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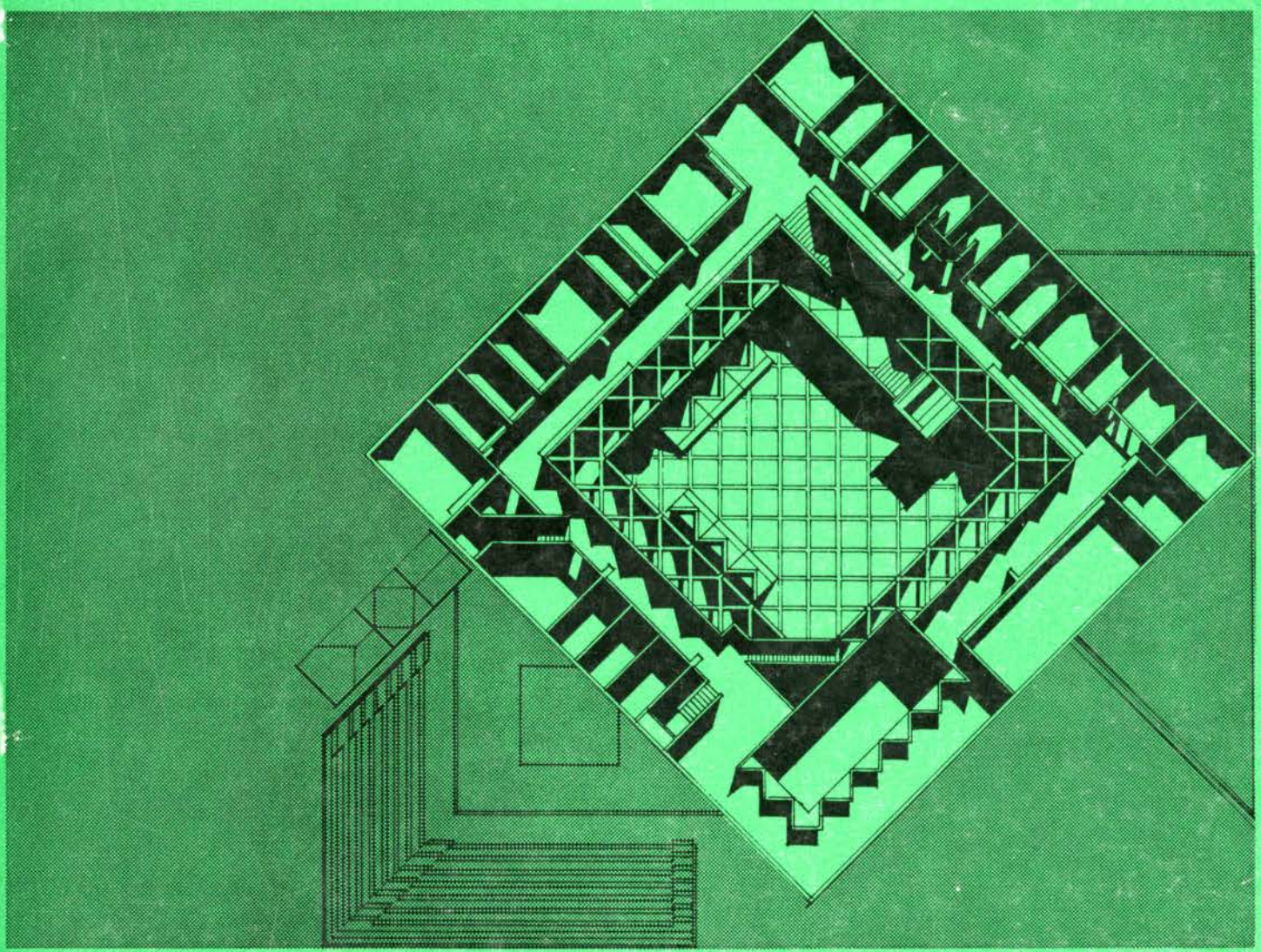
MAY 1963

RAIC JOURNAL



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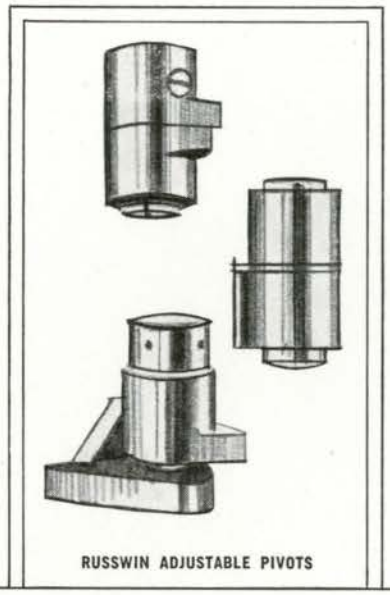

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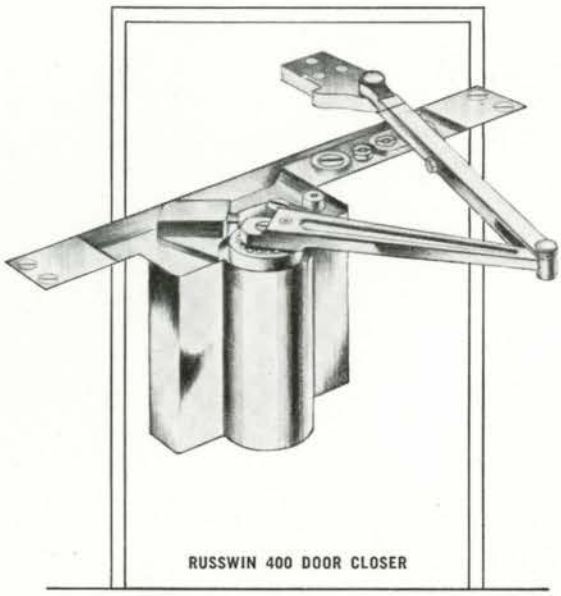

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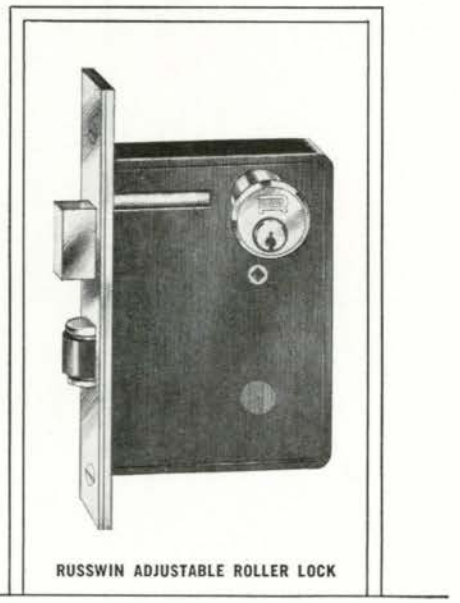

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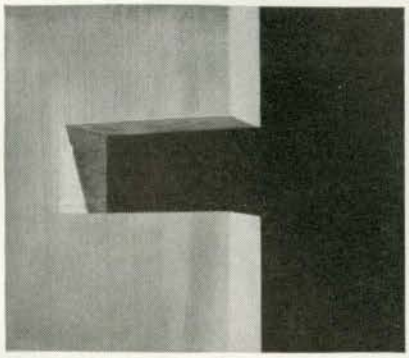

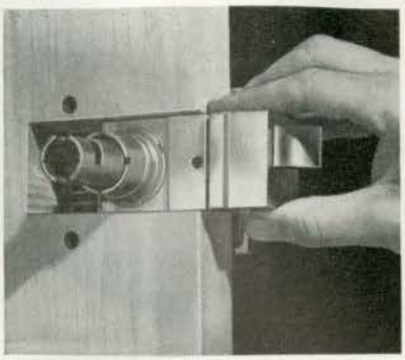

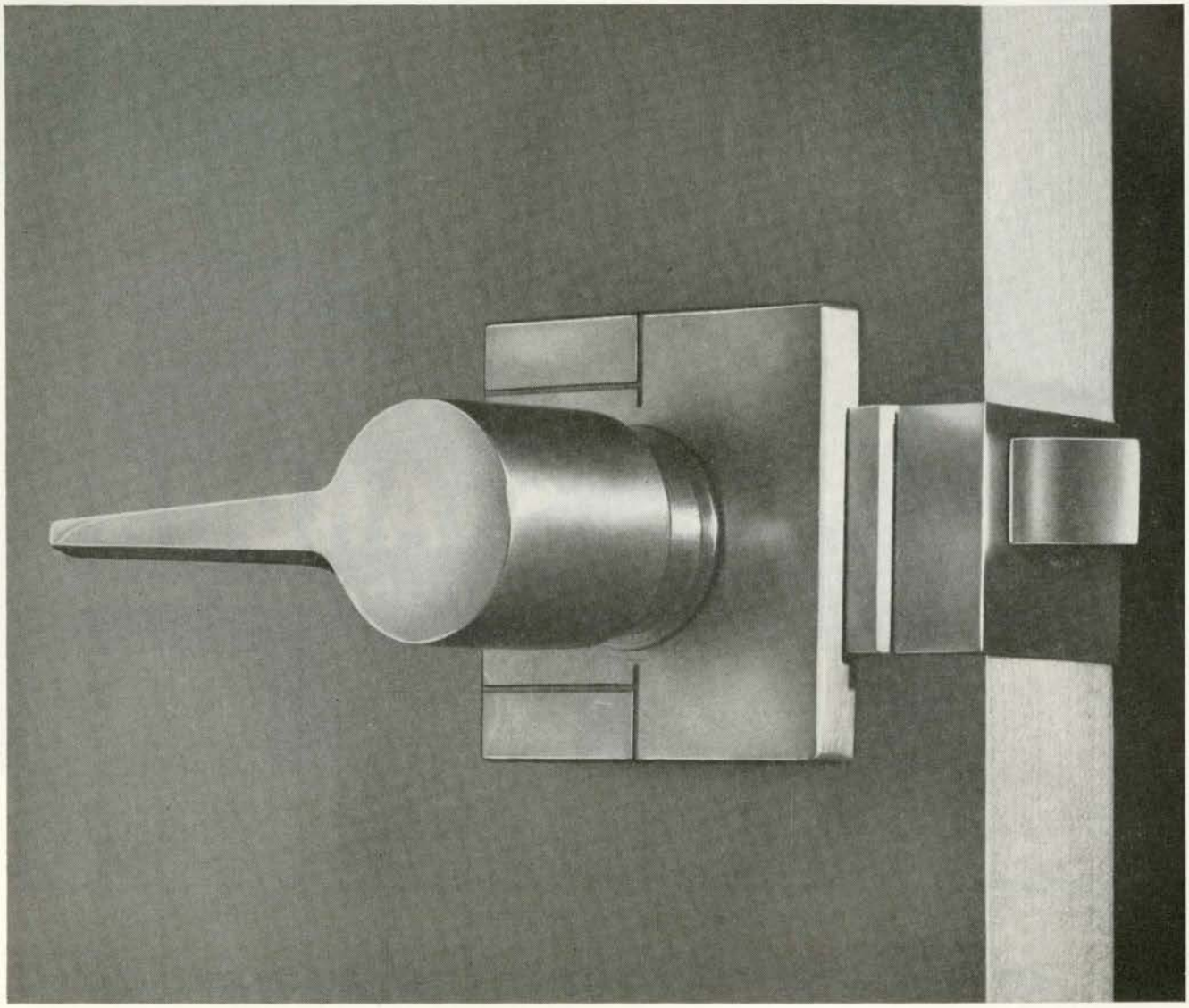

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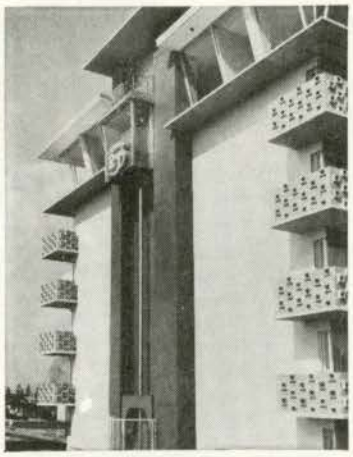

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COVER: Town Hall at Bat-Yam, Interior View. (see page 48)

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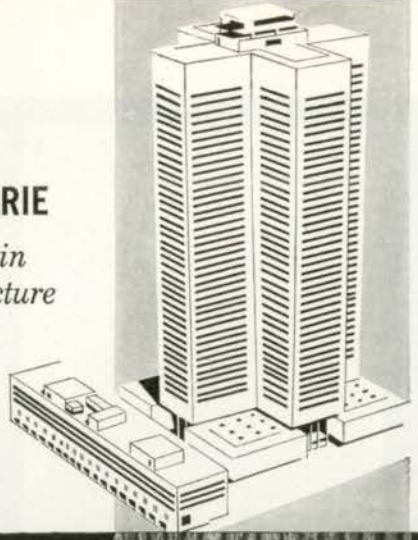

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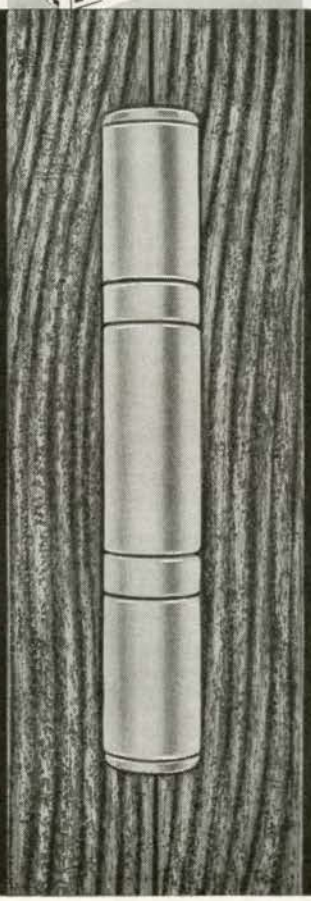

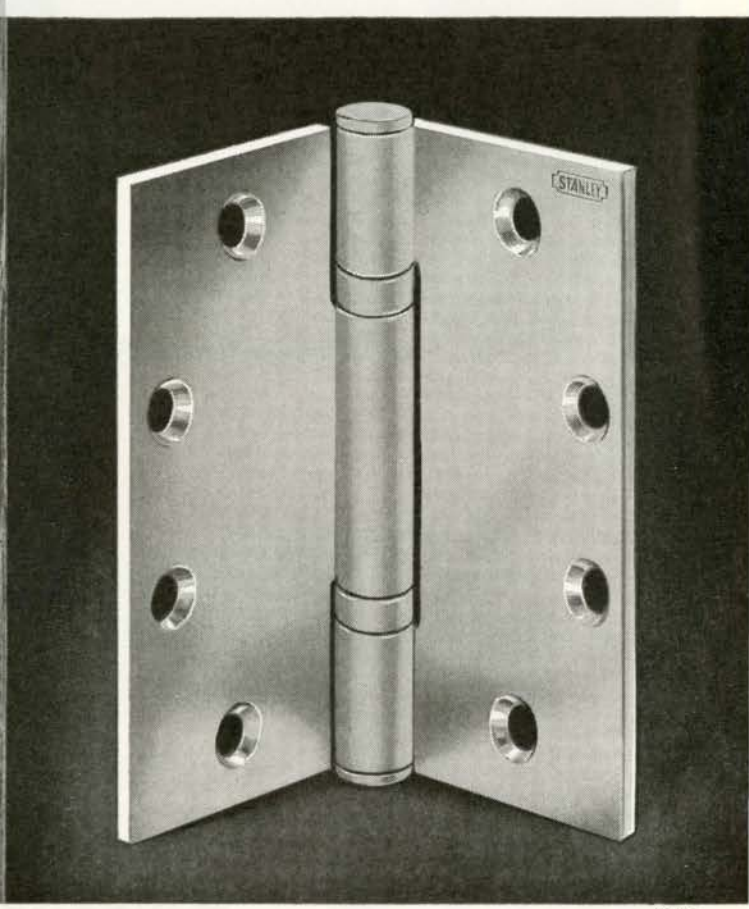

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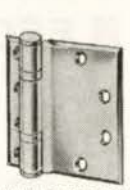

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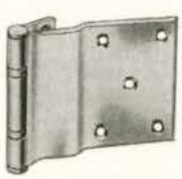

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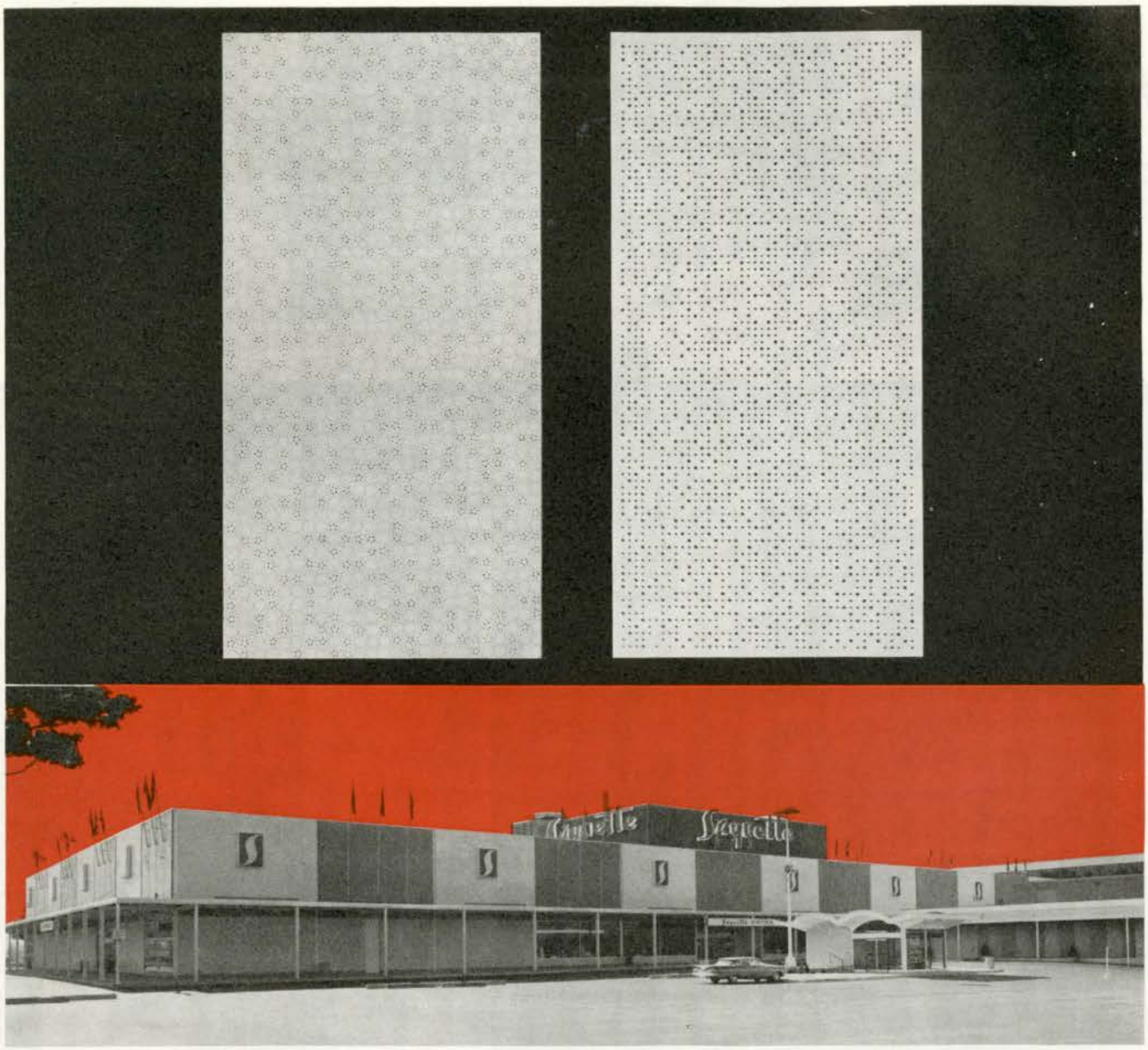

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ARCHITECTURE FOR THE CANADIAN PRAIRIES

A Report on the MAA Conference held in February, 1963 at the School of Architecture, University of Manitoba

by Radoslav Zuk

The year 1963 marks the 50th anniversary of the School of Architecture at The University of Manitoba, the Alma Mater of the majority of architects in central Canada. Recognizing the important role that the School has played in shaping the architectural scene in the prairie provinces, the Manitoba Association of Architects hastened to be the first in acknowledging this anniversary and a special conference was held as part of the Association's annual meeting.

Appropriately, the theme "Architecture for the Canadian Prairies" dealt specifically with mid-western conditions. Probably for the first time, the challenges of the severe climate and the flat landscape were presented squarely to the architects in this region. The overall state of prairie cities on one hand, and the general excellence of several recent buildings in the region on the other, suggested that the time is ripe – that something could and should be done. The questions were: do the particular conditions require special architectural solutions; can a specific architectural quality be achieved, *or* can one rely solely on mechanical equipment, double glazing, and prestine proportions – making believe that central Canada is no different from lower New York or California?

Greetings to the well attended conference (119 architects and 161 students) were presented by the presidents of the University, the RAIC and the MAA. The theme was presented in two ways. Ralph Erskine, the noted British architect from Sweden who has devoted the past fifteen years to the creation of an architecture appropriate for the Swedish climate, was invited, through the assistance of The Canada Council, to act as the key-note speaker. In addition two panels of distinguished Canadian architects discussed particular architectural and urban design aspects; senior and graduate students presented relevant projects designed for the Canadian scene. Mr Erskine's two evening lectures combined with the Canadian contributions in an engaging counterpoint which culminated in harmonious and profound conclusions. The finale of the three day conference took place in a less serious mood at the students' annual Beaux Arts Ball.

In his two evening lectures, "The Challenge of the High Latitudes" and "Community Design for Production, for Publication and for the People?", Ralph Erskine presented his architectural credo. Commencing with his opening statement he established a complete rapport with the audience. One could not help but be impressed by the directness, charm, and strong convictions of this fully dedicated architect and planner. His lectures demonstrated a serious and exacting approach to architecture. Initially he presented a careful analysis of all pertinent conditions of the Swedish scene; climate, topography, vegetation, traditions, and social conditions were examined. This was followed by basic research into particular circumstances which then found their expression in the architectural forms – "Of all geometric shapes the sphere has the minimum surface in relation to its volume, therefore to effect minimum heat loss, a villa resulted in a semi-spherical shape. Exposed structure cannot be easily insulated, thus balconies were not cantilevered but suspended or supported on a separate structure." Although these experiments might be considered as too direct interpretations of a given physical condition, they can serve as excellent demonstrations of an objective and unprejudiced approach to architecture under new and specific circumstances. Ralph Erskine stressed the fact that such an attitude does not allow for consciously transplanted aestheticism. "A deliberate concern with aesthetics without the primary respect for natural conditions cannot be justified – the Stockholm City Hall is decidedly beautiful, but it is wrong; an arcade is correct in Venice where it

PHOTOS BY KALEN

Top: Ralph Erskine. Centre: W. Gerson (F).

Above: guests at the Beaux Arts Ball; L to R, Ralph Erskine, Mrs Davies, and John Davies (F), RAIC president.

(continued on p. 13)

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(continued from p. 11)

gives protection from the sun, but it is out of place in Sweden where it generates drafts." Finally, concern for people emerged as the major motivating force in his architectural and planning work. Need for comfort, privacy, identity, and variety, and the opportunity for heightened social intercourse are his key considerations – "The creation of *place* which is meaningful in human terms, not *space* which is a geometric concept". The question of a comprehensive environmental design is tied in with this approach. "An architect must work within the wider context of a community; the individual building is meaningless if it does not relate to a broader plan." This rather clear cut philosophy, coupled with great artistic ability, resulted in an architecture which carries with it great conviction and has won, for Mr Erskine, respect the world over.

His authoritative approach to northern architecture was respected throughout the panel discussions, to which he contributed observant and positive comments. The discussions were divided into two parts: one dealing with "architectural design determinants", and the other with "urban design determinants". George Swinton, a Canadian painter, introduced the discussions. In a clear and moving statement he appealed to the architect's responsibility, setting the spirit of the conference by urging that before seeking an answer, the appropriate question be determined.

The questions, in many instances, and some of the answers were clear in most of the panelists' minds. Their well prepared statements contributed significantly to the discussions which followed. Each panelist was asked to speak for a brief period, on a narrowly defined topic. During this time he had the opportunity to discuss his particular subject in depth. Usually in panel discussions each speaker tries to expound, in fifteen minutes, his entire philosophy of life and architecture and usually ends up by stating a few generalities which, although impressive, seldom have any practical application. In this case however, a few simple direct lessons could be learned. Etienne Gaboury's discussion of "Orientation", Ken Pratt's "Characteristics of Materials", Gordon Arnott's "Circulation Patterns", and Mel Michener's "Space Systems" generated a lively discussion which proved that many of the architects present had previously considered some of the questions raised.

The second panel discussion was at once easier and more difficult; easier because it dealt with urban design, an area where, frustrated by so many limiting conditions beyond the designer's control, one has an excuse to become overly theoretical and unrealistic, and difficult for the very same reasons. It is not always possible to come to definite practical conclusions, to suggest ready solutions to problems, and one cannot help but be either completely pessimistic or utterly utopian. Again, by being rather specific within the confines of their respective topics, the panelists generally avoided this danger. Erwin Cleve discussed "The Character of Urban Centres"; "Circulation Systems" was the topic of W. E. Graham's contribution; Morley Blankstein spoke on "Visual Aspects"; Jack Ross on "Special Forms".

Presentation of projects related to the theme of the conference was the subject of the final session. Of special interest were three proposals for Svaapavaara, a new town in northern Sweden which Ralph Erskine is designing at present, developed by fourth year students at Manitoba according to the original program he had sent them a month earlier.

An excellent summation of the various thoughts expressed was provided by Wolfgang Gerson (F), who served as a most able chairman throughout the entire conference. He referred to George Swinton's basic thesis, "What are the real bases from which we must function; where do we start?" and to the image of the prairies and their changing character which he so ably presented. Professor Gerson underscored the importance of individual observation as the principal means of determining what the needs of human beings are. "Since this is an age of science, we must not underrate the sciences, both physical and social. We must make a sincere attempt really to see what is known, what is available in knowledge; in this we can adapt this knowledge to our own use . . . George Swinton asked, "What are the answers?" The answer to this we do not yet know. "What are the questions?" I would say there are many. "Where do we go from here?" Trying to search for new solutions to new problems, we discover that new solutions bring with them new problems . . . Co-operation within the profession itself is vital to the challenge of new problems and new solutions. I urge you to carry on these exploratory discussions here in the prairie region. The scope is tremendous and our responsibilities as architects are tremendous." All those attending the conference were unanimous in their conviction that the inspiration provided by Ralph Erskine and all the participants could not fail to further progress and the fruitful development leading to a meaningful architecture in the Canadian prairies.

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LEGAL NOTES

MECHANICS' LIENS PART I — GENERAL

By Norman Melnick

In recent articles this column has discussed the architect's duty to afford protection to the owner-client in the circumstances where the general contractor becomes insolvent or in some way goes into default which results in a cessation of work on the building project. While the subject of the present article, Mechanics' Liens, is one which concerns the protection primarily of subcontractors and suppliers of labor and materials, the rights of the owner-client are directly involved and the architect has certain strict statutory obligations under Mechanics' Lien Legislation with respect to the owner, the contractor and the sub trades — obligations which are worthy of some comment.

Historical Background

The right to a lien upon land by workmen who supply labor, or service or materials which improve and enhance the value of the land, is a right which in Canada is created entirely by statute. Mechanics' Lien Law was unknown at common law. The protection of such workmen whose labor and material benefit the land of another, through the creation of a mechanics' lien, is a concept first found under Roman Law. The civil codes of most European countries and also of the Province of Quebec, have derived from Roman Law articles for recognition of the right of workmen to liens against land, whereas in England, there is today still no Mechanics' Liens legislation. This legislation first evolved in the common law jurisdictions of North America. The first Mechanics' Lien Acts in Canada were passed in Ontario and Manitoba in 1873, and today there are Mechanics' Liens Acts in every common law province of Canada which Acts are essentially similar in scope and effect.

Purpose of Legislation

The purpose of the Mechanics' Lien legislation is to provide a vehicle for payment to subcontractors and suppliers of labor and materials, whose efforts have increased the value of the owner's land and to protect them from the hands of unscrupulous and insolvent owners and contractors.

In general, the Mechanics' Lien laws purport to accomplish this purpose by compelling the owner to set up a fund for the benefit of those doing work and supplying materials, and the mechanics' lien then becomes a charge upon this fund. The owner is required to hold back from the monies payable to the contractor a certain percentage, which comprises this fund, for the payment of claims of subcontractors and suppliers of labor and materials, and the lien feature operates by subjecting the interest of the owner in his land to a lien or charge in favor of those enhancing its value.

Another purpose of this type of legislation, as expressed by the courts, is to prevent a multiplicity of actions for small claims in which the costs would be enormously out of proportion to and in excess of the sums claimed. The Mechanics' Lien laws set up a rather quick, informal and inexpensive procedure for the ajudication of such claims.

General Scheme of Legislation

In all the provincial Acts, except those of British Columbia and Quebec (whose derivation, as has been intimated, is unique from the rest of Canada) there is a holdback requirement which, generally speaking, obliges the person primarily liable on any contract to withhold 15% or 20% of the value of the work, service or materials, actually supplied as a fund to which subcontractors and suppliers of labor and materials may have recourse in the event that the contractor fails to pay them.

The provincial Acts are divided into three main parts, one providing for the creation of the lien, the other for the protection of the lien, and the third for its enforcement. The right to a lien arises in the case of a contractor or subcontractor as soon as the contract or subcontract is entered into, and in all other cases as soon as the first work is done or the first material is supplied. The lien is preserved by registration of a claim for lien, for without such registration the lien right has a limited existence and will expire. In Ontario, the time for such registration is within thirty-seven days of the last work done or last material supplied. In other provinces, different time limits prevail; for example in Alberta, it is thirty-five days and in the case of oil or gas wells, it is one hundred and twenty days.

To enforce the liens thus registered, it is necessary for one of the lien claimants, within a strictly prescribed time limit, to file a Statement of Claim and upon filing such Claim, the claimant obtains a Certificate of Action or *lis pendens,* which he must then register against the land.

Holdback Feature

Under the Acts of Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland, the person primarily liable on any contract must retain a holdback for the benefit of subcontractors and suppliers of labor and materials. The amount of such holdback is calculated in a certain prescribed manner under each of these Acts, eg in Ontario, the owner is required to hold back from the contractor for thirty-seven days after the com-

(continued on p. 16)

(continued from p. 15)

pletion or abandonment of the work 20% of the value of the work done or material supplied, where the price or value is under $25,000 and 15% where such price or value exceeds $25,000.

If the owner neglects or fails to retain this percentage, he may be required to pay it a second time.

This holdback is a fund for the lien holders and the owner cannot resort to it to compensate himself for any loss suffered by the non-completion of the contract by the contractors. If the owner takes the contract out of the contractor's hands, the owner may still be liable to the lien claimants for anything payable under the contract.

Trust Feature

In both the Ontario and British Columbia Acts, there is a further safeguard for the benefit of those whom the Act is designed to protect, by way of a provision that all sums of money received by the contractor or subcontractor on account of the contract price are deemed to constitute a *trust fund* for the benefit of the subcontractors, workmen and suppliers of labor and materials, and that the contractor or subcontractor shall be a trustee of such fund, and until all such claimants are paid, the contractor or subcontractor cannot appropriate any part of the fund for their own use; *ie* such money does not become the property of the contractor or subcontractor until all workmen and suppliers of material on the contract and all subcontractors are paid for the work done or material supplied, and until the Workmen's Compensation Board assessments are also paid.

Value Assessment of Legislation

In its recent treatment of the subject of surety bonds, this column stated that the Mechanics' Lien laws provided inadequate protection in many respects. The expected advantage of providing an expeditious means of settling workmen's claims, has not been achieved. Delays are prolonged through procedural difficulties. There is also a serious gap in coverage in that the projects of the Dominion and Provincial Governments are specifically exempted from the effect of these Acts, as are public street and highway projects of municipal corporations.

Bill 156, Ontario

However, at the time of the writing of this article, the Government of Ontario has given first reading to Bill 156, an Act to afford Protection for the Payment of Wages, Materials and Services on Public Works. The Bill, if eventually passed, will correct one of the more serious gaps in coverage of the Mechanics' Lien Act by ensuring the persons who supply labor, materials and services in the construction of public works undertaken by the Crown, in the right of the Province of Ontario, will be paid in full.

In succeeding articles, it is planned to discuss in more detail the operative provisions of the provincial Mechanics' Lien statutes and also with the corresponding provisions of the Quebec civil code, and to draw specific attention to the role of the architect in complying with these provisions.

ARCHITECTURE IN A SCIENTIFIC WORLD

By William Allen, ARIBA

The article is a summary of a lecture given to the School of Architecture at Manitoba as part of a series of lectures arranged by the school and made possible by a Canada Council grant.

In this paper, which was before a public audience, Mr Allen offered explanation of the development of modern architecture as an inevitable consequence of the introduction of experimental science. Briefly, his theme was that as long as knowledge of the natural world was not sought objectively by experiment – a situation that prevailed until the late 16th century – the principal forces in the world, moral and social, did not disrupt the slow evolution of architectural character based upon post, lintel and arch, lasting from earliest historical times until the construction of King's College Chapel in Cambridge. This he described as "The last building of the pre-scientific era, the last major architectural statement of the medieval world". Experimental science then began to develop and with it the phenomenal power we have today over the natural world.

He explained why experimental science had not developed earlier. The Greeks almost got hold of it but closed their minds to it for the ethical reason that experiments involved physical work, and this was regarded as coarsening suitable only for slaves. A subsequent near-miss in Roman times by Galen, a medical man, was overtaken by metaphysics and then by Christian dogma which consolidated around the view that biblical explanations of creation were true, and that objective studies leading to other conclusions were heretical. The Church had the stabilising advantage of being the only education system until mid-medieval times, when the development of printing offered a wider opportunity to learn and argue. The demonstration by da Vinci, Copernicus and Galileo that the universe in fact was *not* centred upon the earth, was a fundamental blow to the Church's position and established the concept of discovering reliable knowledge by experiment.

The technological and social consequences of science did not begin to operate powerfully until late in the 18th century, and meanwhile the newfound intellectual freedom was accompanied by a classical architecture, drawn into currency again for associative reasons as the style of the previous intellectually free era before church dogma developed. With the growth of belief in the moral worth of materialism in the 19th century, the flood-gates of development opened and architecture as it had been known crumbled completely. Philosophic debates between romantics and rationalists threw up the Victorian battle of the styles, but eventually logic demanded that architecture be re-thought fundamentally so that it could become responsive to a scientific world in which technology, economics and society were in rapid flux.

This was the present position, said Mr Allen. We were only a half-century or so from the earliest explorations of the new architecture and it was impossibly early to expect full emotional maturity or anything approaching stability. The development of society and science was now intimate and rapid, with no sign of relaxation. Architecture and society too had a dielectic relationship and could not be independent of one another in character. What was fascinating now therefore was to contemplate the idea that we were at the beginning of a new epoch of architecture, quite possibly lasting for some thousands of years as the previous one had done, until some other force comparable in influence to Christianity or science, once again shifted the course of history.

In some final remarks Mr Allen said he had naturally been questioned in Canada as to what he thought of Canadian cities and architecture. It was too short a visit for him to comment in any detail, and he could only say that he had been unable to detect much awareness that the nature and character of cities was controllable or much understanding of how this could be done or why it *should* be done. This was presumably a reflection of the particular balance of social values and objectives at this moment in Canadian cities and if this was so, he thought it was to be regretted. Someday there would come realization of the need for civic organisation which could implement the common purposes which were felt by ordinary people, and the longer it was delayed the greater would be the economic and social wastage which the present state of affairs represented.

Mr Allen, right, with Prof Roy Sellors of the University of Manitoba School of Architecture. Mr Allen graduated from the Manitoba School in 1936, winning the Gold Medal and the B Arch. Thesis prize. He was appointed principal of the Architectural Association School in London in 1955. He received the University of Manitoba Alumni Association Jubilee Award at the Annual Convocation of the University last year.

NSAA HONOURARY MEMBERSHIP

At their annual dinner in February the Nova Scotia Association of Architects presented Pauls Kundzins with an honourary membership. A native of Latvia, Mr Kundzins graduated from the School of Architecture, Polytechnical Institute of Riga in 1913 and practised architecture and taught at the School of Architecture in Riga. He has served as the head of the Department of Architecture and vice-president of the University of Hamburg and in 1949 when he moved to Stockholm was appointed to the staff of the Institute of Ethnology. Presently he is working with the Halifax firm of Duffus, Romans, Single and Kundzins, of which his son is a partner.

BOOK REVIEWS

GENUINE FORMS WITHOUT EXTREMES

By Norbert Schoenauer

NEW ARCHITECTURE IN SWEDEN, edited by Marten J. Larsson; published by John Wiley & Sons, New York, 1961, 347 pages, $14.50.

IT IS WITH DEEP RESPECT that one leafs through the pages of *New Architecture in Sweden;* deep respect because one is confronted with *total architecture* rather than the competent but sporadic architectural jewels so much in vogue these days. Whereas the architectonic gems are primarily linked to the names of their designers and developers, thus serving as mementos for their creators, the one hundred and fifty buildings illustrated in this book leave no doubt in one's mind as to the identity of their real owners, namely their respective occupants in the first place and only secondarily the team that brought these buildings into being.

New Architecture in Sweden is the fourth publication in a series commenced in 1939 by the National Association of Swedish Architects. As outlined in the preface by Bengt Gate, the main principle underlying this publication is to present to the reader a many-sided picture of Swedish architecture of the nineteen fifties.

The first part of this book consists of two brief essays entitled "Architecture of the 1950's in Sweden", by Erik Thelaus, and "Planning in the Post War Period", by Yngve Larsson. Both essays cover just about two dozen pages, a fact which must be regretted since many questions are very lightly treated and many more not answered. However we still get an insight into the problems occupying the minds of our Swedish confreres. The search for new forms of expression with its ramifications is understandably the most ardent topic. The new international trend superseding the traditional and regional styles of the 'forties, prefabricated unit construction versus "spatial gestalt", the need for a wide range of house types and the shortcomings of "loan architecture", the groupings of one-family houses and the problems of environment – these are but a few questions discussed in the first essay.

With respect to Planning, the outstanding contribution of the Swedish architects and planners is the recent development of survey methodology for large area planning. Demographic factors determine the Plan. The housing policy, governed mainly by large scale developments, is also based on forecast of population needs. Not yet resolved is the problem of car parking.

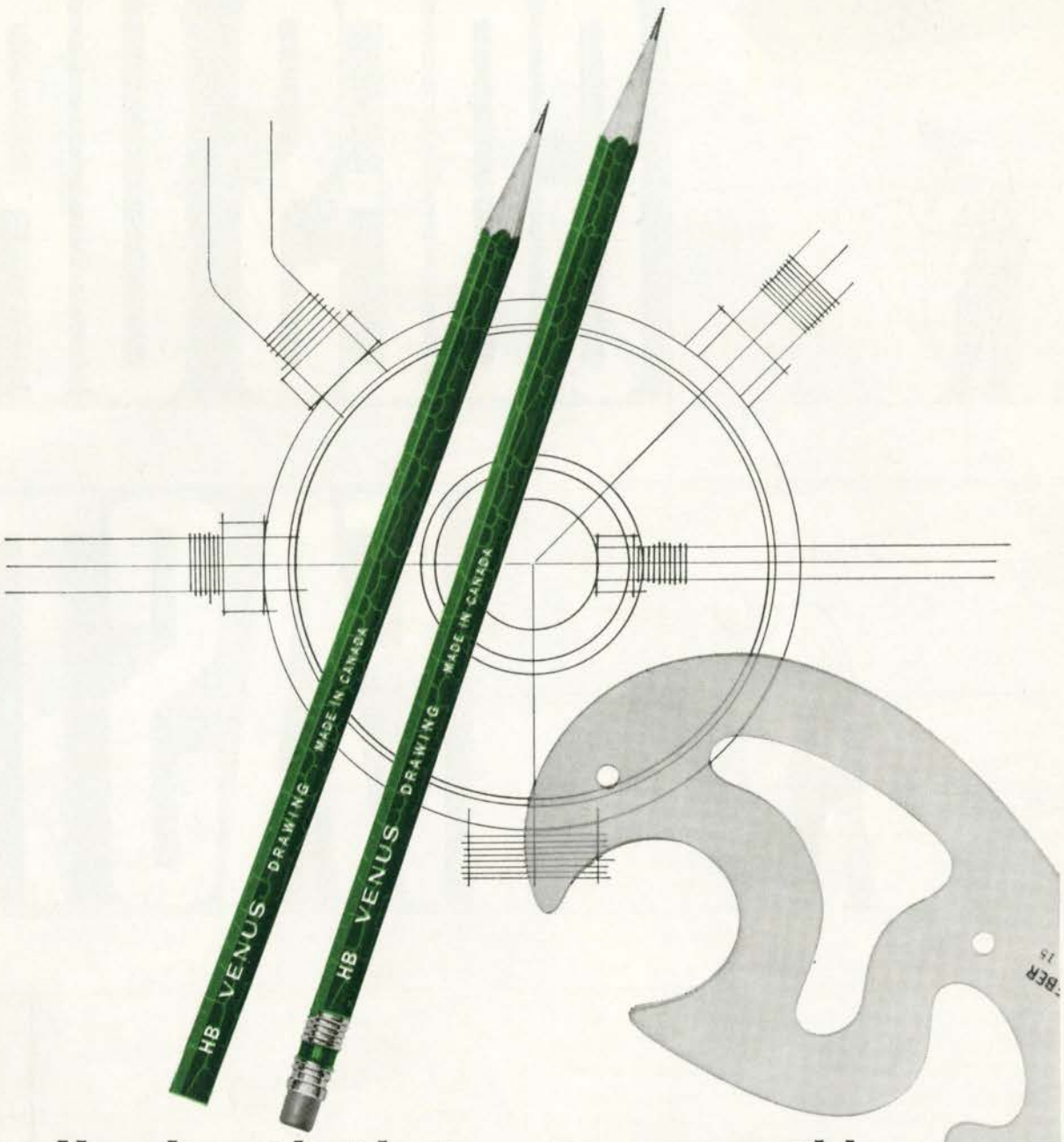
The second and main part of *New Architecture in Sweden* is a pictorial review of buildings designed and erected during the aforementioned decade. The architecture is accredited to some one hundred twenty-five architects, most of them unknown to their Canadian counterparts. Though some work is presented by such well-known architects as Markelius, Backstrom, Reinius and Erskine, the reviewer feels that the architecture of the relatively unknown architects is equally instructive since their buildings may be truer representatives of Swedish architecture. What impact can a great architect have upon the architecture of a country without the help of followers?

The buildings illustrated in the second part of the book are grouped in sections according to building types. Those pertaining to housing represent one third of the examples cited. These are followed by commercial, educational, recreational, social, administrative, industrial and finally religious buildings. The overall standard of architecture is high, and to single out several outstanding buildings is not within the scope of this review. Nevertheless, it is too tempting not to mention a tall cruciform shaped office building designed by Paul Hedquist and illustrated on page 270; its site plan is masterly, a true urban space enclosure permeated by sensitivity in its simplicity.

Also to be mentioned are the religious buildings "in which Swedish architecture has achieved several genuine forms without resorting to extremes".

New Architecture in Sweden is also a *handsome* addition to any architectural library apart from being a fountain of many inspirations.

(Mr Schoenauer is assistant professor, School of Architecture, McGill University.)



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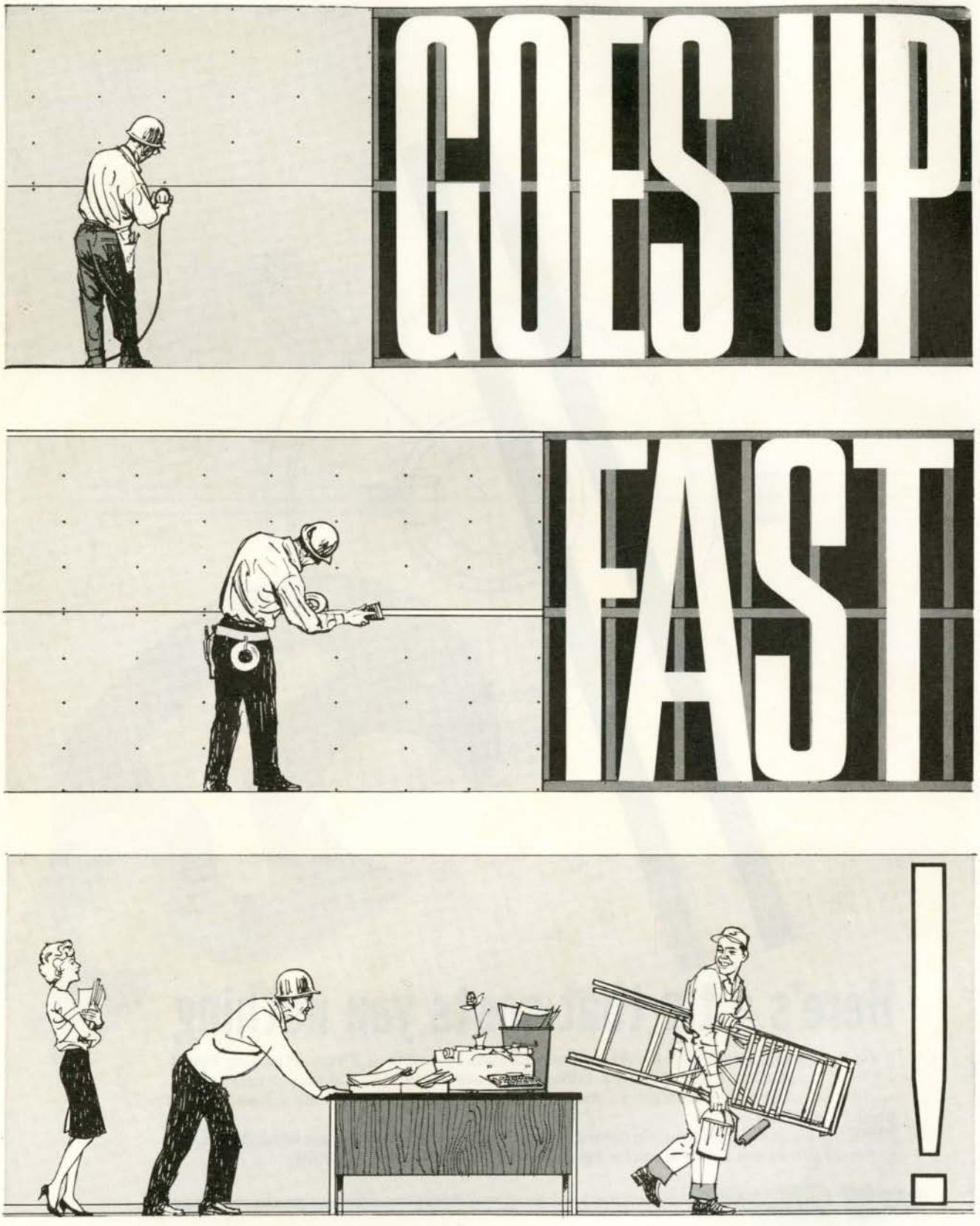

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Architects: Waisman Ross & Associates Photo: George Hunter

WINNIPEG *currently displays that rare Canadian civic feature, a relatively open central core. For this reason an urban renewal scheme at the centre of this city would escape the high land assembly costs normal to such projects. On this premise a group of interested citizens commissioned the preparation of a plan and model visualizing a long-range re-development of the centre of Winnipeg as illustrated above. The details of this plan and the probabilities of its eventual realization are considerations entirely secondary to the fact that it has been developed, has been explained to civic officials and has been widely seen and discussed by the general public. Here is an effective way in which private interests can promote public acceptance of the virtues of urban planning and renewal. Otis, manufacturer of the world's finest vertical transportation, is pleased to make this contribution to the same end.*

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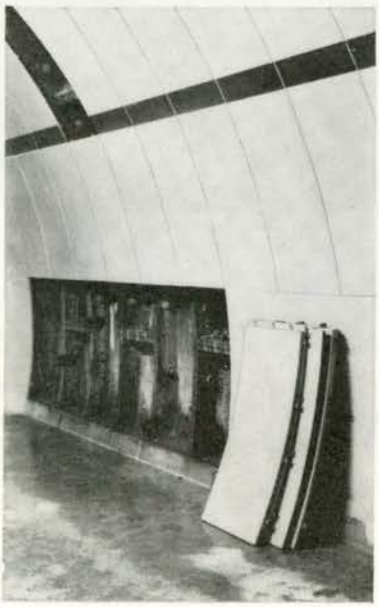

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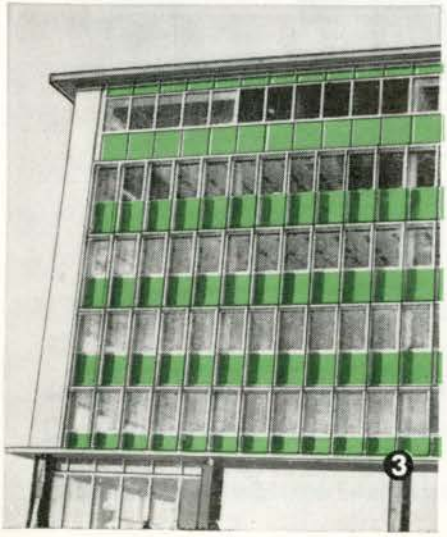

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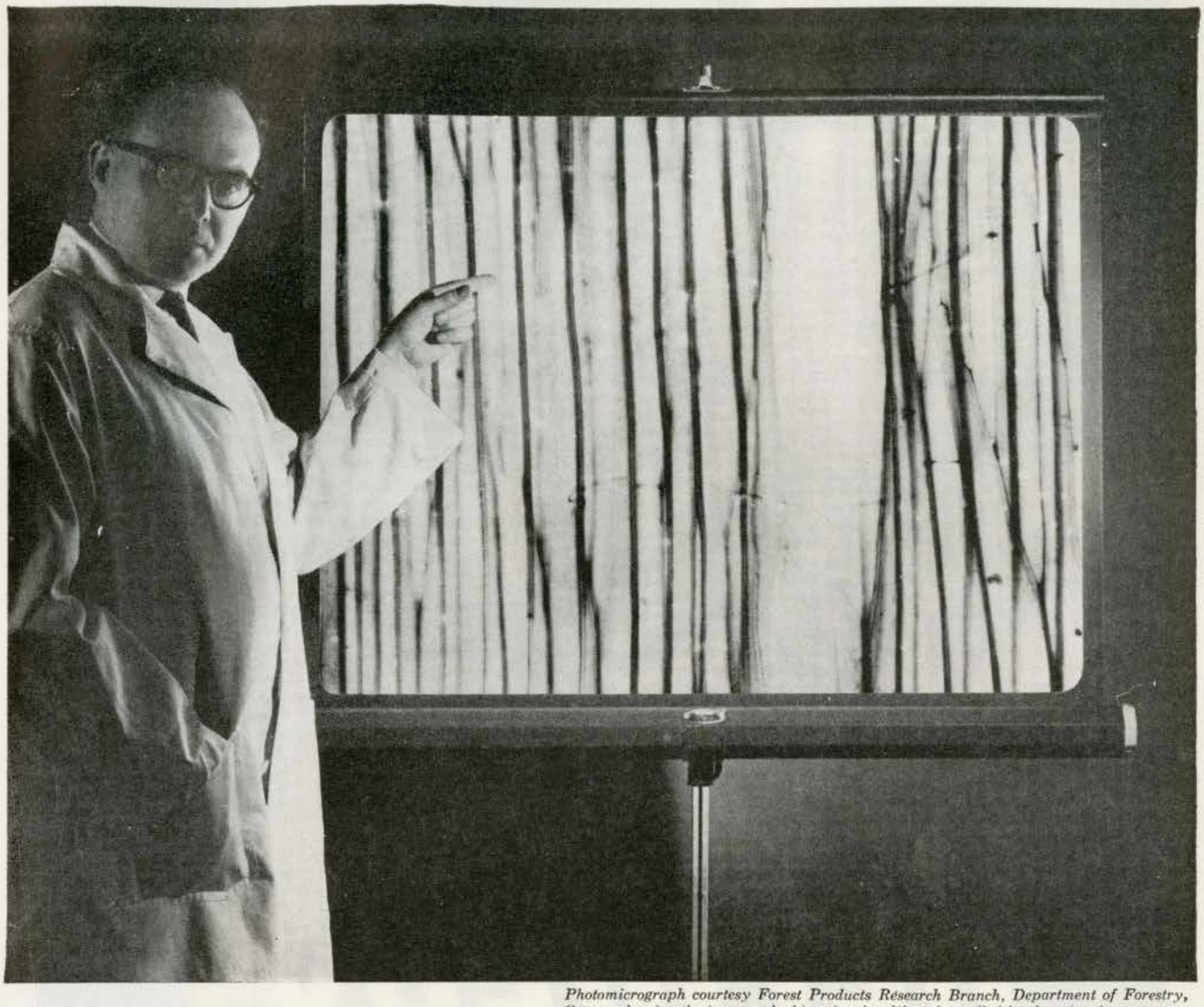

Photomicrograph courtesy Forest Products Research Branch, Department of Forestry, Ottawa showing the innocent looking, bamboo-like tubes called hyphae, (or, in mass, mycelium) which cause wood rot. They are an air-borne form of plant life of a very low order.

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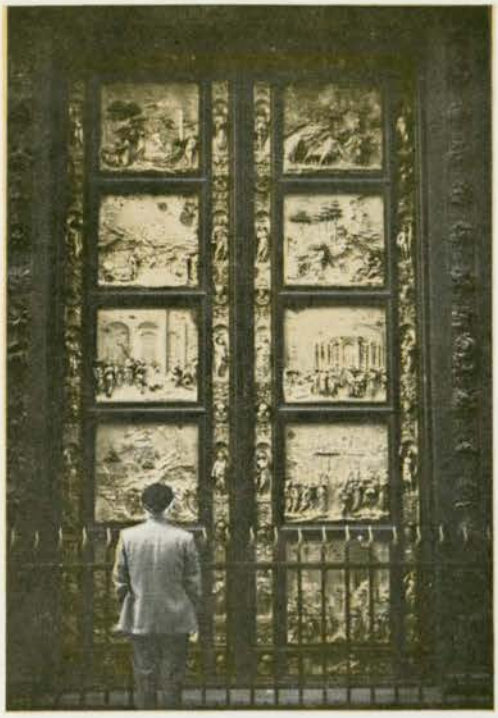

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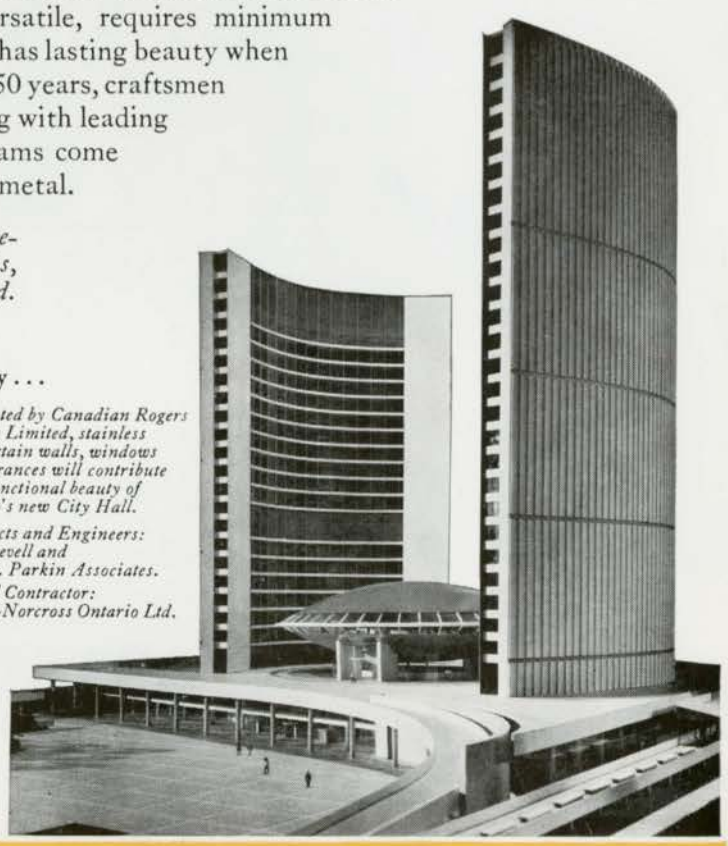

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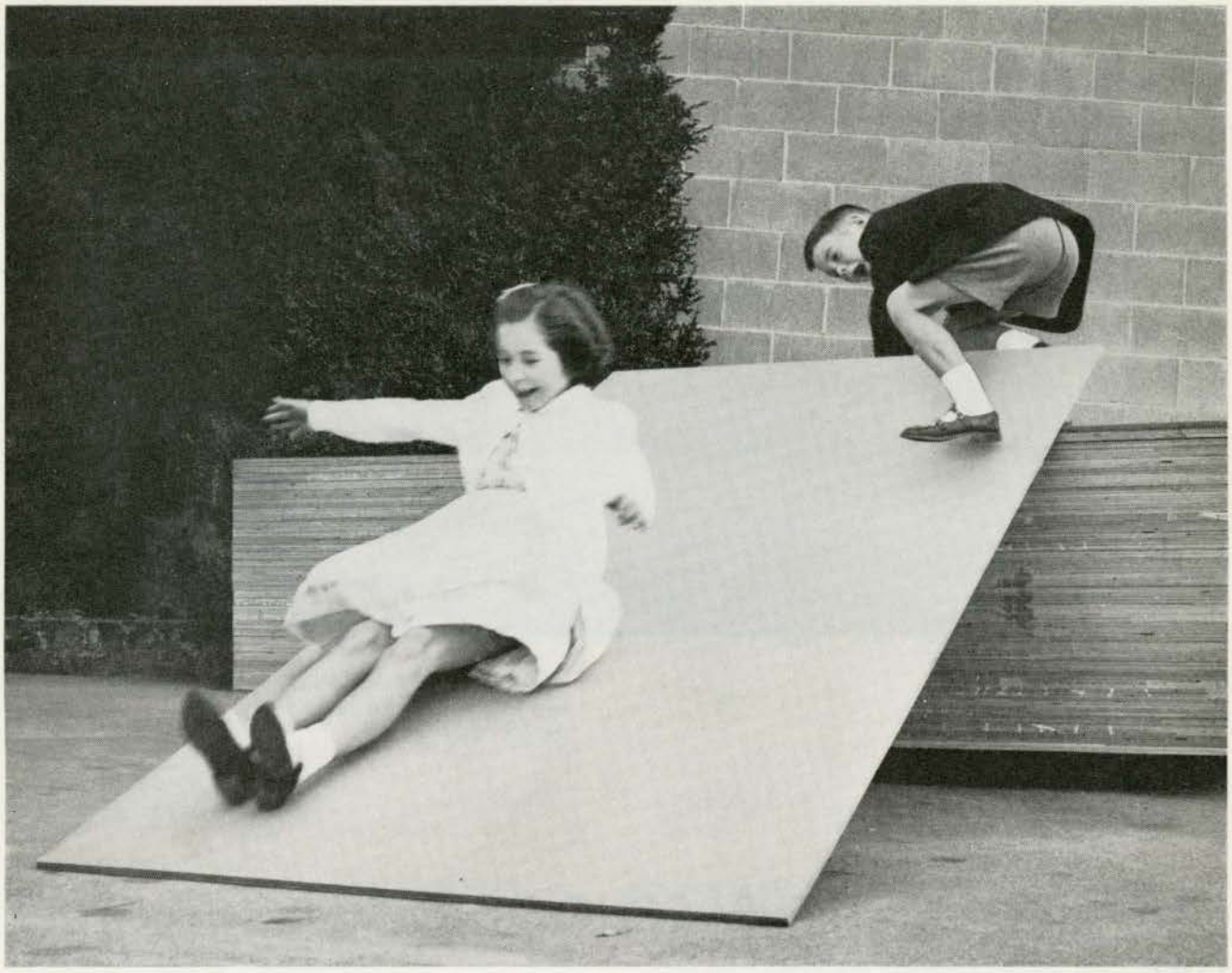

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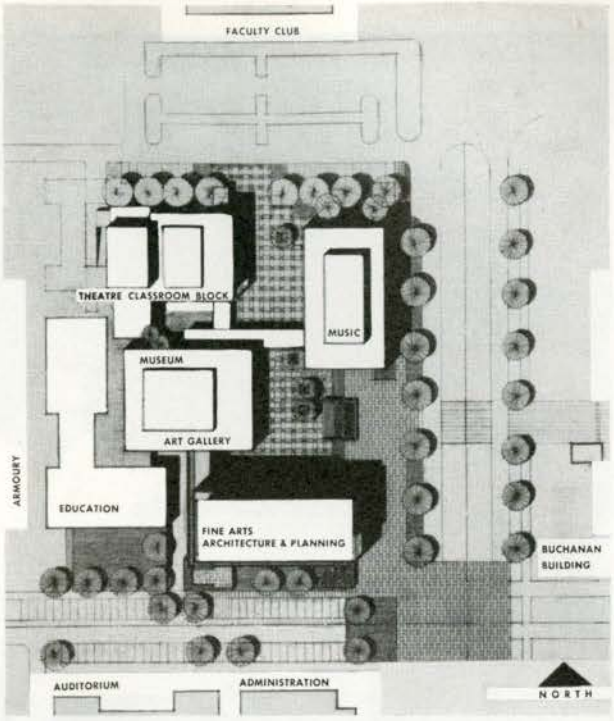
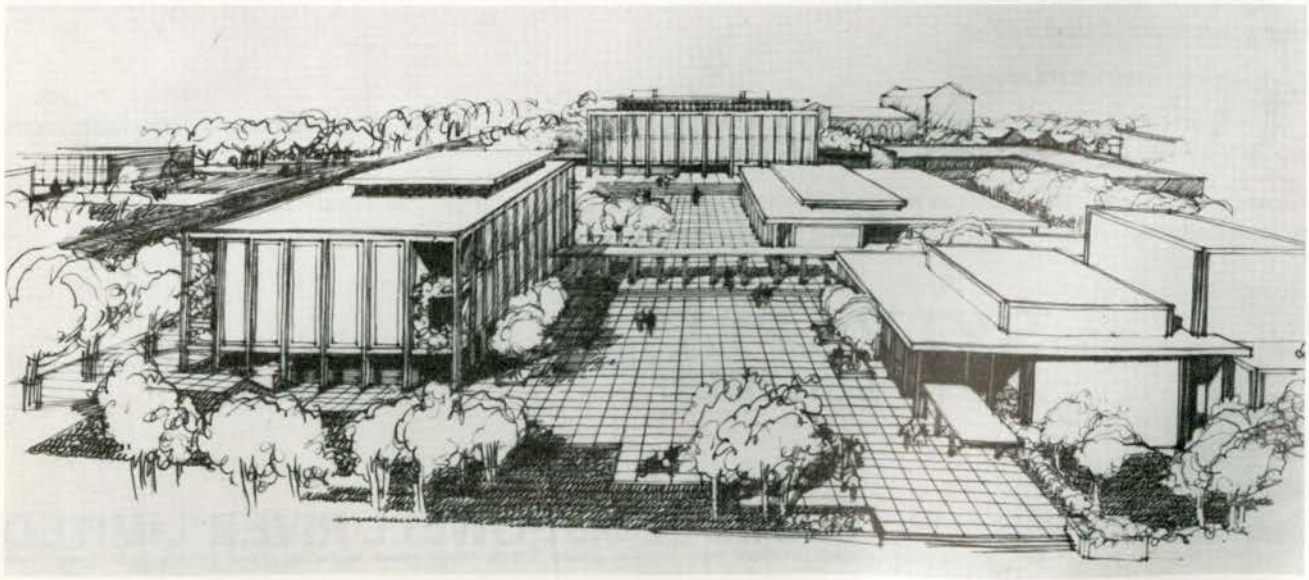


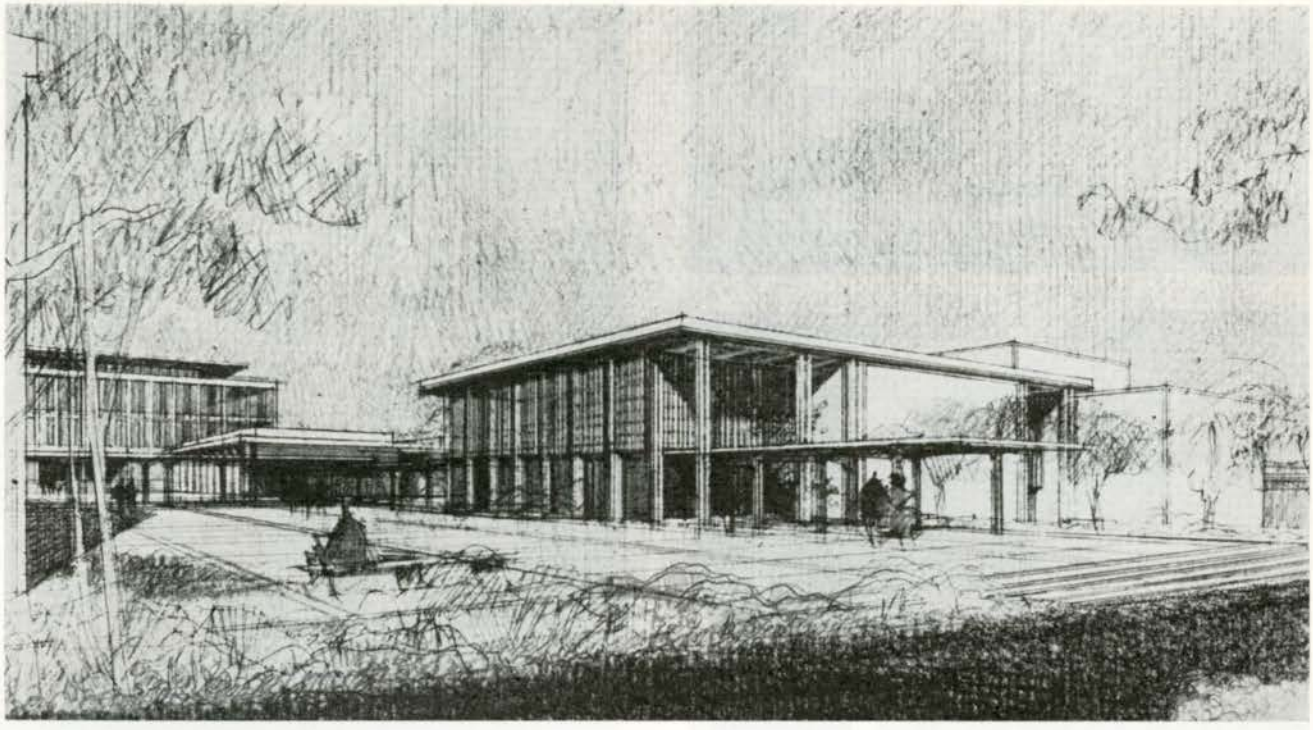
1: Site plan of the Fine Art Centre showing the relationship of this centre to the surrounding buildings.

FINE ART CENTRE & SCHOOL OF ARCHITECTURE UBC

Architects: *Thompson, Berwick and Pratt.*
Consulting engineers: structural, Otto Safir and Company Ltd; mechanical, D. W. Thomson and Company Ltd; electrical, Simpson and McGregor. General contractor: Howden Construction Company Ltd.

3: View from the Faculty Club looking south towards the Fine Art Centre. The Fine Arts building is in the background; Theatre, right foreground. School of Music, left foreground.





2: Architects sketch of the Fine Art Centre showing the Theatre and theatre court with the Fine Arts building on the left.

AN APPRAISAL

THE FINE ART CENTRE AND SCHOOL OF ARCHITECTURE UNIVERSITY OF BRITISH COLUMBIA

BY DR THOMAS HOWARTH

Until quite recently many schools of architecture have been miserably housed – and some still are. Like other relatively small and less favoured university departments the architects have put up with the most unsuitable and inappropriate physical plants and, let it be said, usually have achieved minor miracles of adaptation. One can think of schools that functioned well in dilapidated houses, dingy basements and attics, antiquated engineering buildings, disused chapels, and even in a 19th century curling rink.

Now, however, the situation is changing; the fine arts, architecture, and planning are assuming greater importance in our programs of higher education and they too are taking their rightful place in the physical development of the university campus. Canadian schools have been quite fortunate in this regard and of her five older foundations two, at the Universities of Manitoba and British Columbia, have succeeded in obtaining new buildings.

The most striking and gratifying transformation has occurred at the University of British Columbia where for many years the School of Architecture was housed in a number of old army huts (illustration 4). As part of an ambitious program for a Fine Art Centre the architects, Thompson, Berwick and Pratt, in consultation with the late Professor Lassere and Professors Binning and Oberlander have designed a new building to house the departments of fine arts, architecture, and planning; it was opened in the Spring of 1962.

THE FINE ART CENTRE

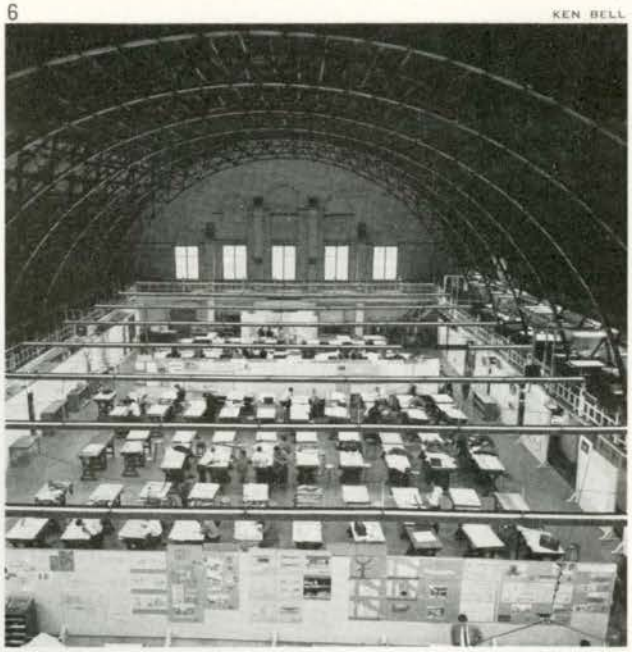
The Art Centre (1, 2, 3) will comprise an art gallery and museum, a theatre and classroom unit, a school of music and the Fine Arts Building. The latter is the only one finished at the time of writing although the theatre is nearing completion. The various elements in the Art Centre will be physically linked together by covered ways and will define two pedestrian spaces or courts running north and south on the axis of the existing Faculty Club which is just discernable at the top of the plan (1). The northernmost space will serve as a fore-court to the theatre and music buildings; the southern court will be used for the display of sculpture. Changes in level and planting should considerably enhance both areas.

The Faculty Club, an undistinguished building externally, has been used in the plan, one presumes, as the northern termination of the vista created through the two contiguous courts – the reverse of the view illustrated in the perspective sketch (3). The perspective shows the Fine Arts Building effectively stopping the gap at the south end, or to be more polite, terminating the vista, but this illustration has

4

5

6 KEN BELL



created the impression that the courts will be equally well contained by the Faculty Club, the building above whose roof the spectator has been adroitly levitated. But this is most unlikely. The impressive vista actually ends in a car park beyond which, at a distance from the theatre almost equal to the combined length of both courts, will be seen the Faculty Club. No doubt trees and heavier planting than has been indicated will be needed to effect some sense of enclosure in the theatre court. The architects have proposed a secondary east-west axis intersecting the north-south axis at right angles in order to draw into the group the adjacent Buchanan Building situated across the wide boulevard to the east of the Music Building. This is a good idea but again, since the Buchanan Building is as far removed from the eastern extremity of the site as the Faculty Club is from the theatre, a more skilful and sophisticated landscape treatment will be necessary if it is to be effective.

The matter of enclosure has been stressed here because in a campus with widely dispersed buildings, motor roads, boulevards, and over-generous open spaces there is a real need for some intimate precincts, some sense of containment. The excellent landscape work that complements the newer buildings at UBC is already providing some compensation by changes in level and horizontal surface textures, and tree and plant groupings; we can look forward with confidence to the completion of this project.

There seems to have been some indecision in the arrangement and placing of buildings (2) and it is not quite clear from the plan whether the main axis lies in a north-south or east-west direction. In perspective (3) the buildings appear to edge apologetically into the courts and the little canopy to the theatre seems to tiptoe timidly from the shelter of the big box rather than to stride out and offer protection to the car-borne theatre goers, most of whom presumably will approach from the north (the car park and the Faculty Club side). One wonders, again, if it were really necessary to retain the car park between the Faculty Club and theatre court – surely UBC would not wish its distinguished guests to traverse a parking lot after dinner in order to enjoy the delights of the Fine Art Centre and, since rain is not infrequent in British Columbia, the canopy might have been extended to become a porte kind of cochère.

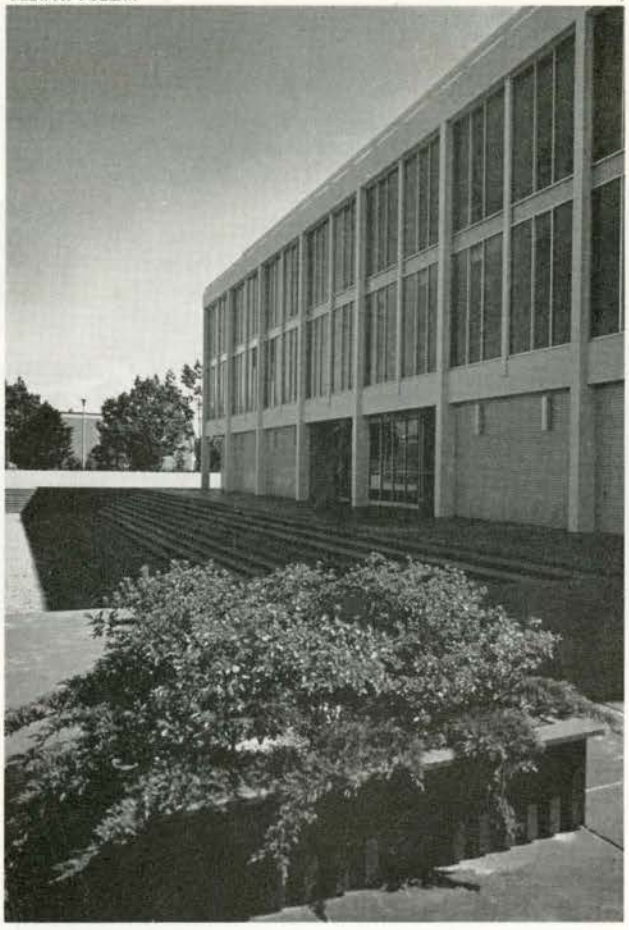
THE FINE ARTS BUILDING

The Fine Arts Building is of modest size, about 160 ft by 70 ft, with three floors and a penthouse above ground level. It stands on a corner site overlooking to the south and east spacious boulevards, while facing the Administration Building and Auditorium; to the north it seems to sit somewhat disconsolately, on the edge of the sunken sculpture court, awaiting its fellows (7).

The character of the building is not easy to define; it has a certain Franco-Swiss air of stolid respectability; it is neither inspired nor inspiring; neither exciting nor wholly dull. It is a tolerably sensible solution to an over-simplified planning problem, conveying little or nothing of the ferment of ideas, the clash of opinions, the agony and the ecstacy of creative thought and manual execution that are the constituent elements of a school of architecture and a department of fine art.

Externally the building is more ably handled than its

SELWYN PULLAN



4: School of Architecture, University of British Columbia, 1960.

5: Studio at old School of Architecture, UBC, 1960.

6: Victoria Rink, 1887, now demolished. Converted to house School of Architecture, University of Toronto, 1959-61.

7: Fine Arts Building: the north facade and sculpture court.

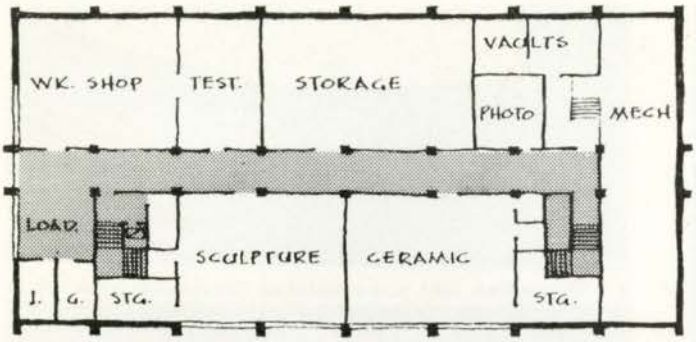
8: Fine Arts and School of Architecture Building: south and east facades.

SELWYN PULLAN

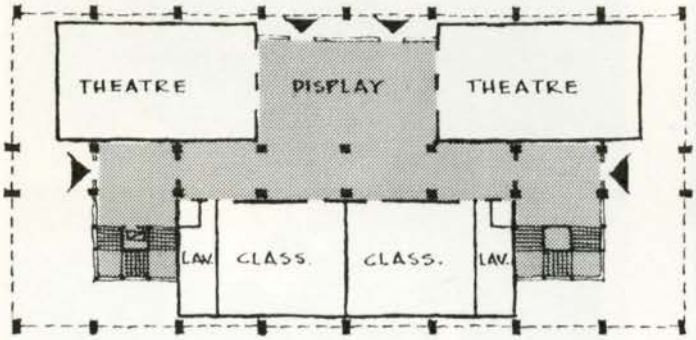
neighbour, the Faculty Club, remotely located at the other end of the north-south axis. The 20 ft bay module of the reinforced concrete structure has an overall height of about 36 ft which produces a well proportioned unit. To gain full advantage of this, however, it would have been necessary to project the columns further than has been possible here. The secondary and tertiary elements of the infilling (the central structural mullion, glazing bars, and spandrel panels) are too close to the face of the main structural elements, and in consequence the discipline imposed by the structure is not given full emphasis. This can be seen clearly in illustration (8) where the secondary mullion, which stops at the main beam, and the third floor spandrel form a strongly defined + which confuses the facade pattern. If money (and, perhaps, imagination) had permitted the structural form to be more positively expressed so that sunlight and shadow could have been fully exploited, the vitality of the building would have been greatly enhanced.

The important north facade which will overlook the sculpture court suffers especially from lack of modelling. The central entrance is not, in fact, sufficiently recessed to give the deep shadow indicated in the perspective (3 top), and it is flanked by nearly flush panels of white glazed brick, embellished by pairs of short vertical elements containing lighting units. If only one could have walked *under* this building how much more effective it would have been! The architects seemed to have recognized this because they recessed the walls of the classrooms at each end of the building (see main floor plan) to provide a corridor-like covered area and, one feels, they would have preferred to continue this along the north side.

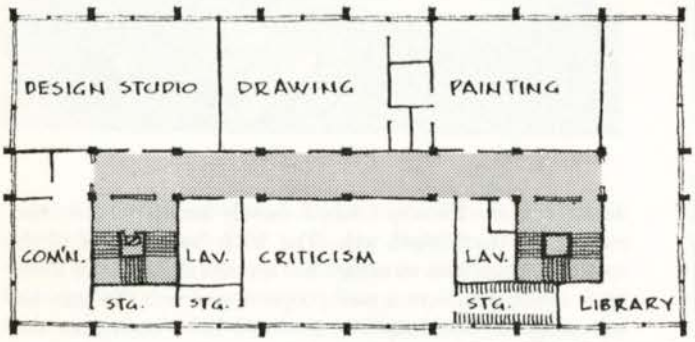
The window module is well proportioned with the cur-



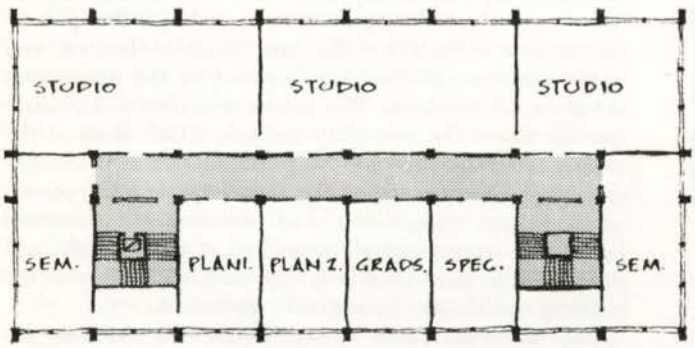
BASEMENT PLAN



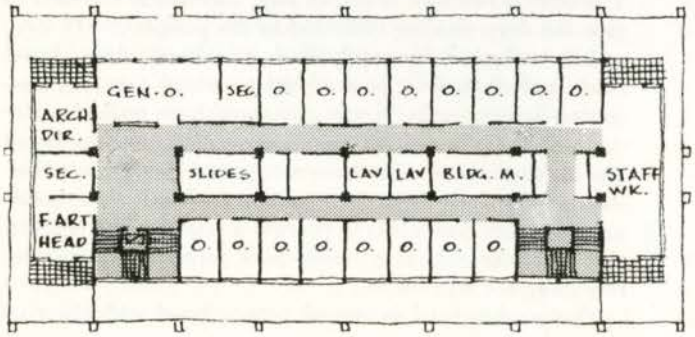
FIRST FLOOR PLAN



SECOND FLOOR PLAN

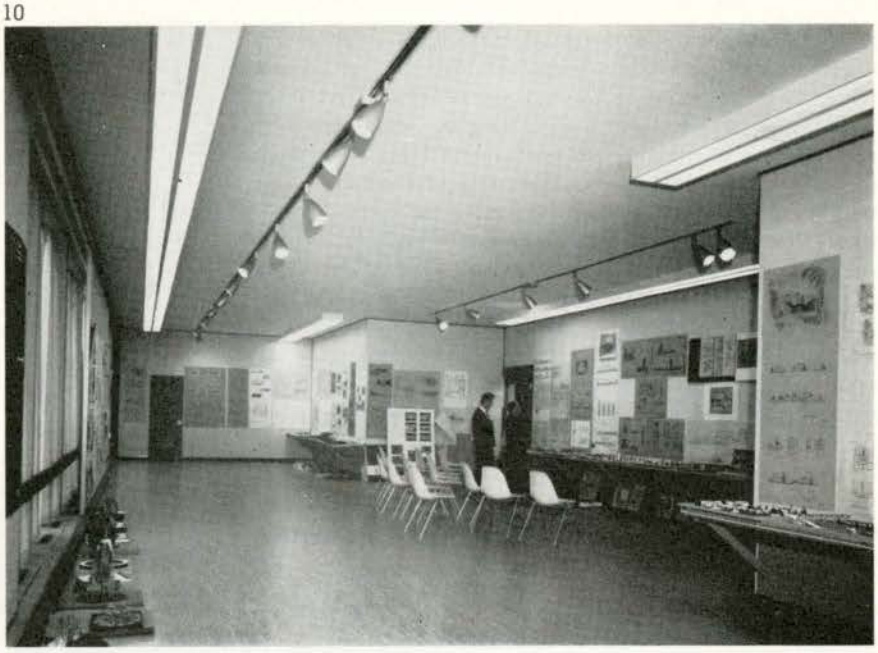


THIRD FLOOR PLAN



"PENTHOUSE" PLAN

9 10



9: "Penthouse" lobby with general office, waiting space and corridor with functional embellishments.

10: Criticism room; ". . . excellent space, good lighting and display facilities".

rently popular narrow, vertical subdivisions, but one continues to question the wisdom of using floor to ceiling, wall to wall glazing on facades exposed to direct sunlight. As a contrast to the glass, porcelain enamelled steel plates are used as cladding where windows were not required. Some inconsistencies in the use of solid and transparent walls are apparent if one compares the plans and elevations.

The plan of the building is of the simple, double-banked corridor type with vertical access at either end. The basement contains two small studios for sculpture and ceramics, a workshop and testing lab, a photographic darkroom, storage space, and the usual offices.

The ground floor plan is the least satisfactory of all and there is a marked sense of anticlimax as one walks into the building from either the north (what should be the grand entrance from the sculpture court) or from one of the twin southern entrances. Fourteen doors and two corridors open into the main hall marked "Display" in the plan. The apartment was depressingly sterile when seen by the writer and like most of the interiors lacked colour and vitality. The south entrances are not very well thought out; the one to the west is approached by an attractively designed stairway and on reaching the main floor level one has the choice of turning right into a short cul-de-sac, going forward and squeezing past the classroom wall into the sculpture court, or feeling one's way, metaphorically speaking, round the staircase wall to the main doors at the side. This plan arrangement is repeated identically at the east end of the building except that steps are not needed and one can enter directly from the sidewalk – a reasonable enough arrangement in this instance – but the cul-de-sac is repeated as before, one suspects for elevational effect although the architects may have wished to carry a covered walk along the south front. The four classrooms, seating in all just over 300 students, discharge into the display area and corridor; none has windows. This is a good layout ensuring an intermingling of students and egress into the sculpture court; it encourages the use of the display area although the placing of doors and the movement of traffic must drastically reduce the amount of effective exhibition space during term time. Washrooms and stairwells are conveniently arranged but there is no office or enquiry desk, and apparently no control or supervision of the building at this level. The visitor must find his own way around, always a rather frustrating experience.

The second floor (arts) contains three studios, drawing, painting, and basic design, with an excellent criticism room, a small student common room, and a library. The third floor (architecture) has studios for the first, second, and third years with smaller rooms for planners, graduates, and special students. There are two seminar rooms and two storage rooms arranged against the outside wall.

The teaching space is compact and adequate for the present student load and academic program. Under the system recently introduced at UBC the student requires only three years of education in the School of Architecture, the first two or three years of his course being devoted to arts and humanities subjects with a modicum of practical, non-professional work. The present building is designed to encourage academic togetherness at student level and apparently is working well in this regard.

The top floor, or penthouse, is designed for staff only – *all* the staff, academics and non-academics! It is a kind of ivory tower, or perhaps more appropriately, a sort of

captain's cabin with officers quarters (incidentally there are three captains and fifteen officers, or rooms for them). Here the staff can live in peace and, because of the staircase locations, move in and out of the building freely without ever encountering a student. An academic Utopia! The staff rooms command magnificent prospects of mountains and sea. The penthouse is well set back from the parapet on all sides (about ten ft) so that the view can be enjoyed without the disturbance of car parks, campus, and pedestrians. Again the plan is symmetrical with roof decks for the director of the School and the head of the Fine Arts Department at one end, and the staff (from their workroom!) at the other. All the staff can look out, but not get out, on to the flat roof; a tantalizing prospect! Communication between the decks and the activities of Peeping Toms is discouraged by a loose surface of pebble stones. There are dramatic perspectives from each of the decks created by the overhanging roof and well designed parapet wall; the inevitable plants and flowers give added pleasure.

The separation between the teaching staff and the students is perhaps the major criticism that one can level at the planning of this building. Probably the two most important decisions to be taken in designing a school of architecture concern the nature of the studios, and the desirable relationship between teaching staff and students. The studios may be merely subdivisions of a great space as at the School of Architecture, Illinois Institute of Technology, which has a minimum of staff accommodation in the basement, (the implication here is that the staff, when in attendance, should be available to the students and be teaching) or at the Victoria Rink which for a short time housed the School of Architecture, University of Toronto, where the teaching staff occupied cubicals opening directly off the great galleried hall (6). The more common arrangement is for studios to be relatively small housing one or two years and to a greater or lesser degree, independant, with the staff adjacent or grouped separately. The choice is, or should be, an administrative one and in this case it was made, no doubt, by the individuals or the user committee that framed the program. One feels that it is a layout that will appeal to few administrators and teachers except, perhaps, those who are deeply involved in research.

CONCLUSION

Despite some of these comments the Fine Art Centre and its first building represent an encouraging advance in campus planning at UBC. One hopes that the architects will be permitted to integrate this development more closely with its surroundings by closing or diverting roads, extending the pedestrian precincts, controlling the landscape program, and changing the parking lots. The continuing use of the established structural modules should ensure a degree of unity in the building group without in any way inhibiting more imaginative design solutions.

It is hoped that those who guide the destinies of our universities will soon be persuaded that the relationship of buildings to each other, the propositions of the spaces between them, landscaping, the alignment of roads and footpaths, the disposition of car parking, and even the selection of suitable street furniture and notice boards demand great care and attention by skilled professional people. These, as well as the buildings themselves, are important elements in that environment for learning we choose to call the university.

THE FINE ART CENTRE FOR THE UNIVERSITY OF BRITISH COLUMBIA AND IN PARTICULAR STAGE 1 — THE FINE ARTS, ARCHITECTURE AND PLANNING BUILDING.

NOTES BY R. JESSIMAN, PARTNER, THOMPSON, BERWICK & PRATT — ARCHITECTS.

The concept for the Fine Art Centre envisaged a grouping of four or five interrelated units defining a plaza or court with the complete scheme relating to the main mall and the Buchanan Building immediately to the east, and the Faculty Club and Thea Koerner House to the north.

The prominent site is of approximately three acres in the north-west corner of the campus. The eastern boundary is on high ground (the main mall); from here there is a gentle slope to the west. Originally the Centre was planned to contain a building for fine arts, architecture and planning, a teaching theatre seating approximately 400, a school of music, a fine arts gallery, and a museum of man – a gross total of some 100,000 square ft. Working with us as advisors were B.C. Binning, head of Fine Arts, and the late Frederic Laserre, then head of the School of Architecture. The original development placed the theatre and the fine arts gallery at the centre, with a second floor over the latter containing the classrooms for all departments. To the north was the building for fine arts, architecture and planning; to the south, the building for music; to the east, physically disconnected, the

11

11: Exhibition and criticism space; ". . . excellent use of corridor walls and lighting".

12: Library. Note raw plate glass placed to each side of the clear glass jalousies.

12

museum, The placement of the latter formed an inner quad onto which the theatre and art gallery faced.

About this time it became obvious the Centre would proceed in stages. This meant each stage must have its own classrooms, not a unit of classrooms shared by those departments making up the Centre. At this time it was expressed that rather than locate the architecture building near the Faculty Club, it would be socially significant to have the theatre near the Club. In addition, the site was reduced in area as it was impractical to move two semi-permanent buildings. Out of all this we were asked to modify the over-all plan and with less site area with which to work, the Centre had to be tightened.

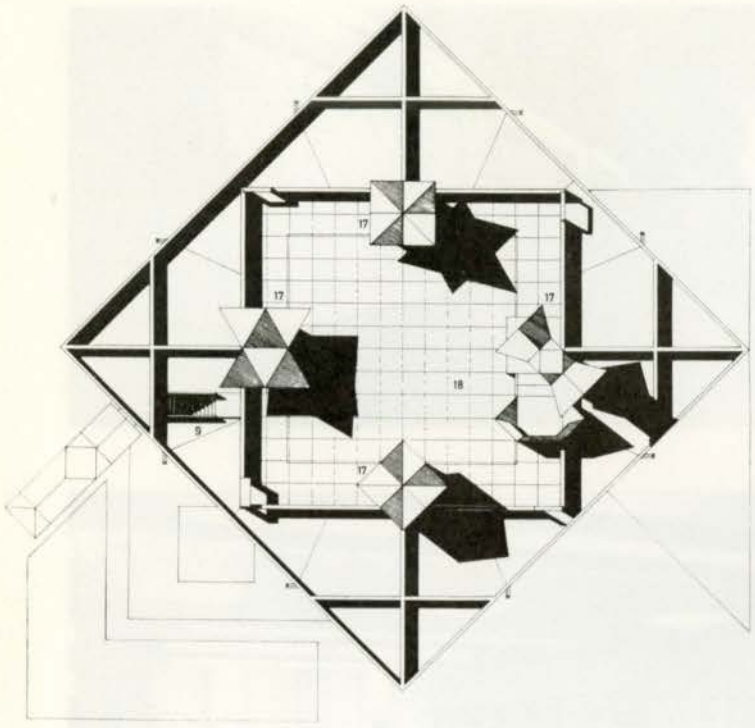
This brings us to what is the current concept of the Fine Arts Centre. Fine arts, architecture and planning are located at the south, the theatre to the north-west. The Fine Arts Gallery and the Museum of Man are located between the two and become transitional units; the Music Building is insularily located to the east. In this concept there are two plazas, one the theatre court between the Theatre and the Music Building, the other the sculpture court relative to the Fine Arts Gallery and Stage 1. Stage 1, the building for fine arts, architecture and planning, was completed and occupied last spring. The requirements listed two visual aid theatres of approximately 100 seats each, classrooms, studios for all three departments, seminar rooms, and faculty accommodation. As a result of the limitations, some of which have been mentioned, and the size of the building, it was decided all the disciplines should be housed in a simplified envelope form. Thus the resulting plan is prosaic, with a centre corridor and stairs near each end.

The 'earthy' studios, sculpture and ceramics, are located in the lower floor, the theatre and classrooms on the main floor. Having no need for outside light they form a base for the studios above. The architecture and planning studios are located on the second and third floors respectively, with the faculty accommodation being housed on the fourth floor. All the main studios have north light. The faculty accommodation in terms of orientation to view is unsurpassed. The foyer facing north at the main floor and the related monumental steps at the moment, seem to be "much ado about nothing" – but as the stages of the Centre become real, the steps and foyer become an integral part of the sculpture court.

The building is of reinforced concrete with a primary structural module of 20 ft and a secondary module of 10 ft. Exterior materials at the base or plaza level are concrete, glazed brick, and glass. Above this level the cladding is either formed porcelain enamel panels where opaque walls were required, or glass. This glass area between the secondary structural module is divided into thirds, the centre being clear glass jalousies, the outer thirds raw plate.

Internally, partitions are either flexible or if, fixed, of exposed light weight block. As on the exterior, color has been kept to a minimum. Walls of the studios are clad with poplar plywood covered in off-white burlap to provide a pin-up surface. A combination of teak and local fir was used for all mill work.

In summary, those who attended the University of British Columbia or are familiar with the campus will remember the Schools of Architecture and Planning were housed, since their inception, in army huts – the informal, undignified classics of a post-war era. The Frederic Laserre Building is formal; it does convey dignity, and is a classical shelter for the students. It is hoped the complete Centre will become a reality within the next few years, at which time its contribution to the academic and social life on campus will be significant.



Roof plan, Town Hall of Bat-Yam. Architects: Hecker, Neumann, Sharon.

PROFESSOR ALFRED NEUMANN

MORPHOLOGIC ARCHITECTURE

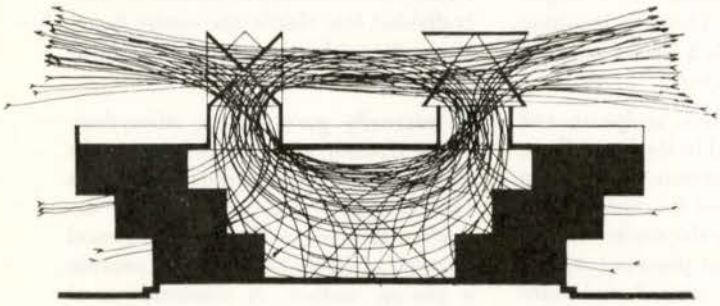
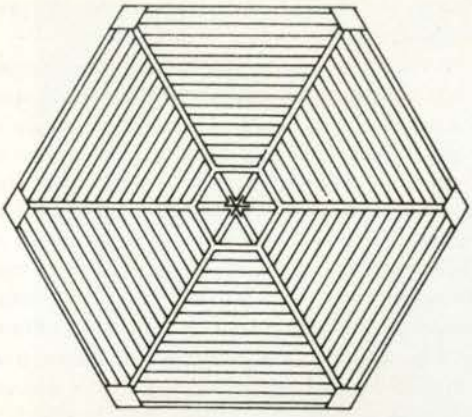


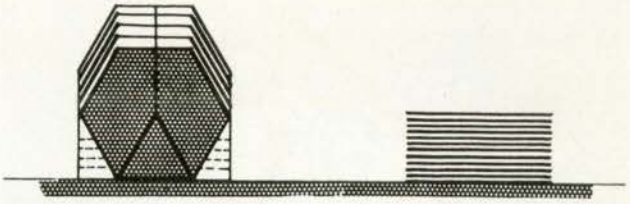
Illustration of natural ventilation system for the Town Hall.

Professor Alfred Neuman presented the following manuscript to the Ontario Association of Architects on March 27, 1963. Professor Neuman was born in Vienna in 1900, graduated from the Bruenn Technical University, then studied under **Peter Behrens** at the Meisterschule fuer Architektur of the Vienna Akademie. Later, under **Auguste Perret,** he studied at the Atelier du Palais de Boisin Paris and was frequently in association with **Adolf Loos.** Professor Neuman was a member of the artists groups "Abstraction et Creation" and "Circle et Carré", in the thirties and worked in Paris, Central Europe, North and South Africa on many important projects. After the war he worked in regional planning for Central Europe which was presented at the CIAM in 1947. Since that time he has done research work on modular coordination (system **M**ϕ), architectural morphology, was professor and dean of the faculty of Architecture at Haifa, Israel and is now teaching at L'Ecole d'Architecture de Quebec.

Even after long experience in teaching architectural design one cannot get rid of the unpleasant feeling of conveying a rather subjective know-how lacking theoretical justification. There are theories about many aspects of architecture but there is no single consistent theory of architecture. The vague term art is often evoked to cover the confusing situation. Sometimes one has the near certitude of touching the border of art. But the built human environment, seen as a whole in its geographical distribution and historical process, has almost nothing to do with art. To use an analogy – of all the spoken or written communication material very little represents poetry. It is obvious that, in building, a certain latent potential of art can be freed, but such a case represents more the exception than the rule.

I was repeatedly asked, by interested laymen, to recommend a book which explains the essence of architecture in a general, accessible way. To my own astonishment, I was unable to do so. The inadequacy of all architectural speculation goes back to its beginning. It is a case of heredity, and it is not easy to get rid of a negative tradition. The ten books on architecture by Vitruvius are a compilation of informations about building and related fields in the Mediterranean basin during the Augustean period. They do not form a coherent system but contain independent references on such topics as climatology, hydrology, building materials, proportion theories, and also recipes for conventional building types as well as for the construction of war machinery. Since the Renaissance, the expression Vitruve has become

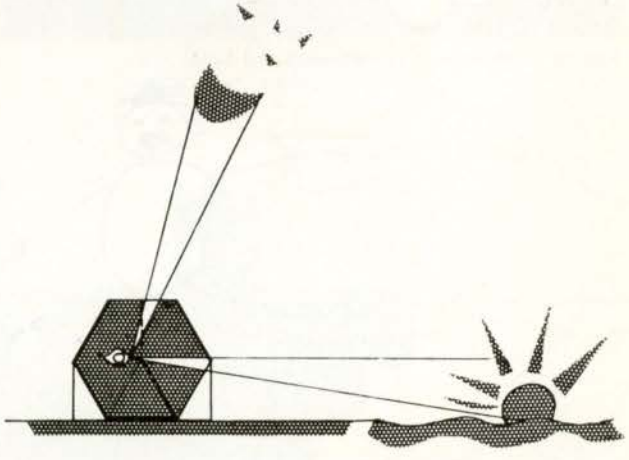




Above: illustration of demountable stacking structure for the camp.

Opposite: structural element for outdoor dining terrace at Achziv Village camp.

Below: illustration of view and light source for the camp at Achziv.



a collective term for architectural theory. All architects bowed before the authority of antiquity and pressed their own thinking into the traditional pattern.

This pluralistic approach has not changed up to the present. Under the influence of the general development of technology, the scientific methods replaced the trial and error phase in the mechanical aspects of construction. More recently, the life process within the built structures, from the dwelling to town and region, underwent sociologic and ecologic analysis. But it remains doubtful whether there is direct interdependence between function and structure.

Without having contributed to the understanding of architecture, those studies have widened the existing gap between architecture in the narrower sense and town-planning, which tends to become a super discipline where specific shape is without importance. Another field of study, History of Architecture, catalogued nearly the entire building production of the past and brought it into geographical and chronological order. The so-called science of art (Kunstwissenschaft) has attempted an interpretation of that accumulated material. The most important outcome of that work was the awareness of architectural space and its evolution.

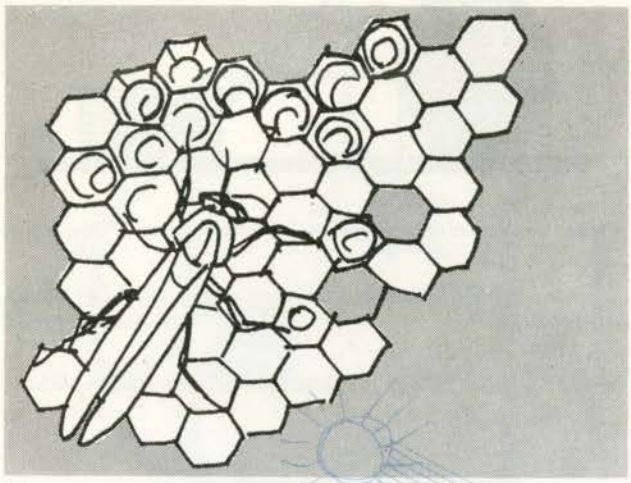
The research lines mentioned have hardly any relation to each other. The possibility exists to conceive the whole man-made human environment from an unifying point of view by applying morphological criteria. Scientific domains, which have been developed up to now and which are predominantly of ecological nature, can easily be integrated into a morphological system, because they possess the value of selection factors only.

A science of architecture, like any other science, should describe the different phenomena by a common lawfulness. But until now, styles and periods of style have remained isolated phenomena. There were endeavors to demonstrate mutual influences of forms and to represent the flow of motives geographically. But styles, as such, remain enigmatic in this representation. Analogies with biological phenomena might contribute to a better understanding. Morphogenesis of design is analogous to morphogenesis of biology. It also is a science at its beginning, but since it moves in the accepted tracks of scientific methods, a normal evolution can be expected. Similarly in architecture, one could follow the way from cell to cell (aggregate) the transformation of shape and dimension which the element undergoes, the laws and symmetries determining the shape of the aggregations.

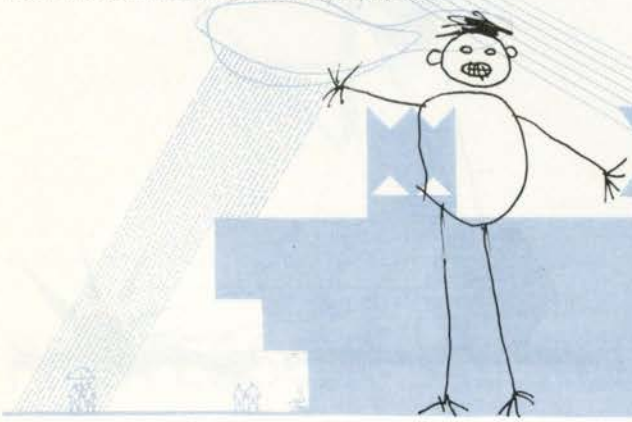
I do not believe that values can ever be entirely eliminated from architecture, as from any other human activity. As in any creative activity, whether in the domain of art, science or technology, the deciding contribution will always depend on intuition. But the mechanism of intuition works only if certain preconditions are given, the most important one being profound knowledge of the subject. Musical talent without thorough training will rarely become productive. In a certain stage of investigation the introduction of a scale of values is hampering. As known, there are, again actual attempts to put value relations on an experimental mathematical basis, to "scientifice" them. (Hartman, New-Mexico). These endeavors continue earlier trends, for instance, Fechner's experimental esthetics "Esthetics from Underneath", using statistical methods. The results were rather primitive and even when further extended one doubts if they could do justice to so complicated a phenomenon that is involved in architectural esthetics, with its intricate interpenetration of logic, sentiment, function, structure, etc. In spite of the unsurmountable difficulties, architectural science has pursued this way. At the basis of architectural research stands architectural history, and architectural history is conceived as a part of the history of art. That implies that under the raw material offered by building history, a division into works of art and none-art was made. The development of works of art is discussed and the others ignored.

Thinking of biology, we often encounter in nature phenomena of astonishing beauty. Naturally the professional esthetician will strictly prove that an unbridgable rift exists between beauty in nature and beauty in art. But where would biology stand if morphological research had introduced esthetic appreciation in advance? I do not know if morphologists and biologists are less receptive to beauty than architects and art critics, but the idea of a mixture of biology and esthetics in research seems deviative.

Animal building as a packed container



Man as a combination of containers and tools



I believe that architecture can be investigated like any other phenomena. The cumulative efforts of scientific thinking, when approaching a phenomenon, have always helped to reach a conceptual order. Architecture itself has never been attacked scientifically, although there exist a multitude of scientific investigations of side issues to architecture (climatology, light, acoustics, sociology, ecology, etc). Whenever architects devote their time to architectural research, they tackle these subject-matters; and one can rightly assume that non-architect scientists would do the job better, and as a matter of fact, they do. Tackling architecture itself is taboo. Of course, architecture is a creative activity, but so is physics, for the creative mind. There is a pronounced trend to withdraw into a foggy irrationalism, with plenty of humanitarian slogans as opposed to the platitudes of common-sense, common-sense being the label which the fake mystic but wildly efficient businessmen architects stick on any attempt at creative order. It is an advertising trick relying on the 19th century popular image of the irresponsible romantic artist, and which still appeals to the provincial taste. They discredit art and they discredit science.

The present views on architecture are distilled from highly complex works of the Baroque period where space had an absolute meaning and received a perfect expression. The concept of space as known today was first discovered through the investigation of Baroque architecture. That means that it has been abstracted from the final product of a long evolution. The thus derived concepts of space do not apply to simpler, earlier or less intricate structures. Although no coherent architectural theory has emerged through the discovery of space, the recognition of space as a constituting factor of architecture, unrecognized by previous generations, remains a lasting contribution.

Architecture is a projection of space images into material form. In the development of architectural space, the known parallelism of ontogenesis and philogenesis is equally present. Some insight into the space perception of children has been won. They go through a topological stage into a projective stage and arrive finally at the Euclidian space of the adult. The building activity of mankind all over the world follows this evolutionaly scheme. This is true not only for building alone but also for the whole man-made human environment, and particularly for the containers.

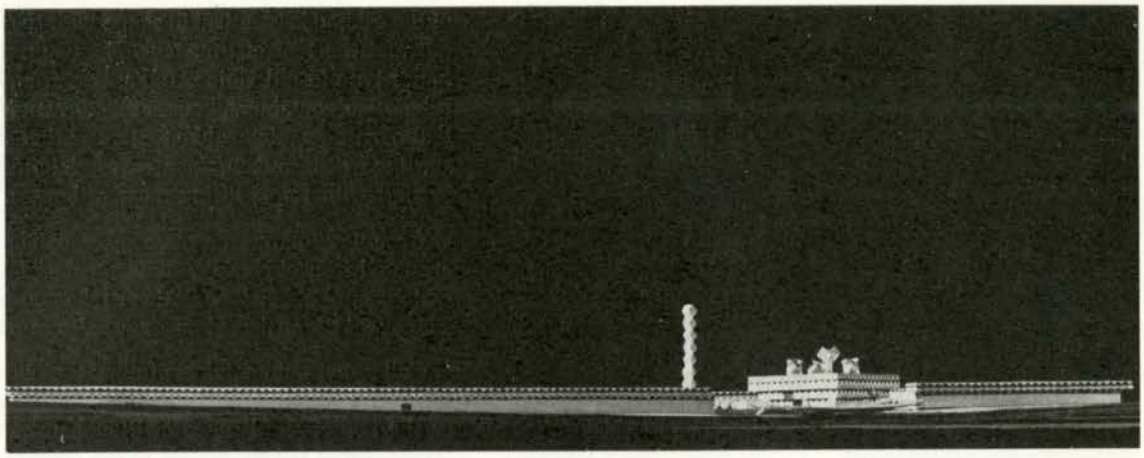
The artifacts of the whole human environment can be roughly divided into two groups, tools and containers. I do not wish to enter the domain of tools, which might by itself be a subject for extensive studies. All tools are a prolongation or multiplication of the human body. Tools and arms developed on the same pattern. When the human hand developed into the gripping organ, the primary tool came into being. Next a transfer of the teeth function to the hand, and from there to the primitive tools took place. All mechanical tools are a kind of mobile teeth connected to the hand. Knives, scissors, hammers, tongs, forks, shovels show this morphological relationship from the first glance. The lever bar is the prolongation of the arm. There is a third element, the handle, an adaptation to the human hand. Tools acquire artificial muscles, first, animal muscular power, then with the first industrial revolution, the mechanical muscle, the motor. A further evolutionary line prolongates the human sense-organs, prolongation of the eyes: microscope, telescope, television, X-rays; prolongation of the reach of the ear, telephone, radio, ultrasound; prolongation of the tactile senses: magnetic detectors, radar, thermometer, barometer, ionisation. Recently prolongation of the brain function forms an additional range of tools: cybernetics, automation, electronic computers.

Animals cannot take off or change at will their teeth, claws, saws, tongs, scissors, as nature developed them. Tools are extended, exchangable, removable organs which means a greater amount of freedom in evolution, therefore less constraint, less specialization. Man seems to be the least specialized being.

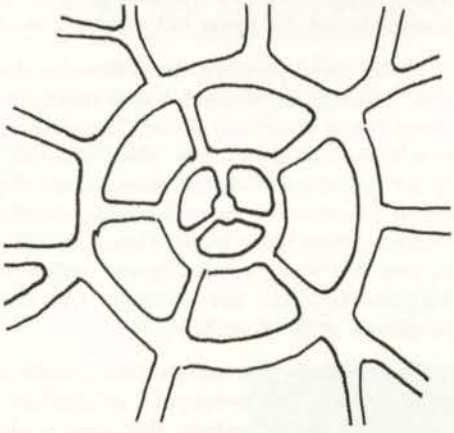
Man is a complex container with the head and the body as two conspicuous main containers, the whole equipped with tools – the limbs, for moving and grasping like a child's drawing. The containers next to man are an inexhaustible domain, which would merit a deeper investigation. Many connections lead to the neighbouring domains of clothing and building.

The container nearest to man is clothing. It is a container for a container, a reinforced skin, as many animals have developed, like sea shells. The armor of a knight is built on the same principle. Clothing hardly allows movement inside the container, only the wider container of the house allows this freedom. The snail leaves its shell to a certain degree, but is still bound to it. Man's clothing represent an extension of his skin and is removable and changeable. This feature puts clothing in analogy with tools. Man is the prisoner of neither his clothing nor of his tools.

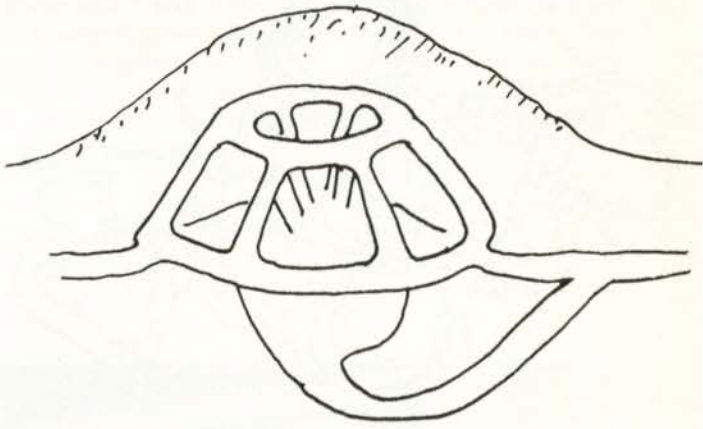
One approach is to see man as a building animal. Building of most animals is guided by instinct. It is most obvious with insects. Instinct is characterized by narrowly bound reactions which do not admit deviations. It is orientated towards certain environmental stimuli. Once those stimuli change, the instinct no longer reacts purposefully. It is too specialized. Man is a learning being. He can adapt to a great



Model of Civic Centre at Bat-Yam (see page 45).



Plan of a mole hill



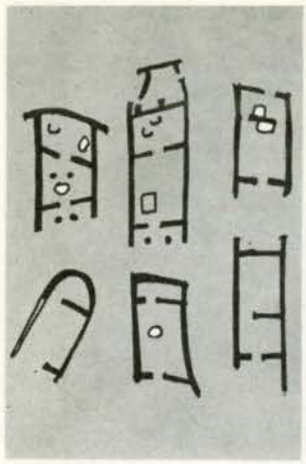
Section through a mole hill

extent his reactions to environmental changes, thereby heightening his chances of survival. His buildings are richer and offer great variety. But it is submitted to lawfulness, as is instinctive building. Wasps and bees and related insects build a cylinder with a horizontal rotation axis. As social beings they group themselves and build "skyscrapers", cell aggregates, within which the cylinders are transformed into hexagonal prisms with half rhombic-dodeca-hedra at the end. It is a very rational, but restricted, building system. The architecture is as monotone as the business architecture of todays evolution line. The mole-hill has a vertical rotation axis. It is a complex pattern of a central space with a surrounding double ring system. The radical corridors show the numerical order of the Fibonacci series. Most birds nests also show rotational symmetry. If I were to name a further geometric property of those buildings, I would say those structures are round and that they approach, as far as execution in different building materials allows, the form of minimal areas. Building materials are determined by the environment; it is a factor that introduces minor changes but does not influence the basic shape. If we look for analogies to animal buildings in the man-made environment, our attention is drawn towards our containers, which show the same characteristics: rotational symmetry and enclosing minimal areas. One could say that they show a stylistic affinity. The contours of those containers are so called *plateau* figures, mainly roulettes of conics. Gravitation adds a further element, influencing the symmetry relations. Broadly speaking, one can divide our container into two subgroups of soft and stiff containers. The soft container is a suspended construction, like the tent or clothing, and its prototype are the sacks and soft containers for liquids; for example, the pockets in clothing, the rucksack of the alpinist, the saddle bag of the horse man, the lady's hand bag, the tobacco pouch, luggage, kitbags, balloons, giant petrol tankers of plastic, and also the modern big tents and inflatable structures. Those containers are essentially mobile and are put on the ground for a certain time only.

The stiff container has a different genealogy. It first sinks into the ground to lift itself out of the ground, and finally free itself into independent shapes. The first stiff containers are hollows in the ground; for example, grain storage of animals and man, water cisternes, with the typical narrow neck reminding the bottle shapes to reduce evaporation. Even after having detached itself from the ground, the stiff container sinks once more into the ground, like the Egyptian pointed vases.

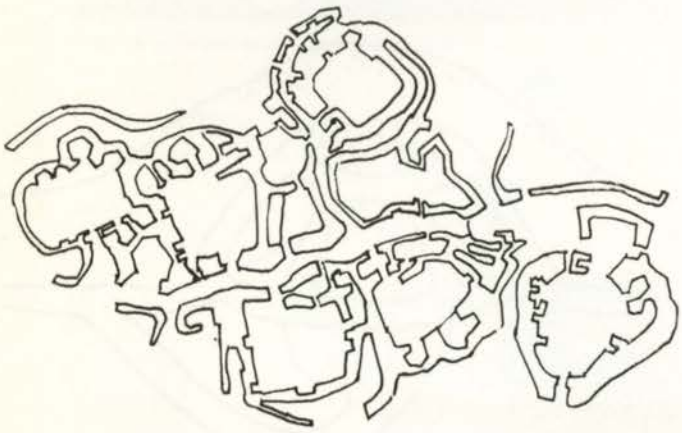
The shapes of the stiff and soft containers converge towards common shapes and their origin can no more be identified.

In the containers next to man the problem of grouping or packaging had no significance in the past. For a long span of time, and in different civilizations, those shapes had hardly changed. Mass transport of containers has brought the packing shape into being. Consider only jerrycans for petrol, and, above all, our over-production of paper packaging. The evolution of containers omitted an intermediate stage which could be called the projective stage, and can be detected in the evolution of houses. Modern package containers are mostly rectangular orthogonal. Of necessity, they should have straight edges and surfaces, but not necessarily right angles. But group containers were born into a rectangular civilization and architecture therefore had to assimilate itself. Problems of transport and storage



Plans of Megaron type cells at the projective stage.

Plan of Lek Mimoash Village. Transformation of round shapes through the process of packing.



have forced it. Interpreted into geometry, this means that the densely packed containers have undergone a topological transformation. In the topological rubber geometry, a sphere can be transformed into a cube. I simplify a bit. In analogy to biology one can see the house element as a kind of container cell with a smaller or larger group of man as the nucleus. This cell can develop in two directions:

a) change its size and create large spaces like large cells. Examples: The Syrian, Roman and Byzantine cupolas, and the big modern shell vaultings. The spans grow absolutely, the amount of material used diminishes. The building dematerializes.

b) lead to differentiated container aggregates, like cell aggregates. Examples: office buildings, flat block, hospitals, etc.

Architecture creates containers for man. It begins with the horizontal area as man moves optimally on horizontal areas. Where horizontal areas do not occur in nature, man introduces them by terrassing mountains and by creating stairs. He creates sunken and lifted horizontal areas, juxtaposes and superposes them.

The end of a linear movement is a rotation movement, creating a round area as an expression of rest. Animals like cats and dogs turn to prepare their resting place. Long after the house became rectangular, the resting place, the apsis, remained round. The house, the container cell, is primarily round, a hollow space with a rotation axis like the other containers next to man. There are cupolas both cylindrical and conical. In clothing similar shapes are found in the head cover. These shapes are very independent of environmental factors like building material and climate. The igloo of the eskimo is identical in shape with the equatorial round hut and the tent of the steps. Excavations show the same house type in old China, India, Africa and the Near East. Like other containers, houses follow two evolutionary lines: that of soft containers, like tents, and that of stiff containers, starting with sunken floor caves, later rising out of the ground with forms lifting massive houses.

Grouping follows the same scheme. The huts are loosely arranged in a circle, sometimes enclosed by a round wall, which could either be elliptic or take any free round shape. The openings of these houses are also round.

Cell growth of containers follow the same form structure, whether covered spaces like the Atreus tomb of Mykenae or the non-covered space of Stonehenge. Incidentally, the round shapes belong mainly to the pre-agricultural civilization stage. We could call this round structure stage a topological stage. But with the emergence of agriculture round shapes do not disappear but receive a sacral character.

Under social pressure, the cells move closer to each other and undergo topological transformations. Certain transitional forms come into being. These transformations could best be visualized by a film. The round cells move closer and closer, the shapes become oblong, only the corners remain round, occasionally an apsis remains, until a complete form transformation takes place. There are not yet rectangles or squares but straight lined figures with oblique angles. The Megaron type has been created. One could call this the projective stage of architecture.

Consequently this architecture transforms into a rectangular pattern. This rectangular architecture has, seen stereometrically, the advantage that area angles and dyhedral angles are identical of 90 degrees. Thus the final result of the topological transformation of loose round shapes is a tightly knitted rectangular pattern. This process provides matter for thought. Geometrically, it is not self evident that the round houses become rectangular. Remembering beehives, where the social structure formed the package into a hexagonal pattern having the advantage of being isotrop. The rectangular pattern is not isotrop but hexagonal houses are rare. It may be that the rectangular structure offers a greater degree of freedom; besides it allows the transfer of proportions of other polygons as the pentagon in the golden section.

The house as we know it from children's drawings is a synthetic form. It is a combination of the two evolutionary trends, of the soft and stiff container. Remember the drawing of a typical house section which Le Corbusier demonstrated as an obsolete example which is opposed to his new section. A typical house consists of a roof, which is a direct descendent of the ancient tent; then of a cellar, which is the descendent of the old sunken floor cave; and then the house proper, which is the central part and which is the cave lifted from earth to the sun. The image of such a house has become a kind of archtype, deeply anchored in the individual and collective subconscience. Now we understand the general popularity of this type of house and the emotional resistance against all attempts of reform.

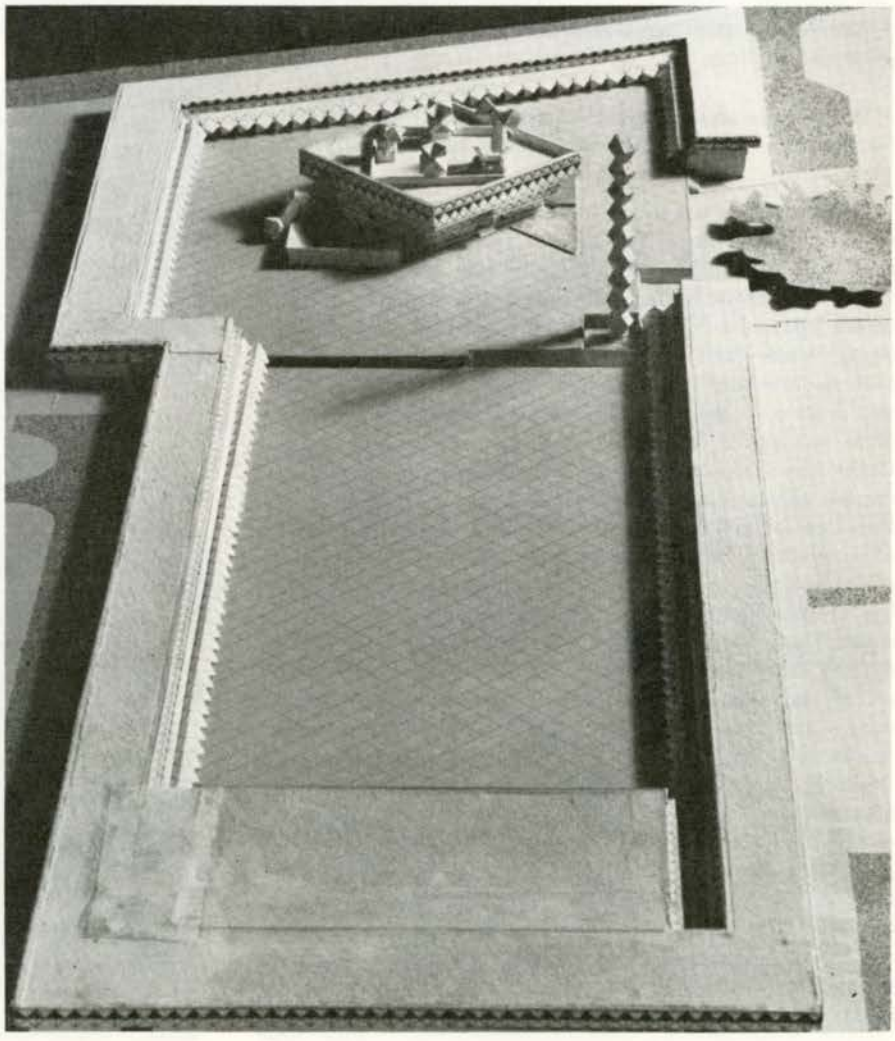
Obsolete shapes do not disappear even after having ceased to fulfill their function. The obsolete house type covers, in a growing measure, the suburbs of highly civilized industrial countries. Inside that house remains the old fireplace, which does not serve for heating anymore, and is another instance of the inertia of form.

The grammar of space developed gradually from euclidian to projective geometry and from there to the new discipline of topology. The evolution of architectural space took the inverse direction: at the beginning there was a topological stage tending towards space enclosure by minimal areas; for example, tholos-type round houses and clusters, absidial and round-cornered houses. Then came a projective geometric stage with undetermined angle length relations; for example, early Megaron-type houses in irregularly grown clusters. Finally architecture arrived at an euclidian organization with straight lined rectangular shapes; for example, building and town planning in high civilizations.

Except for the rectangular prismatic patterns, the possibilities of euclidian order in architecture are far from being fully exploited until now. The large array of space packing patterns, using the platonic and archimedian solids and their duals, prisms and antiprisms, has not yet found any architectural application. These patterns are related to the problem of sphere packing, where mathematical investigations are still in development. Besides the crystallographic space structures there is a whole range of little explored looser packing forms, some appearing in organic life. These forms could have repercussions on architecture.

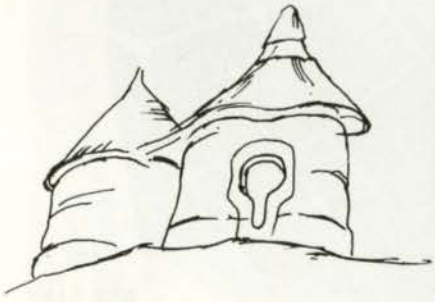
The architect entering this research field would find, to his surprise, that cristallographers had preceeded him. In the discovery of crystal structures, mathematical intuition anticipated later observed confirmation on the X-ray screen. The morphogenetic factors producing crystals operate on the molecular scale level, where gravitational forces are negligible. But, within the realm of container groups on the human scale, as in architecture, these forces strongly influence the configuration of space enclosure. A general science of space should reflect equally upon nature and human creation. The crystallographic discoveries remained without resonance in architecture. The cross-fertilisation between art and science, which one could normally expeet after an important finding in the domain of form, did not set in. The inadequate state of tectonic and massive construction methods prevented a direct impact on architecture. With the actual development of 3-dimensional construction methods the transposition into another medium has become possible.

Space packing patterns are a geometrical abstraction only. In chemistry, many aspects besides the crystallographic ones enter the stage to perform the drama of matter in space time. Also, in architecture, the geometric aspect covers only a part of the complex tissue. It would be naive to believe that one could mechanically transfer shapes from crystallography to architecture. This would mean a worse formalism than the application of historical forms. What is important is *thinking* in analogies. Geometric space patterns have to be transposed into human scale and put into a visually seizable order to be of architectural value. In traditional rectangular packing, questions of scale have found routine answers. Approved cooking recipes exist. In the non-traditional proposals they solicit new approaches. Because of the inherent difficulties a fresh awareness of scale arises.



Opposite: Plan view of the model. Civic Centre at Bat-Yam.

Below: Openings in the topological stage



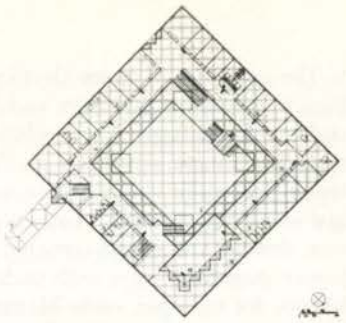
Historic architecture was mainly concerned with the dramatization of statics. The restricted register of baroque space order soon became exhausted. We are now able to distinguish the possible elements constituting architecture. Like in crystallography, the elements are limited in number. Even so, 3-dimensional space packing offers far more possibilities than the 2-dimensional patterns, commonly called ornament (also 2-dimensional crystallography), on which architecture was mainly based until now. Different stages of civilization have different optimal population densities and use corresponding space packing. Hunting and fishing communities lived in loosely packed round houses, of the topological kind, in accordance with the low population density. Agricultural civilizations created the rectangular euclidean pattern. Industrial civilization with its high population density is still packed into an outlined agricultural frame work and has yet to create its appropriate pattern. The rotational symmetries of the new patterns which were meaningless before the space age now become the exact bearers of widely understood contemporary symbolism.

Particular design problems arise at the boundary portions of the new space packings, where different conditions prevail than in the homogeneous inside parts. One of the direct implications is the change of the shape of the openings. In the topological stage the openings followed the general character, and were consequently rounded, as in African huts. In the rectangular space pattern, doors and windows were rectangular, their distribution tending towards certain proportional orders. In the proposed packings rectangular openings are the exceptions. This evolution was forecast by cars and planes, where no more rectangular openings occur. A parallel evolution is noticeable in newer industrial and religious buildings.

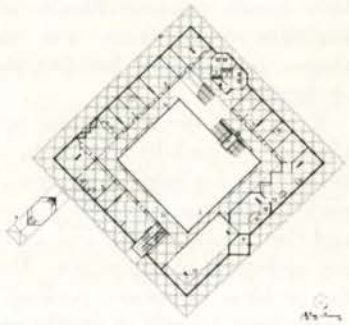
Where does architecture as an art, with all the perfection for the senses, fit into? Where Greece? Italy? Japan?

Architecture is not so much a direct art of the senses, but is like music memory. The tone of the cord which I now hear does not exist in the next moment, nevertheless the synthesis of music forms in my memory. The space through which I passed I do not see anymore; even so, it is present in my memory and directly connected to my actual perception. Architecture is interwoven with reality and the stuff that dreams are made of. This is equally true for the interior of a building as well as the exterior. The facade of the Gothic dome does not reveal the nature of its nave. This remark shows our relation to the slogan "Form Follows Function", which characterizes the actual unwinding period of architecture. Stone minarets still tower above the cupolas of the mosques. Not far from them on some missile launching site rise identical shapes, the rockets no more built of stone. These containers built of modern synthetic materials fly into outer space to destroy themselves and perhaps to spread destruction. Two identical shapes but what difference in function. The cupola might be one of the inflatable structures which blow off here today and there tomorrow. Tinguely, the Swiss sculptor, in the court-yard of the Museum of Modern Art in New York, fired his self-destructive sculpture symbolizing one aspect of architecture projected on the mind of the contemporary artists. Architecture has become agressive and has conquered the dedivined heavens. The nostalgic longing for the stable, symbolic architecture of yesterday, and maybe of tomorrow, remains stronger than ever, the eternal polarity of all human endeavour.

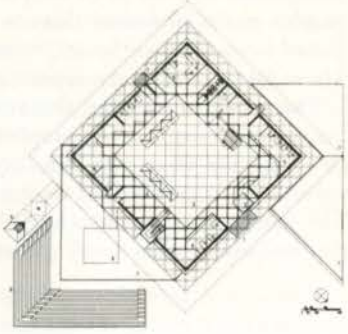
Second floor plan

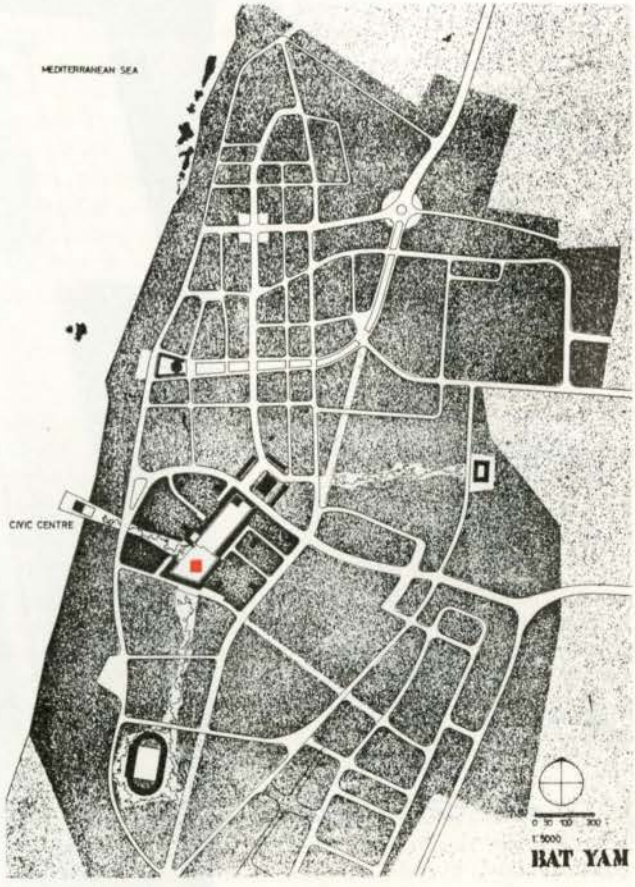


First floor plan



Ground floor plan

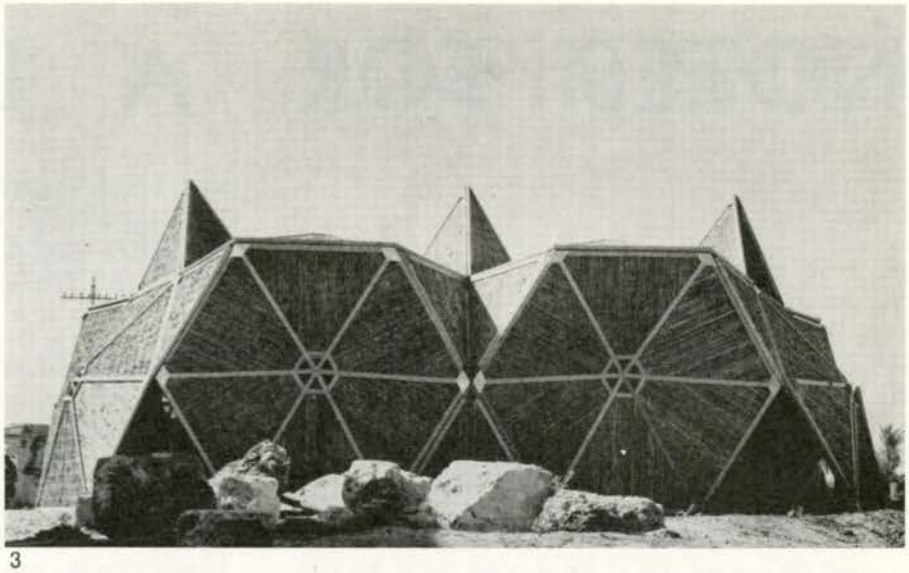




Top: Floor plans of the Town Hall at Bat-Yam.

Above: Plan of Bat-Yam showing the Civic Centre designed by Hecker, Neumann and Sharon.

1



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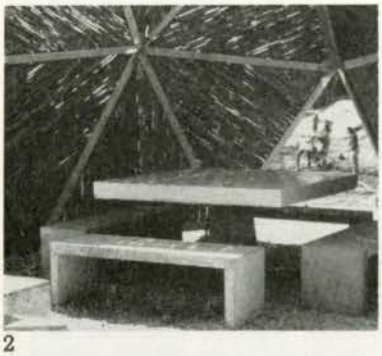

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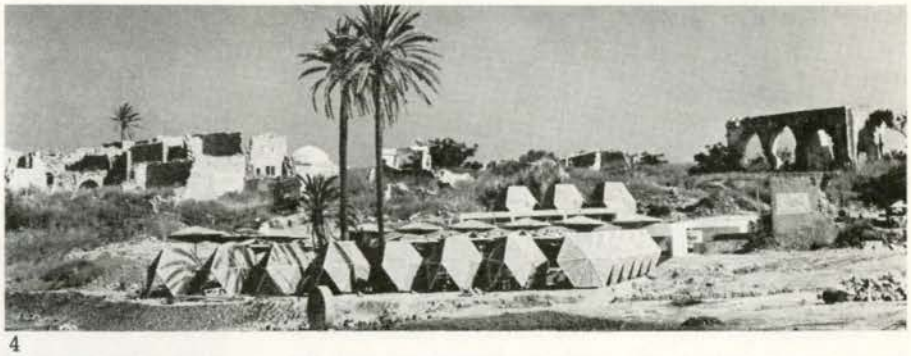

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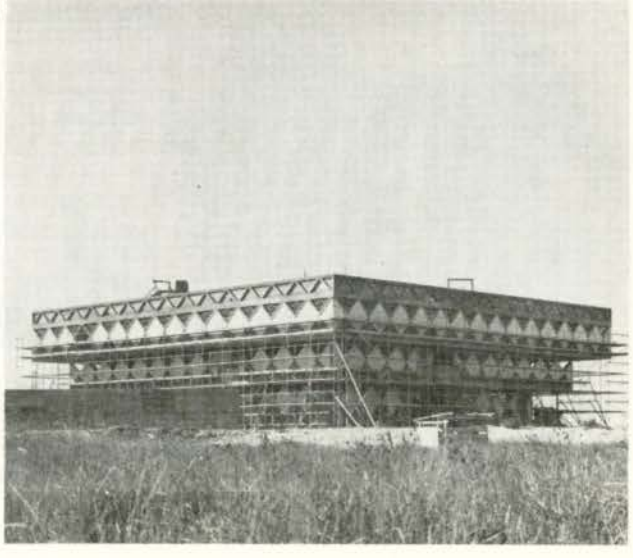
5

1. Interior view of the dining terrace for the camp at Achziv.
2. Detail of a dining table and benches at an opening in the screen.
3. View of the administration pavilion for the camp at Achziv.
4. View of the dining terrace set amongst the ruins at the camp site.
5. Interior view from the courtyard of the Town Hall showing construction progress.
6. Exterior view of the Town Hall at Bat-Yam showing site for the future Civic Centre.

6



NOTES FOR A LECTURE

THE FIRST KNOWN PROPOSAL FOR A SOCIETY OF ARCHITECTS IS FOUND IN THESE UNFINISHED NOTES FOR A LECTURE TO THE YORK MECHANICS INSTITUTE BY DR W. W. BALDWIN, c 1835

I fear I might expose myself to some suspicion with you as to the degree of interest I feel in the prosperity of the Mechanics Institution did I longer withhold my efforts humble as they may be, of contributing somewhat to the labours of those gentlemen who have so long invited your attention and enriched your stores of knowledge – It has been some time my intention of preparing some observations on the subject of Architecture – an art which seldom fails to arrest the eye not only of the traveller but of the community at large – as to the science I shall not attempt to take its elucidations from its professors many of whom are amongst yourselves – and as to its History you have been lately instructed by Mr Young*, in an excellent lecture, delivered here at the last meeting of the Institution, a lecture which I regret extremely not having had the pleasure of hearing. So that I shall on this occasion confine myself to that part of the subject which embraces its objects, its utility – and civic importance – and first as to the genl. object of Architecture – the first important object is the secure and comfortable accommodation of man, as the tenants of the contemplated structure – the feathered inhabitants of the air are all content, and amply accommodated with the simple structure of their nests – in the forest, the forsaken town, or the marsh – according to the wonderful instincts with which a benevolent Providence has endowed them – the beasts of the field have their dens or coverts or other retreats proper to their condition and dictated by the same Providence – but man blessed with superior intellect exercises his reasoning powers, together with his pliant and ingenious fingers, to design and erect more commodious dwellings – neither nest nor hovel is fit for man – his moral character requires a greater number of apartments, his strength of body though great is contained in a frame of peculiar delicacy and beauty which requires greater protection from the inclemency of the weather whether it be chilled by Polar blasts – or fervid with the tropical sun – the human form requires shelter from both extremes – and even in the happier climes of the middle latitudes the vicissitudes of heat and cold of wet and dry still require buildings adapted to the Inhabitants – neither the hut of Siberia or Labrador – nor the palm of the African would suit the inhabitants of Italy (or) southern Canada – then these various climates requiring various structures for the comfortable reception of the human Race, it is not to be wondered at that variety of plans, stile and materials of building should be found amongst us – again the state of society rude and civilized enlarges this variety. National Character also is more or less apparent in the structure of edifices – whether military, religious or – and of all these varieties we have now in our possession drawings and engravings of exquisite workmanship to which we can refer of instruction – yet while elevations and plans may diverge in almost endless

Jail and Court House, 1824; John Ewart and Dr W. W. Baldwin, architects. The building in the distance is the fire hall. Sketch made in 1835 by John G. Howard, architect.

UNFINISHED

variety, yet there are some matters of great importance in all buildings and common to them all –

and Gentleman satisfied that you will agree with me as to the great importance of the Art, I hope you will also concur with me in this opinion – that much now rests in your hands as embarked in the profession of architects and builders to improve greatly the stile, stability, salubrity and accommodation of our buildings in this city – either by forming an Architectural Society independent of the Mechanics institue, or as a branch of it – the object of this Society I suggest should be to encourage by honorary notices, either by medals, prizes, or public votes of approbation, those architects who may distinguish themselves, in the execution of the works they undertake, in the stability of the foundations, the soundness of the materials, the structure of chimneys as free from smoking and above all things secure from fire – the arrangements of the appointments made with a constant view to health, cleanliness, and security from fire–Amongst the evils of the buildings in Toronto are damp foundations, wooden houses built on the ground with wooden sills, bad chimneys equally bad in materials and in structure, small chambers, all evils augmenting to an incalculable degree the proneness of the inhabitants to every species of sickness – most truly it may be said that those buildings (most of them at least) are built by poor persons who cannot afford to erect better – yet very much may be done by municipal regulations, aided with your countenance and example – this Society or its architectural department, might devise the means of obtaining from those persons who have considerable extent of front building lots, to concur in some uniform plan of Elevation so that our growing city may not long continue unworthy the notice of strangers – at least not to submit to sarcastic contempt – add to this that your efforts in this respect we may awake in the distant parts of the Province a degree of national pride in the improving beauty of the Provincial Metropolis – heretofore it has been an object rather scorn – than of Pride – I verily believe that the time is approaching when we shall hear the Inhabitants of Goderich, Niagara, Dundas, Kingston, Cornwall, and all our frontier and central towns and villages rejoice in seeing Toronto raise her head amongst the Cities – Liverpool, Exeter and York all rejoice in the imperial superiority of London – so do Amiens, Lyons and Bordeaux rejoice in Paris – Americans all rejoice in the rising town of Washington – and why should not we Canadians rejoice in the kindred pride of the first City of our infant province –

*Probably Thomas Young. In 1835-40 he did a series of views of Toronto which he dedicated to Sir John Colborne for Currier and Ives. He designed King's College (1842), a large project of which only the S.E. wing was built.

These notes should be of considerable interest to architects because they represent the first recorded proposal that we know of for a Society of Architects. They are of wide notice as an indication of the quality of lectures and of the cultural interest of society in Toronto one hundred and twenty-eight years ago. Dr Baldwin was not the first to deplore the absence of zoning regulations, and here he suggests that, "aided by your countenance and example," regulations might be adopted to improve the housing conditions of the poor, and to urge on larger property owners the desirability of a "uniform plan of elevation" to give greater dignity to the architecture of the residential street.

I am indebted to Miss Edith Firth's book "The Town of York 1793-1815" for a further account of zoning in 1793. Richard Cartwright writes his friend Isaac Todd when the Simcoes were still under canvas – "You will smile perhaps when I tell you that even at York, a town lot is to be granted in the front street only on condition that you shall build a home of not less than 47 feet front, two Stories High and after a certain Order of Architecture; on the Second Street, they may be Somewhat less in Front, but the two Stories and Mode of Architecture is indispensible, and it is only in the back Streets and Allies that the Tinkers and Taylors will be allowed to consult their own Taste and Circumstances in the Structure of their Habitations upon lots of 1/10 of an acre. Seriously, our good Governor is a little wild in his projects."

W. W. Baldwin (1775:1844) was a graduate of medicine (Edinburgh, M.D. 1796) who settled in York in 1802. A serious shortage of lawyers at the time brought about the creation of several, one of whom was Baldwin and from 1803 he practised law and medicine and, on occasion, architecture. Certainly, he designed his own house at Front and Bay, and, in 1824, we find him associated with John Ewart in the design of the Jail and Court House at York. From 1824-30 he was member of the Legislature of Upper Canada, and, after the Union of 1841, he represented Norfolk in the Legislative Assembly of Canada. In 1843 he was appointed to the Legislative Council.

He will be remembered in Toronto for the magnificent gift of Spadina Avenue from Bloor Street to Front which he laid out in 1820, along with a widening of Queen (at Spadina) to 90′-0″. The Avenue itself is 160 feet wide. Spadina is said to mean a sudden rise of ground, and it was on the crest of the hill above Davenport east of the present Casa Loma that Dr Baldwin built his house. Spadina, as the house was called, was destroyed by fire in 1835.

The notes for Dr Baldwin's lecture are to be found in the MSS in the Baldwin papers in the Baldwin Room of the Toronto Public Library.

E. R. Arthur

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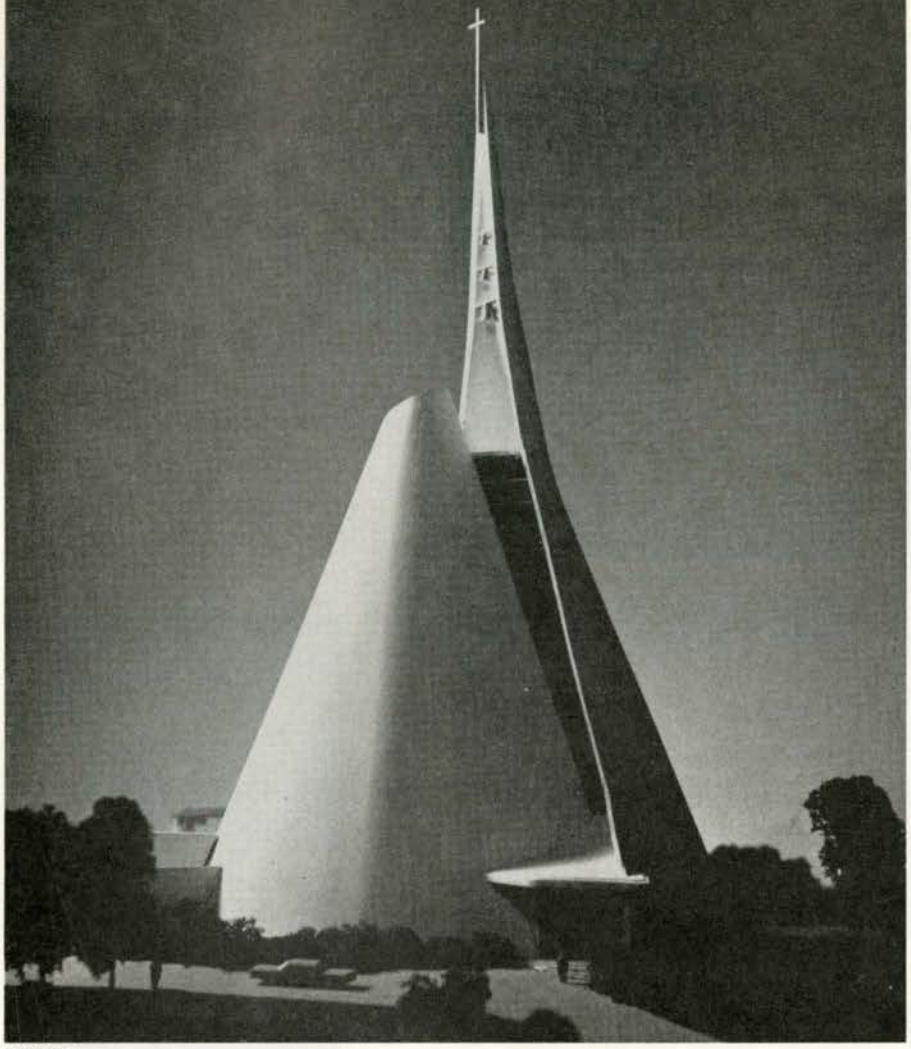


ELLEFSEN

Notre Dame de Fatima, Jonquière. Architectes, Desgagné and Coté.

NOUVELLES TENDANCES DE L'ARCHITECTURE RELIGIEUSE AU QUEBEC

BY DENIS TREMBLAY (F)

L'architecture des nouvelles églises construites dans la province de Québec depuis une dizaine d'années, et plus particulièrement de celles qui viennent d'être terminées ou qui sont en cours de construction marque un progrès très important par rapport à celles des années antérieures à mil neuf cent cinquante, progrès qui mérite d'être signalé et dont il faut analyser les causes aussi bien que les caractères généraux.

Il y a dix ans, je publiais ici même un article sur les tendances qui commençaient alors à se faire jour dans notre architecture d'églises, et qui laissaient présager un avenir prometteur, dont on peut aujourd'hui constater les résultats. Les quelques églises reproduites ici témoignent des progrès très notables accomplis. Elles manifestent d'abord, de la part de nos architectes comme aussi de celle des fabriques de paroisse, d'un souci d'éviter la banalité, faute impardonnable surtout pour une église, et d'une recherche de la qualité artistique et de l'originalité.

Qu'ils aient eu à construire des églises de dimensions modestes avec un budget très limité ou des églises plus grandes et plus riches, nos architectes ont mieux compris leur tâche, et l'on sent qu'ils s'y sont donnés tout entier avec enthousiasme et humilité.

Quand l'architecte n'a pas à faire l'éducation artistique de son client, il travaille dans un climat favorable, car la qualité de l'architecture d'une nation, comme le remarque Pier Luigi Nervi, est plus influencée par les goûts et le degré de culture des clients que par la science et la sensibilité esthétique de ses architectes.

Construire une église est, pour l'architecte comme pour les paroissiens, une aventure exaltante autant que périlleuse. Mais c'est l'architecte qui portera seul le blâme de l'échec, bien que souvent ce sera le client qui imposera

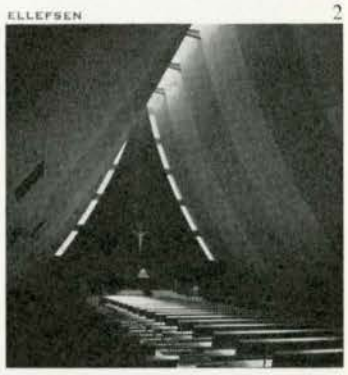
son mauvais goût et ses préférences. C'est dans l'architecture d'église, aujourd'hui comme autrefois, que l'architecte trouve l'occasion de donner la mesure de ses talents, de son génie créateur. Cette architecture, faite pour magnifier le culte divin, doit réfléter dans ses formes, dans une ambiance particulière, ce que l'homme peut offrir de plus convenable à cette fin sublime: rendre gloire à Dieu.

A toutes les époques d'apogée de l'architecture au cours des âges, c'est-par l'architecture religieuse que l'art a atteint ses plus hauts sommets, et de nos jours encore c'est l'art sacré qui doit inspirer les formes les plus significatives.

Le programme d'une église est demeuré, dans ses grandes lignes, un des plus simples qui soient parmi le grand nombre d'édifices de toutes sortes que les architectes soient appelés à réaliser, et ce programme n'a pas changé substantiellement depuis que l'on construit des temples chrétiens. Il consiste toujours essentiellement en une vaste salle ou nef pour le rassemblement des fidèles et un sanctuaire contenant l'autel majeur et des stalles, d'une table de communion, d'autels mineurs ou de chapelles, d'un baptistère, de sacristies. On y ajoute divers locaux pour les activités paroissiales et un presbytère, généralement relié à l'église par un couloir. Les préocupations essentielles de la liturgie ne changent pas, mais leur "style" est sujet à diverses interprétations et adaptations. Ainsi, aujourd'hui, le sanctuaire n'est pas nécessairement à l'extrémité de la nef et nettement séparé. Les nouvelles tendances favorisent une plus grande participation des fidèles, puisque la messe est un sacrifice communautaire. Les fidèles, au lieu d'assister passivement à une cérémonie qui se déroule dans le sanctuaire forment corps avec le célébrant et chantent en choeur. C'est pourquoi, le choeur de chant ne sera plus confiné dans une tribune à l'arrière de l'église mais sera dans le sanctuaire ou adjacent, afin que le maître de chapelle puisse diriger en même temps la chorale et le peuple qui chante avec elle. Le baptistère doit revêtir une grande importance et doit être placé autant que possible près de l'entrée principale et près du choeur, mais il doit être séparé de la nef et du choeur. Le maître autel doit être simple: c'est une simple table bien visible de toute l'assistance. Dans les églises abbatiales et les cathédrales du Moyen-Age, le sanctuaire étant fermé par de lourdes grilles, les fidèles ne pouvaient rien voir des cérémonies qui s'y déroulaient, comme s'il se fut agit d'un culte de mystères, d'une religion ésotérique. L'église d'aujourd'hui est disposée suivant un tout autre esprit.

Le programme d'une église paroissiale a été interprété de mille et une façons différentes, et des types de plans ont été adoptés dans chaque pays ou région pour correspondre au climat, aux procédés constructifs, à l'évolution de l'art architectural et à la culture particulière des peuples chrétiens. Les formes et l'agencement des églises ont donc toujours été en perpétuelle évolution. Les premiers temps de l'Eglise ont d'abord connu le type de plan dit basilical, adaptation de la basilique romaine, puis l'église byzantine à coupoles, dont le plan épouse la forme de la croix grecque. L'église romane et gothique ont la forme de la croix latine, le sanctuaire formant la partie haute de la croix, les transepts la barre transversale tandis que la nef représente le support ou soutien de la traverse. La Renaissance a consacré ces formes traditionnelles où seul le décor était changé, puis le XIXe siècle, par éclectisme, a vu renaître tous les "styles" du passé et réédité tout le répertoire laissé par les générations antérieures. Trop long-

ELLEFSEN 2



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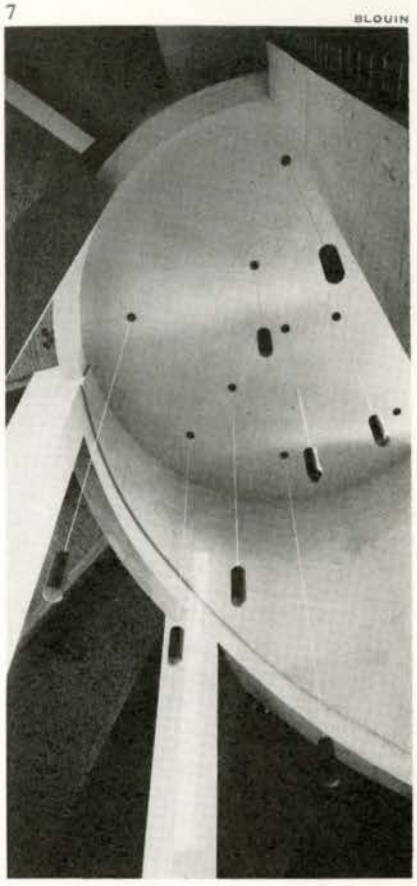
BONNEAU 4

5 ELLEFSEN

6 BLOUIN

7 BLOUIN



2. St Raphael Magella, Jonquière. Architectes, Tremblay and Tremblay.

3 & 4. Saint Gerard Magella, Larouche. Architectes, St Gelais, Tremblay and Tremblay.

5. St Raphael, Jonquière. Architectes, St Gelais, Tremblay and Tremblay.

6 & 7. Notre Dame d'Anjou, Ville d'Anjou. Architecte, André Blouin.

temps dans le Québec comme d'ailleurs dans les autres pays où l'on a construit des églises, on a répété à satiété quelques prototypes, ne les modifiant que par les dimensions et l'ornementation, considérant ces types et ces "styles", acceptés partout, comme seuls convenables pour les églises.

Aujourd'hui, on veut du "moderne", bien qu'on ne comprenne pas toujours le sens de ce mot magique, cette remarque s'appliquant aussi bien aux architectes qu'aux clients. Cependant, le temps est bien révolu des polémiques entre les tenants de l'académisme, terme qui n'est plus employé que dans un sens péjoratif, et les modernistes, puisqu'il n'y a plus de combattants dans le premier camp. Aux hommes du XXe, siècle, à l'Eglise d'aujourd'hui, il faut une architecture contemporaine. Un architecte qui soumettrait, pour une église d'aujourd'hui, une reconstitution archélologique quelconque ferait tout simplement rire de lui par ses confrères et par le public. Il arrive cependant que les paroissiens soient d'abord surpris et un peu désorientés par ces nouvelles conceptions architecturales, mais ils s'y habituent très vite finissant par aimer cette nouveauté et à s'enthousiasmer de cette originalité. On est fier d'avoir une église qui ait sa personnalité propre et qui suscitera la curiosité et l'admiration des touristes et des visiteurs et des commentaires dans la presse. A quels facteurs pouvons-nous attribuer ce renouveau de notre architecture religieuse? Je dirais qu'il est dû autant au public qu'aux architectes eux-mêmes. Le public et les autorités sont aujourd'hui de plus en plus exigeants en matière d'architecture alors qu'il y a une vingtaine d'années on acceptait pratiquement n'importe quoi en ce domaine, parce qu'on était incapable de faire les discernements qui s'imposaient.

Un des principaux artisans du renouveau de notre architecture d'église fut sans conteste Don Paul Bellot, O.S.B., un moine bénédictin architecte français qui, en 1938, vint donner une série de conférences dans la Province sur le renouveau de l'architecture religieuse française de l'époque. Il avait formé quelques disciples canadiens qui commercialisèrent le style Don Bellot, mais c'était au moins du nouveau par l'abandon du pastiche des styles du passé.

La première réalisation valable suivant ce qu'on pourrait appeler la nouvelle vague dans votre architecture religieuse fut la petite chapelle de Notre-Dame-de-Lourdes, au Lac Bouchette, dans la région du Lac St-Jean, terminée en 1952 d'après les plans de Henri Tremblay, architecte.

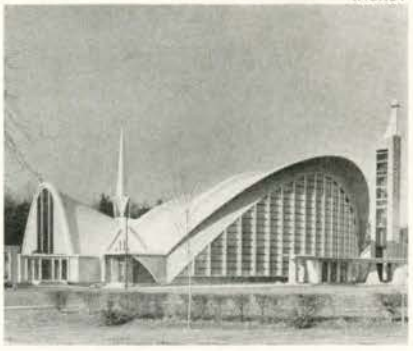
Allen Gowan en a donné, dans le *Journal* de janvier 1953, une appréciation enthousiaste. Suivant le critique et historien d'art Gérard Morisset, cette oeuvre modeste ouvrait la voie pour un nouveau progrès.

Ce progrès, cependant, ne fut pas constant et continu, mais alla en s'amplifiant toujours davantage suivant un esprit de recherches en vue de libérer notre architecture religieuse du poids des traditions mal comprises pour retrouver la source de la création artistique dans les principes mêmes qui ont autrefois assuré sa force et permis ses progrès.

Il faut signaler aussi nos écoles d'architecture, qui ont formé de meilleurs sujets en leur infusant un esprit nouveau, celui d'une architecture pour notre temps, conçue suivant une nouvelle esthétique.

En plus de l'enseignement mieux organisé de l'architecture, le fait du plus grand nombre d'architectes crée une émulation qui force ceux qui veulent percer et réussir à travailler et à étudier davantage. L'architecture n'est plus une profession de ronds-de-cuir mais demande de plus en plus des hommes aux idées toujours neuves, jamais satisfaits d'eux-mêmes, en quête

WIBAUT



8. Cathédrale de Nicolet, Nicolet. Architect, Gerard Maloin.

9. St Marc, Bagotville. Architect Paul-Marie Coté. Architectes conseils, Desgagné and Boileau.

CORBEAU

10. Notre Dame d'Anjou, Ville d'Anjou. Architecte, André Blouin.

11. Eglise de Pelerinages de la Reparation, Pointe Aux Trembles. Architecte, André Blouin.

CORBEAU

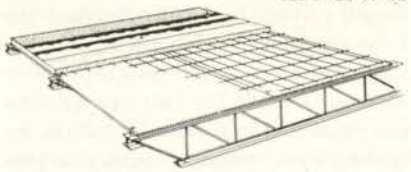
d'une perfection toujours plus grande. Cette concurrence plus vive, cette émulation ont créé les conditions requises au progrès de notre profession.

Ce qui doit d'abord caractériser une église, c'est surtout une certaine noblesse qui la fera remarquer dès le premier coup d'oeil comme étant un édifice destiné à une fonction très spéciale et unique, une fonction sacrée. Car la fonction dans les édifices religieux, diffère essentiellement de ce qu'on entend par le fonctionnalisme dans les édifices de caractère profane. D'une façon générale, le fonctionnalisme doit viser à adapter les formes au contenu, mais dans une église le contenu doit primer sur les formes et les caractériser. Dans une église, du fonctionnalisme pur et simple d'adaptation des formes au contenu physique pourrait ne résulter qu'une froide géométrie vide de toute signification spirituelle, et dès lors la fonction sacrée ne serait pas satisfaite.

L'on doit reconnaître que dans un grand nombre de nos récentes églises, leurs auteurs ont su traduire dans des formes simples et significatives le vrai sens du fonctionnalisme, qui consiste pour une église à sublimiser les formes pour les faire servir à leur fonction particulière qui est une fonction sacrée.

Il ne saurait ici être question de signaler toutes les oeuvres de valeur réalisées récemment, notre but étant plutôt une analyse globale et sommaire des récentes églises du Québec. Ce qui frappe d'abord, c'est la variété des plans, l'originalité des formes, la nouveauté. On s'est départi des types traditionnels, des silhouettes conventionnelles se résumant à quelques types familiers. Elles sont sobres et honnêtes, moins sophistiquées que leurs aïeules, et je dirais, plus près du peuple. Ces églises, et beaucoup d'autres de non moindre mérite, sont d'une originalité de bon aloi, qui n'a pas été recherché pour elle-même et à tout prix, mais qui a été trouvée tout naturellement par une meilleure compréhension du programme dans le sens de l'économie des moyens, dans un choix judicieux des matériaux et des méthodes de construction, en somme dans la simplicité et la franchise. On note une grande variété dans les types de plans et un sens plastique souvent très subtil dans le traitement des surfaces et des volumes, dans l'équilibre des masses, comme aussi plus de sobriété, de dépouillement. En somme, on n'a pas cherché à épatter par le faste et l'artificiel, le théâtral, comme c'était trop souvent le cas autrefois.

SEE PAGE 61 (A)



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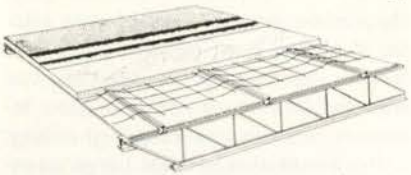

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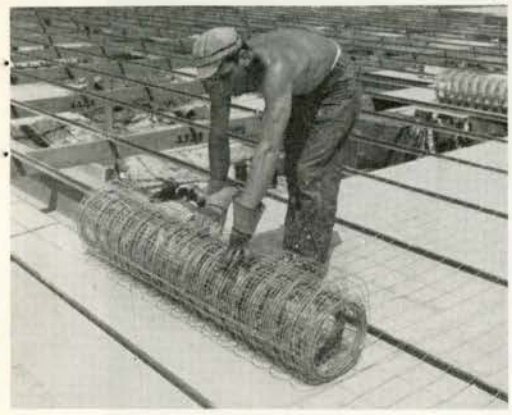

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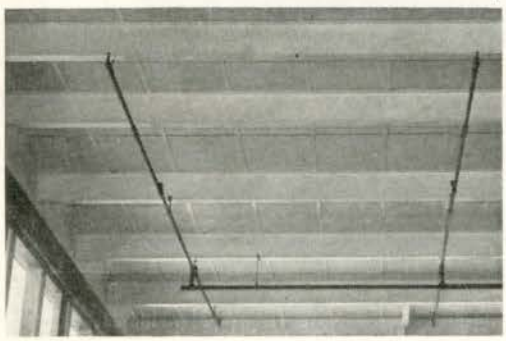

TECHNICAL SECTION

POURED GYPSUM CONCRETE ROOF DECKS

BY DOUGLAS H. LEE

During the past few years a noticeable interest has been shown by Canadian architects and engineers in the use of gypsum as a roof deck material. This interest is apparent from the increased number of buildings recently erected which have used poured gypsum concrete decks and the number for which such decks are being considered.

The idea itself is not new. Gypsum decks of various descriptions were quite popular 30 or so years ago, both in Canada and the United States, and were installed in such major buildings as Varsity Arena of the University of Toronto, in the form of precast slabs, and the Toronto Central Technical High School, where poured-in-place gypsum slabs were used for both floor and roof construction. But despite its early popularity, the use of gypsum decks subsequently fell off to the point where it is fair to say that few architects trained in Canada since the Second World War have had extensive experience with such roofing systems.

It would be presumptuous of me to try to explain the fall from favor in Canada of gypsum roof decks, but several authorities suggest that a number of mis-applications were essentially responsible. One outstanding error was the use of gypsum decks over areas subject to conditions of high humidity, such as are found in pulp and paper mills. The vulnerability of gypsum materials to such conditions is now only too well known. Undoubtedly there were other unfortunate uses of gypsum roof decks which helped to bring about the virtual disappearance of the system from the Canadian building scene.

Gypsum decks continued to be used in the United States, however, and they were widely accepted for a variety of constructions. Today, the method commands an estimated 20% of the total roof deck market in that country. Over the past few decades new developments, refinements and improvements in the materials and handling techniques have taken place and it is apparent that the gypsum roof decks that are available today are quite different from those with which we were familiar a generation or so ago. Improved deck characteristics, coupled with the features of gypsum construction which made them attractive in the first instance, have re-kindled the interests of building designers in gypsum decks. It is significant that their re-introduction to the Canadian scene has largely been on Canadian branch plants of American companies, and where the parent organization had experienced satisfaction with the system in the United States.

1. Permanent form boards being installed on sub-purlins.
2. Placing of reinforcing.
3. Pouring of gypsum slab.
4. Exposed underside of deck showing finished ceiling created by formboards.

Today, the term "Poured Gypsum Concrete Roof Deck" denotes a monolithic gypsum slab of 2-inch minimum thickness, which has been poured on permanent formboards that may or may not be supported by sub-purlins of a structural framework. The gypsum concrete itself is a factory controlled mixture of gypsum and wood chips, shavings or mineral aggregates, and requires only the addition of water at the job site. This is usually done on the ground, and the fluid mixture is pumped from the mixing plant through pipes to its final position.

When steel sub-purlins are used to support the slab, they generally take the form of bulb tees, rails or other rolled sections, and are welded transversely to the primary framing members. Such sub-purlins anchor the deck against uplift forces, restrict deck movement due to temperature changes and provide lateral bracing for the main roof purlins. They vary in size, weight and shape and are selected on the basis of the span between the main purlins and the required total safe load capacity of the deck.

The permanent form boards provide the surface upon which the deck slab is poured and they eliminate the need for temporary forms and shoring. They are non-structural components of the roof deck and are not usually considered in the load carrying capacity of the slab. Formboards are available in different types and varieties and herein lies one of the features of the system. They may be selected to provide undersides or roof decks to meet one or more functional requirements, such as fire

resistance, light reflection, insulation, sound absorption or economy. Typical formboard materials in use today include gypsum boards, paper and wood chip boards, insulation boards, acoustic boards, glass fibre boards, and asbestos cement boards.

Poured gypsum decks are reinforced, particularly in the direction of the span between sub-purlins, when they are used, or between purlins in the absence of sub-purlins. Reinforcing takes the form of galvanized steel fabric, welded or woven, which will provide the required bond, tensile strength and cross section. The accompanying diagrams illustrate the relationship between the elements of gypsum roof deck constructions, (a) with sub-purlins, and (b) without sub-purlins.

The current interest in poured gypsum concrete roof decks will probably be explained by the following list of features claimed for this system:

(a) *Flexibility:* As already stated, a variety of formboards may be used to give a wide range of roof slab undersurfaces. A finished ceiling is quickly and simply provided and at the same time, the cost of temporary formwork is eliminated.

(b) *Rigidity:* The poured gypsum provides a monolithic slab and furnishes a rigidity of structure that is inherent in this condition.

(c) *Fire Rating:* A two hour fire rating can be obtained with this form of construction and this can lead to economic benefits for fire insurance rates, protective equipment and other related considerations.

(d) *Light Weight:* Gypsum concrete weighs from 35 to 55 pounds per cubic foot, depending upon the aggregate used. The weight of a two inch deck varies from 10 to 12 pounds per square foot. Such reduction of dead loads can lead to economies in the design of supporting structural members and building foundations.

(e) *Speed of Erection:* Gypsum concrete sets very rapidly and gains a high percentage of its ultimate strength shortly after it is set. With current production techniques it is possible for a single crew to pour from 20,000 to 30,000 square feet of deck in a single day, ready for roof covering.

(f) *Adaptability:* Current uses of poured gypsum roof decks indicate a wide range of forms and spans. Depending upon the purlin type and load conditions, spans up to 12 feet have been used. Gypsum concrete construction has been applied to forms as varied as folded plate structures and doubly curved shells. With minor alterations, poured gypsum concrete decks have been adapted for use with structural frames other than steel, such as precast and prestressed concrete and glued laminated timber.

Besides these advantages, architects will want to know some of the disadvantages of gypsum decks, particularly in the light of the past history of the system in Canada. For obvious reasons, no group is more anxious to point out the precautions to be taken when selecting and installing gypsum decks, than the gypsum deck people themselves. The Martin Fireproofing Company of Canada is a major applicator of gypsum roof decks and Mr Norman Angell of that firm has submitted the following notes:

(a) *Exposure of unprotected slab to weather:* Despite the fact that gypsum can be poured in nearly all weather, including rain, without causing serious defects in the slab, it is advisable that the roof covering be applied soon after the deck has been poured, since prolonged exposure to the weather can stain the formboard which, in most instances, is serving as a finished ceiling.

(b) *Ventilation of slab:* Large quantities of water are used in the manufacture of gypsum concrete, and much of it has to be removed after the slab has been poured. Adequate ventilation of the underside of the slab must be

provided. If a suspended ceiling is used, there should be some means of ventilating the area between the slab and the ceiling.

(c) *Slabs over areas of high humidity:* Gypsum decks should not be used over areas of high humidity, nor should they be in contact with free water (pulp and paper mills, car washes, etc). When a gypsum deck is used in a semi-exposed way, as in a building roof overhang, a formboard that is impervious to water should be used. Asbestos cement boards have been found to be suitable for such conditions.

(d) *Fastening the built-up roof:* Felts of built-up roofs should not be solid mopped directly to gypsum decks. Due allowance should be made in the fastening of the roof felts. Strip mopping of the felts has been suggested. Nailing to gypsum concrete is possible and nail fastening of base felts is sometimes recommended.

(e) *Painting the underside:* Formboards and sub-purlins are available prepainted, and are usually provided on the job in this condition. If painting is to be done, however, it should be deferred until the formboard and slab are dry. The paint used on the formboards should be of a non-sealing, no-bridging type and fortified with mildew inhibitor. Paint for the metal purlins or sub-purlins should be a type that will protect against rust.

(f) *Suspended Ceilings:* Suspended ceilings, preferably, should be hung from the primary framing members. They can be hung from the sub-purlins only if a design check is made to determine whether the added weight of the ceiling will not cause more sub-purlin deflection and stress than are allowable. In no case should hangers be fastened into or through the poured gypsum concrete slab or the formboards. Similar precautions should be followed for any suspended units such as heaters, light troffers, pipes or ducts.

(g) *Floor decks and heavy loads:* Gypsum decks are not generally applicable for floor systems nor should they be used for heavy traffic deck surfaces. When heavy concentrated loads such as water tanks, large fan bases or cooling towers are contemplated, they should be supported by the walls or the primary framing members, and independently of the roof deck.

(h) *Gypsum Slabs over Acid areas:* Acid fumes do not affect gypsum concrete any more adversely than they do other constructions. However, if acid fumes are anticipated, the manufacturer of the gypsum concrete should be consulted for special recommendations.

In addition to the above considerations, Mr Angell mentioned the following points regarding the economy of the system:

(1) Owing to the large quantities of materials involved and the speed at which decks are poured, a gypsum roof deck job, in order to be competitive in price with other deck systems and to permit the full economic benefits of the system, must involve a rough minimum of 17,500 square feet of roof deck.

(2) Decks on sub-purlins can span up to 12 feet between main purlins. However, the most economical layouts keep these spans 8 feet or less between purlins.

(3) A good water supply at the building site is essential for the construction of a poured gypsum concrete deck. A two-inch water main at normal 40 psi city pressure is a suggested minimum.

(4) Gypsum decks are most applicable to low storey structures, such as schools, industrial buildings and low

(concluded on page 64)

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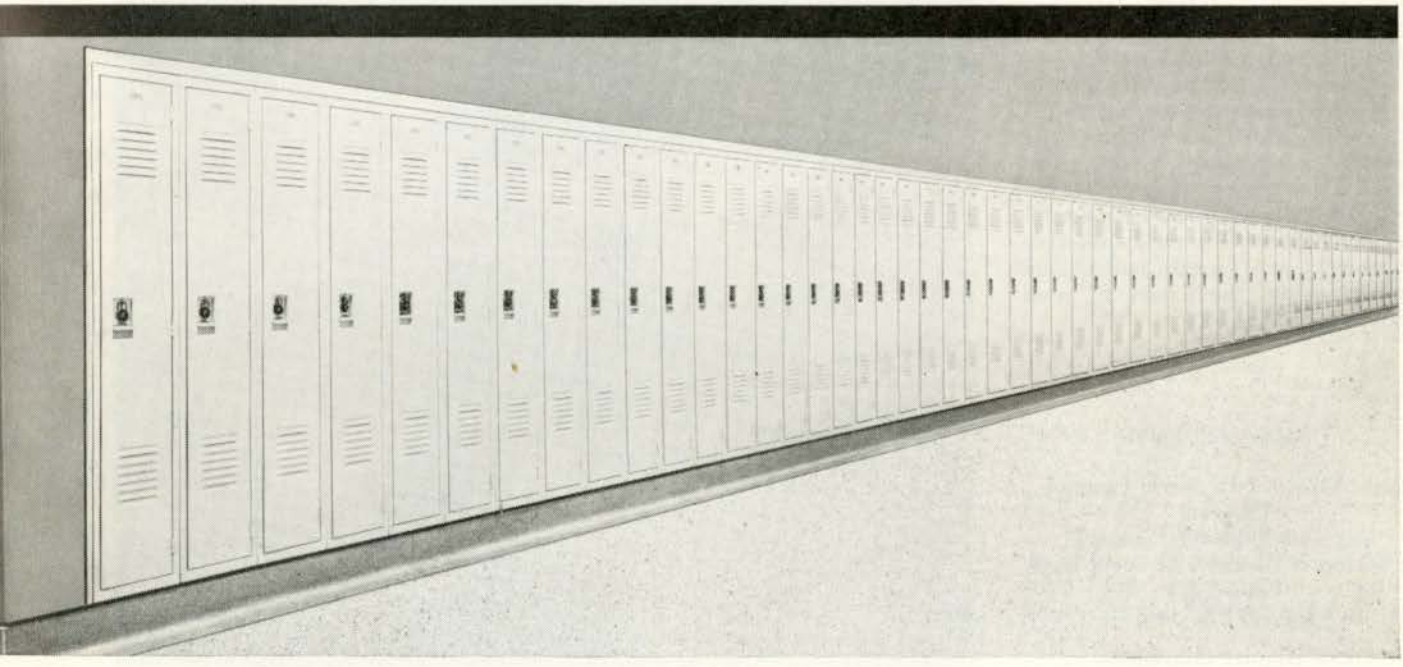

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(continued from page 61)

commercial buildings. Owing to its quick set, it is not advisable to pour gypsum decks at heights greater than 40 or 50 feet above the ground.

Journal readers who wish to obtain more detailed information on this subject can write to the trade association, the *"Gypsum Roof Deck Foundation"*, (known as "GRDF") with offices at 1201 Waukegan Road, Glenview, Illinois. They have published a brochure on gypsum concrete roof decks which includes design details, tables and specifications. The Canadian Gypsum Company is a manufacturer of gypsum concrete. They are members of "GRDF" and have also published design information which is available to Canadian architects and engineers. The pertinent CSA publications are:

C.S.A. A 82.32 – 1954 "Design Requirements for Reinforced Gypsum Concrete".

C.S.A. A 82.33 – 1954 "Poured-in-place Reinforced Gypsum Concrete Roof Decks Using Permanent Formboards".

C.S.A. A 82.34 – 1954 "Gypsum Formboard".

PROJECT NOTES FROM DBR

The Division of Building Research of the National Research Council, in order to provide information on the live loads that act on structures, is measuring pressures on tall buildings in natural wind. The full scale pressure measurements will verify the results of scale model tests and provide independent information on the nature of wind loads on buildings.

COMING EVENTS

25th Annual Two Week Summer Program
City and Regional Planning
Massachusetts Institute of Technology, Cambridge
July 15 - 26, 1963

21st Annual Convention
National House Builders Association
Windsor, Ontario
January 26 - 29, 1964

Western Canada Hospital Institute and Manitoba Hospital and Nursing Conference Program including Seminar on Hospital Design and Construction
University of Manitoba
May 28 - 31, 1963

PROCEEDINGS OF CONFERENCE ON SHELL STRUCTURES

Proceedings of the world conference on shell structures, held in San Francisco in October, 1962, are available from the Building Research Advisory Board of the U.S. The conference was sponsored by the International Association for Shell Structures, University of California, and the Building Advisory Board. Write the National Academy of Sciences, National Research Council, Division of Engineering and Industrial Research, 2101 Constitution Avenue, Washington 25, D.C.

FEDERAL GRANT FOR STUDY OF PLANNING EDUCATION

CMHC has announced the approval of a grant of up to $12,600 for an inquiry, to be conducted by Prof. John Willis of the Faculty of Law, University of Toronto, into the arrangements for professional education in town and regional planning in Canada. The inquiry will be undertaken as a private observation and Prof. Willis' conclusions and recommendations will be made for the information of schools of planning at universities, the Town Planning Institute of Canada, and Central Mortgage and Housing Corporation.

RESEARCH GRANTS AWARDED

The Canadian Council on Urban and Regional Research have awarded a $9,500 grant to Professors Guy Dubreuil and Marcel Rioux of the University of Montreal for further examination of social change in St Hilaire, Quebec.

The study of St Hilaire was begun by the Groupe Anthropologique et Sociologique pour l'Etude des Communautés in 1962, and should be completed by 1965.

The second research grant for $23,000 was awarded to Professor Eric Hanson of the University of Alberta. Professor Hanson is undertaking the projection of provincial and municipal governmental expenditures and revenues up to the year 1976.

The council believes there is value in economic projections carried out on nationally uniform assumptions and under impartial auspices.

LEWIS MUMFORD "THE CITY IN HISTORY"

The National Film Board has created a 6-part film series *Lewis Mumford on the City*. The series will be telecast by the CBC Wednesday evenings in the following sequence. (Telecast time should be checked on the local listings.)

May 22 *The City — Heaven and Hell*

May 29 - *The City — Cars or People*

June 5 - *The City and its Region*

June 12 - *The Heart of the City*

June 19 - *The City as Man's Home*

June 26 - *The City and the Future*

The film series is based on Lewis Mumford's book, *The City in History*, and is produced and directed by Ian MacNeill. With contemporary material especially filmed in eleven countries, with the re-creation of cities of the past from graphic and sculptural art of their times, and with filmed statements by Mr Mumford, the films interpret the views of the foremost authority on the city.

ANNOUNCEMENT OF PARTNERSHIPS

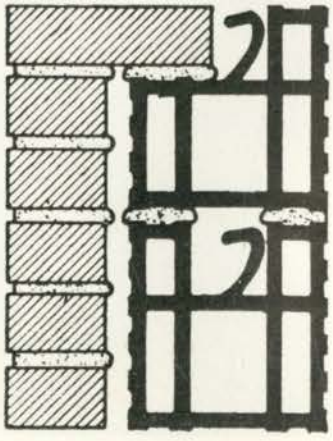
A. Kundzins has become a partner in the firm of Duffus Romans Single and the firm will be known as Duffus Romans Single and Kundzins, architects and engineers, 1525 Birmingham Street, Halifax.

Mr Weld P.Eng. has become a partner in the firm of Webber Harrington and Associates and the firm will be known as Webber Harrington and Weld, architects and engineers, Suite 210, 7071 Bayers Road, Halifax.

Peter Mettam has joined the firm of L. A. Wright and Associates and the firm will be known as Mettam Wright Associates, 1350 Barrington Street, Halifax.

even Joshua would have been impressed!

If the walls of Jericho had structural clay backup tile, chances are the sound of trumpets would never have been heard within the city—let alone tumble the walls. Yet compressive strength and sound reduction are just two of the important properties of structural clay tile. It's non-shrinkable, fire resistant, an excellent plaster base, reduces dead load and inch for inch surpasses thermal resistance of solid masonry units. Make use of this modern hollow tile at every opportunity. Complete specifications on request.



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SUNROC drinking fountain converts to water cooler—anytime

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Sunroc Tiny Titan Cooling unit converts fountain into refrigerated water cooler in minutes — anytime. It fits into the fountain, not the wall. No plumbing changes, no wall alterations, no costly labor charges.

Compact, semi-recessed, projects only 8½" from wall. All stainless steel or bonded vinyl apron in color.

Send for BULLETIN A-392 giving full facts on new SUNROC wall fountain.

Write: Frigidaire Products of Canada Limited, 1901 Eglinton Avenue East, Scarborough, Ont.

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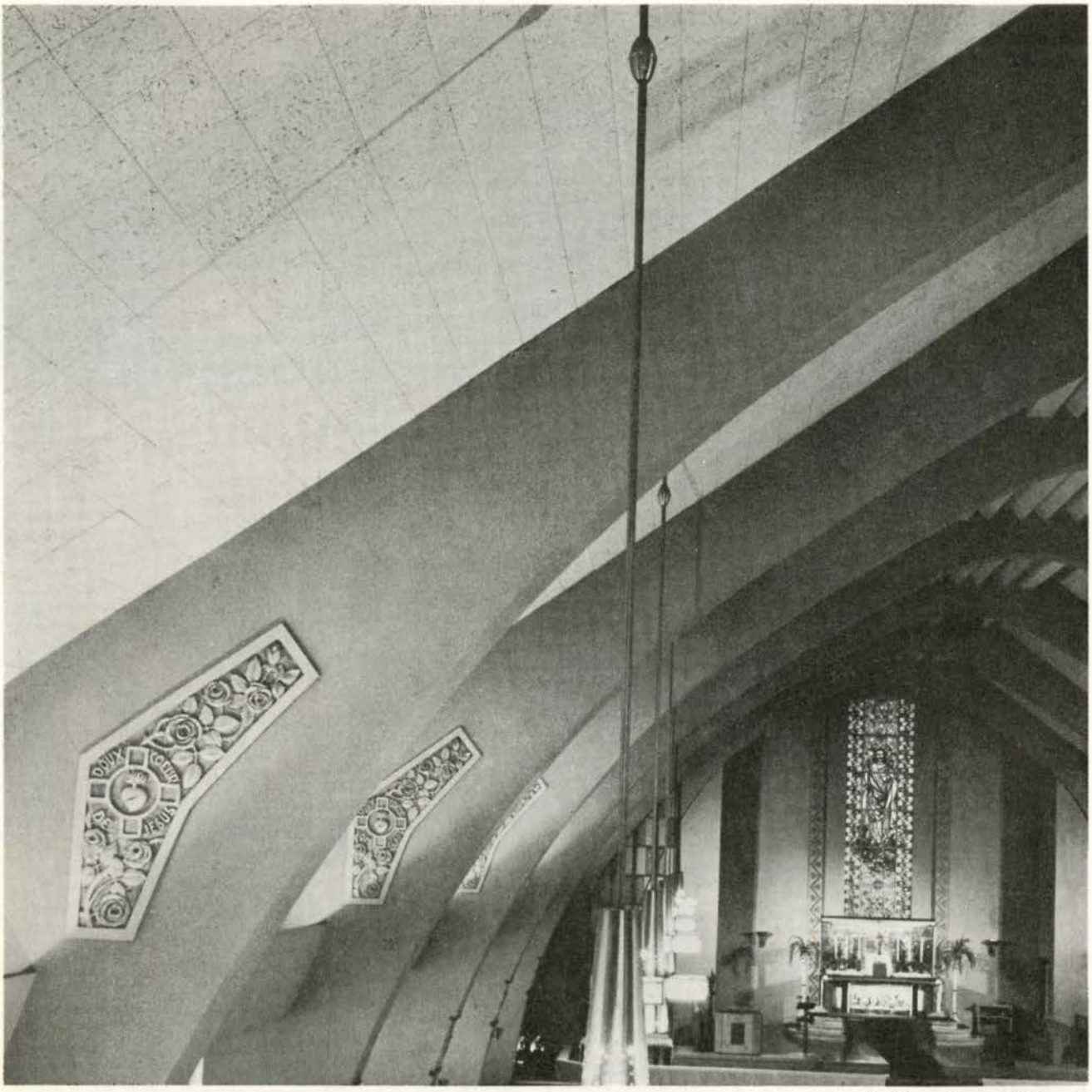

Architect: Bernard Départée
Montreal, Que.

the quiet moments of worship

Acoustic tranquility, especially important in a church, has been assured for the Notre Dame du Bon Pasteur church in Laval des Rapides, Quebec. This has been achieved – while enhancing an atmosphere of peaceful dignity – by use of CELOTONE fissured mineral fibre tile, manufactured by Acousti-Celotex. Application was by Dominion Sound, Canada's largest acoustical specialists.

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EQUIPMENTS LIMITED

HEAD OFFICE: 4040 St. Catherine Street West, Montreal • **BRANCHES:** Halifax, Saint John, Montreal, Ottawa, Toronto, Hamilton, London, North Bay, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver

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In this way, Royalmetal has kept pace with the contemporary architectural trend towards curving, sculptured forms ■ The accompanying photographs show how the seating can be used either in straight, concave, or convex lines ■ These curved line adaptions are of obvious benefit in reception areas or conference rooms, where group participation demands fatigue-free seating ■ Furthermore, previously difficult "dead room" areas in lounge and waiting areas are easily employed. ■ Its crisp classical lines harmonize with today's architectural styles or room decors.

■ Note the unusual three-legged design, and "floating" action of upholstered seat and back ■ The flexibility of the line is achieved through the insertion of an especially designed and precisely engineered pivot or "knuckle" into the back leg(s) ■ This also allows the addition of other units at any time ■ Accessories such as tables, planters, individual chairs and tables, and removable arm rests, are also available ■ THIS IS VISCOUNT 65

by ROYALMETAL

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No. 1614AT

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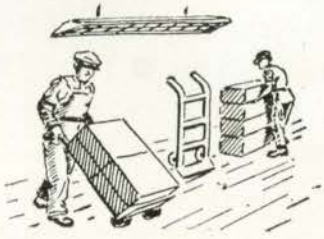

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COMBINATION 3 IN 1 UNIT
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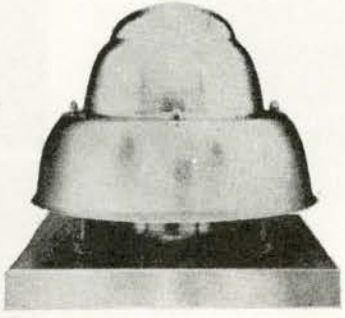
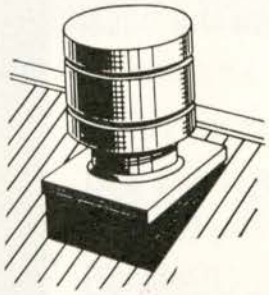
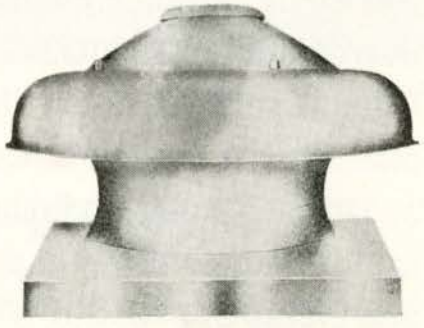


Centrifugal Roof Ventilator
MODEL C

Centrifugal Sidewall Fan
MODEL S



Industrial Roof Ventilator
MODEL UNC



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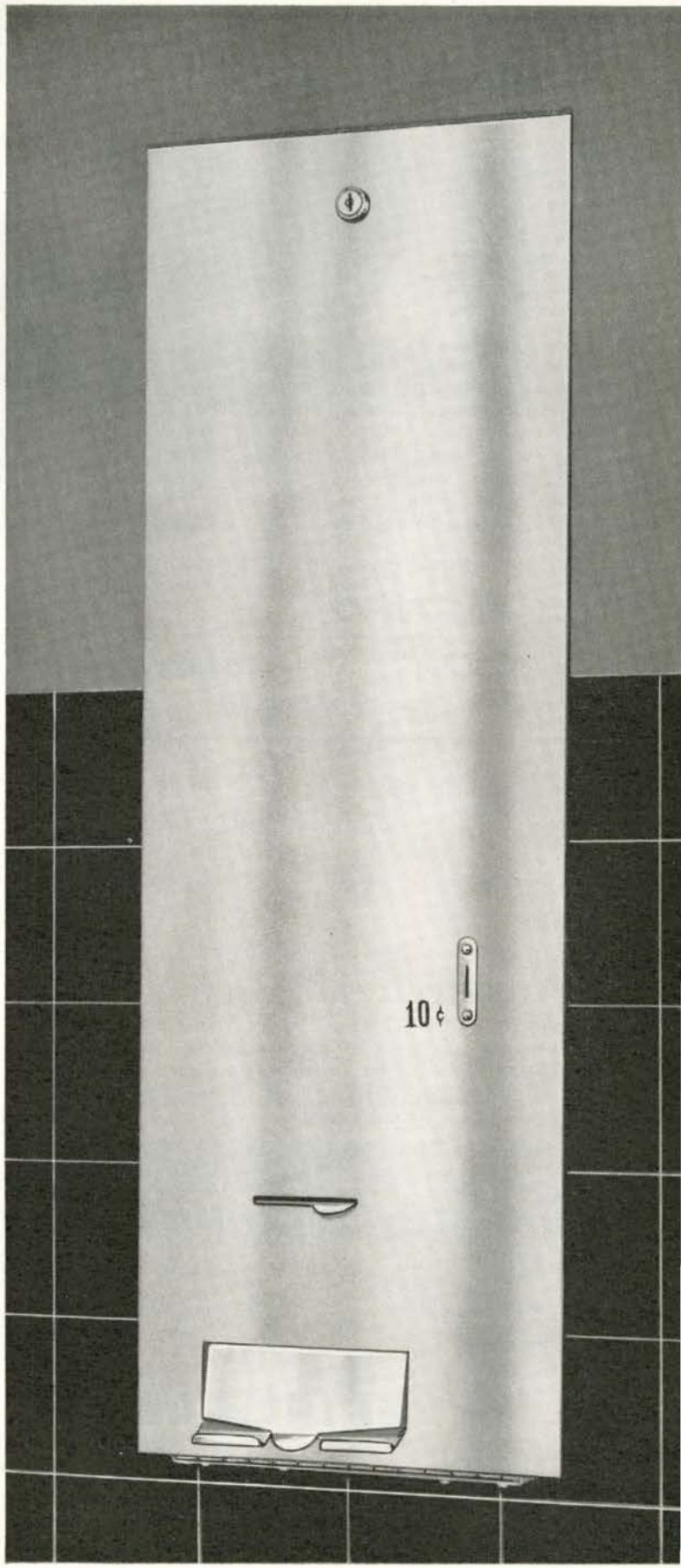

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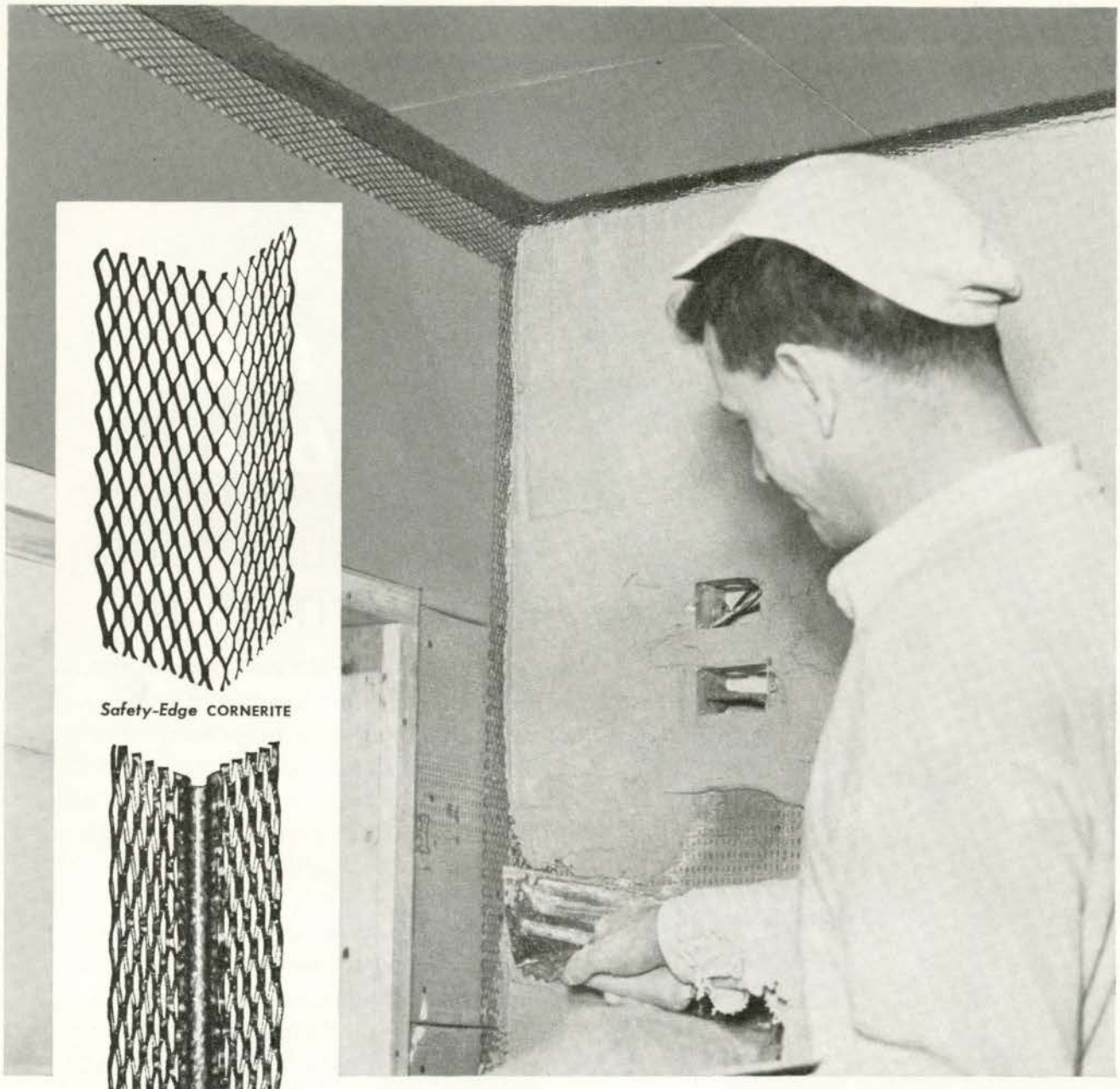

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"PEDEX" Corner Bead

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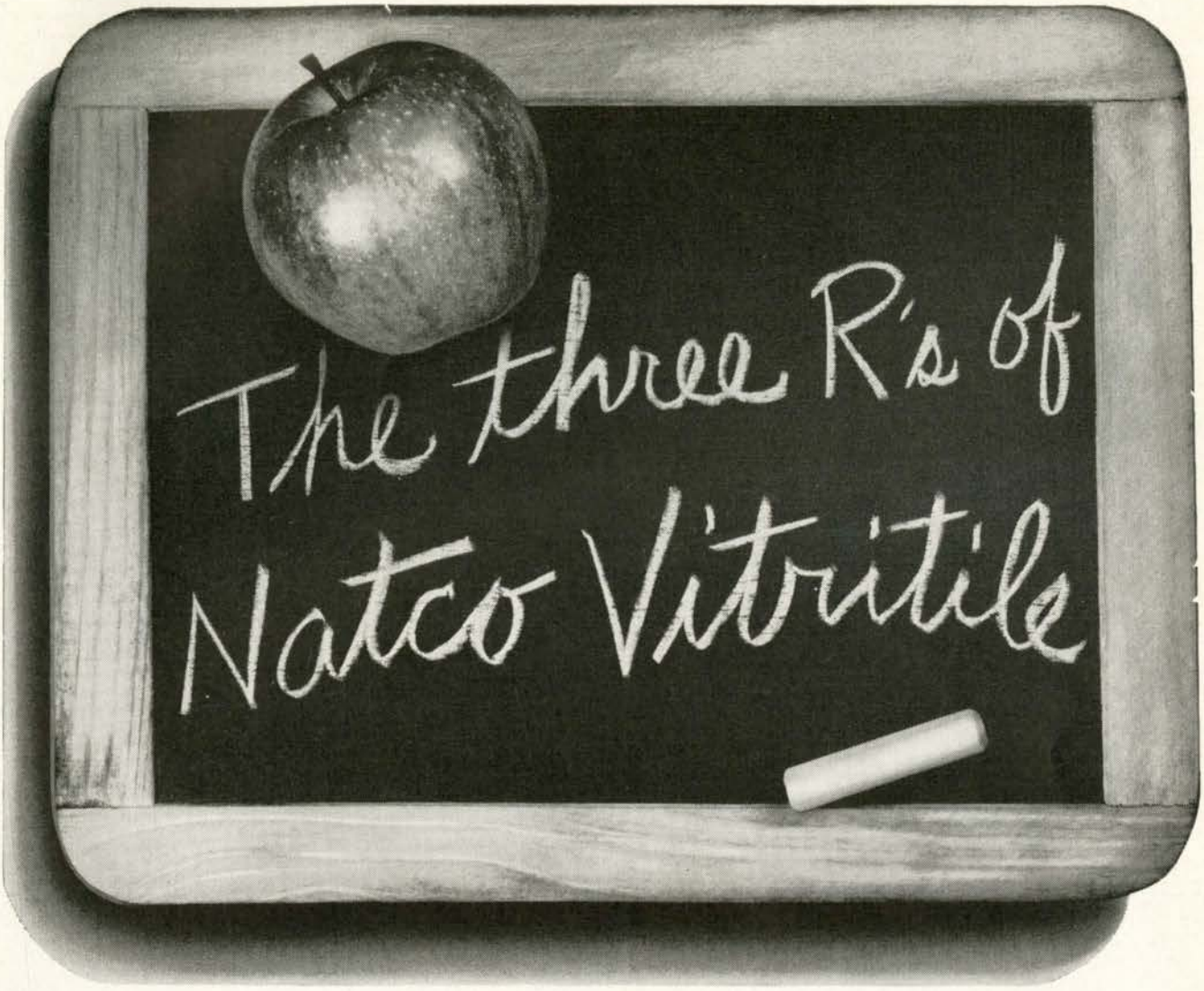

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Natco Vitritile is available in a variety of attractive, radiant colors. All colors are permanent and will not fade. A periodic cleansing with common soap and water is all that's necessary to **maintain** Vitritile's original radiance.

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Vitritile—a ceramic glazed structural clay facing tile—is resistant to moisture, fire, chemicals, dirt and scuffs. Interior walls of smooth Natco Vitritile resist the day by day wear and tear that only school children can administer.

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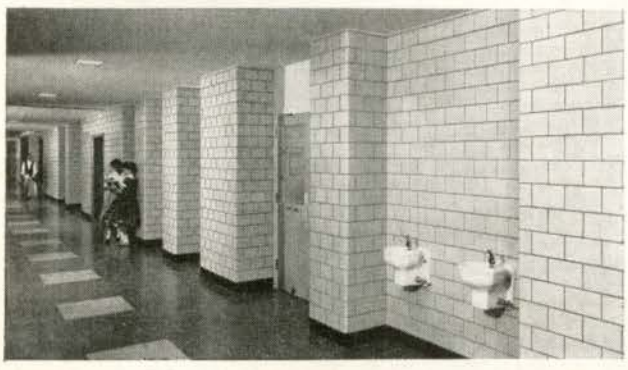
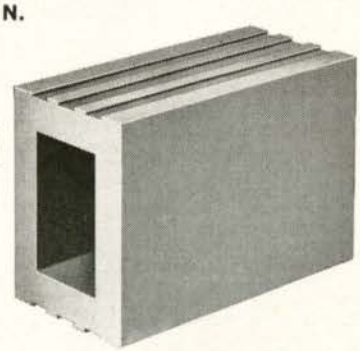
Install it and forget it! Vitritile's permanent, hard-fired finish assures years and years of maintenance-free service. Because it is a **genuine** clay tile product Vitritile will last the life of any school in which it is installed.

If you're building a new school or adding to an existing school it will be to your best interests to consider Natco Vitritile. For complete information write for catalog #S-61 N.



Vitritile is available in many shapes and sizes. Including the large 8W series (7¾" x 15¾" face size) and the popular 6T series (5 1/16" x 11¾" face size) available in nominal 2", 4", 6" and 8" thicknesses.



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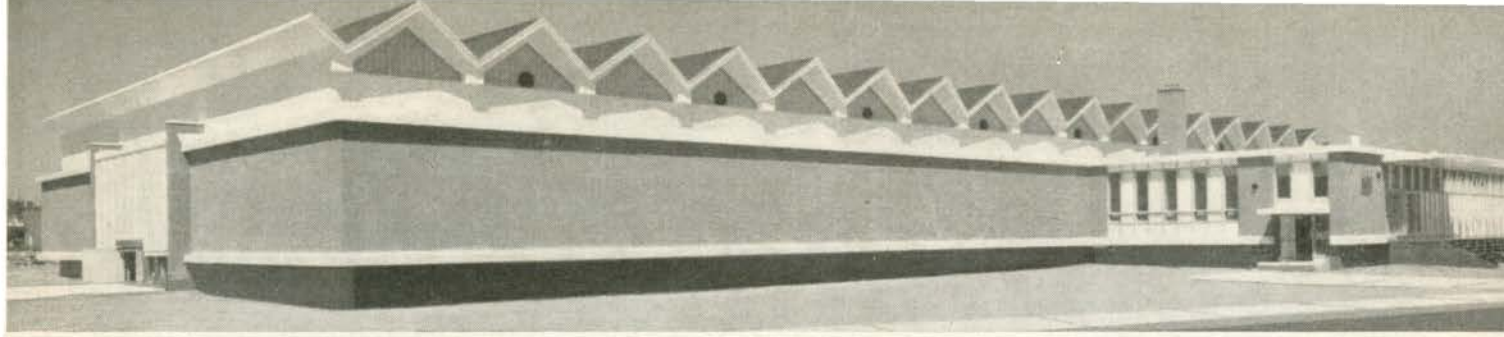
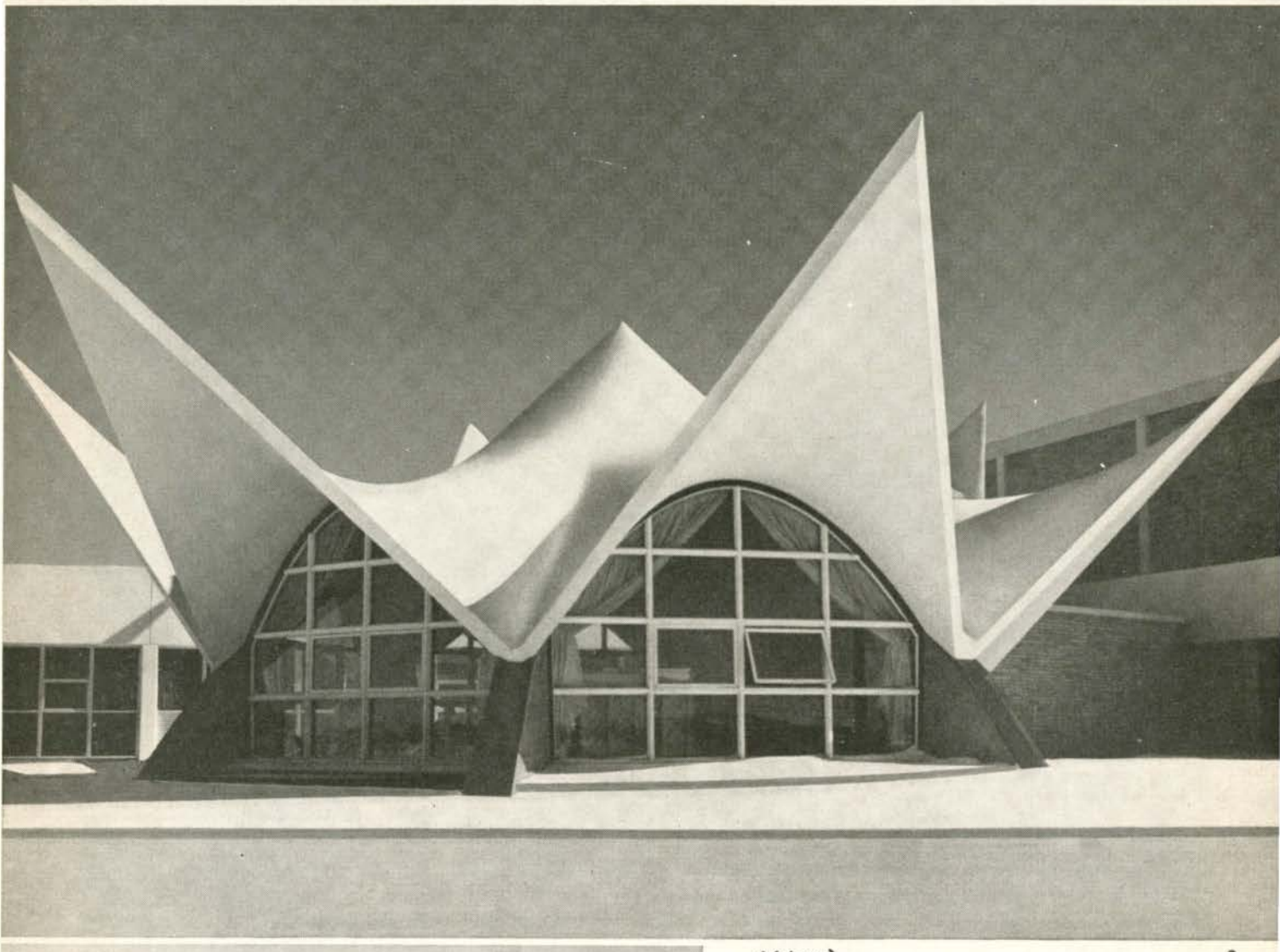




1 (above) 2

6

1 SPORTS ARENA AT VILLE LASALLE, Que.
Architects: Rioux & Morin
Consulting Engineers: Gagnon and Associates
General Contractors: Desaulnier Construction Ltd.
Lift Slab Contractor: Lift Slab of Eastern Canada Ltd.

2 SCHOOL AT TABER, Alberta, featuring concrete hyperbolic shell roof
Architect: N. Fooks
Design Engineer: J. R. Milne
General Contractor: Chronik Construction
Gunite Sub-Contractor: Canada Gunite Co. Ltd.

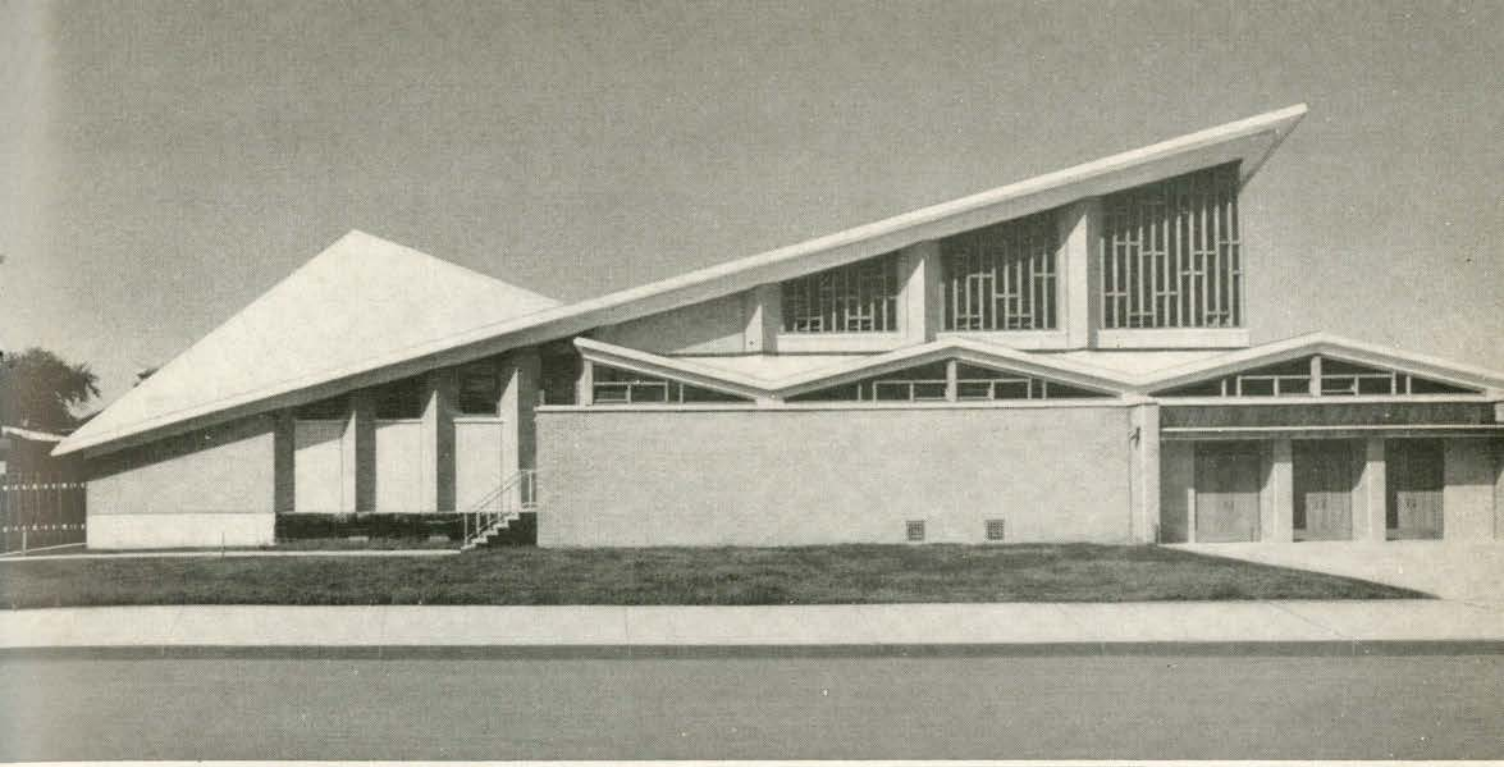
3 CHRIST THE KING CHURCH, Moncton, N.B.
Architects: LeBlanc, Gaudet & Associates, Moncton
Project Architect: Jacques Roy
Consulting Engineers: Adjeleian and Associates Ltd., Ottawa
General Contractor: Modern Construction Limited

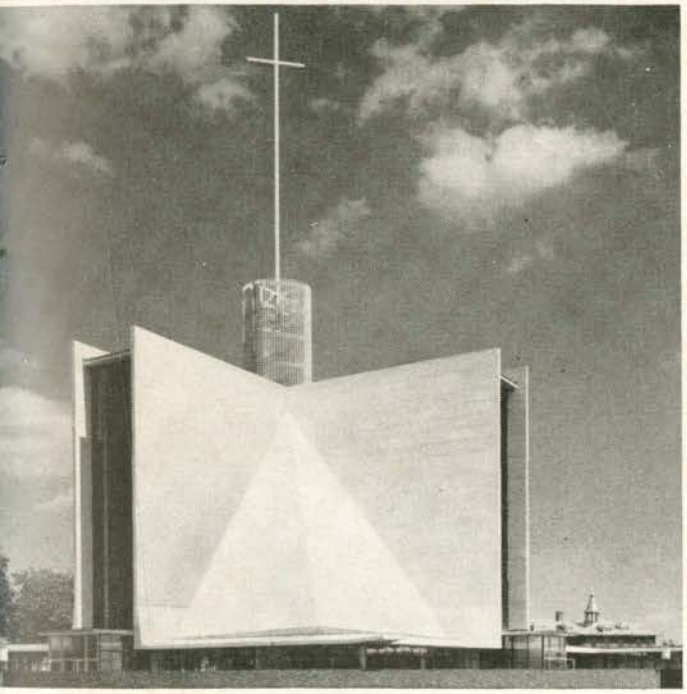
4 STE. GERMAINE-COUSIN CHURCH, Pointe aux Trembles, Montreal, Que.
Architect: Gérard Notebaert
Consulting Engineers: Lalonde & Valois
General Contractor: Paul Desormeaux Ltée.

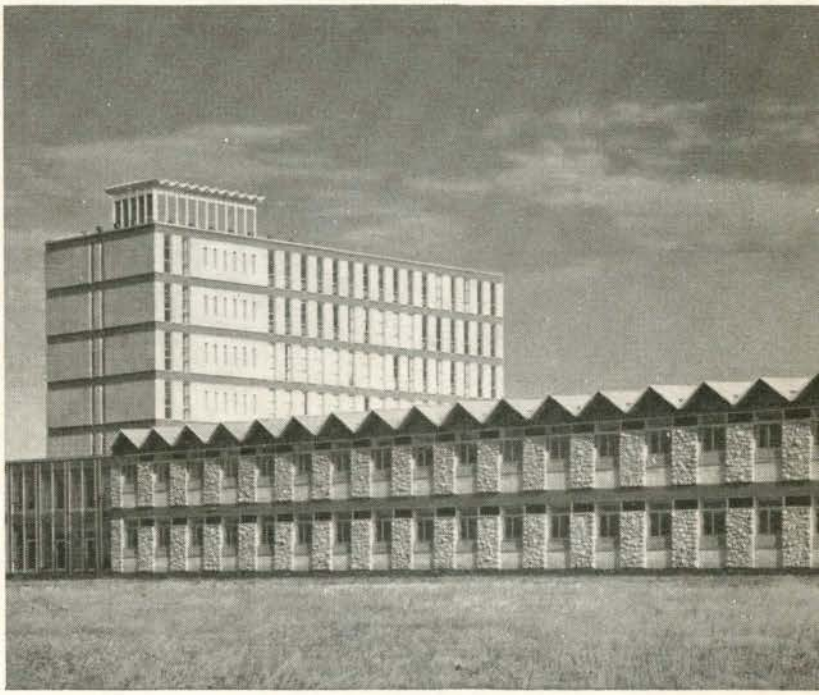
5 UNIVERSITY OF SASKATCHEWAN new Arts Building, Saskatoon
Architect: Shore & Moffat, Toronto
General Contractor: W. C. Wells Construction Co. Ltd.
General Contractor: (For tall part of the building):
Bird Construction Co. Ltd.
Sub-Contractor for Precast Concrete: Precast Concrete Ltd., Edmonton

6 ST. HILDA'S ANGLICAN CHURCH, Toronto
Architect: Philip C. Johnson, London, Ont.
Consulting Engineer: Raimond Miniats
General Contractor: Fassel Construction Co. Ltd.

CANADA CEMENT







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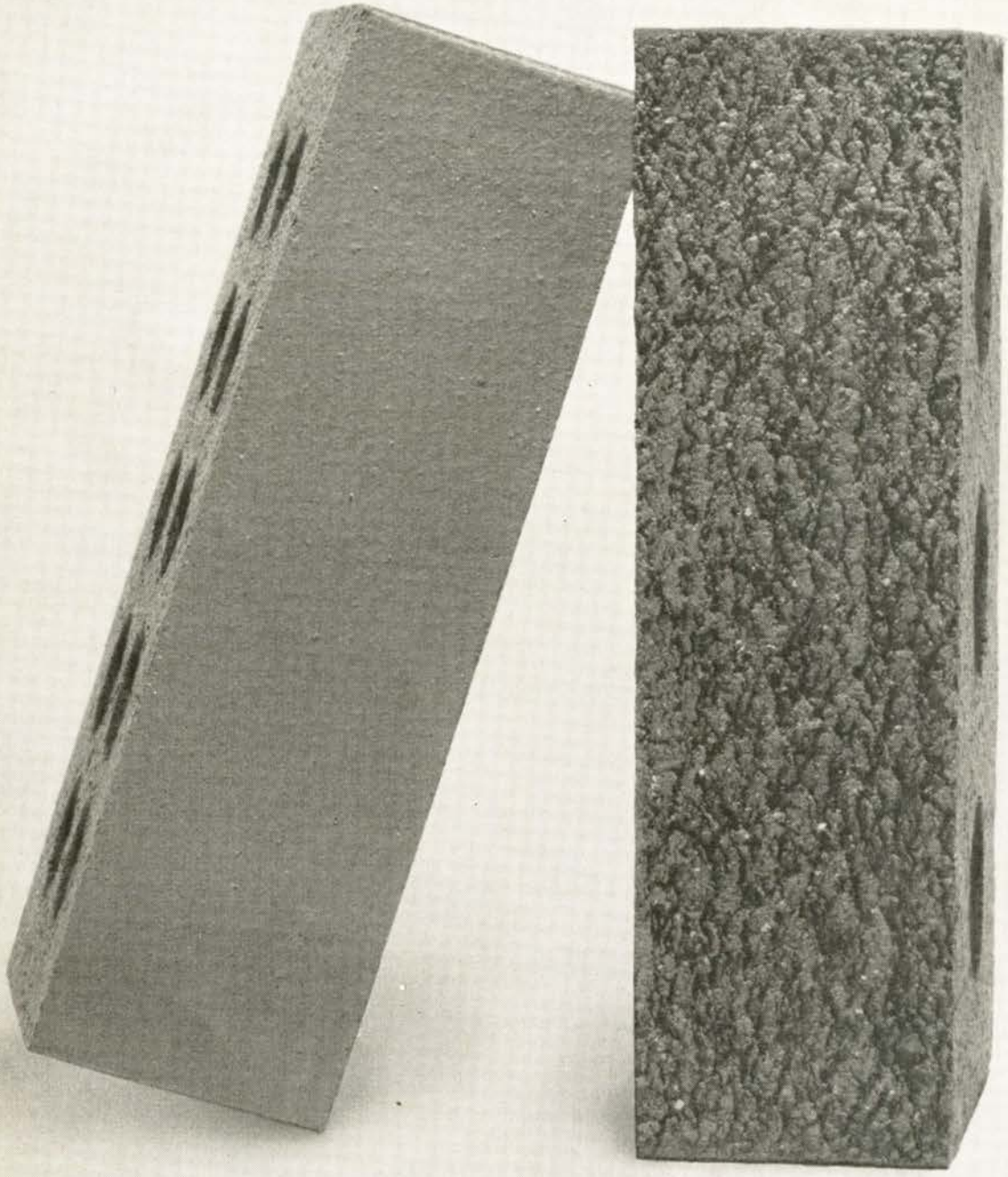

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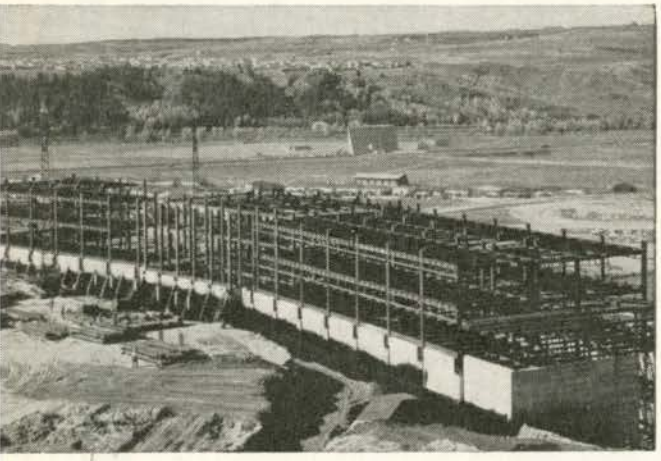
in schools

High strength steel and the application of the plastic design theory produced a highly efficient frame for this university extension. The ductility of steel has allowed the designer to take into accurate account the full strength of this structure. The result is clear usable space, architectural freedom, and low cost.

Building: Engineering Building—University of Saskatchewan, Saskatoon.
Architects: Webster, Forrester, Scott & Associates—Saskatoon.
Consultants: Douglas, Micholenko & Dupuis.



in hospitals

6,000 tons of steel are going into this hospital in Calgary. By selecting steel for the frame the owners will have a flexibility of layout that comes from large floor areas free of roof supports. Inexpensive floor reinforcing to permit the installation of presently unplanned heavy medical equipment is also a special advantage of steel. The need for this frequently occurs long after construction is complete and with steel the cost can be reasonable.

Building: Foothills Provincial General Hospital—Calgary.
Architects and Consultants:
Department of Public Works—Government of Alberta.

in bridges

By assembling the box girder sections on the ground and lifting them into place in large units, this bridge was erected over a busy canal without the use of falsework. Shop fabrication also permits close quality control. You can do this sort of thing with steel.

Bridge: Homer Bridge over the Welland Canal—St. Catharines, Ontario.
Consultants: Foundation of Canada Engineering Corporation Ltd.

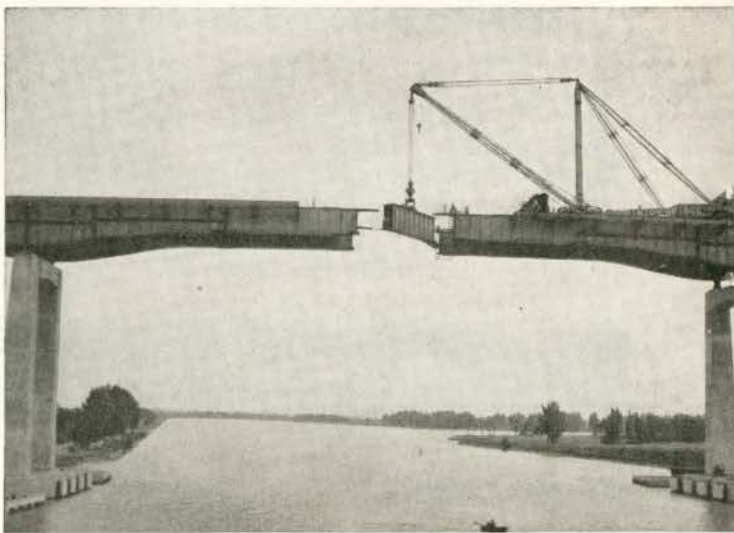
new steels

are opening doors to new design concepts

New steels with their high yield points have given designers fresh scope in the use of structural steel as a construction material. Sizes and weights are down affording new architectural treatment and reduced in-place costs. This brief selection of a few D.B. contracts in different parts of the country shows how the advantages of steel are being used in a variety of applications. Dominion Bridge maintain design fabrication and erection facilities in most of the major cities. Their sales and engineering departments are always available for discussion and to assist in any way they can.

139

STRUCTURAL DIVISION
DOMINION BRIDGE
SIXTEEN PLANTS COAST TO COAST

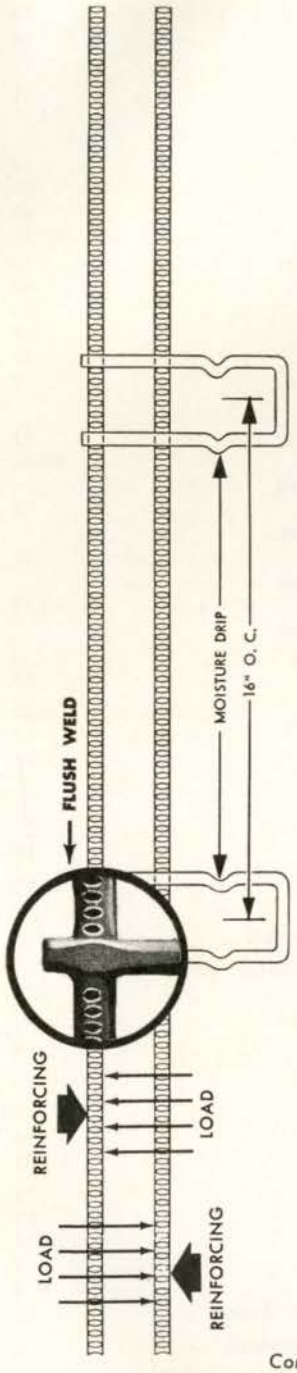


in churches

Exposed steel gives a pleasing modern interpretation of the traditional cathedral roof. Steel has produced an enduring structure which displays slender appearance and design freedom. Structural steel was selected as the most economical material to achieve the design concept.

Building: St. Paul's Lutheran Church—Saskatoon.
Architects and Consultants:
Webster, Forrester, Scott & Associates—Saskatoon.

NEW IN CANADA



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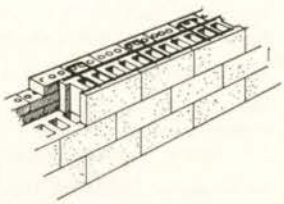
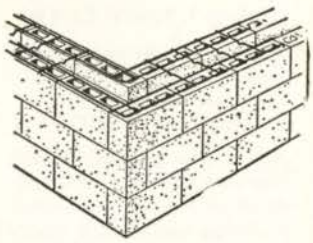


ECONO-LOK



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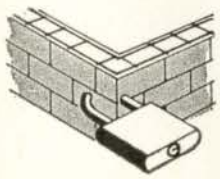
Complete brochure containing product specifications, tests and technical data can be obtained from:



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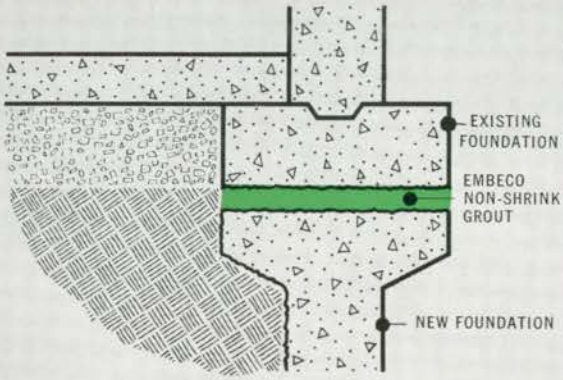

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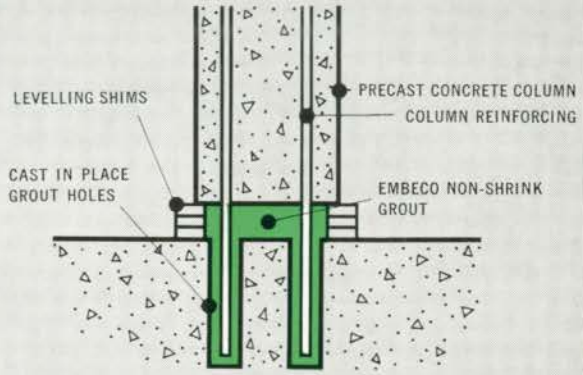
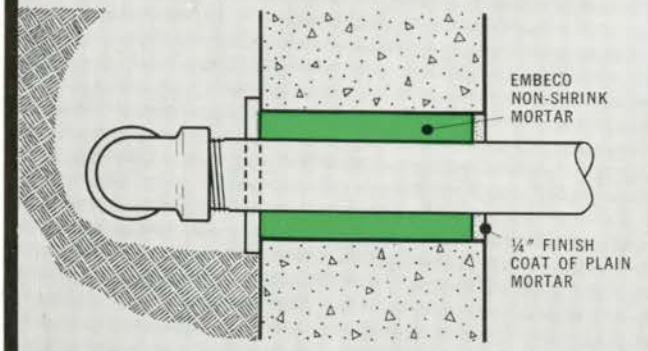


Non-shrink method of

GROUTING PRECAST COLUMNS

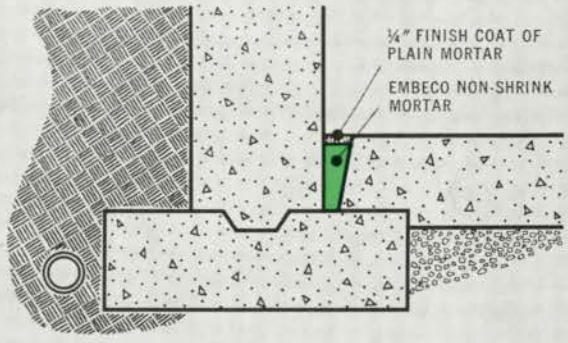
EMBECO assures tight, high-strength, load-bearing qualities and high bond to steel.



Non-shrink method of

CAULKING AROUND PIPES THROUGH FOUNDATION WALLS

EMBECO prevents leakage of ground water that accumulates in service trenches; bonds tightly to concrete foundation.



Non-shrink method of

CAULKING BETWEEN FLOOR SLAB AND FOUNDATION WALLS

EMBECO prevents leakage of ground water. Eliminates costly corrective measures after building is occupied.

EMBECO GROUTS FOR GOOD!

In new construction, there is a complete, long life solution to shrinkage problems set up by ordinary grout and mortar . . . use EMBECO. Ordinary grouts need excess water to make them placeable. When the water evaporates, shrinkage results and proper bond formation is prevented. EMBECO does not shrink . . . grouts for good! Because of this, Architects, Engineers and Contractors throughout Canada find EMBECO an important tool on every type of new construction project. There are a number of special formulations for specialized uses, all manufactured under rigid control. See your Master Builders field man. Write for specification sheets on the use of EMBECO Grout and EMBECO Mortar.

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MC-6301-E

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Holbrook School, Hamilton, Ontario

Architect: Basil M. Hall, Hamilton *General Contractor: Stewart-Hinan Corporation, St.Catharines*

Functional Fenestration

Several types of Rusco Steel Windows were used in the new Holbrook School.

Classroom fenestration employs units 4-lites high and 3-lites wide with inside sliders for indirect ventilation. Top lites and inner sliders are glazed in Alseynite.

At other locations Rusco hopper vents and fixed lites were specified.

The steel windows and column covers between the windows are finished with baked-on enamel. Window colour—Dark Brown. Column covers—Horizon Blue.

RUSCO WINDOWS AND DOORS

RUSCO OF CANADA LIMITED

750 Warden Avenue, Scarborough, Ontario

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