

JOURNAL

RAIC - L'IRAC

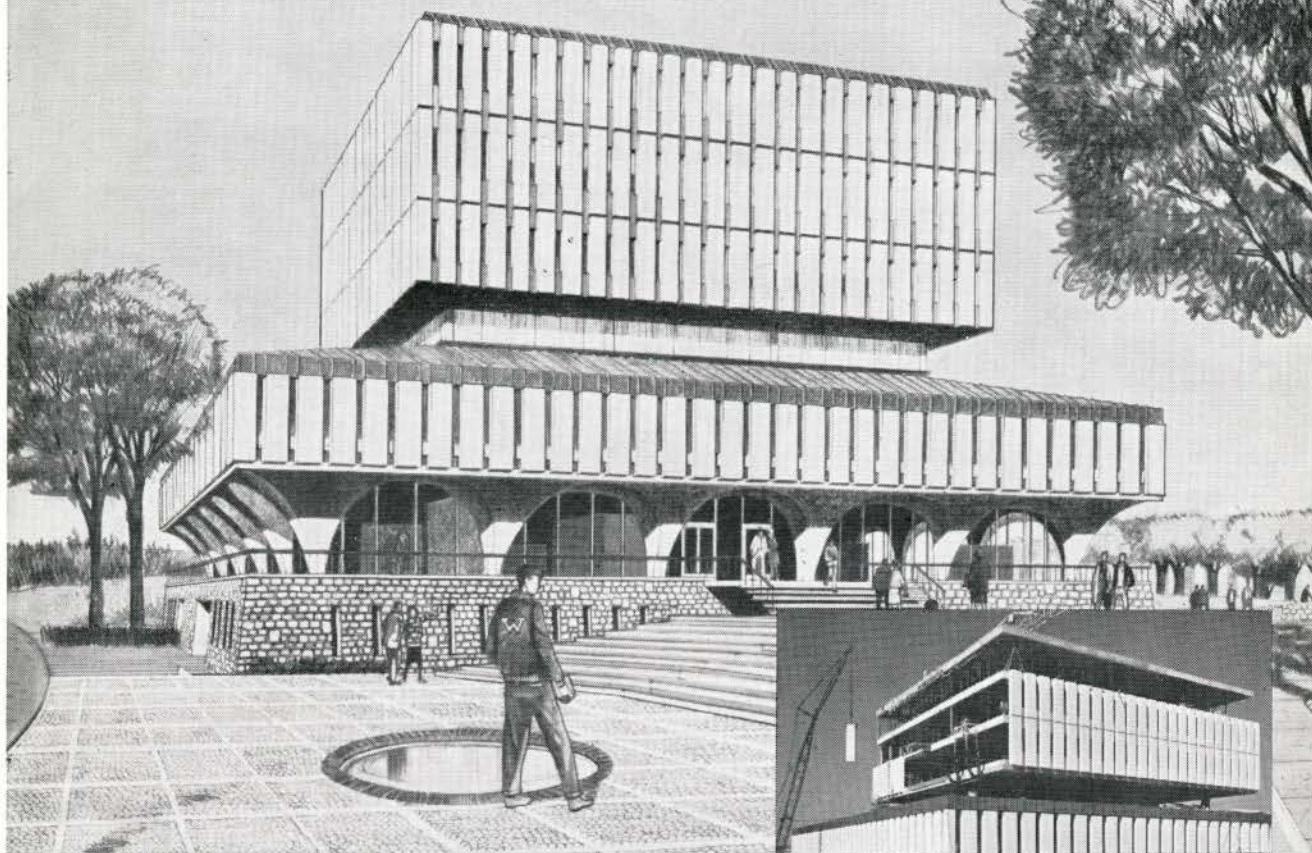
NOVEMBER 1965 NOVEMBRE

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SCHOOL

**IN CANADA,
the best ideas are
more exciting in
CONCRETE**



Arts Library Building, University of Waterloo. Architects and Engineers: Shore & Moffat and Partners, Toronto, Ont.



Arches and panelled walls of concrete endow a library with classic simplicity

The new Arts Library, designed as the focal point of the University of Waterloo campus, is an excellent example of Canadian concrete technology and a demonstration of concrete's versatility. ■ The arches forming the perimeter of the entrance-level floor are achieved by cast-in-place columns which surround a conventional waffle floor system and support the precast bearing wall panels of the floor above. On upper floors, curtain wall panels, also precast, attach directly to the reinforced concrete frame. The predominant colour of the clean-lined structure is white, achieved by use of exposed aggregate concrete panels made with white

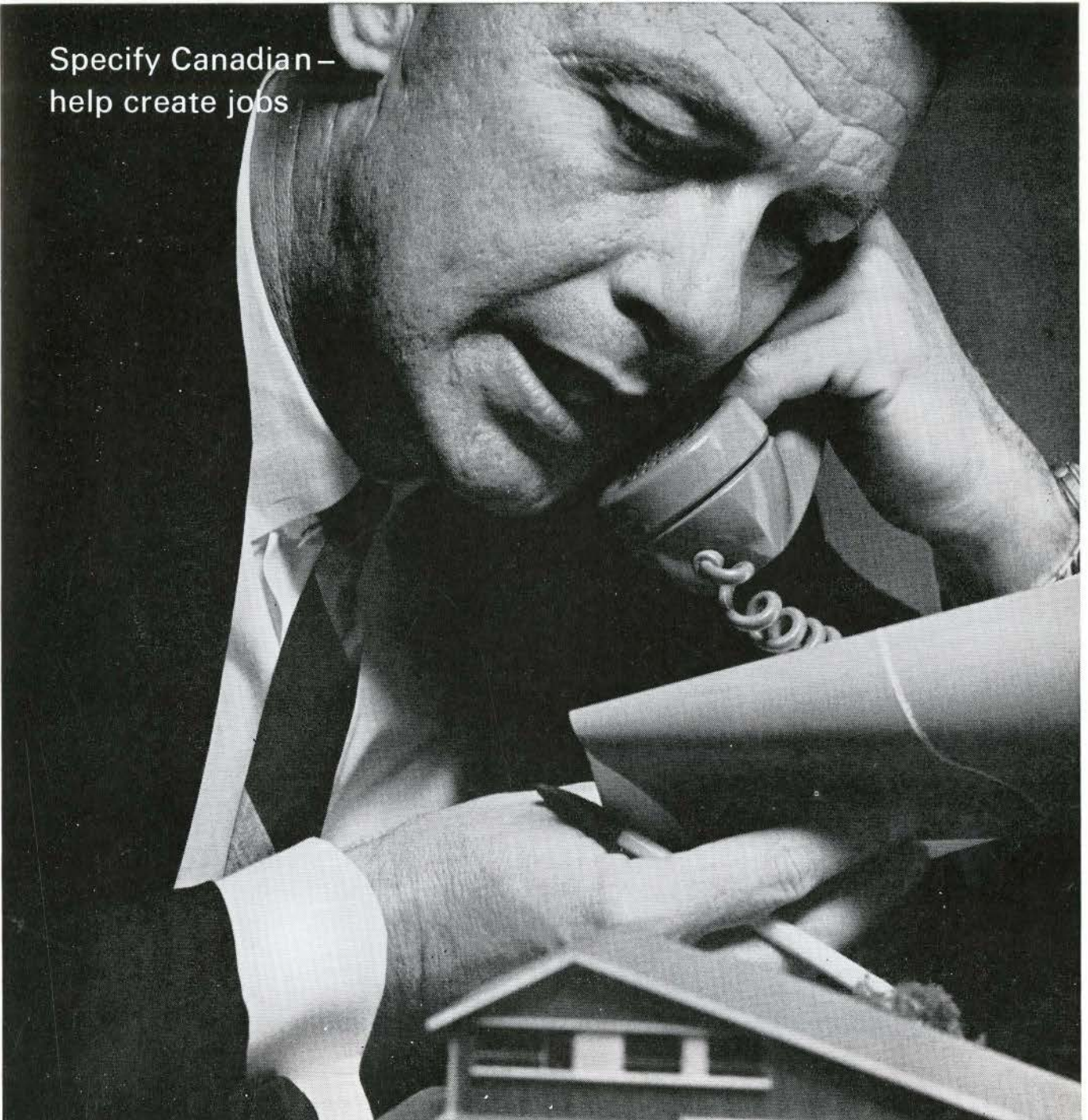
portland cement. For contrast, the surfaces of the base columns were bush-hammered for greater texture. ■ By scheduling curing over weekends, the 20 arches were placed in 10 weeks, using only two sets of split steel forms. The two arches placed each week were directly opposite each other on either side of the previously placed floor system, so they could be post-tensioned in place. ■ Not only for beauty, but for structural efficiency and economy as well, architects throughout Canada are turning to modern concrete for structures of every type and size. Write for free literature to nearest district office. (Canada and U.S. only.)

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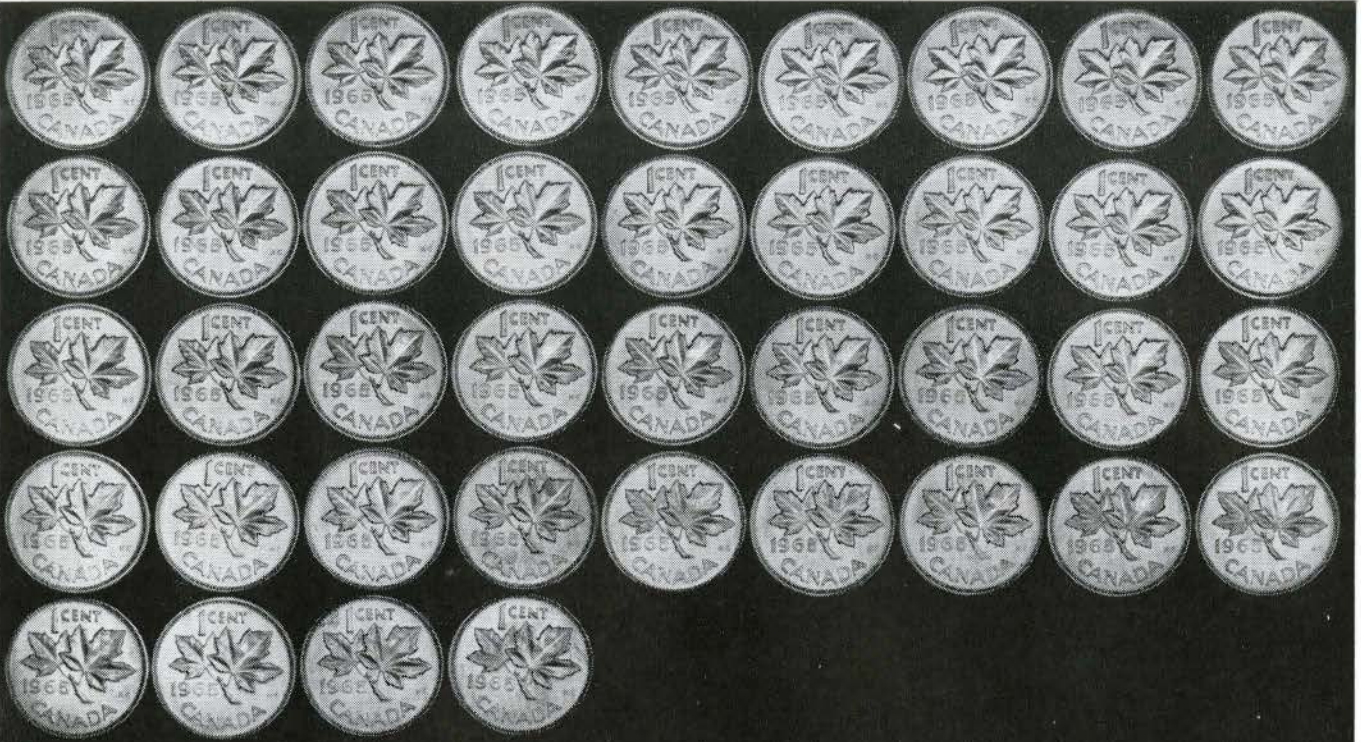
Ontario alone needs 75,000 new job opportunities each year to absorb the young people entering the work force—perhaps members of your own family. When you specify "Canadian-made" you help create these jobs.

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Mr. Salter gave other reasons

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for his choice of electric heating in schools. Minimal maintenance. Lower cleaning and re-decorating costs. Individual room temperature control. Space savings and greater design flexibility."

Before you plan another school, investigate all the advantages of electric heating. Ask your Hydro for detailed information.

ONTARIO HYDRO

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Cody School, Toronto

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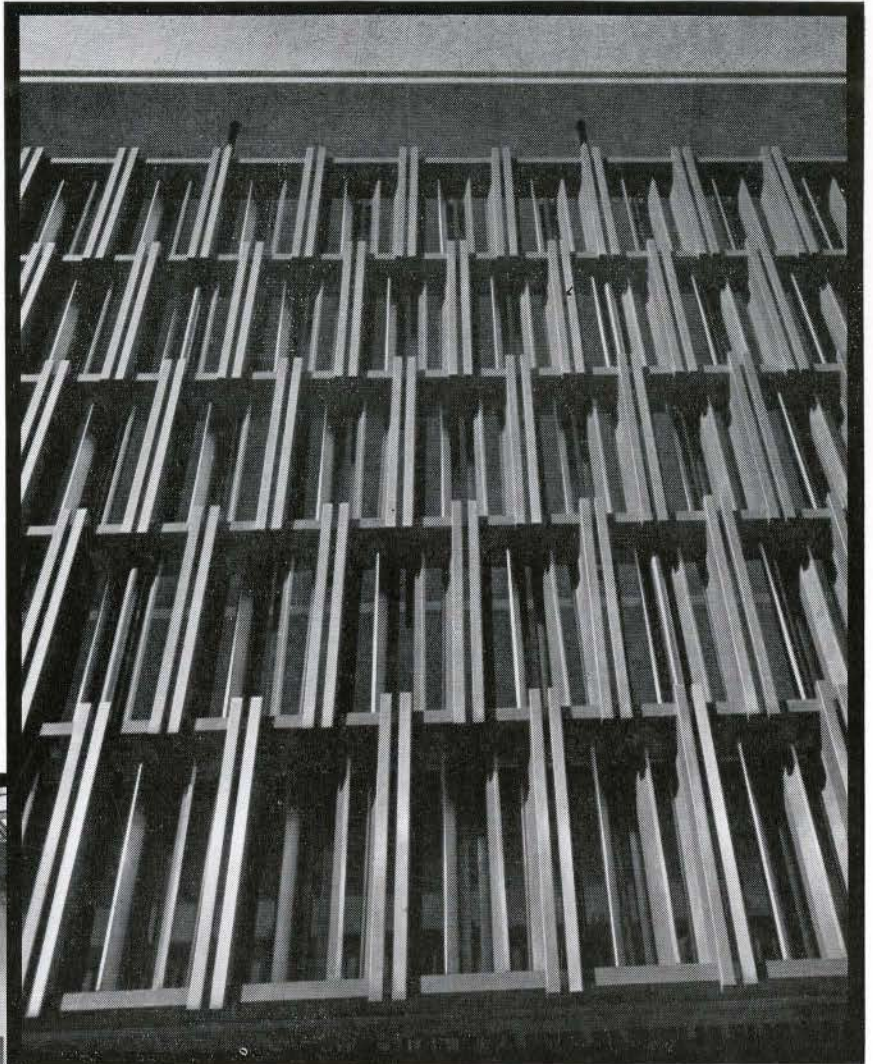


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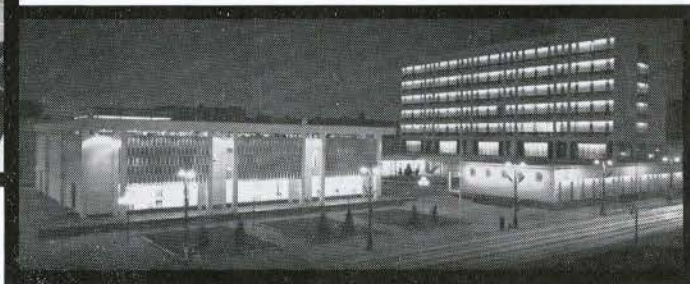
...add beauty
to Winnipeg's New
City Hall



Architects, Green Blankstein Russell and Associates; Contractor, G. A. Baert Construction Limited; Metal Sub Contractors, General Machine and Welding Limited, Dominion Bronze Limited and Kawneer Company (Canada) Limited.



(ABOVE) Section of one of the Muntz metal solar screens, each 15' high by 30' wide.
(LEFT) Council Chamber exemplifies varied applications of coppermetals.
(BELOW) Dramatic night view of Legislation and Administration buildings.



Rarely have copper and its alloys been used more widely, inside and out, than in Winnipeg's impressive new City Hall. Applications of Anaconda Architectural Coppermetals, for example, include solar screens, entrance and elevator doors, windows, stairways, ornamental screens, builders' hardware, fire hose cabinets, lighting fixtures and council chamber ceiling grid. Anaconda American Brass Limited, New Toronto, Ontario. Sales Offices: Quebec, Montreal, London, Winnipeg, Calgary, Vancouver.

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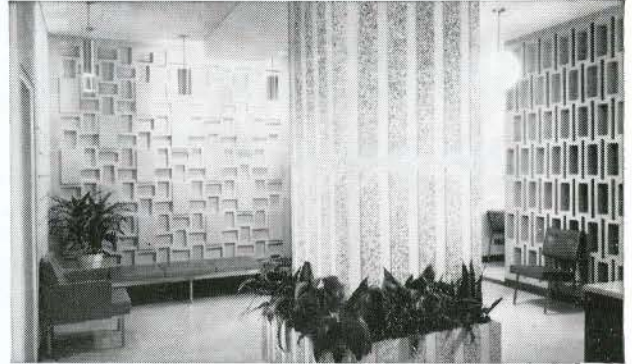
Riviera Motor Court, Burlington, Ont. General Contractor: Brantdale Construction Ltd. Masonry sub-contractor: Tip Top Construction Ltd. Concrete masonry units supplied by: J. Cooke Concrete Blocks Ltd.



Holy Trinity Roman Catholic Church, Calgary, Alta. Architects: Cohes-Delesalle and Associates. General Contractor: Commonwealth Construction Co. Ltd. Concrete masonry units supplied by: Consolidated Concrete Ltd.



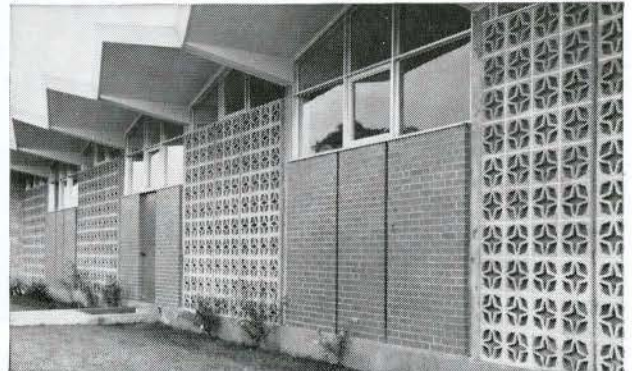
St. Benoit Church, Montreal, Que. Architects: Poulin and Ayotte. General Contractor: Sauvé Construction Ltée. Masonry sub-contractor: Carl Foth. Concrete masonry units supplied by: Montco Company Ltd.



An office in the Canada Cement Building, Montreal, Que. Architect: Paul H. Lapointe. General Contractor: A. O. Olsen and Co. Masonry sub-contractor: Laurent Molini Inc. Concrete masonry units by: Canada Iron Foundries Ltd.



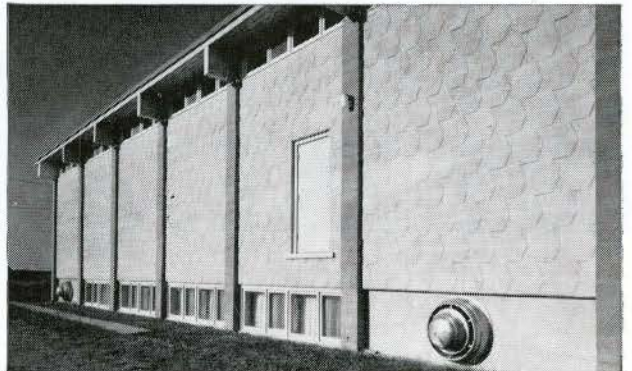
Fire Station No. 11, Edmonton, Alta. Architects: R. F. Duke & W. Telfer of City Architects Dept. General Contractor: Forest Construction Ltd. Concrete masonry units supplied by: Edmonton Concrete Block Co. Ltd.



St. Joseph's Church, Kingston, Ontario. Architect: George L. Schneider. General Contractor: G. Splinter and Sons Ltd. Concrete masonry units supplied by: Patterson Concrete Products Ltd.



Penner Dodge Chrysler Winnipeg Ltd., Winnipeg, Man. Architect: W. Crosbie. Associate Architects: Smith Carter Searle Associates. General Contractor: Peterson & Fonger Ltd. Masonry sub-contractor: J. Prall Construction Ltd. Concrete masonry units supplied by: Supercrete Ltd.



General Alexander Ross Branch No. 77, Royal Canadian Legion, Yorkton, Sask. Architects: Black, Larson, McMillan and Associates. General Contractor: Weber Construction (Yorkton) Ltd. Masonry sub-contractor: Nick Wasylynka. Concrete masonry units supplied by: Yorkton Concrete Products Ltd.

PRACTICAL-DISTINCTIVE-ECONOMICAL:

Today, a wall is no longer merely a structural element; it is part of the design, part of the overall aesthetic concept of a building. This added dimension is fulfilled ideally by concrete masonry units.

Such units are available in a wide range of shapes, sizes, textures and colours. Their first cost is low — and their long life, low maintenance expense and fire safety put them among the most economical building materials of any kind.

Here are just a few examples of interior and exterior uses of concrete masonry units made with "Canada" cement — in schools, churches and commercial and public buildings. For more information, please contact any Canada Cement office.

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News

NEW JOURNAL ORGANIZATION

Changes in the RAIC by-laws require that the Journal Editorial Board and the Journal Committee be amalgamated into one group, to be known as the Journal Board, and composed of: one member from the council of each provincial association, one additional member from BC, Ontario and Quebec, appointed members at large with the RAIC Vice President and Honorary Treasurer ex-officio. Meetings are to be held quarterly. W. N. Greer, Toronto, former Chairman of the Editorial Board, and Denis Lamarre, Montreal, have been nominated Chairman and Vice-Chairman. The organizational meeting was held November 4, in Montreal, prior to the RAIC Council meeting giving the Council and new Board members an opportunity to meet and exchange views. Full details of the policies and organization of the Board will be published in the January 1966 *Journal*.

MEMORIAL TO P. E. NOBBS

As a memorial to the late Percy Nobbs, MA, LITT.D., HON FRAIC, FRIBA, RCA, a plaque has been placed on the front wall of the Drummond Medical Building, Montreal, designed by him in 1929. It was unveiled by his widow on November 11, one year after his death. The ceremony was attended by members of the family, including his son, F. J. Nobbs, FRAIC, President PQAA. Harry Mayerovitch, FRAIC, delivered the memorial address.

COMPUTER COURSE

A ten-lecture course, "Computer-Aided Graphics" will be conducted by the Division of University Extension at the University of Toronto, in co-operation with the School of Architecture. Instruction will be given in the use of computers to solve architectural design problems by Prof. Allen Bernholtz of the School of Architecture. The lectures will be given on Monday evenings from 7.30 to 9.30 p.m., from January 3rd to March 7th, in Room 116 of the Galbraith Building. Registration can be made either by mailing in a registration form and cheque for \$35 (fee for the series), or direct at the University Extension, 84 Queen's Park, Toronto 5.

R. S. REYNOLDS MEMORIAL AWARD

Nominations are now being received for the 10th annual judging of the R. S. Reynolds Memorial Award. The closing date is January 31, 1966. Judging will be in March.

The international Award, administered by the American Institute of Architects, is conferred each year for design of a significant work of architecture in which aluminum has been an important contributing factor. It carries an honorarium of \$25,000 and an emblem. An architect may be nominated by anyone, including himself or his firm, using a form obtainable from The Reynolds Award, The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006. Preference will be given to structures completed during the past three years.

AARONS APPOINTED TO OCF COMMITTEE

The *Journal's* Allied Arts Department Editor, Miss Anita Aarons, has been appointed to the Advisory Committee of the Ontario Craft Foundation, which under the Education Department Community Programs Division and the Ontario Arts Council, has plans to build in Toronto a large community craft centre for education and activity in the hand-crafts.



Members of the Journal Board at the first meeting, November 4, in Montreal.

Front row l. to r.: Anita Aarons, Allied Arts Editor; Gérard Venne, (F), President RAIC; W. N. Greer, Toronto, Journal Board Chairman; Denis Lamarre, Montreal, Vice-Chairman; Annabel Gerald, Assistant to the Editor. Second row: W. B. Bowker, Managing Editor; W. B. Guihan, St. John's, Nfld.; Harry Mayerovitch, (F), Montreal; D. S. McLelland, Prince Albert, Sask.; Robert Harrison, Vancouver; John Gallop, Toronto; W. N. Smale, Simcoe, Ont.; W. G. Leithead, (F), Vancouver. Back row: Cyrille Roy, Moncton; Fred Price, Executive Director RAIC; T. W. Bauld, Halifax; R. G. Cripps, Toronto; H. D. R. Buck, Toronto; A. J. Diamond, Associate Editor; Gerald Macdonald, Winnipeg; W. J. Neish, Toronto; Loren Oxley, (F), Toronto; D. L. Sinclair, Edmonton. Absent: C. A. E. Fowler, (F), Vice-President RAIC; James E. Searle, (F), Hon. Treasurer RAIC; Jacques Folch-Ribas, Montreal; James Langford, Ottawa.

POSITION OPEN

Planning Director for Sault Ste. Marie, Ontario, with a degree in Planning or a related field. To be responsible for directing the Planning Program for city of 70,000. The program includes Urban Renewal work. Employment immediate. Apply to Chairman of the Sault Ste. Marie and Suburban Area Planning Board, City Hall, Sault Ste. Marie, Ontario.

EMPLOYMENT WANTED

Indian Architect, 27 years old, graduate from Bombay University (B.Arch., AIAA), six years office experience, seeks position in Canada. Write to: Ashvin Karvat, 15 Parleshwar Road, Vile-Parle, Bombay-57, India.

Philippino Architect, 23 years old, graduate from the University of Santo Tomas, with undergraduate experience,

wants employment in Canada. Reply Arturo M. Santiago, 1301 Lepanto, Sampaloc, Manila, Philippines.

Philippino Architect, 24 years old, graduate from the University of Santo Tomas (B.Arch.) with 4 years experience, wishes a position in Canada. Reply Victor B. Gavino, Q 143 Lawton Avenue, Fort Bonifacio, Rizal, Philippines.

Philippino Architect, 37 years old, graduate from the Mapua Institute of Technology, Manila, B.S.Arch., 10 years experience, wishes employment in Canada. Write: Antonio A. Madrinan, R-304 A Rojas Center, Cinerama Building, C.M. Recto St., Manila, R.P.

Australian architect, arriving in Ottawa, mid-April 1966, seeks employment with a Canadian firm. 1964 graduate (U. of Adelaide), 12 months undergraduate and 14 months post-graduate experience. Reply Brent Blanks, Flat 23, Knox Court, King William Rd., North Unley, South Australia.

28-year-old Philippino architect, graduated from the National University in 1960, B.Sc., 5 years experience, seeks position in Canada. Rodelio S. Cruz, 548 P. Burgos Street, Sto. Nino, Marikina, Rizal, Philippines.

British Architect, dip. Arch. (Dunelm). ARIBA, Chartered Architect, 10 years experience, seeks position in Canada. Wm. E. Casson, 7 Braintree Gardens, Kenton, Newcastle upon Tyne 3, England.

Architect, registered in the Philippines since 1962, seeks position, enabling immigration to Canada; Hermogenes M. Icasiano, 387 P. Gomez, P. Sevilla, 10th, Ave. G. Park, Caloocan City, Philippines.

SCHEDULE OF PROVINCIAL ASSOCIATION ANNUAL MEETINGS 1965-66

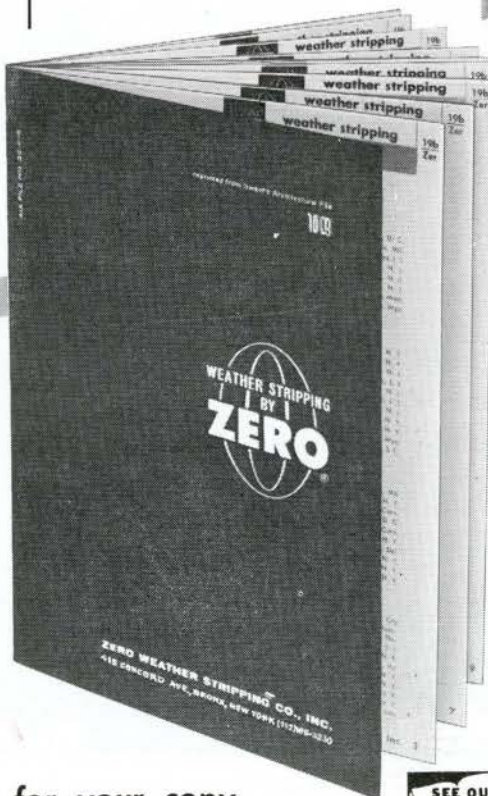
- AIBC December 3—Airport Inn, Vancouver
- MAA January 22—Winnipeg
- AANB January 28-30—Saint John, N.B.
- NSAA January 29—Lord Nelson Hotel, Halifax
- SAA February 4-5—Hotel Saskatchewan, Regina
- OAA February 17-19—Royal York Hotel, Toronto
- AAA June 1—Jasper Park Lodge, Jasper
- RAIC June 1-4—Jasper Park Lodge, Jasper, Alberta

RAIC February 25-26—RAIC Council Meeting, Toronto
June 1-4—RAIC Annual Assembly, Jasper Park Lodge, Jasper, Alberta.

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The architects specified Tri-Seal
lath and plaster system for Simpson's,
Yorkdale Plaza.

But these experts didn't want to
use it – they had their doubts!





This expert specified Tri-Seal.

He is an architect.

His client, The Robert Simpson Co. Ltd., wanted a beautiful ceiling for their Yorkdale Plaza store in Toronto. A ceiling that would offer low maintenance. And crack resistance. And high quality. Over *all* 198,000 square feet of area.

Not normally a big problem.

But this ceiling was to have 30 ft. square bays. And 49 in. square recessed fixtures. With plumbing above. And below, thousands of customers who required fire protection.

The answer was obviously a suspended lath and plaster ceiling.

Domtar Tri-Seal was specified for this job.



This expert said another ceiling system was just as good.

"Tri-Seal? I've been using another system that is just as good. My boys know how to install it and it will do the job!" That's what Fred Bergeron of Norman Lathing, ceiling contractors for the job, said.

He didn't know the inherent advantages of the longitudinal supports in the Tri-Seal system. Because of this Tri-Seal is less prone to crack.

But nothing could convince Fred. He wanted to prove that his present lath and plaster system was as good as Tri-Seal. So he put up a test ceiling, using his present product, to convince everyone.

"There", he said, "that ought to do it!"



This expert disagreed.

Angus Graham works for DOMTAR. He's our chief engineer of gypsum products. We respect his knowledge. And so do architects. He's been known to recommend a competitor's product if he thought it would do a better job.

But in this case Angus disagreed with Fred Bergeron's contention that the other ceiling system would be "just as good" as Tri-Seal.

So Angus discussed the problem with the architect. He pointed out that under the circumstances the large areas and recessed fixtures would normally cause cracks.

"Tri-Seal's just about the best thing there is for resisting cracks," said Angus. "Every lath is connected together with rugged loop channels. And you've got a solid, wire interlocking system. That's how Tri-Seal gets an equal weight distribution. And that's why Tri-Seal hardly ever cracks — because there are *no stress points in the surface!*"

The experts agreed: "Let's build a Tri-Seal ceiling—and compare!"

So Fred Bergeron put up a Tri-Seal ceiling. And the experts compared both.

The experts agreed. It was Tri-Seal for Simpson's Yorkdale.

"It's o.k. And it went up much faster than the material we've been using," conceded Fred Bergeron.

When the job was finished everyone was satisfied. Especially Fred. "No doubt about it. Tri-Seal does the best job!"

If *you* have any doubts about Tri-Seal, go out and see the ceiling in Simpson's, Yorkdale Plaza. It speaks for itself. Without making any cracks.



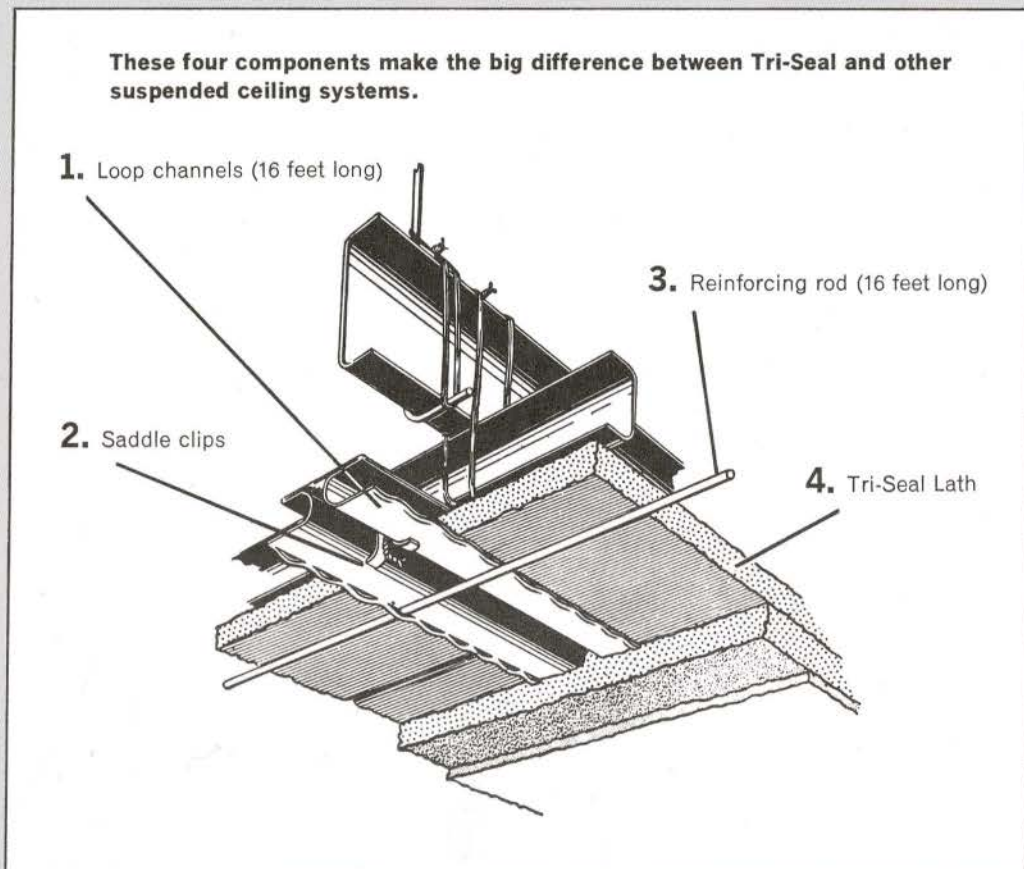
JOHN B. PARKIN ASSOCIATES
Architects and Engineers
Toronto, Montreal and Los Angeles



(Does Macy's tell Gimbel's? We don't know, but it is a fact that both Simpson's *and* Eaton's have specified Tri-Seal ceiling for their new stores in the Fairview Shopping Centre in Pointe Claire, Que.).

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No need to worry about cracked ceilings when you specify DOMTAR Tri-Seal. This lath and plaster system produces an extremely rigid ceiling with reinforcement over the entire area.

Tri-Seal resists cracks because the loop channels connecting the lath, plus the wire interlocking, form a solid "one-piece" base. This permits uniform weight distribution — eliminating concentrated stress points over the entire surface.

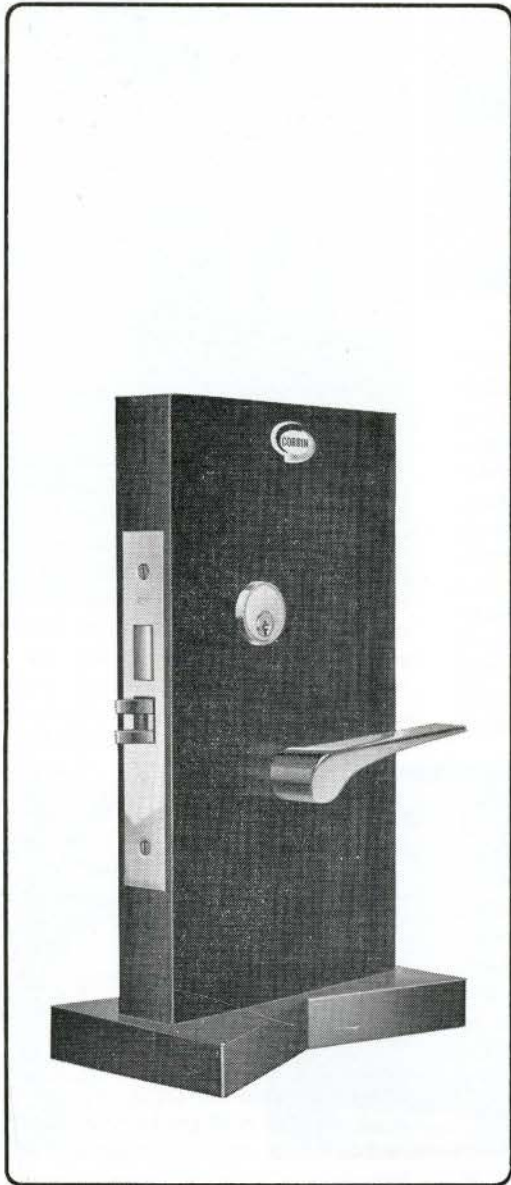
The ceiling "floats" (again without weight-stress points). Because the metal components are not tied into the walls, it can resist stress that would cause cracks during the normal settling of the walls.

When you want the very best, specify Tri-Seal. Costs a little more but it's worth it.

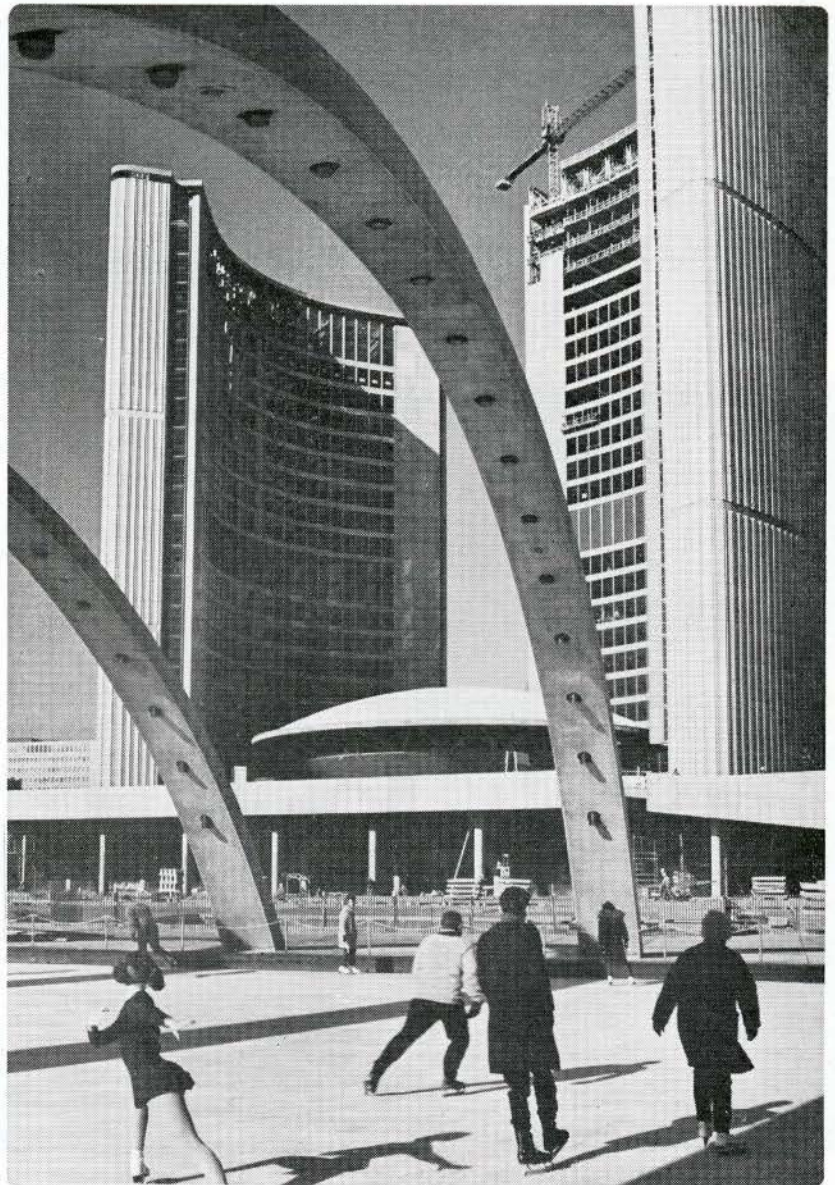
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It's beautiful, functional, durable
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CORBIN LOCK DIVISION
BELLEVILLE ONTARIO

ART AND ARCHITECTURE

The Western Provinces

Part I: Generalities

A late summer tour this September (with temperatures of 20° and snow and ice), to Winnipeg, Regina, Calgary, Vancouver, Victoria, Edmonton and Saskatoon revealed an independence and activity of building growth second to none.

The nature of this post-war growth and speed of accomplishment is historically unique.

Throughout Australia and Canada, one constantly meets British town planners dazedly operating in an area and era that confounds the analysis of one born in "Canute's country". The European born and trained town planner, looking backwards and sighing of "the gradual growth of a city and the natural use developing over the centuries", cannot hold back, any more than Canute could, the waves of increasing population battering the shores of Canada's natural development. The mushroom growth of towns and cities, in five years, become as vast or great as their ancient counterparts feebly crumbling amidst the rebuilding of sky scrapers around them. The general state is one of unawareness of the true situation and the need for an "immediacy" of planning for today's accelerated pace.

The sad story is that there is no real town planning, merely the erection of buildings and a few emerging complexes, crowned with super-markets, amidst the geometric muddle of verticals, whose summits expose vital parts protruding rudely like escaped entrails, constituting, what must be the most disgraceful roofscape in history.

The stupefying dullness and slum horrors of Great Britain, due to ignorance of the rate of industrial growth, and the urgent replanning necessary in the USA to correct the ills of an artificial induction of enormous populations, are reason enough for two continents, Australia and Canada, to be more alert aesthetically and avoid repeating the errors. But they are not.

Who is to blame? Everybody. Architect, client, city fathers, too concerned with material affluence, blame each other for perpetuating a crime against the future.

"Democratically" however, the "builders" manage to overwhelm the protesting voices of more thoughtful civic groups fighting to maintain some natural order or beauty. Developers and architects, along with building controllers, manage to join forces when their own interests are at stake but rarely do so to protect or project an ideal. Contrary to opinion, there is less idealism in Australia and Canada than in the USA, usually dubbed the "money grubber". Fear of status and position hushes public voice to admit fault or utter trenchant criticism.

Western Canada is vigorous and affluent. There are signs of quality and honesty in the work of western architects—surprisingly young—busy building schools, court houses, city halls, churches, shopping complexes and business centres which are no less affluent than their counterparts in the main eastern centres. All this from men in their thirties! . . . What opportunities! But what of aesthetics, art and art integration? Two or three generalities seem to have established themselves.

A quality of honesty in architecture, in contrast to the more sophisticated "feature" efforts of eastern provinces, appears to absorb the creators more in architectural solutions than cogitations on the aesthetic and metaphysics of art and architecture. Wherever an excursion is made it is of a fairly pedestrian nature—safe, unexplorative and largely unexciting. Well meaning but without much content, it is frequently very competent but out-dated.

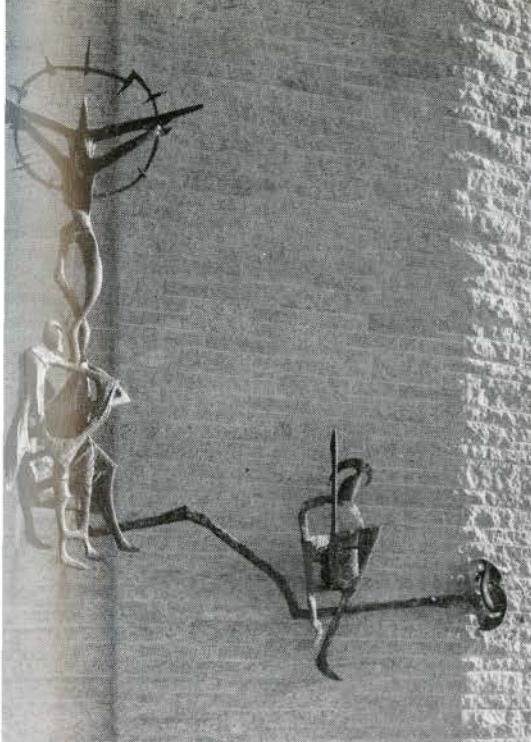
In contrast, an isolated centre or two, through local activity, an enlightened patron or the presence of forward thinking artists tolerates the more contemporary idiom. Here, the sad fact is that the artist is frequently not competent to produce work worthy of the scale required for architecture. Lack of experience keeps the artist gallantly experimenting to keep his image developing in a tiny studio on an even tinier income supplemented by odd jobs or teaching. He strives to produce, year after year, a "large" work maybe six or seven, nine or even twelve feet in scale which, when removed from the box confines of the

studio, becomes puny and insignificant in scale.

Such experiments must be undertaken; better a positive action than negative fear, but these are inadequate and make it abundantly clear that art schools are not preparing their students for professional participation with architecture or, in addition, there is urgent need for a post graduate opportunity for the artist and architect to produce projects and study the scale necessary to complement and sometimes dominate the architectural scene.

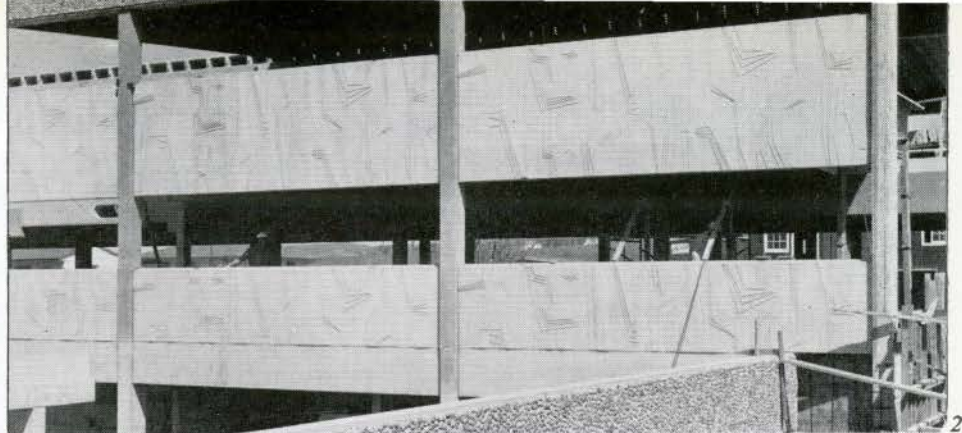
One is aware of receptiveness and sympathy for the artist's problem in the west and a desire to co-operate with the local man. What is needed is independent liaison of a dynamic nature to keep the architect acquainted with what and where the artist is working. Photographic files at a centre have failed to help and quickly become outdated. In addition, there must be some move at university level to train, say at near graduate and post graduate level, artist and architect to work together at the inception of projects. Some universities have a greater awareness of this than others and do show a respect for the art faculty, which on the whole is timorous in operation and often starved economically for equipment and means to perform more adventurously. At this stage of development, some of the large funds, running into millions of dollars, set aside to train and amuse the adult amateur in his leisure time (the "happy" purveyor of mediocracy), might be diverted to the material and educational welfare of the trained professionals who prefer working at home to running off internationally on handsome grants. In one western university I visited, all the best equipment and space was provided for the "extension activity" for amateur adults, while the art faculty struggled on with 1898 equipment of easels and plaster casts as a dominating background for activity!

Affluence to do things is undeniable. What is lacking is the will to want to do it. This leadership must come fearlessly from those in the position to sanction and promote action.



KALEN

1



MATHIESON

(1) S. E. Elsey, Leo Mol, Artists; Moody, Moore Architects, St John's College, U. of Manitoba

(2) Robert Oldrich and Cohos-Delesalle integrate a wall at Simon Fraser High School, Calgary

(3) Jack Sures, Artist; Smith Carter Searle Architects, School of Architecture, U. of Manitoba

(4) Lionel Thomas, Artist; Gardiner, Thornton, Gathe, Architects, St Paul's College, U. of Manitoba

(5) Otto Rogers, Artist; Kerr Cullingworth Riches Architects, Prince Albert Regional Library

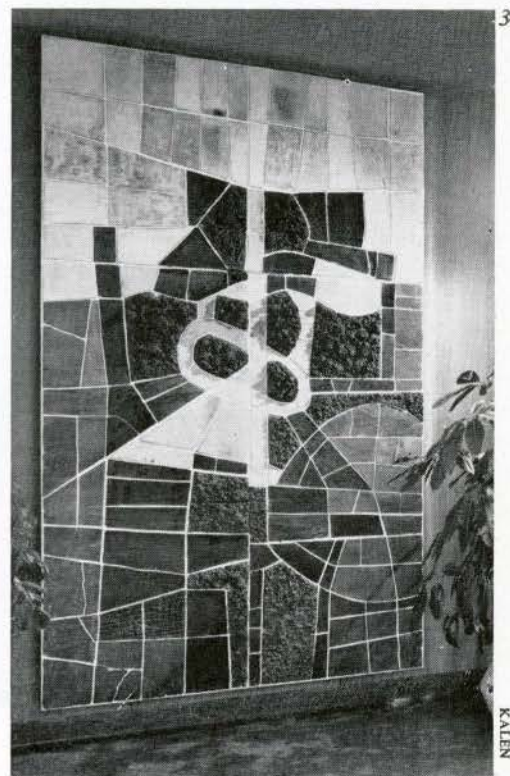


5

4



KALEN



KALEN

Parochial screams from the locals and anti-contemporary protests reveal the need to get busy on aesthetic matters. We are already too late. Both artist and architect are not too competent, even if they are willing, to enter the vigorous program together.

The West with its vigour and honesty, I believe, could be the ideal starting point. An initial post graduate course or experimental studio to provide amenities to produce projects and group work on a "grand scale" could more easily be started in the west and point the way to change to the more moribund institutions of the East, already too bound down in old traditions and divisionism and too inbred to disturb or excite easily.

Two highlights of the western tour were the individual works of Etienne Gaboury, of Winnipeg—his court house, studio, churches and "sculptured park"; and the authoritative autocratic architectural statement of Vancouver's Simon Fraser University (Erickson and Massey), putting an end to democratic dither

pathetically being indulged in at other universities . . . more of these later, but, in passing, what a pity these architectural statements will not have, I believe, force enough to exert their influence beyond individual statement and give a direction for overall form.

I wish I could say I had discovered a similar art talent co-operating with architecture as authoritative as Gaboury or as dominating as Simon Fraser—or even as exciting as Jordi Bonet from Montreal, whose work ubiquitously turns up as frequently in western banks and buildings as it does in the East. A good artist and an equally good agent will have Bonet "crypts" creating indoor tombs all over Canada in ten years. When I jocularly commented on this to a western architect he remarked, "When the public reaction may be to laugh or jeer, we cannot afford to make another mistake with contemporary art out here. We have to convince our clients of our sincerity, so we need the excitement and competence of Bonet." Quite a thought for artists to dwell upon. The sad fact is

that gallantry to preserve imagery is overcome by an inability to produce work of suitable scale. The architect, with his problems of pleasing his client and having sympathy for local talent, has his own dilemma.

In conclusion, art and architecture in the West have many of the problems and ills of the general situation. A need for much practical liaison exists. This is more complex than just files and photographs. Too often the artist is called in too late because consultation at an earlier level was not available as to the nature and possibilities of what could be done. I was surprised to find how many projects, before and after, need the "neutral" artistic advice before deciding to call in an artist or group.

With good re-education of how to work together this would not occur. In the meantime there is great need for vigorous liaison between architect and artists. With more clear thinking and less confusion with "good will" and well meaning patronage, we can do this and will.

Anita Aarons

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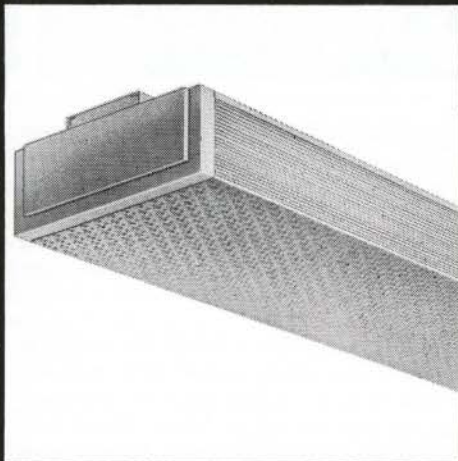
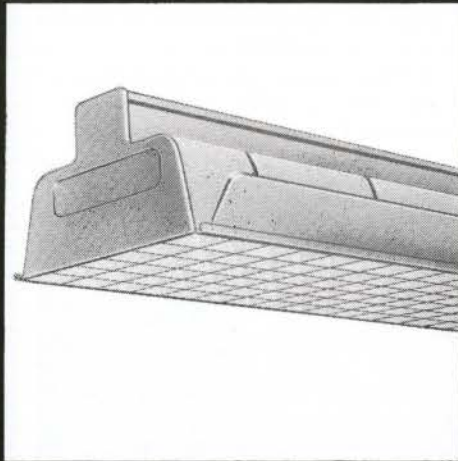
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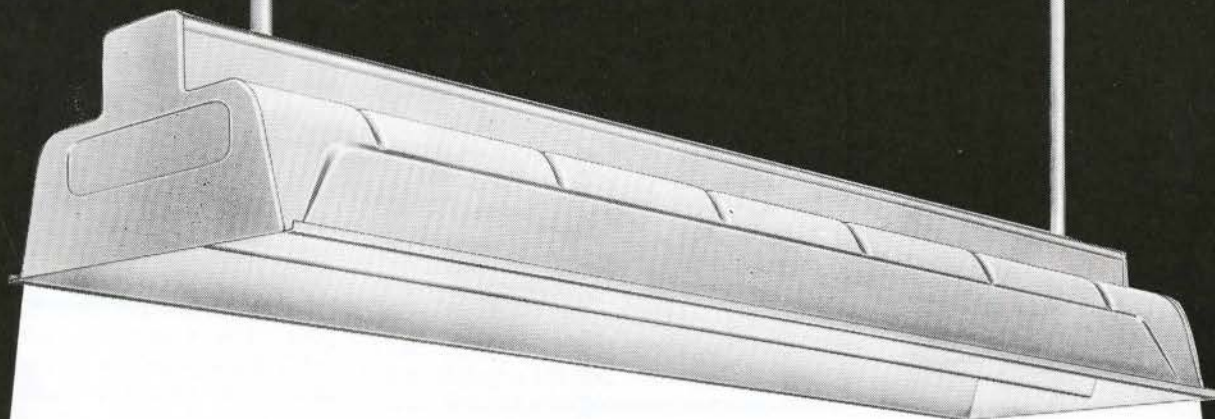


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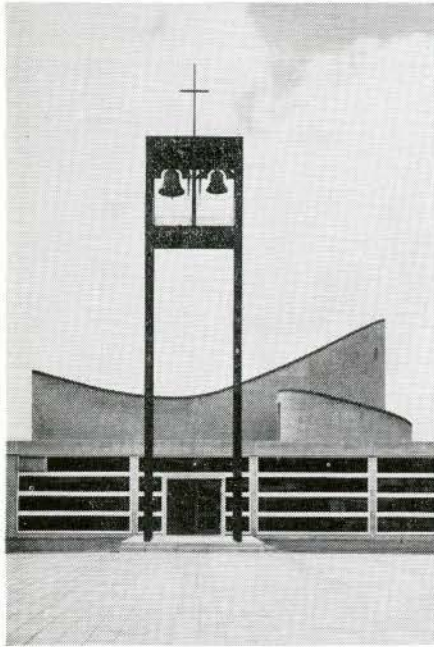
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Book Reviews

CHRIST AND ARCHITECTURE, by Donald J. Bruggink and Carl H. Drovers. Wm. B. Eerdmans Publishing Company, Grand Rapids, Michigan, (in Canada, Evangelical Publishers, Toronto), 1965, 708 pages, \$22.00.

While this book is primarily addressed to the detailed architectural requirements of Reformed Churches it does refer and apply in certain instances to all new Christian church architecture. From a history of the changes, and the meaning of the changes, at the time of the Reformation the theological requirements are specifically and clearly stated as the only basis for successful architectural expression. Strong emphasis is placed upon the real significance and proper placing of the Pulpit, the Font and the Communion Table. These are the key to the theological communication and signify the prime importance of the Word and the Sacraments, according to Calvinist teachings. A welcome directive is for the simplification of churches and for a discipline to delete all the usual unnecessary ornamental furnishings. The specific relationship of the minister and the laity is stated to regain the intended unity of the whole congregation and to differentiate the two responsibilities. After a full discussion it is concluded that the best place for the choir and the organ is in a rear gallery. Valuable comparative data on each pipe organ of each new church illustrated is listed. The authors warn against too many materials, too many decorations, too many crosses, too many memorials and too many lecterns; and plead for the architectural expression to be strictly in agreement with the verbal proclamation of the Gospels. The second and specifically architectural part of this book details the role and selection of the architect, the objective written program, the duties of the Building Committee, the contract documents,

processes and safeguards. It also lists many items which must be considered for the optimum building economy. Architect Drovers discusses the means through materials, structure and planning to achieve a positive expression of a church building, and the potential shapes of a church through new structural concepts. Intelligent programming must determine the essential functions and space requirements, and prevent classrooms, kitchens and recreation facilities where they are not needed.

The book text is tied in and profusely illustrated with exteriors, interiors, plans and details of contemporary churches mostly in the Netherlands and Switzerland. While none of these would appear from the photographs to be “great” churches, they do appear to be competent and serious in their solution of typical church planning problems.

Church Building Committee members will find this book most useful as a serious introduction to their responsibilities, and in realizing the theological principles and the architectural means involved in building a new church or an addition to a church. It is serious because it goes through a whole explanatory process to reach clarity and definite statements. This is very often tedious, but perhaps necessary to make a lasting impact and to instil the principles in which both authors must sincerely believe. The Committee will not find ready-made plans but its work could be easier if its members would study this book before building.

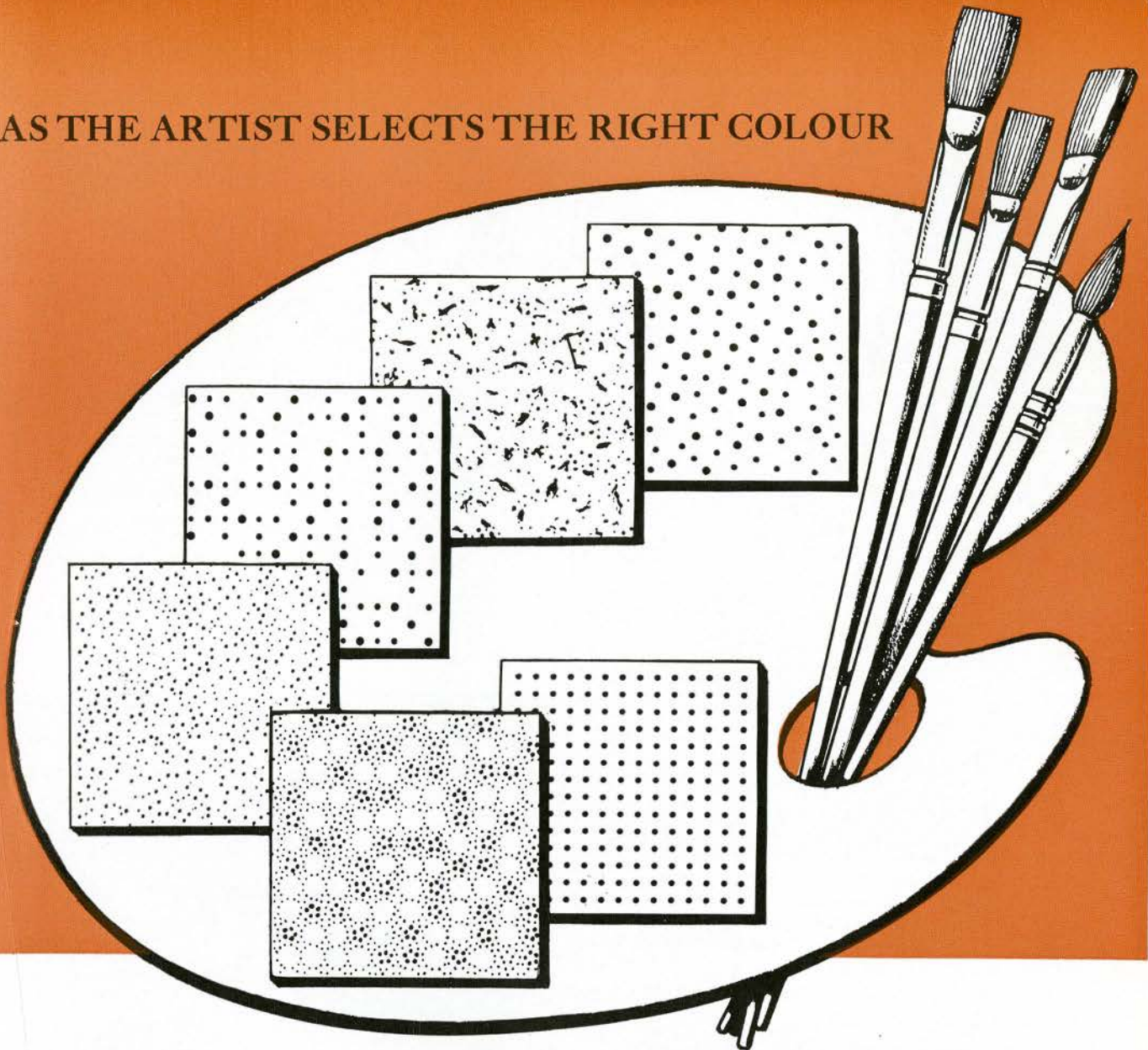
For the architect who designs churches this book presents: many new churches not previously published in America; a strong and insistent theological statement, and a definitive check list of all those things which should not be left undone. The long theological statement by Dr. Bruggink will be the most useful to the architect because so few of the few books on churches state the whole matter with such assurance.

John Layng, MRAIC, Toronto



*Church of the Advent, Aerdenhout, The Netherlands, K. L. Dzn, Architect.
Page 605 Christ and Architecture.*

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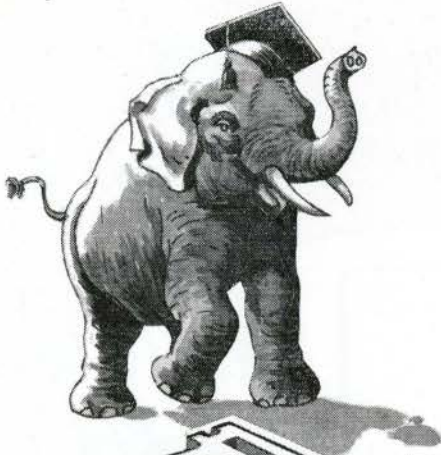
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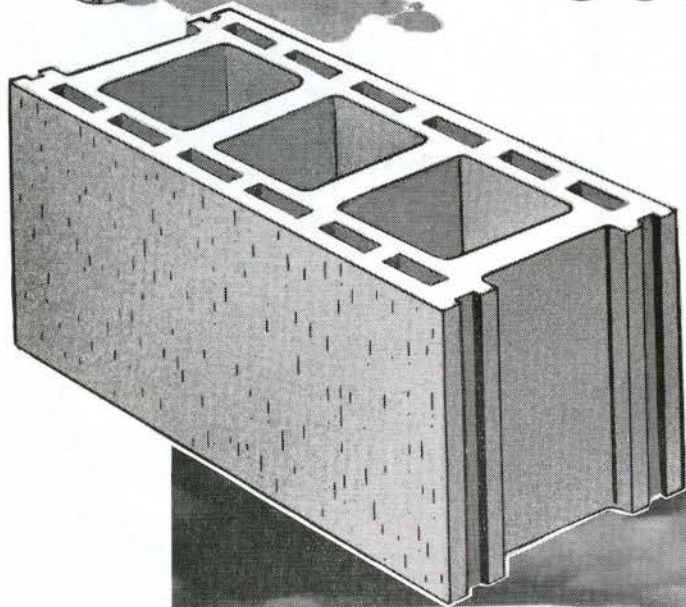


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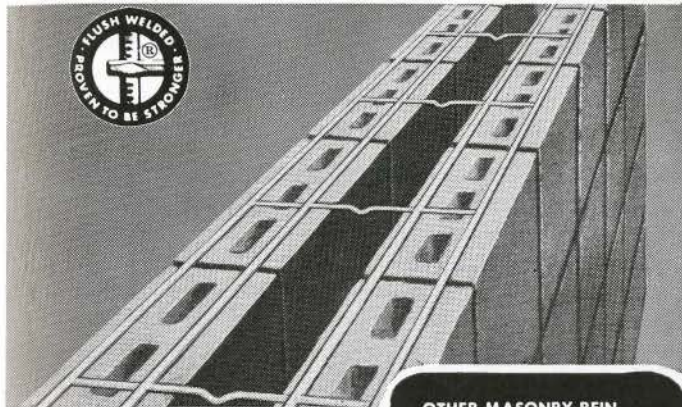
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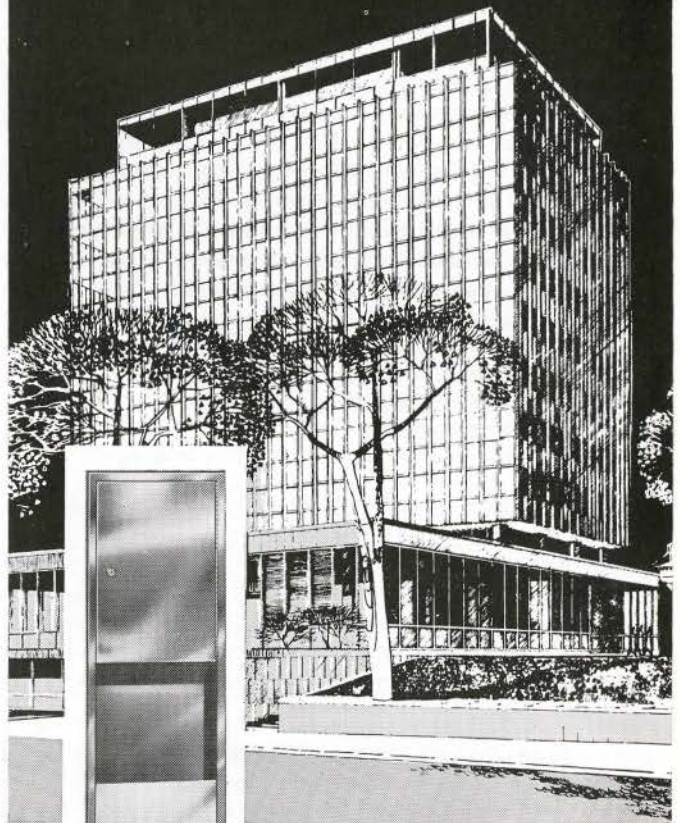
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LOUIS I. KAHN

STRUCTURE AND FORM

A young architect came to ask a question . . .

"I dream of spaces full of wonder — of spaces that rise and evolve flowingly without beginning, without end — of a jointless material white and gold," he said. "Why is it that when I place the first line on paper to capture the dream, the dream becomes less?"

This is a good question. I have learned that a good question is greater than the most brilliant answer. This is a question of the measurable and the unmeasurable. Nature — physical Nature — is measurable. Feeling and dream have no measure, have no language, and everyone's dream is singular. A man is always greater than his works because he can never fully express his aspirations. To express oneself in music or architecture, one must employ the measurable means of composition or design. The first line on paper is already a measure of what cannot be expressed fully. The first line on paper is less.

"Then," said the young architect, "what is the discipline, what is the ritual that brings one closer to the psyche? For I feel that man truly exists in this aura of no material and no language."

Turn to feeling and away from thought. In feeling is the psyche. Thought is both feeling and the presence of order. And order, the mold of all existence, has of itself no will to exist — no *Existence Will*. I choose the word "order" instead of "knowledge" because personal knowledge is too little with which to express thought abstractly. This *Existence Will* is in the psyche. All that we desire to create has its beginning in feeling alone. This is true for the scientist; it is true for the artist.

But I warned my questioner that to rely entirely on feeling and to ignore thought would mean to make nothing.

Said the young architect: "To live and make nothing is intolerable. The dream already has in it the will to be and the desire to express this will. Thought is inseparable from feeling. In what way, then, can thought enter creation so that this psychic will can be more adequately expressed? This is my next question."

When personal feeling transforms itself into religion (not a religion but the essence of religion) and thought becomes philosophy, the mind then opens to realizations — realization, let us say, of what the *Existence Will* of any particular architectural vision of spaces may be. Realization of this nature is the merging of feeling and thought when the mind is in closest rapport with the psyche, the source of what a thing wants to be. It is the beginning of form. Form encompasses a harmony of systems, a sense of order, and that which characterizes one existence from another. Form has no shape or dimensions. For example, "spoon" stands for a form having two inseparable parts — the handle and the bowl — whereas "a spoon" implies a specific design made of silver or wood, big or little, shallow or deep.

Form is *what*. Design is *how*. Form is impersonal, but design belongs to the designer. Design is prescribed by circumstances — how much money there is available, the site, the client, the extent of skill and knowledge. Form has nothing to do with such conditions. In architecture, it is a harmony of spaces good for a certain activity of man.

Reflect, then, on the abstract characteristics of "house," as contrasted with "a house" or "home." "House" stands for the abstract concept of spaces good to live in. "House" is thus a form in the mind, without shape or dimension. "A house," on the other hand, is a conditioned interpretation of living space. This is design. In my opinion, the greatness of an architect depends more on his power to realize that which is "house" than on his ability to design "a house" — something prescribed by circumstances. "Home" is the house and its occupants. It becomes different with each occupant.

The client for whom a house is designed states the areas he needs. The architect creates spaces out of these required areas. Such a house, created for a particular family, must, if its design is to reflect trueness to form, have the character of being good for another family.

I think of "school" as an environment of spaces in which it is good to learn . . .

Schools began with a man under a tree, who did not know he was a teacher, discussing his realizations with a few others, who did not know they were students. The students reflected on the exchanges between them and on how good it was to be in the presence of this man. They wished their sons, also, to listen to such a man. Soon, the needed spaces were erected and the first schools came into existence. The establishment of schools was inevitable because they are part of the desires of man.

Our vast systems of education, now vested in institutions, stem from these little schools, but the spirit of their beginning is now forgotten. The rooms required by our institutions of learning are stereotyped and uninspiring. To be sure, the uniform classrooms required by the Institute, the locker-lined corridors and other so-called functional areas and devices, are arranged in neat packages by the architect who follows the area requirements and the budgetary limits established by the school authorities. But such schools, though good to look at, are shallow as architecture because they do not reflect the spirit of the man under the tree. Nevertheless, had the beginning not been in harmony with the nature of man, there would have been no beginning to the entire system of schools. The *Existence Will* of "school" was there even before the circumstances of the man under the tree.

That is why it is good for the mind to go back to the beginning — because the beginning of any established human activity is its most wonderful moment. For in that moment lies the whole of its spirit and resourcefulness, from which for present needs we must constantly draw our inspiration. We can make our institutions great by giving them, in the architecture we offer them, our sense of this inspiration.

Reflect for a moment on the meaning of "school" as contrasted with "a school" or institution. The Institution is the authority from which we receive the special requirements for a school. A school, or a specific design, is what the Institution expects from us. But "school" — the spirit school, the essence of the *Existence Will* — is what the architect should convey through the medium of his design.

It is here that the architect is distinguished from the mere designer.

In a school conceived of as a realm of spaces where it is good to learn, the lobby — regarded by the Institution as an area measured by so many square feet per student — would become a generous Pantheon-like space where it is good to enter. The corridors, by the provision of greater width and alcoves overlooking gardens, would be transformed into classrooms for the exclusive use of the students. These would become the places where boy meets girl, where student discusses the work of the professor with fellow student. If classroom time were allotted to these spaces instead of only the passage time from class to class, they would become not merely corridors but meeting places — places offering possibilities in self learning. In this sense they would become classrooms belonging to the students.

The actual classrooms in such a school should not follow the usual soldier-like dimensional similarity but should invoke use through their spatial variety, for one of the most wonderful aspects of the spirit of the man under the tree is its recognition of the singularity of every man. A teacher or student is not the same with a few, in an intimate room with a fireplace, as in a large, high room with many others. And must the cafeteria be in the basement, even if it is not in use so much of the time? Is not the relaxing moment of the meal also a part of learning?

As I write, alone in my room in my office, I feel differently about the very same things that I talked about only a few days ago to many students at Yale. Space has power and determines mode. Thus, the concept of each person as a distinct individual suggests the need for a variety of spaces, with variety in natural lighting and orientation to compass and garden. Such spaces lend themselves to ideas in the curriculum, to better rapport between teacher and student, and to vitality in the development of the institution.

A realization of what particularizes the domain of spaces ideal for "school" would make the designing of an institution of learning challenge the architect and awaken in him an awareness of what "school" *wants to be*, which is the same as saying an awareness of the form: school.

In the same spirit I should like to talk about a Unitarian Church . . .

My very first day on this task I talked before the congregation, using a blackboard. From listening to the minister's discussion with the men about him, I realized that the form aspect, the form realization of Unitarian activity, centers on that which is question — question eternal, "Why anything?" I had to achieve a realization of what *Existence Will* and what order of spaces were expressive of the question.

I drew a diagram on the blackboard which served as the form drawing of the church and, of course, was not meant to be a suggested design. I made a square center, in which I placed a question mark. Let us say I meant it to be the sanctuary. Around an ambulatory I drew a corridor which formed part of an outer circle enclosing a space, the school. It was clear that school, which gives rise to question, became the wall which surrounds question. This was the form expression of the church, not the design.

In this connection, let us consider for a moment the meaning of a chapel in a university. Is it mosaics, stained glass, water effects and other known devices? Or is it not a place of inspiration — the kind of inspiration expressed by a student who winks at the chapel as he passes it after being given a sense of dedication to his work by a great teacher? He does not need to go in. This place, which for present purposes can be left undescribed, should have an ambulatory for the person who does not wish to enter it. The ambulatory should be surrounded by an arcade for the person who does not wish to go into the ambulatory. The arcade should be situated in a garden for the person who prefers not to enter the arcade. This garden should have a wall, and the student can be outside, winking at it. The ritual is thus inspired and not set, and is the basis of the form: chapel.

To return to the Unitarian Church, my original solution was a completely symmetrical form — a square. The building provided for classrooms around the periphery, the corners punctuated by larger rooms. The space in the center of the square harbored the sanctuary and the ambulatory. This design closely resembled the diagram I had drawn on the blackboard, and everyone liked it until the particular interests of each committee member began to eat away at the rigid geometry. It is the role of design to adjust to circumstances. But the original premise of the school around sanctuary still held.

At one stage of my discussion with the members of the church committee, a few insisted that the sanctuary be separated from the school. I said, "Fine, let's put it that way." And I then put the auditorium in one place and connected it up to the school with a very neat little connector. Soon everyone realized that the coffee hour held after the ceremonies would then require several related rooms placed next to the sanctuary which, of themselves, would be too awkwardly self-satisfying and would necessitate the duplication of similar rooms in the separated school block. Moreover the schoolrooms, because of their separation from the sanctuary, would lose their power of invocation for religious and intellectual uses. And eventually, like a stream, they all came back around the sanctuary.

The final design does not correspond to my first design, but the form held.

I want to talk more about the difference between form and design, about realization, about the measurable and the unmeasurable aspects of our work, and about the limitations of our work . . .

Giotto was a great painter. Because he was an artist he painted the skies black for the daytime and he painted birds that couldn't fly and dogs that couldn't run, and he made men bigger than doorways. A painter has this prerogative. He does not have to answer to the problems of gravity, or represent images as we know them in real life. As a painter he expresses a reaction to Nature, and he teaches us through his eyes and reactions about the nature of man. Again, a sculptor is one who modifies space with objects expressive of his reactions to Nature. He does not create space; he modifies space. An architect creates space.

Architecture nevertheless has limits. When we touch the invisible walls of its limits, then we know more about what is contained by them. A painter can paint square wheels on a cannon to express the futility of war. A sculptor can carve the same square wheels. But an architect must use round wheels. Though painting and sculpture play a beautiful role in the realm of architecture, just as architecture plays a beautiful role in the realms of painting and sculpture, they do not have the same discipline. One may say that architecture is the thoughtful making of spaces. It is not the filling of areas prescribed by a client. It is the creating of spaces that evoke a feeling for appropriate use.

To the composer, his sheet of music is a visible record of what he hears. The plan of a building should read like a harmony of spaces in light. Each space must be defined by its structure and the character of its natural light. Even a space intended to be dark should have just enough light from some mysterious opening to tell us how dark it really is. Of course here I am speaking of minor areas which serve the major spaces.

An architectural space must reveal the evidence of its making in the space itself. It is not a space when carved out of a greater structure meant for a greater space because the choice of structure is synonymous with the choice of light which gives form to that space. Artificial light is a single, tiny, static moment in light and is the light of night and can never equal the nuances of mood created by the time of day and the wonder of the seasons.

A great building must, in my opinion, begin with the unmeasurable and go through the measurable in the process of design, but must again in the end be unmeasurable. The design — the making of things — is a measurable act. In fact at this point you are like physical nature itself, because in physical nature everything is measurable — even that which is yet unmeasured, like the most distant stars which we may assume will eventually be measured.

What is unmeasurable is the psychic spirit. The psyche is expressed by feeling, and also by thought, and I believe it will always remain unmeasurable. I sense that the psychic *Existence Will* calls on Nature to make that which it wants to be. I think a rose wants to be a rose. Man, created by *Existence Will*, came into being through the laws of Nature and evolution. But the results are always less than the spirit of existence.

In the same way, to accomplish a building you must start in the unmeasurable and go through the measurable. It is the only way you can build — the only way you can bring the building into being is through the measurable. You must follow the laws, but in the end — when the building becomes part of living — it must evoke unmeasurable qualities. The design phase involving quantities of brick, methods of construction and engineering is over, and the spirit of the building's existence takes over.

Let us take the beautiful tower that was erected in New York, made of bronze . . .

It is a bronze lady, incomparable in beauty. But you know she has corsets for fifteen stories because you cannot see the wind bracing — that which makes it an object against the wind, that which can be beautifully expressed, as is the difference between moss and reed in Nature. The base of this building should be wider than the top. The upper columns dance like fairies, but the lower columns groan like mad. They do not have the same dimensions because they are not the same thing. Realization of form would result in a tower more expressive of the forces involved. Even if in the first attempts in design this realization tended to be ugly, it would lead on to beauty by its statement of form.

A building I am doing in Angola, Africa, very close to the equator . . .

The glare is killing; everybody looks black against the sunlight. Light is a needed thing but still an enemy. With the relentless sun above, the siesta comes over you like thunder. There I saw many huts made by the natives. There were no architects. But I came back much impressed by the ingenuity of these men who have solved the problems of sun, rain and wind. I learned that every window should have a free wall to face. This wall, receiving the light of day, must have bold openings to the sky. The glare will be modified by the lighted wall and the view will not be shut off. In this way, too, the contrast made by separated patterns of glare, which stylish grilles close to the window make, can be avoided. I also learned about the effectiveness of the use of breeze for insulation, which can be provided for by a loose sun roof independently supported and separated from the rain roof by a head room of six feet. Such designs of window and wall and sun roof and rain roof would tell the man in the street about the way of life in Angola.

I am designing a unique research laboratory in San Diego, California . . .

This is how the program started. The director, a famous man, heard me speak in Pittsburgh. He came to Philadelphia to see the building I had designed for the University of Pennsylvania. We went out together to see it on a rainy day.

He said, "How nice . . . a beautiful building. I didn't know a tall building could be nice. How many square feet do you have in this building?"

I said, "One hundred and nine thousand square feet."

He said, "That's about what we need."

That was the beginning of this project's program of areas. But there was something else he said which became the key to the entire problem of space environment, namely, that medical research involves not only medicine and the physical sciences but also people. He meant that anyone versed in the humanities, in the sciences or in the arts can contribute to the mental environment needed for research leading to discoveries in science. Unrestricted by established requirements, I have found it a rewarding experience to participate in the projection of an evolving program of spaces without precedence. This has only been possible because the director is a man with a unique understanding of the inspirational quality of environment, and because he could sense the *Existence Will* and its realization in form provided by my spaces.

Here the simple, first requirement for laboratories and their facilities has been expanded to include cloistered gardens, studies over arcades, and spaces for meeting and relaxation, interwoven with unnamed spaces for the glory of the fuller environment. The architecture of these laboratories is that of air cleanliness and area adjustability. The architecture of the studios is that of the oak table and the rug.

My medical research building at the University of Pennsylvania incorporates this realization that science laboratories are essentially studios and that the air to be breathed must be separated from stale, waste air. The normal plan for laboratories places the work areas along one side of a central corridor, the other side of which houses the stairs, elevators, animal quarters, ducts and other facilities. In such a corridor there is mixed together with the air you breathe the outflow of contaminated, dangerous air. The only distinction between one man's work space and that of another is the difference in numbers on their doors. For the University, I designed three studio towers in which each man may work in his

(continued on page 32)

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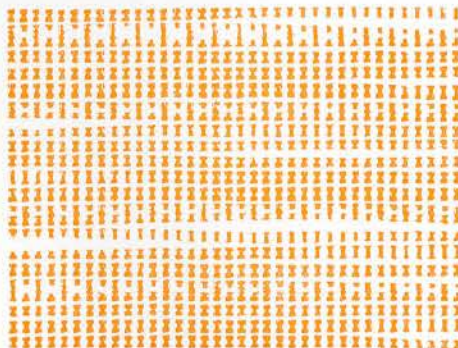
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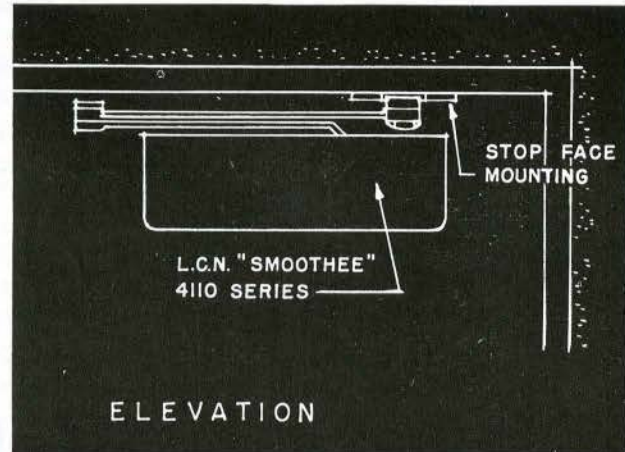
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One day I visited the site for this research building during the erection of the prefabricated frame . . .

The crane's 200-foot boom picked up steel members weighing 25 tons and swung them into place like so many match sticks moved by the hand. I resented the garishly painted crane, this monster which humiliated my building because it was so out of scale. I watched this crane go through its many movements, all the while calculating how many more days this "thing" was to dominate the site and the building before a flattering photograph of the building itself could be made.

Now, however, I am glad of this experience because it made me aware of the meaning of the crane in design, made me realize that a crane is merely an extension of the arm, like a hammer. Now I began to think of steel members weighing 100 tons being lifted by even bigger cranes. These great members would be the parts of a composite column, with joints like sculpture in gold and porcelain harboring rooms on various levels, paved in marble. These joints would be the stations of the great span, and the entire enclosure would be sheathed with glass held in glass mullions, with strands of stainless steel, interwoven like threads, assisting the glass and the mullions against the force of the wind. Now the crane was a friend and the stimulus for realization of a new form.

Institutions in cities can be made greater through the power of architectural spaces . . .

The meeting house in the village green has given way to the city hall, which is no longer a meeting place. But I sense an *Existence Will* for the arcaded city place, where again boy could meet girl, where the city could entertain and put up its distinguished visitors, where the many societies which uphold our democratic ideals could meet — in the city place — within clusters of auditoria.

The motor car has completely upset the form of the city. I feel the time has come to make a distinction between the viaduct architecture of the car and the architecture of man's activities. The tendency of designers to combine the two architectures in a simple design has confused the direction of planning and technology. Viaduct architecture enters the city from outlying areas. It must now be more carefully planned and, even at great expense, must be more strategically placed with respect to the city centers.

Viaduct architecture would include the street which, in the center of a city, wants to be a building — a building with room beneath for city piping services so that traffic interruption will not be necessary when these services need repair. This viaduct architecture would encompass an entirely new concept of street movement. It would make a distinction between the stop-and-go movement of the bus and the go-movement of the car. The area-framing expressways would be like rivers. These rivers would need harbors, and the interim streets would be like canals, which need docks. The terminal buildings of this viaduct architecture would

be the harbors — like gigantic gateways expressing the form of the *Architecture of Stopping*. These terminals would have garages in their cores, hotels and department stores around the periphery, and shopping centers on their street floors.

Such a strategic positioning around the city center would present an ideal protection against the destruction of the city by the motor car. In a sense, the conflict between the car and the city is war, and planning for the new growth of cities is not to be regarded complacently but as an act of emergency. A distinction between the two architectures — the architecture of the viaduct and the architecture of man's activities — could produce a logic of growth and a sound positioning of enterprise.

An architect from India recently gave an excellent talk at my University about the fine new work of Le Corbusier and about his own work. It impressed me, however, that the beautiful works he showed were still out of context and had no position. After his lecture I was asked to remark. Somehow I was moved to go to the blackboard, where I drew in the center of the board a towering water tower, wide above and narrow below. Like the rays of a star, I drew aqueducts radiating from the tower. This implied the coming of the trees and fertile land and a beginning of living. The buildings not yet there, which would cluster around the aqueduct, would have meaningful position and character. The city would have form.

From what I have said I do not mean to imply a system of thought and work leading to realization from form to design. Design could just as well lead to realizations in form. This interplay is the constant excitement of architecture. □

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School Design

In September the Journal brought together in Toronto two educators and six architects from different parts of Canada to tape-record a discussion on school design. The object was to obtain a contribution from the architectural profession on the process of elementary education. The method was, first, to identify the participants in the education process — parents, children, teachers, school administration, school boards, teachers' colleges, universities, provincial departments of education and architects — and discuss their roles; then to exchange experiences with new educational methods and new architectural concepts which have had a significant influence on school architecture; and finally to draft what, it is hoped, would be some helpful conclusions.

One of the conclusions reached was that the discussions of this kind would be most useful in furthering good school design and should be repeated periodically by the Journal.

The Editors of the Journal thank the participants for their willing acceptance of an invitation to share the benefit of their years of experience in school architecture and education; and we compliment the moderator, Mr Loren A. Oxley, FRAIC of *Somerville, McMurrich and Oxley, Architects, Toronto*, on his thoughtful guidance of the discussion. We thank him too for what was probably the most difficult task of all — editing the transcript of the four hours of discussion. In addition to Mr Oxley, the participants were:

Dr Carl Williams, Vice President of the University of Toronto, for Scarborough and Erindale Colleges.

Edward M. Davidson, a past chairman of both the Toronto Board of Education and of the Metropolitan Toronto School Board, former Classics Master at Upper Canada College, and now Director of Financial Aid, University of Toronto.

Gordon Arnott, MRAIC, of *Izumi, Arnott and Sugiyama, Architects and Engineers, Regina, Saskatchewan*, representing the Saskatchewan Association of Architects on the new Saskatchewan School Facilities Council.

John Holden, MRAIC, Assistant Architect, Edmonton, Alberta, Public School Board.
Denis Lamarre, MRAIC, of *Jadoin, Lamarre and Pratte, Architects, Montreal*.

F. J. Nicol, MRAIC, ARIBA, Research Architect, Ontario Department of Education, Toronto.

Eberhard H. Zeidler, MRAIC, of *Craig, Zeidler and Strong, Architects, Toronto*.

The panel met at 9.30 a.m. in the OAA board room in Toronto. After some preliminary skirmishing, the discussion began to consolidate around the place of the school building in the community :

NICOL : In many communities, and certainly our smaller communities, a school is the most important building. It is the largest building, it is the most expensive building, and the most elaborate building. As such, it becomes, presumably, the most important



NICOL

local piece of civic design. You wonder whether or not the school, in that sense, contributes as much as it should to the community.

HOLDEN : There seems to be some resistance on the part of boards, in many cases, to open schools up to the public. This is changing, however, with the rising cost of construction, improved facilities and the emphasis more on education from birth to death rather than just from kindergarten to grade twelve. As a tax payer, it bothers me to see buildings of this calibre sitting there and only being used a fraction of the day.

ZEIDLER : I want to bring out a definite trend you have mentioned. We have changed our thinking about education and this has influenced quite profoundly the school building itself. It is not only that we educate through our whole life — we have to re-educate the adult population in the city — but also the children use the school differently under present-day conditions. The encouragement of the Ontario Department of Education towards the building of libraries which provide space for individual study will attract the students back into school after school hours, so that you will have the school used from seven o'clock in the morning until ten or eleven o'clock at night. This will spread out into other areas, but it needs a re-thinking of the administration within the school and the uses of the school. I think that this is very important, and I think we should press it as much as we can.

NICOL : There is another aspect, and I am sure the trustees, Mr Davidson, would have some opinion about this. If you open a school after normal school hours, it costs money. There isn't any doubt it costs more money. There is a constant battle between the municipal authority, who is responsible for raising the money, and the school board, who is responsible for their part of the budget. The financial or economic aspects of running the school system are such that as soon as the school board is faced with the criticism of a heavy budget, perhaps over-spending, the things we hear about so much, the first thing they cut out of their budget is the money that is devoted to things other than basic education. After all, the board's prime function is to provide basic education. I

think very often this is why school programs haven't been expanded in a community, or adult sense. Isn't this so ?

DAVIDSON : This is quite correct. It certainly implies cutting back arrangements such as you describe. I think, however, something can be done before the building goes up to have agreement between the municipality's recreation department and the school board as to future use and financing. The way in which architects can be very helpful to school boards is to devise methods of separate entrances and exits for community facilities or shared facilities, so that there isn't the spectre of the public wandering all over the school corridors in the evening when they have come in for some particular function. Sometimes mutual arrangements to use a playing field for parking are extremely useful, because there is always going to be a great deal more parking for evening affairs than there is in the daytime.

ARNOTT : Doesn't this point up once again the necessity of having a statement of objectives from the commissioning agency ? We architects can certainly plan all the separate entrances that are required, the physical separation for whatever use we are told about. If it is not in the program, and no one has a clear idea of what is wanted or the various ways the building might be used, the architect, in the pressure to reduce cost, doesn't plan for these things. He sees the options that are available, but if the board doesn't request them they don't go in. So we need some kind of educational outline, or statement of objectives, call it what you will, that spells these things out.

OXLEY : We seem to agree that schools are going to be used for other things than teaching the young. It might be interesting to think on the other side for a bit. Are any of these uses incompatible ? In other words, we are all familiar with the business of building a gymnasium and an auditorium, ending up with neither. Isn't there a danger that in attempting to make the school into a community centre we might compromise its value as a school ? The kindergarten, with kindergarten chairs, is perhaps not the



OXLEY

ideal place for parents' meetings, and a room suitable for the parents is perhaps not the ideal kindergarten.

WILLIAMS : The kindergarten, ideal as a kindergarten, can have folding chairs or moveable chairs of proper adult size trundled in and out whenever they are needed. This would give a legitimate double use. But I could not agree with you more on these "gymnatorias". They are dreadful ! They function as neither, and they simply add ugly words to the language. With newer and improved school furnishings we no longer are talking about a cockpit arrangement, where the student is strapped in and seated

with a desk in front of him which no one except a young tot can get into. Now we are talking about larger tables which we can do something with, larger seats and not connected — more flexible seating arrangements and furnishings.

ZEIDLER: Underlying everything is the final question: What is the purpose of the education we are trying to give? Is it only to teach a boy to read and write? Is it one thing if it is to prepare him for university, and another thing if it's to teach him certain other skills. Or if it is to bring up, or educate people who are later on capable of living, then it is a different story again. Then all of a sudden all these other things are as widely meaningful as a straight classroom where desk work is taught. Can we afford to give this other type of education or can we afford *not* to give this wider education? With this, it is important that we give the child not only just strict teaching in certain subjects, but that we also give him a broad experience in all these other things. Of course, our schools and our system of education will become more expensive in doing so.

NICOL: I wonder if they have to become more expensive just to provide a broader basic education? I would doubt that. I don't know whether they become more expensive or less expensive.

ZEIDLER: Maybe "expensive" is not the word. I meant more things necessary to fulfil it. It maybe is not so much the physical environment as the attitude towards the physical environment. For example, the attitude that swimming pools are a waste of money; or a general purpose room is a waste of money; or a wider corridor where people can stand and talk is a waste of money; or the over-size library is not necessary. On the other hand maybe these are most important things in the school.

NICOL: When you say "over-size library" it suggests that it is not necessary!

ZEIDLER: I mean over-size from the standards that we have been following. A high school library of 1,200 sq. ft is just inadequate for a high school educating 1,200 students.

NICOL: This is because the function has changed, and the function is changing because we have a different outlook. I think this is wrapped up in the philosophy of education. We may require more elaborate facilities but I think it is dangerous to say these facilities are necessarily more expensive. It isn't always true. Maybe they are just different.

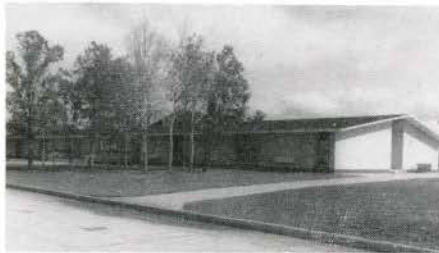
DAVIDSON: Sometimes it is forgotten by the public, who rejoices in the horrible name of taxpayer, that these additional spaces, such as swimming pools and library spaces, are actually teaching accommodation, perhaps more expensive than classroom accommodation. In most of today's crowded schools, when a group of pupils is in a swimming pool, another group of pupils is in the classroom that they have vacated. We don't always want to think that swimming, library, or gymnasium accommodation is extra and over. These are alternate forms of accommodation, admittedly somewhat more expensive. It should be stressed that pupils are filling them and other pupils are filling the seats the first group have vacated in the classrooms.

OXLEY: I wonder if we could attempt to enumerate some of the characteristics that schools should provide for three different classes of people. The teachers, the "community" (used as a

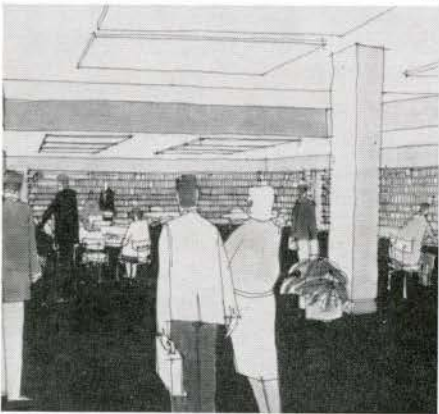


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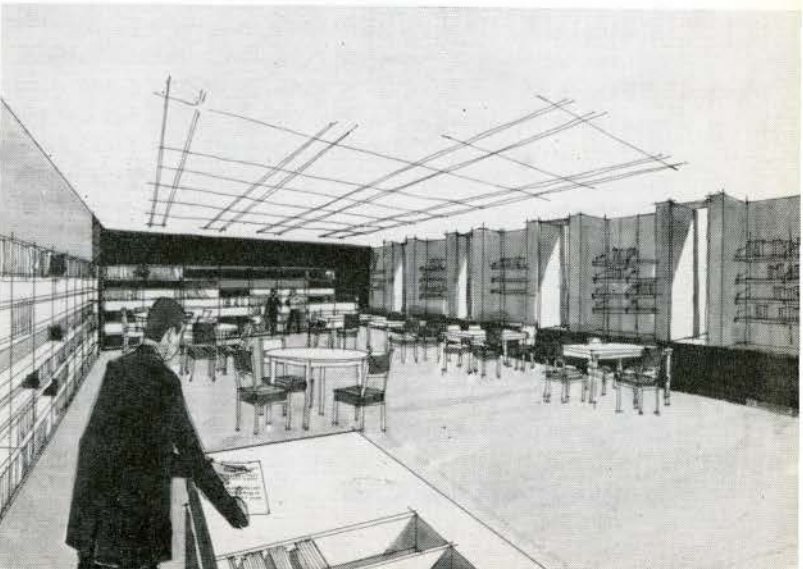
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C



D



A Language Lab

*B Laidlaw School,
Tuxedo, Manitoba
Architects: Ward
and Macdonald
Associates*

*C & D Library, Georges
Vanier Secondary
School, North York,
Ontario
Architects: Allward
& Gouinlock*

general term for all the users outside of school hours), and the pupils.

ZEIDLER: There is a trend away from pushing students through their education in blocks of thirty. At the beginning of the year you climbed in your wagon and got pushed through, and at the end of the year you either got thrown out, or kept on going. Now



ZEIDLER

educators try to advance children at their own speed. This will need a different space arrangement. Each student is at times more or less capable of working alone. The teacher has been a very neglected animal in the school, because he hasn't been given, in many schools, a space to work and prepare and discuss his work with other teachers.

HOLDEN: In any school, I believe, there are five basic areas: A place for storage of materials; work areas for teachers; places for group learning; spaces for individual learning; and other auxiliary spaces for other subjects, such as music, art, and related mechanical requirements.

DAVIDSON: I wonder if I could protest that word "auxiliary" that slipped into the last statement?

WILLIAMS: I would like to try to describe what the school should do for pupils, assuming that you here know how these things would affect the buildings. In the first place, the formal education, or whatever the curriculum is, has to be taken account of, whether it is done in groups of thirty, or done individually or however. Then these proportions have to be known and decided on and the building is designed accordingly. Then I think there is a lot of what might be called informal education as well, where outside the formal class, we still want the school to serve a social function. In short, the school has always been regarded as a civilizing agency. Children are born savage and spend the rest of their lives attempting to become civilized. The school is one of the great civilizing agents. So what we want is a harnessing in the school of all the forces that make for the positive development of the children, both as social beings and as individual ones. And this involves them in interaction with other children, with adults, and with the teachers who are in effect the agents of society in this civilizing process. In the course of this we expect far more of the school now than we did a generation or two ago. We also want to get into such things as Holden mentioned — an appreciation of music, a participation in the drama, dancing, athletics, swimming — so called frills, and I think this extends to aesthetics. So that it seems to me that there are a great many things here that the architect is challenged with, just considering the pupil alone and taking no account of these other matters we have been discussing at all.

DAVIDSON: Before these become a challenge to the architect, the architect must know what trends the teaching methods will take, so as not to design a school that will become obsolete in a few years, or cannot be changed or adapted to other methods. The architect is well aware that you don't need only 25 by 30 ft rooms in a school, put one beside the other; but to design a school to serve these purposes, he has to have discussions with



DAVIDSON

the teachers, with the school board, and other experts, who have done research on this subject. Now that education is taking so much longer, in terms of total years, I regard life at school as a significant part of total useful human life. A student that goes as far as he can has probably spent his years from 5 to 30 in some sort of educational institution. If you define his years as 5 to 70, for his working life, he has then spent 25 of 65 years in a school. Now if we are going to have a population, as somebody just put it, civilized, they should not be subjected to the first 25 years, or the first 20 years, or even the first 15 years, as a training course. In other words, life in school is *life*, not just preparation for life. This is where people spend a large part of their days. Employers do more to make office employees happy in their surroundings than school boards sometimes do to make their pupils happy in their surroundings. This is a situation where the architect can help by impressing on the school board that the hours spent in school are not nowadays just a period of training for another educational institution, or for the world of work. This is life as we know it on this continent. Going to school is perhaps the longest consecutive job that anybody has.

NICOL: I think it was a wonderful statement from the past chairman of the Toronto School Board. If an architect had sat down with the board with a scheme for a new school, and said "I've done it this way, because I am trying to provide for the pupils a broad social experience" what would have happened to the poor fellow?

DAVIDSON: With the particular board mentioned, he would have got a good hearing, and probably a commission for a school. I could name schools that have been built with this in mind.

NICOL: Would you say that this is true of all boards?

DAVIDSON: The Toronto board had the advantage of size, and size is sometimes an advantage. Because of size, it has an educational directional staff, and a building staff which has a firmly developed philosophy of education; and sometimes the trustees were criticized by the newspapers, and the public for adopting the professional ideas of their academic and building staffs. A smaller board is in a much more difficult position because the

trustees, if they haven't a wealth of professional advice, have really got to form their own educational philosophy every time they begin to commission an individual school. This can lead to gyrations in overall board policy and lack of co-ordination about objectives, which are really very serious and debilitating to the system of education.

NICOL: I don't think you have answered the question. Do you think boards of education are sophisticated enough to appreciate aesthetics, environment, social experience? You use any of these terms and you are a dead duck!

WILLIAMS: Most of the architectural publications seem to be able to manage one outstanding school per issue of their publication, and to indicate that it is perhaps nearly everything that could be expected. There must be a good number of really significant schools going up all across this country, if we can believe what we read. I know that schools are opening in Canada on an average of about two per day. Not all of them are in the prize winning class. But I do feel that there are a large number of boards that are willing to talk to architects, and absorb architectural ideas, but these ideas must be combined with their own ideas on education, and the very important ideas of their own professional staff, which has spent a lifetime in education. I feel the trustees are ready to be led by architects and their own professional staff. The fact that they don't go all the way in the first hop is not serious, and is not a reason for architects to pull in their horns and say, "I was snubbed last time." The architect must continually be prepared to stick his neck out, just as any one who stands for election is prepared to do so.

HOLDEN: I agree with that. I feel that in some cases when an architect was talking about environment and the effect that the building has on the student, boards tended to take the stand, "Well, buildings really aren't that important: the teachers and pupils are the important things in the schools." But I think that this is changing because of new designs and concepts in school architecture. An architect is labeled a dreamer by some boards if he goes off on a tangent. In many cases the architect is very practical, and talks about roofs that don't leak. Usually the boards perk up and say, "This is wonderful, this is what we want." But



HOLDEN

if an architect talks about these other things you can't put your finger on, well, he's a dreamer. He probably should not talk about them. He should do them! The fellow who will get the job is the fellow who says, "I will never win a Massey Medal for design but, by gosh, I can build a school for \$11.50 a square foot."

ZEIDLER: I think this leads back on to completely different

ground. Our society is, more or less, a democracy. People from all walks of life are moving into positions where they have, through committees, the power to make great changes in our society. This architectural life is a political life. We can feel sorry and say it was great in the time of Louis XIV, when if one man liked you, and you could convince that man that you were a great architect, that was all that was needed to build marvelous buildings the rest of your life. Today, architects will fail who do not manage to get their ideas across to the public, and then, out of the public, the demand for their buildings. I think we are in a big experiment right now, and our success is not so much a question of "can we build the buildings?" but rather "can we manage to convince the public to want these buildings?"

WILLIAMS: I do think that architects are particularly guilty of using the most awful jargon when they talk to school boards about these things. They use airy, fairy language, and get the school board people all upset. Then they go away feeling very self-righteous, and their aesthetic souls have been frustrated. The plain fact of the matter is they have never bothered to learn how to talk, they have never bothered to learn how to communicate with people. The result is that a good, conscientious architect unknowingly will leave an attitude behind that he doesn't care, for instance, about the budget requirements that the school board has to face. It seems to me that it would be very worthwhile to try to think of ways in which one could take some of these vague notions and translate them into something quite realistic. We say, for instance, that the school is the child's home away from home. Well, how do you make it homey? In concrete terms, instead of just saying that. Do you put broadloom on the floor? Is this a good way of doing it? Do you make sure the rooms are scaled for a child so that they are about the size of the rooms he is used to at home? I am thinking now of very small children just beginning the school experience. The teacher does function as a kind of mother substitute for the time being. Is the design of the room laid out in this fashion, are the colors such that the child finds them pretty? They don't need to be deep fundamental aesthetic, satisfying experiences. The child may never comment on the colors in the room. Yet it seems to me the architects, the color consultants, someone, should know enough about children to make attractive looking rooms.



LAMARRE

LAMARRE: I think the question is a double one. First, you try to describe atmosphere — what is it; and then you want to know how it can be achieved — how you can give atmosphere to the thing. If architects use funny words to describe atmosphere, it's because atmosphere equals poetry. It just can't be described with the use of ordinary words, you just have to put poetry in words so you have the atmosphere of what you are going to give your

client. Sometimes not even the architect who can give atmosphere to the schools can use words to describe what he is going to give his client. That is why atmosphere is so difficult to describe, and it is so difficult to give the client an idea of. Now how it can be attained? Well first one must say that atmosphere can be economical. Atmosphere is given by a few things like the layout, the different components of the plan, by the scale of the building, and by color and texture. I think these are the components of atmosphere. Has anyone anything else to add to these? Does any architect think that atmosphere can be given by other components?



ARNOTT

ARNOTT: I have a feeling that architects should speak practically and be very poetic in what they do, and perhaps not talk about it too much. Talk one way and do another, but don't get involved in the jargon, because even in trying to discuss this, you have had to use words like "scale", which is an architect's technical term; "texture" and things like that. But if you could get one room done, say a kindergarten, that has this feeling, that would do more than explaining what the architect does. People can see it. You don't have to explain it. You can see that someone has thought carefully about this room. How you get the board to venture into this is probably to say it needn't cost any more, or it won't cost that much more, and then do your job.

HOLDEN: We all realize that the environment and atmosphere is very important, and that children are extremely aware of their environment. I've gone into schools recently completed in Edmonton and spoken to the children in grades one to six and asked them openly what they thought about the school, and they have come up with comments such as — the courtyard wasn't developed well enough, it didn't look complete, the trim around the beam going into the wall looked silly, and was too heavy — little details like this. They appreciated the colored doors; they liked the lighting, it was a pleasant experience to go into the guidance room, because they felt relaxed in it, and so on. So, with the skilful handling of materials and combinations, I don't think it needs to cost a little more. I don't think we should waste time talking to boards in these terms, because they are not interested. They are just interested in final results.

OXLEY: Do you think some kind of organized inquiry among school children would be desirable?

HOLDEN: We conduct evaluation programs of all our schools in which we get the opinions of caretakers, teachers, students, parents, and then evaluate the report. This report is then sent out to the architects' association for distribution, and also to all of the administrative staff, and the teachers. In our next school project we can bear these comments in mind.

WILLIAMS: I would like to ask Mr Davidson about this. I think it is the greatest invention since the wheel. So often each building is built as if nothing had been built before, and then the next man comes along and starts all over again. Holden is really on to something!

DAVIDSON: I think the idea of the pupil evaluation is new and very significant and I hope it spreads fast across the country. I know that large boards have other evaluation efforts, because they simply can't afford to perpetuate mistakes. The idea of bringing in the pupil is extremely important, and I would like perhaps to see the general public perform an evaluative task. The amazing willingness of the public to pay for buildings that capture their imagination — for example our new City Hall — once they can see them in three dimensions, means that a taxpayer's evaluation of a school might be a very inspiring operation and very useful.

WILLIAMS: I think it gets right back to the point we were discussing before, that perhaps this is the way into the problem that obviously besets architects. How do you communicate the importance of the notion of atmosphere, the poetry of it and so on, as Lamarre says? Perhaps you do it this way. You invite people, including the board and the taxpayers, to comment on a building that has been built, and my guess is that even though they may have insisted to you beforehand that they wanted a jam factory, if you build them a jam factory they will then criticize it because it is nothing but a jam factory. So you find out that after all they did have more poetry in their hearts than they appeared to have when you were discussing it in the first place.



WILLIAMS

ZEIDLER: Dr Williams and Mr Lamarre both said the same thing but from different angles. If you ask "what are the components of atmosphere?" you could not describe them. You could say that there is rhythm and words, but these don't necessarily create poetry. Just scale, texture, and so on can be horrible. But cannot we say more? We are out of the unconscious stage. Even the Gothic masters worked in a conscious stage, and we cannot ignore the two or three thousand years of history behind us. So we have to find ways, and this is what Dr Williams tried to point out. There are certain things with which we can measure now. This measurement may not be absolute and correct, but it brings us closer and I think that these evaluations are on the right track. For example, if two hundred people feel a thing isn't good, and you the architect feel it is good, then maybe you, the architect, are wrong, not the two hundred people. The public has a very clear ability as a whole. Great plays in the long run have always been successful, and the failures have not always been great plays. I think somehow we lack at the moment the tools to

measure our ability to create atmosphere. We do know it when it is there. A man like Corbusier builds a building like Ronchamps. People like it. Everybody likes it. I think anybody who starts to write poetry wants certain tools with which to criticize his own work.

LAMARRE: Atmosphere is the result of good architecture. I think that even if the school board did a lot of research, on the children let's say, and you learned that what influences them is color and texture, or low ceilings, you would not automatically get good schools because of that. I think that the putting together of all these is the mark of the good and the great architect. The better he is, the more atmosphere he will put in to the building, and the more architecture will come out of it.

ZEIDLER: Yes, but on the other hand I feel that T. S. Eliot without Shakespeare would not be T. S. Eliot. Architects today have to know everything that has happened up to this very moment in order to use it. Now our capability of using it is a completely different question, and obviously only a few people are capable of doing it, otherwise we would have many more beautiful buildings. If we assume that we are capable of doing so, and all architects assume so, then we should open our minds to try to get all the influences which are there. We can't ignore them anymore. There was a time when a Michelangelo or da Vinci could encompass all knowledge, or almost all knowledge, at one time. We cannot. We have to rely on many people to know better and tell us.

NICOL: This is a point I would like to mention. Quite a few research and development groups are now working in the field of school architecture. All of a sudden, in the last five years, it has become almost a hobby horse. Everybody is jumping on the bandwagon. The funny thing is that most of these research groups are architectural in nature. Practically none of these groups is educational, or represents education. It seems to me this is where education is beginning to drag its anchor a little. I don't think that teachers — the responsible people in the school system, or those responsible for education in the provincial or national sense, or whatever it happens to be — have done enough educational research. This is part of the problem that the architect faces. He does not know what he has to do for education, and the educator doesn't know what to ask of the architect, because he doesn't really know where he is going. I think the only way we can ever get to this is for educators to establish a much more intense program of educational research. Much of educational development has grown out of the need for other things — economy, better use of teachers — all sorts of by-products to worry about. Very seldom have educators sat down and said "how does a person learn better?" Very little has come out of this field from the educational people.

DAVIDSON: I would certainly accept this criticism and in this one province, fortunately, a new research institute is being set up by the Department of Education. I think they should receive an immediate representation from the Association of Architects, urging them to make building and environmental research one of their important branches.

ARNOTT: This is quite true. There are a couple of notions I would like to lay out on the table. First, we don't even seem to have the raw figures to know what each province is spending on capital construction per annum. That is, no one could tell me in Saskatchewan what the total contemplated value of school construction is

for 1965. Maybe figures are in the school report, but there has been no projection. The point I am making is, there must be millions and millions of dollars involved in school construction, with very little follow up as to its efficiency. The Edmonton school board has some professional advisers looking into these ideas. Ontario is doing something. These minimal efforts are going on and they are not co-ordinated. If only we could spend a fraction of a percent of the millions of dollars spent on school construction in pilot projects! Let's make a few mistakes! Let's make a school completely out of pre-stressed Kleenex, and get rid of that notion, abandon it. Or try one without — you name it. There are a lot of ideas floating around. We can afford to do it. We are spending millions on schools, so the money's there.

The other point is that although we have the Educational Facilities Laboratory, I don't think we should accept what they are coming out with automatically by any means, just because the Ford Foundation is behind it. In rather obscure areas of universities and other places, there are psychiatrists, there are people who are interested in visual perception, there are people who are interested in what kind of groups work. What is the size of a group that works best if you are trying to teach a certain subject? A group of six? Is five too little? Seven too many? There are people zeroing in on these very special areas which have probably some validity for education.

NICOL: I think maybe we exaggerated this problem of nothing being done. I think a lot is being done. The trouble is that I don't think that enough is being done by the educator. The problem is the lack of a co-ordinating agency to tell people what is being done. Maybe this is a problem more true in Canada than most other countries, because of the provincial system, where each province is responsible for its own educational problems. I am sure I know more about what is going on in New York State than I know about what is happening in Saskatchewan, for instance. This seems to me to be a dreadful lack. Maybe it is my own fault. I don't know. But we sometimes have better communications with people in Europe or people in the United States, than we do with people in our own country. This is a sad reflection, but the sources of information are there. Quebec is beginning to do a lot, an awful lot, in this field. I think Ontario is beginning to, I think Alberta is beginning to, but none of us really knows what the *other* is doing.

HOLDEN: I think we have seen tremendous changes in educational systems in the past ten years. Probably I could illustrate this by saying that an architect who designed a school in 1940, and then didn't design another until 1950, would find that he had very little homework to do. An architect who designed a school in 1955 today would find that he was completely out of the picture if he had not kept up to date on the changes. One of the reasons that educational change is so slow is fear — everybody seems to be afraid to move into a new area. The teachers are afraid of the principal, and the principal is afraid of the administrators, and they are afraid of the board, and the board is afraid of the taxpayers. Largely this is true, because if we are going to try something we have to build experimental schools, and commit ourselves.

NICOL: I don't think change is important just because it is change. My point is that we should have more educational research. Then maybe at the end of that research program they are going to say, "What we need is a double loaded corridor, with classrooms on either side; they will house 30 to 35 pupils, and will be 750 sq. ft in size." Maybe this is the answer, but nobody knows.

DAVIDSON: Education has not been a complete success in the past. Some of the new ventures may be far out, but I am not sure that they are any more far out than sticking to what we are doing. If the architects find that the educators' research is not fully productive and final — then this is normal. It's very much like researching fertilizers for a century plant, as somebody pointed out. It is a little too late to find out the answers. The architect must be prepared to realize that the educator cannot always find the answers. I am certain of one thing, that sticking to what has been done is not going to produce the peaceful civilized world that we are looking for.

NICOL: Very often the architect is the one who is selling educational progress to the educators. He may be doing it because he thinks he is doing something exciting, and he need not necessarily have any idea whether it is good education or not. Very often the things we see may be valid in the United States, or Germany, or Denmark, but they may not be valid in Canada. The danger is that, rightly or wrongly, many of these new ideas we hear about — or so called new ideas — are promoted by the architects who are leading the trustees and the educators by the nose, and I don't think enough is being done the other way. The educator is the person who should go to the architects.

OXLEY: Architects seem to know pretty well what is wrong with educators. It might be very interesting to hear from educators what is wrong with architects.

WILLIAMS: I have been trying to say some of the things that I think are wrong with architects. One of them is this jargon. Certainly you get more of it out of a learned journal than you ever would get anywhere else. It isn't the professor who writes the jargon that you are trying to persuade to build a school building. That's a different business altogether. I think the problem I was raising here is that perhaps we need to spend our time hunting for ways of improving the communications that exist between boards and educators generally, on the one side, and architects on the other. I was wondering, for instance, if out of this evaluation discussion we have been having, would it be worthwhile to recommend that there should be a joint annual conference between the Architectural Associations and a similar educational body. The Canadian Education Association is meeting now as we talk. I don't know whether that's the one, but surely there should be a joint one where Holden can bring his best school for instance, to be set up, and analyzed, or examined, or defended, by both sides.

NICOL: In Ontario in 1963 we had a Minister's conference on school design, and this was the first time, to my knowledge, that we had at one time and in one place, architects, engineers, trustees, teachers, municipal people, the fire marshal — all these people together — five hundred people. It was big, and everyone decided then and there that we all had the same problems, that we should get together and discuss these things. Since then, the Department of Education of Ontario has run four regional workshops on school design, and we limit attendance to about a hundred. We had one at the Lakehead, and one in Sudbury; Windsor was the third, and the fourth one is in Kingston next month. Out of these has grown, locally, co-operation which did not exist before, because the architect had time to meet the educator and discuss with him what he felt the problems were. They talked, over a drink or on a panel, and they fought and they argued, and called each other names. Out of it has grown this co-operation and I think this is very valuable.

ARNOTT: This is what our meeting in Saskatchewan in November is all about. We have been talking about it for two years and we are just now launching it, and I really think it was architects' impetus that got the thing going. It did not come from the Department. It did not come from the school trustees. A group of architects got it going, and we think it might lead to the sort of thing we have been talking about, although there is no research staff on any school board, or department level. Maybe it will point up the necessity for this kind of staff.

HOLDEN: In Edmonton we are in the process of setting up a department of school construction and research planning. The main objective of the research staff is to strengthen communications. The architect's communication with the contractor is by specifications and drawings. There is a very fuzzy relationship between architects and educators, because schools are becoming so specialized — you have so many people to contact. This brings up the educational specifications, as compared with the building specifications. Educational specs, to a great extent in the past, have been nothing more than a statement of needs. I am afraid of seeing mediocre educational programs forced into just any type of building. They should be clearly defined, and the building tailored to the programs. In other words, educators should let architects know what happens to a child in school.

ZEIDLER: It is very important. Everybody agrees communication has to be there. Also, there has to be a central agency to collect information and pass it on; to see that in certain areas more research is done, so that not every board is researching the same thing. On the other hand, we have to be very careful that the central research agency does not become the law, does not force everybody into a certain pattern and stifle development. Look back on the last ten or fifteen years of development of school thinking, and at the areas it has come from. It has not always come from central agencies. Sometimes these groups have been very good. But sometimes the thinking has come from a smart administrator, or a smart educator, or a bright architect. He has just fought, somehow had the chance to develop his idea and bring it about, and slowly it has caught on. I think we should not forget that basically we have to draw from a very wide and great wealth of ideas among all the educators in the province. This is my own experience with various boards. One board will work with you and let you talk to their principals and so on, and out of that develops something really imaginative. Somewhere else they say to you, "We have done it all — it is all researched and this is our package. Here it is. Do it." This is maybe very easy for the man who is interested in doing the job in the fastest way, but does not necessarily produce the school system which will develop.

HOLDEN: At the beginning of each building program, we hold one-day seminars of all the newly appointed project architects, and at the seminar the educators give their views on their new programs, new techniques, to bring the architects up to date. This saves having many meetings. The first architect to go and see the music director, for example, gets a good run down. By the time architect number eight comes, the music director is fed up with talking to architects and it's "Well, just give me a music department!" So this saves time, and we get a good interchange of ideas between architects, educators and the superintendent and the board members as well.

NICOL: I think our chairman started this part of the conversation by saying "let's take a crack at the architect". Maybe architects

don't take enough cracks at architects. Zeidler brought up an interesting point when he said "the central agency can become the authority". The Ontario Government has been accused of this in the past, but you know the authoritarianism was based on a booklet. It was not very good, but it was something, and it was entitled "Suggestions for the Layout and Construction of Schools in Ontario". It did not say, "This is how you do it." It became the architectural bible in Ontario, and I think the architects lacked imagination in interpreting it. You may as well have taken the pages out of the book and stuck them together on either side of a loaded corridor, and if you happened to come out equal at the end — good. And if you didn't, you stuck a storage room in.

A PANELIST: You may be surprised that this is the way some of these schools were designed.

NICOL: Not at all surprised! I am sure that many of them were designed that way. You can't slough off this responsibility on central authority. I am quite certain that most central authorities are very prepared and quite ready to listen to innovations in approach to the basic planning of any school, if the architect has something to approach them with.

DAVIDSON: I just wanted to go back to the invitation to criticize architects. I can't take part in it. I am not critical of architects. I think, though, that I should point up what I suppose is the professional man's problem in any field. It is the negotiation between the architect and the client, in which the architect is afraid of not getting the commission, or if he executes the commission as he thinks he should execute it, losing a potential second commission, or any further commissions. How much architects at their professional meetings discuss this problem, which is their problem, I don't know, but I suspect a good deal. Daring types of buildings are found at airports and in commerce and industry. There must be a way, and an ethical way, in which architects can persuade clients. In public buildings, the worst thing an architect can do is make an original under-estimate of the cost of the building, and then save that by compromising the building. Far better that the architect put in a hidden contingency item, or a room, or set of rooms that he deliberately intends to take out, as the tender prices go up. People who are spending tax money, once they have taken the plunge and committed themselves to \$750,000 will spend \$750,000 gladly, but are terribly subject to criticism if it ends up at \$775,000, which is not an excessive contingency item, considering the couple of years that elapse before the planning of a project and its completion. This is one field where architects should be extremely careful. The other ways in which they plan to protect themselves against competition within their own profession are important things that I am sure architects continue to work upon.

OXLEY: Has the new technology freed planning to a large extent? Has it had a large effect on school buildings that has nothing to do with educational programs?

ARNOTT: I would like to start with just a simple thing that happened in our office to show how an architect can talk to school boards who are not discussing educational philosophy, and somehow an idea can get out that can affect the shape of the building — but for a cause, not just because the architect liked the roof shape. On a project that was to teach adults we got involved with studies that were going on in Sweden for folk

schools, where groups of people, not more than 12, are in living accommodations. They wanted to sit at tables, and there should not be more than 25 in a room. We started working on a way to get more blackboard space, and the net result was: (figure 1.)

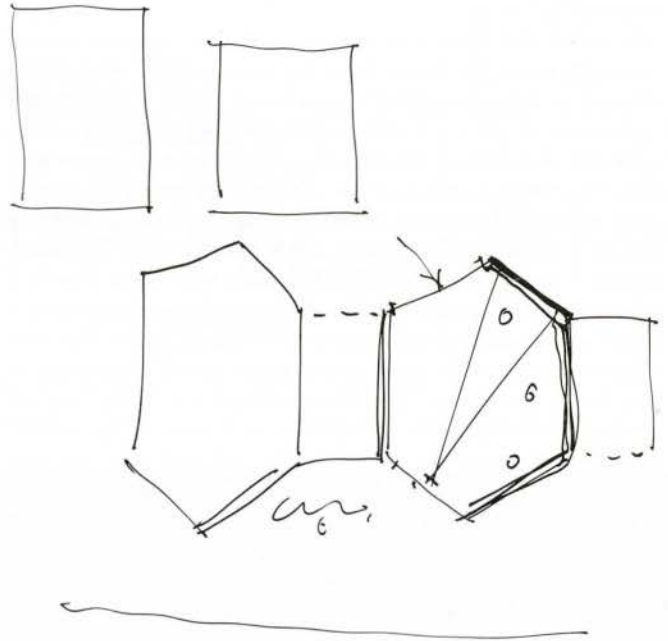


FIG. 1.

Our passage is a place for people to loiter. They can have coffee there, and we have something that is not a corridor.

When the foundations were in we thought, "The room is too small, we will never get everybody in." We panicked a bit, but find that it works very well and that you can't get more than 25 into a room, which is what the users wanted. Yet the room looked small, a very intimate room, so you could have amongst more people this kind of a talk session and not feel remote, or lined up. Next we asked a collegiate board who had never done anything unusual (and gave us one sheet of paper for the program, which we had to write), "What would you think of using this room for certain kinds of academic subjects?" Well, it is interesting, and they went out and looked at it, and tried it, and it looks very well. The rooms are very clean, and in mathematics, where you need a lot of board, we have three sides of the room of chalk board. Window area is small to reduce the solar heat gain, and so on, and it seems to work. And that stemmed from just starting from one notion and jumping to the other. The point I am really making is that we are still having to do with the teacher talking to a specific number of people, namely the class, and this effects the shape of the building. When you start stringing this together you get a different shape, but there is a reason for it, not just as a stunt.

ZEIDLER: This is probably the beginning for an architect working on any project. The beginning has to be the problem you have to solve in some form rather than the form forcing a problem. We were talking yesterday about a school where somebody thought he liked this particular form, and said, "This is a very interesting form, and does seem to make sense in education. So let's make this our starting point." And then we say, "Well if it can be used as a classroom, why not as a shop?" Then, all of a sudden, the school is developed like that, and this is the commercial, or the industrial wing, and it doesn't make any sense at all. It is quite an

interesting building, architecturally right, but it is utterly wrong because there is no reason why the hexagon does any better job than the rectangle. There are a lot of reasons why it does a worse job. These buildings are subject to change, but you can't change the hexagon if the school gets one more printing press, for instance.

We have to start considering the individual uses, and from there on develop a new form. It may be a very startling form. I always feel hesitant to approach anybody saying that I have a brilliant idea and I want to carry it out without really having a chance to test the idea. We are doing at the present a project in conjunction with the Department, and one of the many things which we tried to think of was "what is really a high school?" If you as an architect look at a school and say, "Now, is this a high school, or is this a factory?" maybe it is the wrong question, but I think it isn't. If you enter a high school you should have a feeling that this is a place where young people are educated, and where they live. What is a symbol of it? We walk into a high school, and mostly we see a wall that is nice, a foyer with trophies, and then we see endless lines of corridors with lockers, and this is a high school, and somewhere behind the lockers are classrooms. To my idea maybe it isn't education. Lockers are not necessarily secondary education, but a library is. Basically all we know has been recorded somewhere in books or records, or written things. Therefore the library is something which we should make the centre of our school. We tried to develop a school where you don't come in the foyer, but you come in the library, and everything evolves from the library: (figure 2.)

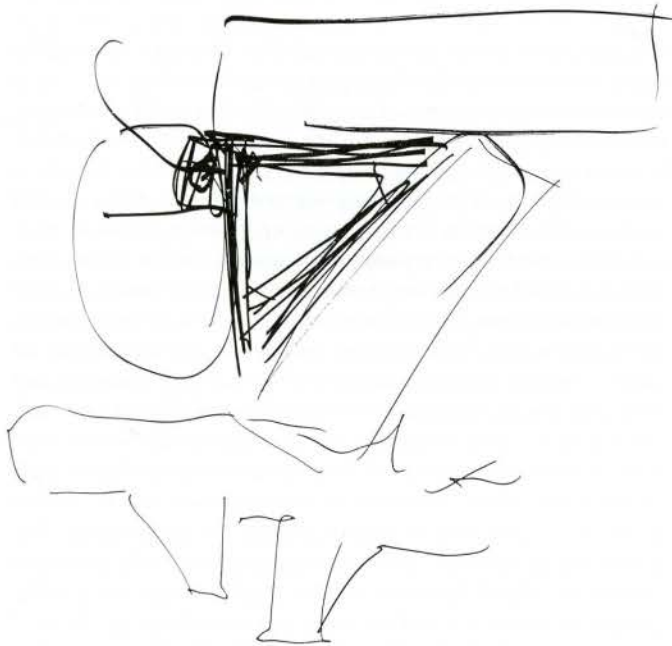


FIG. 2.

Reading rooms, seminar rooms, and everything are in a space which can change, and our whole school evolves around this area. Unfortunately, our dear friend, the Fire Marshal ruined it because he said, "No you can't do that. You have to get a separation around here because of fire," and the concept of it was not as clear as we wanted it. As the student comes into the building all he sees is the library. Also it does work, although we do have carpets in it, and we got criticism for that. Also it works as a function — the rotation is there, the connection between the

rooms, the flexibility can be evolved, and so on. Out of that quite a strange looking design develops, which has shapes that wander through the landscape. There are other influences which come in to it, but out of these considerations new forms may develop, and this is a consideration that is not strictly logical in the sense that it works as a classroom or something like that, but the idea of the school. From there I think we can develop our form.

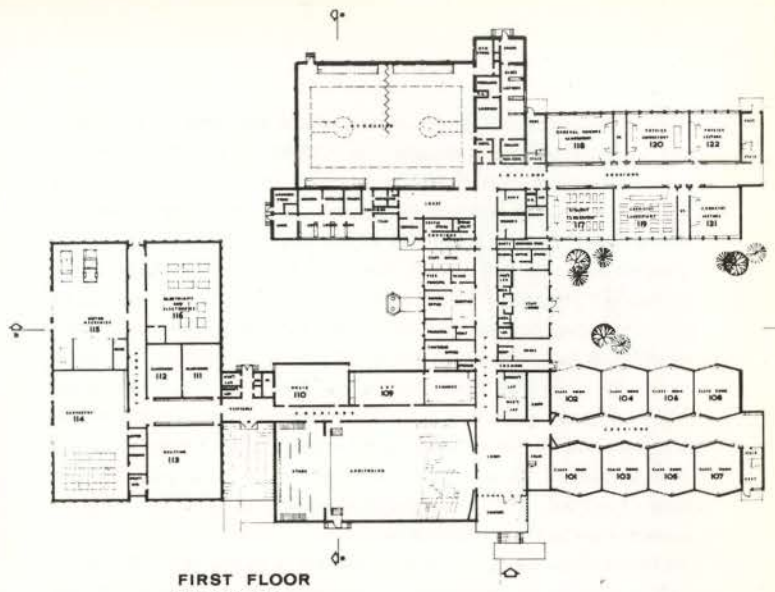
NICOL: When you were talking about that particular problem you were fortunate in that you had a board who were interested in a new concept in education. The unusual form has grown from an educational validity, rather than simply saying — "here is a new form — this is an exciting school — fit your education in to it," which has happened so often. Frankly, I think this happens more often than not. We build a school and the educator moves in, and for the next 35–40–50 years education in that school is inhibited by the facilities which he has to work with.

WILLIAMS: That is really what I say — to harp back to the earlier invitation of the chairman to be critical of architects. I said at the coffee break I thought that the only valid criticism that comes to me, is the fear in communication — that when the communication between the architect and his client is not good, then the architect looks like a villain. He does all the wrong things. The client is then afraid he will build a monument to himself at the expense of serving the function for which the building is supposed to be designed. This is really again a problem of communication. This, that we have just been looking at, may very well and very properly be a monument to Zeidler, but it is done as a creative way of answering the question "What is a high school?" There are a dozen other answers I am sure that are equally valid, so a dozen other architects will produce equally good solutions, but they won't be this solution. Right here we come close to a lot of problems.

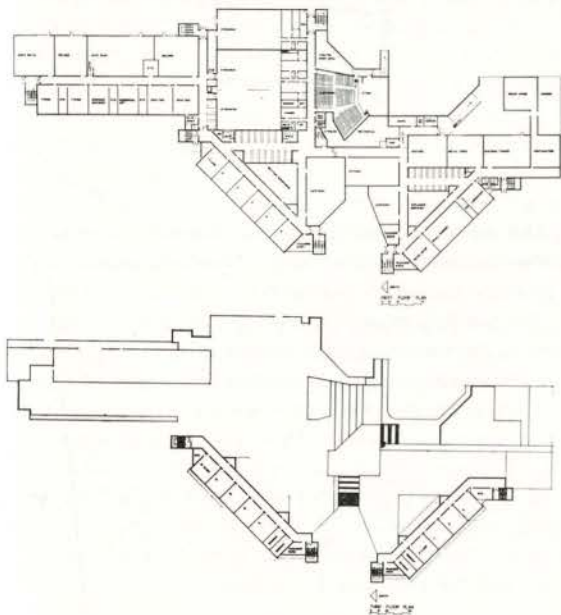
This is what I was referring to previously, this marriage, if you will, between the architect and educator. One architect can't design a good school, and one educator can't. It is a real combined effort, and it takes an effort. From my own experience, part of the problem is the fact that educators don't really understand the process of design or what an architect is really up against. So there is fault on both sides. I think you architects do yourself an injustice by simply following a client's whims, and simply because he wants a "jam factory" as you put it.

DAVIDSON: I have a very short story that illustrates in the mind of a student the inter-relationship between function and design. In the suburbs in the summer-time I was driving a boy who had finished grade eight and hadn't yet entered high school. We were looking at schools and I caught sight of one just over the brow of the hill, and I said to him, "Is that a factory or a school? Shall we drive over there?" He said, "It could be both."

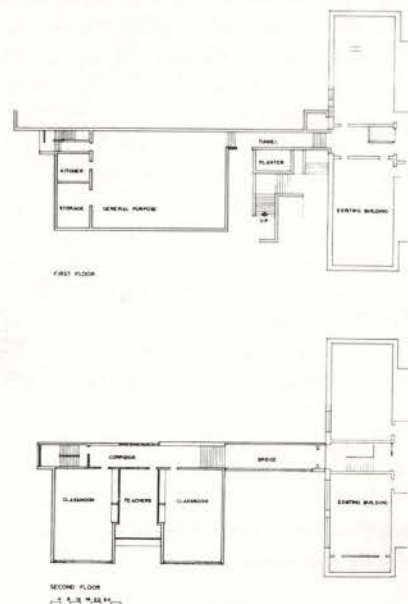
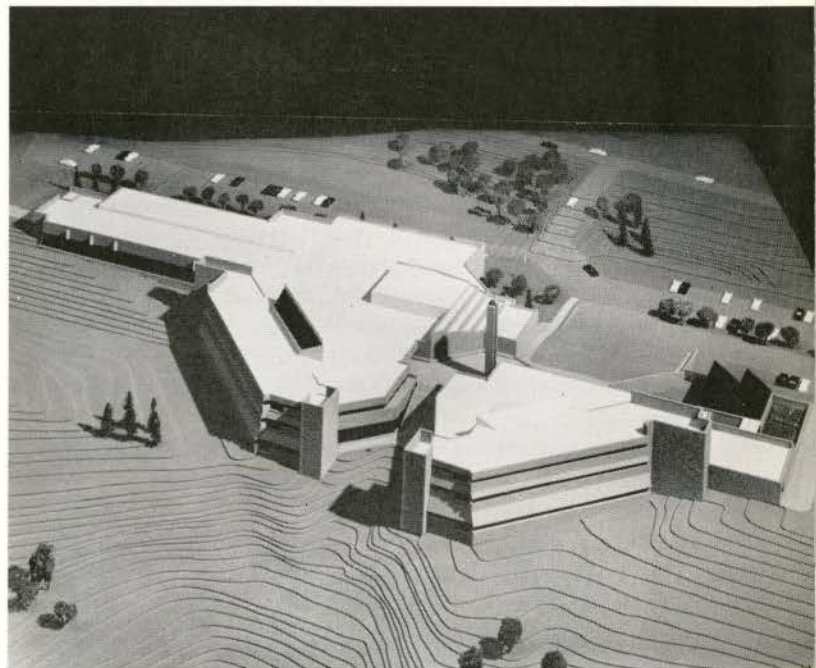
ZEIDLER: The big problem architects have today is their split personality. On the one hand they are creative designers, like Frank Lloyd Wright, Rudolph, Kahn — great philosophers who create original ideas. On the other hand, if they run an office, they are business men entrusted with two million, three million, four million dollars to build a school, and the school board is very worried that they may have a dreamer who will end up with six million dollars. For example, the Toronto City Hall, where you start off by saying you want a building for sixteen million dollars, and it costs thirty million dollars. Now at length everything is fine, everybody is happy, and it is great. But if you come to the school



Thom Collegiate Institute, Regina, Saskatchewan
 Architects: Izumi, Arnott and Sugiyama (See Figure 1)



River Road Secondary Schools, Peterboro, Ontario
 Architects: Craig, Zeidler & Strong (See Figure 2)



Queen Mary Public School, Peterboro, Ontario
 Architects: Craig, Zeidler & Strong

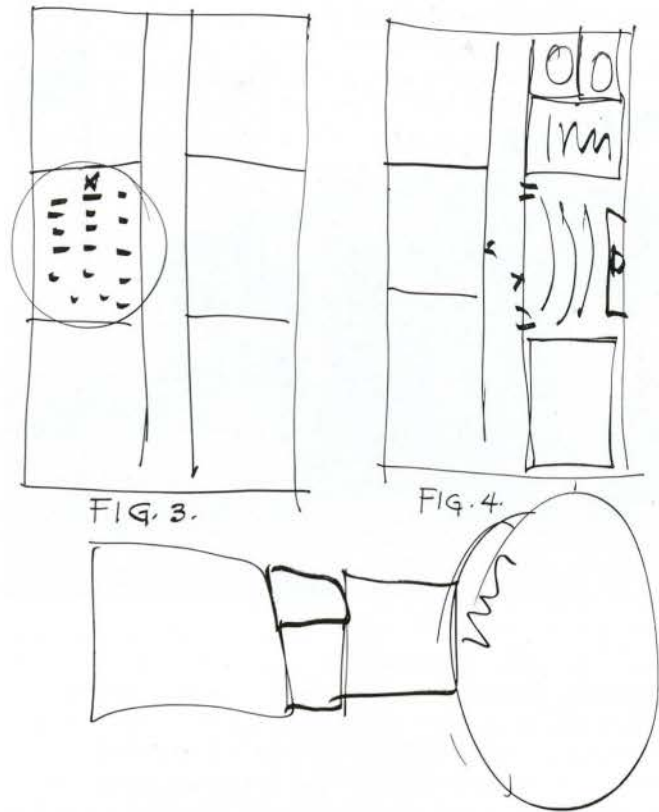
board and say: "I have the most brilliant idea and let's build it, but unfortunately it is double the budget," it doesn't work. So the combination of both has to be settled and it is most difficult because not often will you find personalities who are capable of doing both. But let's look at a horrible school, which is unimaginative, and ask, "Why has this architect all these commissions?" Because he follows them through to the last detail and all his schools work. They come out within the price. They produce a building which fulfils all the requirements they have asked for and they think they need. Therefore the board says, "That is great, you have the next school." All of a sudden this architect has 50, 60 schools but he is lacking the beginning. I say that because I have worked with architects who produce this type of school, and I have revolted against it. But I still have to admire their skill as technicians.

As far as sheer work is concerned, there is as much turning out a dull school as an imaginative school from that point on. If you look at your own timing, the imaginative school design in the overall cost of producing a school, to an architect, is a five, ten percent item at the best. We architects are criticized sometimes in the wrong way. You never criticize a doctor for doing a routine operation. All he does is cut your stomach open, pull out something and sew you up again. Great! Fine! He has done a wonderful job! Nobody will say, "We have a fantastic method for doing this — maybe the patient will die — but it is a far superior, and more sophisticated method of doing it." Many times we have an imaginative design and then little things go wrong because you try something, and you forget something else, so therefore you will be bitterly criticized for small things which are of the secondary order, but to the school board of first order. The door knobs don't work, or you forgot to get the keying right, and the poor caretaker has to wander around with twenty keys to open the doors. These are maddening things and far more important to the men who use the building. This is the dilemma we are in.

OXLEY: Perhaps the five or ten percent spent on creative design in terms of time, is in fact what we mean by Architecture.

ZEIDLER: Vitruvius we all accept as the "father" of architecture. I don't know if you ever read his book. I did by mistake when I had nothing else to do. The great sentence which defined architecture as "commoditie, firmnesse and delight". He really didn't say that. The translation is wrong. He said something more. He said "economy", and he meant it in a different sense. But there are only about five sentences in which he spoke in a truly philosophical sense, the five percent we are talking about. All the rest were concerned with how to do certain things, like how to put pots in to reinforce the sound in a theatre, and why a theatre should be built this way etc.; and I think sometimes we wander too far off, forgetting that our basic concept is first to build good buildings, and that is as important as anything else. People other than architects can build good buildings, they don't leak and all those things. They are good in that respect and they are trustworthy buildings. Architect — the word suggests a master builder, not a master artist; so I think the true sense of the architect is to build and we somehow have lost it. His first requisite is to be technically competent. The thing that distinguishes him from all others is his interest in imaginative design, that is all.

* This appeared on the original typescript from the tape as "Commodity firms and blight". Editor.



ARNOTT: The thing that distinguishes architects from others in society is the fact they are the people to whom society says, "You are specially trained to arrange buildings for the purposes intended." The building must flow from the program of requirements stated by the owner, or if the architect has to help state it, the more he knows about the client's operations the better he will be able to interpret the program. I think society, by law, says that architects and engineers, by virtue of their training, are responsible that the building must stand up, meet the zoning codes, the by-laws, and so on. The plus factor is the extent to which he puts into this structure, or combination of things, an expression; this is what distinguishes the architect, say, from the engineer. The best engineer and the best architect, merge.

OXLEY: It would be interesting to take a slightly different tack for just a few minutes. I think we had some very good examples on the architectural impact on schools. We heard discussed by different people at different times this morning the new educational ideas, and Mr Nicol, you mentioned several times the idea of the school with the corridor and the rooms on each side, as a basic concept. Now how do the new educational ideas change that concept.

NICOL: This is where the architects get involved with education; this is where the clash occurs.

DAVIDSON: I want to protest this. May I butt in and just say that the idea of the architect getting involved in education is not heresy. It is not bad. It is good! The architect is perhaps the most educated man, and he finds himself involved in the whole school creative process. He has more years of university than any of your superintendents of education. They basically have a training at teachers' college plus university extension. Many of your trustees have not had any formal education and absolutely no aesthetic training. I want architects to be concerned with education.

NICOL: The problem is really the growth in terms of knowledge. In a traditional school (*figure 3.*) the sort of thing they have been building for hundreds of years, we are trying to get across in the same length of time, that is, kindergarten to grade twelve, almost double the knowledge or three times, or four times the knowledge in the traditional way. You have a teacher and 35 kids. Something has to suffer. I don't see how we can get around this and get the knowledge across in the same time unless something varies. The change in architectural patterns led from a change in educational patterns. Teachers find now that it is perhaps more efficient to vary the sizes of the groups. Now how do you do this in a traditional building. We still don't know where we are going. In Ontario, the Fire Marshal insists that the corridor walls be fire walls, and all the rest of it, but within the room space we can do all kinds of things. Instead of having a classroom we might end up with a few small rooms and one bigger area (*figure 4.*), so that within the same pattern you can vary the facilities. What we do is we deal with large groups in a lecture room, and then we break down into small groups maybe for part of the time; or maybe they go back to standard classrooms part of the time. Maybe they don't do that at all. Maybe they go into a very large library and work as individuals. Who knows. Somehow we have to achieve this dreadful term "flexibility" (and I am not sure what flexibility means), within much the same confines of economy. We are limited in square footage, limited by fire regulations, limited by health requirements and so on. So I think, within the same basic space and the same basic volume we have to provide for a variety of spaces to do the job better. Basically, it is because of the growth of knowledge that there must be found a more efficient way of transferring knowledge from teacher to pupil.

OXLEY: Would you like to add anything to that, Mr Holden? You have had some experience with new types of schools in Edmonton. Could you tell us a little about them?

HOLDEN: An example is our new high school, Avalon Junior High School in Edmonton, in the design of which building the administrators and staff were consulted. We had quite a battle with the Department of Education, because it publishes a little book, previously mentioned, that has become a bible, and they

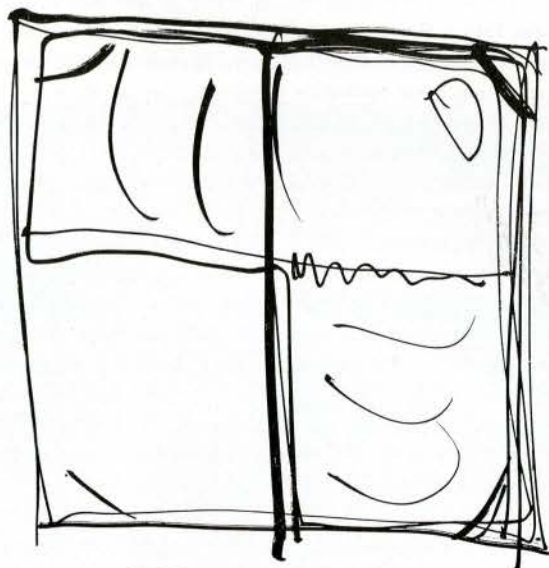


FIG. 5.

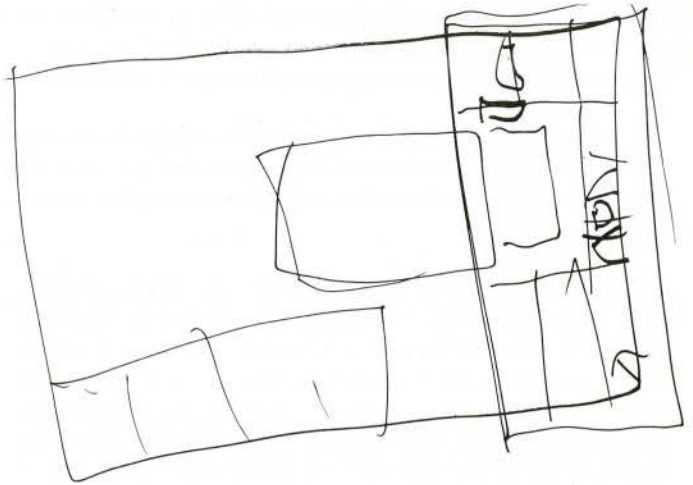


FIG. 6

say "classrooms shall be 'X' number of feet"; this kind of thing, rather than allow so many square feet per pupil. They were determined that we were going to end up with the standard egg crate. You divide the number of pupils into the size of the school and you get the number of classrooms. We ended up here with the team area in the centre of the school, which was divided in four directions. Incidentally this was carpeted, and there are folding soundproof doors, so we can have the complete area, four individual classrooms, or two areas, or an area like (*figure 5.*) with seating this way, and the projector, and permanent screens each in four corners. So we have complete flexibility within the space. In addition we have group rooms for seminars of up to 15 students and individual study rooms which are just like small offices. They will accommodate up to four and five people for individual study, and for the small group assignments. The other day we were in the team area with a photographer and I was amazed at how good the acoustics are. There were students milling about, doors were being opened and closed, and yet there was less audible distracting noise than in the standard classroom with the hard floor. In our new elementary school (*figure 6.*), we have some standard classrooms and a large open courtyard. One complete end of the school, about 75 ft x 180 ft, is equivalent to eight classrooms and an instructional material centre with no walls at all. The staff were selected prior to the design of the space. We have to make some provision here for varying sized groups, and all our chalk boards, tack boards and what we have around the outside are pivoted with a spring loaded affair. We can swing them out, and we can have small groups within the area. There are so many types of flexibility. In the past we have used it as an excuse and have said, we will put up the non-bearing walls in long spans and maybe in a few years somebody will have the nerve to knock the walls out. But in effect this never happens. You try to go back to the board two years later and say "we have changed our thinking; now we want to try a new approach to teaching". They won't remove this wall, it is difficult to do this, because they will say, "let's not try this now, let's try this next year."

ARNOTT: What is the moral to this story? It seems to me the moral is that the architect did not conceive this sitting at his studio drafting board. It looks like the board responsible for education determined that it was going to re-think its method and it set up the situations so that teachers who wished to could work in this

methodology. They structured the whole thing so that when the architect was commissioned to do the building, he was in position to know what was required, and he helped to interpret it.

HOLDEN: In both these schools they put the number of teachers required on a standard classroom count, plus one teacher to do nothing but evaluation in comparison with a similar school, of a similar size.

ZEIDLER: The really important thing is to get this information. So far as I'm concerned, I have seen schools of this nature and you talk to one principal and he says it is marvelous, and then you talk to another. No evaluation has been done by a man who knows how to evaluate — to take out all of these personal whims and establish a broad statement. On evaluations one of the most interesting things is a report by E.F.L. on acoustics which says, if I read the thing right, that it does not really matter what sound rating you put on a wall. You get the same percentage curve of people who don't like it, and people who think it is marvelous, and people who think it is useable, regardless of what the rating was. Here we have been working as architects to perfect a flexible wall with a certain rating, and then a report like that comes along stating that we really don't have to worry about it. Again, this may not be true. I find that working in my office with the door open all the time never bothers me until I come to a certain pressure. Then, all of a sudden, someone whistling in the drafting room makes me furious, and I am ready to go out and strangle the man. I think that at certain times you are relaxed and the racket doesn't bother you, but if you are under pressure then the noise is very distracting.

HOLDEN: Originally the space was designed with about \$30,000 worth of folding partitions. We finally got around that by asking the educators whether they really needed these partitions, or if there was not another way of creating some sort of visual privacy. They had to have storage facilities. Why not mount the storage facilities on casters, so they can be arranged to give this sort of privacy. But I think the whole idea came from the educators saying, "We are getting away from giving pills or capsules of knowledge to the student. We are getting away from where the teacher spoons out education. The teacher is now becoming more of a leader, creating in the students incentive for learning, and more individual responsibility for learning." In this kind of space there obviously can't be eight teachers all standing in front of their classes, jabbering. The teacher, more and more, does the minimum of talking, and the students take on more responsibility in going about their learning. They are willing to admit that this is wrong, and the whole space is designed so that it can revert back to a standard classroom. But we are very excited that we have picked up considerable corridor space here for instructional use, and it has brought our ratio down for the whole school to eighteen or twenty percent, rather than the standard twenty-five.

ZEIDLER: I would like to ask Mr Davidson, as an educator, if a child's interest in his own development and freedom and enjoyment of learning is not a greater stimulator than the stick or strap that used to be used to get the child into line? Were classrooms the only way to teach certain subjects, or can you teach any subject to any group, at any time?

DAVIDSON: This is a complicated question, so I will start by shifting a little bit off the point in answering it. Flexibility in education, and the absence in laying down the law, and saying "learn this", has come in with compulsory education. It is no use

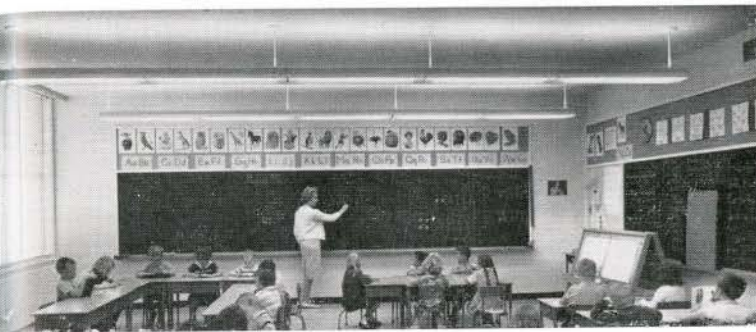
pretending to take children and tell them what to learn up to the age of eighteen. It used to be that the drop-out solved your problem. I distinctly remember that in the late thirties the problem cases in the high school that I taught always dropped out. I wondered what we could do with the unfortunate child that could not sit still. Well, what happened was not that the teacher invented any fine method of discipline or anything like this. The student wasn't sitting still because he wasn't getting anything and he just left. In today's world, the student does not just leave school. He can't just leave school; he has got to stay there for various social and other reasons. One man cannot stand up in front of 30 wrigglers and get away with it, either from a nervous or educational point of view. The answer is that education has become more flexible and this has had good philosophic results too. The student's mind now becomes part of the process, and the student himself has a lot to contribute. This we simply did not recognize. Real educational philosophers recognized it, but it hadn't come into the public or educators' consciousness 30 years ago. Now it is here. This is why I feel that the approach to building schools in rigid, pre-defined boxes is probably extremely dangerous. One element of the physical environment that the architect should spend most of his time on is acoustics. Because the visual stimuli before the student can be chosen selectively by him, he can decide what he is going to look at, but he can't decide what he is going to listen to if there are conflicting sounds. Even if the conflicting sounds are just echos off the wall, his ear cannot be selective as can his eye. He can move about the room and decide how the ventilation is going to affect him. He can move about the room and decide how the lighting is going to affect him. The one thing that provides a better school, in my opinion, is the acoustic environment, and I think that architects should think about this first.

ARNOTT: Architects don't have to apologize for being architects. We have to try and understand what the educators' options are, and make them bite the bullet, as it were; and by means of conferences and discussions of this kind assist Departments of Education and school boards to help formulate their programs for buildings. We are going to jointly search for some answers; we would like to know the questions first, and it's not going to be just doing something by rote. I think we must be alert to technology. Let's not let it master us. Let's try and master it. If we are going to have a theatre that is going to use film strips, tape machines, let's master the technologies so that it will be a working tool for the teachers, and get the board to realize that these things exist, and help them formulate programs. Let us abandon some of the fuzzy thinking. If we are clearer and they state the problem clearly, and we add those inputs that architects can — atmosphere or suitable expression — then maybe we will get school buildings that are a delight to the eye of the beholder and the user. Also, let's try and meet the budgets. I don't think we need to apologize to boards for saying that we are not going to do the cheapest building. You have not got enough research, and neither have we, to say that one cost per square foot gives a better building than another. Together let us test some of these things. If we think that for a little more money you can have some of these features that are being discussed, maybe try them out in one school. That is for the board that does not have a research department as part of its staff. Let us encourage architects to go into this area.

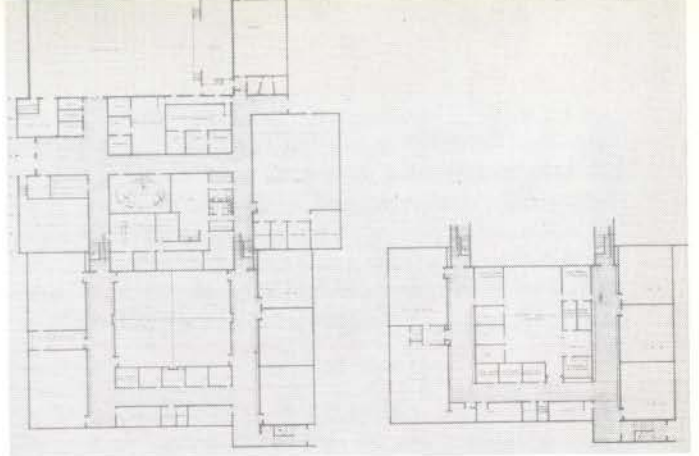
NICOL: There are times when frankly I feel that we are working in a vacuum, because we don't have the educational material to manipulate and come up with the best solution. I am afraid that after fourteen months of working in this field, I am perhaps a little



A



C



B

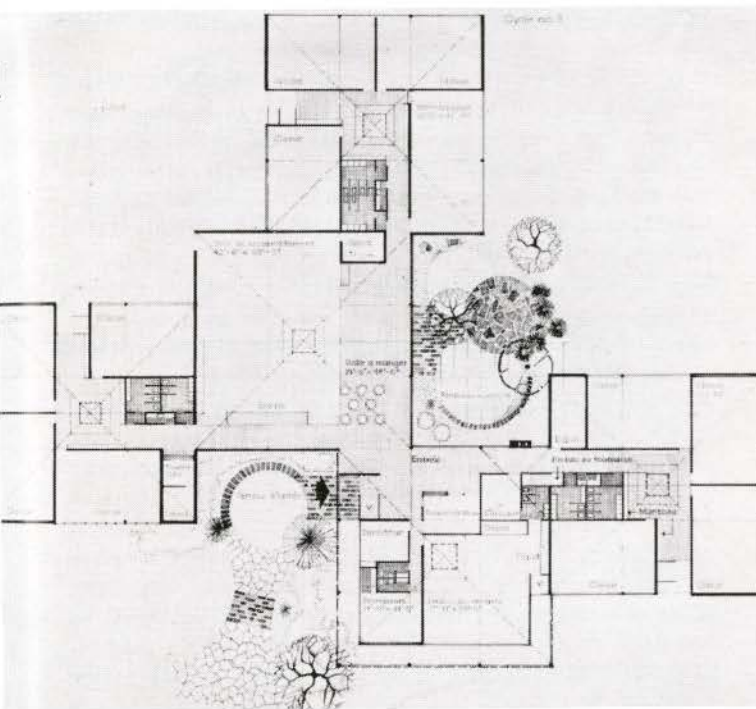
A & B Avalon Junior High School, Edmonton
Architects: Wood & Gardener (See Figure 5)

C Richview Public School, Etobicoke, Ontario
Architects: Abram & Ingleson

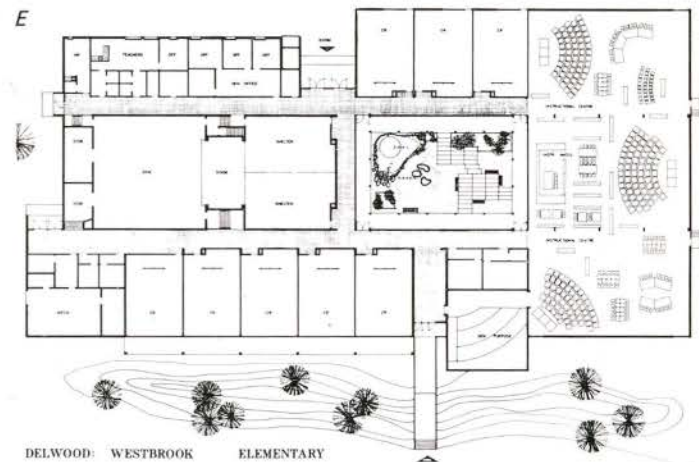
D Ecole Secondaire Regionale de Vaudreuil
Architects: Labelle, Labelle & Marchand

E Delwood Elementary School, Edmonton
Architects: Hemingway & Laubental (See Figure 6)

F Bendale Vocational School, Scarborough, Ontario
Architects: Abram & Ingleson



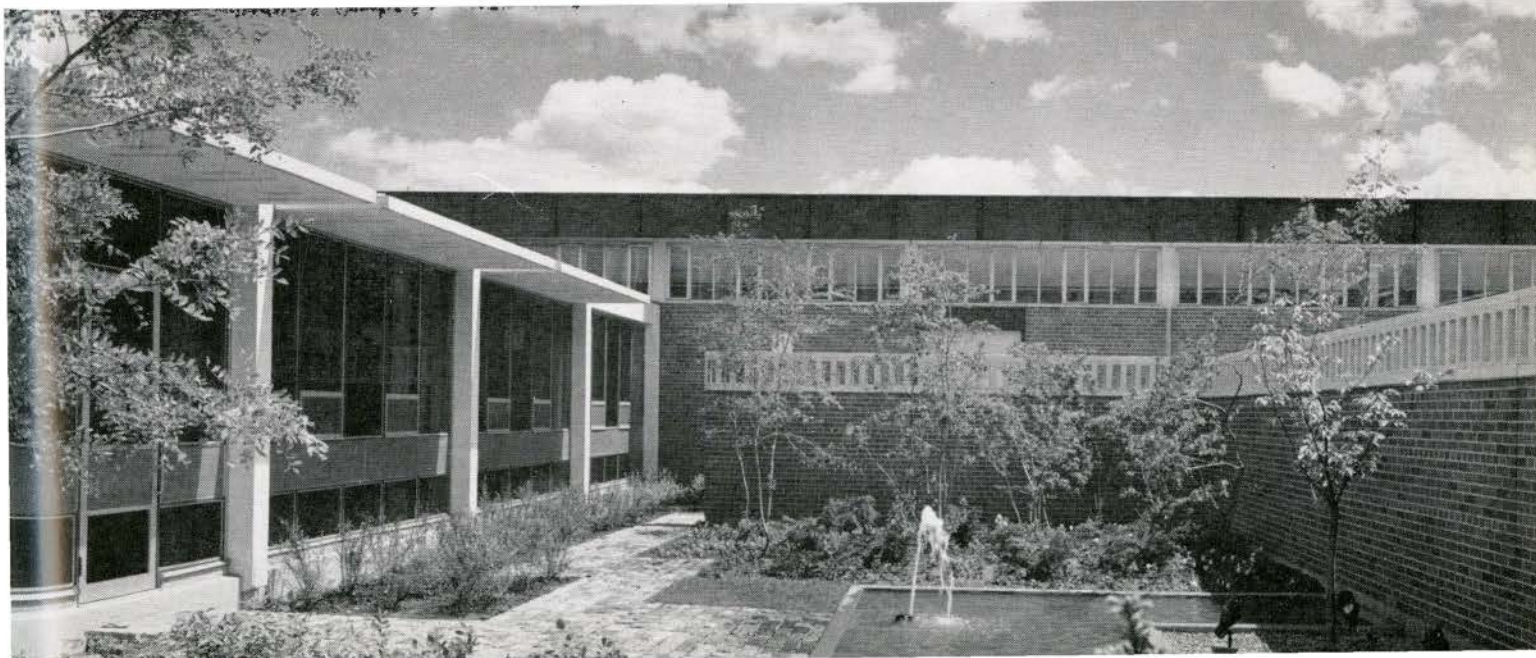
D



E

DELWOOD: WESTBROOK ELEMENTARY

F



hazier than I was before I started, in not being able, perhaps, to determine exactly what our targets are. However, I suppose as the program settles down and we develop it, we may come up closer to it and to what our function should be. I would hope that any research organization would encourage and would have the confidence of both the teaching profession and the architectural profession, so that we can work fully as a team with the architects in private practice.

LAMARRE: In experiments like this, I think that universities and teachers' colleges, and the architect, naturally, should be part of the evaluation of the results. Then those results should be diffused on a national basis, so that experiments made in the western part of the country could help the eastern part, and vice versa. As I can see in Quebec, for example, we have just recently been analyzing our educational system through a very important report, and I find out by listening to you this morning that we are going in the same trend, in the sense that the school is becoming more and more active. The children are working more and more by themselves. Maybe this was started to economize on professors and teachers, but it will improve education definitely, and it will change the ideas we have about school buildings. They will be places where children have pleasure in learning instead of those drab, flat schools we were educated in. These flat buildings reflected the flat education that was given in them.

HOLDEN: I should have added a postscript when I was speaking of our evaluation. Both of the schools have a station for generating television productions in the school itself, so that the activities there may be viewed by the university. They are tied in very closely with the university and they can sit in the classroom in the university and watch the activities, and they are using university students, taking education, to participate as teachers' aids and assistants as part of their training.

LAMARRE: I would like to add as a conclusion that experiments of one nature should be done concurrently in different parts of the country, but they should not be done too fast, before we have some evaluation of the results. Maybe part of the country could do experimentation of one sort, and another experimentation of another sort. This would spread the cost of such a program among all the taxpayers, instead of one huge board paying for all of the experimenting. And we would arrive at the results faster, instead of having all the experiments done by the same people.

WILLIAMS: My summing up would be very similar to what has gone before. It's mainly a plea for better communications and this involves responsibilities on both sides. Both the architect and his client are responsible each to the other to facilitate this. It is true that the research and development groups that are gradually being established do function to facilitate this kind of communication. The experiment in evaluation is an obvious point that we have perhaps taken far too long to get to. I would, however, enter another plea — that these results be not only published and distributed, but I come back to my notion that I think we need an annual national conference as a way in which people can physically come together, not only to read, but to hear, and discuss, and argue the results. It is perhaps a truism to end up on but it seems to me that when you have a well-established communication system here, you have all the requisites for co-operation of effort, so it becomes a more efficient thing, and you have mutual confidence. Where confidence is lacking, where suspicion, where mutual recriminations are the order of the day, I think that this is just by itself a clear indication of a failure in the communication system. Too often it appears to the people concerned a character defect or a personality defect on the part of the contracting parties.

DAVIDSON: I would like very much to endorse Mr Arnott's summing up. He did a wonderful job and we could almost have stopped there. I would say myself that I hope the architects will feel free and brave enough to assume as much leadership as they dare. Now I think that architects tend to be extremely co-operative but perhaps a bit nervous. I don't blame them. Remember that in his relations with medium sized and smaller boards he has as great a cross section of knowledge about current and future educational practices as have trustees and administrators. No one can blame the architect for saying the board should give him precise specifications of what it wants to do. I like the suggestions that have been made here, that the board defines the problems. That is a fair way; but I think the architects can throw in some problems too, and the solutions will work out. I don't blame an architect for wanting to have a sufficient set of specifications so he will eventually be let off the hook. The only real test, though, is the subsequent evaluation. This is something that has come out of today's conference that is extremely important everywhere. Whoever undertakes this job of evaluation (it might well be architects' associations that codify the results), adds something to the process of creating useful and beautiful schools in our community and country.



FIRE PERFORMANCE RATINGS

by M. Galbreath

UDC 614.841

With the 1965 edition of the National Building Code of Canada the Associate Committee on the National Building Code issued a revised Supplement No. 2, *Fire Performance Ratings*. The original document provided the information needed to enable the fire endurance provisions of the National Building Code to be implemented, and was in the form of an extensive list of ratings, each purporting to relate to one fire test.

In the new edition of Supplement No. 2 a significant change has been made in the approach to the presentation of fire performance information. It now includes ratings that are, for the most part, conservative values that will be equalled or exceeded by a large proportion of the constructions falling within the described classes. These values are recommended by the Associate Committee on the National Building Code for use when no more specific test or rating information is available for the particular construction involved.

Summaries of individual fire tests, in more detail than was available in the former Supplement, are now being published by the Division of Building Research, National Research Council, as general information not related specifically to the provisions of the NBC.

The Former Supplement No. 2

The widespread use of the former Supplement No. 2 brought to light some of the limitations inherent in a compilation of brief summaries of fire tests. It became evident that it is not possible, even in an extensive list of individual fire tests, to cover all possible combinations of building materials that might be used in practice. There is also the possibility of conflicting results, as two assemblies of essentially the same construction may not give exactly the same fire endurance under test. Over the years the Division of Building Research has received many enquiries regarding

the effect of variations in materials, shape of hollow units, methods of fastening, etc., and has found these difficult to answer on the basis of individual test results.

The Associate Committee on the National Building Code, recognizing this need, set up the Fire Test Board, a small technical committee to keep under review and to prepare recommendations for revision of Supplement No. 2. Following careful consideration of the problems involved and a survey of all available fire test data, the new form of publication was evolved. It differed from the old publication in several important respects.

Changes in Supplement No. 2, 1965

Some of the changes in the general approach are as follows:

1. The values included in Supplement No. 2 are ratings based on a comparison of the results of a number of similar tests. They are not, with a few exceptions, the results of individual tests. The information is arranged in such a way that there is some flexibility in determining the fire performance of combinations of materials, and the emphasis is placed on the more significant features of an assembly.

In light frame construction, for example, it has been found that unprotected framing will fail structurally within a very few minutes when exposed to the standard fire test. The major contribution to fire endurance must, therefore, lie in the membrane exposed to fire and, in particular, in its ability to stay in place. For this reason, and following the example of some British studies, the fire endurance of light frame construction for up to 1½ hours' fire endurance has been broken down into (1) the contribution of the membrane exposed to fire, (2) the contribution of the frame, and (3) the contribution of additional insulation or

reinforcement. This makes it possible for a designer to assess the fire endurance of a variety of framed assemblies and to consider ways in which materials may be employed most effectively in light frame construction from the standpoint of fire endurance.

2. The minimum specifications of materials and workmanship are those required by the general provisions of the National Building Code.
3. The information presented is related directly to the fire performance requirements of the National Building Code; for example, fire resistance ratings are expressed as $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, 2, 3 and 4 hours, the periods required by the National Building Code. The effect of grading fire endurance ratings in this way is that interpolation between test results has been made and the designer can choose the thickness of material closest to his needs.
4. Reference is made only to building materials and assemblies that can be properly identified and reproduced; no proprietary materials or products are described. It was found necessary to make this distinction between identifiable and proprietary materials. Proprietary materials are generally described by trade name; they are the product of an individual or company who may not wish to disclose all the information required for an adequate description of the material. Identifiable materials are those that can be specified with sufficient accuracy to ensure that an assembly can be reproduced in all essential details.

Fortunately, there is for the manufacturer of a proprietary product an alternative method of having his product rated. This is the service provided by Underwriters' Laboratories of Canada who perform the fire tests, describe the assembly in their Building Construction List, make regular factory inspections, and issue labels as identification of the product. For example, Type X (Special Fire Retardant) gypsum wallboard is described in CSA Specification as having a specially formulated core and providing a greater fire resistance than regular gypsum wallboard of the same thickness. This type of wallboard is not referred to in Supplement No. 2, but ratings for assemblies using this material are available in the Underwriters' Laboratories of Canada Building Construction List.

NBC Provisions

There are now three means by which the fire performance provisions of the National Building Code can be met:

1. By an assembly that is the same in all essential details as a tested assembly. The standard test report, used as evidence, will

show details of construction and of fire performance.

2. By an assembly, not covered by test, of common building materials assembled in accordance with the provisions of the National Building Code that can be assigned a rating on the basis of Supplement No. 2, *Fire Performance Ratings*.
3. By an assembly as described in Underwriters' Laboratories of Canada Building Construction List and using the labelled materials described therein.

Standard Fire Endurance Tests

The standard methods of fire test recognized by the National Building Code are ASTM E119-61, BS 476-53 and CSA B54.3-64. All are similar in their more significant aspects. The Standard Fire Test has been described in CBD 53, *Fire Endurance of Building Constructions* by G. W. Shorter. A large sample wall, floor, roof, beam or column is exposed to a furnace whose temperature reaches 1000°F in 5 minutes, 1700°F in 1 hour and 2000°F in 4 hours. The criteria for failure in the test of a wall or floor are:

1. collapse;
2. temperature rise of 250°F average or 350°F at one point on the unexposed surface;
3. development of cracks or fissures through which flame or hot gases may pass.

Building Constructions Exposed to Fire

The properties required of a construction exposed to fire are:

1. integrity: the construction must remain intact and in place and carry any loads imposed on it during fire exposure;
2. thermal resistance: the construction may be required to prevent heat transfer through a separating member such as a wall or floor or to act as a protective covering to a heat-sensitive structural member.

The materials most commonly used in structural assemblies are brick, concrete, steel or wood. Brick and other burned clay products, having been exposed to high temperatures during manufacture, are relatively stable in fire endurance test. Brick also displays reasonably good thermal performance.

Concrete, which is similar to brick in thermal performance, loses strength gradually during fire exposure, retaining about half its original strength at 950°F and one third of its original strength at 1300°F. This loss in strength is irreversible because it is associated with the deterioration of the cement binder and in some cases of the aggregate.

Steel has high thermal conductivity and shows a significant loss in strength at temperatures exceeding 1000°F. It is, therefore, usu-

ally protected from fire by an insulating layer of another material.

Wood is a good insulator, but when exposed to fire it will burn until it is destroyed. The penetration of surface charring has been measured and it is estimated that the depth of char in wood surfaces exposed to the standard furnace temperature is about 1/40 inch per minute.

In general, an assembly of small members exposing a large surface area to fire is more vulnerable than an assembly of large members arranged in flat planes having a minimum surface exposed to fire.

Hollow Unit Masonry

One of the more significant factors in the fire endurance of hollow unit masonry is the amount of solid material in the wall thickness. To assume that the fire endurance is directly related to the amount of solid material is a rough approximation, but it is sufficiently accurate for application to the fire provisions of the National Building Code. The convenient device "equivalent thickness" has been adopted as a measure of the fire endurance of hollow masonry. Equivalent thickness is described as the thickness of solid material in the unit or component and is obtained by multiplying the over-all thickness by the percentage of solid material in the unit.

Hollow units having thin face shells and webs are subject to stresses resulting from unevenly distributed thermal expansion. The tendency to spalling and shattering has been observed in concrete containing quartz aggregate and in hollow clay tiles. The shell may, however, be effectively protected by a plaster finish on the face exposed to fire. With the reservation that hollow clay tile and siliceous aggregate concrete units must have a plaster finish on the side exposed to fire, equivalent thickness is used to compare the fire endurance of a variety of solid and hollow units. The thickness of plaster finish is also taken into account in assessing the fire resistance. Equivalent thickness provides a flexible means of assessing the fire endurance of hollow units based on the amount of solid material provided as a barrier to fire.

Concrete

The fire endurance properties of concrete depend on the type of aggregate, the proportions of the concrete mix, and moisture content at the time of fire exposure. A wide variation in performance is therefore possible. The stone used as coarse aggregate can have a significant influence on fire endurance. It has been observed that some quartz or granite aggregate concrete has a tendency to spall when exposed to furnace temperatures. This may cause early failure under the fire test. Limestone aggregate

concretes, on the other hand, display generally favourable performance in fire. In Supplement No. 2 concretes having over 65 per cent quartz, chert or flint are not included. These have to be rated on the basis of test. The minimum thicknesses of concrete in walls and floors are shown for varying fire resistance ratings.

Reinforced Concrete

There are two factors to be taken into account in assessing the fire endurance of reinforced concrete. One is the thickness of concrete required to limit the temperature rise on the unexposed surface to 250°F for the period desired; the other is the cover required to keep the temperature of the reinforced steel below that at which it will lose its effective strength.

Prestressed concrete requires greater thickness of cover to the reinforcement than regular reinforced concrete because a lower temperature will release the prestress and bring about collapse of the assembly.

Steel

The fire endurance of steel in a structural assembly depends primarily on the thermal protection provided by other materials interposed between the steel and the fire exposure. Some light materials such as plaster and wall-board are effective as thermal protection. Stronger materials such as concrete or masonry may also contribute to the load-carrying capacity of the assembly, thus extending in some cases the fire endurance. The new Supplement No. 2 shows minimum thickness of a number of materials that may be used as protective cover of steelwork for varying degrees of fire endurance. The protection may be in the form of encasement of individual members or of a membrane applied to the face of a group of members as in light frame construction.

Wood

The fire endurance of a wood assembly depends mainly on the residual strength of the members. Wood exposed to fire is gradually destroyed by charring. The reduction in effective cross-sectional area is dependent on the number of faces exposed to the fire.

There are two ways by which a measure of fire endurance can be provided in wood assemblies. One is to arrange the wood in massive flat planes so as to minimize the effect of charring. The other is to add a protective covering or membrane to the wood structure. Supplement No. 2 shows the minimum thickness of solid wood assemblies for varying degrees of fire endurance. Values are also assigned to various materials used as a protective membrane on wood frame assemblies.

The Contribution of the Membrane

A study of available reports on fire tests of

light frame walls and floors suggested the possibility of assigning a value to the membrane on the fire-exposed side and of adding appropriate values for the structural frame and for additional protection such as that provided by batt insulation.

The time during which the membrane remains in place is of great significance in the fire endurance of an assembly. Consequently, membranes having metal reinforcement, e.g., plaster on metal lath or double thickness of wallboard with wire mesh between the layers, generally contribute more to fire endurance than the more easily shattered materials. The method of fastening by nails, screws or wire hangers is also of great importance, particularly when the membrane is used as a protective ceiling. Close attention should, therefore, be paid to specification details if a fire resisting assembly is to be achieved.

Flame Spread

The National Building Code places certain limits on the flame spread properties of interior finish materials in assembly, residential and institutional buildings. There are also more stringent limitations on interior finishes in all corridors and stairs forming part of possible escape routes. The test recognized by the National Building Code is ASTM E84-61. The test method and the requirements of the National Building Code are described more fully in CBD 45, *Flame Spread*, by G. W. Shorter.

Both the surface finish material and the material to which it is applied may contribute to the flame spread performance of an assembly. The contribution of the supporting material may be neglected only when the thickness of the surface coating exceeds $\frac{1}{8}$ inch. The glue used in plywoods and veneers is also of importance. It has been found that phenolic adhesives have satisfactory performance in fire, but that inferior glue allows the surfaces to peel off, exposing more surface area and increasing flame spread. Opaque paints generally reduce the flame spread of the base to which they are applied. Shellac and lacquer, however, may produce significant increases.

The values shown in Supplement No. 2 for flame spread performance of common building materials are based on a study of all available published reports of tests. The scarcity of test data in accordance with the recognized standard method of test, ASTM E84, made it necessary to take into account information derived from other comparable tests also. The values are classified in the flame spread groups required by the National Building Code. The

effect of several combinations of surface finish and base material are recorded.

Test Information

One of the results of the study involved in the preparation of the revised Supplement No. 2 has been the collection and examination of test information from the published literature. Digests of this information are published by the Division of Building Research. The basic information that is available to the user of the National Building Code on fire performance of building materials will now be as follows:

1. Reports of Standard Tests.
The Division of Building Research publishes a number of these in the Fire Study Series. Others are issued by Research Organizations throughout the world.
2. Fire Performance Ratings.
Supplement No. 2 to the National Building Code, available from the Associate Committee on National Building Code, National Research Council, Ottawa, 25¢. This provides ratings for a variety of assemblies of common building materials based on the judgement of the ACNBC and acceptable under the provisions of the National Building Code.
3. List of Equipment and Materials, Vol. 11, Building Construction, Underwriters' Laboratories of Canada, 7 Crouse Road, Scarborough, Ontario, no charge. Lists of fire-tested assemblies of proprietary and non-proprietary building materials that may be identified by the U.L. label.
4. Summaries of available published fire test reports.
 - (a) Flame Spread Performance of Common Building Materials, by M. Galbreath. Division of Building Research, National Research Council, Ottawa, NRC 7820, April 1964, 75¢.
 - (b) Fire Endurance of Protected Steel Columns and Beams, by M. Galbreath and W. W. Stanzak. Division of Building Research, National Research Council, Ottawa, NRC 8379, April 1965, 75¢.
 - (c) Fire Endurance of Unit Masonry Walls, by M. Galbreath. Division of Building Research, National Research Council, Ottawa, NRC 8740, Oct. 1965, \$1.
 - (d) Fire Endurance of Concrete Assemblies — in preparation.
 - (e) Fire Endurance of Light Frame Assemblies — in preparation.

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Au Québec... les écoles?

On ne saurait donner une juste idée de l'état de l'architecture scolaire au Québec sans en faire la genèse. Le temps et les moyens à notre disposition nous manquant, il nous est impossible dans ce court article d'en faire même un exposé en raccourci. Cependant, il nous est possible d'en donner une idée générale, en soulignant quelques aspects majeurs de son développement.

La presque totalité de l'équipement scolaire en place au Québec, appartient à une époque révolue, soit les quelques décennies précédant les années 60.

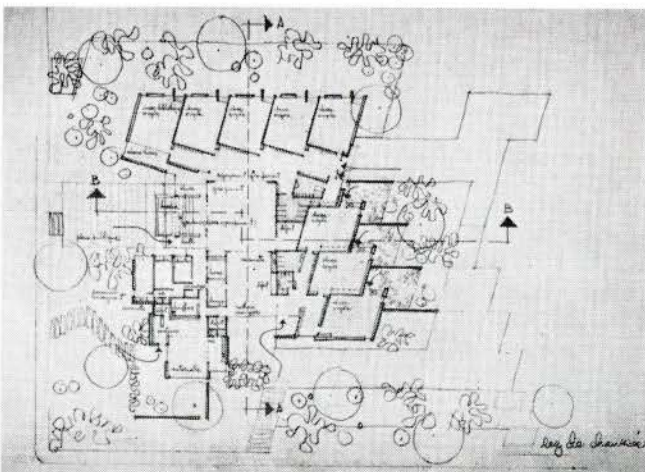
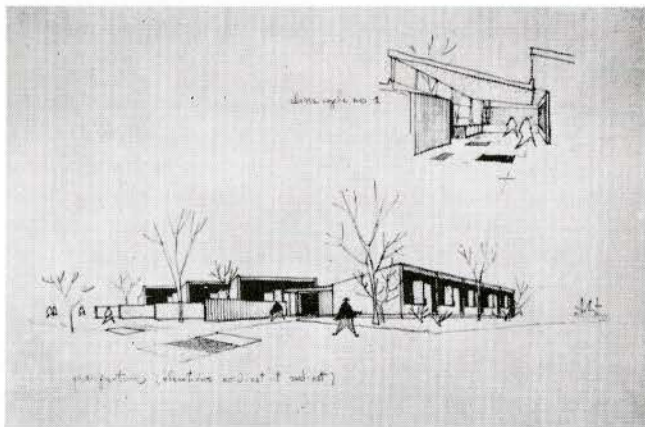
Cette période fut surtout marquée par la prolifération d'un type d'écoles élémentaires rurales, où la pauvreté des moyens contraste avec le luxe extravagant de certaines écoles urbaines et surtout des collèges classiques qui se construisaient durant la même période.

Tout cet équipement est en grande partie le fruit d'un système arbitraire, développé en l'absence de principes directeurs surtout en économie, et sous le poids d'une pédagogie d'autoritarisme et de paternalisme. L'ensemble de cet équipement scolaire illustre surtout l'injustice sociale que favorisait un manque de planification et dépeint, dans une large mesure l'état d'une société dominée par une bourgeoisie intégriste exploitant l'ignorance dont elle était responsable et, par voie de conséquence, l'état d'une société où les pouvoirs publics cédaient au chantage d'une puissance économique dont le contrôle lui échappait.

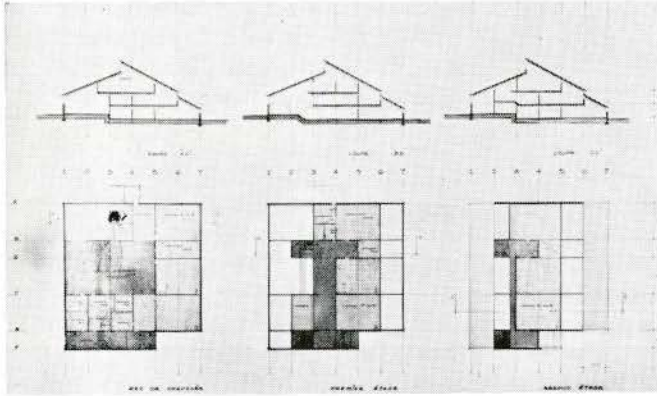
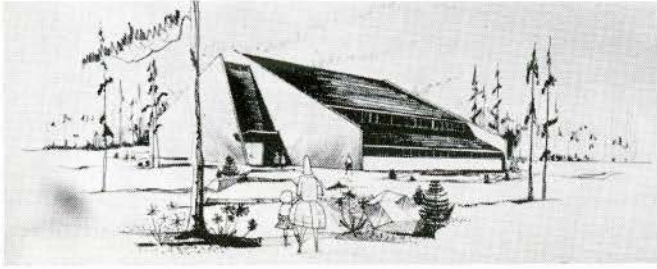
La simplicité de cette description ne saurait faire comprendre toutes les incidences de la situation, mais elle explique, sans l'excuser, les failles que l'on peut déceler encore dans les nouvelles structures proposées.

En 1960, la grande activité dans le domaine de l'éducation fut d'un début tellement brusque et tellement entier, que la période

- *Concept spatial basé sur l'orientation des classes au N.-E. et la maternelle au S.-O.*
- *Le noyau collectif articulé d'une façon intéressante sépare le groupe de la maternelle et de l'administration de l'ensemble des classes.*
- *Recherche intéressante d'identification.*
- *À souligner les possibilités de développement de l'ambiance suggérée.*



Maurice Gauthier, Montréal



- *Conception spatiale imaginative dans un volume simple et économique. Caractère architectural prononcé.*
- *Bonne intégration du noyau collectif, surfaces de circulation minimum.*
- *Peut trouver sa place dans une ambiance régionale spéciale.*

*Jean-Marie Roy
Sainte-Foy, P.Q.*

précédente, même si très près de nous, est facilement isolable. Son influence sur le développement actuel est minime. Ici et là elle se manifeste encore, et même d'une façon violente, mais c'est à la manière des spasmes nerveux d'une bête mortellement blessée.

Du moins, nous osons l'espérer.

Or, dans ce grand remous des activités scolaires et éducatives, dans quelle mesure l'architecture scolaire témoignera-t-elle de la force et de l'énergie déployées dans les autres domaines de l'éducation ?

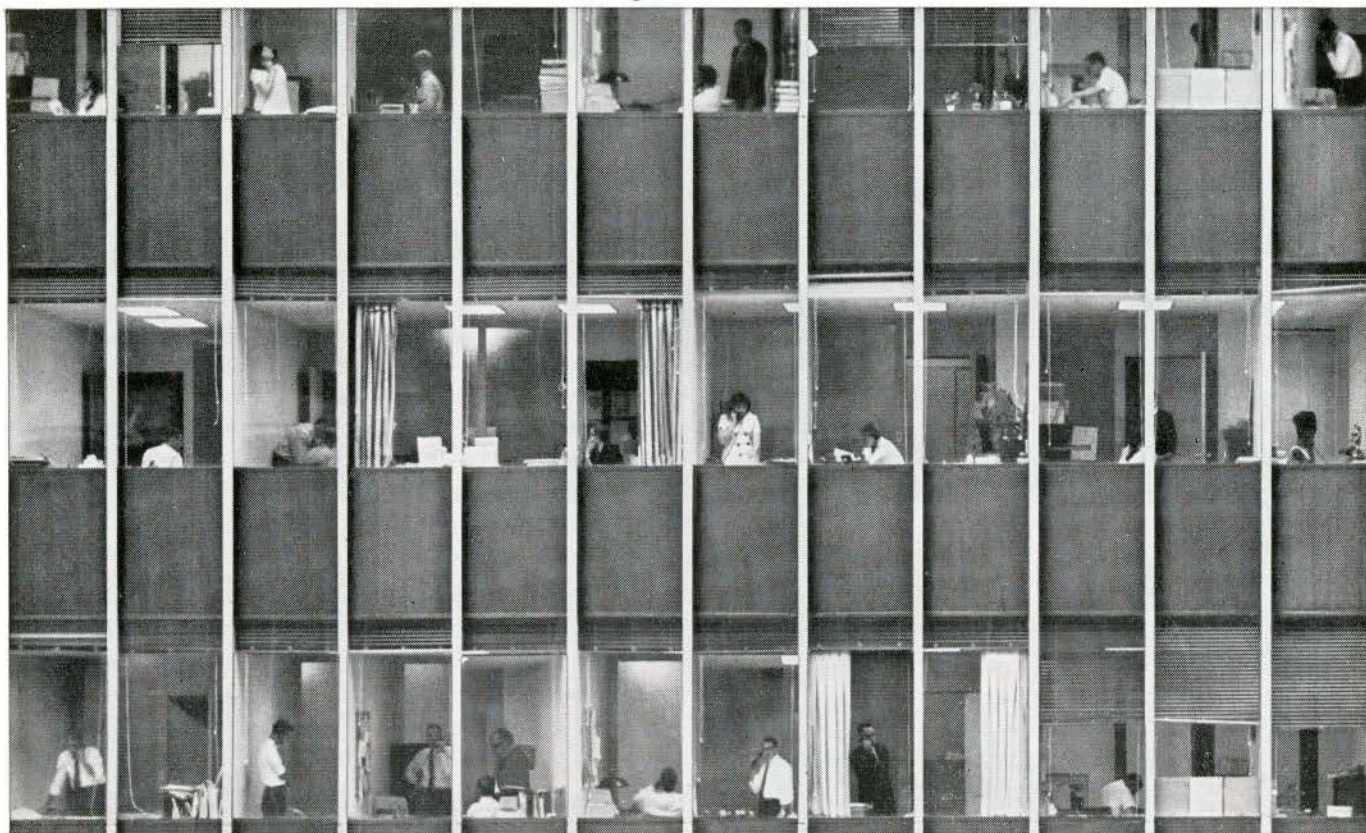
Quelques réalisations au niveau élémentaire, illustrent déjà les nouvelles tendances pédagogiques. L'école revient vers l'enfant et son monde de merveilles. D'après l'aménagement physique de certaines de ces écoles, on semble avoir compris que toutes mesures disciplinaires et toutes réglementations plus directives qu'indicatives sont des béquilles à un système boiteux, et qu'il vaut mieux guérir le système plutôt que de continuer à perfectionner les béquilles.

Cependant, il ne faudrait pas oublier que le grand remous en éducation affecte surtout les niveaux supérieurs de l'enseignement et que la majeure partie de cet équipement est encore à venir. Dans le passé, l'équipement de ce niveau nous a laissé sous l'impression que l'architecture scolaire chez-nous traduisait plus l'inquiétude des grandes personnes qui regardaient leur passé, que la confiance que pouvaient avoir les enfants qui regardaient leur avenir.

Aussi à l'avenir, il ne s'agira plus pour les architectes de trouver de nouvelles formes pour y mettre de vieilles choses, mais bien de répondre mieux à de nouvelles fonctions. De plus en plus la beauté architecturale devra se placer au niveau des nécessités et non au niveau des accessoires. Et comme nous l'avons déjà dit ailleurs, l'importance de mouler l'espace sur les gestes de l'enseignement nouveau définira la beauté du bâtiment scolaire.

Donc, pour nous résumer, au Québec, notre architecture scolaire est surtout à venir, et elle pourrait être riche...

René Dumont



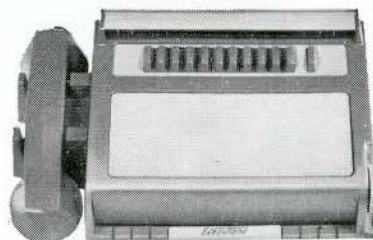
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Ontario Masons Relations Council/1965 Awards

One Award of Excellence and six Awards of Merit were presented in the second annual competition of the Ontario Masons Relations Council for outstanding buildings in Ontario designed by architects in private practice and constructed essentially of structural clay products manufactured in Canada. The Award of Excellence, a plaque, was presented by the Minister of Labor, Hon. H. L. Rowntree, QC, MLA. Framed photographs of their buildings with an embossed seal were presented for the six Awards of Merit. Presentations took place at the OAA on October 28. 56 buildings were entered by 26 firms in the Awards program. Professional adviser for the Competition was George Gibson, FRAIC, and the assessors were J. A. Murray, FRAIC and Ron Thom.

Report of the Jury

The submissions this year tended less to produce master works than to achieve a fresh approach to basic building types too

frequently characterized by stereotype solutions. Such buildings as schools, apartment houses and laboratories were submitted whose design approach reflected new purposeful thinking rather than the dreaming up of potential new clichés. It is refreshing and encouraging to feel that buildings common to our day are being designed in an imaginative and sensitive way. The jury was impressed with the diversity of mood in these masonry buildings which range from the childlike intimacy of an elementary school to the classic discipline of a large industrial research complex.

The Awards are as follows:

Award of Excellence

**Willow Park Public School,
Scarborough
Architects: Craig, Zeidler and Strong**

This is a school building which to a

remarkable degree is built for children.

The school sits gracefully in a residential neighbourhood. Its dark brick, copper and wood exterior set in a landscape of evergreens is rich and inviting. One feels this pleasant building must constructively affect the attitudes of its pupils.

Willow Park Public School should be a lesson to school boards and to their architects: that regulations inevitably surrounding school design do not necessarily imply a regimented building. Here is a school which has managed to escape the long, tiresome corridors, monotonous cellular repetition of classrooms and the generally factory-like approach so inappropriate to the education of young children.

Surely the learning environment constitutes one of the most important architectural challenges of our day. A building creatively meeting the challenge well merits the Award of Excellence.



Awards of Merit

New College, University of Toronto Architects: Fairfield and Dubois

This building was a close contender for the Award of Excellence.

For a city block surrounded by traffic, the site plan is good. When the other half of the project is built, the cloistered quad will be interesting as a space and invaluable as a place.

The building represents itself as what it is very clearly by the architects' expression in detailing brick and concrete.

Because it is generally so articulate in its use of masonry and concrete, it is unfortunate that such abrupt changes are encountered on the interiors due to the somewhat arbitrary use of plaster.

The quality of brickwork throughout is excellent.

Where brickwork is predominant, such as in the stairwells, it has been made to greatly enhance the atmosphere of the interiors, in a way most appropriate to a college building.

The use of a corridor rather than a stair system which lends itself to the organization of residents in smaller groups by "houses" is questioned. But assuming this to have been a requirement of the owners' program, then at least these are extremely interesting and agreeable corridors.

Product Research Laboratory — The Consolidated Mining & Smelting Company, Clarkson Architects: Shore & Moffat and Partners

This tri-nuclear building (labs, offices and workshop) is solved expertly. The three functions are clearly expressed externally yet each blends easily with the others and the whole sets harmoniously in its park-like setting.

Appropriate judgment and restraint has been shown by architects and owners in the use of the clients' architectural products.

A frequent failing of modern buildings to integrate the mechanical system in the design has been called by one critic "a sort of mechanical hernia on the roof." By contrast the Cominco building exploits the mechanical necessities and incorporates

the air exhaust system as an integrated element of the design.

Some suspicion lingers that fenestration appropriate to offices is equally appropriate to laboratories — is the approach mannerist?

Topcliff Avenue Public School, North York Architects: Banz-Brook-Carruthers- Grierson-Shaw

Topcliff Avenue Public School exhibits many of the qualities inherent in the Willow Park Public School. In design it is straightforward and unpretentious but thoughtful. This commendable spirit characterizes the interior of the building as well as the exterior for it is all of a piece. Corridors are well planned, effectively detailed and their lighting is well integrated. In response to this quiet and controlled architectural approach the interior court is uncomplicated and simple and consequently beautiful.

Perhaps the building's highest quality is that in its design and workmanship it has exhibited the good judgment to content itself within a modest philosophy rather than striving for a virtuoso performance. This attribute is not as common in Canadian architecture as one could wish.

Northern Electric Research and Development Laboratories, Ottawa Green Belt Architects: Bland, Lemoyne, Edwards, Shine

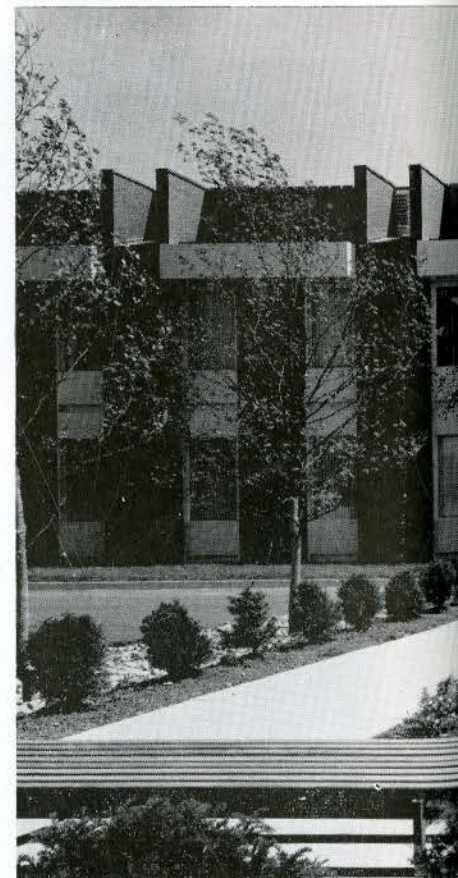
An administration building and a laboratory have been constructed as the first two elements of an eventual four-part building group.

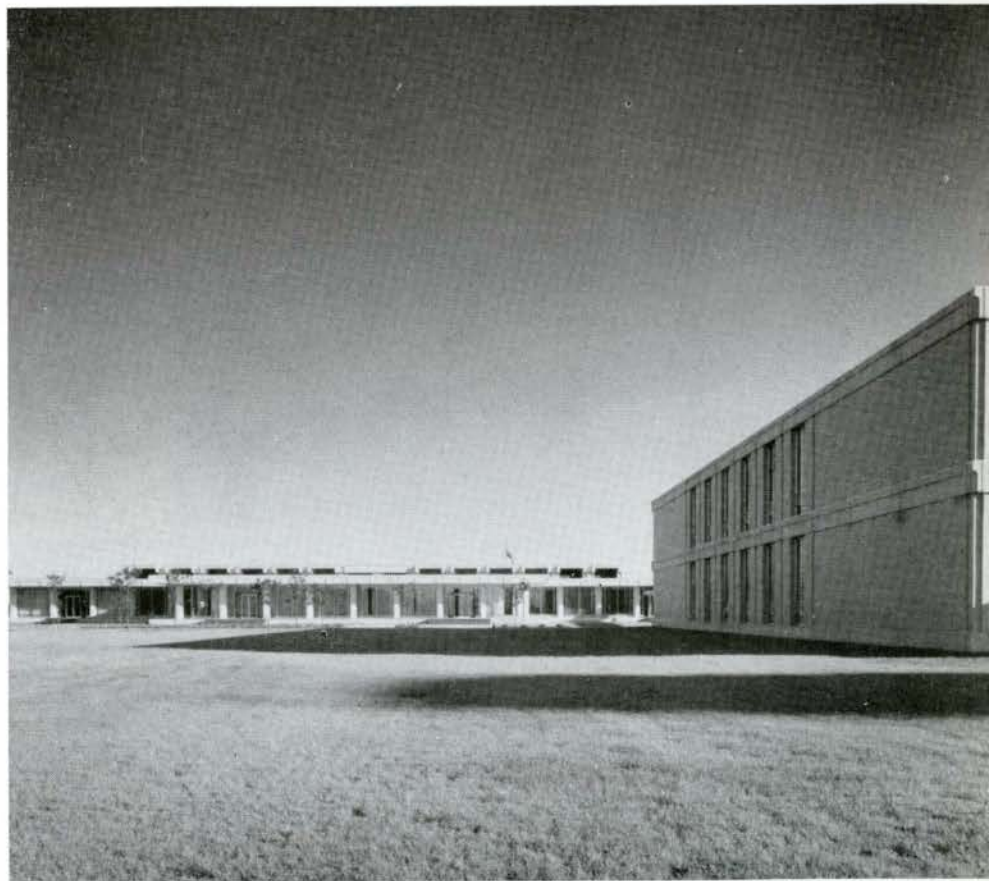
The building is a classic example of the incorporation of masonry within a skeleton frame.

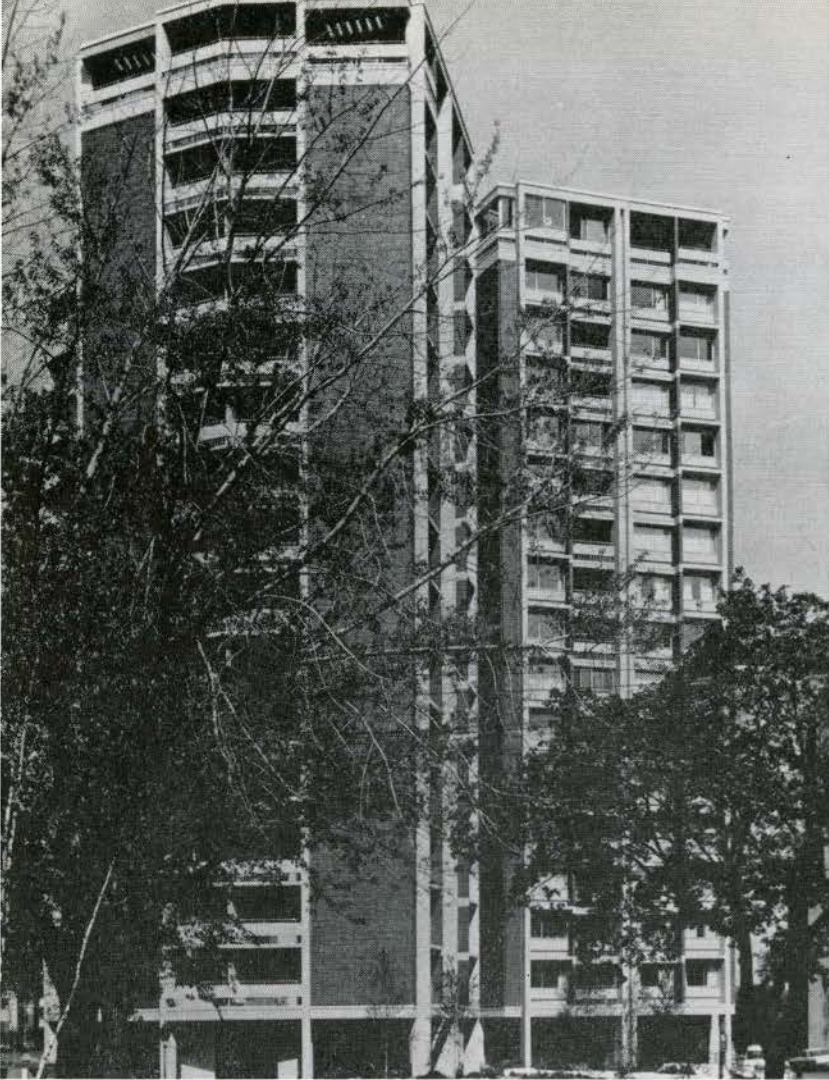
The entire building exhibits a friendly discipline and serenity not always characteristic of the pavilion approach.

The strength and restraint inherent in the overall design finds a consistent reflection in the handsome proportions within a sensitive revelation of the basic structure.

Workmanship is of the high quality such a sophisticated approach demands but infrequently receives.







Parc IX Apartments, Toronto
Architects: Satok and Poizner

Parc IX (we trust it is Parc Neuf) belongs in that frequently tiresome family of buildings — the high rise apartment.

The jury was pleased to record a building which, in spite of the usual constraints of civic by-laws and developers' economics, broke with the anonymous cellular façade to articulate and separate to a considerable degree the essential commodity — the suite. This is done within an overall approach within which even balconies (so frequently pasted on the façade) are an integrated part of the building form.

It is most unfortunate that the technical execution of the project was not carried out with the same care as is evidenced in the basic design.



National Trust Building,
Oshawa, Ontario
Architects: Pentland, Baker and
Polson

The architects of this project are commended for the careful and sensitive way they have inserted a building into the typical façade of an Ontario main street. It is a good neighbour; at the same time it recognizes the secondary approach from a public parking lot in the rear. The feeling of the jury that the interior is not distinguished does not detract from its regard for the detailing and general concept of both front and rear elevations.

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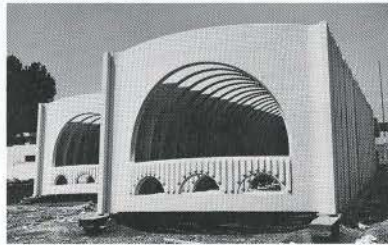
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Send for Medusa's new colour brochure "Precast Concrete Exterior Units." See for yourself why—colour is the mark of distinction in precast panels with Medusa White.



Precast Panel being cast

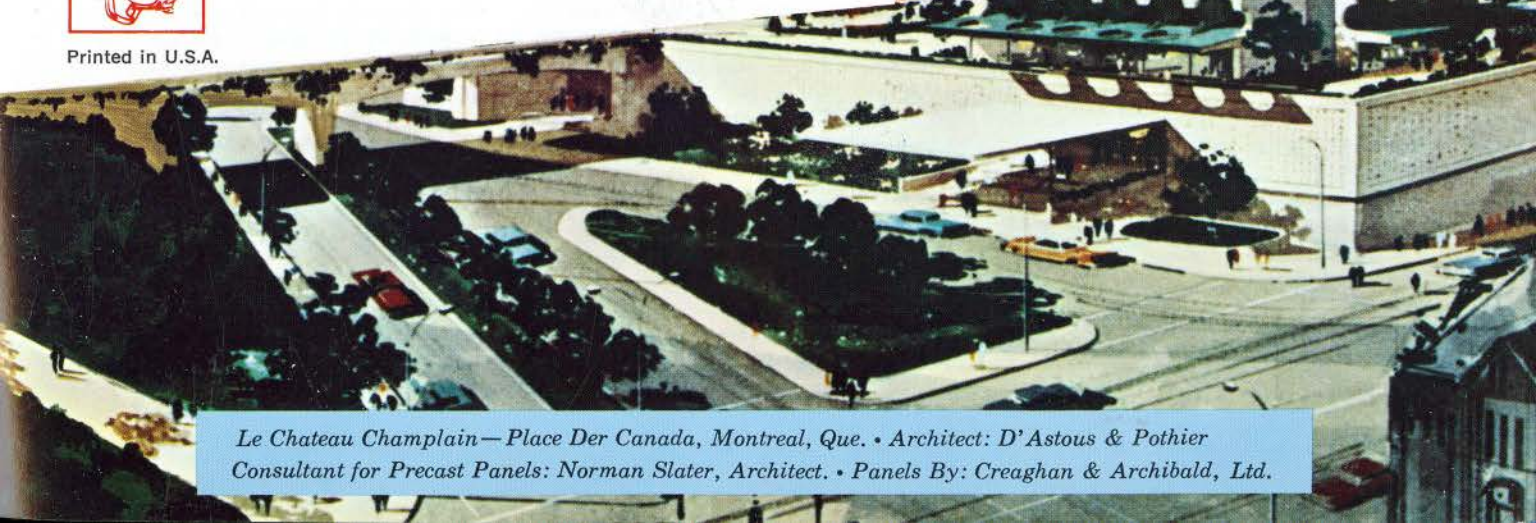
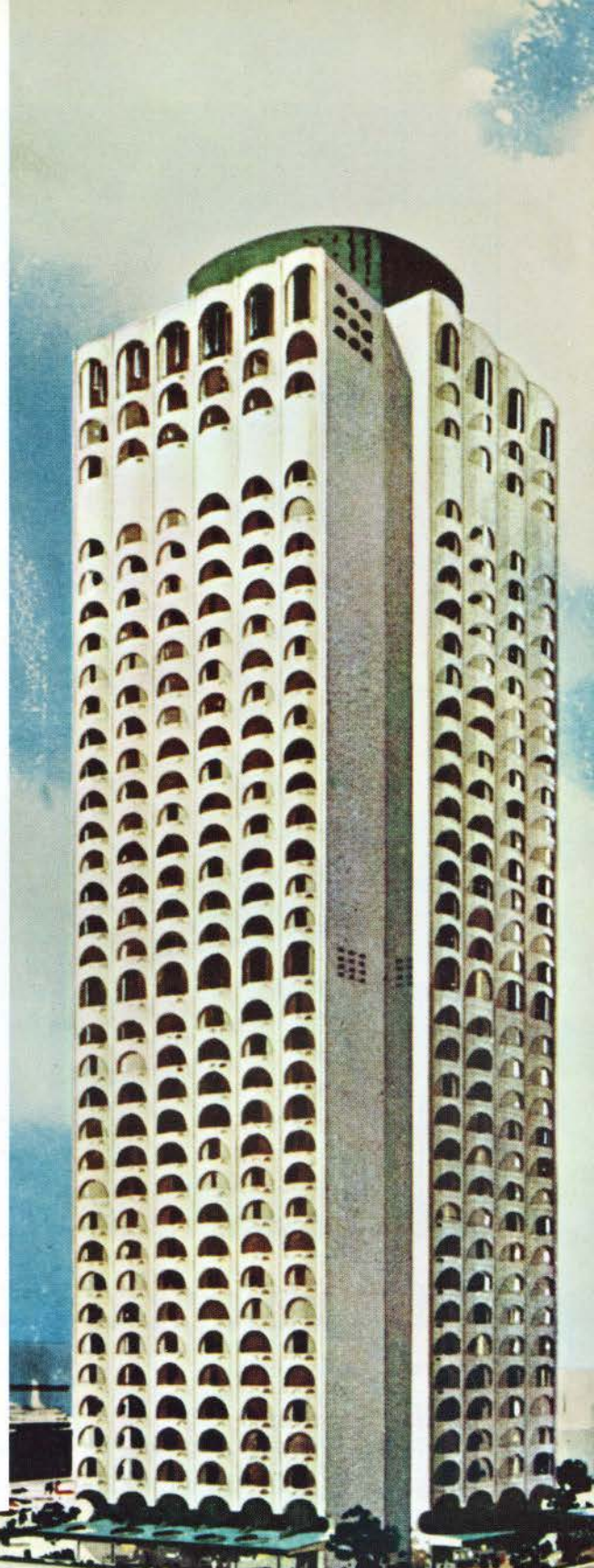


Panels ready for shipment

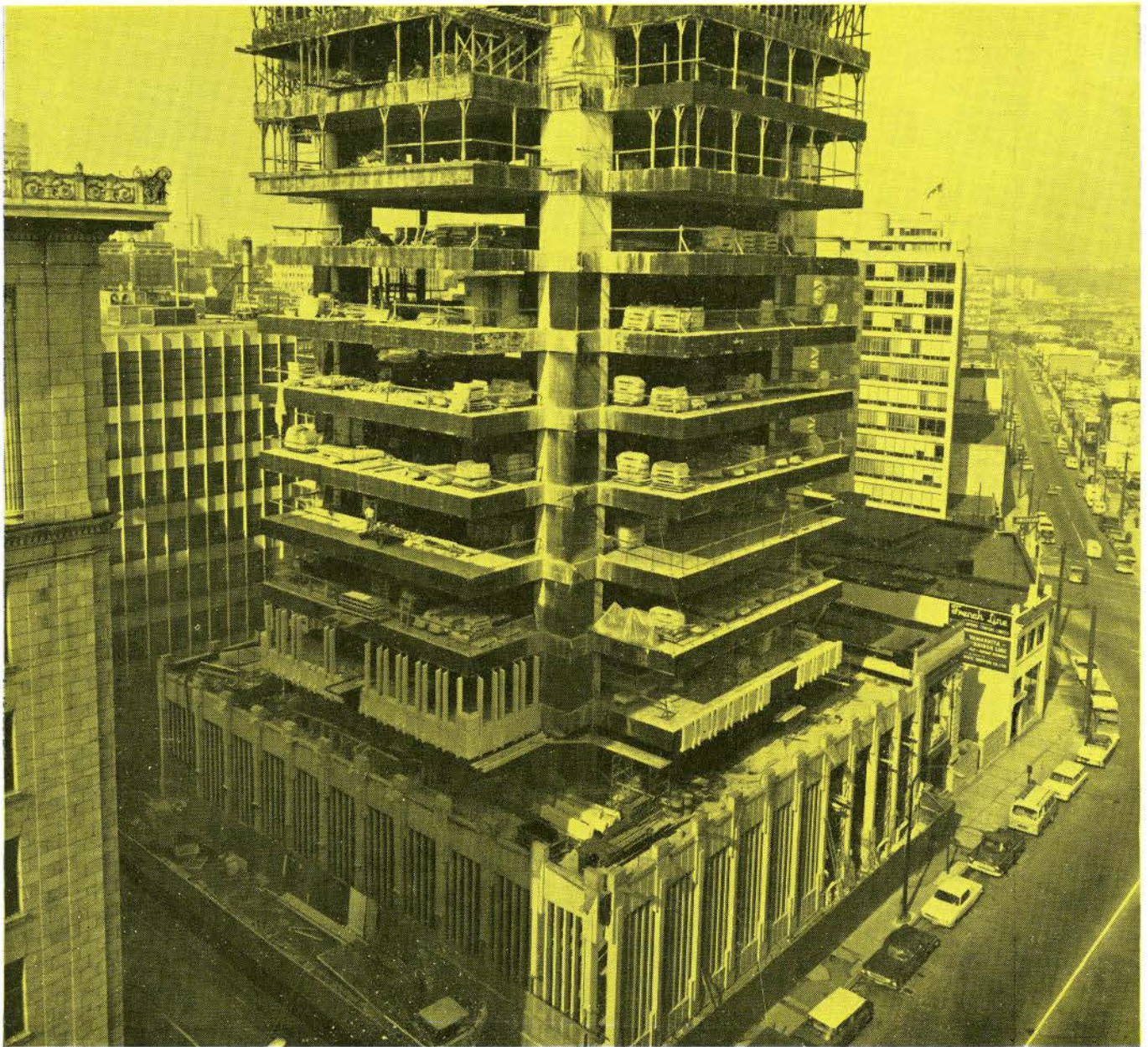
MEDUSA PRODUCTS COMPANY of CANADA, Ltd.
PARIS, ONTARIO, CANADA



Printed in U.S.A.



*Le Chateau Champlain—Place Der Canada, Montreal, Que. • Architect: D' Astous & Pothier
Consultant for Precast Panels: Norman Slater, Architect. • Panels By: Creaghan & Archibald, Ltd.*



Why they put BRC WELDMESH in the Bank

This is the new Bank of Canada building going up on the corner of Hastings and Hornby Streets, Vancouver. One of the reasons for the quick and accurate construction of this building is due to the use of B.R.C. Weldmesh.

2607 sheets of B.R.C. Weldmesh were used in reinforcing the floor slabs, and a further 1432 sheets of mesh were used in the pre-cast panels that cover the building's exterior. The contractor

reports that B.R.C. Weldmesh gives greater speed and accuracy; but more than that . . . the pre-caster reports no shrinkage or cracks have developed in any panel reinforced with B.R.C. Weldmesh, thus there were no rejects on the job.

That means savings on construction, and savings like that make B.R.C. Weldmesh pretty valuable. Valuable enough to put in the bank.

General Contractor - Foundation Company of Canada Ltd. Architect - Thompson Berwick Pratt and Partners Steel Placers - Western Reinforcing Steel Service Limited Precast Panels - Continental Marble and Granite Limited Consulting Engineer - Otto Safir

BRC WELDMESH

LTD.

3157 Grandview Highway, Vancouver, B.C. Phone 433-7707

Affiliated with

EDMONTON IRON AND WIRE WORKS LTD., 14505-122ND AVENUE, EDMONTON • PHONE 454-6561

10020-3C

Management Practices

Edited by James Vair

Insurance

by Arthur R. Leonard

Mr Leonard is a General Insurance Agent and Chartered Life Underwriter with 15 years' experience in estate planning, business life insurance, employee benefit programs and personal insurance programming.

Modern business practice dictates that all serious risk of loss should be offset as far as possible by some form of insurance. It is therefore logical that the human asset should likewise be insured to protect the business against the greatest loss it can possibly suffer, the death of one or several of the key men in the firm.

Without getting involved in the argument as to how goodwill is valued, it should also be noted that the liability for payments to the estates of deceased or retired partners is also a contingency that may be covered by insurance.

Professional men such as Architects may practice their professions under various organizational arrangements. For example, they may operate as sole proprietors working completely independently of any other professional associate, occupying their own office, hiring their own assistants; a more common arrangement, however, is a partnership wherein the formal organization, properly conceived and executed, produces an entity the whole of which is greater than the sum of its parts (see *Article 5 in this series, "Organization"*, by James W. Vair).

Professional men operating as sole proprietors can easily perceive the following problems created by destruction of their earning power by death, long-term disability, or old age:

1) Income replacement for themselves and dependents. Accounts Receivable must be heavily discounted in many

cases, depending on the type of clientele, because many creditors, recognizing that "dead men don't tell tales", slow down or forget payments.

2) Personal cash requirements for expenses of illness which gives rise to disability or death, taxes (estate and succession as well as income in case of death), mortgages and personal debts, and the continuance of education for the children.

3) Business cash requirements for such outlays as payments under lease agreements, accounts payable which cannot be eliminated at a moment's notice, as well as loans to the business for which a sole proprietor is personally responsible.

Most professional men realize only too well, the possibility that the work in process and clientele of a personalized practice may well be worth nothing for lack of a ready buyer when its time for his departure from the world of work.

By taking judicious steps with regard to our tax laws—income tax, gift tax, estate tax, and succession duties—a professional man and his family can save thousands of dollars (and it is easier to do if the planning starts early in the individual's career). Modern insurance plans can provide non-taxable, non-cancellable income in case of death, disability or old age, and provide cash which is a non-taxable receipt in the event of death, disability or at some future date. Some recent developments of special interest to sole proprietor

professional men are Major Medical Insurance policies that insure against medical expenses up to \$10,000, Disability Overhead Expense policies with premiums chargeable as a business expense and Pension plans where income tax is deferred from high-tax contribution years to low-tax pension years.

When professional men share facilities, they should clarify their position as to whether they are sole proprietors or partners: a written agreement is not necessary for the formation and existence of a partnership, but in case of the death of a partner, the law requires that, in the absence of written agreement to the contrary, the surviving partners must act as liquidating trustees, who, if they continue any business activity of the partnership, must share profits with the deceased partner's heirs, while absorbing all losses themselves. Thus, in the case of a partnership, the situation militates strongly in favour of a binding "Buy-Sell Agreement" funded by criss-cross life insurance. The death of a partner automatically dissolves the partnership, unless there is an agreement to the contrary, and liquidation can be very costly to the surviving partners and heirs. The alternatives to liquidation of any partnership are:

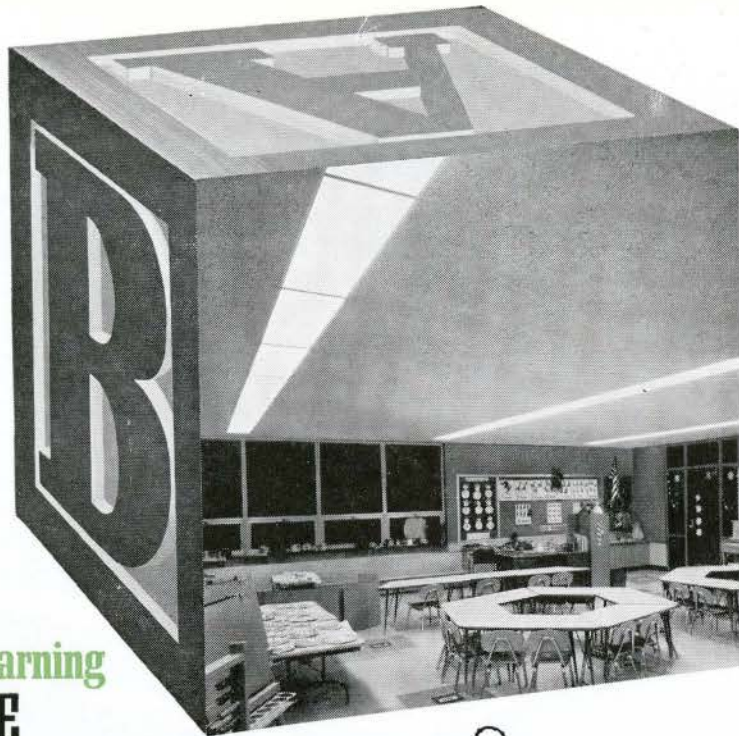
a) Form a new firm with one of the heirs as a partner: if there is not already an heir working in the firm in a professional capacity, it is difficult to see how a stranger could contribute anything useful. If there is an heir already in the firm, then it would be wise for him to consider insuring the senior man for the value of the senior man's interest—to facilitate distribution of the senior man's estate to other heirs not in the firm, and to relieve him of the burden of paying off other heirs in instalments from after tax earnings.

b) Find a new partner willing to buy the deceased's interest. Unless there is an employee already in the firm who is ready, able, and acceptable to the surviving partners, it is difficult to imagine finding such a person quickly enough. Where there is such an employee in the firm, why wait until the death of a senior partner before making him a partner?

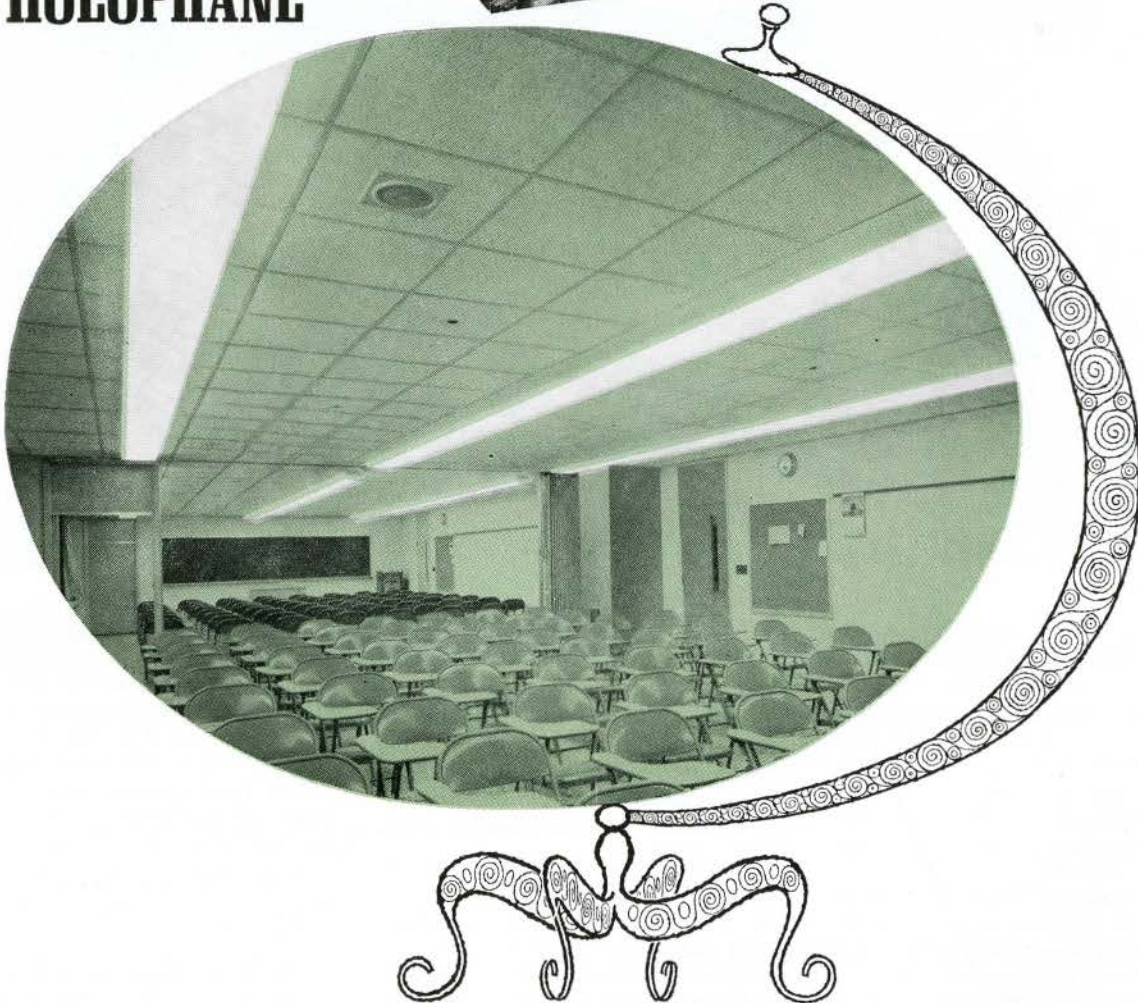
c) Sale of the partnership to the heirs, which is clearly impossible for a professional firm.

d) The surviving partners buy the interest of the deceased partner from the estate. This is clearly in the best interests of both parties, but, at what price and on what terms? The answers are best provided by a binding "Buy-Sell Agreement" funded by criss-cross life insurance.

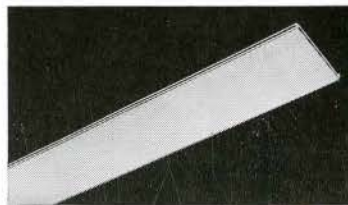
When there are more than two partners,



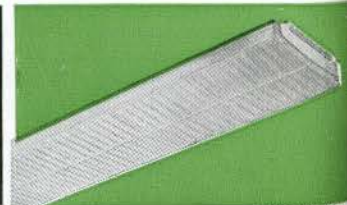
For economical lighting
at every level of learning
specify **HOLOPHANE**



Measured by "life-cost" per installation, plus maintenance economies, Holophane prismatic luminaires provide substantial savings in lighting expenditures. At the same time they deliver the most effective illumination for every school or college area. □ For over six decades, the Holophane engineering staff has concentrated on new and better methods of educational lighting. Shown: two latest products of this continuing research... (1) FRAMELESS CONTROLENS®, recessed for low-ceiling construction... (2) REALITE II®, surface-attached, in 4-foot multiples. □ If you plan any form of educational lighting be sure to get all the facts about Holophane luminaires—directly, or through your professional advisors.



frameless (in block)



realite II (in globe)

The Holophane Company, Ltd.,

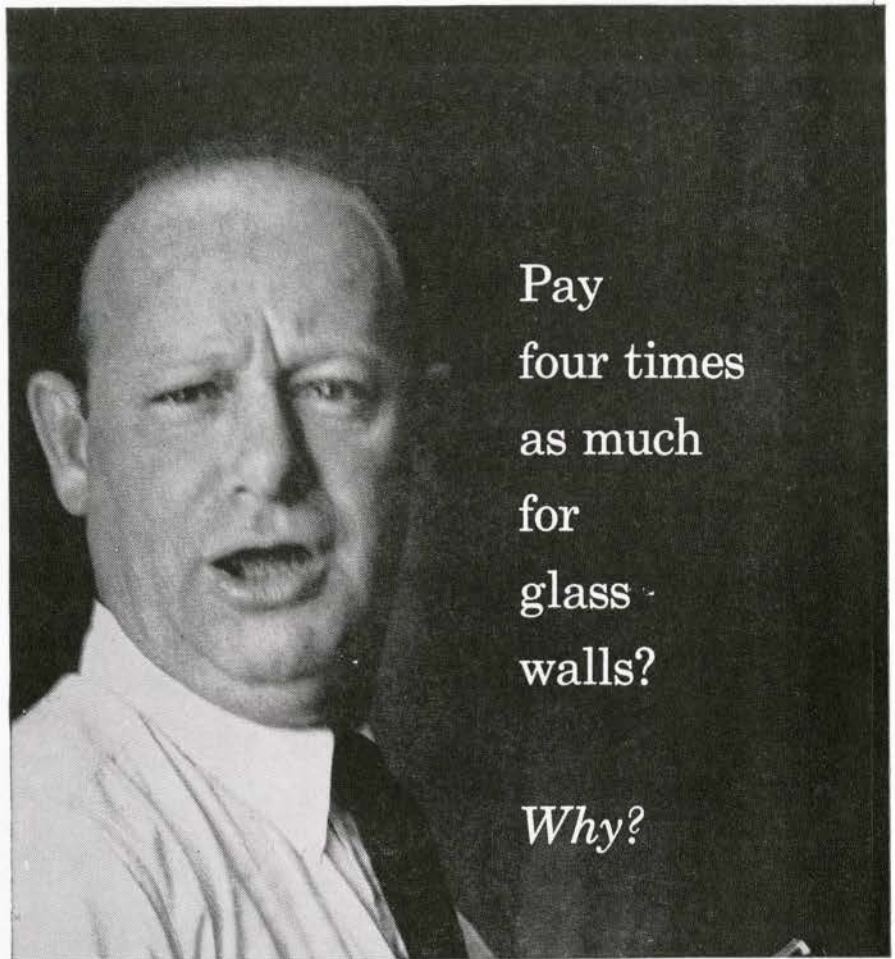
418 Kipling Ave. South, Toronto 18, Ont.



the criss-cross life insurance arrangement funding a "Buy-Sell Agreement" may become complicated and unwieldy. In this case, a Trustee can be appointed to hold the Agreement and the Life Insurance Policies, to collect premiums from partners in the proper amounts as their interests in the policies indicate, to pay premiums to the insurance company, and to collect proceeds at the death of a partner and apply them in accordance with the agreement to effect the purchase of the deceased partner's interest from his estate for the surviving partners. This arrangement is also most suitable when partnership interests vary. In determining the price for a partner's interest in the firm, there is a natural inclination to simply equate it to the Accounts Receivable with adjustments for Overhead and Accounts Payable. Is this realistic? The "Going Concern Value" is properly calculated as the sum of Accounts Receivable less estimated attrition, Work in Process less estimated attrition, Goodwill Value of all Clients including those in Accounts Receivable and Work in Process, depreciated value (not resale value) of Office Furniture and Equipment, and Prepaid Expenses, if any, less Accounts Payable, and Business Overhead Expenses such as leases that must be paid regardless of business conditions. Is it not likely that the value of the Accounts Receivable will vary substantially from the "Going Concern Value", and an unrealistic valuation might involve problems with the Department of National Revenue with respect to Income Tax and Estate Tax.

When arranging life insurance on the life of a partner, it may also be wise to add something for his "Key Man Value"; for example, the death of a partner whose interest in the firm is valued at \$30,000 may also result in lost efficiency plus costs of finding a replacement that would total (say) \$20,000. In this case, it would be advisable for the other partners to insure him for a total of \$50,000. If there were four other partners, each would own \$12,500 insurance on his life, and each would use \$7,500 of proceeds at his death to fund the "Buy-Sell Agreement".

A word of caution regarding Partnership Insurance and Key Man Insurance in Partnerships: do not copy the "Entity Plan" used in the USA whereby the partnership as an entity applies for, owns and pays for the insurance on the lives of the partners. In Canada, this would come under section 3(1)(m-i) of the Estate Tax Act, the net result being that all such insurance on the life of a partner would be added to his estate for tax purposes, in addition to his partnership interest. □



Pay
four times
as much
for
glass
walls?

Why?

ULTIMATE COSTS FOR GLASS WALLS ARE ABOUT FOUR TIMES GREATER THAN FOR MASONRY WALLS; FOR METAL SKIN, 71% GREATER.

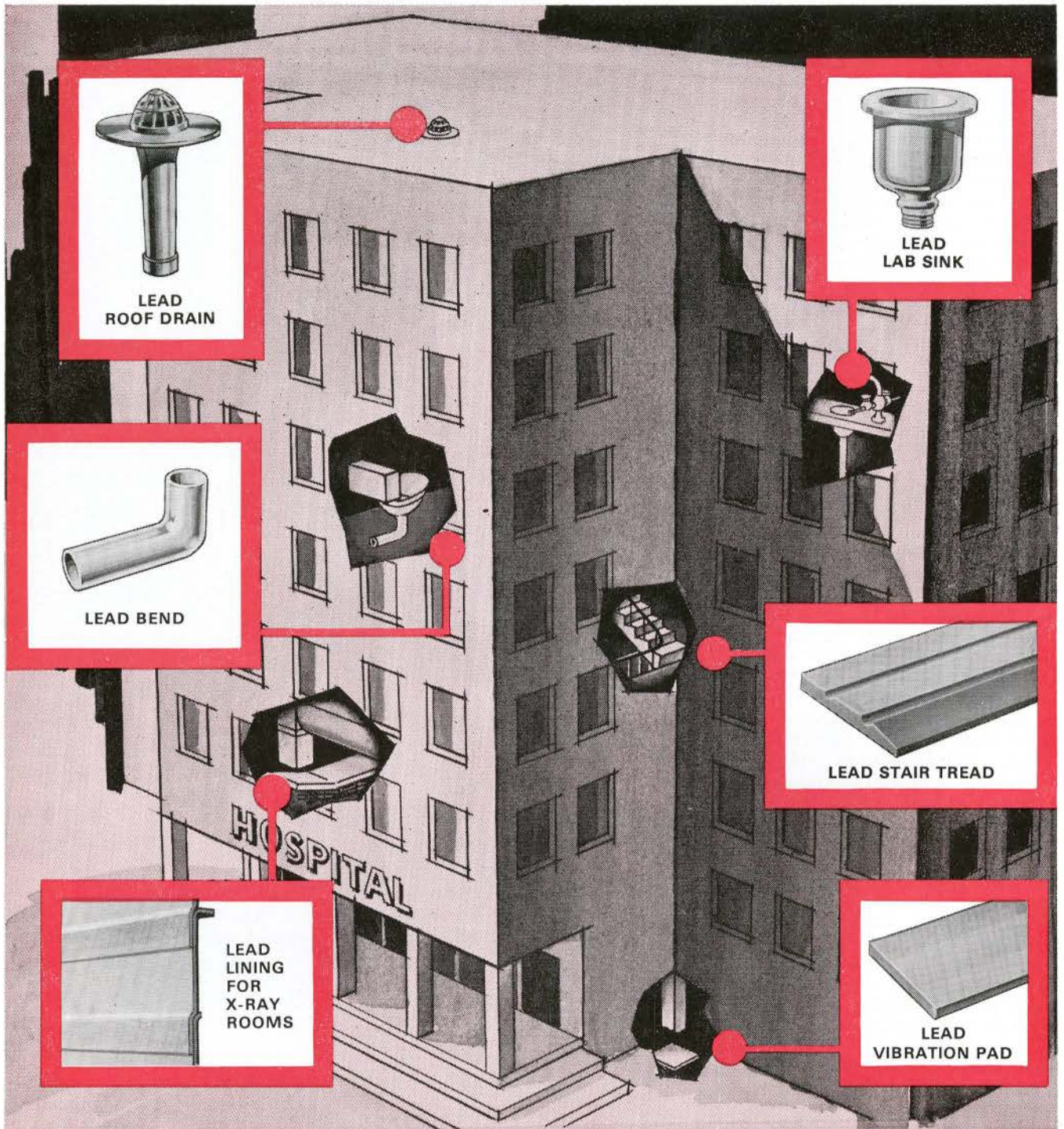
That's the conclusion of a team of professional architectural engineers, based on a study* that took a theoretical office building, gave it exterior walls of clay masonry, metal, and glass, respectively, and, using identical criteria, calculated ultimate costs over a 50-year building life. Factors considered: initial construction cost, maintenance, taxes, heating, depreciation, speed of erection, insur-

ance, air-conditioning, value of money, and other influencing items. The study has been widely accepted by leading architects, engineers, building industry editors, and school of architecture and engineering.

For maximum long-range economy, for maximum safety, for complete versatility in meeting contemporary design requirements, it pays to specify clay masonry.

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THE BRICK AND TILE INSTITUTE OF ONTARIO AND THE ONTARIO
PROVINCIAL CONFERENCE OF BRICKLAYERS' AND MASONS' UNION.
4824 YONGE STREET, WILLOWDALE, ONTARIO

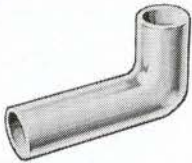
* Write or phone for your free copies of ULTIMATE COST OF BUILDING WALLS and non-technical version DESIGN TO SAVE DOLLARS.



**LEAD
ROOF DRAIN**



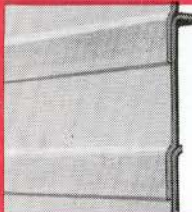
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LAB SINK**



LEAD BEND



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**LEAD
LINING
FOR
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ROOMS**



**LEAD
VIBRATION PAD**

Lead—Canada Metal lead—has long answered architects' and builders' construction and plumbing requirements in institutions and industrial buildings. In construction . . . lead vibration pads, lead stair treads, lead lining for X-ray rooms, lead roof drains. In plumbing . . . lead bends, lab sinks, roof vents, traps, stubs, etc. From roof to basement specify Canada Metal lead construction and plumbing materials. Consult our Technical Service Department for full information.

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METAL**

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MONTREAL
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WINNIPEG
CALGARY
VANCOUVER

Industry

Pilkington Brothers (Canada) Limited, will manufacture float glass in Canada. They will spend \$21,000,000 on an addition to the firm's existing plant in Scarborough, Metropolitan Toronto, for the manufacture of the new glass. *Pilkington Brothers (Canada) Limited, 451 Ellesmere, Scarborough, Ontario.*

The incorporation is announced of a new Company known as Canadian Swedish Products Limited with headquarters at 2455 Dixie Road, Cooksville, Ontario. The intent is to bring suitable Swedish construction items such as window coverings, wall coverings and architectural glass products. Reflector design that takes full advantage of the new-compact metallic vapor light source to produce predictable "blocks of light" has been announced by *Crouse-Hinds Company, Syracuse, N.Y., 13201.*

Standard Electric Time Company of Canada, located in Pointe Claire Industrial Park near Montreal, will no longer be known by that name. Its new name is "Unelco Limited" or "Unelco" for short. The change is in line with the company's expansion and its emphasis on Canadian design since moving under Canadian ownership five years ago.

NEW PRODUCTS

New electronically controlled dimmer switch for incandescent lighting, adjusts lights from bright to candle glow without flickering. *IDI Electric Canada Limited, Ajax, Ontario.*

(Circle reply card item 1)

American Olean announced a new line of subtle colors in their textured crystalline ceramic tile. *American Olean Tile Company, Lansdale, Pa.*

(Circle reply card item 2)

Day-Brite Lighting, a division of Emerson Electric Co., introduced a new Clymatron II line of fixtures with advances in both lighting and air-handling features. *Day-Brite Lighting, 5411 Bulwer Avenue, St. Louis, Mo., 63147.*

(Circle reply card item 3)

New versatile Curtain Wall stud fastener reduces erection costs of curtain wall buildings through ease of installation and elimination of inside scaffolding. May be used to recover and/or insulate older buildings without removing the original siding. Leak proof, available with an outer hex head cap nut or swageable outer drive cap. In cadmium-plated carbon steel or 305 stainless steel. *Write Parmenter & Bulloch, Division of Textron of Canada Limited, Gananoque, Ontario.*

(Circle reply card item 4)

Dura-Gel (fiberglass) drinking fountain, invulnerable, light, economical—available in five decorative colours. *Wade International Limited, 73 Rainside Road, Don Mills, Ontario.*

(Circle reply card item 5)

Builder Products Division of Emerson Electric Co. is now marketing a new, extra-rugged incandescent exit light for commercial and industrial applications. The new line includes solid bottom and glass bottom models, in addition to metal stencil and all-glass face exit

(Circle reply card item 6)

lights. *Builder Products Division, Emerson Electric Co., 8100 Florissant Avenue, St. Louis, Missouri, 63136.*

(Circle reply card item 7)

LITERATURE

New 4-page, illustrated brochure provides a ready reference to the more than 200 different Leviton "Specification Grade" electrical wiring devices. It describes the company's line of Specification Grade switches, outlets, locking devices, combination devices as well as lampholders, wall plates and dimmer controls. Designed to NEC, ASA, and U.L. requirements. *Leviton Manufacturing Co. Inc., 236 Greenpoint Ave., Brooklyn, N.Y., 11222.*

(Circle reply card item 8)

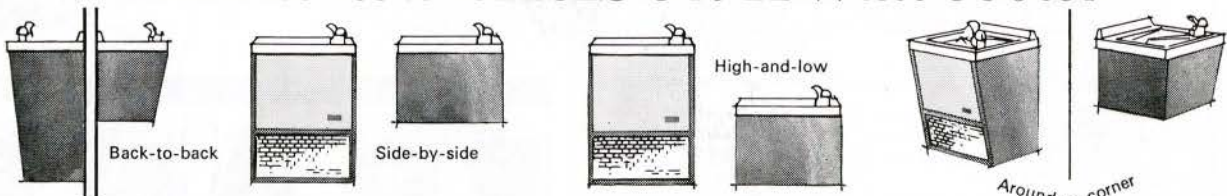
New Bulletin 6-103 "Gas-Fired Duct Furnaces" incorporating the data on a new 350,000 BTU model is now available. The 8-page booklet in two colors gives complete description of the Modine line of duct furnaces. *Sarco Canada Ltd., R.R. 1, Agincourt, Ontario.*

(Circle reply card item 9)

New Atlas Asbestos catalogue gives greater emphasis to technical information, physical characteristics, specifications, detail drawings, etc. Copies are available on request. *Write to the Atlas Asbestos Company office at Montreal, Toronto or Vancouver.*

(Circle reply card item 10)

Versatile new OASIS On-A-Wall Cooler



A water cooler with the contemporary look. Installs on a wall at desired height. Available in Hot 'n Cold for complete refreshment. Use it alone, or combine it with an Oasis fountain for economical multiple unit use as shown.

Prompt attention to your request for architectural catalog describing complete OASIS line.

OASIS Water Coolers

Products of **EBCO** Mfg. Co.

Distributed in Canada by **G. H. WOOD & COMPANY, LTD.**
P. O. Box 34 • Dept. JR-2 • Toronto 18, Canada

FRANKI FACTS



Gold Bullion Loads Floors to 10 KSF

Problem

The Bank of Canada Building in Regina is one of several structures across Canada used for the storage of gold bullion. It is six storeys high and has a double basement.

A large bank vault was designed to occupy one half the floor space below grade, the height of this vault being approximately 20 feet. The floor dead load was estimated at 10 ksf. Four columns, with loads varying from 2400 kips to 2800 kips, penetrated the vault. Such loading conditions posed a variety of unusual foundation problems.

Two foundation systems were initially considered. Excavated caissons were eliminated when the design study indicated that the required bell sizes were of such a diameter that overlapping would result and complete undermining of the site would occur.

A raft foundation design was also excluded because of poor settlement characteristics in the proposed bearing layer at excavation depth.

Solution

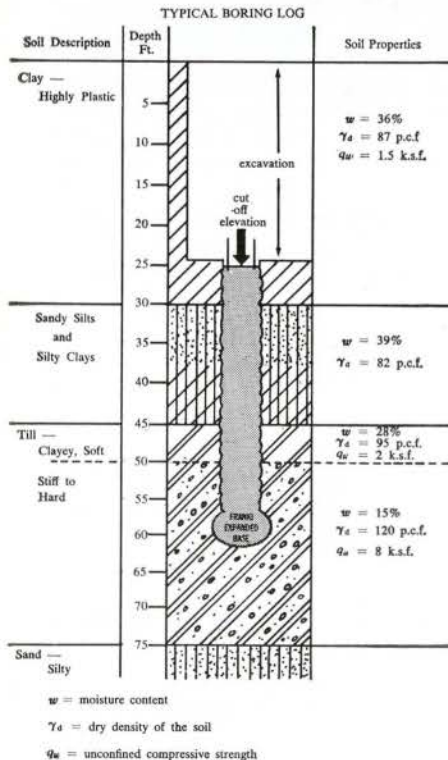
Franki Caisson-Piles were then studied by the designers and a design was considered using a pile-supported mat under the vault. The caisson-pile system offered support in the hard clay till 60 feet below street grade. It was found that the bearing capacity of the till layer would be improved by the displacement and compaction of the soil during the expansion of the endbearing base. The bearing layer was of low compressibility, thus total and differential settlements would be minimized. These foundation characteristics were most desirable and the system was accepted by the structural engineers.

In September 1962, two piledrivers were put to work in the 26-foot excavation. All pile locations were pre-bored to reduce ground heave. Two hundred and eight caisson-piles were driven on a 4 ft. to 5 ft. grid under the vault mat. The remaining piles in the contract were used to support walls and a central core.

Delicate electrical circuits in the Saskatchewan Government Telephone Building, located 20 feet from the site, were undisturbed by the piling process.

The Bank of Canada is another interesting and important building supported on Franki Caisson-Piles, *the right foundation for every structure.*

Franki foundations have been installed in more than sixty countries since the year 1910.



CLIENT:
Bank of Canada

LOCATION:
Regina, Saskatchewan

TYPE OF STRUCTURE:
Bank Building and Vault

ARCHITECTS:
Durnford Bolton Chadwick
& Ellwood, Montreal

ASSOCIATE ARCHITECTS:
Storey & Marvin, Regina
Saskatchewan

ENGINEERS:
Haddin Davis & Brown Ltd.,
Calgary, Alberta

SOILS CONSULTANTS:
Stock Keith & Associates,
Regina, Saskatchewan

No. OF UNITS:
305 - 20" Franki Reinforced
Caissons

WORKING LOAD:
135 tons

AVERAGE DRIVEN LENGTH:
33'-0"

AVERAGE CONCRETED LENGTH:
29'-10"

Literature — This series of job highlights as well as other descriptive literature, will be sent to you upon request to Franki Canada Limited, 187 Graham Blvd., Montreal 16, P.Q.



FRANKI

CANADA LIMITED

Head Office: 187 GRAHAM BLVD., MONTREAL 16, P. Q.
 QUEBEC OTTAWA TORONTO EDMONTON VANCOUVER



Celastic System accepted by CMHC, Ref. No. 5318.

Weatherproof a wooden raingutter? Easy! **CELASTIC**[®] it!

You find the busiest rain gutters in Canada on our West Coast. But this B.C. gutter is made of wood covered with Celastic, and it shrugs off storms and salt-laden air. It's extra-big and takes more rainwater than ordinary gutters; it's rot-proof and requires a minimum of maintenance. This is just one example of the way Celastic helps architects add to the attractiveness of homes and commercial buildings.

Flexible, durable, versatile Celastic has a thousand and one uses. On verandas, balconies and sun decks, Celastic handsomely resists the full heat of summer sun, and the snow and extreme cold of winter. For roof surfacing it provides an economical means of covering flat areas and maintaining an undisturbed roof line.

A robust fabric impregnated with solvent-activatable resin, Celastic can

be moulded to any shape, and sets permanently. It is non-corrosive, resists fungus, and has a high abrasion factor. It is unaffected by temperature extremes from -50° F. to +200° F. Celastic bonds to a variety of substrates, such as wood, concrete, ferrous and non-ferrous metal and plastic, and is easily coated to your colour specification. It will pay you to find out more about Celastic. Mail the coupon today.

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P.O. Box 1445, Place d'Armes, Montreal 1, Quebec.
PLEASE SEND ME FULL DETAILS ON CELASTIC.

Name.....

Title.....

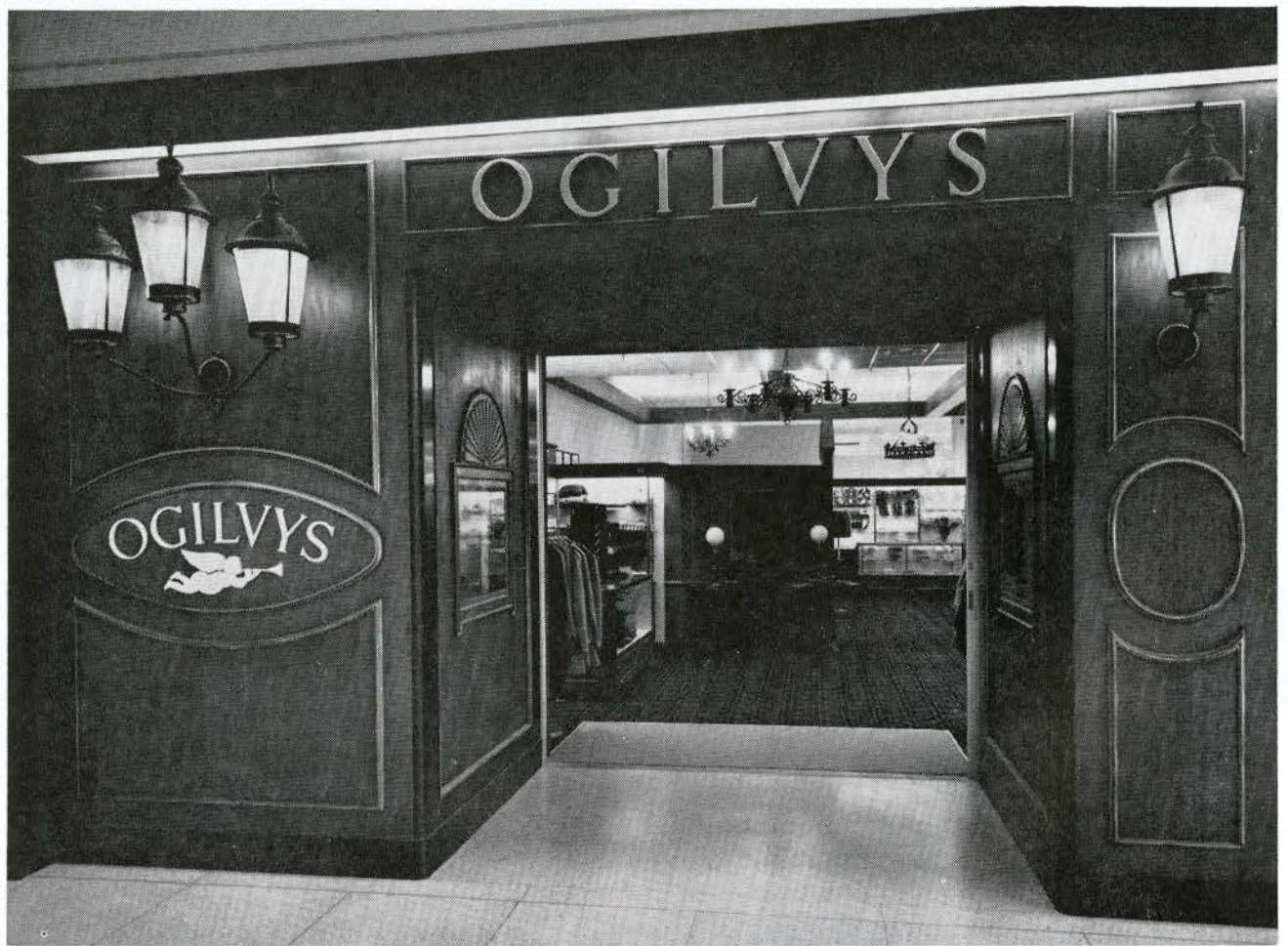
Company.....

Address.....

City..... Prov..... Tel.....

Antique-finished plywood and traditional wood trim create an elegant, inviting entrance to Ogilvys in the Fairview-Pointe Claire Shopping Center, near Montreal. Architect, J. A. Woollven MRAIC.

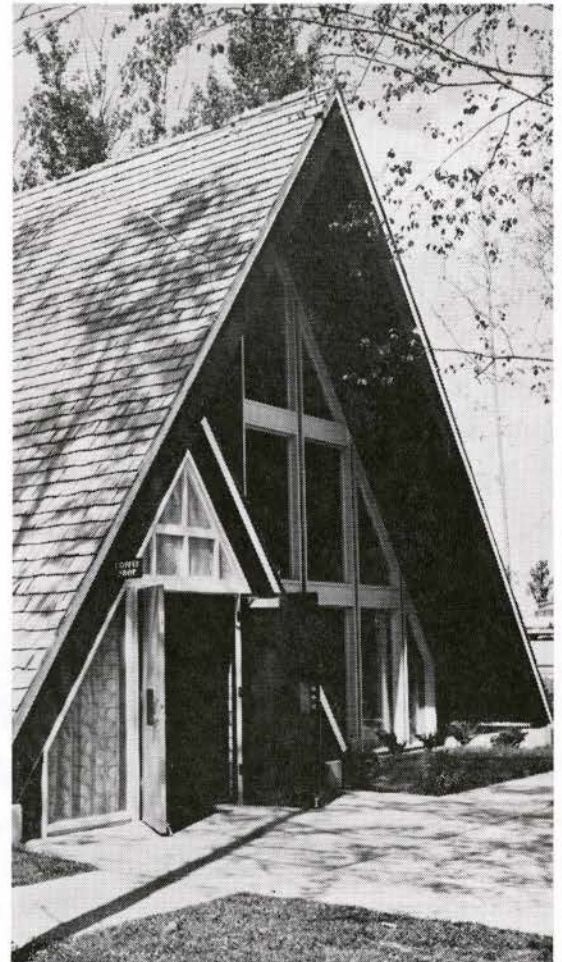
Below, the rich mellow tones of solid wood panelling provide distinctive display walls for the Seagram's office in the Fairview-Pointe Claire Shopping Center. Designed by Carl Mangold Ltd.



**For the perfect
business environment**

For the Selkirk Inn Motor Hotel, Golden B.C., a dramatic wood building catches the traveller's eye. A-frame design and roof of cedar shakes lend an air of friendly informality. Architects, G. A. Blum and Associates.

use wood... and your imagination



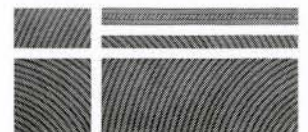
The obvious function of a business establishment is to attract customers and stimulate sales. The natural choice — wood. For the architect, the unlimited forms of wood give your imagination free rein to create buildings that attract the eye . . . and the business! Wood carries the appeal inside, too. The warmth and beauty of wood create a friendly atmosphere . . . set a perfect mood for buying. And wood's natural properties control temperature and absorb unwanted clatter. In a showroom, strong laminated wood beams provide wide-open selling space . . . beautifully! Wood panelling gives a look of luxury to any decor. Custom-built wood shelving and counters can easily be integrated into your theme . . . and give distinction to all merchandise displayed!

For the ideal environment for any business, look to wood first. And for a comprehensive new idea booklet entitled "Environment for Business", please write:

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A fitting home for a company which
has had the first name in Quality
Architectural Woodwork since 1871



LIDLAWS

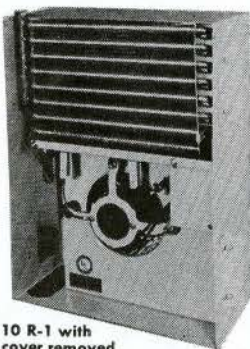
50 Oak Street, Weston, Ontario

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ZONED COMFORT - AT LOW COST**

PENN Air-rad

has delighted Canadian users for 11 years

For room thermostat control, with or without air intake.



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You can connect **PENN AIR-RAD** to any standard hot water heating system. Summer cooling may be added in the future, by installing a water chiller. Blower fan with adjustable speed is silent at heating speed of 650 RPM. Compact size permits installation where wall space is limited.

Also for heating only—add suffix -H. Steam or hot water.

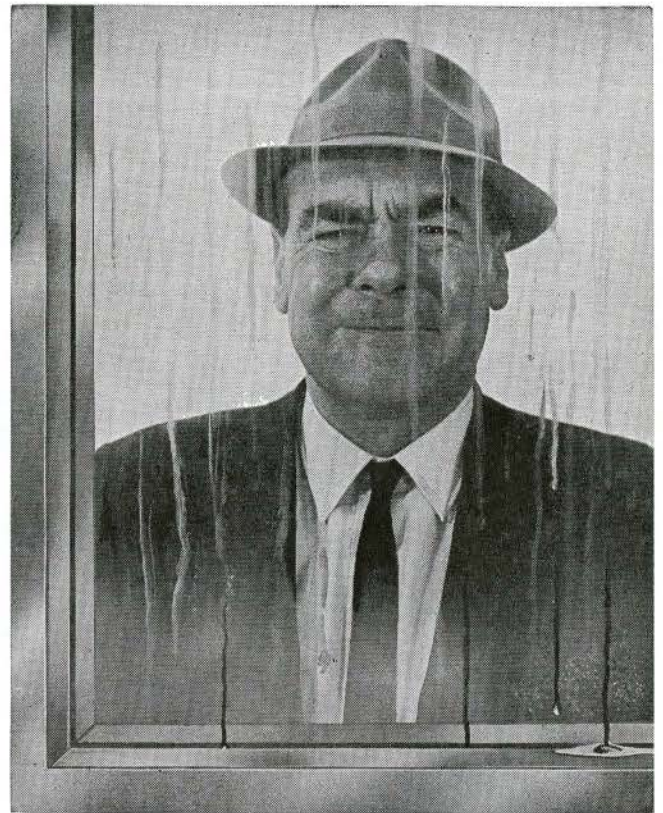
Semi-recessed. For free standing add suffix -FS.
For fresh air intake add suffix -FA.

Heating: BTU/HR 200 deg. F.	Models:	10-R	15-R	22-R
Cooling: BTU/HR 42 deg. F.		10,000 5,000	15,000 7,500	22,000 10,000

C.S.A. approved. Sold through heating wholesalers.

Write for literature or demonstration.

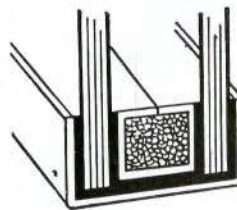
F. G. French & Co., factory representative
4337 Wilson Ave., Montreal 28, Quebec. 486-4165



SOMEBODY DIDN'T SPECIFY

Sealite!

Boy is he mad! Fogged up dirty double glazing is bad publicity for any building job. If you have had glazing problems, you will appreciate the guarantee that only Sealite gives on all units, including a re-glazing fee. Sealite builds them to last the lifetime of the building.



Before you specify another job, see why triple seal, steel framed Sealite units are your best—your most economical guarantee of glazing satisfaction.

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GLASS LIMITED

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2094 CHARTIER AVENUE, DORVAL, QUEBEC



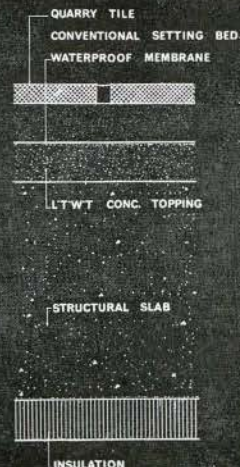
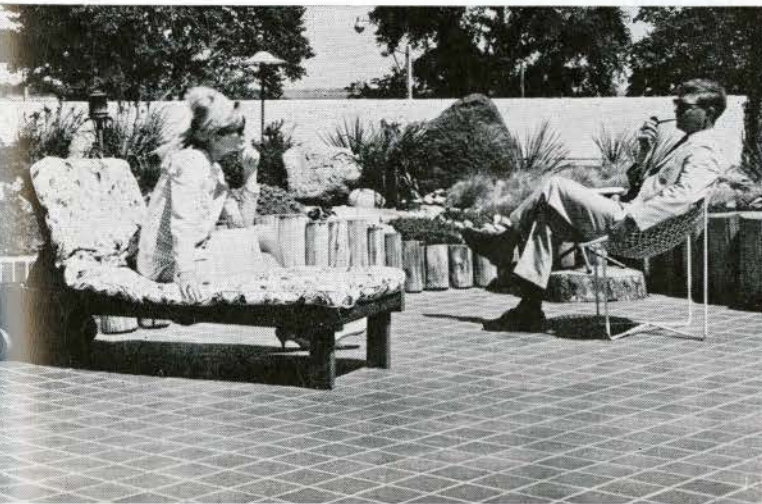
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Valuable roof-promenade areas over occupied quarters can now be created at a cost far below conventional installations. □ Three quarry tile decks, built on the 3M system, have been observed and studied over three years. Their advantages are proved and documented. □ Weight saving is better than 25% of conventional setting. Installation costs are lower to an important degree. □ In any

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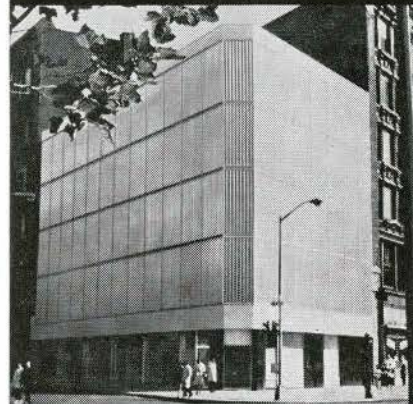
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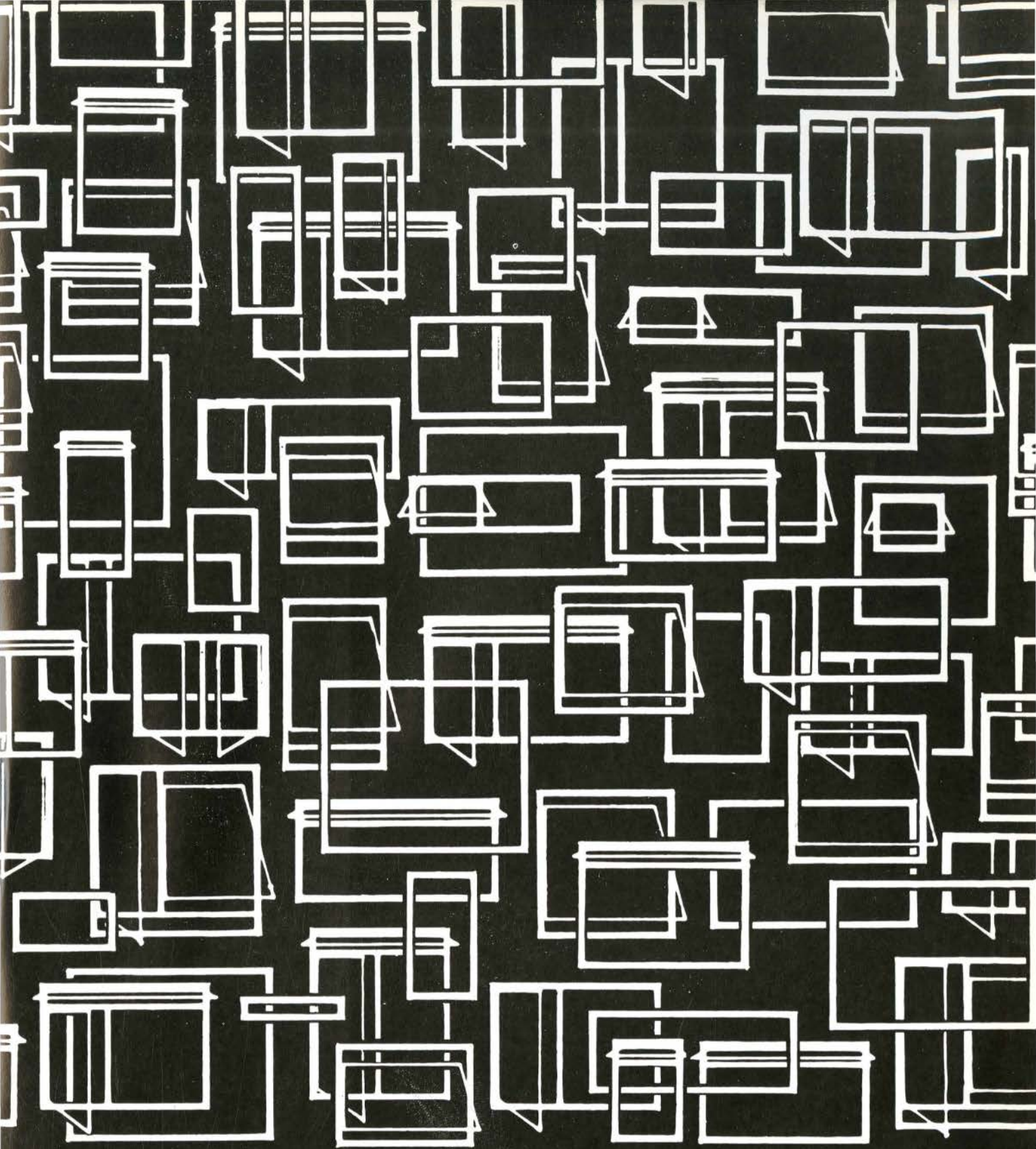
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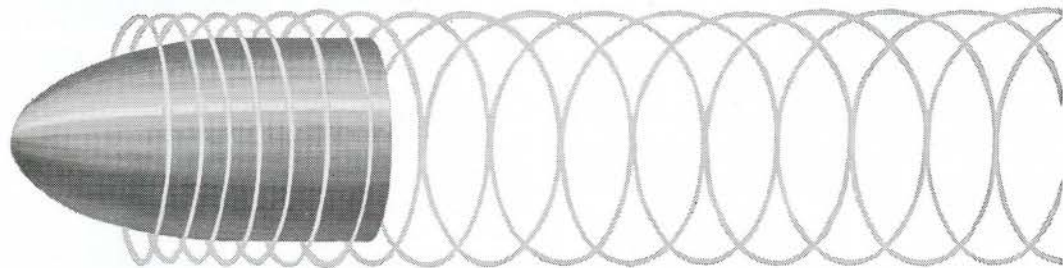
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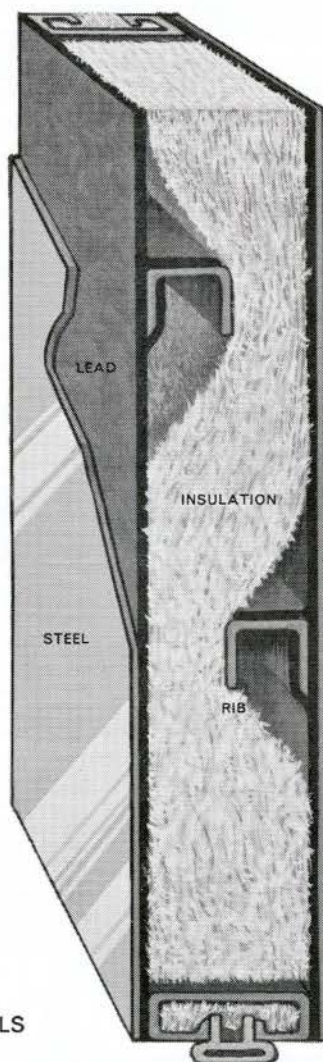
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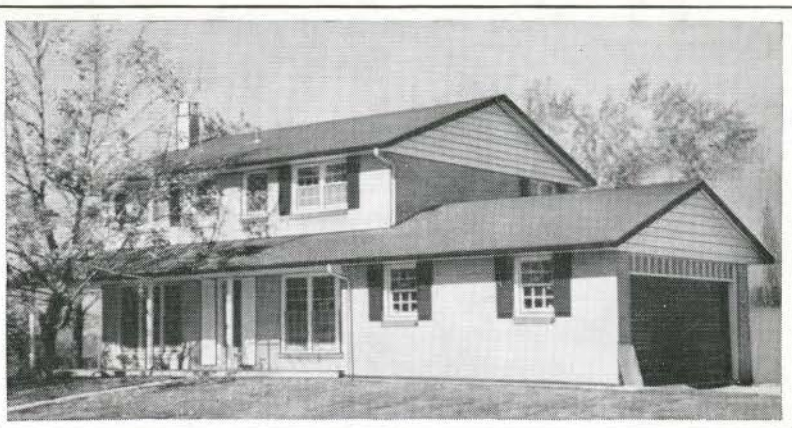
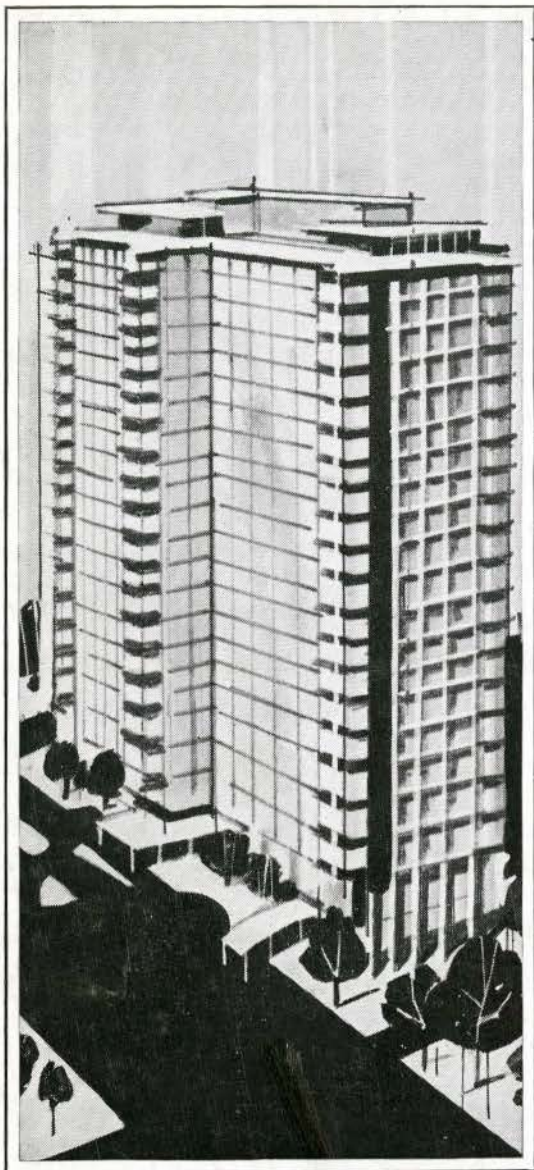
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