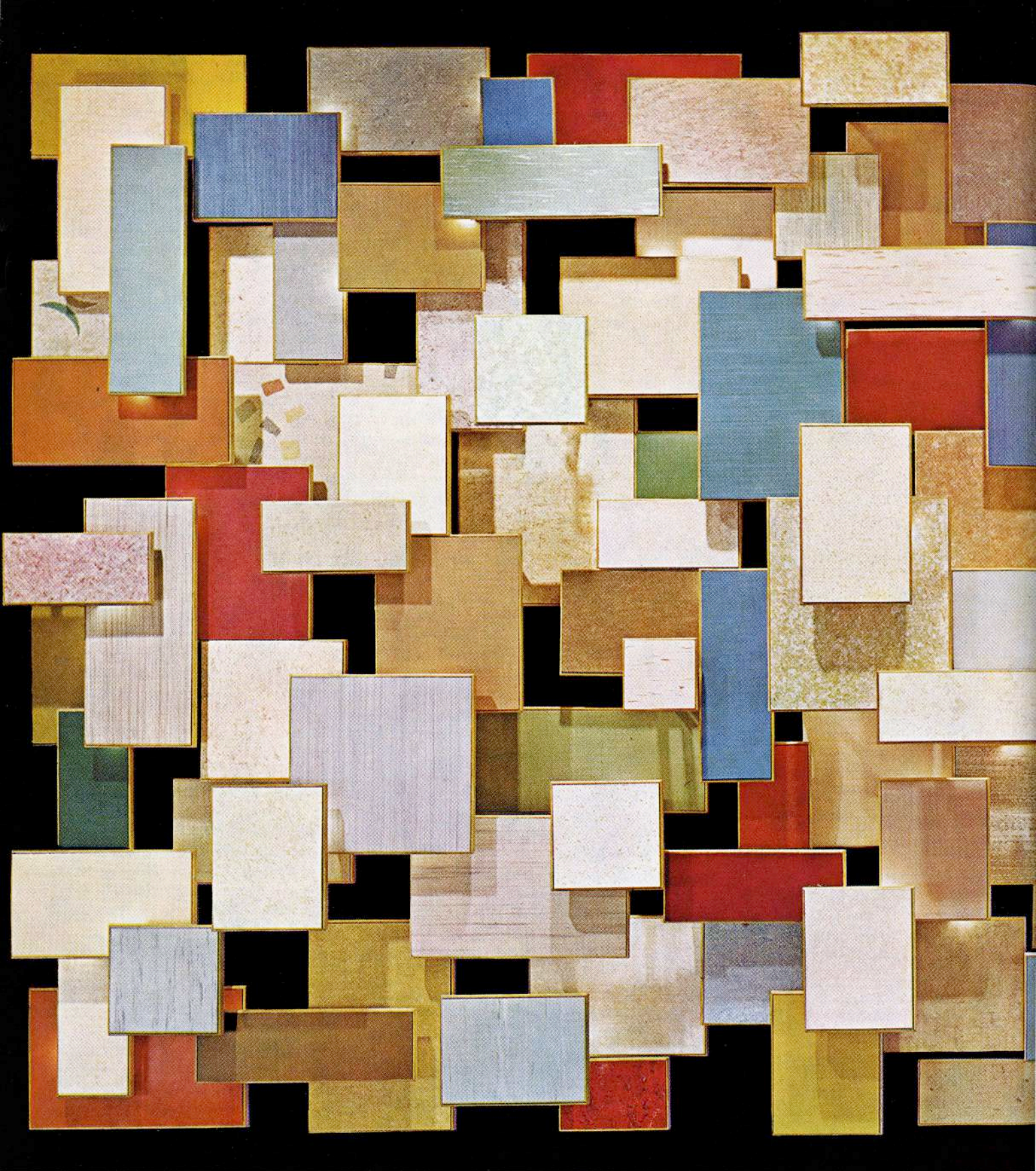
La Compagnie canadienne de l'Exposition Universelle de 1967, tout en reconnaissant l'intérêt d'attraction indéniabie d'une telle formule, et tout en y ayant recours, croit toutefois qu'il y a lieu d'attacher une plus grande signification à l'homme, à ses aspirations, ses efforts et son oeuvre qu'à la nation et à ses produits. Elle présentera donc parallèlement aux pavillons nationaux, des ensembles où les thèmes corollaires au thème principal, "Terre des hommes", seront illustrés et ce, avec la participation de divers pays aussi bien que des grands intérêts privés.

C'est ce concept élevé et plus profondément humain qui marquera le caractère de cette Exposition. C'est également ce concept qui en deviendra l'élément unificateur non seulement sur le plan des

Le Comité Exécutif de l'AAPO élu à l'assemblée annuelle. Dans l'ordre habituel, Peter M. Barott, 1er vice-président; Roy E. Lemoyne, trésorier; Gilles Marchand, président; Francis J. Nobbs, président sortant de charge; Max W. Roth, secrétaire; André Blouin, 2ème vice-président.

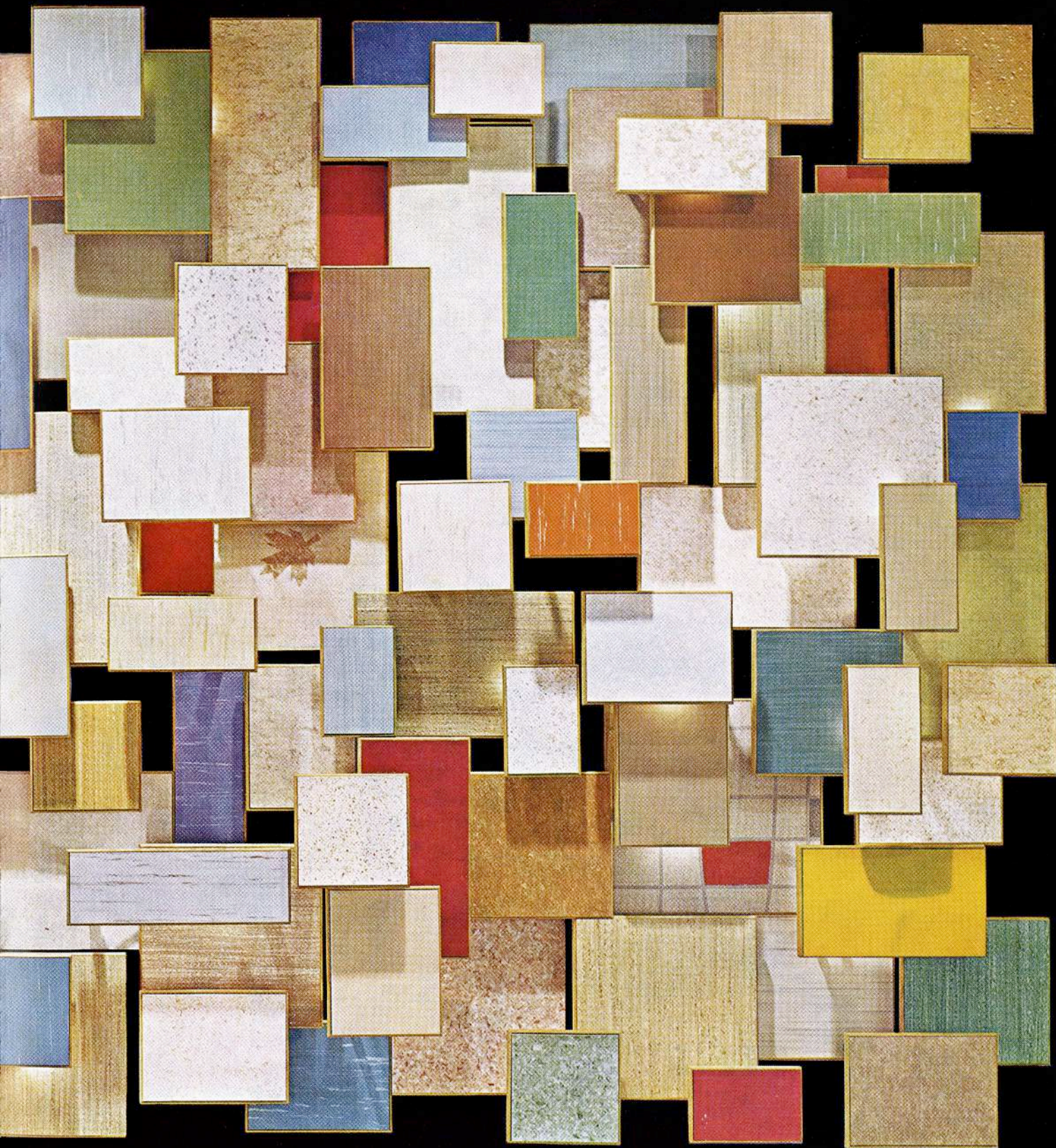






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idées mais également sur le plan architectural. Seule une conception aussi hardie et se séparant à un tel point des conceptions traditionnelles, permettra à l'Exposition de laisser sa marque dans l'histoire des Expositions Universelles. Elle permettra également d'éviter que cette Exposition ne devienne qu'un pâle reflet de l'Exposition internationale de New York en 1964 et 1965, qui dispose de ressources plus considérables.

Le site comprend quatre parties: la première, la Pointe Saint-Charles, groupant des immeubles destinés à devenir permanents; un stade olympique, une arène, un Palais des Congrès, un bâtiment d'expositions et un complexe résidentiel intitulé "Habitat 67", appelé à illustrer le thème "L'Homme et la cité". Les seconde et troisième, Ile Verte et Ile Notre-Dame, en amont de l'Ile Sainte-Hélène, centre de l'Exposition où seront érigés les pavillons des thèmes, les pavillons nationaux et les principaux éléments de l'Exposition. La quatrième, Ile Ronde où sera aménagé un parc d'amusement et deux rades. La répartition des pavillons nationaux et des pavillons privés sur les Iles Verte et Notre-Dame, de continuer monsieur Fiset, sera fonction des

facteurs suivants:

- (a) relation géographique, politique ou économique,
- (b) groupement autour des thèmes,
- (c) exigences du plan directeur et caractéristiques du site.

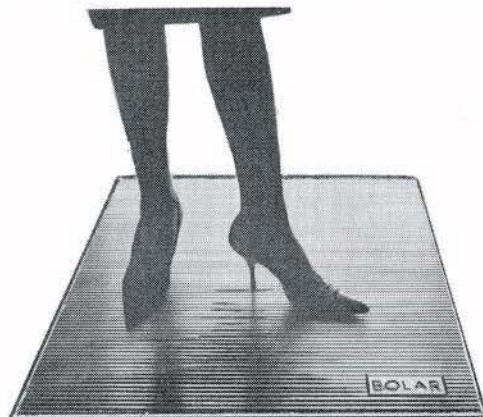
Les pavillons seront disséminés afin d'attirer et retenir les visiteurs dans toutes les parties de l'Exposition.

On a tiré le plus grand parti poétique de l'eau en situant les centres d'intérêt sur les rives des îles et en aménageant des places, des quais, des débarcadères, des rades et des canaux Monsieur Fiset précisait en confiant que "sur la berge, côté nord de l'Ile Verte, une enceinte comportant des gradins ouverts permettra d'assister au spectacle "sons et lumières" qui embrassera toute la ville et sera accompagné de jeux d'eaux et de lumières en premier plan avec des effets musicaux les plus divers."

M. Legault consacra son exposé à nous faire part des réactions spontanées qu'il a éprouvées en mesurant ce que l'Expo 67 pouvait laisser derrière elle. Rappelant le vaste programme de construction d'autoroutes que les gouvernements fédéral, provinciaux et municipaux ont mis sur pieds, M. Legault remarqua que son im-

portance ne tient pas au déboursé de \$175 millions qu'il entraîne, mais au fait que la région métropolitaine sera dotée d'un réseau d'autoroutes indispensable. La construction des voies comprenant le Bd Métropolitain, le Bd Décarie, la Montée Saint-Michel et, au sud, le prolongement de la route 2-17 constitue un événement majeur dans le développement de la région. Le conférencier a ajouté qu'il aurait été utopique il y a quinze mois, pour quiconque du milieu de l'urbanisme, de croire à une réalisation aussi rapide de ce qui apparaissait comme un besoin indispensable. Cet ensemble sera un des traits que la région présentera aux visiteurs de l'Expo 67. Il reste peu de temps pour faire de ces constructions des pièces de dessin et d'architecture qui ont de la qualité. Quant au site de l'Expo il deviendra avec la montagne et le fleuve, ce qui identifiera Montréal. Enfin M. Legault attirera l'attention sur l'affectation éventuelle du site.

M. Bland nota qu'il fallait tirer parti de l'heureuse situation des terrains de l'Expo, en face du port et du centre de la ville. En s'assurant de ce que le site et les immeubles permanents devenus publi-



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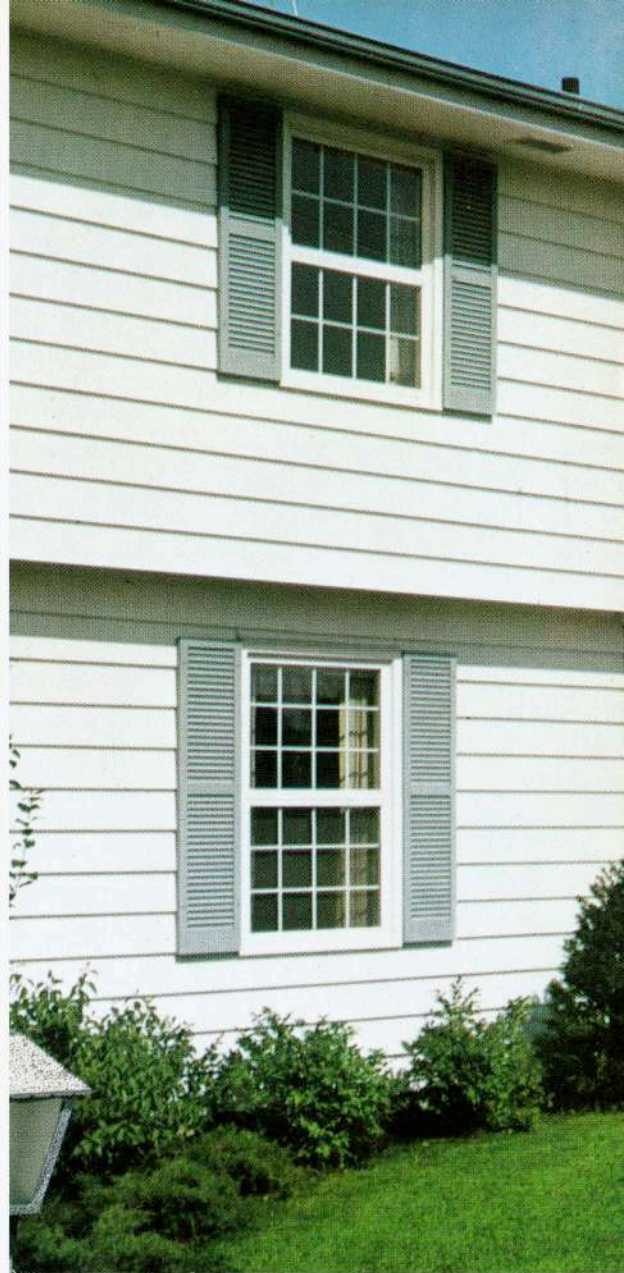
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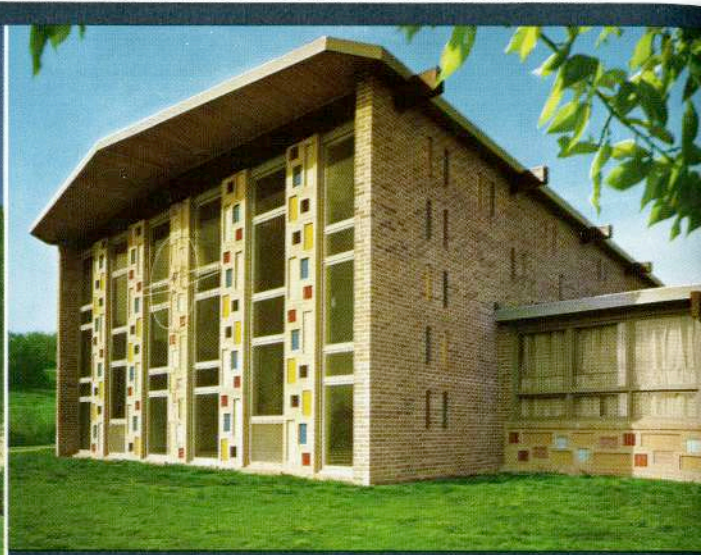
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ques après l'Exposition, en rappellent le sens aux Montréalais. Le Vieux-Montréal pourrait exercer un attrait touristique tout particulier. Nombre de ses immeubles dilapidés pourrait être aménagés en restaurant; ce serait acquis. A l'occasion de l'Expo qui sera une grande manifestation architecturale, l'AAPQ devrait organiser un congrès international pour lequel le thème "L'Homme dans la cité" pourrait être développé. Les architectes francophones pourraient bien à cette occasion servir de cicérons en Amérique française. Aux thèmes déjà envisagés, M. Bland proposa d'ajouter celui de "L'Homme organisateur social" auquel les fédérations et unions d'états, le mouvement écuménique, les Nations Unies et la Confédération Canadienne pourraient être invités à traiter du sens le plus profond de la coopération et du renoncement.

Le Dr Moore toucha aux aspects sociaux de l'Exposition, traitant tout particulièrement des influences du milieu physique sur l'homme et, par voie de conséquence, des réactions humaines aux systèmes sociaux que l'homme oppose à ce milieu. A cet égard, un site créé de toute pièce grâce à la collaboration des gouvernements fédéral, provinciaux et municipaux dans le cours de ce fleuve vital pour le pays appelle, par son symbolisme, une affectation publique après l'Exposition, que ce soit un parc, des terrains de sport ou une école de fonctionariat fédérale. L'Exposition pourrait donner lieu à des congrès de sociologie, permettant ainsi aux spécialistes d'étudier sur place nos institutions et nos services. Elle devrait se prêter à une présentation des travaux des Nations Unies et de ses agences. Enfin, l'Exposition devrait laisser un symbole visible de la ténacité qui évoluera le Canada de demain.

#### 2ème SEANCE D'ETUDES L'Architecture de l'Exposition.

M. Harry Mayerovitch présenta le sujet d'études et, avec beaucoup de tact et d'esprit, les participants. Le Professeur Peter Collins, de l'Ecole d'Architecture de l'Université McGill; Hans Blumenfeld, commissaire-adjoint du Metropolitan Toronto Planning Board; Jean-Louis Lalonde, architecte de Montréal et Julien Hébert, esthéticien industriel.

M. Peter Collins a retracé l'évolution des Expositions Internationales depuis 113 ans. Les architectes se refusèrent d'abord à y prêter leur concours, les pavillons d'exposition n'étant ni permanents, ni décorés, qualités jugées essentielles à l'époque, jusqu'à ce qu'on en vienne à

créer des pavillons nationaux, mettant en valeur la personnalité d'une nation plus que ses produits industriels et à changer ainsi le caractère de l'exposition. A l'Expositions des Arts Décoratifs de 1925 la copie et le pastiche étaient proscrits et à Barcelone, quatre ans plus tard, Mies van der Rohe réalisait un pavillon dont l'architecture même constituait le spectacle. Depuis les expositions ont été des chantiers d'architecture expérimentale, le conférencier s'est opposé à cette approche en déclarant que l'on ne devrait pas se demander ce que l'Exposition peut apporter à l'architecture mais quel peut être l'apport de l'architecture à une exposition.

Que l'on vienne pour une visite rapide ou que l'on vienne pour un aperçu quitta à revenir, le visiteur de l'Expo voudra tout voir, affirma M. Hans Blumenfeld. L'orientation du visiteur sera en partie facilitée par la composition du site en trois sections. Cependant l'échelle d'elles exigera une artère principale qui guidera le visiteur sans d'ailleurs tout révéler. Le long de cette artère pourraient être groupés les éléments les plus spectaculaires et les plus susceptibles d'attirer ceux qui ne faisaient que passer. La longueur des visites nécessitera sans doute des "Havres" à l'abri des courants de circulation. Si les déplacements peuvent délasser et le corps et l'esprit, l'eau pourrait être mise à contribution, les trajets se faisant à faible vitesse sur des canaux et le long des rives des îles. M. Blumenfeld rappela l'attrait ou des vastes perspectives ou des percées sur le fleuve, la ville et la montagne et nota que l'Expo devrait présenter deux visages, l'un de jour, l'autre de nuit; ce dernier pouvant bien causer l'impression la plus vive et présentant donc aux architectes le défi le plus grand et le plus inhabituel.

M. Jean-Louis Lalonde a évoqué les images que pourrait inspirer l'Expo de 1967, images qui permettraient d'entrevoir ce que son architecture devrait refléter. Il rappela que, mêlé au spectacle, le visiteur de l'Expo en est à la fois l'acteur et le spectateur, qu'une exposition est une manifestation de caractère temporaire dont le message doit être simple et direct. La foule constituant elle-même une part du spectacle, les espaces extérieurs ne devront pas paraître déserts. Ils devront plutôt constituer une séquence de lieux variés, discontinus, imprévisibles. Il découle de ce sens de l'espace que le caractère de l'Expo soit largement déterminé par le caractère visuel de son système de circulation. M.

Lalonde conclut son exposé en affirmant que l'Expo 67 devrait présenter le monde contemporain dans un langage de notre temps. Dans ce contexte, l'architecture pourra servir l'Expo en analysant le sens profond de son thème.

M. Julien Hébert déclara que l'Exposition n'était pas créée pour révéler au monde l'habileté des ingénieurs, des architectes, des artistes et des dessinateurs, mais pour exprimer son thème "Terre des Hommes" en le transposant sur le plan visuel avec le concours de ces groupes professionnels. A cet égard, rien de ce qui est visuel ne sera étranger au spectacle, à l'aspect fonctionnel de transposer un thème précis, à l'aspect poétique de lui donner une résonance humaine.

#### DERNIERE REUNION D'AFFAIRES

La réunion, présidée par M. Marchand, entouré du Conseil nouvellement élu, avait lieu le samedi matin. La plus grande partie de la séance fut consacrée à la discussion et à l'adoption de cinq propositions émanant des séances d'étude de la veille.

Alléguant qu'il soit essentiel au Vieux-Montréal d'être en contact avec le site de l'Exposition, la première proposition visait à s'opposer à tout projet d'auto-route le long du fleuve, venant ainsi achever la ruine esthétique et économique de ce vieux quartier.

La seconde proposition soulignait l'importance attachée à la recherche d'un moyen de transport dont, compte tenu de la configuration du site, l'efficacité ne subordonne pas la qualité esthétique comme facteur d'identification de prime importance de l'Exposition.

La troisième proposition réclamait que les sujets relevant de l'esthétique et touchant la Compagnie de l'Exposition demeurent la seule et immédiate responsabilité de la Compagnie par l'intermédiaire de son personnel et de ses conseils. La quatrième proposition exprimait la satisfaction de l'AAPQ pour la formation d'un comité d'architectes-conseils auprès de la Compagnie.

La dernière proposition résumait le sens des interventions les plus valables faites au cours du congrès: les architectes y exprimaient leur solidarité à l'architecte-en-chef et à ses collaborateurs et exprimaient leur inquiétude pour que dans l'ardeur du travail et le harcèlement des pressions l'on ne perde pas de vue le sens du thème, mais qu'au contraire l'on fasse les plus grands efforts pour l'exprimer d'une façon intelligible, forte et mémorable.

Jean Gareau



THE ROYAL ARCHITECTURAL INSTITUTE  
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57th Annual Assembly — June 1964

- WHERE?** At the Algonquin Hotel, St Andrews, NB.
- WHEN?** From Wednesday, June 17 to Saturday June 20.
- WHO?** You and the other members of the Institute. The special guest list includes: The Right Honorable Lester B. Pearson, Prime Minister of Canada; The Honorable Louis Robichaud, Premier of New Brunswick; Sir Robert Matthew, FRIBA, president of the International Union of Architects. Mr Pearson and Sir Robert will be made honorary members of the College of Fellows of the Institute. Mr Pearson will be the speaker at the dinner on Saturday night.
- WHAT?** The theme: "The architect in a changing world". The sessions will deal with subject of major importance to the Institute and there will be panel sessions on questions of special interest to architects. This will be the month of June and the hotel is located on the shores of the Bay of Fundy. You will be able to take a dip in the ocean or a boat trip, play tennis, or golf on the course of champions — not to mention the sea food.
- HOW?** St Andrews is easily reached by car, train or plane. Special transportation arrangements will be made from Saint John, 60 miles away.

L'INSTITUT ROYAL D'ARCHITECTURE  
DU CANADA

57<sup>e</sup> assemblée annuelle — juin 1964

- OU?** A l'Hôtel Algonquin, St Andrews NB.
- QUAND?** Du mercredi, 17 juin au samedi, 20 juin.
- QUI?** Vous et tous les autres membres de l'Institut. La liste des invités spéciaux comprend: Le très honorable Lester B. Pearson, premier ministre du Canada; l'honorable Louis Robichaud, premier ministre du Nouveau-Brunswick; Sir Robert Matthew, FRIBA, président de l'Union Internationale des Architectes. M Pearson et Sir Robert seront reçus membres honoraires du Collège des Agrégés de l'Institut. M Pearson sera l'orateur au dîner le samedi soir.
- QUOI?** Le thème: "L'architecte dans un monde en évolution". Les délibérations porteront sur des sujets de première importance pour l'Institut et il y aura des séminaires sur des questions intéressant tous les architectes. Et ce sera le mois de juin et l'hôtel est situé sur les rives de la Baie de Fundy. Il y aura bains de mer, voyages en bateau, tennis et un terrain de golf de championnat — sans compter les fruits de mer.
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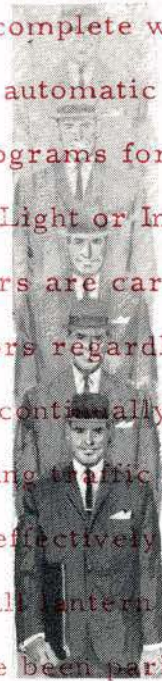


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# Book Reviews

THE PLACE OF THE IDEAL COMMUNITY IN URBAN PLANNING by Thomas A. Reiner; 192 pp. illus.; University of Pennsylvania Press, 1963. \$8.50.

This study is based on the view that a physical model of the ideal city is useful to planners.

The first 18 pages consist of an introduction and a chapter dealing with ideal physical planning principles. The next, and largest section of the book, deals with actual examples covering 75 pages. The third part of the text, extending over 52 pages, deals with the physical plan content of ideal communities. There are 28 pages of bibliography, an index of authors, but none of subjects.

The author uses 'community' in a strictly physical sense. One could legitimately ask whether it is possible to consider the ideal community as a purely physical concept without reference to the cultural and economic levels of the people comprising it.

The second section of the book, dealing with examples of the physical layout of ideal communities analyses 20 examples beginning with Fritsch in 1896 and ending with Klein in 1947. Each ideal proposal is dealt with in the same way: context of proposal, a description, a content analysis, an evaluation, and a bibliography. Each is accompanied by a diagram, well drawn, but not easy to read because there are no explanatory

notes, the reader being asked to hold in his mind a legend stated at the beginning of this section. Whilst the diagrams dictate the intentions of their authors, they do not always transmit the spirit or esthetic of the original drawings.

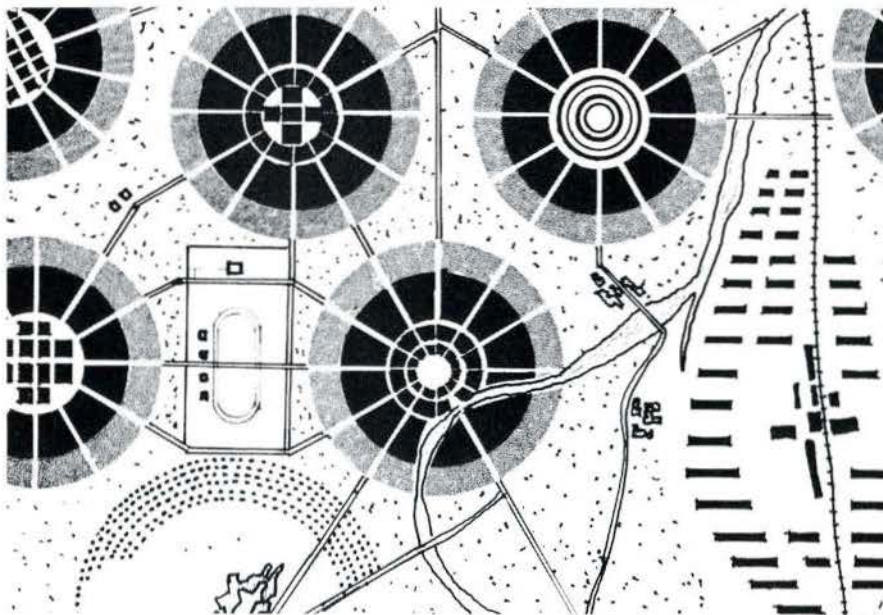
This portion of the book is a kind of inventory and as such must be intended for reference purposes. Regarded in this light it can be commented that the treatment is either too full or not full enough — too full for a brief statement, not full enough to give a really comprehensive idea of a man's thought on this subject. For example the author uses Le Corbusier's *Ville Contemporaine* of 1924 without any hint that he revised this model in 1933 as *La Ville Radieuse*.

The last section of the book is a useful synopsis of factors important to planners but again one would like to see this expanded. For example, the treatment of the neighbourhood unit is too brief, failing to draw any distinction between the service concept and that of fostering social improvement by physical arrangement. There is a useful list of ideal communities indicating densities and populations.

The chief criticism of this book is that it should, perhaps, have been longer in preparation in order to do full justice both to the idea, and to the author's manifestly sincere attempt to bring such diverse material between the covers of one book.

*John Dakin*

E. Gloeden 1923, The cells; from *The Place of the Ideal Community in Urban Planning*.



L'ARCHITECTURE DU XX<sup>e</sup> SIECLE, par Bernard Champigneulle et Jean Ache. (Presses Universitaires de France, Paris 1962). 156 pages, \$9.00.

Un panorama de l'Architecture d'aujourd'hui précédé d'un bref aperçu historique sur les origines et les causes de cette nouvelle architecture. Les auteurs exposent comment la révolution industrielle a modifié les structures de la vie sociale et imposé de nouveaux cadres à la vie urbaine, ce qui met en relief la liaison plus intime requise entre l'architecture et l'urbanisme.

La production industrielle machinique, la science appliquée, ont eu pour conséquence la standardisation de plusieurs éléments de la construction, la création de nouveaux matériaux, et comme résultat la création d'un style international d'architecture, remplaçant l'architecture folklorique et locale. De plus, les nouvelles techniques permettent des prouesses autrefois impensables et de plus grandes possibilités d'expression plastique. "L'Architecture dominera-t-elle les techniques avec cette aisance souveraine qui est l'apanage du grand art, se demandent les auteurs, ou en restera-t-elle la fille soumise?" De nombreuses réalisations récentes prouvent que, bien que soumise aux impératifs de la technique, l'architecture d'aujourd'hui peut s'en affranchir. En effet, à de plus grandes possibilités de réalisation doivent correspondre une plus grande richesse et une plus grande variété dans les formes et les agencements. L'expression formelle de l'architecture d'aujourd'hui s'appuie de plus en plus sur la structure, qu'elle tend à réléver et à magnifier, à identifier, à l'oeuvre même.

Bien qu'il s'agisse d'un ouvrage de vulgarisation destiné au grand public, ce volume, abondamment illustré, n'en est pas moins d'un grand intérêt pour le spécialiste, architecte ou ingénieur, à qui il présente une synthèse lucide de l'évolution de l'architecture depuis cent ans.

*Denis Tremblay*

COMMUNITY AND PRIVACY: TOWARD A NEW ARCHITECTURE OF HUMANISM, by Serge Chermayeff and Christopher Alexander. 236 pp. Doubleday and Co. Inc., Garden City, N.Y., 1963. \$6.95.

This book was read on a relatively quiet university campus — peaceful, that is, except for the continuous roar of downtown traffic, intermittent motorcycles and the meandering drone of a helicopter



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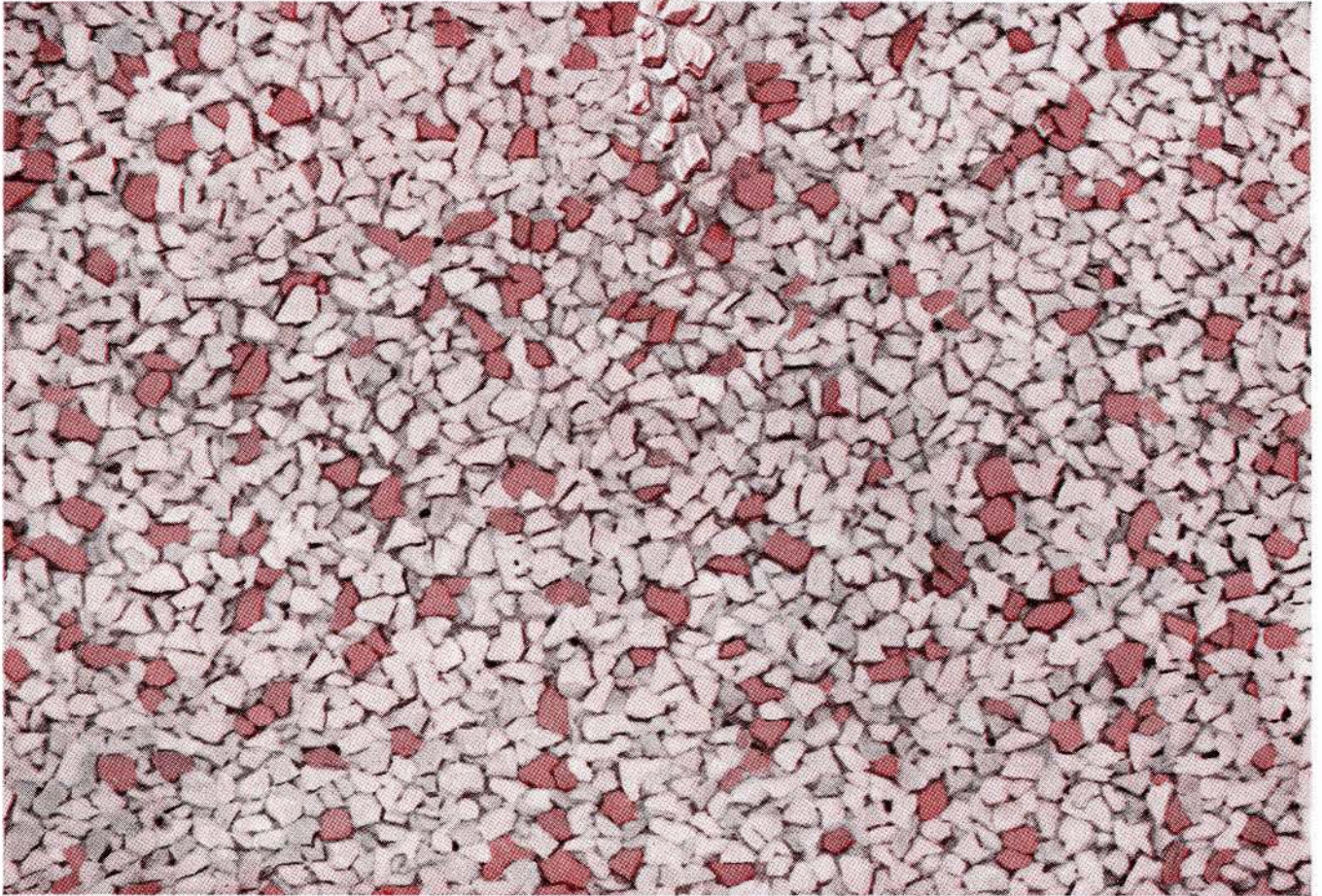
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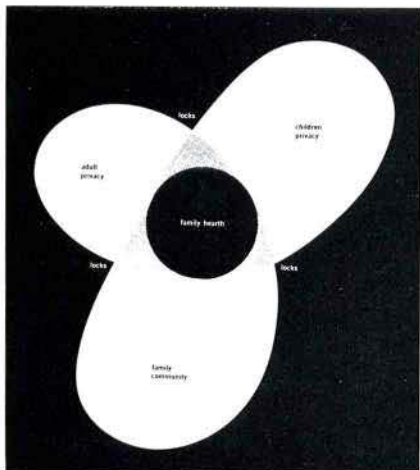
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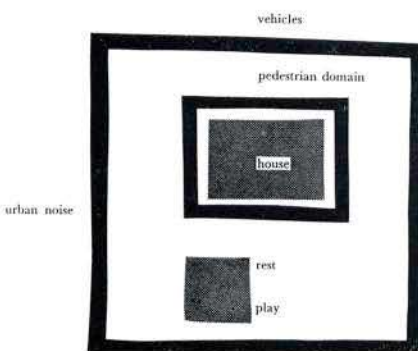


trailing an advertisement. Are these and other intrusions to be accepted into our daily lives quite without concern — since they are all circumstances easily within our power to control?

Concern over the current situation, with the individual's lack of tranquillity and his fast-vanishing privacy and independence, is certainly felt by the joint authors of this highly stimulating study. Clearly illustrating the degree to which the moving vehicle and noise in general have intruded on daily life, they show how



Anatomy of dwelling: people



Illustrations from Community and Privacy

man by destroying the existing equilibrium — especially through increased mobility and instantaneous communication — must if he is not to preserve the balance, certainly create a new one. In terms akin to the philosophies of Mumford and especially of Gutkind, the dissolution of the city's once clear structure, the failure of suburbia, and indeed the inappropriateness of most of today's existing forms, are vividly portrayed.

Yet this book is not just one more contemporary study that cries woe without putting forward any more concrete proposal for the future than that of a change

of heart. In specifically architectural and planning terms, which far from being either costly or utopian, are immensely practical, the authors show how urban experiences and the individual dwelling can be translated into "distinctly articulated and appropriately structured physical zones", hierarchically organized in their interrelationships. By analyzing and grouping items in their search for privacy, Chermayeff and Alexander are led to a principle of organization that will create an harmonious physical environment,

producing in turn implications of physical form. In the light of this analysis, the study concludes with a critical appraisal of various projects, including both groups of dwellings and individual house plans.

Reflecting the nature of the text, the layout of this book is clear, intelligent and attractive; the illustrations, which range from Steinberg cartoons to a printed circuit, from a tire track to cluster diagrams, are stimulating and forceful.

Jonas Lehrman



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A Programmed Introduction to Program Evaluation and Review Techniques, Federal Electric Corp., John Wiley & Sons, Inc. \$3.95.

Fundamentals of Acoustics, second edition by Lawrence E. Kinsler and Austin R. Frey. 524 pp. John Wiley & Sons, Inc. NY. 1962. \$10.75.

Engineering Contracts and Specifications, fourth edition, by Robert W. Abbett, 461 pp. John Wiley & Sons, Inc., NY. 1963. \$8.50.

1963 Canadian Trade Index. Published by the CMA, Toronto. \$24.00.

Materials for Architecture by Caleb Hornbostel. 610 pp. Reinhold; in Canada Burns & MacEachern Ltd., \$24.75.

Is Your Contemporary Painting More Temporary Than You Think? by Louis Pomerantz. Drawings by Paula Gerard. 62 pp. A Chicago Chapter Artists Equity Pub., Chicago, Illinois, 1962. \$2.50.

The Architecture of Fantasy by Ulrich Conrads and Hans G. Sperlich. 188 pp. Frederick A. Praeger, NY. 1962. \$19.50.

World Architecture—A Pictorial History by Lloyd, Rice, Lynton, Boyd, Carden, Rawson, Jacobus. 348 pp. McGraw Hill Co., Toronto. \$21.25.

Early 19th Century Architecture in South Africa by Ronald Lewcock. 451 pp. A. A. Balkema, Cape Town. 1963. \$10.00.

Shell Architecture by Jurgen Joedicke. 304 pp. Reinhold NY. \$22.50.

SOM — Architecture of Skidmore, Owings & Merrill, 1950-1962 by Ernst Danz. 232 pp. Praeger, NY. \$22.50.

Cities by Lawrence Halprin. 224 pp. Reinhold, NY. 1963. \$16.25.

Campus Planning by Richard P. Daber. 314 pp. Reinhold, NY. \$26.50.

Candela: The Shell Builder by Colin Faber. 240 pp. Reinhold, NY. 1963. \$19.75.


Office Buildings by Jurgen Joedicke. 220 pp. Praeger, NY. 1962. \$18.75.

Michelangelo by Ludwig Goldscheider. 262 pp. Phaidon Press, London. Reprinted 1963. \$10.00.


The Italian Townscape by Ivor de Wolfe. 280 pp. Architectural Press, London. \$8.40.

Architecture, Catalogue 2, Books and Drawings before 1800. Published by B. Weinreb Ltd., London, 96 pp.


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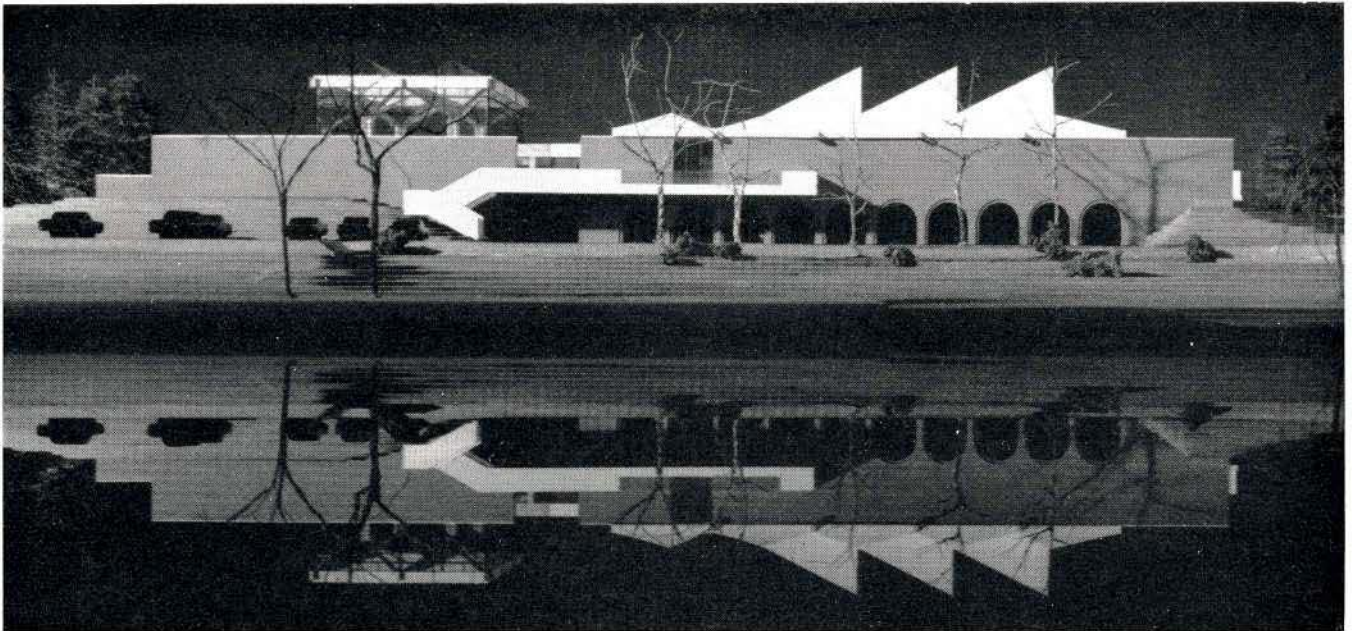
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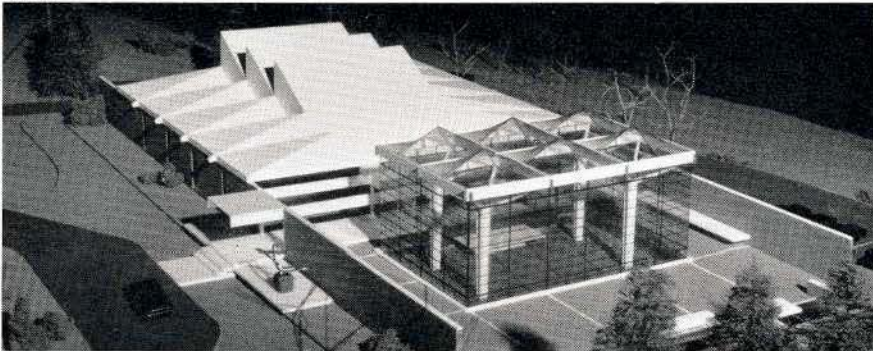


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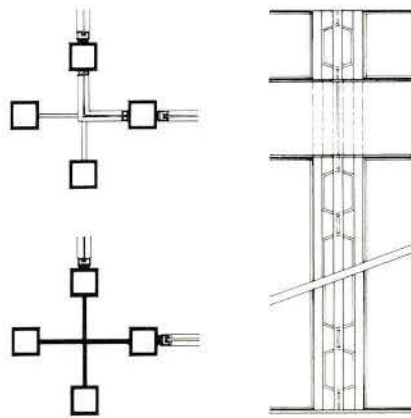


3

PULLAN



4



## Features

The design for the Mendel Art Centre and Civic Conservatory (1, 2) is the result of a national competition. Blankstein, Coop, Gilmore and Hanna, the winning architects, deserve praise for their high standard of achievement in the execution of the final scheme. This, along with one or two other competition projects currently under construction, proves that the profession is prepared to compete in world architecture, and more advantage should be taken of this method for selecting architects. Perhaps at this point we need to educate the client, for we cannot expect everyone to be as enlightened as the sponsors of this particular competition, namely, the Province of Saskatchewan, the City of Saskatoon, and Mr. F. Mendel.

There are many parts missing in Clarke Simpkins' motor showroom that are normally associated with high pressure selling. The architects, Thompson, Berwick and Pratt have omitted the banners, the sea of parked cars in front of the building, the floodlights and flashing neon signs. This shows the result of considering, at a very early stage, such mundane things as color, lighting, identification and civic order. And when these were resolved there was some excellent attention to detail. The skylights in the showroom function in the day and night, the corner is carefully turned in steel and glass (see sketch). The sign demands attention (color) but does not overpower the building and destroy the order of a street.

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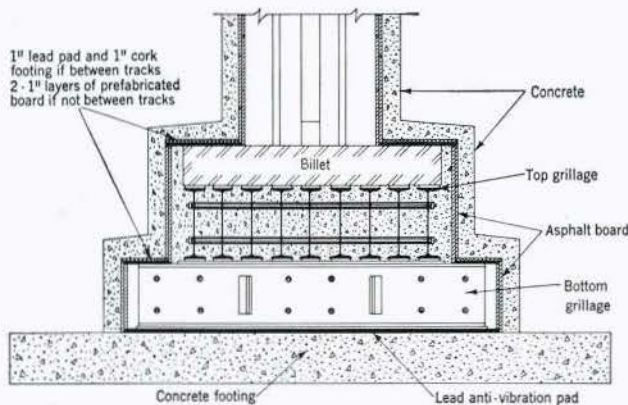


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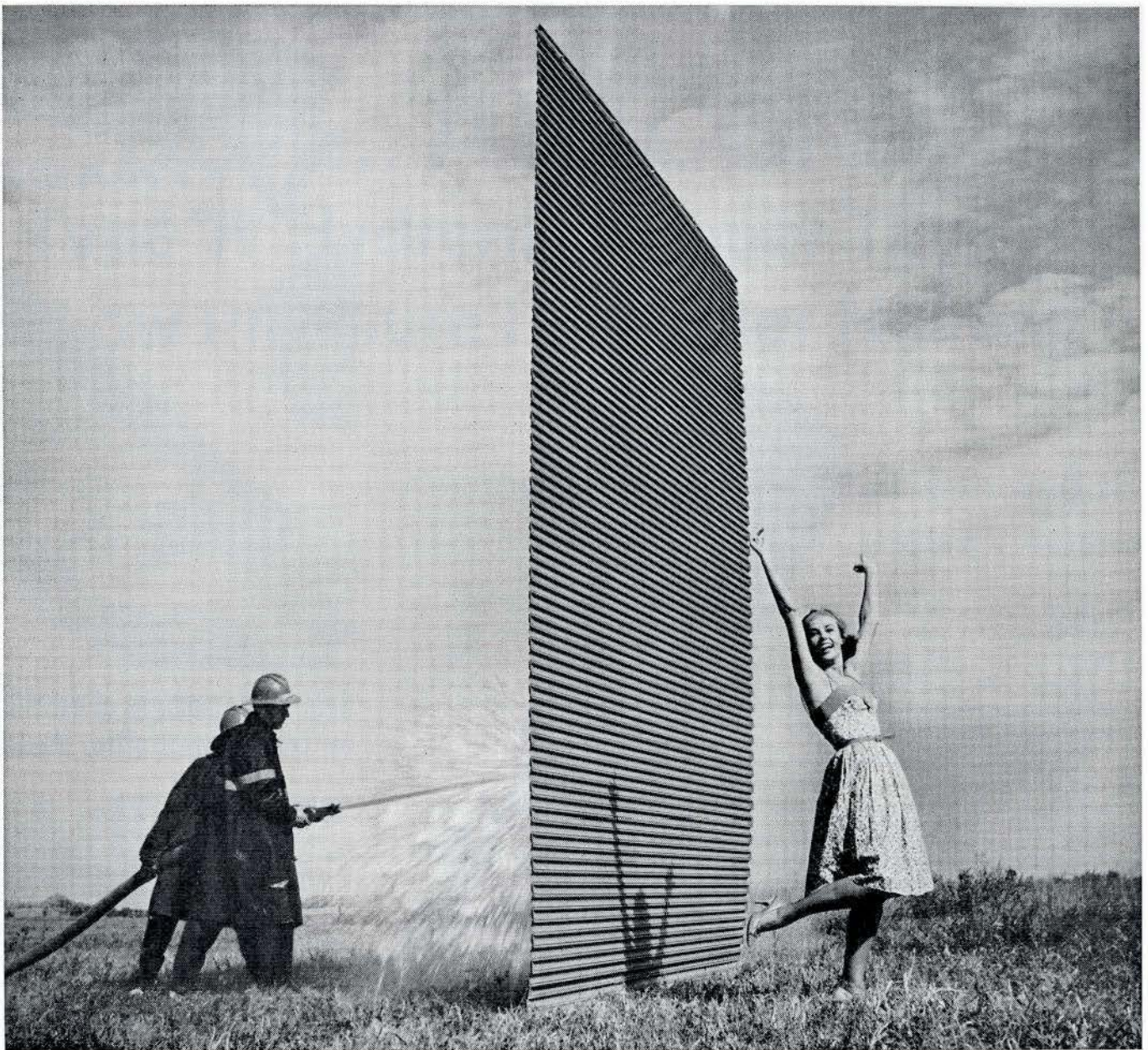
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# Legal Notes

## Substantial Completion of a Contract

by Norman J. P. Melnick

As a lawyer, I am intrigued by the extraordinary position an architect is placed in under the terms of the usual construction contract. He is employed by an owner to prepare plans and specifications which ultimately are to be implemented by a contractor in the construction of a building. The architect emerges from this relationship in a double capacity, which I find extraordinary. Because he is hired by the owner and paid by him, he becomes the agent of the owner; but, under the standard RAIC contract forms, the role of arbiter or certifier between the parties is thrust upon him and it is this role which I find so curious. The architect is being asked to perform what amounts to a quasi-judicial function and I often wonder how well his training prepares him for this supra-professional role.

Actually, the scope of the architect in the performance of this quasi-judicial role has been strictly defined by law and it appears to me that he is constantly in danger of exceeding his authority as arbiter if he is inattentive to the precise limits of his authority. In succeeding articles, therefore, it is proposed to deal with the legal limits of the architect in his quasi-judicial role.

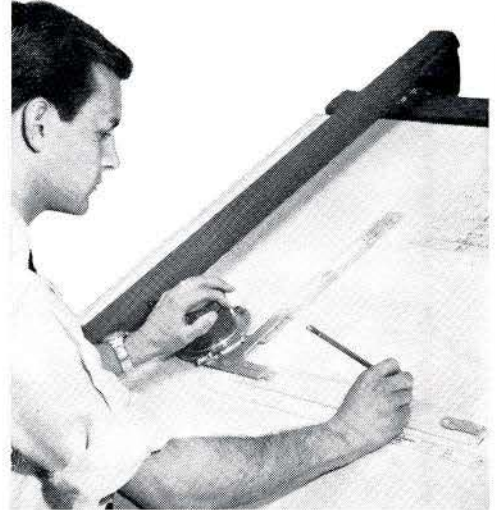
One of the more difficult questions which an architect must decide upon as arbiter of a contract is the question, "When has there been substantial completion of a contract?" The standard RAIC construction contract form (for a stipulated sum) obliges the contractor, among other things, to "complete substantially, as certified by the architect, all the work..." and elsewhere in the contract, the owner

is obliged to make payments on account upon the architect's certificate "on completion of the entire work...". Thus, the contract itself forces the architect to make estimates of the various stages of completion of the construction work by the contractor.

The law is clear on this question of substantial completion and says that where a contractor has completed work as specified in the contract, except for unimportant and rather trivial variations or omissions from the architect's specifications, he has, nevertheless, substantially complied with the contract and, under law, is entitled to recover the contract price less the cost of making the work conform to the specifications. And similarly, where a contractor completes specified work but completes it defectively in some respects, he is, nevertheless, entitled to receive payment of the contract price but the owner can deduct the value of the defective parts and only pay over the complete sum when the contract is completed to the satisfaction of the architect.

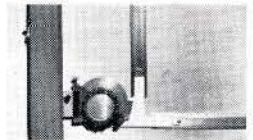
In fact, the standard RAIC contract referred to anticipates the problem of frustration in the completion of a contract and provides that if climatic or other conditions occur which are beyond the contractor's control and which prevent him from completing the entire project, the architect is permitted to issue his final certificate and payment in full for the work done up to that point may take place.

In next month's article, it is proposed to deal more specifically with the responsibilities surrounding the architect's obligation to issue certificates.



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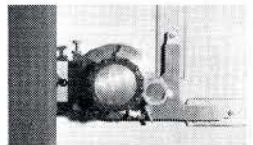
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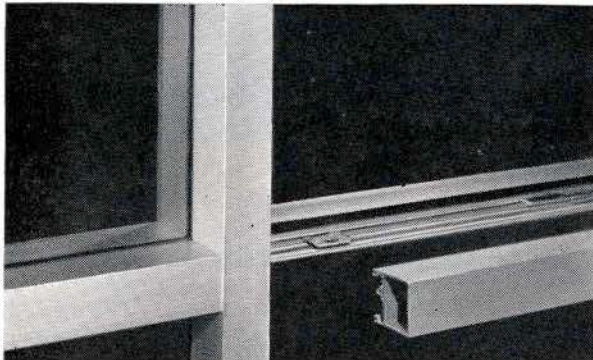
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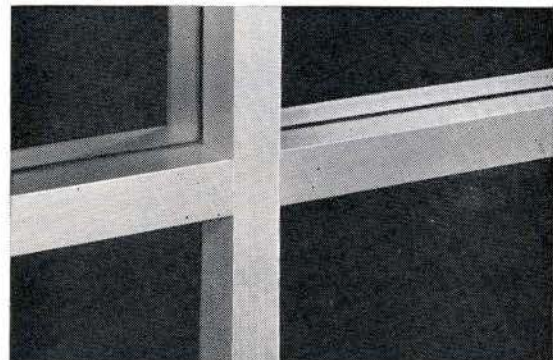
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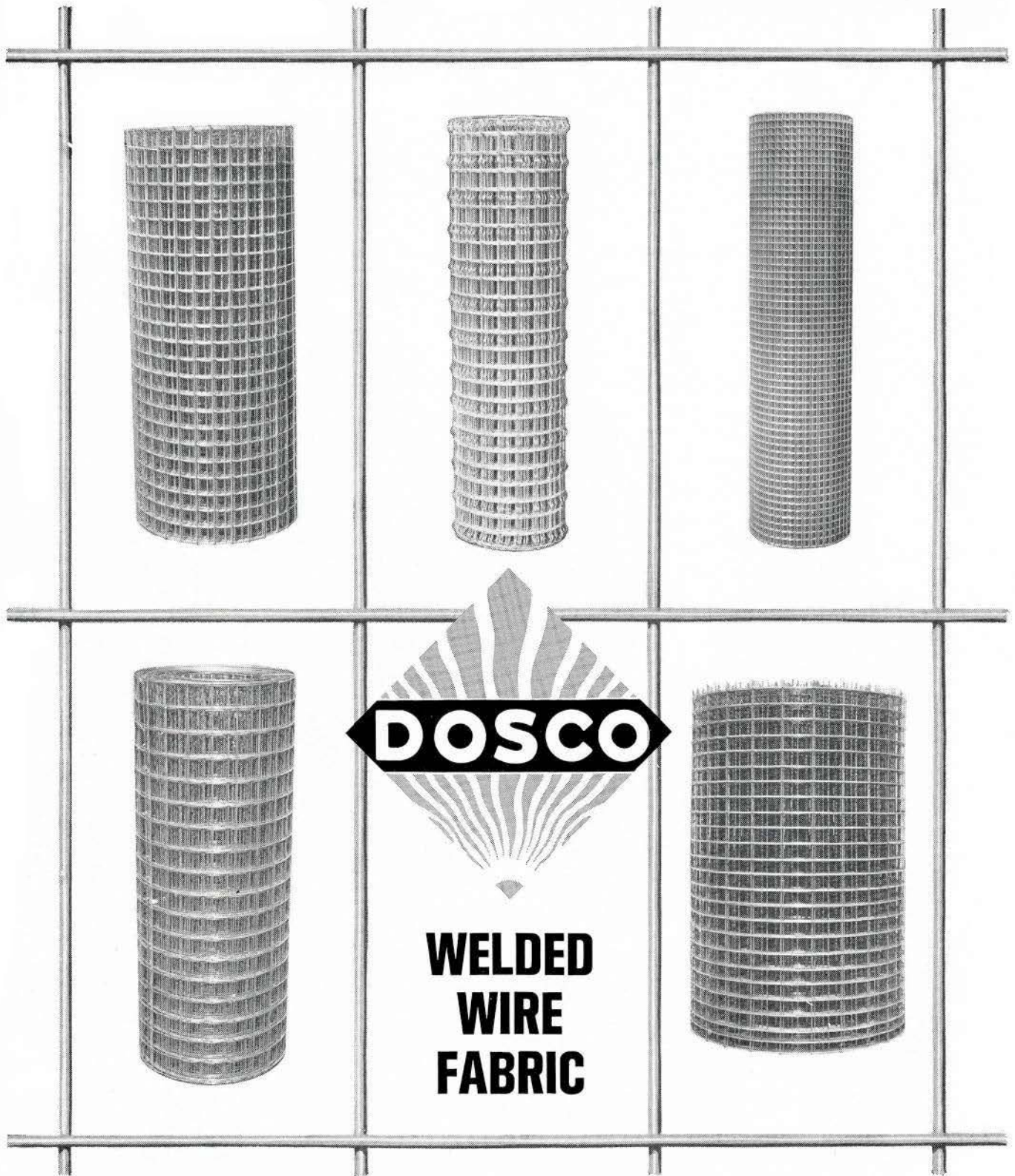


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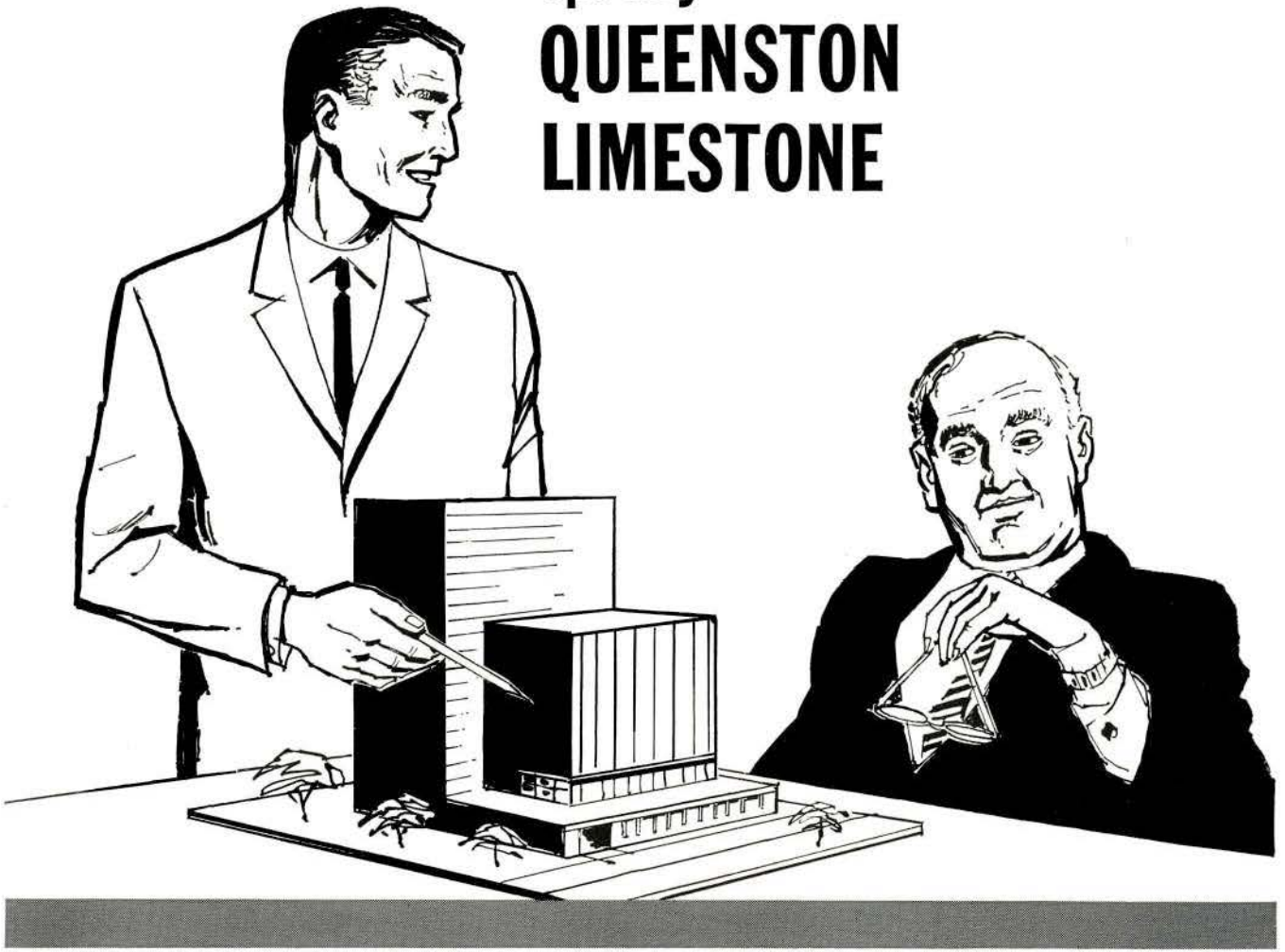
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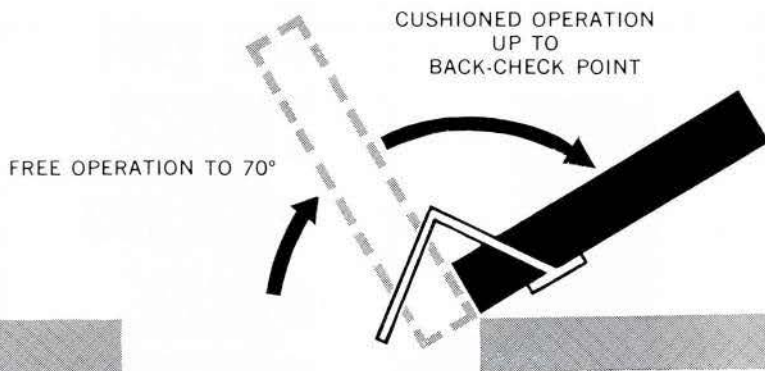


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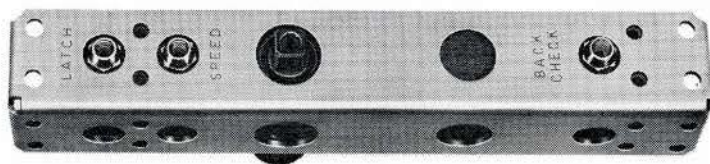
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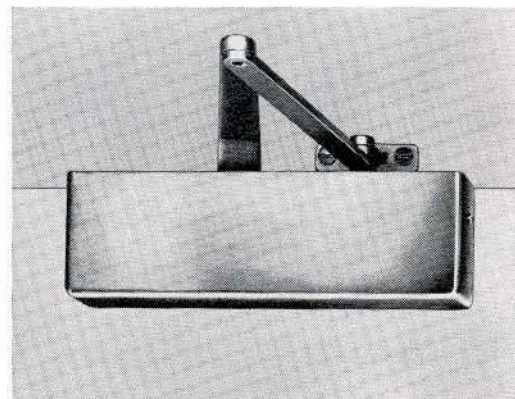
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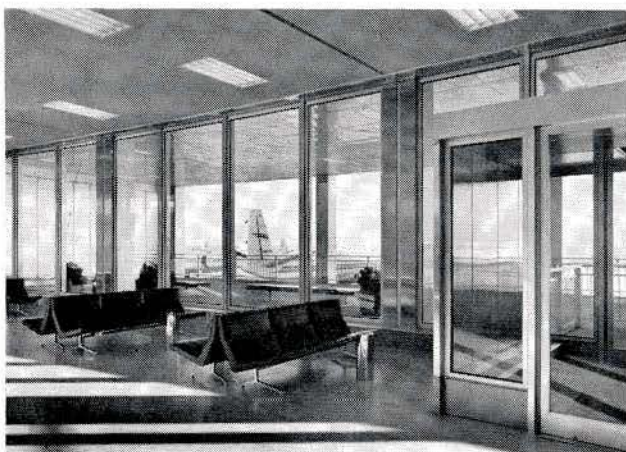
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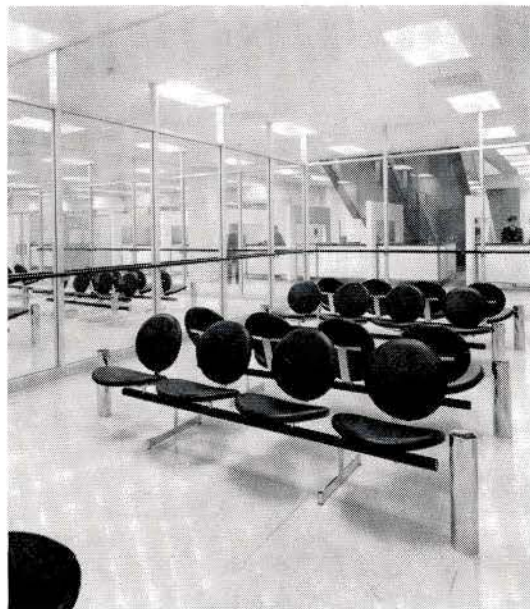


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# Air Terminal Buildings in Canada

by W. A. Ramsay  
Chief Architect/Major Terminals/Department of Transport

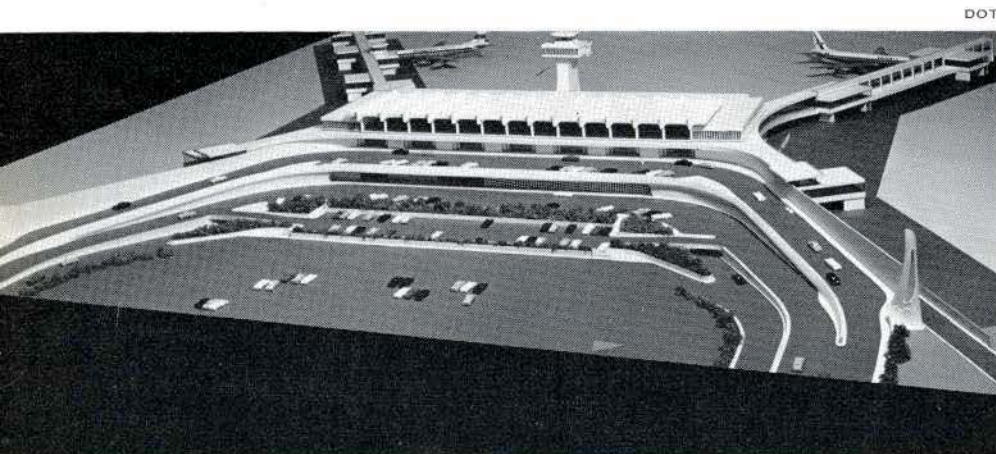
Opening of the three major new air terminals at Toronto, Winnipeg and Edmonton over the year end by the Department of Transport marks the completion, but for the Vancouver terminal, of the extensive construction program begun in 1952. The program was described in the April, 1956 *Journal* by W. A. Ramsay, chief architect, major terminals, Department of Transport, to whom the *Journal* is indebted. It also acknowledges the valuable assistance of the consulting architects in the presentation of the three new terminals. The Montreal, Ottawa and Halifax terminals were published in the December, 1961 *Journal*.

Because these buildings are very much in the public eye and because they will be very extensively used by the public, the *Journal* asked its editorial board member and frequent contributor of appraisals of contemporary architecture, Professor Peter Collins of the McGill School of Architecture, Montreal, to visit the new terminals, and write about what he saw. His views are expressed on pages 45-48.

The planning and construction period of the program marked the transition in air travel from the smaller, propeller driven aircraft of the post war years to the large passenger capacity, long range jet of today, and an increase in national and international air travel that severely strained the capacities and facilities of the existing buildings until they were gradually replaced. The transition also greatly affected air terminal design, for airline acceptance of the jet for commercial flights meant additional requirements for their handling. The change occurred while the Montreal terminal at Dorval was under construction, and necessitated changes in design. Once the difficulties and disadvantages of the Montreal building were analysed, improvements to overcome them were incorporated into the design of the major projects which followed.

The most common complaint at the Montreal terminal was the excessive walking distances. Various schemes to minimize this problem were studied in the preliminary design of the Toronto

Model of proposed passenger terminal at Vancouver International Airport. Aero-bridge loading ramps will be used at this terminal. Consulting architects and engineers: Thompson, Berwick and Pratt.





terminal. The first solution was a circular, horse-shoe shape, with car parking within the circle, to provide for the maximum number of cars with the shortest walking distance to the terminal. From ticket and baggage checking points in the terminal, passengers would walk by tunnel to a circular departure room, with doors leading to aircraft positions around the circumference. However, a sufficient number of cars could not be accommodated without expanding the horse-shoe to the point where the walking distance became a problem. The final solution at Toronto was a circular building with aircraft positions around the circumference, and cars stacked under cover in a multi-level structure superimposed above the inner circle of the circular building. Passengers park their cars, descend by elevator to the ticket lobby and proceed to the departure gates on the circumference, around which are the aircraft positions. The result is the shortest walking distance of any major air terminal anywhere.

The plans of the new air terminal buildings at Winnipeg and Edmonton are basically smaller scale plans of the Toronto scheme. They form the first segment of a flat "U" building capable of expansion to a closed square or rectangle. Multi-level car parking adjacent to each terminal was planned but found to be uneconomical for the present by current traffic forecasts. There are other differences of course. Winnipeg and Edmonton terminals have linked to them the operational and administrative offices, surmounted by the aircraft control tower. At Toronto terminal, because the multi-level car parking structure is superimposed above the terminal, the administrative offices and aircraft control tower had to be located each in a separate building elsewhere on the airport.

The Toronto terminal being a circular building has its limitations for expansion, beyond that already designed into it. The initial concept provided for four similar circular buildings served from the same basic roadway system. The problem will arise whether to expand the first circle to the maximum or proceed with the second

circle. This will depend on the maximum utilization of the aircraft positions surrounding the terminal and whether their total passenger load will exceed the calculations used in planning the building. Since the administration and control tower buildings are separate they may be expanded without limitation. The administration building is constructed to carry three additional floors and may also be expanded laterally. The control tower building has the tower only elevated. All other facilities connected with its operation are located at grade level and may be expanded in either length or width.

At Winnipeg and Edmonton, expansion to provide additional aircraft positions may be added by simple extension of the "fingers", but this will increase the walking distances. The control tower is fixed above the administration and operational offices. Expansion for the latter facilities could in the first instance effect expansion into unessential offices which would then have to be relocated in a separate free-standing building.

Like the Montreal terminal building each of the new terminals at Toronto, Winnipeg and Edmonton, have departure waiting rooms adjacent to the aircraft position. With the competition between airlines as keen as it is, it is important that each aircraft spend maximum time in the air and minimum time on the ground. To accomplish this the boarding passenger should be ready at the gate to board the aircraft as soon as it has been unloaded and serviced. In the event of delayed loading, the departure rooms provide seating accommodation for about half the passenger seating capacity of the aircraft, further reduced by the estimated number of vacant seats on the flight, (the load factor). Again, like the Montreal terminal building, each of the three new terminal buildings will accommodate future enclosed loading bridges to make a level connection between the departure room and the aircraft. All have Health, Immigration and Customs facilities as well as restaurant, lounge, coffee shop, short term rentable roomettes, shops and spectators decks. Mech-

anized baggage systems are similar at each terminal.

Unlike the Montreal sterile U.S. preclearance operation, the United States now having amalgamated the Customs and Immigration Inspection, these two inspections will be performed adjacent to the ticket check-in counter. This eliminated the necessity for an isolated corridor to the aircraft gate position as at Montreal. The departure room and short corridor to the aircraft will alone be sterile.

Other similar features are the cellular floor and cable trench system developed jointly by the Department of Transport and the design engineers to facilitate installation of the myriad of communication, control and power cables each with appropriate segregation. This system, first, fully employed at the Gander Terminal and further developed at Montreal terminal was considered at the time of planning to be adequate for Toronto, Winnipeg and Edmonton. With the airlines gradual move to automation, with multi-pair communication cables, co-axial and other cables, recent experience begins to indicate that further modifications must be made to this scheme for the new air terminal building at Vancouver. (Much of the mechanization and automation now being installed was proposed to the airlines in 1953 but rejected on the grounds of lack of development, and the probable prohibitive cost even when it might be developed.)

In the design of the new air terminal buildings at Toronto, Winnipeg and Edmonton, the consulting architects were encouraged to contemplate during the design period — appropriate settings for works of fine art, murals, sculpture, mobiles and other, in the hope that the appreciation and praise for the mural and sculpture at Gander and Ottawa might win a favourable decision for such works. Approval was obtained, and in keeping with the contemporary architectural design of the buildings appropriate works of art were commissioned. All the works were not completely installed by the time the buildings were put into service, but a representative selection accompanies the presentation of the terminals.





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## THREE NEW INTERNATIONAL AIR TERMINALS

### An Appraisal

by Peter Collins

Air terminals are fascinating objects of study for anyone interested in contemporary architecture; firstly because they represent one of the few building types really characteristic of the twentieth century, secondly, because they possess a kind of monumentality unusual in the present age, and thirdly, because they justify more than any other contemporary building the present concern with "building for the future".

The peculiarly twentieth century character of air terminals is so obvious that it need not be commented on; but the other two qualities deserve more than a passing thought. What, after all, do we mean by monumentality? J. L. Sert, Fernand Léger and Sigfried Giedion, in a joint manifesto published in 1943, defined monuments as "human landmarks which men have created as symbols for their ideals, for their aims, and for their actions". Giedion further asserted that it was the painters of that era who were reviving the lost sense of monumentality, for "one trend can be observed in recent years, common to nearly all leading painters, namely that together with the urge for larger canvases, brighter colours have appeared full of inherent hope". Now I would suggest that architectural monumentality has little to do with symbolism, and nothing to do with size, colour, or hope. It is essentially a matter of social importance and physical prominence. If a monumentally - designed building lacks social importance, it is a mock-monument. If a socially important building lacks physical prominence it is not a monument at all. This prominence may be produced by isolating the building by vast open spaces, or it may be produced, as in mediaeval cathedrals, by elevating the structure above the closely-knit conglomeration of surrounding buildings. What matters is that the building should stand out; should be seen immediately and sensed as something locally unique; should dominate its surroundings as a landmark in the urban or rural scene.

Today there is a regrettable tendency to design all buildings, however humble or trivial, as if they were monuments, and it is a besetting vice of contemporary architecture that there are few architects today who do not envisage their buildings in isolation. But an air terminal is by its very nature not only

socially important — the spiritual gateway to the modern metropolis — but physically isolated. It cannot function otherwise than in isolation. Hence monumentality imposes itself on the designer and becomes an essential aesthetic problem to be solved. In this respect it is interesting to note, especially when one bears in mind the form of earlier air terminals in Canada, that all these new terminals are strictly symmetrical — a quality imposed as much by the function of the building as by the artistic sensitivity of those responsible for the designs.

As regards the concern to "build for the future", it will be immediately perceived that this attitude is more realistic when applied to air terminals than to any other type of building. Many architects in recent years have boasted that they have designed buildings for the future, but such claims are often merely poetic expressions of the current urge towards a kind of romanticism that is the architectural equivalent of science fiction. When designing an air terminal, however, building for the future is a prime consideration. Unless the architect is prepared to see his design become obsolete at the same rate as the aircraft it caters to he must allow for eventualities which even today's aircraft designers regard as little more than remote dreams.

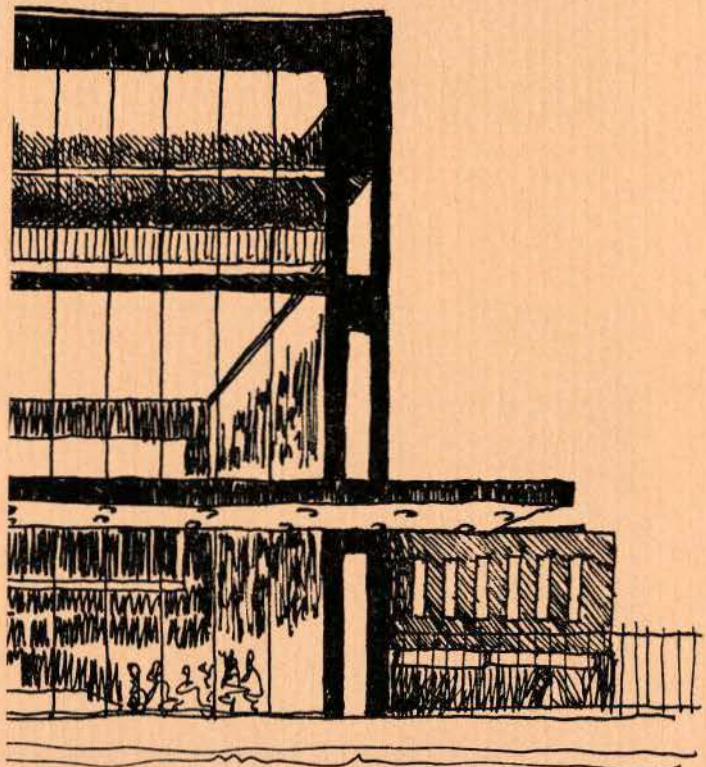
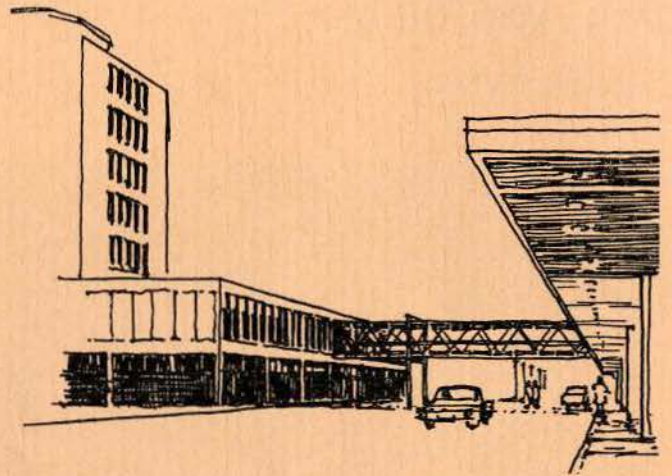
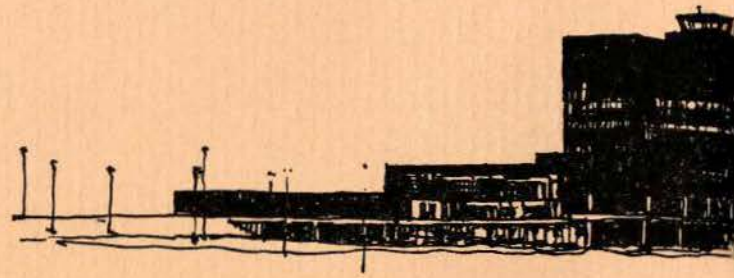
This urge to plan for the future (an urge which for architects like Sant'Elia or Le Corbusier has often implied and stimulated a liberation of the imagination) has been an inhibiting factor in the design of the three terminals under consideration. Planning was begun just at the time when the introduction of jet aircraft was playing havoc with the proposed organisation of Montreal airport (then under construction). Enormous pains were therefore taken to ensure that when the Edmonton, Toronto and Winnipeg airports were completed, they would function efficiently under any new conditions that might be created by further developments in aircraft design. But these attempts to anticipate the future undoubtedly proved extremely frustrating to at least some of the architects. Nowhere is this more apparent than in the design of the Winnipeg air terminal, which went through a more agonizing period of gestation than either of the other two.



Thirteen schemes were prepared successively for the Winnipeg terminal and it seems inconceivable, in retrospect, that the architects ever had the fortitude to persist with their commission to the end; for these thirteen schemes are not, as one might expect, an orderly progression of improvements and refinements on an initial concept and a specific budget. On the contrary, each corresponds to an entirely different set of programmatic requirements — evidence of a vacillation for which the clients (namely the Department of Transport) must presumably be held largely responsible. The Department of Transport can doubtless produce plenty of persuasive arguments to justify their indulgence in so many changes of policy; but what matters to the architectural critic is the psychological effect which such vacillation has on the vigour and integrity of an architectural design. It is obvious that no architect, unless he is endowed with superhuman patience, can maintain the same creative enthusiasm in elaborating the thirteenth set of drawings as he possessed with the first. Moreover, after five years of chopping and changing, values become distorted and ideals less clearly defined, so that points of design which would have provoked an uncompromising stand in the initial stages seem to lose their urgency after five years of compromise and manipulation. Hence it is no wonder that the final solution lacks the freshness and *élan* which is in evidence in the earlier drawings. Despite its many admirable qualities (some of which will be described in due course), the Winnipeg air terminal is languid and inert. It seems reasonable to suppose that it looks that way because the architects had all their creative energy systematically dampened and their creative enthusiasm quenched by regular douches of bureaucratic countermanding and irresolution.

Aesthetically, the main defect of the Winnipeg terminal seems to lie in the awkward conjunction of two radically different systems of walling; whereby the main concourse is sheathed in metal and glass, while the administrative building and the departure rooms are predominantly massive in character. Admittedly, these massive walls and small windows can be justified functionally as heat and noise insulators, but glass walling seems particularly appropriate for air terminals, where there is so much of interest to be seen outside, and where a light, diaphanous quality seems especially apt. Secondly, the composition of the Winnipeg terminal seems far less conducive to a unified monumentality than that of the Edmonton terminal. In the latter the tall administrative building is integrated with the concourse in a most striking way; whereas in the former it is separated from it by a bridge. Thirdly, the absence of a ramp for arriving vehicles at second floor level (such as we find at the Edmonton terminal) must count as an aesthetic, as well as a compositional defect of this building, for there is immense grandeur in a sweeping roadway arriving at an upper level, and it is difficult to understand why, even from a purely functional point of view, this highly desirable segregation of in-coming and out-going passengers was discarded.

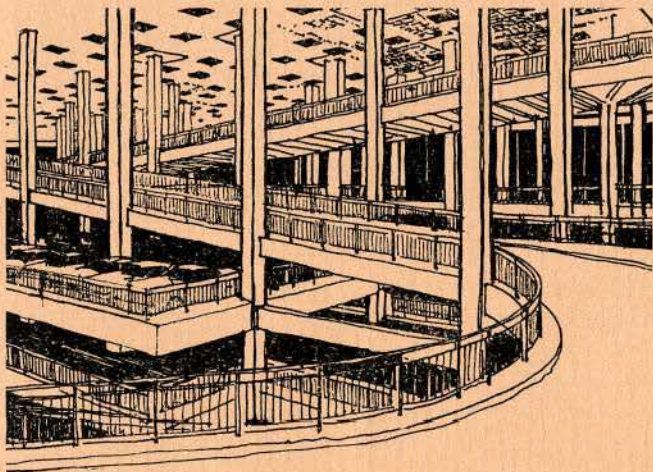
Even so, it should not be concluded, from these remarks, that the Edmonton Terminal is in every respect superior to the Winnipeg terminal. On the contrary, the Winnipeg terminal shows a distinct superiority in its structural system, the organ-







Malton terminal cannot be compared effectively with either Winnipeg or Edmonton, because the two latter airports deal essentially with transit passengers, and can only accommodate eight aircraft at a time, whereas the former is much more of an air terminal, and already handles twice as much air traffic in a year. Indeed, it was doubtless Malton's quality as a terminal which persuaded the Department of Transport to authorize the inclusion of a parking garage (which was refused at Winnipeg and Edmonton as being uneconomical). However, whatever the reason for this innovation, Malton undoubtedly constitutes a prototype of world-wide significance in its compositional conception. From the purely aesthetic point of view, there can be no doubt that the presence of the towering, rectangular, central multi-storey garage within the ring of departure rooms and observation platforms gives this terminal a grandeur when seen from a distance which the more modest programmes of Winnipeg, Edmonton and even Dorval simply did not permit.



Curiously enough, however, this sense of grandeur diminishes considerably when one approaches the lobbies or parking floors which constitute the arriving motorist's normal destination. Once the traveller enters beneath the structure, he finds himself among a maze of columns and ramps which evoke a certain Piranesian awe, but which, by their restlessness and complexity, produce the very opposite effect from that sense of serene grandeur possessed by the Edmonton terminal (and to a certain extent the Winnipeg terminal). If the access to Malton aeroquay reminds one of anything, it is of the rather grisly sub-structure forming the vehicular approaches to Montreal's Central Railway Station. Now it may be that this feeling of *malaise* was simply due to unfamiliarity with a new and vital aesthetic experience, for this type of spatial configuration is certainly fashionable nowadays, as may be assumed from the preliminary drawings of the Boston City Hall. But my own feeling is that the emotional experience of arriving and departing at this terminal will prove oppressive and dismal. I do not question its validity from a purely functional point of view, nor do I presume to suggest that it would have been possible to attain a better solution once the brilliant *parti* constituted by the composition as a whole had been accepted. But I do believe that since architectural progress is evolutionary, future advances may well consist in a modification of the *parti* in such a way as to obviate the dilemma I have just described.

isation of its main internal spaces, and in the internal use of colour. The fact that the concourse of the Winnipeg terminal is covered by a roof which spans the entire breadth with single trusses (as compared with the intermediate columns at Edmonton) is not perhaps in itself particularly meritorious, especially as these trusses are almost entirely concealed by a suspended ceiling. But the presence of a "mezzanine" (i.e. the roofs of the ticket offices inside both concourses) clearly makes the absence of intermediate columns as aesthetically advantageous in the former as their presence is clumsy in the latter. The use of a clear span is a particularly happy solution at Winnipeg, where this "mezzanine" is not wasted (as at Edmonton, and also, incidentally, at Dulles air terminal, Washington), but is used as a public waiting area or lounge. Moreover, mention must be made of a very subtle way the supports of these trusses at Winnipeg are articulated. Instead of being supported by a single stanchion, each is supported by two stanchions forming a kind of fork, with the space in between occupied by a smaller stanchion supporting the low roofs of the surrounding structures (i.e. departure rooms, etc.). In old-fashioned terminology, this is the equivalent of combining a giant order with a small order, but here the device is used so naturally and logically that the basis of its elegance is not immediately perceived.

One of the most attractive features about the Malton terminal is that its unity will never be compromised by additions of the sort envisaged at Winnipeg and Edmonton. By its very nature, each aeroquay at Malton is an indivisible and inextensible unit, which like all great works of art can neither be added to nor diminished but for the worse. Increases in the number of aircraft and passengers cannot, by the very completeness of the compositional form, result in anything other than duplication rather than extension. This will necessarily involve administrative difficulties (such as the duplication of the customs and immigration services) of a type avoided at Winnipeg and Edmonton, but these difficulties have presumably been accepted with good grace, and as a result a far more satisfying piece of architecture has been attained.



A criticism that will inevitably be made of all three air terminals concerns the means of conveying passengers from the waiting rooms to the aircraft. Having studied the evidence, I can readily accept the contention that the system used for many years at London airport and Frankfurt airport, and recently refined by Eero Saarinen at Washington International airport — namely the use of vehicles or “mobile lounges” — has serious disadvantages. But it is difficult to understand why telescopic covered gangways have not been provided at Edmonton, Winnipeg and Malton. The reason given is apparently that such equipment is charged to the airlines, and the latter are unwilling to accept the additional expense. But it seems difficult to believe that, with good will on both sides, some agreement for providing them could not have been negotiated by the Department of Transport, especially as the excess expense (as compared with the usual mobile stairways) would have been little more than the cost of adorning the interiors of the buildings with abstract painting and sculpture.

Another sphere in which the bureaucratic division of responsibility has militated against good architecture is in the design of concession booths, and in the provision of furniture by other government departments, such as the Immigration and Customs authorities. Admittedly, the architect of Malton airport seems to have surmounted this difficulty successfully, so perhaps the architects at Winnipeg and Edmonton could have done the same. But there can be no doubt that at the last two terminals, the booths and furniture occasionally introduce disparity into an otherwise unified whole.

Lastly, something should be said about the value of the works of painting and sculpture exhibited in the three buildings. No appraisal is necessary concerning their artistic merits, since this can safely be left to more specialized critics. But it is worth noting in the present context that the paintings have at least one praiseworthy and important architectural quality: namely, they all occupy spaces deliberately marked out and allotted to them by the architects who designed the buildings. This seems to me an enormous advance on the more popular practice, such as we find in the Montreal Place des Arts, of simply hanging a painting or sculpture of unrelated shape onto a blank wall; and the example set at these air terminals may well indicate the beginnings of a real sense of collaboration between architecture and the “allied arts”.

Nevertheless I question the assumption (which seems so general nowadays) that there is some virtue of connoisseurship, some moral aesthetic duty, imposed on architectural patrons

by civilized society, which obliges them to allot a specific percentage of the cost of a public building to the “allied arts”. Did Louis XIV allot a straight half-per-cent to the “allied arts” when he commissioned the building of Versailles? Of course he did not. He simply told his architects that painting and sculpture were to be included where it was appropriate and omitted where it was inappropriate, and I have yet to see any argument at all, let alone any convincing argument, to the effect that it is appropriate to decorate an air terminal with murals and sculpture. To my mind, the function of an air terminal precludes arbitrary ornament of this nature for somewhat the same reason that Ruskin deprecated the adornment of railway stations\*. No amount of press releases in favour of these ornamentations impresses me, because they avoid the real issue at stake. It is a matter of indifference to me that many of the artists responsible teach at the local art school. I do not care how many of the painters and sculptors selected have received prizes for easel paintings or museum pieces; nor am I moved by the fact that so many of them received Canada Council grants to seek inspiration on the French Riviera. I simply contend that the value of a mural painting rests more on its environmental appropriateness than on its objective artistic excellence, and I suspect that the architecture of these three air terminals would be quite complete without any abstract paintings added at all. Such bright splashes of colour may indeed give the architecture an “added brightness” (and this, according to Alberti, is the function of ornament). But elaborate murals in an air terminal lack the qualities of *convenance* and *bienséance*, of suitability and decorum, which in the great eras have always been the criterion for judging whether the addition of painting and sculpture to architecture is justifiable or not.

\* “Another of the strange and evil tendencies of the present day is to the decoration of the railroad station. Now, if there be any place in the world in which people are deprived of that portion of temper and discretion which are necessary to the contemplation of beauty, it is there . . . The railroad is in all its relations a matter of earnest business, to be got through as soon as possible. It transmutes a man from a traveller into a living parcel. For the time he has parted with the nobler characteristics of his humanity for the sake of a planetary power of locomotion. Do not ask him to admire anything. You might as well ask the wind. Carry him safely, dismiss him soon: he will thank you for nothing else. All attempts to please him in any other way are mere mockery, and insults to the things by which you endeavour to do so. There never was more flagrant nor impertinent folly than the smallest portion of ornament in anything concerned with railroads or near them . . . Railroad architecture has, or would have, a dignity of its own if it were only left to its work. You would not put rings on the fingers of a smith at his anvil.” *Seven Lamps of Architecture*, (Everyman Edition, pp. 122-3).





1

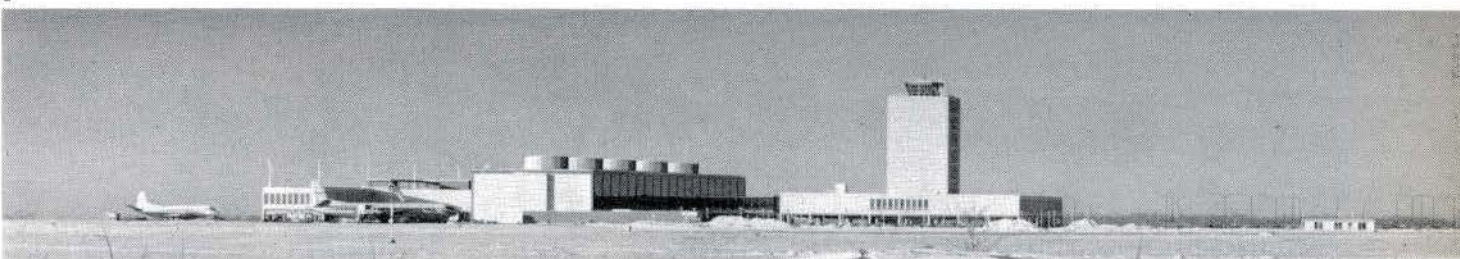
# Winnipeg International Airport

Chief Architect/Major Terminals/Department of Transport  
W. A. Ramsay

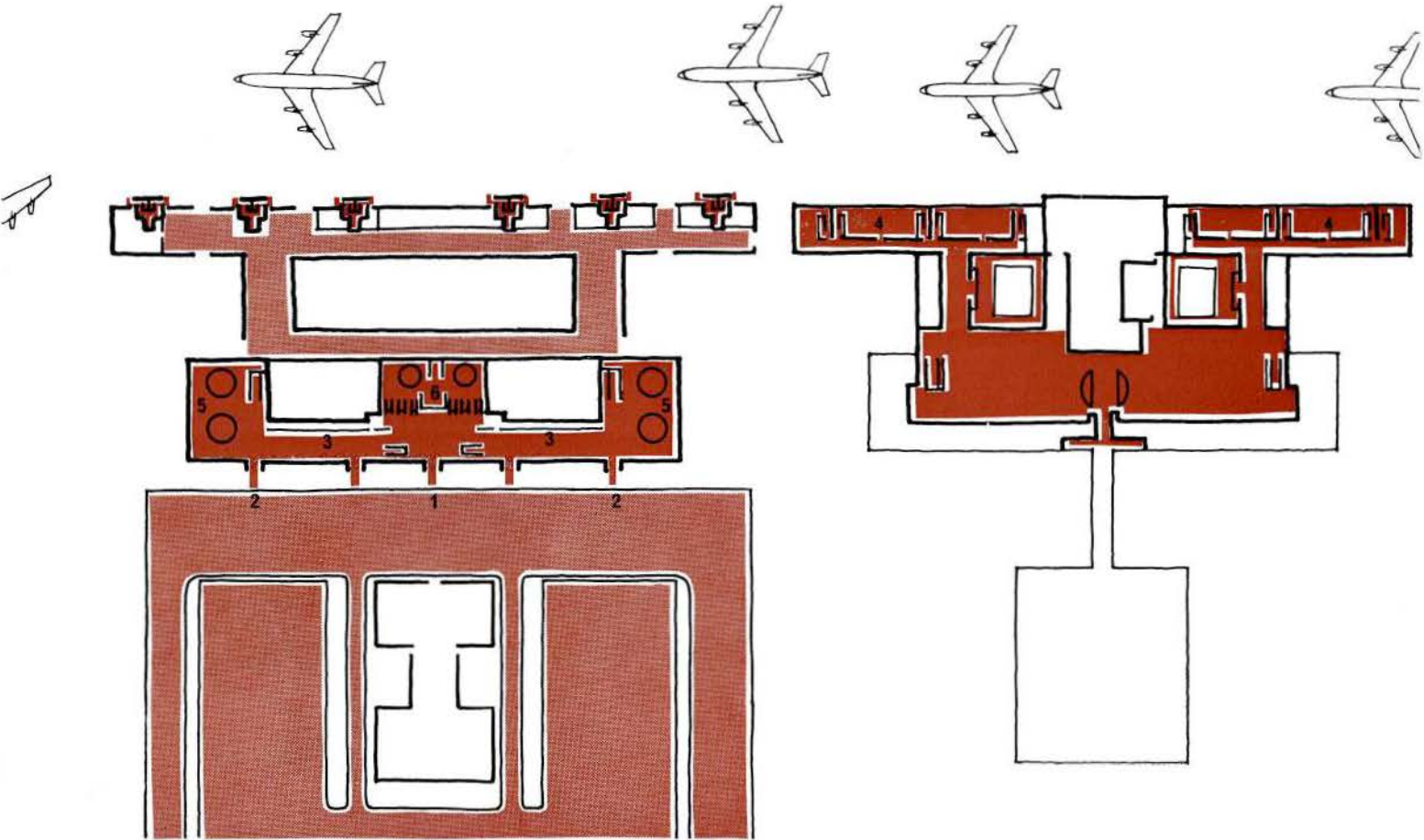
Consulting Architects and Engineers  
Green, Blankstein, Russell and Associates

General Contractor  
Commonwealth Construction Company Limited

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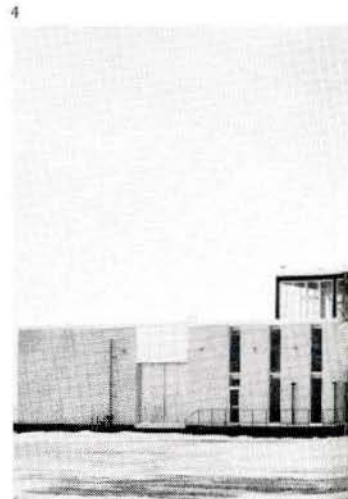
APRON (FIRST) FLOOR LEVEL

SECOND FLOOR LEVEL

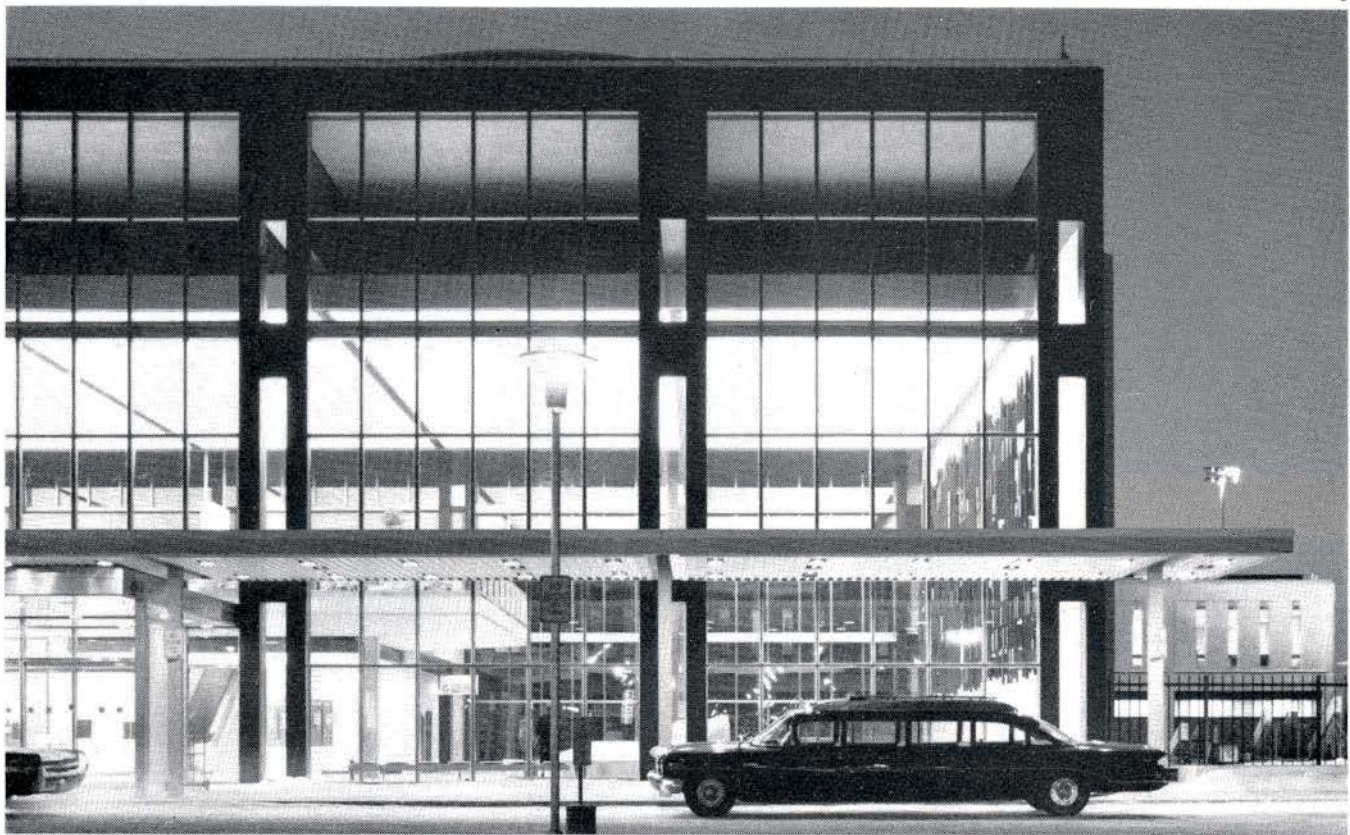
PLAN LEGEND

Solid color — passenger circulation  
 Screened color — vehicular traffic

- 1 Enplaning ramp
- 2 Deplaning ramp
- 3 Ticket area
- 4 Departure lounge
- 5 Baggage
- 6 Customs and immigration





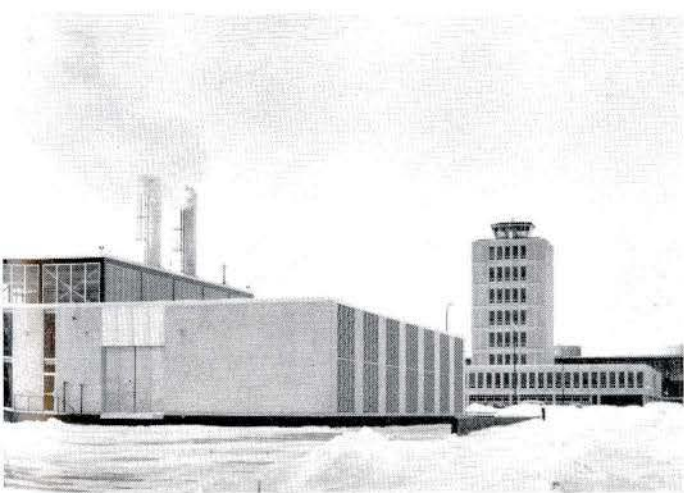


1 (Page 49) Enplaning and deplaning ramp. Terminal building, right; administration building, left; connecting bridge, centre.  
 2 (Page 49) Relationship of airport buildings left to right — loading areas (to planes), concourse, administration, boilerhouse.  
 3-4 Complex from roadway approach.  
 5 East elevation of concourse at deplaning area.  
 6 Concourse from baggage pick-up area.  
 7 Concourse from bridge at second level showing lounge over ticketing area.  
 Photos by Kalen unless noted.

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8 Bridge entrance, at second level of terminal building, to administration building. Mahogany sculpture by Anne Kahane.

9-10 Departure rooms.

11 Entrance to dining room and bar. Mural by Alfred Pellan.

12 Dining room.

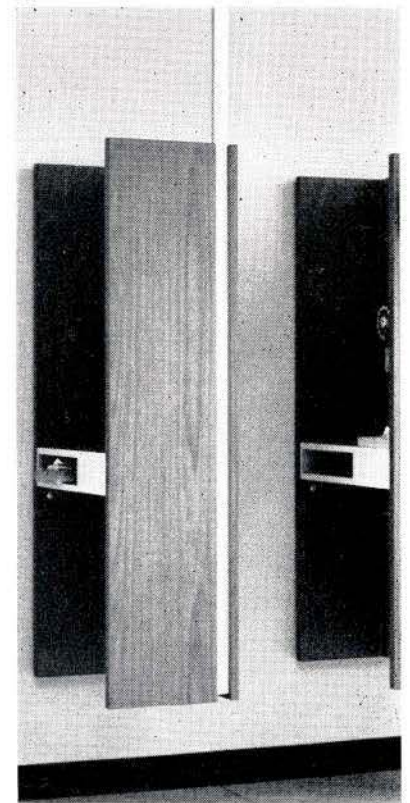
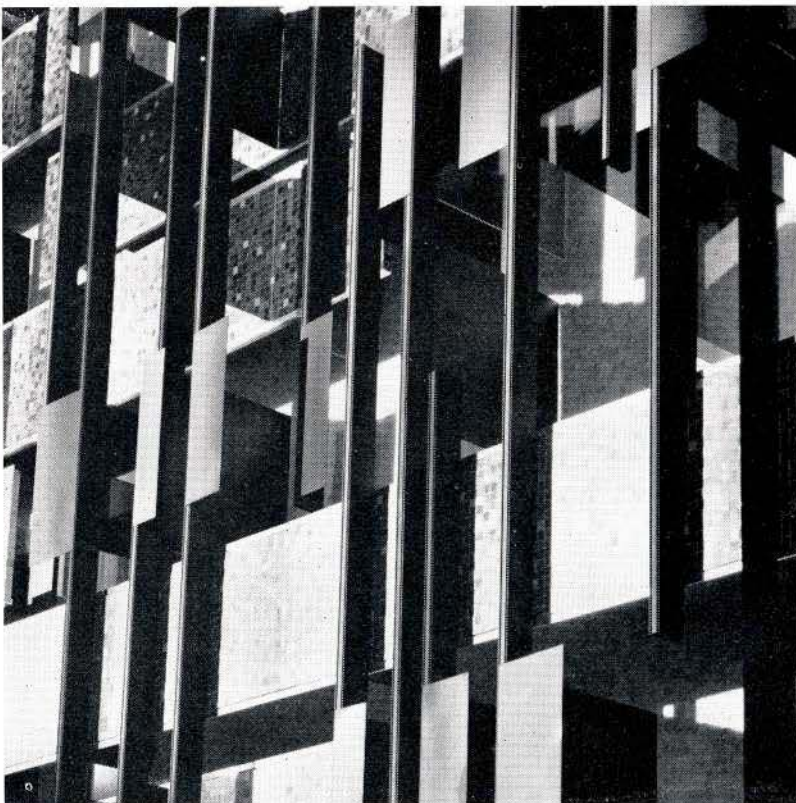
13 Bar.

14 Lounge above ticketing area.

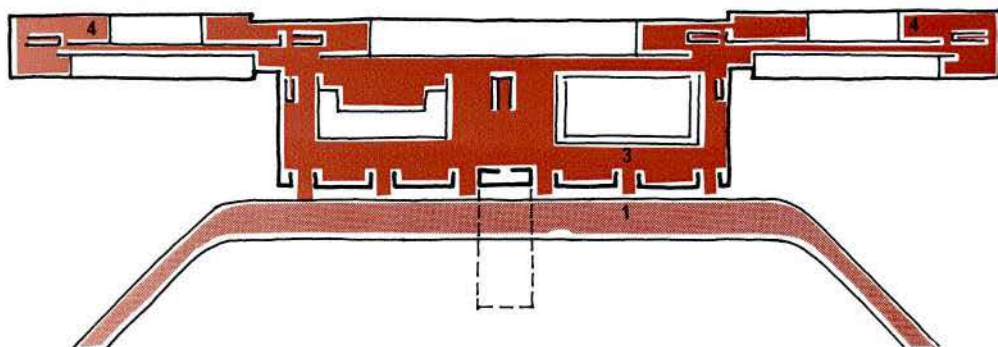
15 Detail of mural by John W. Graham located on north wall of concourse.

16 Detail of telephone booths.

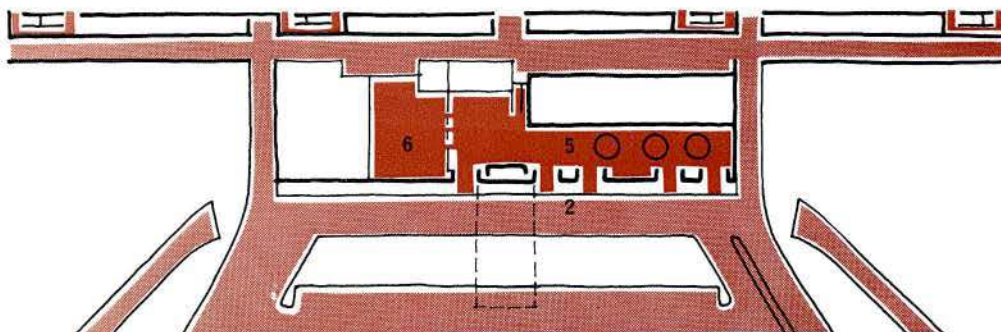
Photos by Kalen unless noted.







SECOND FLOOR LEVEL



APRON (FIRST) FLOOR LEVEL

Plan Legend

- Solid color — passenger circulation
- Screened color — vehicular traffic
- 1 Enplaning ramp
- 2 Deplaning ramp
- 3 Ticket area
- 4 Departure lounge
- 5 Baggage
- 6 Customs and immigration

1

DOT







DOT  
2

# Edmonton International Airport

Chief Architect/Major Terminals/Department of Transport  
W. A. Ramsay

Consulting Architects and Engineers  
Rensaa and Minsos

General Contractor  
Burns and Dutton Construction (1962) Limited

3



DOT





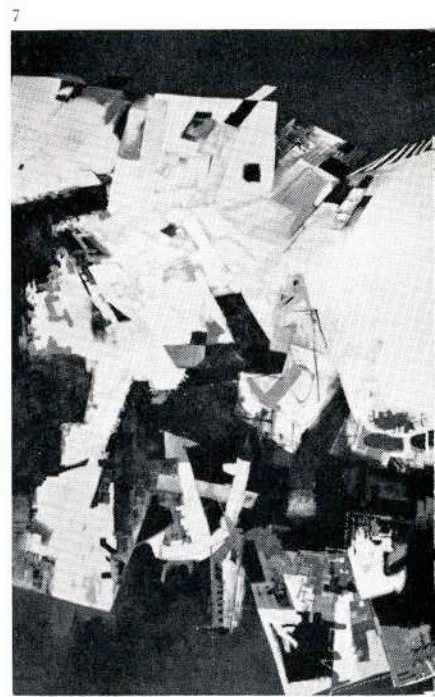
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- 1 (Page 54) Terminal building from apron.
- 2 (Page 55) Administration building from enplaning ramp.
- 3 (Page 55) Terminal and administration buildings showing separation of enplaning and deplaning ramps.
- 4 Enplaning concourse.
- 5 Baggage pick-up station. Mural in brick by B.C. Binning.
- 6 Waiting area.
- 7 Mural by Jack Shadbolt commemorating the bush pilots.
- 8 Waiting area adjacent to Customs and Immigration section.
- 9 Concessions in the concourse.
- 10 Waiting area. Mural by Dennis Burton.



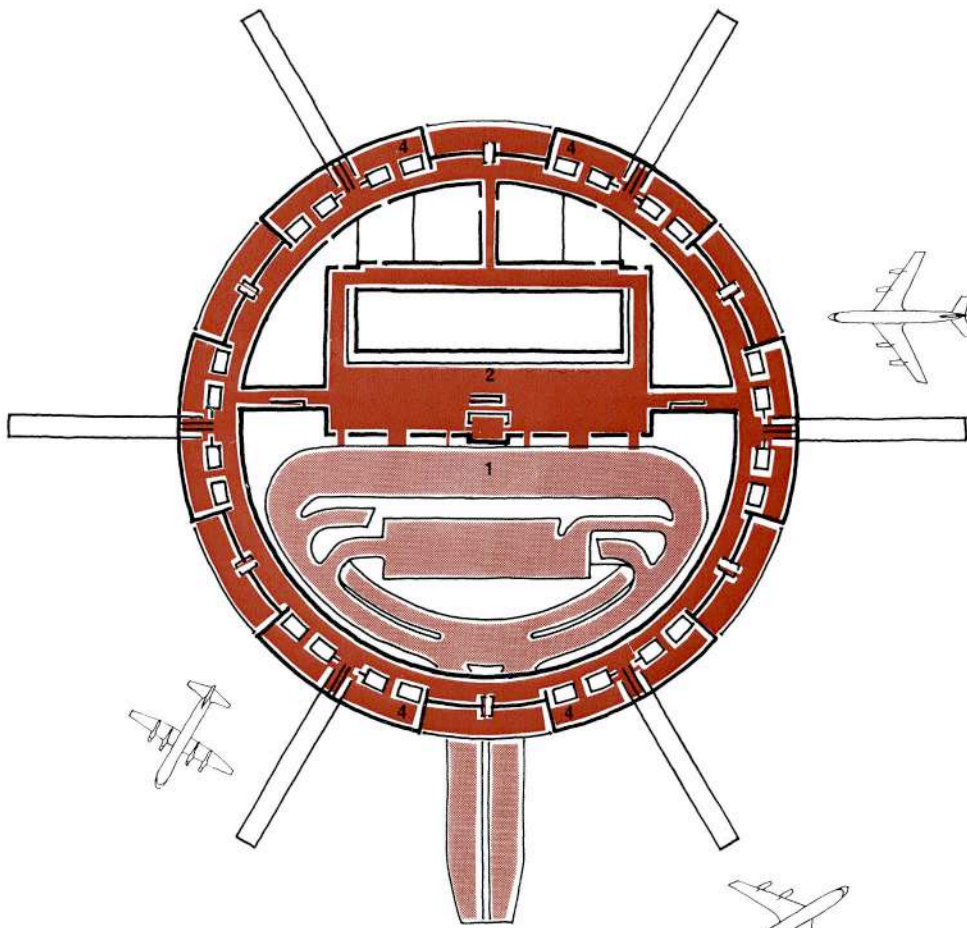
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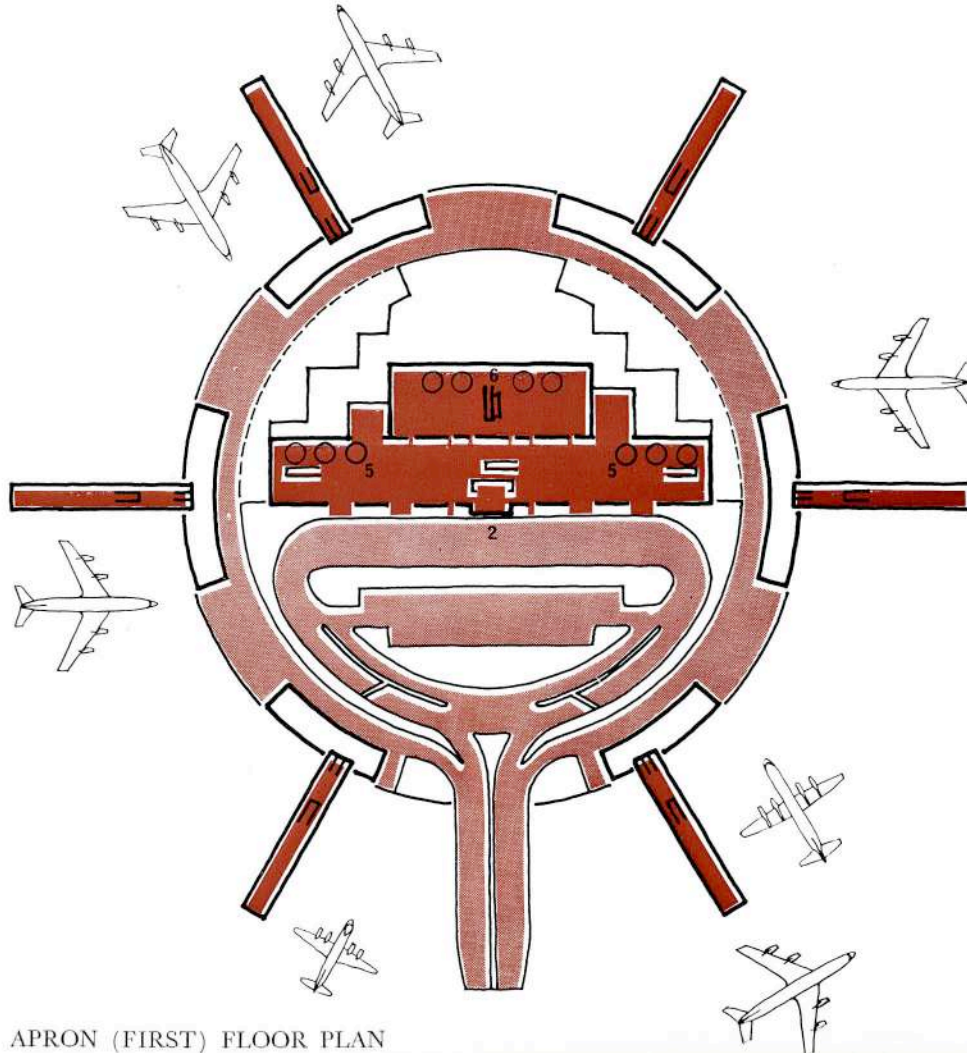
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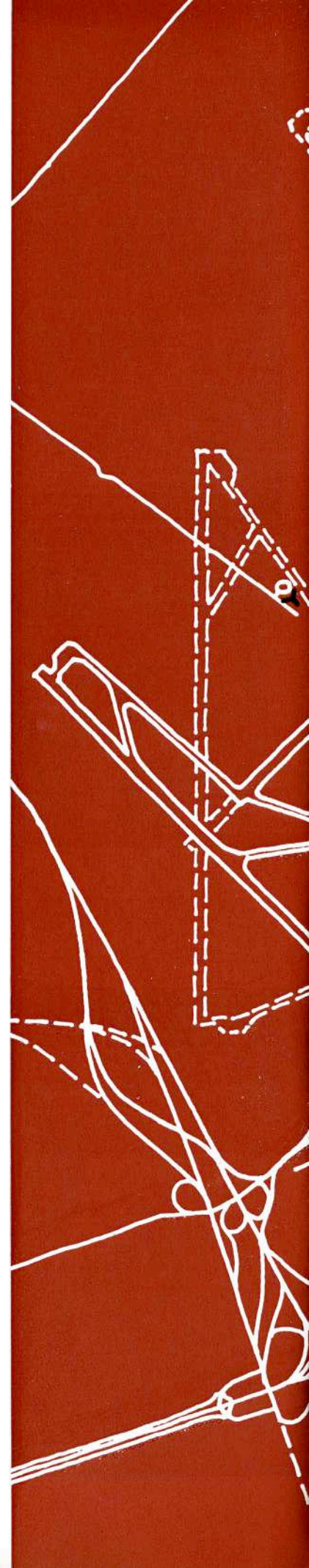




SECOND FLOOR PLAN



APRON (FIRST) FLOOR PLAN



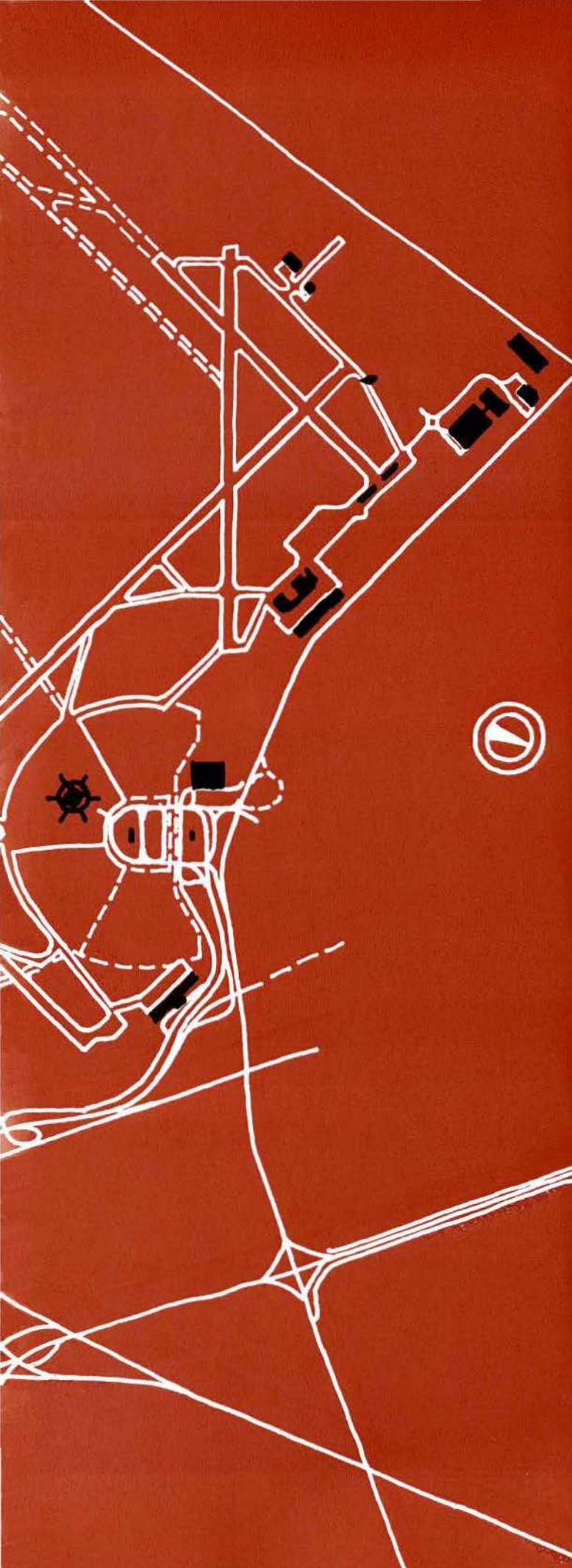


# Toronto International Airport

Chief Architect/Major Terminals  
Department of Transport  
W. A. Ramsay

Consulting Architects and Engineers  
John B. Parkin Associates

General Contractors  
The Foundation Company of Canada Limited



## LEGEND

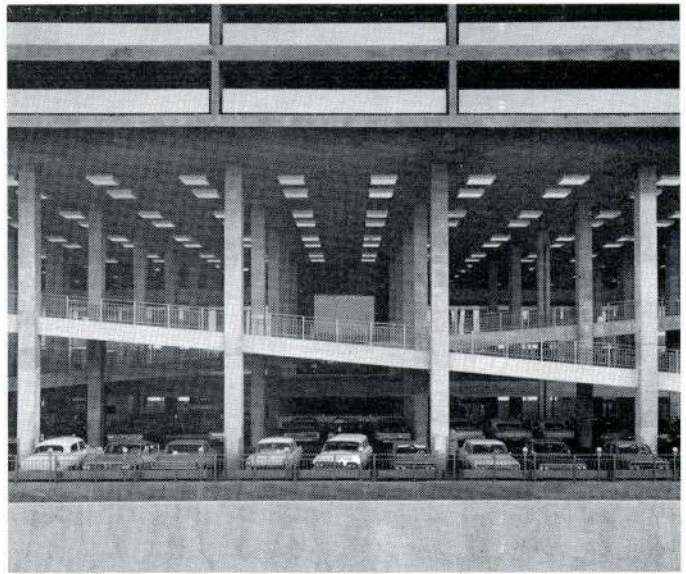
Solid color — passenger circulation  
Screen — vehicular traffic

- 1 Enplaning ramp
- 2 Deplaning ramp
- 3 Ticket area
- 4 Departure lounge
- 5 Baggage pick-up
- 6 Customs and immigration

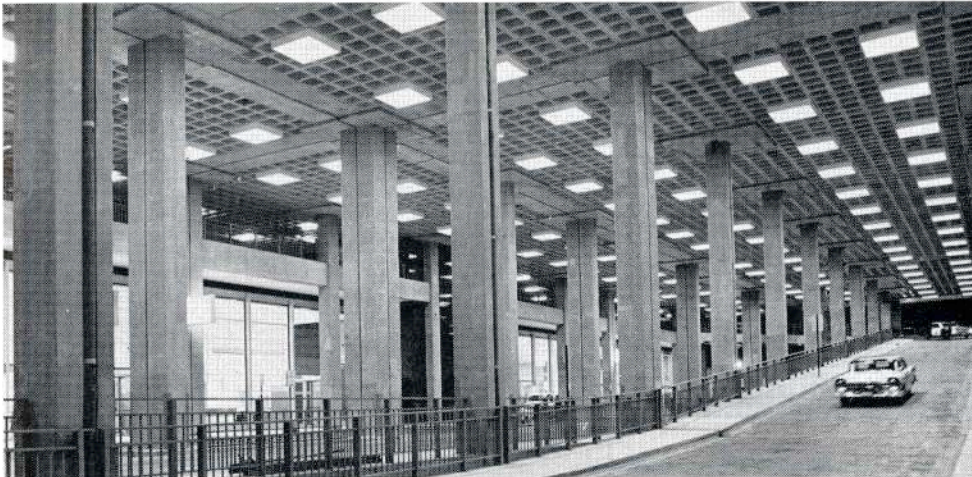








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1 Inssuk. West Baffin Eskimo Co-operative Limited, Cape Dorest, NWT. See page 48.

2 Aeroquay from vehicular approach. Main mass is the parking garage. (60 percent of the passengers park their cars at the terminal for the duration of their trip.)

3 Ramps serving the parking garage. Short term parking facilities are provided at the lower levels (foreground).

4-5 Main entrance and interior ramps.

6 Enplaning ramp. (Stairway up from short term parking areas.)

Photos by Panda



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7-8 Enplaning concourse and ticketing area.

9 Shopping concourse.

10-11 Main lounge adjacent to nursery. Murals (back to back) are by Louis de Niverville.

12 Main dining lounge located above aeroquay with views over apron and runways (see photo 21). Mural in background is by Harold Town.

13 Elevator core in enplaning concourse.

Photos by Panda





erta





14 Courtyard formed by the aeroquay and parking structure.

15 Detail of the aluminum facade.

16 Aeroquay leading to the departure lounges with an entrance to the enplaning concourse on the left.

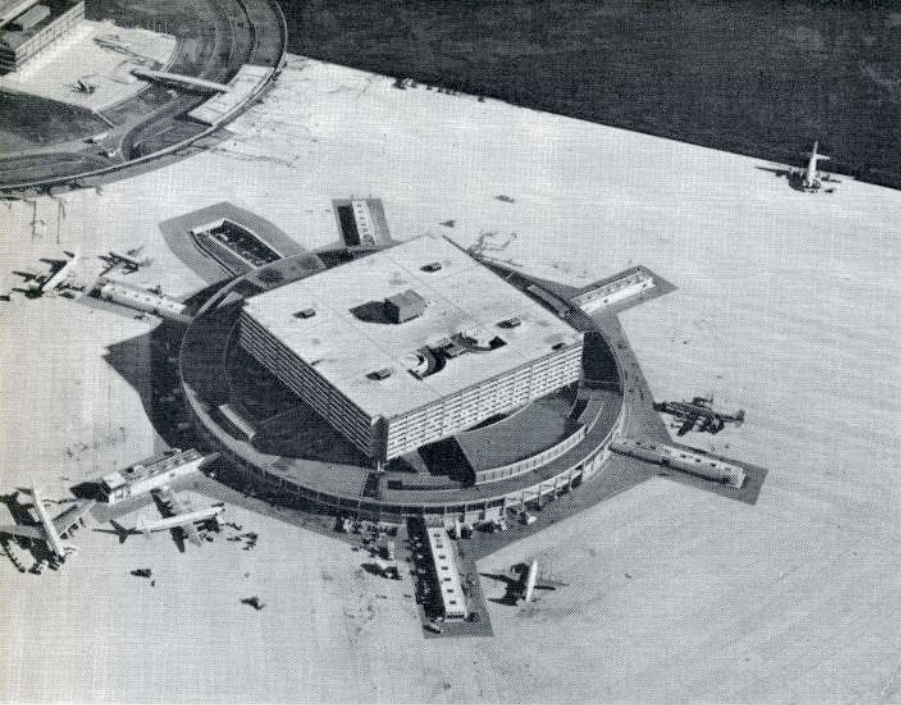
17 Departure lounge.

18 Observation deck.

Photos by Panda







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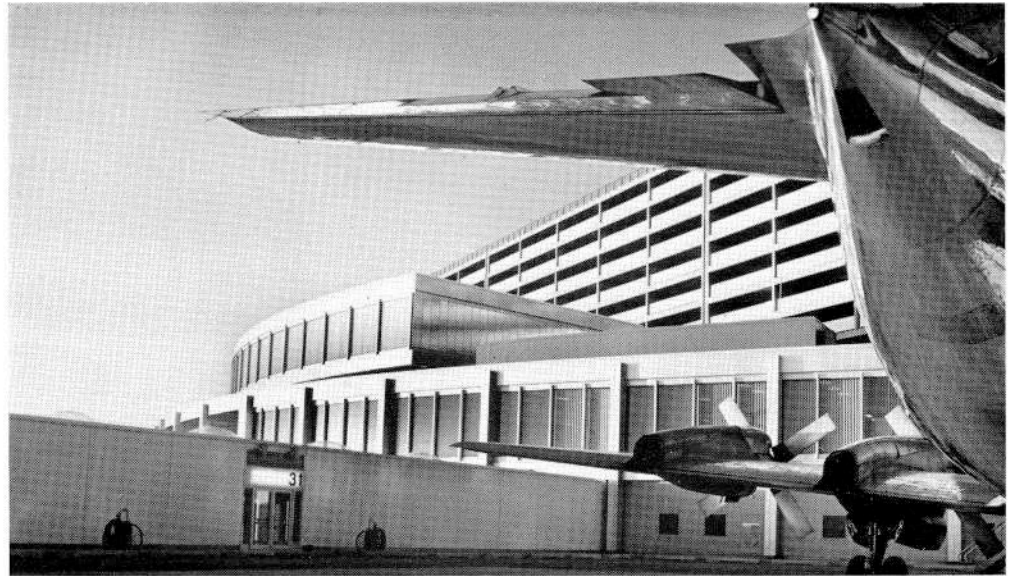
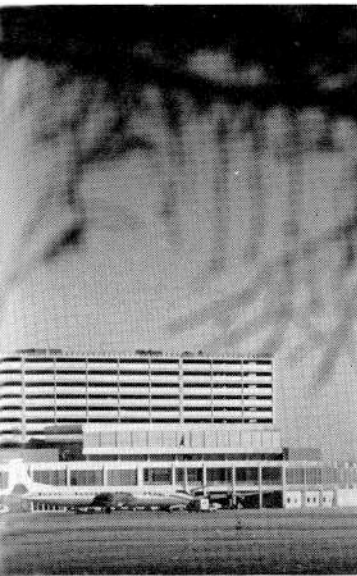


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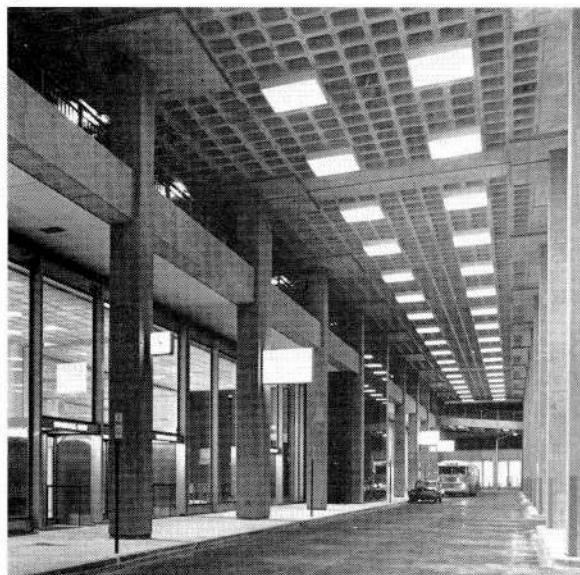


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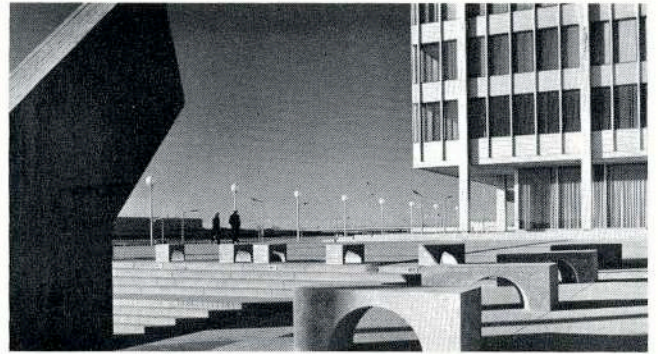


- 19 Aeroquay. Administration building — upper left.
  - 20 Aeroquay from beyond runway.
  - 21 Loading and unloading platform. Restaurant and bar — centre left.
  - 22 Escalator to deplaning concourse.
  - 23 Baggage claim area.
  - 24 Baggage processing area.
  - 25 Deplaning concourse.
  - 26 Departure ramp.
- Photos by Panda





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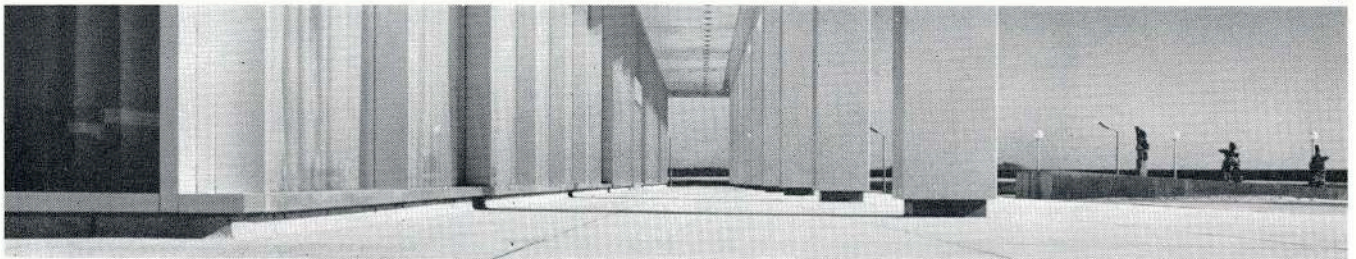


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27 Control Tower.

28 Sun dial, designed by the architects, located on the administration plaza.

29 Administration building — south elevation.

30 Peristyle of the administration building. The three Inussuks are in the background.

31 Detail of Inussuks.

32 Boilerhouse.

Photos by Panda



# CANADIAN BUILDING DIGEST



DIVISION OF BUILDING RESEARCH • NATIONAL RESEARCH COUNCIL

CANADA

## Principles Applied to an Insulated Masonry Wall

by N. B. Hutcheon

UDC 69.022.32

Exterior walls of buildings must act as separators between indoor and outdoor environments and in addition must satisfy several other general or over-all requirements. These were discussed in CBD 48. Other Digests have dealt with individual considerations including relative humidity and condensation, air leakage, rain leakage, water in materials, heat flow and temperatures. CBD 42 has been devoted to a discussion of the considerations that become important when buildings are to be humidified in winter. It is now proposed, before proceeding to further detailed discussions in succeeding Digests, to demonstrate the application of the principles and considerations already discussed in the design of exterior walls. An insulated masonry wall will be used as an example and will be compared with a modified design to illustrate possible improvements.

Wall No. 1 is representative of a number of current designs that have been used quite extensively in recent buildings. It is of a basic form consisting of 8-in. back-up and 4-in. facing, in this case stone, which has been widely used in Canada over the past 50 years or more. Insulation is now commonly added to the inside, and may take several forms including mineral wool between strapping or foamed plastic serving also as plaster base. Full mortar backing, which usually requires a very wet mortar, is commonly used behind the stone.

The calculated limiting temperature gradients for winter and summer are superimposed on the wall section. Winter conditions are assumed to be 73°F inside and -27°F outside. An indoor relative humidity of 35 per cent, which might commonly be desired in winter, corresponds to a dew-point temperature of 44°F, which has been drawn on the diagram.

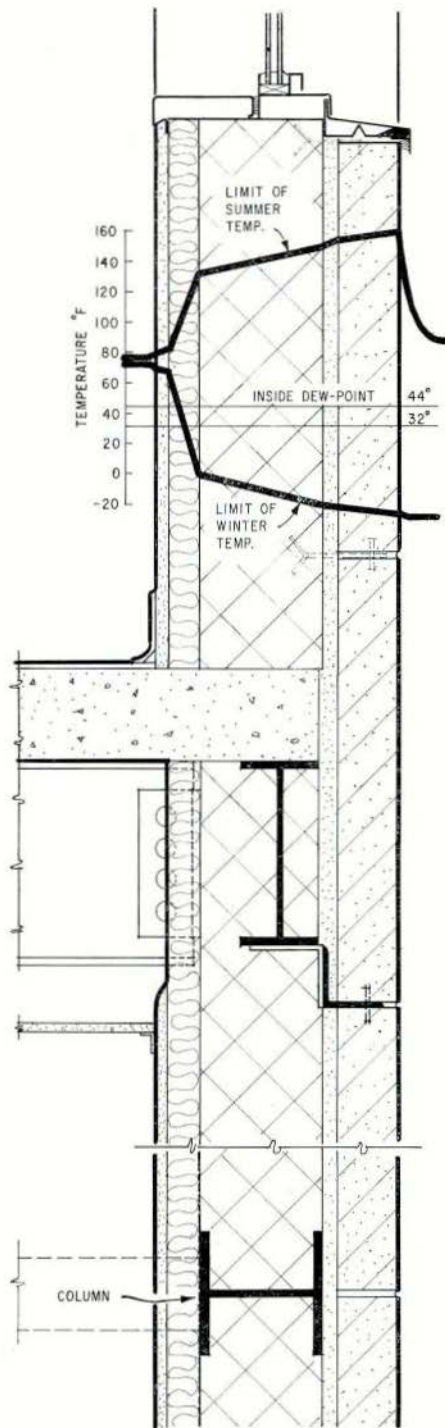
Summer conditions are assumed to be 75°F indoors and 90°F air temperature outdoors, with a surface temperature due to solar radiation of 150°F. The summer gradient is drawn for an assumed steady flow condition that is never realized in practice but does represent for present purposes a reasonable estimate of the limiting gradient conditions to be encountered.

The very large range in temperature of the back-up and cladding from winter to summer, amounting to about 160°F, may at once be noted. This produces changes in dimension in these components of about 0.1 per cent from winter to summer. The spandrel beams and columns are enclosed in the wall material outside the insulation and thus tend to follow the temperature changes and to experience roughly the same expansions and contractions. Meanwhile, all of the interior structure remains at a nearly uniform temperature and may resist the movements of the attached members, which are changing in temperature. These effects lead inevitably at times to cracks in portions of both the exterior walls and cross-walls.

Penetration of the insulating layer by cross-beams, cross-walls and slabs creates thermal bridges. Cool interior surfaces may thus be produced on which condensation may form in winter unless relative humidities are kept to low values. The calculation of surface temperatures for such two- and three-dimensional cases can be very complex, but estimates may be made for some common cases with the aid of the information given in CBD 44.

Windows also suffer thermally from contact with the main portion of the wall, which is outside the insulation. The temperatures of metal frames, sills and sash in contact with





Wall No. 1

cold masonry in winter are lowered, thus complicating the critical thermal condition at the window and in many cases reducing markedly the already low relative humidity that can be carried without condensation.

The thermally induced expansions and contractions of the back-up and cladding and the restraining forces exerted by various connected parts of the structure are, as already indicated, very likely to lead to cracks. In addition to their visual effects, these can be serious in two ways: they may allow the leakage of warm air outwards into the wall in winter; and they may allow rain penetration at other times. It is almost impossible to predict with any certainty the occurrence, size and location of such cracks. Both reason and experience confirm that they do occur. There may in addition be many other unintentional paths for outward air leakage, particularly under windows and at roof slabs and parapets, arising from lack of attention in design or construction.

Reference to the winter temperature gradients for Wall No. 1 will show that all material outside the insulation will fall below freezing. Air leaking outward through cracks or faults will deposit moisture in the cold masonry whenever the dew-point temperature of the moisture it contains is above the temperature of the masonry. Naturally the higher the indoor relative humidity the greater will be the amount of moisture deposited, but, as may be noted, some condensation can be expected even at low indoor humidities because of the low temperature of the masonry. At times of less severe temperature, water deposited by condensation close to a freezing plane in weak mortar may promote ice lens formation and the development of strong disrupting forces within a wall similar to those produced by frost heaving in soil. Even if ice lensing does not occur, the deposition of substantial amounts of water within the wall may lead to staining, efflorescence, corrosion of ties, and to degrading effects in the wall materials if subsequently frozen when wet.

Rain penetration through cracks, occurring as a result of temperature movement in the exterior cladding, can also allow the entry of water and the wetting of the wall. The use of full mortar bedding of the cladding usually results in a weak mortar and a confused drainage pattern, so that when cracking and leakage do occur water may be retained and lead to deteriorating effects when subsequently frozen.

A dramatic difference in temperature conditions and their attendant dimensional changes



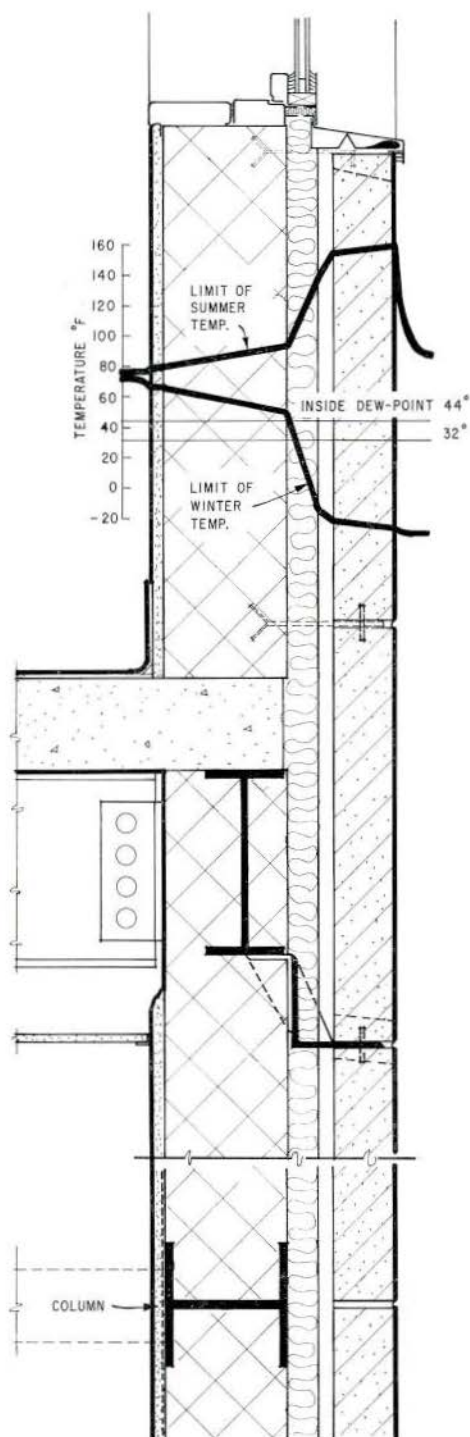
can be effected by moving the location of the insulation, see Wall No. 2. The main wythe and all the parts of the structure in contact with it are subjected to a much smaller range of temperatures. The possibility of disruptive dimensional changes arising from temperature effects is greatly reduced for all but the exterior cladding and, as will be discussed, these can readily be accommodated.

The window frame, bedded in or fastened to the warm interior wythe, is now relieved of the substantial edge-cooling effect of the former arrangement. Advantage can be taken of the inside metal sill to collect and conduct heat to the frame, and a thermal break may be incorporated on the outside to minimize the loss of heat in winter.

The relocation of insulation by itself effects very considerable improvement in relieving the frame and inner wythe of temperature variations. If, however, the insulation is merely inserted between the main wythe and the cladding, the latter being made continuous by the use of mortar at all joints as before, two potential difficulties remain. The cladding and the main wythe will still tend to move in relation to one another in accordance with their respective temperature changes. Cracks are almost certain to form in the cladding and perhaps also in the main wythe. Further, the cladding, being more or less continuous, is likely to provide at least a partial barrier to wind pressure so that pressure differences across it can develop and cause rain to enter wherever cracks exist. The need for some further improvement in the design is thus indicated.

The exterior cladding can be arranged as shown for Wall No. 2 in the form of an open rain screen (see CBD 40). It may be set out to form an air space and supported by ledger angles and ties as before. The air space, being heavily vented by suitably designed open joints at both horizontal and vertical intervals, will at all times follow closely the outside air pressure so that the rain screen is substantially relieved of wind pressure differences. This not only removes the major force causing rain to penetrate the cladding, but also eliminates the wind loads on it.

Open joints in the cladding, that need only be arranged to prevent the direct entry of rain drops, serve also as expansion joints. Any rain that does migrate to the back of the cladding will run down and can be intercepted by suitable flashing above each ledger angle and drained to the outside.



Wall No. 2



The problem of thermal bridges has been greatly reduced, though the need for ties and ledger angle support for the cladding still remains. The metal connections between the ledger angle and the spandrel beam must be kept to the minimum necessary for structural support so as to minimize the thermal bridging; on the other hand, however, they can now be fastened to a relatively large, relatively warm, high-conductivity member capable of supplying the necessary heat to make up the loss through the connection without undue reduction in temperature. Finally, corrosion of ties can be greatly improved by proper design that avoids serious or prolonged wetting.

The need for a vapour barrier and the question of the relative humidity that can be carried has still to be discussed. A vapour flow analysis, not included, indicates that Wall No. 1 will experience condensation under winter conditions with 35 per cent relative humidity indoors, while Wall No. 2 will not. The possibility of this may be gauged from examination of the winter temperature curves relative to the indoor dew-point temperature. In Wall No. 1 the temperature falls below the dew-point at a point within the insulation and is far below it for all parts of the wall outside the insulation. In Wall No. 2 the main wythe and all parts of the frame are held above 44°F. The significance of this condensation from vapour diffusion in Wall No. 1 must, however, be questioned despite the importance attached in the past to the use of vapour barriers to control such vapour diffusion. Relatively small amounts of water will be involved when the materials on the warm side are reasonably resistant to vapour flow, e.g. paint on plaster.

The possibility of condensation from vapour diffusion alone within Wall No. 1, while undesirable, does not lead to a firm basis for establishing the limiting indoor relative humidity that can be carried in winter. Actually, the cool surfaces of windows and frames and of the ends of cross-beams and slabs bedded in cold outer masonry will, in the first instance, establish the limit on indoor relative humidity through surface condensation. As discussed, Wall No. 1 is inferior in these respects. The real danger from increased indoor relative humidity comes from outward air leakage, which carries with it water vapour to be deposited in substantial quantities by condensation in the cold outer parts of the wall with which it comes in contact.

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The merits of Wall No. 2 can now be more fully appreciated. Not only has the possibility of cracking from movements due to thermal and moisture changes been greatly reduced, but in addition the possibility of degradation caused by wetting and wet freezing has been minimized. All parts of the wall inside the insulation are kept well above the indoor dew-point of 44°F so that no condensation should occur there. Indeed a relative humidity higher than 35 per cent might be carried with safety for the conditions assumed, so far as the wall section itself is concerned. The limitation posed by cold window surfaces and the heat bridges formed by the cladding ties and supports has been greatly relieved.

Even if condensation does occur on the warm side of the insulation, the temperature there is shown to be well above freezing, so that wet-freezing should not occur. Any water vapour or moist air moving outward does not encounter freezing conditions until it reaches the insulation. Some condensation, even if it does occur within the insulation need not be serious; it can later pass relatively freely to the air space and on to the outside.

While Wall No. 2 can tolerate condensation should it occur, it is still desirable to ensure adequate control of vapour flow and air leakage. Suitable barrier properties should be built into the wall between the inside and the insulation. Wall No. 2 presents much more opportunity for this than does Wall No. 1.

### Conclusion

The modified design illustrated by Wall No. 2 will experience reduced temperature changes and reduced possibility of cracking within its main section. Movements in the cladding can be tolerated. Greater freedom is provided for the positive control of heat flow, air leakage, vapour flow and rain penetration, and at the same time the wall is inherently less vulnerable to wetting and freezing.

It must not be thought that only masonry walls are subject to the difficulties that have been discussed. Changes to other materials and types of walls do not eliminate potential difficulties, although they may change the relative seriousness of the various problems that may be encountered. These difficulties can be avoided with reasonable assurance only by an appreciation of the mechanisms involved and by careful analysis and design.



# Technical Column

Edited by Douglas H. Lee

## Bootstrap Heating for Commercial Office Buildings

by R. T. Tamblын

Mr. Tamblын, B.A.Sc., P.Eng., M.E.I.C., is of R. H. Tamblын and Partners, Limited, Consulting Mechanical Engineers. The firm has just completed a "bootstrap" installation which was chosen for its economical advantages. Because of the unique features of this design Mr. Tamblын was asked to present a paper at the ASHRAE semi-annual meeting held in New York last year. The article here is taken from that paper.

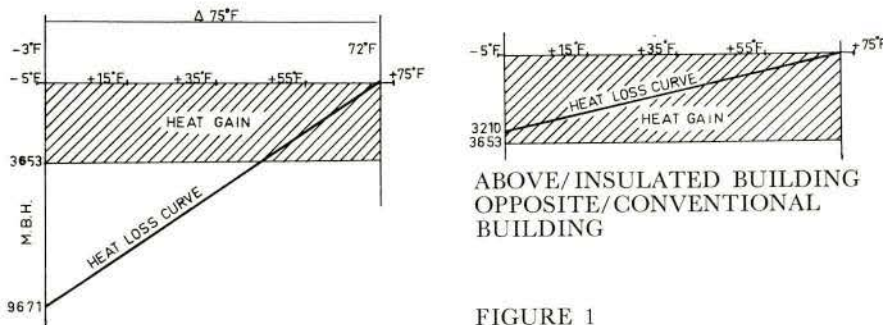


FIGURE 1

TABLE 1

Factor Affecting Heat Loss	Savings in Max. Heat Loss BTU/hr	Increase in first Cost Required
11/2" extra insulation in wall panels and roof	736,000	\$20,000,000
Double glazing vs. single glazing	1,125,000	\$50,000,000
Reduction in minimum fresh air ratio by electronic odour control	4,600,000	\$25,000,000
Total	6,461,000	\$95,000,000

HEAT LOSS TABLE 2A

ITEM	Conventional Bldg.			Insulated Bldg.		
	FACTOR	MBH	BTU/Sq. Ft.	FACTOR	MBH	BTU/Sq. Ft.
GLASS	1.13	2645	14.70	0.65	1520	8.43
WALL	0.25	1120	6.22	0.10	448	2.49
ROOF	0.18	144	.80	0.10	80	.44
OTHER		12	.07		12	.07
INFLT. TOTAL EQUIVALENT	0.4 CFM/Sq. Ft. Kw	5750 9671 2840	31.95 53.74	.08 CFM/Sq. Ft.	1150 3210 940	6.38 17.81

HEAT GAIN TABLE 2B

ITEM	VALUE	MBH	BTU/SQ. FT.
PEOPLE	900	180	1.0
FANS & PUMPS	109 Kw	373	2.07
MISCELLANEOUS	45 Kw	153	0.85
LAVATORY EXH.	5000 CFM	108	0.60
ELEVATOR ROOM	20% of 200 Kw	136	0.76
TRANS. ROOM	3% of 1000 Kw	102	0.57
HEAT PUMP	100 Kw	341	1.89
LIGHTS	85% of 783 Kw	2260	12.55
TOTAL		3653	20.29

"Bootstrap heating" describes those systems which are able to derive their heat source from the waste heat in the building which they serve . . . a method of heating which will find increasing favour with building owners and managers in the next few years.

This heating concept, when well applied, will produce economies in three areas. It will lower first cost by reducing the mechanical equipment area and head room requirements and by eliminating chimneys; it will lower operating costs; it will reduce air filtration maintenance by minimizing fresh air requirements for interior zone cooling during heating seasons. In addition it will permit a building design free from mechanical "belts" that interrupt the exterior facade.

At the outset, it is important to observe that conventional office buildings are not prospects for this type of heating. The design condition of a typical building today allows a greater heat loss during winter than can be made up from all sources of initial heat gain.

Few office buildings can be found with a sufficiently high lighting load and a sufficiently small glass area to permit the equation of heat loss and gain which is fundamental in the selection of a bootstrap heating system. On the other hand, the insulation coefficients can be improved and it may be possible to gain more from the benefits of "bootstrapping" than it costs to reduce the building heat losses to a point where the system can be used.

The technique of bootstrap heating involves year-round operation of the water chiller. In the winter, the water chiller is used to cool mechanically the waste heat areas such as the central core of each office floor. This action prevents temperature rise equally well as conventional systems which rely on an increased fresh air ratio for winter cooling. When the water chiller has thus "trapped" the waste heat in its condenser, it will be found cheaper to pass the heat from the condenser into the heating circuits, than to generate the same amount of heat in a fuel fired boiler system.

It is obvious that this technique can only be used where the amount of waste heat at least equals the total building heating requirements.

Let us look at the problem of equating heat gain with maximum heat loss. A conventional building (as illustrated in Figure 1) with 38% of the exterior wall glazed, is an unlikely candidate for bootstrap heating. However, it can be con-



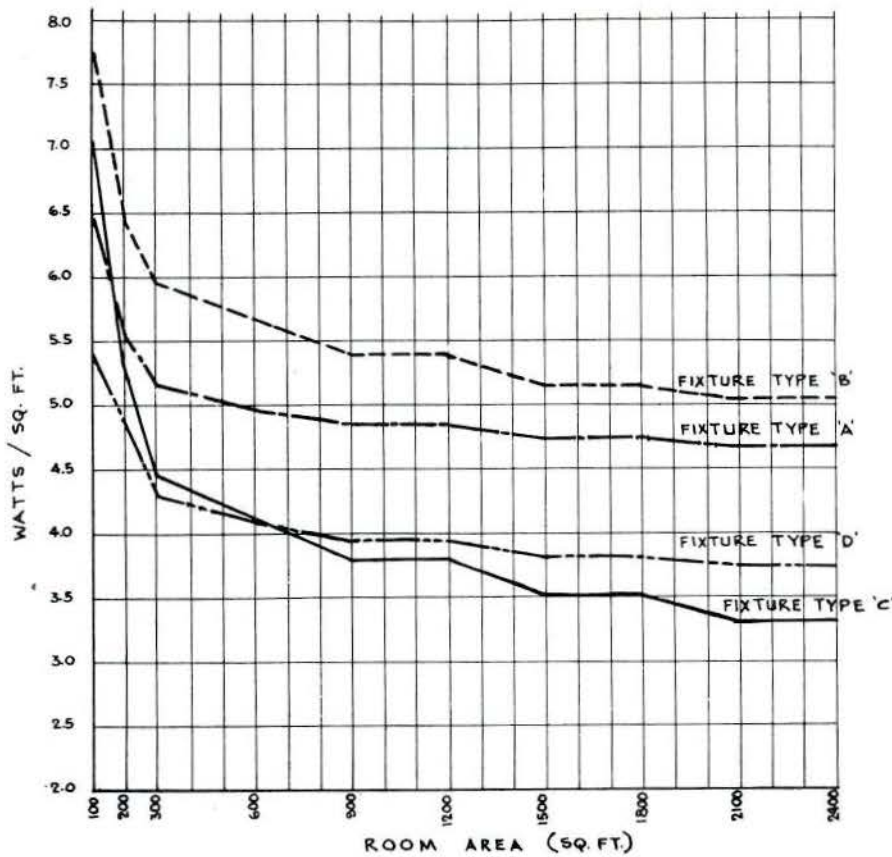


FIGURE 2/ELECTRICAL INPUT TO MAINTAIN 100 fc FOR VARIOUS AREAS

### RECOMMENDED IES LIGHTING LEVELS

Cartography, designing, detailed drafting. ....	200 fc
Accounting, auditing, tabulating, book-keeping, business machine operation, reading poor reproductions, rough layout drafting. ....	150 fc
Regular office work, reading good reproductions, reading or transcribing handwriting in hard pencil or on poor paper, active filing, index references, mail sorting. ....	100 fc
Reading or transcribing handwriting in ink or medium pencil on good quality paper, intermittent filing. ....	70 fc
Reading high contrast or well-printed material, tasks and areas not involving critical or prolonged seeing such as conferring, interviewing, inactive files and wash-rooms. ....	30 fc
Corridors, elevators, escalators, stairways. ....	20 fc

verted to this concept by manipulation of the heat losses. Table 2 shows the comparison of heat loss and gain.

Table 1 is a summary of the changes made and the resulting increase in first cost to convert a conventional building with 38% of the exterior wall glazed into a building suitable for bootstrap heating. The additional insulation costs in this building would be offset by an equal saving in boilers, boiler room and chimney; the additional cost of electronic odour absorption offset by the saving in oversized fresh air and exhaust louvres, exhaust fans and fan room space.

The operating rate of the bootstrap heating plant (system 1) at 86¢/million BTU is equal to the cost of bunker oil. So what, might you ask, are the real advantages in this particular heating system? 1 The insulated building has much warmer, and thus more comfortable, exterior wall temperatures.

2 The warmer temperatures permit winter humidification without condensation. This is not available in standard building design without paying a premium for double glazing.

3 The bootstrap design will operate at 3210 MBH instead of 9671 MBH. (Fig. 1). Therefore, heating costs are 1/3 of normal, assuming the same cost/million BTU to re-use or generate the heat. The building could be insulated to accomplish the same saving with oil heat, but only at the cost of both the insulation and the boiler plant.

	TYPE 'A' RECESSED ALZAC TROFFER	TYPE 'B' LUMINOUS CEILING	TYPE 'C' SUSPENDED DIRECT/INDIRECT	TYPE 'D' TROFFER WITH LENS
WATTS/SQ. FT.				
3	63	58	83	79.8
4	84	78	111	102
5	103	97	139	130
6	126	116	166	156

FIGURE 3/ILLUMINATION FROM VARIOUS LIGHTING SYSTEMS

FIGURE 4/SYSTEM 1

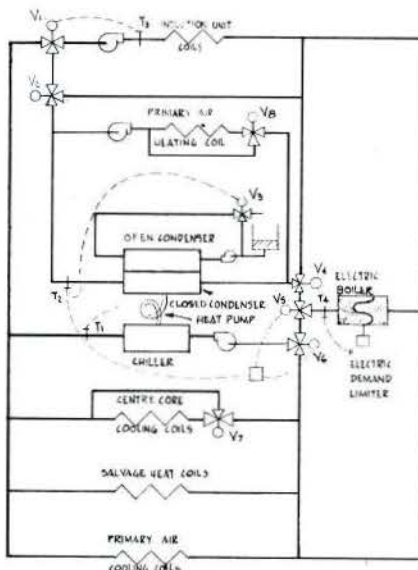
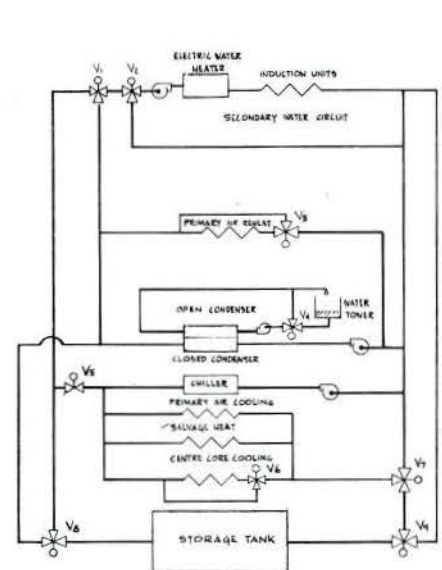


FIGURE 5/SYSTEM 2





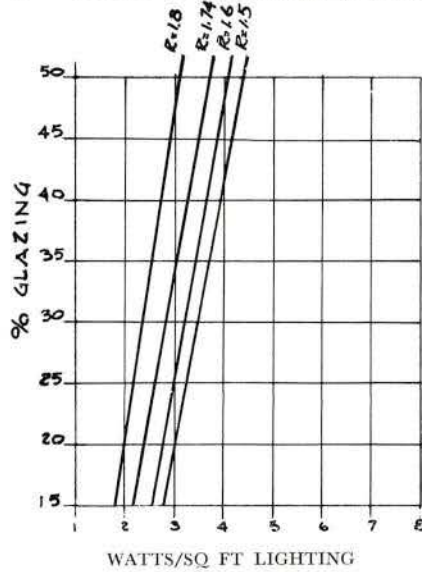
The bulk of the internal heat gain used in the building came from the installation of a first-class lighting system. Figures 2 and 3 illustrate the IES recommendations for office lighting and the illumination levels to be gained from various fixtures used in various room sizes. A level of 90 foot-candles would have to be maintained in this building. This may be achieved by using fixture "D" in offices of 100-sq.-ft. size with 5 watts/sq. ft. installed capacity.

Figure 4 shows a schematic diagram of the piping connecting the perimeter induction units and central cooling coils with the water chiller. The electric boiler is used for off-peak electric resistance heating when the lights are turned off.

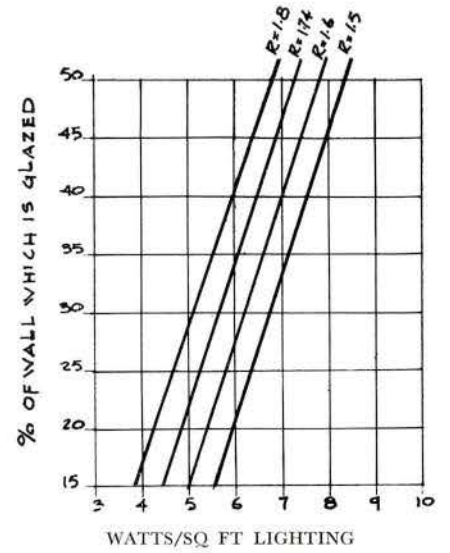
Figure 5 shows the same system with the addition of an underground tank for storage of surplus heat during the milder weather. If this tank were used at premium initial cost, the heating rate may be as low as 47¢/million BTU.

Where electric power rates are within 1½¢/KW hr. for a 300 hr. per month operation, the bootstrap heating design should be investigated. This condition occurs almost everywhere in the provinces of Ontario and Quebec.

$$R = \text{GROSS FLOOR AREA (incl. one basement) / TOTAL SQ FT / ROOF AREA}$$



STANDARD BUILDING  
GLASS u = 1.13/WALL u = 0.25



INSULATED BUILDING  
GLASS u = 0.65/WALL u = 0.10

FIGURE 6  
Figure 6 indicates the lighting level and the window requirements for insulated and non-insulated buildings of various wall/floor ratios. This chart can be used for a quick preliminary check on the possibility of the bootstrap method.

The bootstrap method of heating permits the dollars spent on lighting to be used twice. It offers cleanliness as well as economy and automation. When the technique is understood and applied, it promises great bonuses for the owner on each installation.

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**RUSSWIN**



(continued from page 12)

### CHANGE OF FIRM NAME

The firm of Aza Avramovitch, architect has changed its name to Aza Avramovitch and Associates, architects, 1714 Robie Street, Halifax.

Bolton, Chadwick, Ellwood & Aimers announce they will continue the general practice of architecture as successors to Durnford, Bolton, Chadwick and Ellwood. A. T. Galt Durnford (F), ARIBA, RCA, formerly senior partner, will continue his practice as chairman of the new firm, with Richard E. Bolton (F), ARCA, becoming the senior partner. The firm's offices are at 4101 Sherbrooke Street West, Montreal. The Industrial Division, under the direction of R. V. Chadwick, MRAIC and G. Bennett Pope, MRAIC, is at 1980 Sherbrooke Street West, Montreal; and the Ottawa office under the direction of John B. Roper (F), is at 116 Albert Street.

The partners of Ledaire and Morley, architects, have now established separate practices under the names of Lucien R. Ledaire, architect, suite 1B, 106 Newcastle Street, Dartmouth, NS and Leslie Morley, associates, 86 Dorchester Street, Sydney, NS.

### NEW PRACTICES

Jean - Paul St. Jacques, MRAIC has established a practice at 5-415 Victoria Avenue, Fort William.

James Keywan, formerly of Mendelow & Keywan has formed a partnership with Eugene Lyle. Their offices are located at 1398 Eglinton Ave. W., Toronto 10, Ont. Robert J. Flinn, architect-engineer, has established a practice at 223 Hollis Street, Halifax.

### POSITIONS WANTED

Man of 28 seeks position with architectural firm in Canada. A graduate of the Applied Fine Arts School in Istanbul who speaks English, he has been self-employed for the past two years as an interior decorator. He has worked on a hotel, factory, villas and fair pavilions. Available October, 1964. Write: Cemal Ozdemir Tesvikiye yokusu, Solgun Sogusok. 19/1, Besiktas-Istanbul, Turkey.

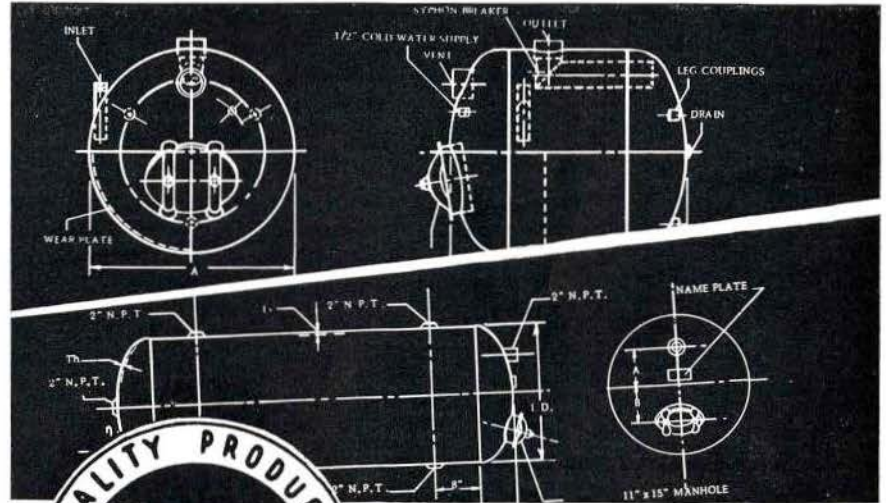
### ENTRIES BEING RECEIVED FOR 1964 PRODUCT LITERATURE AWARDS

Two new categories, installation and maintenance literature, and samples, have been added this year to the three

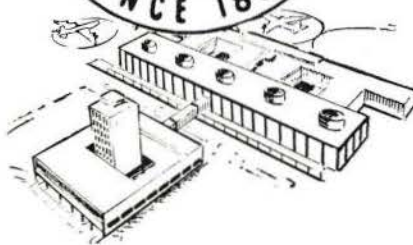
(concluded on page 79)

### JOURNAL TEAM TO PARTICIPATE IN ALBERTA ASSOCIATION'S BANFF "SESSION '64"

The Journal will contribute to the Alberta Association of Architect's Banff Session '64 March 22nd to 26th by sending three participants to present papers on the three main divisions of the session subject, *University Architecture*. W. N. Greer of Shore and Moffat and Partners, Toronto, will speak on the master plan for the new campus, using the new 20,000-student York University campus as his example. David Bourke, of Dobush, Stewart and Bourke, Montreal, will discuss new architecture on the older campus, with McGill as his example; and E. M. Brooke, P.Eng., director of planning of Waterloo University, will discuss programming from the academic requirement point of view. Walter Bowker, Editor of the *Journal* will also attend the session. The papers and discussions will be presented in an early issue of the *Journal*.



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(continued from page 77)

previously eligible categories of catalogues, brochures and publication advertising for the Third Annual Awards for Excellence in Building Product Literature conducted by the Canadian Joint Committee on Construction Materials of the Royal Architectural Institute of Canada, the Canadian Construction Association and the Association of Consulting Engineers of Canada.

Closing date for entries is April 17th and judging will be May 1st.

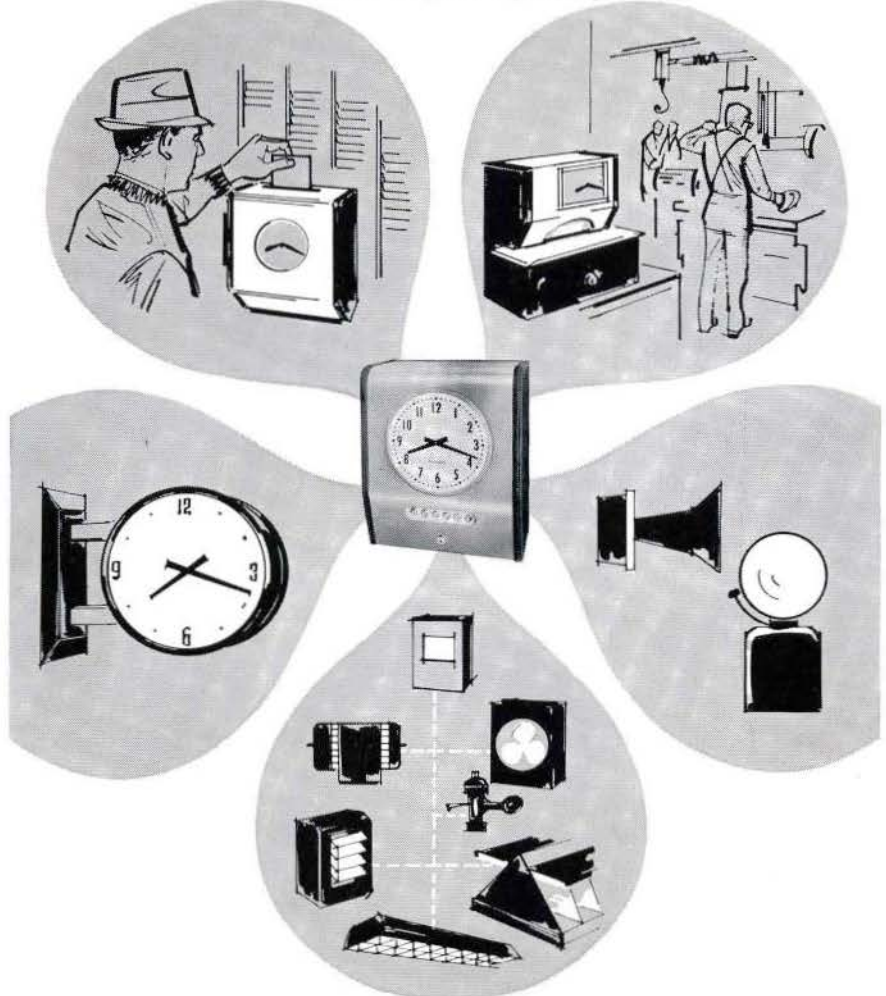
The brochure giving full details of the five different categories for which frameable Certificates of Excellence may be awarded by the jury for the 1964 Awards, is being mailed to manufacturers, advertising agencies and all concerned in the production of product literature and samples. One set of entry forms will go out with the brochure. Extra forms may be obtained from the *Journal*, or from the secretary of the Joint Committee at the Canadian Construction Association in Ottawa.

The Guide to the Preparation of Effective Product Literature, prepared by the Joint Committee and published by the *Journal* in 1961, has been revised under the direction of Robert Briggs, MRAIC, vice-chairman of the Joint Committee. Presentation of Certificates of Award will take place in Toronto in the last week of May. Winning entries will be displayed on this occasion, and afterwards at the Annual Assembly of the RAIC at St Andrews, NB, June 17th-20th. The winners will later be sent to provincial architectural associations for display. Comments of the jury on each entry will be sent to the individual submitting the entry after the judging.

The 1964 Jury, composed of four architects, one consulting engineer and an advertising executive experienced in graphic design, is this year headed by Gordon R. Arnott, MRAIC, of Regina. The other members are Andre Tessier, MIRAC of Quebec City, W. A. Gibson, MRAIC, assistant chief architect, Federal Department of Public Works, Ottawa; Prof. Stanley R. Kent, MRAIC, School of Architecture, University of Toronto; Robert Halsall, P.Eng, Toronto, of the Association of Consulting Engineers of Canada; and A. McDonald Robertson, nominated by the Toronto Chapter of the Association of Industrial Advertisers.

Enquiries about entries and the Awards should be directed to Walter Bowker, Editor of the *Journal*, in Toronto.

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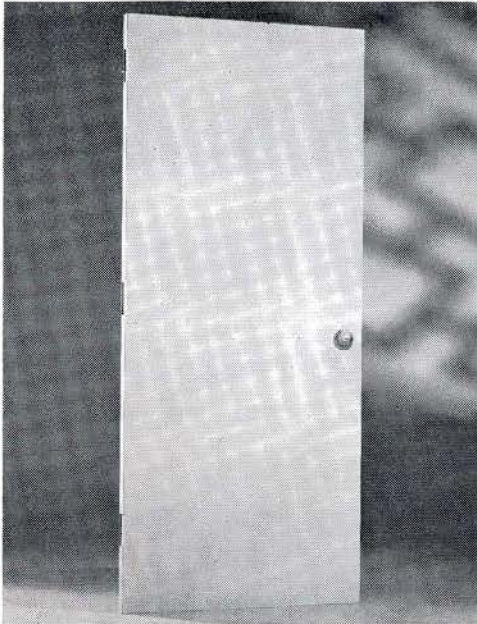
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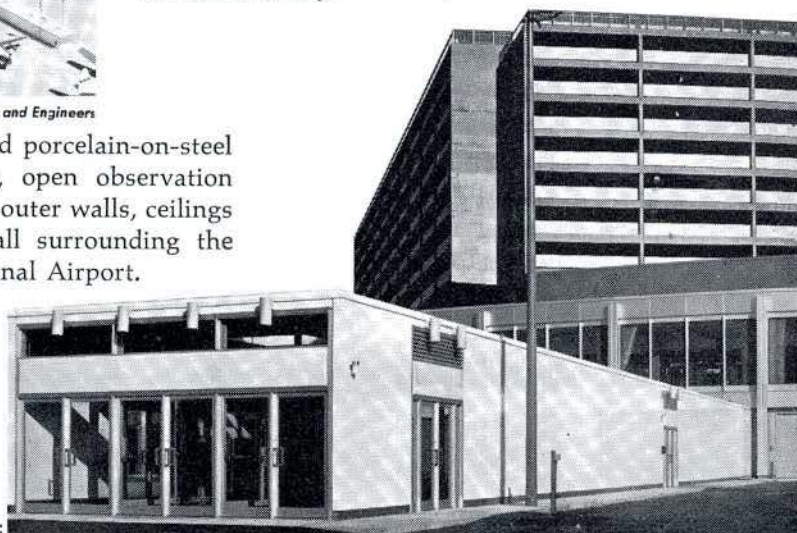
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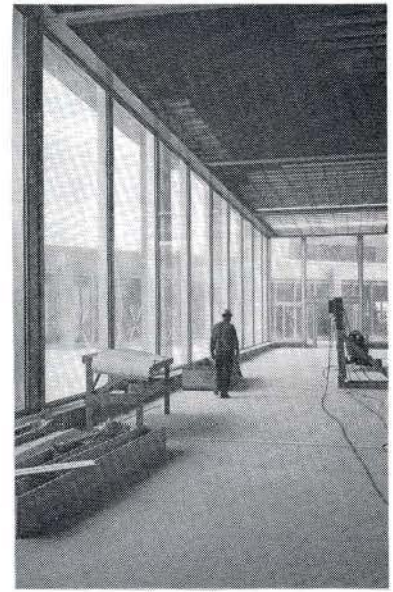
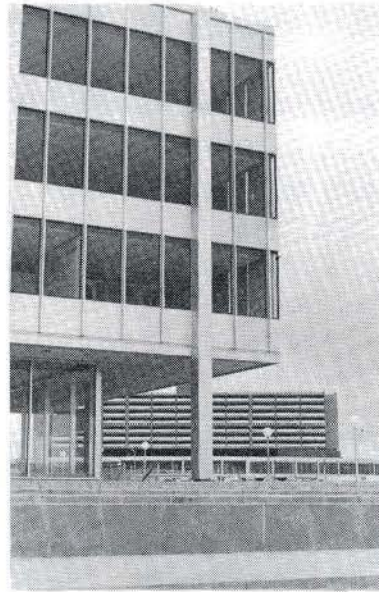
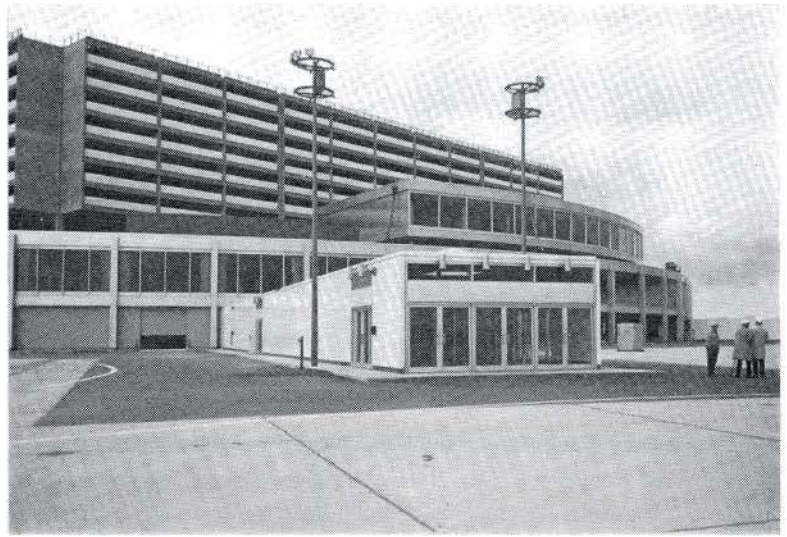
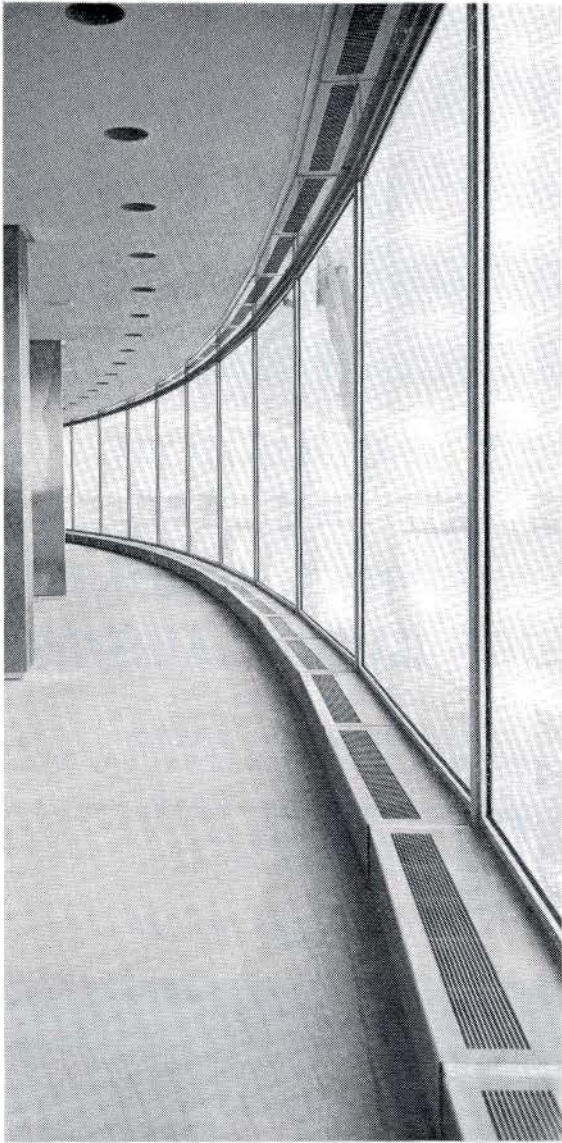
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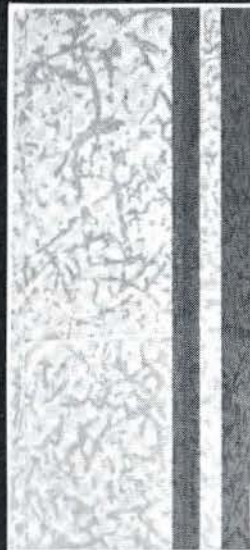
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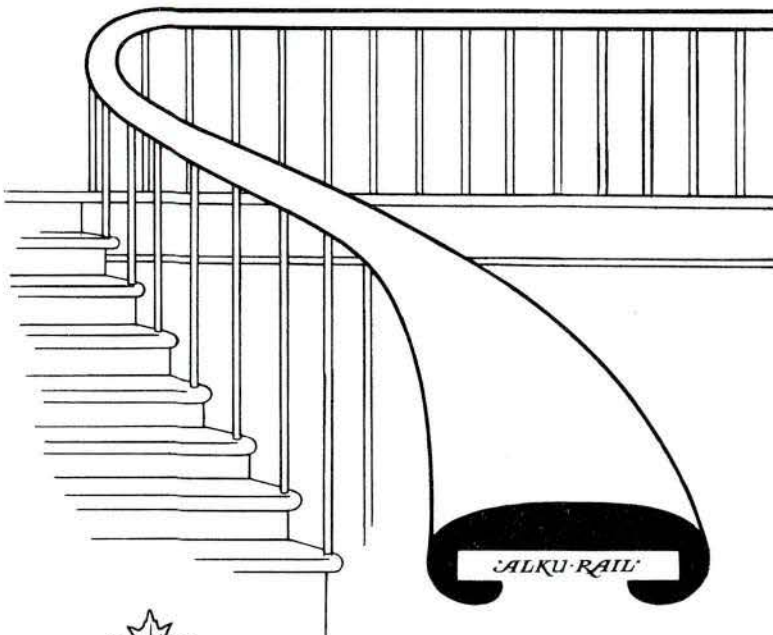
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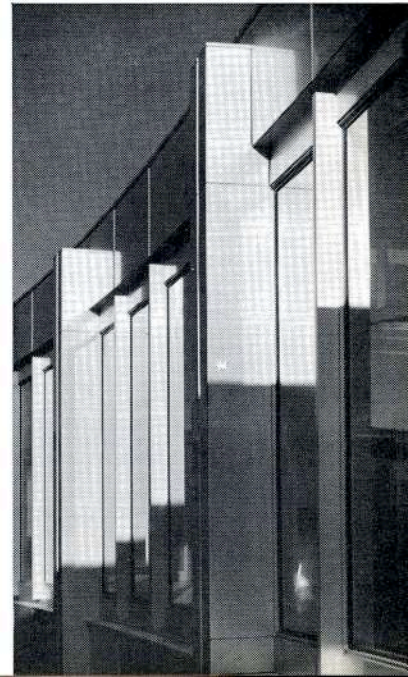




Architect—John B. Parkin Associates General Contractor—Foundation Company of Canada Limited

in Canada where there's a curtain wall to be built.

*In addition to the aeroquay itself, CPI also supplied and erected the complete curtain wall for the airport's new Administration Building shown here with the aeroquay and parking building in the background.*



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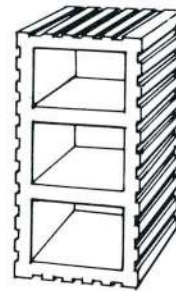


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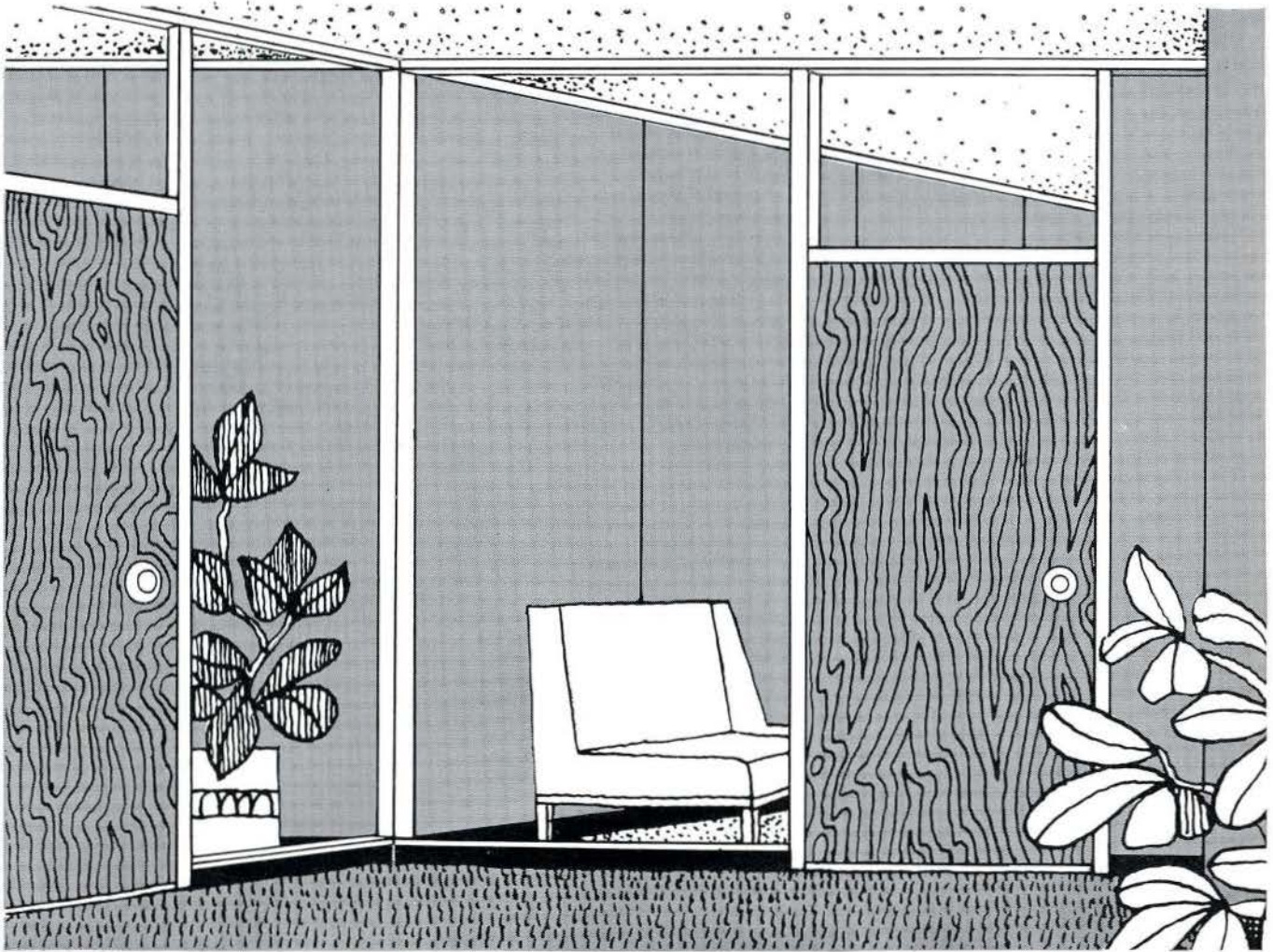
**NATCO·CLAY·PRODUCTS·LIMITED**

55 Eglinton Ave. East, Toronto 12, Ontario



ARCHITECTS: JOHN B. PARKIN & ASSOCIATES





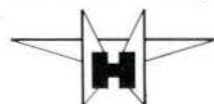
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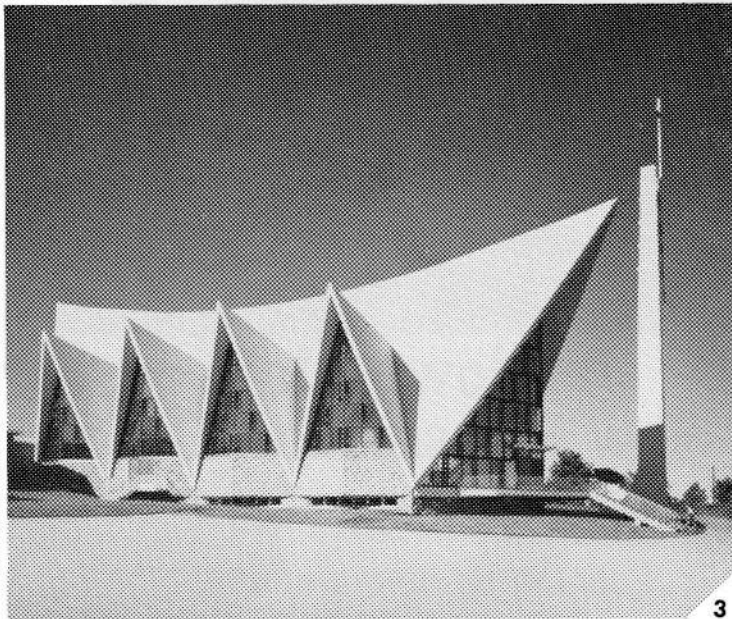
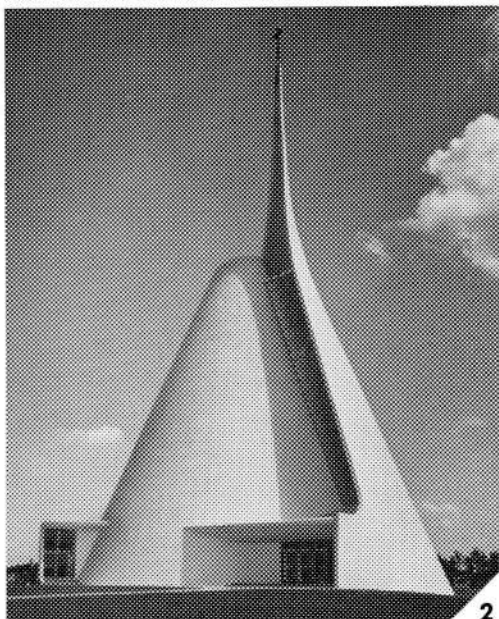
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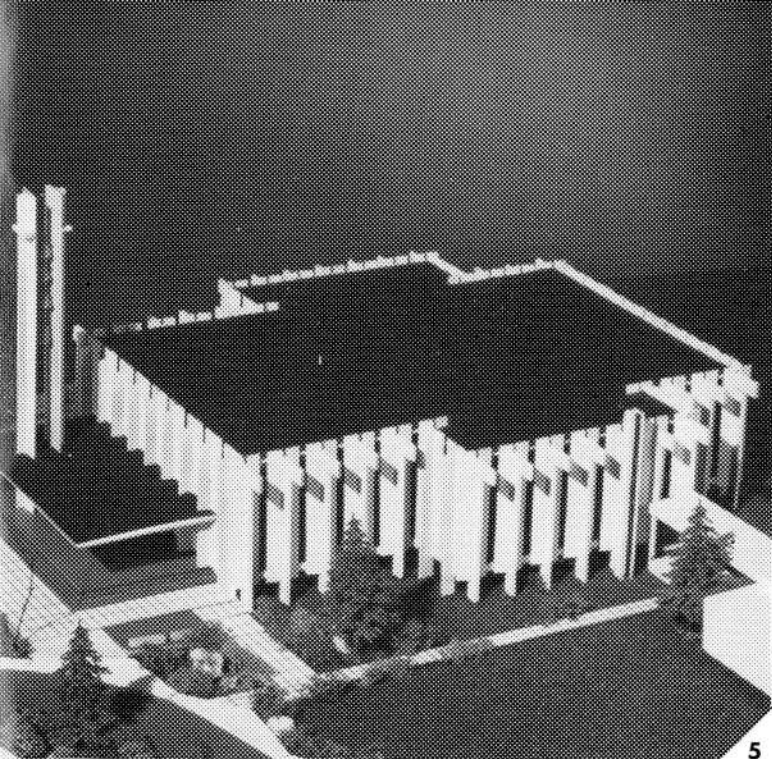


1. **Eglise St. Marc, Bagotville, Que.**  
Architects: Desgagné & Coté. Consulting Engineers: Dauphinais & Bélanger. General Contractor: Cabot Construction. Concrete supplied by: Arvida Mix and Supply Co. Ltd.
2. **Notre Dame de Fatima Church, Jonquière, Que.**  
Architects: Desgagné & Coté, Chicoutimi, Que. Consulting Engineers: Louis Lemieux, Jonquière, Que. Concrete supplied by: Saguenay Prémix Inc., Chicoutimi, Que.
3. **Eglise St. Pierre d'Alma, Alma, Que.**  
Architect: Armand Gravel, Chicoutimi, Que. Consulting Engineer: André Desrochers, Alma, Que. General Contractor: Romeo Fortin, Alma, Que. Supplier of ready mixed concrete: Alma Mix and Supply Co. Ltd.
4. **Interior, Ursuline Sisters' Chapel, Chatham, Ont.**  
Architect: Joseph W. Storey. Consulting Structural Engineers: Todgham and Case in association with Edgar A. Cross & Associates. Contractor: Eastern Construction Co. Ltd., Windsor, Ont. Supplier of ready-mix concrete: Watson Concrete Products, Chatham, Ont.
5. **St. Richard's Church, Montreal, Que.**  
Architect: Maurice Robillard. Consulting Engineer: Jean Duchesneau. General Contractor: A. N. Bail Limited. Prestressed and precast units supplied by: Francon Limited.

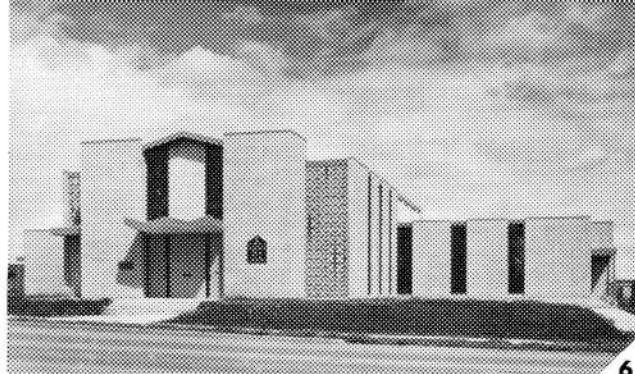
6. **St. Clare's Roman Catholic Church, Edmonton.**  
Architects: Blais, Sheddon and Associates. Consulting Engineers: C. C. Parker, Whittaker & Co. Ltd. General Contractor: McRae and Assoc. Construction Ltd. Masonry Sub-Contractor: Julian's Masonry Ltd. Concrete masonry units supplied by: Edmonton Concrete Block Co. Ltd.
7. **Christ the King Church, Moncton, N.B.**  
Architect: LeBlanc, Gaudet and Associates. Project Architect: Jacques Roy. Consulting Engineers: Adjeleian and Associates Ltd., Ottawa. General Contractor: Modern Construction Limited.
8. **St. Patrick's Cathedral of the Catholic Diocese of Fort William, Ontario.**  
Architects & Engineers: McIntosh and Associates. General Contractor: Claydon Company Ltd. Precast & prestressed members supplied by: Standard Prestressed Structures Ltd. Supplier of ready mixed concrete: Nor-Shore Ready Mix Concrete Products Ltd.
9. **St. Stephens United Church, Edmonton.**  
Architects: McKernan and Bouey. Consulting Engineers: Read, Jones, Christoffersen. General Contractor: P. W. Graham and Sons Ltd. Supplier of precast members: Con Force Products Ltd. Supplier of concrete masonry units: Edmonton Concrete Block Co. Ltd.

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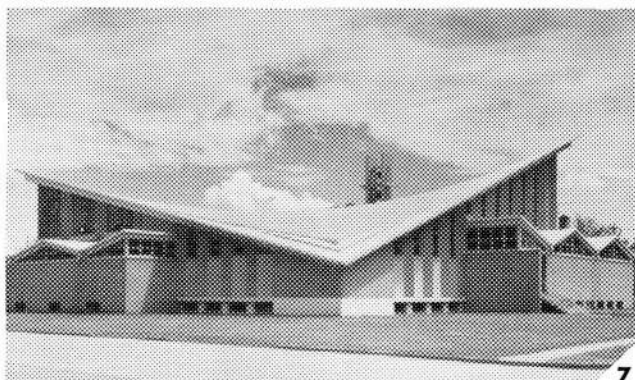




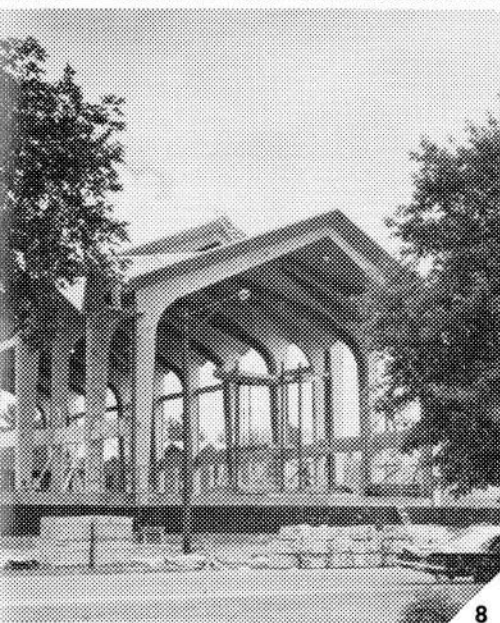
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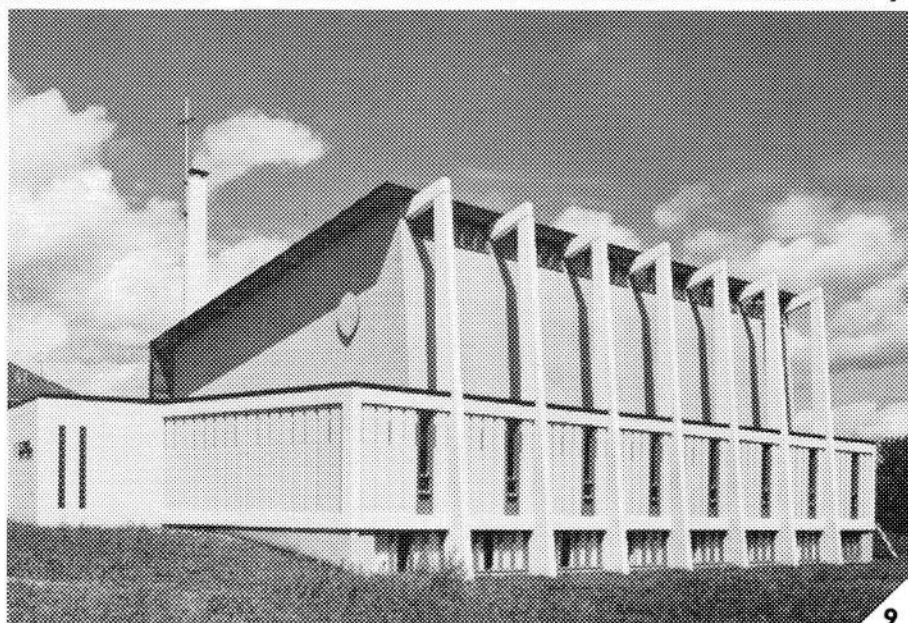
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- Creative Ideas in Concrete Masonry Walls
- Concrete Masonry Handbook for Architects, Engineers and Builders.
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Designed by Gore & Storrie, Ltd.



Entrance to the Toronto Dominion Bank on St. James Street in Montreal.  
Architect: Ross, Fish, Duschenes & Barrett.



Entrance to TCA's service building at Dorval Airport, Montreal.  
Owner: Department of Transport.  
Architect: W. Ramsay. Associate Architects: Illsley-Templeton-Archibald Larose & Larose  
General Contractor: Foundation Company of Canada Limited.

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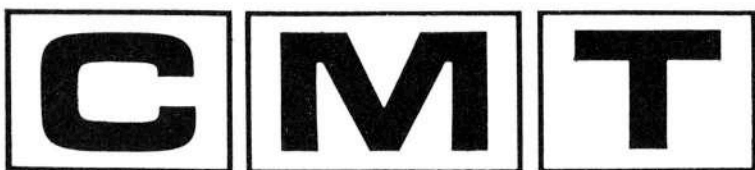
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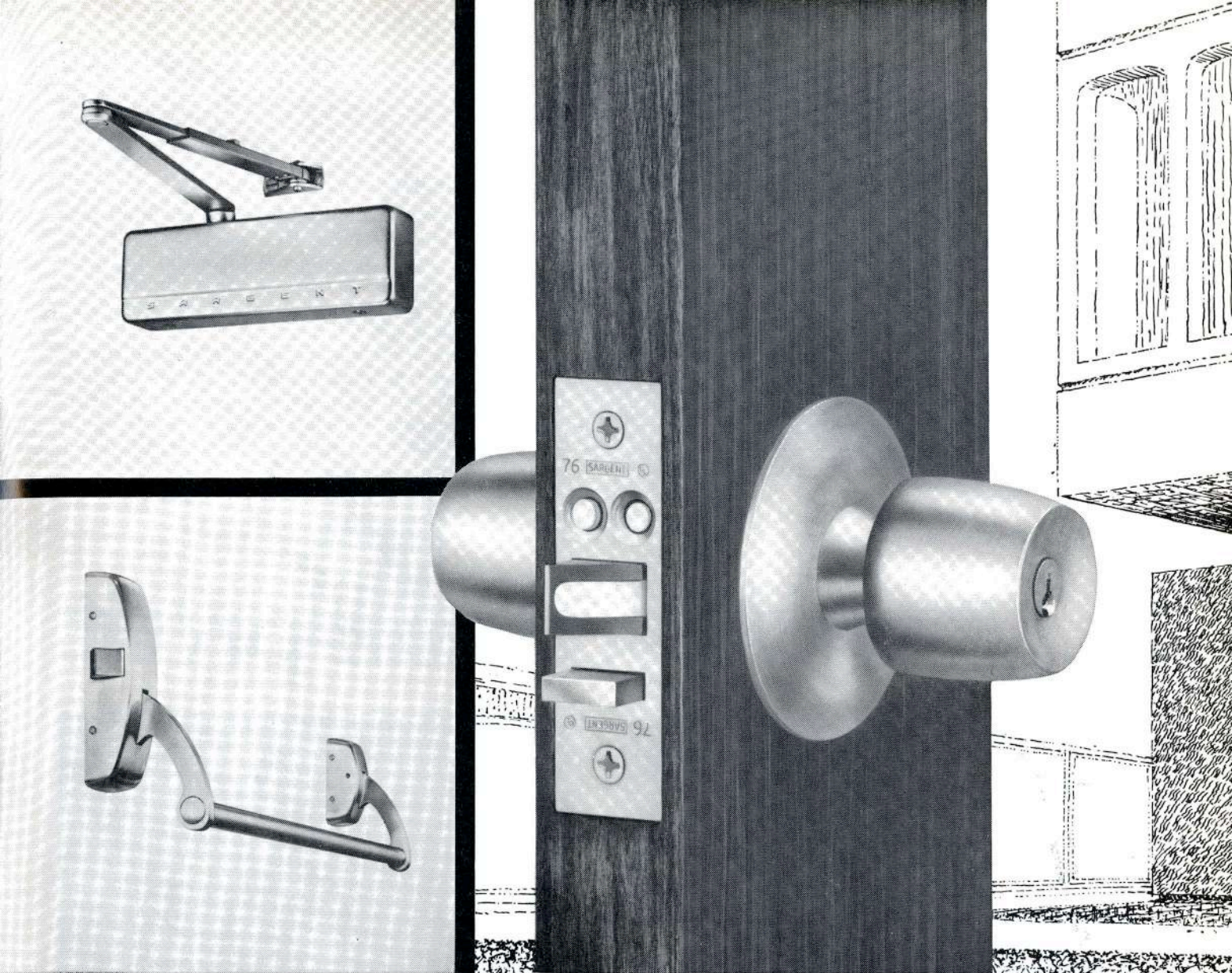


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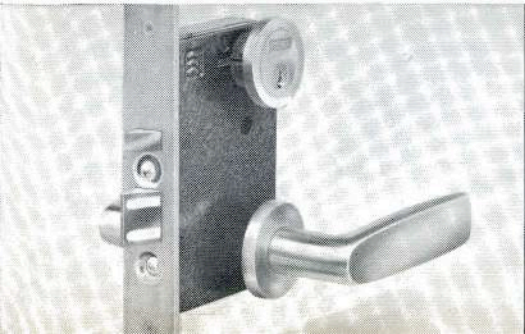
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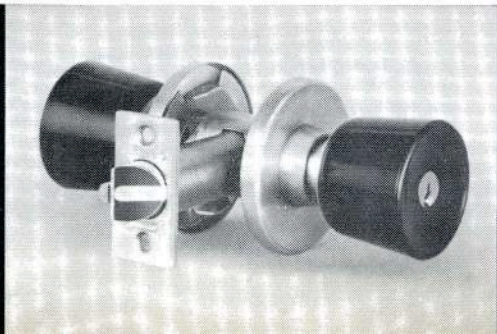
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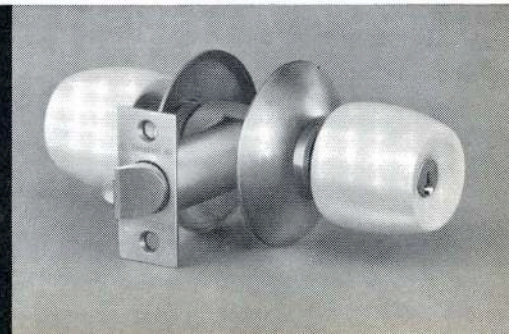
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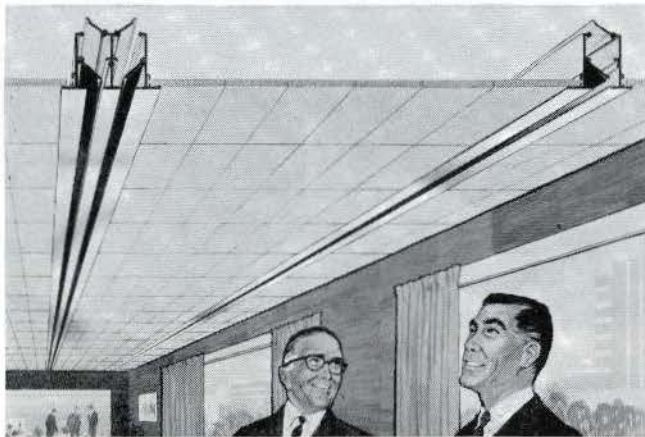


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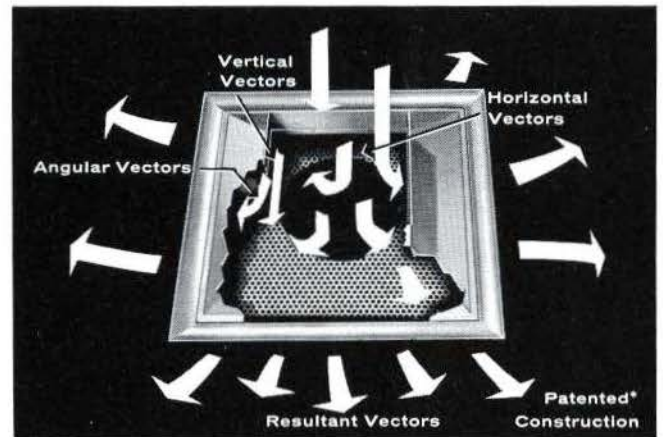


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Barber-Colman Control-Line air diffusers give you everything the name implies—built-in control of air volume and pattern, plus linear design distinction to meet all architectural requirements, including the latest integrated ceilings.

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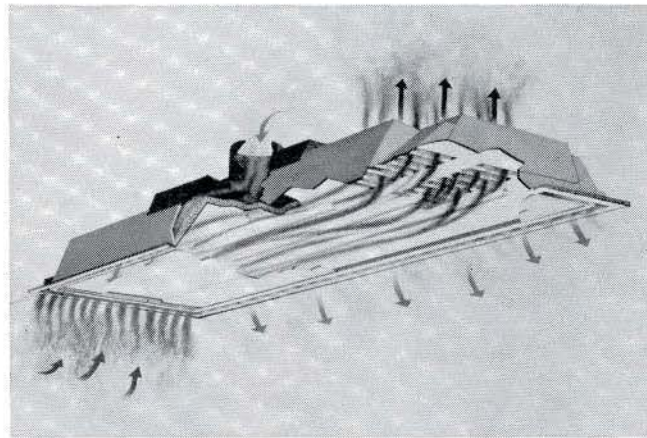


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Now, Barber-Colman diffusers are available mounted integrally with perforated metal ceiling panels in modular sizes to fit modern integrated ceilings.

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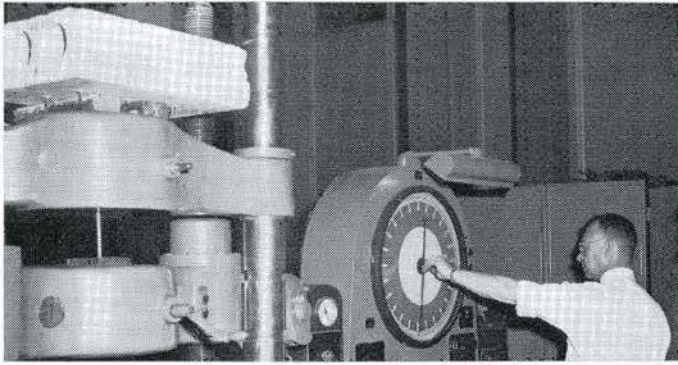
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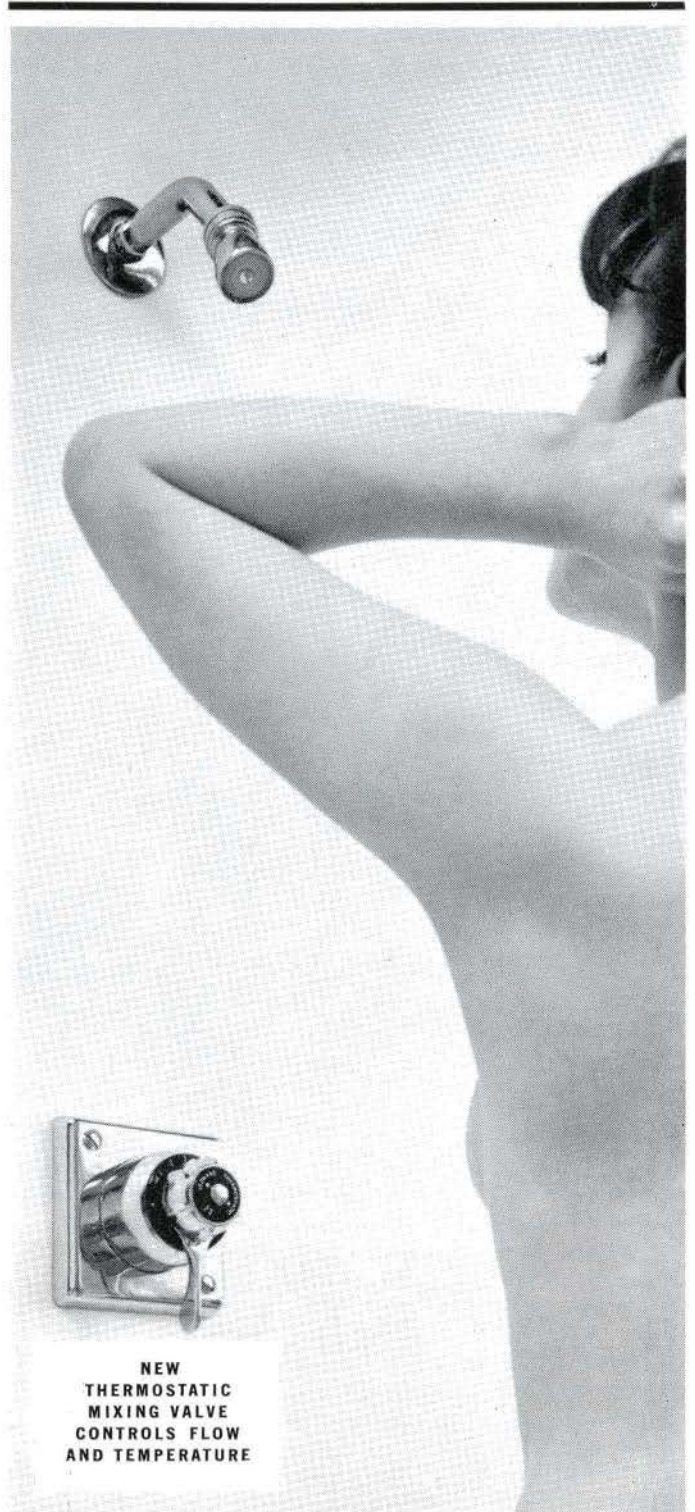
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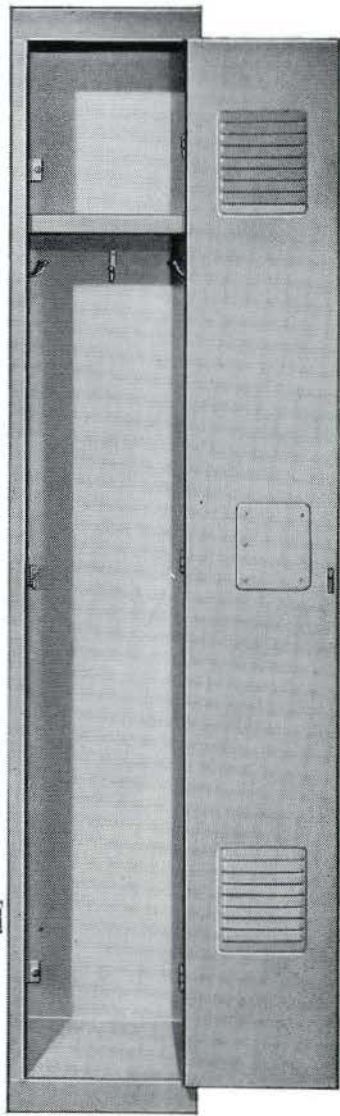
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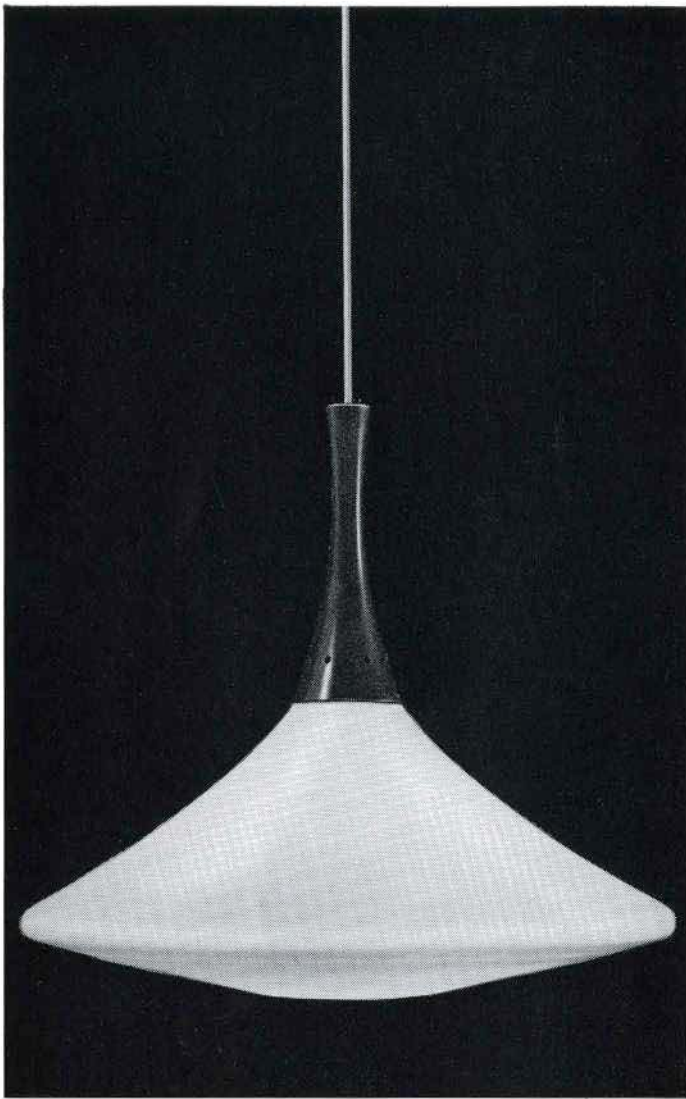
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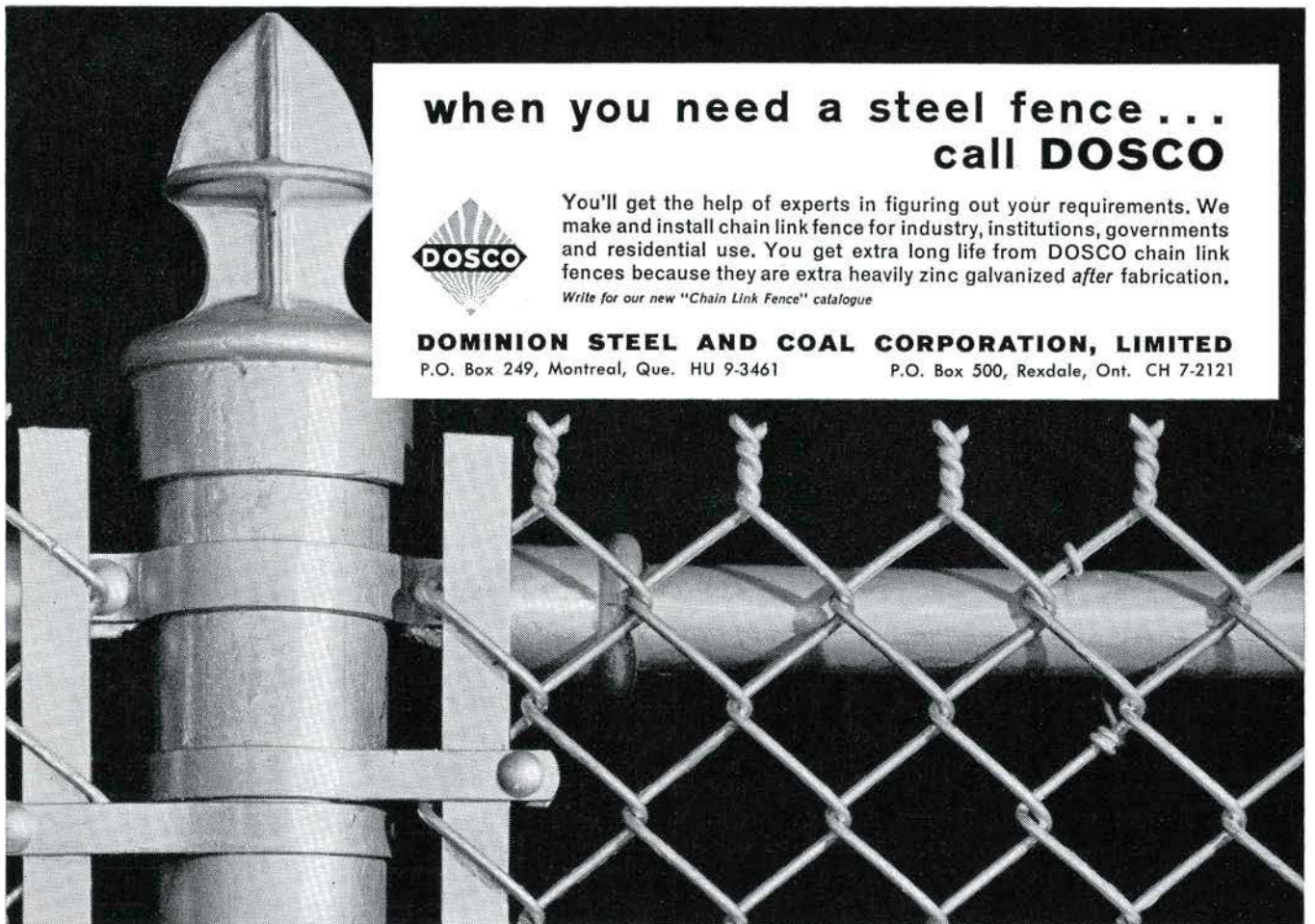
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