Serial 458 Volume 40
Number 10

RAIC Journal

OCTOBER 1963

38 MASSEY COLLEGE
Thompson, Berwick & Pratt, Architects

ARCHITECT'S STATEMENT

39 AN APPRAISAL
by Peter Collins

HOSPITALS

49 INTRODUCTION
WINNIPEG CONFERENCE
by P. M. Keenleyside

51 METHOD OF EVALUATING AN EXISTING HOSPITAL PLANT
by E. Todd Wheeler

58 CARIBOO MEMORIAL HOSPITAL
Thompson, Berwick & Pratt, Architects

64 RIVERDALE HOSPITAL
Chapman & Hurst, Architects

66 MANITOBA REHABILITATION HOSPITAL
Moody, Moore & Partners, Architects

68 OAKVILLE TRAFALGAR MEMORIAL HOSPITAL
Govan Kaminker Langley Keenleyside Melick
Devonshire Wilson, Architects

70 A ROME SCHOLAR

72 ECOLE MGR LAVAL
Desrochers & Dumont, Architectes
Présentation par Jean Gareau

74 QUESTIONNAIRE

LEGAL NOTES

27 MECHANICS' LIENS – PART V
A CASE COMMENT
by Norman Melnick

TECHNICAL SECTION

59 FACTORY-SEALED DOUBLE-GLAZING UNITS
by K. R. Solvason and A. G. Wilson, the October Building Digest Supplement from the Division of Building Research, NRC, Ottawa

75 ROOFING INSPECTION
by Wyndham J. Freeman

DEPARTMENTS

9 Features
13 Book Reviews
18 Institute News
79 Industry
108 Index to Advertisers

COVER: Massey College (see p. 38); architects, Thompson, Berwick & Pratt, from a photo by Roger Jowett.

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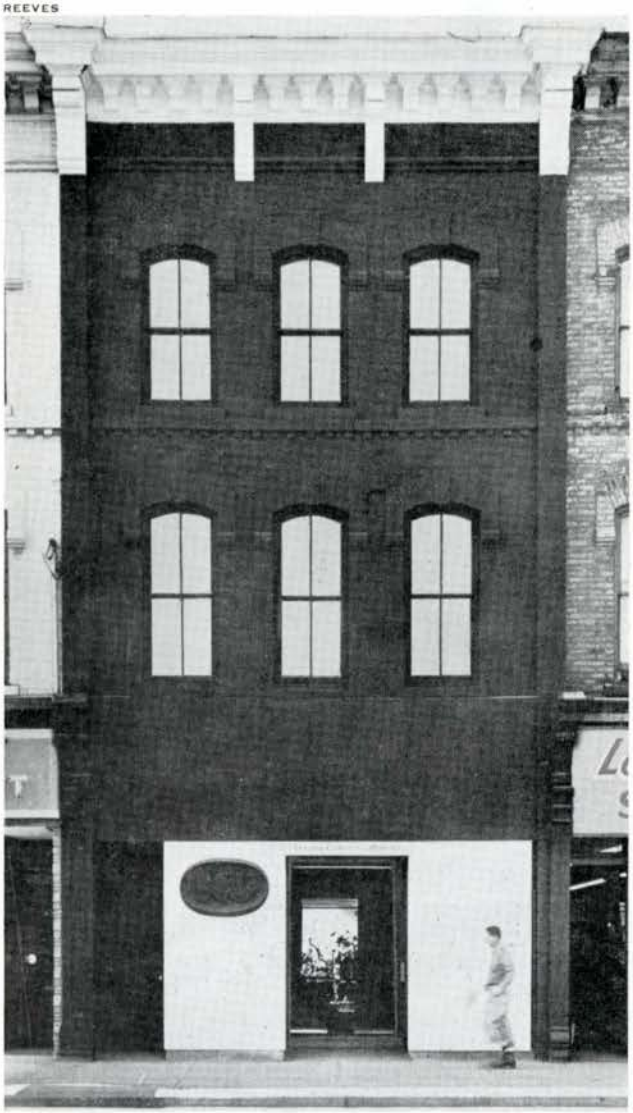
FEATURES

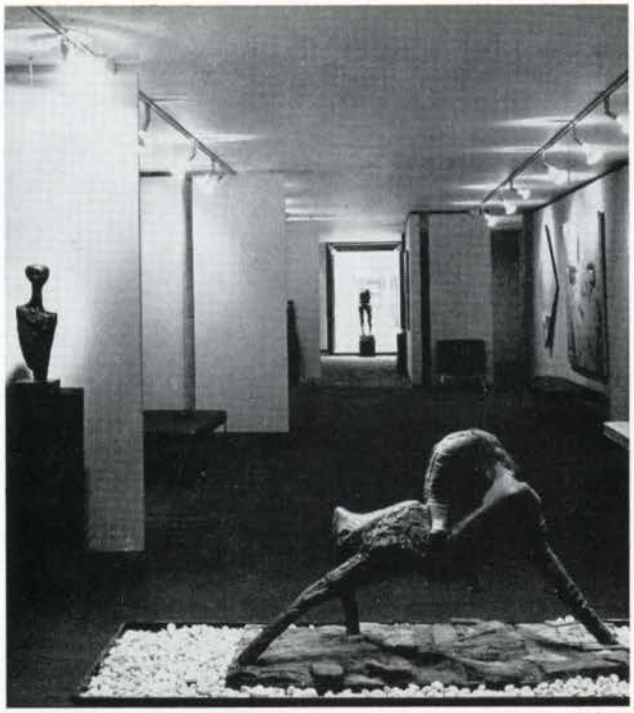
REEVES



John B. Parkin Associates have again been awarded the title of Canada's Most Distinguished Architectural Office. The September issue of *Architectural Review* emphasizes this statement by illustrating the Imperial Oil building in Don Mills with the following explanation ". . . its wide bays and precast window/wall units (which may be compared with those of I. M. Pei) are 'in' line with advanced North American practice, as is the fairly elaborate landscaping . . . the final cost came in at around $18 per square foot, which is competitive with spec-built office prices."

If this description gives reason to the title suggested above then Canada is fairly teeming with candidates. If this office deserves the honour it is not only for these humdrum peculiarities but for many distinguished diversifications.

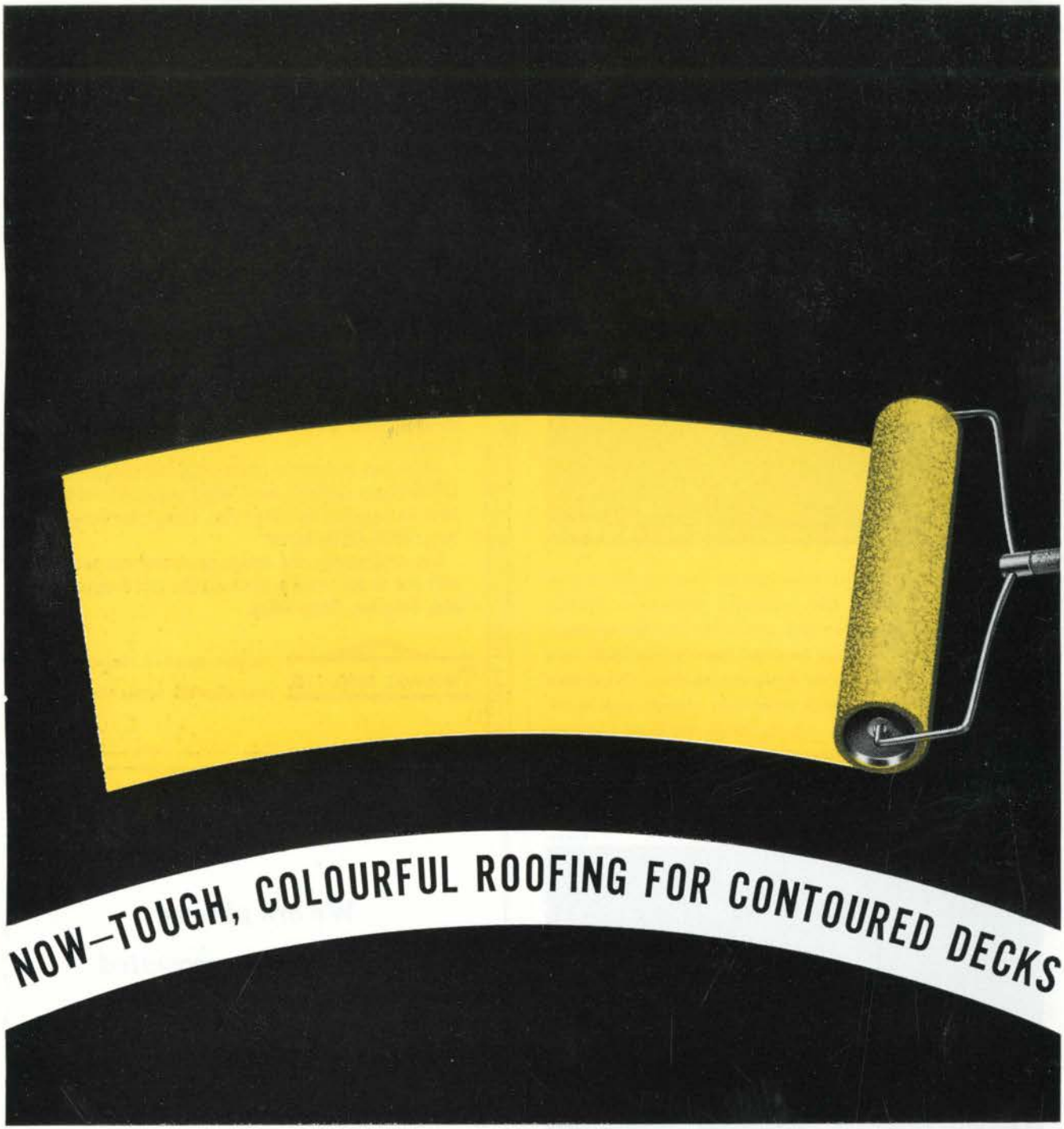
The practice is equipped with an awareness — their information secretary is an art historian and archaeologist, which would suggest that along with all the powers of this office they are also aware of what future generations may discover about our society.



REEVES

The office would not be distinguished for Imperial Oil or even the Sun Life building (on haphazard University Avenue, Toronto) alone, but may receive such a title for their advancement of ideas. And this may be stated more emphatically now that the Lipton industrial plant has been completed. (September *Journal*). This combined with renovation projects such as the Dorothy Cameron Gallery and the Brock Building entrance, produces a title of Distinguished Architectural Office. So it becomes fact that John B. Parkin Associates are convincing on any level of operation and produce results of poise and promise.

PANDA



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BOOK REVIEWS

PROGRESS REPORT ON THE DEVELOPMENT OF CANADIAN BUILDING STANDARDS FOR HOSPITALS AND HEALTH FACILITIES.

Statement by the Hospital Design Division, Department of National Health & Welfare, Ottawa.

Hospital construction in Canada is now approaching an annual investment of $200 million, with substantial yearly increase. The operational costs of hospital services is well over three times this figure. A considerable proportion of this is now contributed by the government and many people are concerned with the problem of guiding the design of the buildings to permit maximum effectiveness of public moneys available for health purposes.

Increasing complexity in the plant requirements of new hospitals and existing obsolete hospitals in need of renovation and expansion calls for ever increasing diversification of building standards and guidance information. Quality becomes measurable only when a standard of reference exists. Standards applied to building and building facilities are a tool for planners, and like tools must be kept sharp and up to date. Because they are aware of this, not only the provincial hospital authorities but also many others responsible for hospital building programs in Canada have repeatedly expressed the need for authoritative and readily available guide material related to all phases of the design of buildings for hospitals and health facilities.

At present several groups of interested and informed individuals are being brought together by the federal government to work on the preparation of new and revised hospital building standards. Their objective is primarily educational, and it is hoped that the standards will be adopted and used by provincial, regional, or local authority on the same basis as for instance the National Building Code of Canada. It is for this reason that similar, although necessarily less broadly organized, developmental methods are being used.

On policy matters, guidance is obtained from the Dominion Council of Health and from other advisory committees serving the National Department of Health & Welfare. Working as individuals, the members of the working groups prepare drafts on agreed sections which are then assembled and reviewed by the individual members, and by others who express interest. The Hospital Design Division has concentrated on the editorial function of organizing the material for ease of reference and in revising the drafts as required. The drafts are then reviewed by the provincial hospital authorities and finally edited to make them as consistent as possible with the comments received, before they are approved.

Publication will be in both the official languages and is expected to begin late in 1963. For various reasons, the production of the standards has taken longer than originally anticipated, but nevertheless the quality of the work that has been accomplished is encouraging. Progress is most advanced on the General Conditions, these being closely followed by the Mental Health and

Long Term categories of hospitals. The main headings may be listed as follows: General Conditions; Part I, Standards For General Hospitals; Part II, Hospital Facilities For Mental Health; Part III, Long Term Active Treatment Hospitals; Part IV, Hospital Living Quarters For Nurses & Internes; Part V, Public Health Units. One of the most interesting items developed entirely during the past year has been the General Conditions No. 6, "Hospital Food Services". Based on a research questionnaire sponsored by the Canadian Dietetic Association, in collaboration with the Hospital Standards Committee of that organization, a complete contemporary statement has been drawn up on the criteria for planning and developing floor areas for all components of the food service. It takes into account variations in hospital size ranging from 25 to 1200 beds, and has been illustrated with charts, graphs and diagrams. Allowance has been made for variations in operational methods and in space requirements to suit local conditions.

The non government people who have served on the working parties and other contributing committees have done so voluntarily, and it is appropriate to acknowledge, not only the participation of these working members but also the assistance of the provincial health departments, the several professional associations, and the individual specialists who have generously contributed their time and experience.

LIFE AND SHAPE by Richard Neutra, published by Appleton, Century, Crofts, 374 pages. $7.95.

While the stature of Richard Neutra and his importance in the development of architectural thought is generally accepted, it would be difficult to deny that his latest book, "Life and Shape", is *heavy* reading.

The work opens with a prologue which is both laboured and enigmatic. It then moves into reminiscences of early influences which, while describing many interesting and unusual facts in the author's life are, though valid, in constant danger of being rejected by the reader for stylistic reasons.

The term 'genius' is too freely applied in the expansive, overcommunicative world of today. Only greater perspective in time will permit us to decide if Richard Neutra can be described as such. However even the harshest of his critics would be hard-pressed to deny that his works contain the seeds of genius if not the fully ripened fruit.

The pace of "Life and Shape" picks up perceptibly as Neutra moves more into the realm of architecture and away from personal experiences of youth and early manhood. It is here for the first time that the mind and spirit of the man begin to shine luminously through the words he chooses.

As Neutra moves from Europe to the States and finally to California, one watches the man finding a home for his footloose soul, and begins to see clearly the meaning that space and shape have for him. The early tangible expression of this is evident in the airy beauty of the Health House. One reads with increasing fascination and it becomes obvious that the significance of Neutra's work is in proving that man is stable and


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the New Architecture is no passing fashion. In the tumultuous, shifting world of today this is a courageous philosophy which only a man of Neutra's calibre could hold all through his life and express so consistently in his work.

In the chapter "Programs and Problems" the author recognizes and comes to grips with the fact that mankind will soon have to face the over-population of the world. Space will become more precious and its deployment will be critical to both health and sanity. But he does not speak from an ivory tower; all his life he dealt with people who make the critical monetary decisions which bear on the architect's fate. Because he understands and appreciates his client's motives, he speaks with authority; he does not resign himself to being dominated, but with humor and understanding achieves his aesthetic goals with a conscious or unconscious approval of the client.

It is the architect's unquestionable responsibility to understand the evolution of man, his nature and his needs, his fears, hopes and prejudices. Richard Neutra is a wise perceptive man whose book is worth the struggle through the first few sections. One final word of criticism: the illustrations, all grouped together, are brilliant freehand sketches and in the style familiar to us from the Banff conference of some years ago. However they relate little to the important message which the author wishes to convey in his text. To talk about buildings and not to show them to the reader is an error; to assume that he may have by his side W. Boesiger's volume "Richard Neutra: Buildings and Projects" is wishful thinking. *John Schreiber*

LES MEUBLES ANCIENS DU CANADA FRANCAIS, par Jean Palardy. (Arts & Métiers Graphiques, 18, rue Séguier, Paris VI.)

Voici un fort beau volume, in 4, illustré de près de six cents héliogravures et d'une dizaine de hors-textes en couleurs, consacré au mobilier des premiers habitants de notre pays. C'est un répertoire très précieux de ces meubles anciens, aujourd'hui si recherchés par les collectionneurs et les musées, et qui ornaient les demeures de gens de toute condition, fermiers surtout. L'auteur est lui-même un collectionneur de grande expérience. Il a non seulement inventorié et classé les meubles suivant leur style et leur destination, mais il en a retracé les origines ou l'inspiration en France, auprès d'experts comme Georges-Henri Rivière, Conservateur en Chef du Musée des Arts et Traditions Populaires, et Directeur du Conseil International des Musées.

Le volume est préfacé par Marius Barbeau, avec qui Jean Palardy a parcouru autrefois les fermes du vieux Québec. Il s'est passionné pour la découverte et la conservation de ces trésors du passé, et le fruit de son travail patient et méthodique est ce beau livre, si bien documenté, que nul autre que son auteur n'aurait pu écrire, et qui devrait figurer dans la bibliothèque de tout architecte à côté de celui de Ramsay Traquair "The Old Architecture of Quebec", aujourd'hui presque introuvable et que l'on devrait rééditer.

Le catalogue raisonné comprend: coffres, portes d'armoires et de placards, vaisseliers, buffets vitrés, huches, encoignures, lits, berceaux, sièges, tables, horloges, secrétaires, rouets, lustres, objets usuels etc.

Ce volume est aussi publié en anglais, chez Macmillen, à Toronto. *Denis Tremblay*

RAIC/L'IRAC
JOURNAL

Announcing • Announcing • Announcing

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*ARCHITECTURAL DIRECTORY
ANNUAL 1964 / CONTENTS

1. the 1964 RAIC official annual membership list
2. complete list of architectural firms in Canada
3. an architectural practice reference and guide to building construction services
4. RAIC- AIA STANDARD filing system with products and manufacturers listed and cross indexed

PUBLISHED ANNUALLY IN JUNE BY RAIC JOURNAL.

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INSTITUTE NEWS

EXECUTIVE DIRECTOR, PQAA

Bernard Sarrazin, QC was appointed Executive Director of the PQAA at the council meeting on September 3, 1963. He replaces Jacques Tisseur who has accepted the position of Assistant Secretary of the Montreal Bar.

Born in 1907, Mr Sarrazin graduated from Collège Ste-Marie, Montreal in 1928 and was admitted to the Bar in 1935. After some years of private practice he served in the personnel department of the Aluminum Company of Canada Ltd until 1956. From 1950 to 1960 Mr Sarrazin was a member of council of the city of Montreal representing the Canadian Manufacturers' Association and during this period spent a two year term as member of the executive committee.

Bernard Sarrazin

Radoslav Zuk

REGIONAL EDITOR

Radoslav Zuk, M.Arch., MRAIC, has been appointed regional editor for the prairie provinces.

Prof. Zuk was born in Lubacziw, Western Ukraine and received his secondary education in Graz and Salzburg. In 1956 he graduated from McGill University and was awarded the Pilkington Travelling Scholarship. After travelling in western Europe and working in architectural offices here and abroad Prof Zuk then studied at MIT where he received his Master's degree. As well as being Assistant Professor of Architecture at the University of Manitoba he is engaged in private practice. He was a member of the team "Associated Architects" which won the first stage of the Banff Winter Olympic Development competition. The past summer, on a Canada Council grant, Prof. Zuk studied teaching methods at the European schools of architecture.

OAA TOURIST AWARDS

The closing date for submissions to the OAA annual awards for excellence in the design and construction of tourist facilities (see September *Journal*) is November 15th, 1963. Submissions may include new buildings or major additions; awards will be made on the basis of interior and exterior photographs, site plans, floor plans, and a short written description. Information should clearly indicate the location and character of a project and its relationship to other features in the vicinity. This year submissions designed and built in Ontario since 1958 will be accepted but in future awards will be confined to facilities put into operation during the year of the awards. Members wishing to submit material in behalf of owner-operators should send their entries to William E. Carruthers, 50 Park Road, Toronto.

GUIDE TO PORTLAND CEMENT PLASTERING

Recommendations for producing good interior and exterior portland cement plastering are described in a report which had been published in the July 1963 issue of the American Concrete Institute Journal and is now available in reprint form; price is sixty cents per copy. The report, titled "Guide to Portland Cement Plastering", discusses materials, proportioning and mixing, sampling and testing, methods of application, bases, crack control, application and curing, and decorative finishes. Write the ACI, P.O. Box 4754, Redford Station, Detroit 9, Mich.

LETTER TO THE EDITOR

Editor, RAIC Journal,

I am an Associate of the Royal Institute of British Architects and have been in Canada eighteen months. During this time I have been unable to find employment with an architect and so have not been able to qualify for registration in any province.

I received my degree in England in 1960; during my studies and since graduation I have had varied experience with architects both in private practice and government departments. The last position I held in England was with the Hull City Architect. Since being in Canada I have worked with the Department of Northern Affairs and a building contractor.

Unfortunately, prospective employers are more interested in drawings than qualifications and references and I have not been able to obtain satisfactory samples of my work from past employers.

Although residing in Calgary at present, I would be willing to consider employment in any Canadian city as a draftsman or assistant architect. I have a good knowledge of the French language.

Wendy Abbey (Miss)
Box 145, Banff, Alberta

CCURR GRANT

Prof. Leslie J. King of the Geography Department of McGill University has received a $4,400 grant from the Canadian Council on Urban and Regional Research for the study of census data on all Canadian cities of more than 10,000 people to determine which cities share the same combined characteristics of composition and change.

PRACTICE

The firm of Bowers and Atkins, architects has been dissolved and the members will now practice individually at the following addresses: Alton McCaul Bowers, 1812-20th Avenue NW, Calgary; Gordon Lee Atkins, 3412-23rd Avenue SW, Calgary.

Jon Hoets, MRAIC, ARIBA, MIA, has commenced private practice in the province of Saskatchewan at 507 Kerr Building, 1864 Scarth Street, Regina.

Place Ville-Marie

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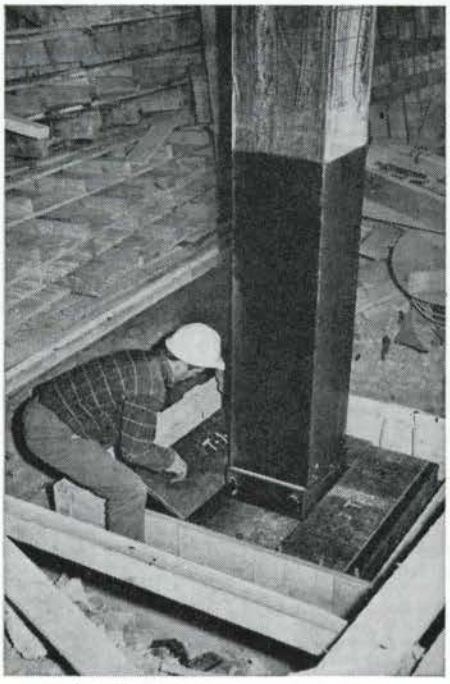
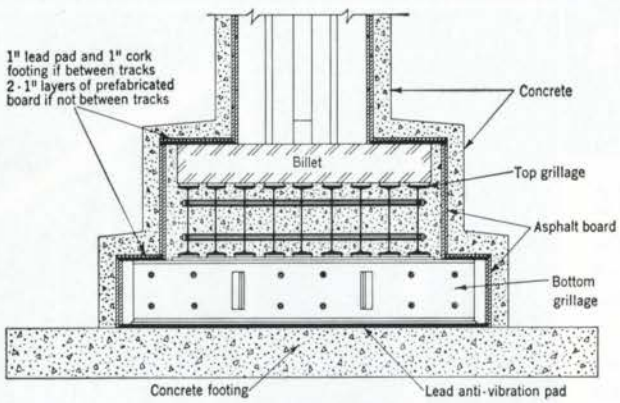


Installing lead-asbestos anti-vibration pads on top of column base plate

Built a-straddle the CN Central Station railroad yard, Place Ville-Marie's 42-storey cruciform has to shrug off plenty of vibration.

To isolate this prestigious building from *feel-and-hear* vibrations which otherwise would speed through its footings and columns from the tracks below, Canada Metal lead—in the form of lead-asbestos anti-vibration pads—was chosen.

Consult Canada Metal's Technical Service Department on all your *feel-and-hear* vibration problems . . . and just about everything in lead for architecture, engineering, construction and plumbing.



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CANADA JOINS WASHINGTON CONFERENCE ON NEW PRODUCT LITERATURE FILING SYSTEM

Whether or not the building construction industry in North America will have one uniform filing system for product literature and data was left in doubt after professional, business and manufacturers representatives met for the Second Industry Conference on Uniform Indexing Systems at AIA Headquarters in Washington on September 9th.

While the liaison committee of the American Institute of Architects and the Construction Specifications Institute would adopt the recently developed CSI format, with its 16 division titles, as the basis for a new universal system applicable to the filing of product literature, preparation of specifications and of cost data, the Consulting Engineers Council favored its own new indexing system as more suited to the needs of the industry. Sweet's Catalogue delegate felt that his system was adequate and had long been in extensive use.

While the new CSI format still required expansion and improvement it appeared to be the most suitable to replace the present AIA system. It has been accepted by the AIA for study and adaptation within the AIA documents. A third conference on the problem is to be held in January.

The question of the filing system affects the entire building construction industry in Canada, because the RAIC, through the courtesy of the American Institute of Architects, uses the AIA Standard Filing System and Alphabetical Index. The "RAIC-AIA" system is in general use in architects' offices in Canada and building product literature and data distributed in this country to architects, engineers and others concerned in building construction bears an RAIC-AIA file number.

It was for this reason that Canada was represented at the Washington Conference; the RAIC by Walter Bowker, Managing Editor of the *Journal,* accompanied by Mr R. V. Fernandez of Frost-Fernandez Associates of Toronto, a specification writing and technical literature consultant firm; Peter T. M. Barott (F), Montreal architect, member of the Canadian Joint Committee on Construction Materials and President of the SWAC; and Miss Eileen Carson of the Division of Building Research, NRC, Ottawa.

The observers from Canada spoke of the interest of their respective organizations in a new filing system and offered to contribute in any way they could to a successful solution to the problem. As a result the meeting formally passed a motion inviting the RAIC, the SWAC and the CCA to participate in all future meetings.

Canadian Art magazine wants photos of anonymous sculpture in Canada, including bas (or high) relief on buildings (heads, torsos, flora, fauna, coats of arms); carved or fashioned architectural details of a sculptural nature; free standing figures like the one illustrated (taken in Hamilton by John Bland (F)) totem poles, religious statuary, ships figureheads, weather vanes, gravestones, etc.; antique or contemporary. Mail by December 1st to Managing Editor Paul Arthur, at 77 MacLaren Street, Ottawa who will pay $5.00 for photos used.

REYNOLDS AWARD

Nominations are being received for the 1964, eighth annual R. S. Reynolds Memorial Award. Each year the international award of an honorarium of $25,000 and an original aluminum sculpture is conferred on an architect for the design of "a significant work of architecture in which aluminum has been an important contributing factor". The AIA administers the award and nominations will be accepted by them through December 31, 1963. Registration forms and information are available from The Reynolds Award, The American Institute of Architects, 1735 New York Avenue N.W., Washington, D.C., 20006.

COMPETITION

The Urban Redevelopment Authority of Pittsburgh, Pennsylvania has announced an international design competition for Alleghany Public Square open to all architects and landscape architects, and to associations of architects, landscape architects, city planners, civic and urban designers, sculptors, painters, or others who file a registration form with the professional advisor. Participants may be residents of any country provided that the architects are members of a recognized institution or society and that the associations of other professionals include a qualified architect or landscape architect.

To be held in two stages, five competitors selected from the first stage to compete in the second will be awarded $5,000 each. Winner of the second stage will be commissioned to design, prepare contract drawings and documents, and supervise the construction of the public square provided he satisfies the Urban Redevelopment Authority of Pittsburgh that he is in every way qualified.

Requests for registration forms and information should be sent to Paul Schweikher, Professional Advisor, Alleghany Public Square Competition, Department of Architecture, Carnegie Institute of Technology, Schenley Park, Pittsburgh 13. Closing date for registration is November 15, 1963. The competition has been approved by the AIA and the RAIC.

JAMES CARLISLE PENNINGTON

James Carlisle Pennington died suddenly on August 18th, 1963, while visiting in San Francisco. He was 78 years of age.

Mr. Pennington attended primary and secondary schools in Windsor, later taking architecture at Penn. State University. He commenced practice in Windsor in 1908 in partnership with C. Howard Crane as Crane and Pennington, thus constituting the oldest established professional service in this area. He was regarded as the dean of local architects, and served on the council for the Ontario Association of Architects for three years from 1930 to 1932, inclusive. The partnership of Pennington and Carter, in which Mr. Pennington was active to the time of his death, was formed in February, 1957.

He was active in the work of his church as a member of Central United, Windsor. He was a 32nd degree Mason and a member of Moramus Shrine.

His wife, Hazel, pre-deceased him two years ago, and he is survived by two daughters, Mrs. R. (Betty) Frankling, San Leandro, Calif., and Mrs. J. Finley (Dorothy), Dresden, Ontario, and by two sons, J. C. Pennington of Cardston, Alta., and G. A. Pennington, Belleville, Ontario.

LEGAL NOTES

MECHANICS' LIENS, PART V
A CASE COMMENT

by Norman Melnick

Before leaving this very important field of Mechanics' Liens, it is proposed to deal with a very recent case of the Supreme Court of Ontario which judicially interprets, for the first time in Ontario, the trust section of that province's Mechanics' Lien Act.

This section provides that all sums received by a builder, contractor, or subcontractor on account of the purchase price for work done or material supplied are to constitute a trust fund for the benefit of the owner, builder, subcontractors and suppliers of labor and materials. Up until now there have been no reported decisions under this section of the Ontario Act and only one or two under the comparable section of the British Columbia Act.

In the case under discussion the plaintiff company was a supplier of electrical equipment to a construction project in the city of Ottawa. The contract to supply was made between the plaintiff and a subcontractor on the project. The general contractor was the defendant company in this action.

Equipment which the plaintiff installed was for a contract price of $2,960.00, which the subcontractor failed to pay. The plaintiff thereupon sued the subcontractor in the County Court and obtained judgment by default. The plaintiff, not being able to obtain satisfaction on his judgment, then brought the present suit against the defendant general contractor, basing the claim upon Section 3 or the trust section of the Mechanics' Lien Act.

Section 3 reads as follows:

"(1) All sums received by a builder or contractor or a subcontractor on account of the contract price are and constitute a trust fund in the hands of the builder or contractor, or of the subcontractor, as the case may be, for the benefit of the proprietor, builder or contractor, subcontractors, Workmen's Compensation Board, workmen and persons who have supplied material on account of the contract, and the builder or the subcontractor, as the case may be, is the Trustee of all such sums so received by him, and until all workmen and all persons who have supplied material on the contract and all subcontractors are paid for work done or material supplied on the contract and the Workmen's Compensation Board is paid any assessment with respect thereto, may not appropriate or convert any part thereof to his own use or to any use not authorized by the trust.

(2) Every builder, contractor or subcontractor who appropriates or converts any part of the contract price referred to in Subsection 1 to his own use or to any use not authorized by the trust is guilty of an offence and on summary conviction is liable to a fine of not more than $5,000.00 or to imprisonment for a term of not more than two years or both, and every director or officer of a corporation who knowingly assents to or acquiesces in any such offence by the corporation is guilty of such offence in addition to the corporation.

(3) Notwithstanding the other provisions of this section, where a builder, contractor or subcontractor has paid in whole or part for any materials supplied on account of the contract, or any workman or subcontractor who has performed any work or services or placed or furnished any material in respect of such contract, the retention by such builder, contractor or subcontractor of any amount so paid by him shall not be deemed an appropriation or conversion thereof to his own use or to any use not authorized by the trust."

Mr Justice Aylen of the Supreme Court of Ontario found that the defendant general contractor had failed to comply with the provisions of Section 3, the trust section, and accordingly, had incurred a civil liability. Mr Justice Aylen relied on a decision of Mr Justice Rand of the Supreme Court of Canada, dealing with the British Columbia mechanics' lien action, who interpreted the trust section of that province's statute as follows:

"I am unable to feel difficulty about what this language provides. The act is designed to give security to persons doing work or furnishing materials in making an improvement on land. Speaking generally, the earliest sections give to such persons a lien on the land, but that is limited to the amount of money owing by the owner to the contractor under the contract. . . . For obvious reasons this is but a partial security; too often the contract price has been paid in full and the security of the land is gone. It is to meet that situation that Secion 19 "(our s.3)" has been added. The contractor and subcontractor are made trustees of the contract moneys and the trust continues while employees, material, men or others remain unpaid."

The defendant general contractor had received the sum of approximately $140,000.00 from the owner out of which he retained about $9,500.00 as profit on the contract after deducting costs and overhead charges. The defendant had paid out some $37,000.00 to the particular subcontractor, who had failed to pay the plaintiff for his services. The Court stated that the general contractor had failed to inquire from the plaintiff as to whether or not he had been paid for his work and services performed and for the material supplied under his subcontract and to request written acknowledgment or receipt of payment from the plaintiff before paying to the subcontractor in question the sum of $37,000.00. Accordingly, the Court gave judgment against the defendant in the amount of $2,960.00.

The importance of this case cannot be overstated. It purports to put teeth into a provision of the Act which, although strongly worded and broad in its intended protection, has until now been completely ineffectual. If this decision stands and is followed by succeeding courts, it will have one effect of putting an extremely heavy onus upon general contractors to satisfy themselves that all suppliers of labor and materials have been paid in full before they pay their subcontractors. Otherwise, they may be called upon to pay twice.

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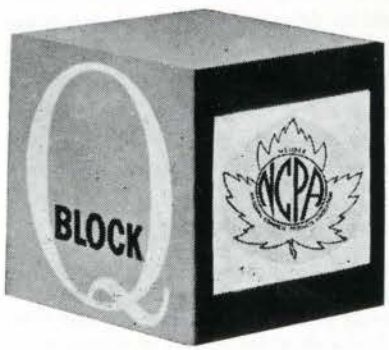
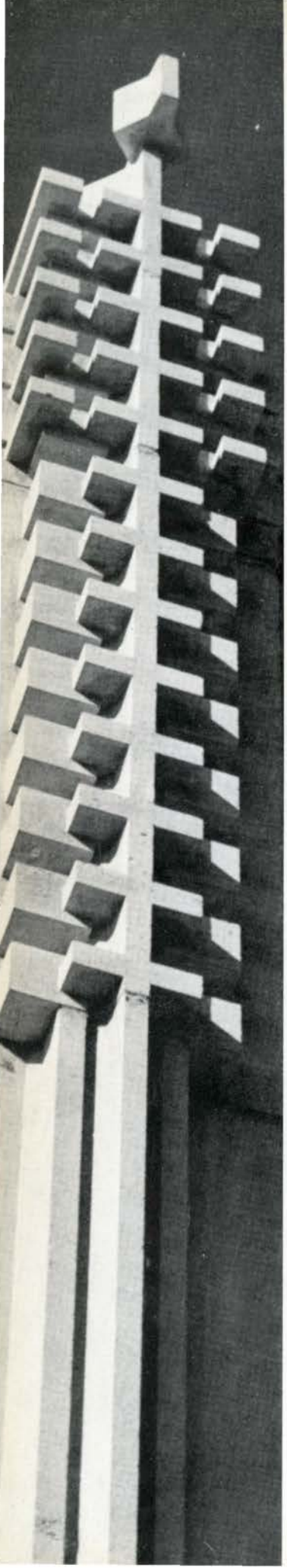


*Registered Trade Mark

The Massey coat of arms; sculptor, Ken Guild. Detail at east entry from the interior court.



Massey College

MASSEY COLLEGE, TORONTO • ARCHITECTS — THOMPSON, BERWICK & PRATT ARCHITECT IN CHARGE — R. J. THOM • SUPERVISING ARCHITECT — HANCOCK LITTLE, CALVART ASSOCIATES • SUPERVISING ARCHITECT IN CHARGE A. K. S. LORIMER • ENGINEERS • STRUCTURAL — OTTO SAFIR • SUPERVISING STRUCTURAL — GREGORY R. WILLIAMS • HEATING & VENTILATING — D. W. THOMPSON • PLUMBING & DRAINAGE — R. J. CAVE • ELECTRICAL — SIMPSON & McGREGOR • SUPERVISING ELECTRICAL & MECHANICAL — JACKSON, YPES & ASSOCIATES • GENERAL CONTRACTOR — EASTERN CONSTRUCTION COMPANY LIMITED

I have written before about the intentions behind the design of Massey College, but some restatement is probably timely now that the proof of the pudding is at hand. There has already been a widespread attempt to categorize the building and its contents, to identify it with every architectural style from Oriental to Gothic. But this is one time in the history of Canadian architecture when idea has been held foremost and has had everything to do with giving specific shape to building.

The idea was expressed in the first memorandum from Vincent Massey in 1960. "Massey College, as a college for graduate students, will be unique in Canada. There is nothing comparable to it in any Canadian university. It is of great importance that it should, in its form, reflect the life which will go on inside it, and should possess certain qualities—dignity, grace, beauty and warmth. Such a college as we have in mind possesses antecedents in various countries, and whatever their physical forms may be or the date of their erection, they have a character in common. What we wish is a home for a community of scholars whose life will have intimacy but at the same time, academic dignity." As such, the college has been fashioned from the inside outwards, having as its primary purpose the accommodation of this academic idea.

The first factor to be accounted for was the site itself — a very noisy streetcorner, due to the city car traffic that streams incessantly through the University of Toronto campus at this point (a fundamental mistake which the university planners allowed to happen earlier). The obvious answer to this, of course, was a quadrangle that used the building as a sound barrier. This decision produced the added benefit of defining the community within. Having determined this much, the internal planning followed naturally, by a process of organizing residential rooms and communal rooms.

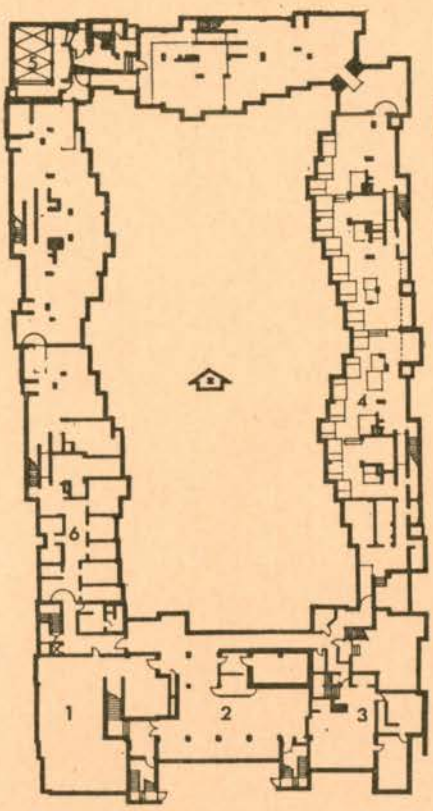
The residences were planned on the staircase system, which breaks down the academic body to smaller social groups, and gives a greater degree of privacy for the individual fellow than the usual hotel-like residences found in most Canadian universities.

The communal rooms have many different needs and require many different expressions. The library, for instance, is a working library consisting of a reference section, a microfilm section and a 50,000 volume permanent collection, and it is laid out to function efficiently for both the fellows of the college and the university at large. The hall, on the other hand, is intended as more than just a machine for eating. It is hoped that this room will have an intrinsic attraction, and become a centre for the community in the true sense. These and the other special areas of the college are, however, a part of the overall idea and therefore have been carefully kept within the discipline of a single architectural language.

A vocabulary of materials was selected that works throughout the complex, specific differences in expression of use being achieved partly by the application of these materials and partly by the proportion in which one or other is present. The list is simple — wood, stone, plaster, brick and bronze — and was picked with regard to the graceful aging of a building with an anticipated long life span, and also with regard to materials possessing intrinsic warmth.

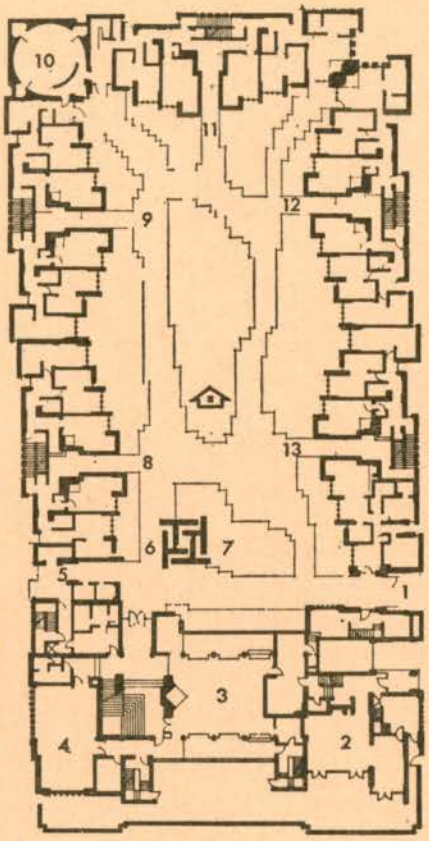
Also involved in the fashioning of the building and its contents was a group of designers and craftsmen who, like the architect, allowed themselves to be governed by the founders' idea of the meaning of the college. As a result, there is a sympathy between the building and its parts not usually found. Pottery, calligraphy, silverware and stone carving occur in the midst of the structure naturally and not as solo performances of prima donnas, shouting for the pre-eminence of their separate personalities at the expense of the whole.

So no matter how the finished product is read by others, it stands in the minds of those who produced it as an earnest response to a very particular situation, and no one but the fellows who are to live in it will know for sure how accurately we were able to perceive and interpret that situation. *R. J. Thom*



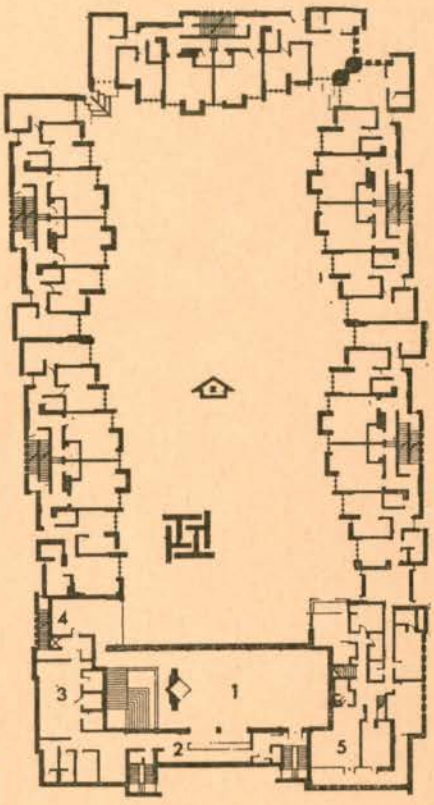
BASEMENT PLAN

1 special collections. 2 reference library. 3 recreation. 4 carols. 5 chapel. 6 pass-through.



FIRST FLOOR PLAN

1 east gate. 2 master's. 3 common. 4 reading. 5 west gate. 6 tower. 7 pool. 8 west residence. 9 north-west residence. 10 conference and oral exam. 11 north residence. 12 north-east residence. 13 east residence.



SECOND FLOOR PLAN

1 hall. 2 buttery. 3 kitchen. 4 dining. 5 master's.

An Appraisal

By Peter Collins

For members of the architectural profession, the main importance of Massey College lies in the fact that despite its obvious efficiency of plan, pleasantness of appearance and soundness of construction, it challenges with shameless vigour many of the basic architectural concepts which seem to constitute orthodoxy as expressed in the leading architectural magazines in Europe and the United States.

Consider, to begin with, the plan. According to the *avant-garde* theorists, such as Professor Llewelyn Davies and Reyner Banham, the worst thing any self-respecting architect can do is to accept either the client's program, or a traditional program, as the basis for his own design. Reyner Banham criticized Coventry Cathedral because, according to him, it kept too closely to the traditional arrangements of Anglican worship, whereas the whole liturgy should, in his view, have been reinterpreted in twentieth century terms to produce a twentieth century program. Professor Llewelyn Davies has been even more categorical in his attitude (although the uninspiring results of his attempts to apply his own theory in the new "Times" Building may well have tempered his arrogance in this respect): "The client's brief is nearly always wrong, and a bad brief inevitably results in disastrous architecture". But in the competition for Massey College, the four contestants were presented with an extremely detailed brief by a group client (namely the trustees of the Massey Foundation) who had very definite ideas as to what was wanted; and the client not merely specified in detailed terms the physical facilities required, but stated the precise environmental character which was considered most suitable.

The nature of the amenities to be provided was prescribed in unequivocal detail, even to the extent of describing the character of the dining hall, common room and so on, and requiring, for example, that fireplaces should be provided in these communal rooms and in the resident Fellows' rooms. There is no doubt that the program was strongly influenced, if not directly inspired, by personal recollections of the type of community which was established at Oxford seven centuries ago and has flourished vigorously ever since, and it is clear that the trustees deliberately intended that the graciousness and dignity of the accommodation provided at Oxford in the middle ages should be found at Massey College.

For visitors familiar with Oxford, there is undoubtedly an aura of traditional collegiate life about the plan of this new building in Toronto. But interestingly enough, the plan is in no way based on that of an Oxford college, and is strikingly original both in the organisation of the circulation and the planning of the various rooms. Nowhere, at Oxford, can one find such an ingenious arrangement of stairways. Nowhere, at Oxford, can one find anything comparable to the spatial configuration of the common room, with the dining hall so elegantly superimposed. In fact, if one analyses and compares, one finds that the only really similar feature is the common presence of an enclosed courtyard whereby all the rooms look onto an inner communal tranquility. Perhaps the *avant-garde* theorists would prefer to have seen an isolated refectory and dormitory blocks, although it is difficult to see how one can reject the contemporaneity of this

courtyard plan except on the grounds that it corresponded also to the needs of scholars before the First Machine Age, and hence is no longer valid.

Let us now consider the appearance of the building, since it is in this respect that hostile critics of the design will find most cause for raillery, in that, in the name of Progress, they can easily take the architect to task for using forms reminiscent of both the Middle Ages and of Frank Lloyd Wright's architecture previous to 1914. There can be no doubt that the window and spandrel details, and the pinnacles, could justifiably be classified by archaeologists as neo-Gothic, and in this sense, they are curiously comparable to Barry and Pugin's facades for the Palace of Westminster. Moreover, such romantic associations with mediaeval prototypes can hardly be dismissed as fortuitous, even though the architect himself protests his complete ignorance of the history of architecture. Hence one has an uneasy suspicion that this design is essentially a kind of scenery, and any architect visiting the building is inevitably reminded of the brilliant speech made by Robertson Davies, now Master of Massey College, when he addressed the RAIC in 1960, and proclaimed that "you are the designers of the scenery against which we act out the drama of our personal lives".

It may well be that Robertson Davies and the Fellows of Massey College will find the same kind of comfort there which the Victorians discovered in their neo-Gothic villas as they immersed themselves in Sir Walter Scott's romances. It may be that Ron Thom has responded too superficially to Robertson Davies' plea: "Would it not be possible for some of us — a few of you architects and a handful of us ordinary people — to conspire to bring a whisper of magnificence, a shade of light-heartedness and a savour of drama into the setting of our daily lives?" But here, at Massey College, magnificence, light-heartedness and drama have undoubtedly been created with a skill which borders on genius; and the only question which the hostile critic may legitimately ask is whether it is proper to achieve these effects by means which so patently appeal, however subtly, to nostalgic reminiscences of a past which is not Canada's, and therefore have an exotic as well as a revivalistic flavour.

Much criticism of this nature could, I think, be validly countered by claiming that there is nothing very wrong with using traditional forms when building in traditional materials, and since this building is constructed of brick and limestone, it could reasonably be urged that the detailing is perfectly legitimate. However, before discussing this aspect of the design (which relates more to the validity of the structural system than to the problem immediately under consideration) I should prefer to deal with the other criticism which has been levelled against the building, namely that it is reminiscent, in its forms and ornamentation, of the early architecture of Frank Lloyd Wright. In other words, it is to be condemned because it seemingly indulges in what Nikolaus Pevsner has recently called "The Return to Historicism"; *i.e.*, the imitation of a style authentic only in the first decade of the present century.

Does Massey College set Canadian architecture back fifty years, as one critic has suggested? The answer can indeed be in the affirmative; but only if one regards architectural style as comparable to fashions in clothes, whereby the nature of architecture changes every spring. If one considers that Frank Lloyd Wright was one of the pioneers of modern architecture, and that he had already reached maturity by, say, 1903, then it is difficult to see why the forms he was using in 1913 should cease to be valid in certain circumstances today. The operative phrase here, of course, is "in certain circumstances", since clearly, the forms Wright used so successfully in Midway Gardens are obviously not applicable to every circumstance. But it may reasonably be argued that Massey College is precisely a circumstance in which they *are* applicable. The building is surrounded by neo-Gothic masonry and brick buildings of various periods with which it now harmonizes. The geometry of the composition seems peculiarly suitable for, and in conformity with, the disposition of the accommodation. The general atmosphere created by these forms seems to combine with singular felicity to create both the dignity of an academic building and the comfort and intimacy of residential accommodation. Thus of all the works created by the so-called "Form-Givers" of modern architecture since modern architecture first assumed its definitive character fifty years ago, it can hardly be denied that, from the point of view of what Robertson Davies has called "magnificence, light-heartedness and drama", no idiom could be more suitable than that which has actually been chosen, and executed with such masterly originality and verve.

There remains then only one other possible basis of criticism (if we respect the triple criterion of *utilitas, venustas* and *firmitas),* namely the validity of the structural system. Was the architect right to build this three-storey building in load-bearing brick and limestone, or should he have ostentatiously called to his aid some of the more daring technological developments which have appeared in the last fifty years? Perhaps a clue to the resolution of this dilemma is furnished by the fact that although the fenestration and spandrels are of carved limestone, the architect originally specified concrete, and only allowed limestone to be substituted when the building contractor demonstrated that it was cheaper.

Now it seems to me that if one "designs" concrete in such a way that limestone can be substituted, there is something inherently wrong with the design itself, and in this respect it is interesting to compare the finished building with one of the competition projects rejected, namely that by John B. Parkin Associates. I do not for one moment intend to question the decision of the jury in rejecting this design, for there seems no doubt whatsoever that the plan of the winning scheme was better, and that its appearance was more pleasing. But it is noteworthy that Parkin Associates made a deliberate attempt to utilize and exploit contemporary technology in their design, especially in their method of roofing the dining hall, and I would suggest that it is axiomatic that *really great architecture is infused, by the very nature of architecture as both an art and a science, with the urge to utilize and exploit the most up-to-date structural system that the spatial requirements of a building will permit.*

Massey College, as now completed, is, by virtue of its very excellence, a valuable lesson to architects as to the true nature of architecture, for it illustrates the fallacy of believing too strongly in the fashionableness of today's abstract forms, just as it shows the folly of seeking modernity in novel programmatic requirements alone. Thus it bears striking evidence to support the view that there is no reason why an architect cannot create a completely contemporary building with a traditional program, traditional materials, and geometric forms evolved in an earlier decade. But at the same time it does suggest that genuinely epoch-making architecture can only result through the application of the latest technological processes. There is no reason why every building should have to be epoch-making. The trustees of the Massey Foundation did not ask for an epoch-making building. They asked for a building that would be eminently functional, eminently sturdy, and eminently beautiful, and that is what they got.

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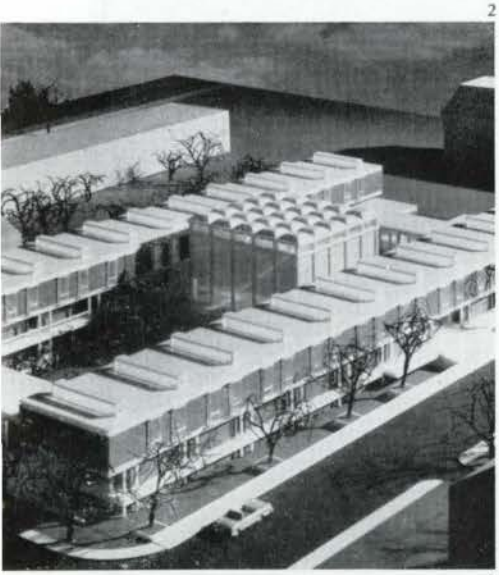

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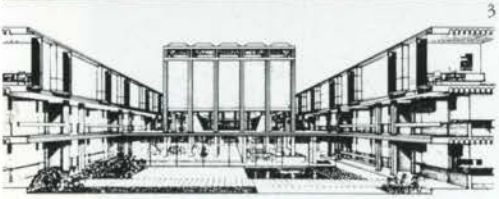

1. General view of the east and south facades (the master's residence and his courtyard).

2, 3. Photo of model and sectional perspective of John C. Parkin's scheme for Massey College. See Peter Collins' appraisal on page 39.

4, 5. Street views of the west wall.

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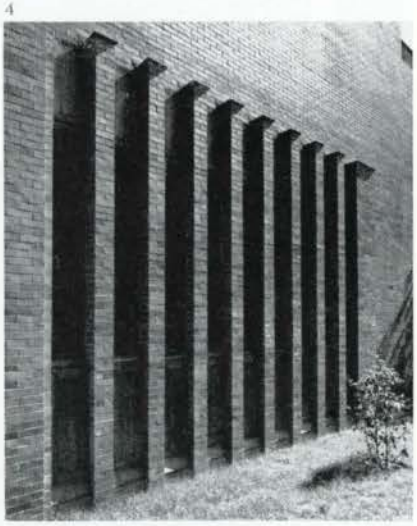

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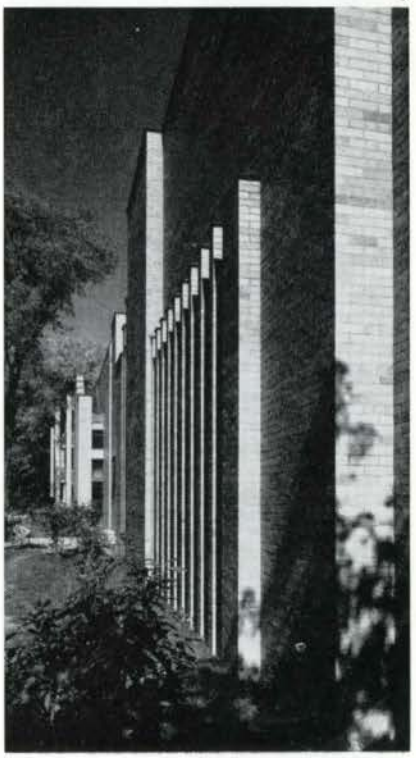

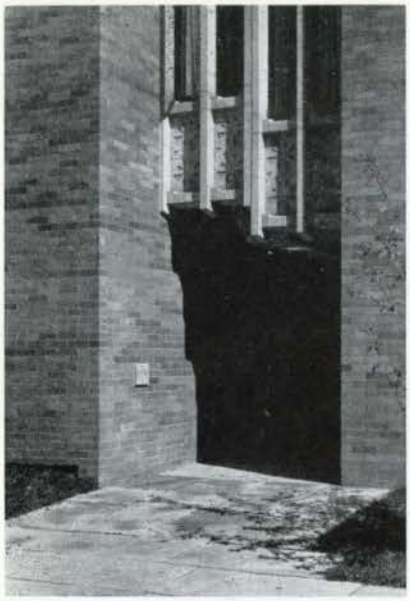

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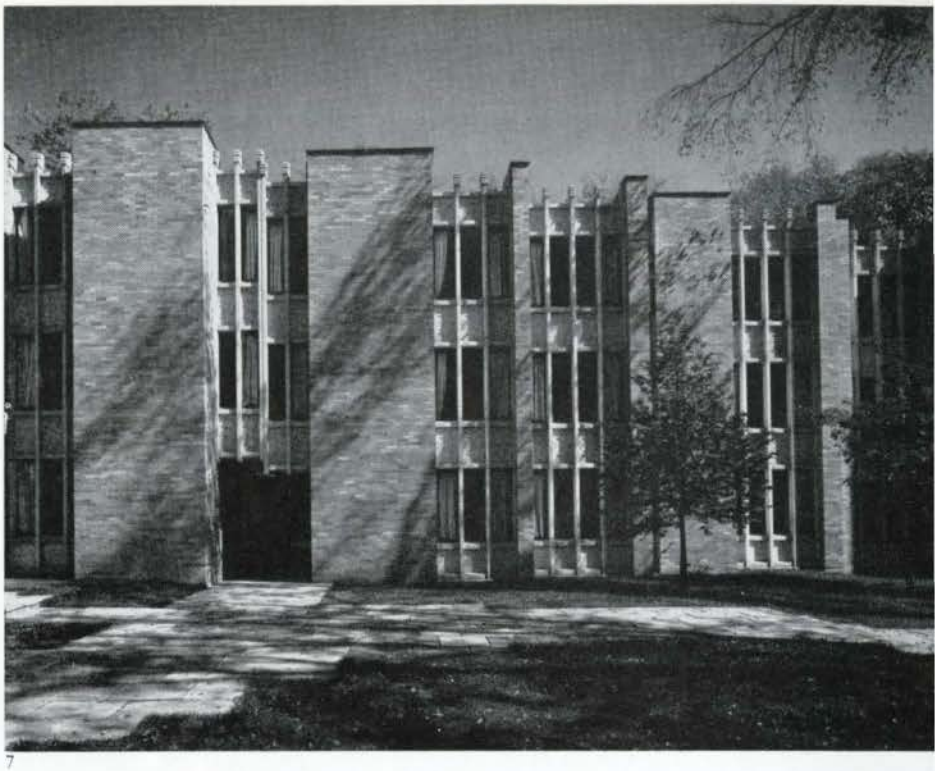

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MASSEY PHOTOS BY ROGER JOWETT

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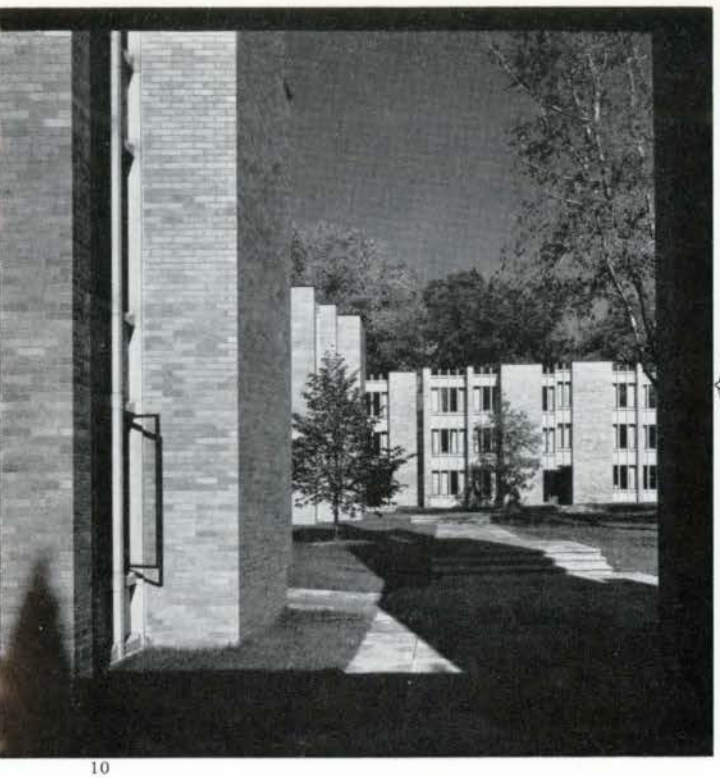

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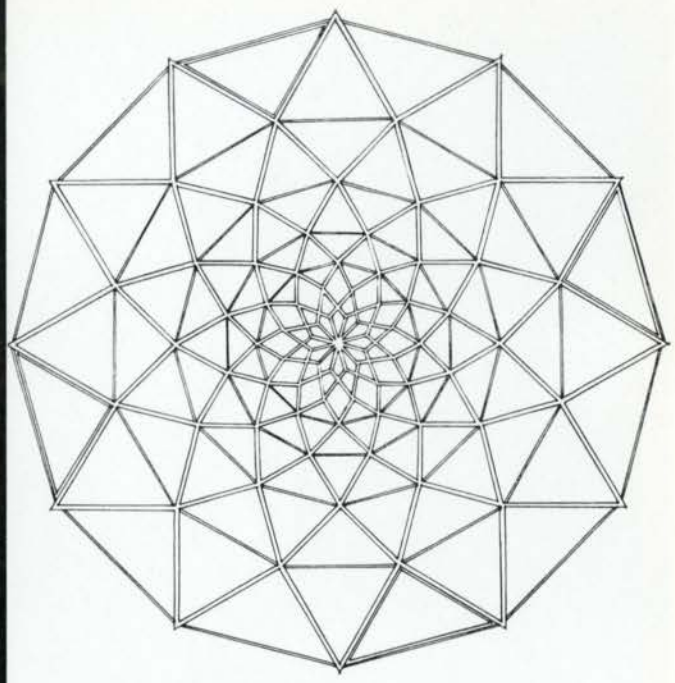

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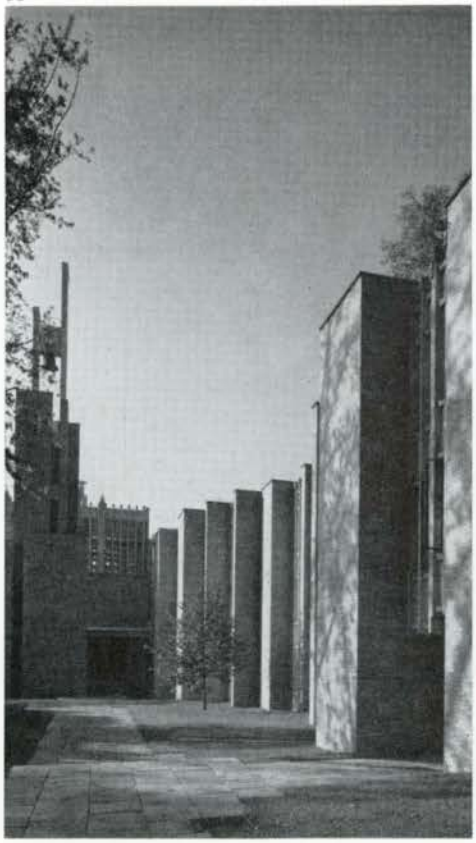

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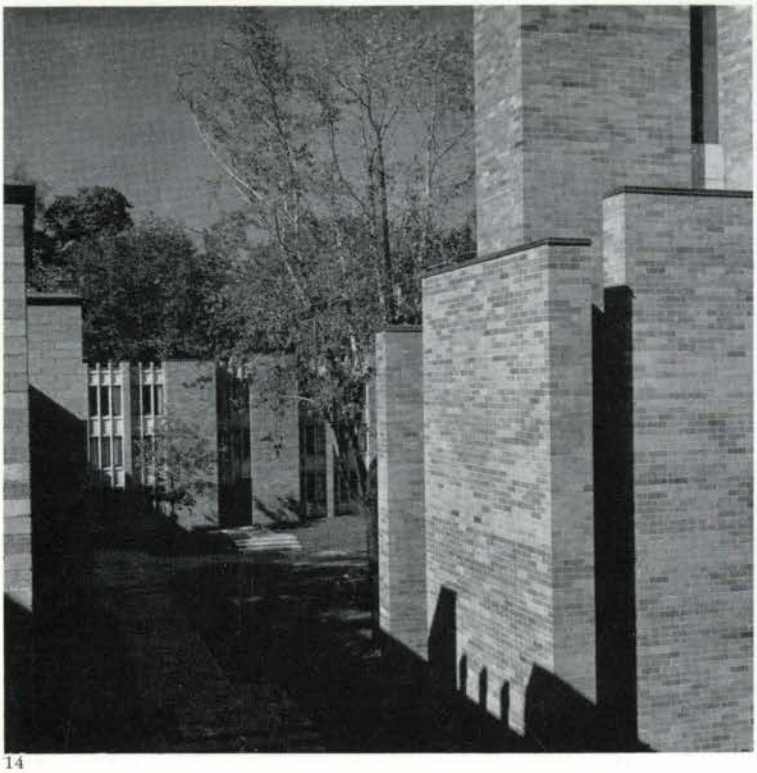
6. Detail of the entry into the east residence block.

7-12. General views of the residences within the quadrangle.

13. Drawing of the lighting fixture in the conference and oral examination room. See photo number 29 on page 47.



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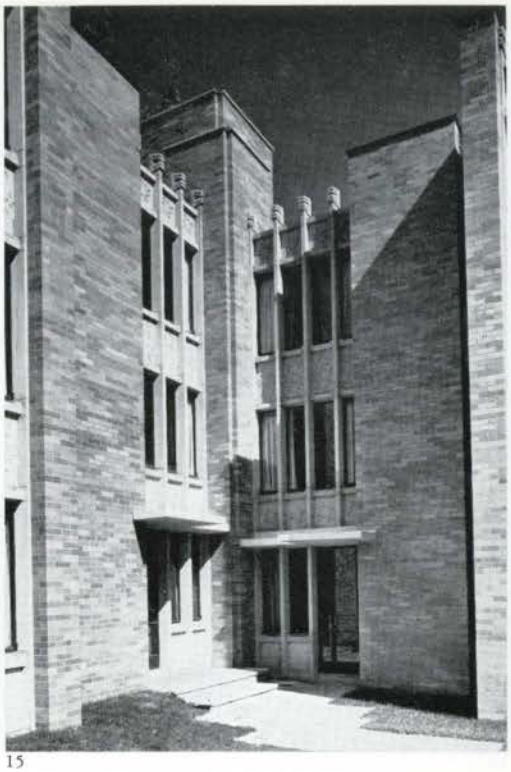

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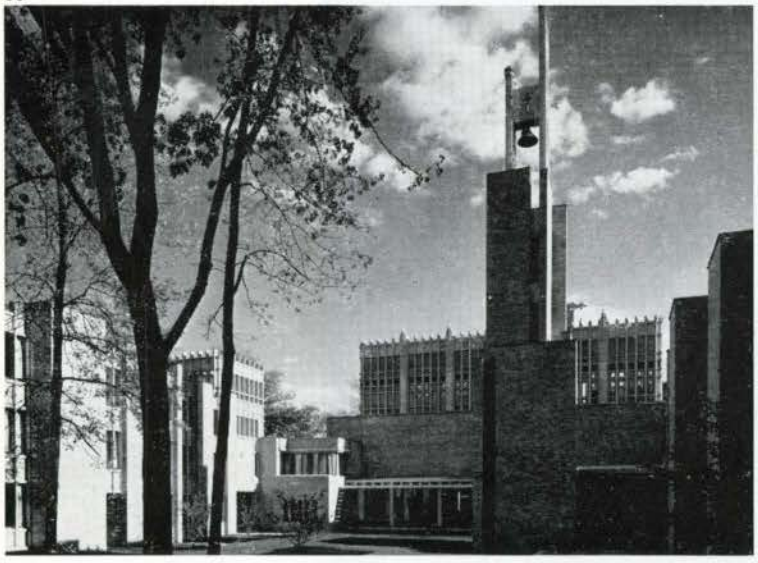

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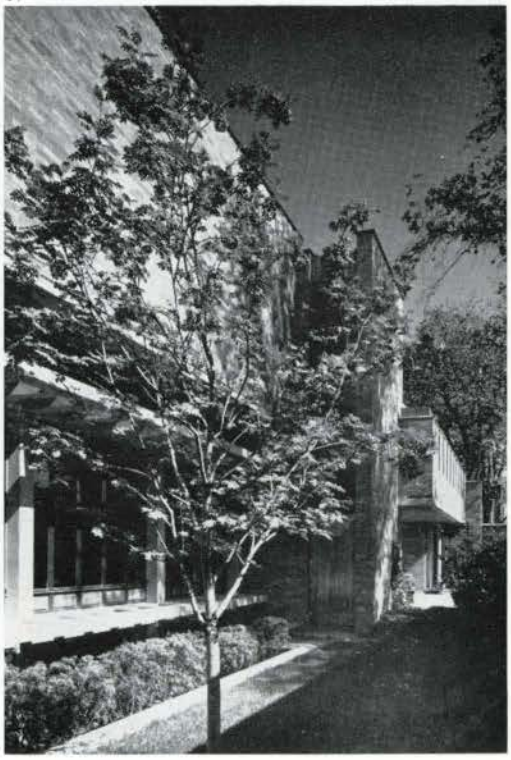

14. The quadrangle looking north from the clock tower.

15. Corner detail of the residence blocks.

16. The quadrangle looking south toward the clock tower and dining hall.

17. The master's courtyard. 18. Reading room.

19. The common room looking into the courtyard.

18

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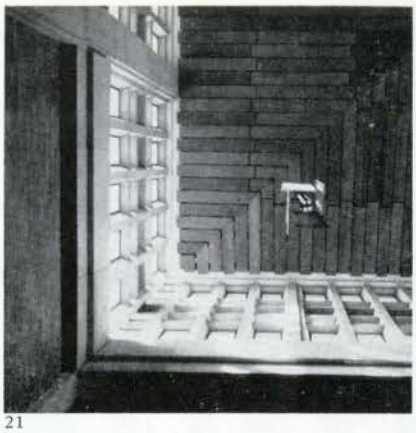

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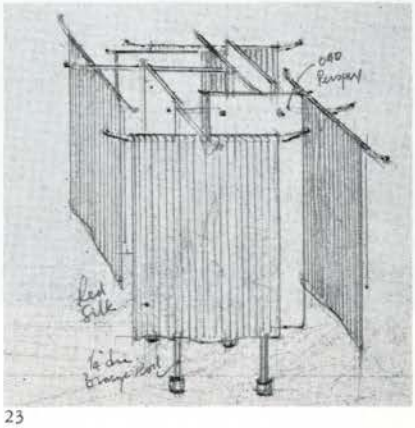

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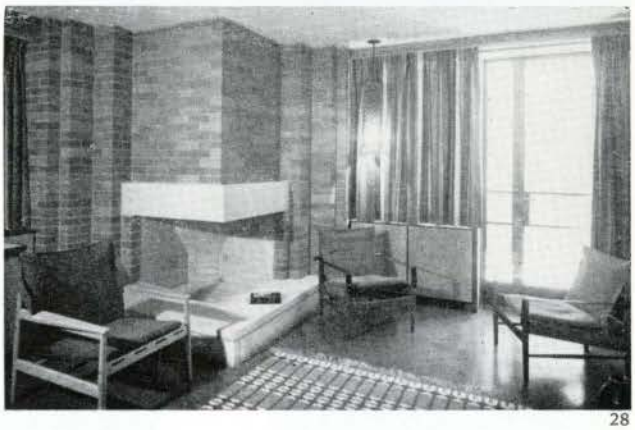

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29

Furniture was designed by the architect, R. J. Thom.

20. Private dining room. 21. Great hall ceiling detail.

22, 25. Silver sauce boat and condiment set designed for Massey College by Eric Clements. (Photos courtesy the British Information Service.)

23. Drawing of a table lamp designed by R. J. Thom.

24. The great hall. 26, 27. The lounge. 28. Typical senior fellow's room.

29. The conference and oral examination room. 30. Typical fellow's room.

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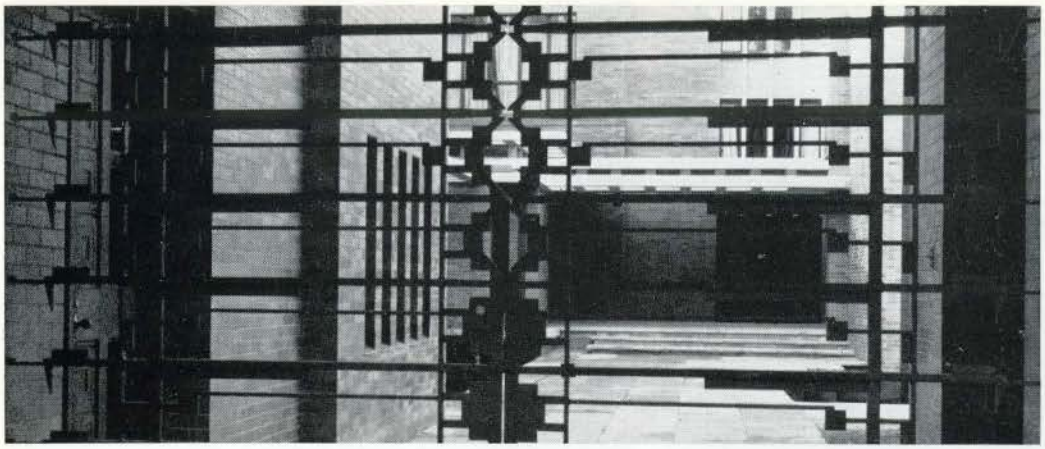
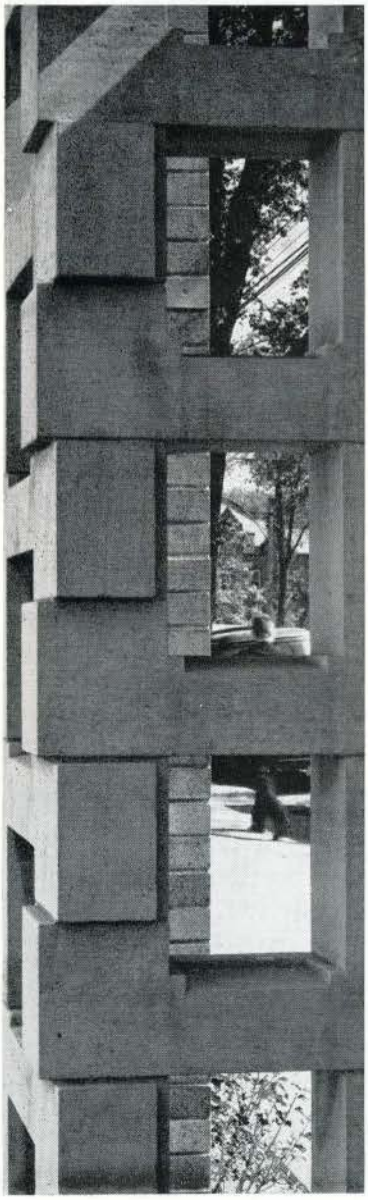
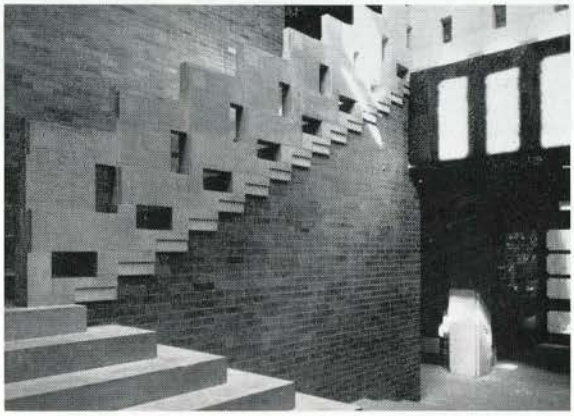
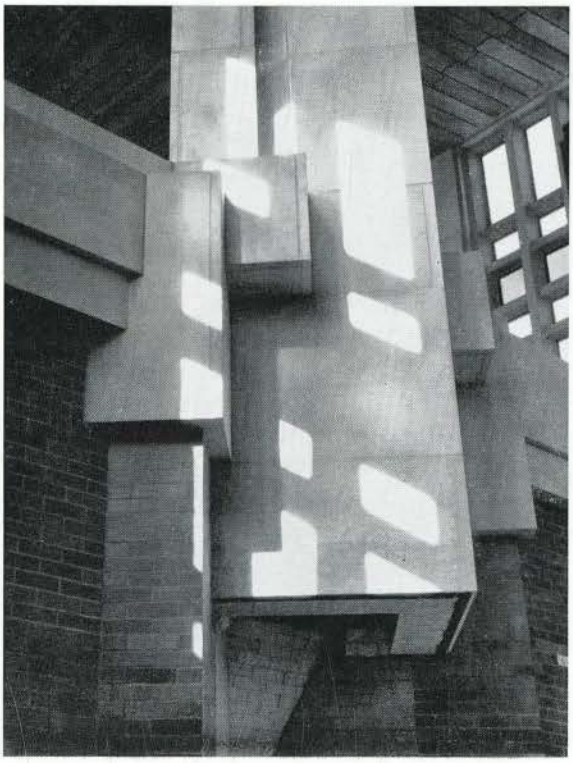








HOSPITALS

INTRODUCTION by P. M. Keenleyside

Hospital associations in the four westerly provinces meet annually to discuss their problems and for the last two years have requested individual architects and the MAA to take part in their deliberations.

The hospital administrators and health authorities outlined a number of problems which they felt were in great need of attention. Although the speakers made little reference to hospital plans in effect in the various provinces, it should be acknowledged that the presence of such plans solves some problems, creates others and greatly affects the construction of hospitals.

The hospital commissions face the problems of takeover of all hospital functions and engendering criticism on the basis of "Government of man by man is slavery. To be governed is to be watched, preached at, controlled, ruled, censored by persons who have neither wisdom nor virtue. It is to be . . . registered, stamped, taxed, patented, licensed, assessed, measured, reprimanded, corrected, frustrated." The alternative is to temper their control by creating an atmosphere whereby hospitals retain as much autonomy as possible and where individual hospitals, the professions involved, and individuals contribute their knowledge.

Many of the hospital plans are incomplete and the various government health organizations will undoubtedly be refining and modifying such plans in the future. They want the individual hospitals to initiate and take part in worthwhile improvements to the plan. The government agencies have sought the advice and collaboration of the professions involved. Individual members of our profession have been directly involved with the government agencies for some time.

The AIBC set up a committee some years ago to work with the government agency. The Manitoba commission utilizes the services of a consulting architect. This year the Ontario Hospital Services Commission requested the OAA to provide assistance and a committee of architects has been formed. Collaboration of this nature is an essential responsibility of our profession.

THE WINNIPEG CONFERENCE

Dr Barr, Dr Wallace and Mr P. Rickard, three very able and widely experienced people in the field of hospital and health administration, presented the problems that confront health authorities across the country — the key problem being "Establishing a balanced hospital community which would automatically cover the question of better use of existing facilities".

Mr Rickard "Why is it that we have such a fragmented service for the provision of different types of institutional care in this country? For example, the mental hospital system operates under a separate government agency from those concerned with the general hospital service. Incidentally, I am fascinated with the way in which mental hospitals are doled out. It reminds me of a card game I used to play as a child called "Happy Families". You would ask another player for a certain card and if he had it he had to give it to you. If he didn't have it, he used to say, "Sorry, not at home". In the same way we find delegations from cities waiting upon the appropriate minister, and asking, "Can we have a new vocational school, or perhaps a new provincial police building?" And he looks up at them and says, "Sorry, not at home". But, as the delegation is about to leave his office, he may murmur, "Of course, if you are interested in a spare mental hospital". Sanitoria have also had a very separate existence through recent years when their empty beds have sometimes forced them into the chronic hospital field, or even to providing accommodation for the chronically sick. Where these facilities do exist, they may be provided by provincial governments, sometimes through the departments of health, sometimes through the Department of Social Welfare. Sometimes private enterprise controls the beds, or it could be municipalities or religious orders. Elsewhere the general hospital has accommodation for the chronically sick. When the administrator of the general hospital has no chronic beds at his disposal, you can be quite certain that the very costly to operate active beds are jammed with the chronically sick and he can never utilize the facilities to their best advantage. Add to these facts the lone roles of the DVA hospitals, the tri-service hospitals, and if you like, the homes for the aged; then remember that general hospital beds are not necessarily where they are most needed, perhaps because of population changes, and perhaps because ministers have sometimes said yes, when they should have been saying no. . . ."

The need to endeavour to establish a balanced hospital community in your area out of the existing fragmented system is not only essential but is urgent. This you may say sounds fine, but what steps have to be taken? Your area needs have to be compared with your area facilities. Some areas have planning boards who will be keen to take on this type of project, and they seem to be very successful in obtaining research grants. Certainly pro-

vincial hospital associations should be considering making funds available for carrying out surveys where they have not been done, and for initiating area development programs. As the project continues examples become evident as to how the public need can better be served by a degree of voluntary integration. For example, it may not be necessary for each hospital to provide a medical centre type of laboratory service. Perhaps it could be supplied just as well through two or more hospitals. Do we have to compete so intensely as to try and provide every service at each hospital? At regional meetings there are many areas to study: the use which is made of the beds in the area and the question as to whether they could be more effectively used in a different manner; the empty bed factor; the joint carrying out of methods and improvement projects. Despite the views of one correspondent, I believe group purchasing is inevitable and that it would be advisable for the Provincial Hospital Association to study the question. Many of you will not be very keen on all this, and yet you are the more liberal minded ones by virtue of the fact that you are attending the convention. Many who are not here would be strongly opposed to these ideas. Yet, consider the point that, if you have to surrender a little of the autonomy that you have left, is it better to surrender it to the government agency, the Provincial Hospital Association, or to an area group of hospitals? Samuel Johnston said, "That is the happiest conversation where there is no competition, no vanity, but a calm and quiet interchange of sentiments". Perhaps we should reflect on this when next we meet with our neighbouring hospitals."

Dr Wallace "It is my firm conviction that through adequate regional planning we could provide better health care to the people of our country at a reasonable cost." He acknowledges that wherever regional planning has been carried out to any degree it has been directed from a central source, a government agency, or a government itself.

However, this is not necessarily the only procedure. Dr Wallace points to the causes of development of hospitals in this country and rightly attributes great importance to individuals and groups who by their energy and industry originally created such institutions. These groups did in fact greatly affect the growth of the country: such individuals and groups are still available and should be corraled and encouraged to contribute.

There is no question that we are wasteful in the health fields, that we duplicate services that don't need to be duplicated, that we provide unnecessary services. We build small hospitals in areas where they shouldn't be built, in areas that are ten or fifteen miles from already existing hospitals. We duplicate services between health agencies. We don't co-ordinate the operations of various agencies that are being supported partly or wholly through taxation. Therefore, my feeling about regional planning is that it should include the total aspect of health care. This includes hospitals without supporting any idea of state control. It also indirectly includes medical services because where you have good hospital services, you automatically have good medical services. It should include public health services. The hospital board should be represented by a regional health or hospital council; the health unit should be represented; the physicians should be represented through their medical society because without their support, I don't think we could probably do any regional planning.

Dr Wallace puts forth specific recommendations —
"Except in very remote areas, we should agree that no new hospital whose population will not justify fifty or even seventy-five beds should be considered. I think it has been proven over and over again that the day of the small fifteen and twenty bed hospital in this age of super highways has long since passed.

Secondly, small hospitals that have already been developed, and are no longer providing the necessary service should be closed or converted for use as chronic hospitals or nursing homes.

Thirdly, pressure that develops for hospital construction with the purpose of attracting a doctor to a small community and holding him there should be avoided through the provision of active staff privileges for such physicians in neighbouring towns.

The largest organized unit in any area has the most diversified staff and it is the logical place to centre health services. Medical practice is part of health service. It can't be carried on without the hospital and therefore we should attract doctors back into the area. We should also start attracting public health personnel back to the hospital areas Space should be built into hospitals, onto hospitals, or adjoining hospitals for the community public health services or for the health units, so that the hospital in effect does become the centre which provides the total preventative and curative medical professional care for the area. I am firmly convinced that the efficiency of our health services generally could be improved by organized regional planning."

The Western Hospital Institute invited three architects to address the session. Mr E. Todd Wheeler of the firm of Perkins and Will is known to all readers of the *Journal* as an outstanding architect. He has very kindly provided his manuscript for publication. The method described by Mr Wheeler was successfully used in the Chicago area to assess existing plants. Area facilities determined by such a method of appraisal can be determined reasonably, quickly, and cheaply by architects. The facts thus furnished can in turn be related to total area needs or confined to particular hospital needs.

Roger C. Mellem, chief architect for the American Hospital Association, presented a paper on Functional Programming. Those of us involved with hospitals know the difficulty involved in obtaining a thorough functional program from the client; the nature of the modern hospital and its role in the community aggravates the problem.

Gordon Hughes chief architect, Department of Health and Welfare, summed up the problem thus: "I am very much concerned about the problem of programming because I find, in my experience at the federal level, that programming is not properly done by the great majority of hospitals. I have tried to get hospital authorities to develop a comprehensive program. When I show them the questionnaire that was produced out in Oregon (that great big thick book) and say, "These are the kind of questions that somebody has got to answer sometime before this building gets built", they throw up their hands and say, "My God, we haven't got time to do this sort of thing, let the architect do it". This is the sort of situation that I find time and time again."

Our profession will undoubtedly become involved with the health and hospital problems outlined at the beginning. The mechanics of 'How', outlined by the architects, should prove of great interest to our profession and to those involved in the administration of health facilities.

method of evaluating an existing hospital building

BY E. TODD WHEELER

Mr Wheeler is a partner in the firm of E. Todd Wheeler and Perkins & Will, architects. Since 1941 he has been associated with the building of over 100 hospitals in the United States and was associated with the survey on hospital plants within the Chicago area.

This paper will describe various techniques that can be used for a relatively quick evaluation of existing hospital buildings, and for a projection of their growth to meet the requirements of estimated future program needs. Precision is not claimed for the method but it does have flexibility, and in the hands of a knowledgeable architect it can be used quite effectively.

Some methods are laborious, some are easy. The method suggested is both. It is laborious though not difficult to learn and once mastered, it is easy to use. To a large extent it depends upon the architect's background and experience, plus analytical and interpretative techniques. It leans heavily upon quick perception and intuitive conclusions, both of which can be most useful tools in making an evaluation.

We learn with all our senses. Admittedly we perceive more fully with our eyes and ears than we do with the other senses but all of us have memorized smells and can recall the feel of fur or a fabric and we cherish certain taste recollections. Even asleep, as psychologists have shown, we apprehend some portion of what is being said or played, though the degree may be little. It is vital with a quick evaluation method that there be the maximum of sensitivity not only to facts and figures, but to general situations. For this our five senses are none too many.

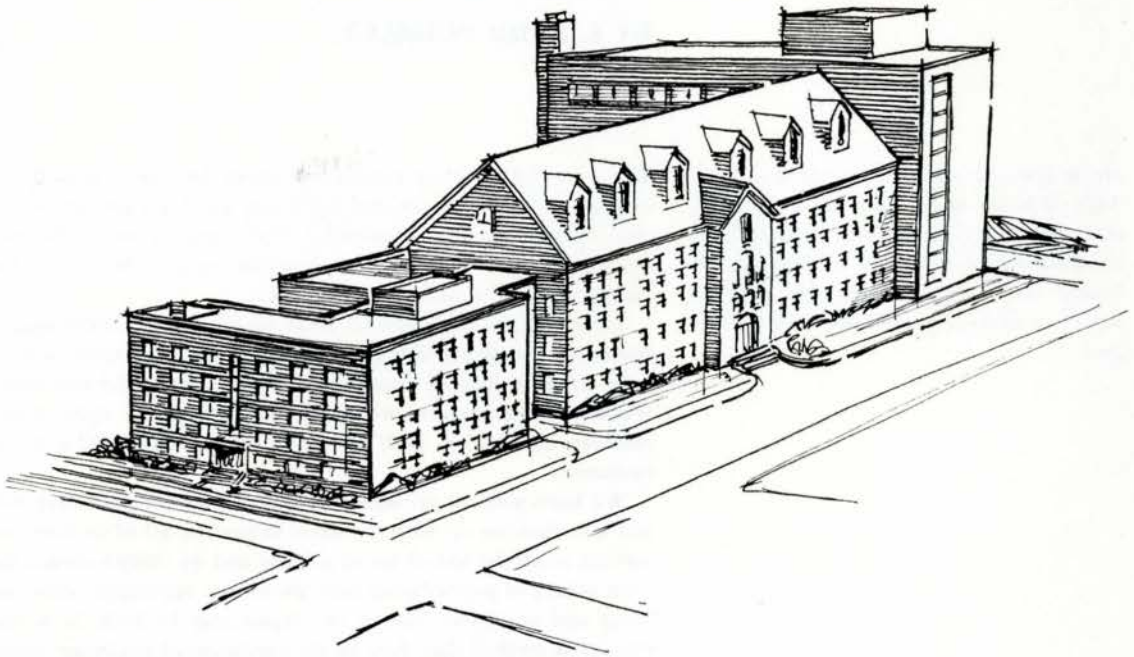
The evaluation of existing plants is fairly commonplace and is essential to any review of where your hospital is going. Much of the work of our firm is in long range planning and whenever we undertake to make a long range plan for an existing hospital we like to look ahead just as far as seems realistic. It's never more than thirty years, often only twenty, but always at least ten. The view ahead for three decades serves in different ways. The farthest view serves to give perspective; the middle decade serves to give a goal; and the first decade serves to establish the real needs and to force you to single out priorities and to plan the phases.

Before we undertake to evaluate a hospital we make certain assumptions. The first is that community needs have already been explored. This subject is fully developed in other discussions and I am presuming that you know your functional needs for the next ten years, or even the next thirty, and what the resources of the community will be. I also assume that you have a direction from your board to proceed with some improvements. The functional needs are the true determinants in planning a hospital. They include the number of beds and their subdivision into the services of medicine, surgery, obstetrics, pediatrics and psychiatry, and their subdivision by character of service — long-term, short-term, intensive, hotel, or others. They include the essential adjuncts, such as the number of operating rooms, the number of delivery rooms, the number of radiographic rooms, the laboratory load, physical therapy elements, and the outpatient load. The service department can be derived later.

THE PROBLEM

A 520 BED HOSPITAL NEEDS TO EXPAND TO 650 BEDS AND ALSO TO MODERNIZE ITS EXISTING FACILITIES

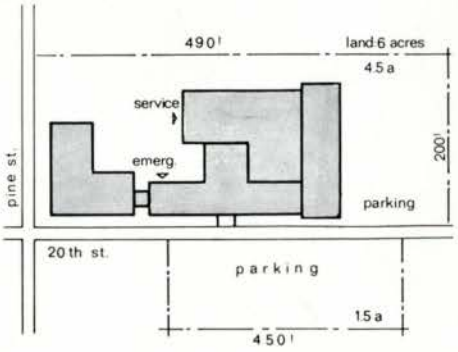
We shall concentrate, therefore, on how you evaluate an existing hospital, using a hypothetical case as an illustration. A 520 bed hospital, large by any standard, desires to expand to 650 beds and to modernize its existing facilities. Not uncommonly a simple statement like this is all the architect is given as a program — really not enough to go on. A 130 bed addition to a 520 bed hospital, or a 25 per cent increase, is not a small addition no matter how you look at it and is especially difficult when replacement of old buildings is involved. The main building was built in 1870. Adjoining it to the south is Ward A built in 1892 and named Ward A because there were seven donors, no one of whom was willing to have it named for someone else. Behind Main is Porter, a two storey service building erected in 1930. The west wing, obviously of new design, was built in 1954. We have, therefore, a hospital of the standard variety with many old, tired, and circumscribed components. The problem is practically impossible to solve easily.



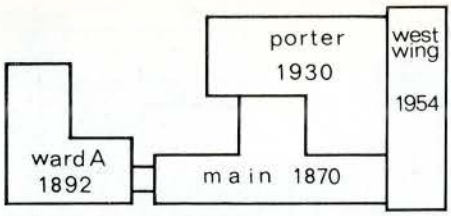
We next list the study objectives, which are simple and fundamental.

Which buildings should be demolished and which salvaged and modernized? how much total space is needed? what is the best possible direction of growth? how much land is needed to grow on that site? and finally, how much will it all cost? Throughout this paper the figures used will undoubtedly be taken as standards. I warn you against this. They are illustrations, not gospel. In fact, I warn you against me generally. I am trying to make you think rather than to lay down a law; and if you don't think but do take my figures as law, you are likely to get some odd results; but if you do think, I believe you will see that there is no law but only a method by which you can reach your own conclusions.

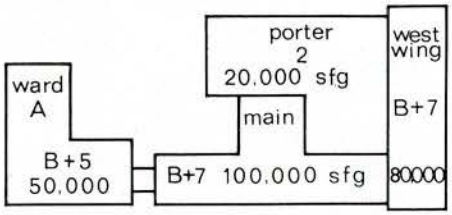
Faced with an evaluation problem, the architect always encounters a series of questions from the owner. What are the existing deficiencies in the building? Shall we salvage the 1870 building? Can the supporting departments carry any more load than they now do? Where can we possibly build those extra 130 beds? Is the site large enough for the next thirty years? Is equipment usable? Shall we move to a new location and build a whole new plant and dispose of our present property? This last question is a very tempting prospect, sometimes rightly done. How can we operate during construction? What will the whole project cost?



The architect does not start this study empty handed. First he collects the essential facts about the plant. The ground plan of existing buildings and a survey tell the amount and contour of the land you have. It may also tell the age of the buildings and the size and location of utilities. Many hospitals have floor plans of their buildings, but not all do. Too often we enter a problem like this one I pose for you and find there are no plans for the old main building, or if there are they no longer apply because of changes made since 1870. But floor plans are essential, so if you don't have them they must be made by measurement. The use of space by departments should be indicated on each floor. The ages of buildings are

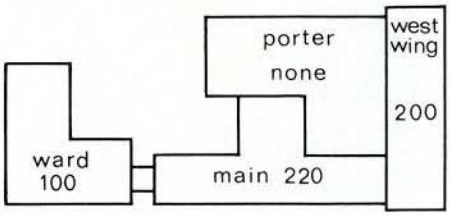


AGE OF BUILDINGS



STORIES & FLOOR AREAS

HOSPITAL BEDS



needed when you come to figure depreciation and residual value of each building. The number of hospital beds by services, the physical condition of each building, opinions of the operating personnel on how the various departments are functioning, and finally fire and safety reports are evaluation criteria to be used after you get the facts before you. It is shocking to find how many hospitals have adverse fire and safety reports tucked away somewhere waiting for action. Whether they are tucked away or not, they are useful because sometimes the condition of a building with respect to fire and safety violations will rule out its future use without any further consideration. With those tools we can start the process of evaluation.

A schedule of height by floors is helpful: ward A, B+5, means basement plus five storeys, and so on, similarly for the others. Porter has no basement at it was a service building built to the rear. The floor areas should also be shown. Porter has two floors of 10,000 each and the west wing has eight floors of 10,000 each, and so on. These gross floor areas and departmental areas are important tools for evaluation because the calculations used later start with them. Next there is a listing of the number of hospital beds in each building, which is important when you come to the question of where you can start tearing down. Obviously you cannot tear down the main building, with 220 beds in it, until you have built replacement beds, and probably 130 more. The evaluation factors which I have mentioned thus far are not only physical but also operational. The size of each building, its physical condition, its internal arrangement, the fire and safety needs, and the land all generate gross budget. In fact, you will note that the cost of improvements arises out of these factors. The size of the building needs to be compared with what you have — its condition calling for building improvements; its arrangement calling for remodelling and rearrangement of the departments; fire and safety deficiencies calling for enclosure of stairs or new stairs; and land calling for purchase of adjoining land.

THE EVALUATION METHOD

1. CALCULATE GROSS FLOOR AREAS BY DEPARTMENTS
2. APPLY AREA CRITERIA TO DETERMINE SPACE DEFICIENCIES BY DEPARTMENTS AND TOTAL
3. EVALUATE PLAN ARRANGEMENT. ESTIMATE AREAS NEEDING ALTERATION OF PLAN
4. EVALUATE CONDITION OF BUILDINGS. ESTIMATE AREAS NEEDING MODERNIZATION.
5. INSPECT MECHANICAL AND ELECTRICAL SYSTEMS
6. CALCULATE BUILDING SPACE NEEDS:
   a. TO MAKE UP DEFICIENCIES
   b. TO EXPAND PROGRAM
7. CALCULATE LAND NEEDED
8. EVALUATE EQUIPMENT
9. ESTIMATE COSTS

If you and your architect were to address yourselves to the problem illustrated, most likely the first question would be — where are we going to put that extra wing? Thinking of the site plan, the obvious place is off to the west because there is land there, and this brings up a word of caution. You really shouldn't start out by thinking where you're going to put that extra wing. You ought to think about all these other things first, without presuming a solution, because you can get tied up in a solution too early and not only stop creative thinking but also fail to sense the total problem. You are thus likely to end up by building the wing and not doing other things which may be more urgent. One great advantage of this method of evaluation without a schematic solution is to force all of you, including your architects, to make a quick review of the potential of the present plant before you start thinking about where the future wing is going to go. Therefore I am not presenting a solution in this paper, but merely a method by which you can size up the problem, estimate costs, and proceed to your own solution.

The first step in the method, calculating the gross floor areas by departments, is illustrated on the ground floor plan. The separated department areas are shown as gross figures. The question always arises as to why we include corridors, elevators, stairs and such within the department: why not figure each room size and add them all up to get the true net area of the department? The answer is that the method is not sufficiently precise to justify that much extra trouble. In a few hours the architect can go through the floor plans and take off the areas by departments but it would take a week to calculate the net area of each room.

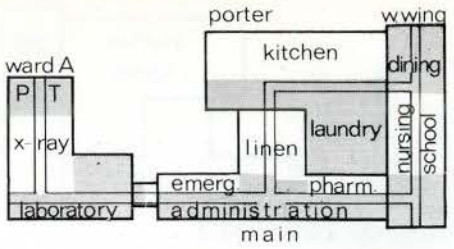
Next formulate the gross floor area analysis, as shown in the table, which will eventually permit a projection of the desirable space for the existing number of beds and the proposed new space for additional beds. This is the most technical part of the method and even it is not very difficult. The schedule shows the hospital subdivided into all the principal departments. For my convenience they are arranged under nursing services, adjunct facilities service departments, and administration. But they can be arranged in any desired manner.

The key to evaluation and projection is in the unit areas per bed. The existing hospital with 520 beds shows a total of 250,000 sq. ft of building or 480 sq. ft per bed. This is a derived figure which gives you a measure of adequacy. From experience we can say that for a 520 bed hospital 600 sq. ft per bed could easily be justified even though many get along with less than that. Nevertheless that is the figure which is suggested here. Correspondingly, for a larger hospital of 650, again referring to the totals line, we suggest 590 sq. ft per bed. The unit area per bed is nothing more than a measure: it is not the number of sq. ft in a bedroom. It is the total floor area of the hospital divided by the number of beds and is a surprisingly good measure of plan adequacy. As a standard it has been derived by measuring a number of hospitals, and with judgment it can be quite effective on just one hospital. In using it we look at each existing department and compare the area per bed with the empirical standard. In the existing column you will see I have written Def. for deficiency for several departments. For example, the patient care units show 240 sq. ft and ought to be 300; the surgery with 25 sq. ft per bed ought to have 30; and so on down the line. There are no serious deficiencies until we reach central sterile supply and central general stores. Central sterile supply has less than half the area it should have and central general stores a little more than half.

We have analyzed scores of hospitals thus, often as a preliminary to the study of a long range plan, and have found this method a good tool, an easy one to use, not hard to understand, and surprisingly accurate. In the same breath I have to tell you that it's not a precise tool. This chart shows potential ranges of areas, low and high, in total from as low as 550 sq. ft per bed to as high as 715 — a thirty per cent spread. So great a difference is not logically defensible, but it is often found, and it comes about for many reasons. In the patient care divisions, if you have a high percentage of single rooms, there is a higher unit area per bed. In surgery, if you have only morning operations, you need more rooms and have a higher unit area per bed. Similarly with radiology and service departments there are a variety of factors, all of which tend to vary the unit area per bed. While I have set 550 as the desirable low, I must admit that there are hospitals which have as little as 400 sq. ft per bed total. In these hospitals the service departments are trimmed to the bone; some of the adjunct facilities may be missing, for example physical therapy or pharmacy. Again I am illustrating why there isn't any standard figure for unit size. You should explore the facts for your own hospital, using this method of analysis. So much for size.

The evaluation of plan arrangement is not difficult. What is evolved here is an indication as to how much of the existing hospital needs to be remodelled. For this you make the inspection of the hospital and judge as you go which departments really ought to be improved. You then build up, department by department and building by building, a list to use in calculating the remodelling costs. Factors in judging arrangement are the entrances, the flow of goods and persons, departmental relationships, outward aspect, sizes of bed units, location of nursing stations, and the expansibility of various departments.

The next step is to evaluate the physical condition of the buildings, particularly the mechanical plant. In running tests on this method recently in Chicago, two teams inspected ten hospitals and drew up separate conclusions for comparison. This was done as research on our method, sponsored by the United States Public Health Service, with the Hospital Planning Council of Metropolitan Chicago as



GROSS FLOOR AREA ANALYSIS

	EXISTING		DESIRABLE	
	520 BED		520 BED	650 BED
A. NURSING SERVICES	292	GSF PER BED	357	354
1. PATIENT CARE DIVISION	240	DEF	300	300
2. SURGERY	25	DEF	30	30
3. DELIVERY	18		18	16
4. EMERGENCY	9		9	8
B. ADJUNCT FACILITIES	46		64	63
1. LABORATORY	18	DEF	20	20
2. RADIOLOGY	18	DEF	25	25
3. PHYSICAL MEDICINE	5	DEF	9	9
4. PHARMACY	5		7	6
5. SOCIAL SERVICE	0		2	2
6. MEDICAL ILLUSTRATION	0		1	1
C. SERVICE DEPARTMENTS	105		139	134
1. DIETARY	24	DEF	32	31
2. HOUSEKEEPING	4		5	5
3. LAUNDRY	10		10	9
4. CENTRAL STERILE SUPPLY	4	DEF	10	9
5. CENTRAL STORES	17	DEF	26	26
6. EMPLOYEES FACILITIES	6	DEF	10	9
7. SHOPS & MECHANICAL	40		46	45
D. ADMINISTRATION	37		40	39
1. OFFICES	23		25	24
2. MEDICAL RECORDS	7		8	8
3. PUBLIC SPACE	5		5	5
4. AUXILIARY	2		2	2
TOTALS	480	GSF PER BED	600	590
			312,000	
	250,000	GSF		384,000

GROSS FLOOR AREA CRITERIA
(GROSS SQ. FT. PER BED)

	LOW	HIGH
A. NURSING SERVICES	321	414
1. PATIENT CARE DIVISIONS	270	342
2. SURGERY	27	38
3. DELIVERY	17	25
4. EMERGENCY	7	9
B. ADJUNCT FACILITIES	54	77
1. LABORATORY	17	25
2. RADIOLOGY	20	28
3. PHYSICAL MEDICINE	8	10
4. PHARMACY	6	8
5. SOCIAL SERVICE	2	4
6. MEDICAL ILLUSTRATION	1	2
C. SERVICE DEPARTMENTS	139	174
1. DIETARY	32	40
2. HOUSEKEEPING	5	6
3. LAUNDRY	8	10
4. CENTRAL STERILE SUPPLY	10	12
5. CENTRAL STORES	30	40
6. EMPLOYEE FACILITIES	9	11
7. SHOPS & MECHANICAL	45	55
D. ADMINISTRATION	36	50
1. OFFICES	17	24
2. MEDICAL RECORDS	7	9
3. PUBLIC SPACE	7	9
4. AUXILIARY	5	8
TOTAL (520 BEDS)	550	715

EVALUATION OF PHYSICAL PLANT

	MAIN	WARD A	PORTER	W WING
DATE BUILT	1870	1892	1930	1954
CURRENT AGE	92	70	32	8
CONSTRUCTION	B&W	B&W	B&C	B&S
ARRANGEMENT	POOR	POOR	FAIR	GOOD
FIRE & SAFETY	ILL.	ILL.	GOOD	GOOD
STRUCTURE	GOOD	GOOD	FAIR	GOOD
FINISHES	FAIR	POOR	POOR	GOOD
PLUMBING	POOR	POOR	FAIR	GOOD
HEATING & AIR COND.	FAIR	FAIR	FAIR	GOOD
ELECTRICAL SYSTEMS	POOR	FAIR	FAIR	GOOD
ELEVATORS	POOR	—	—	FAIR
COMMUN-ICATIONS	GOOD	GOOD	GOOD	GOOD
FIXED EQUIPMENT	FAIR	POOR	FAIR	FAIR
MOVABLE EQUIPMENT	GOOD	POOR	POOR	FAIR
UTILITIES	FAIR	FAIR	FAIR	FAIR
GENERAL RATING	POOR	POOR	FAIR	GOOD
RECOMMEND-ATION	REP.	REP.	REM.	MOD.

ill. — illegal
rep. — replace
rem. — remodel
mod. — modernize

B&W — brick & wood
B&S — brick & steel
B&C — brick & concrete

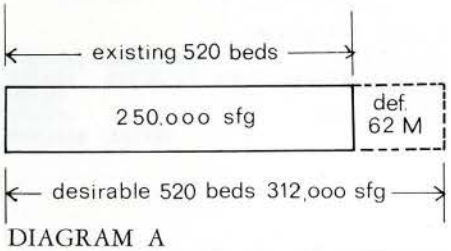


DIAGRAM A

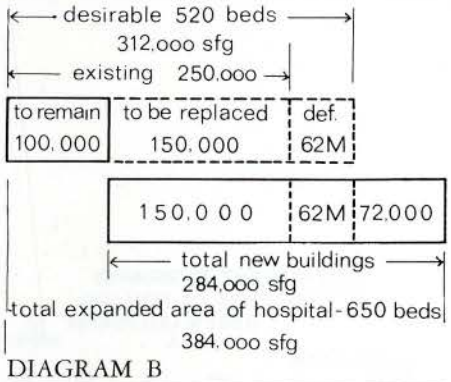


DIAGRAM B

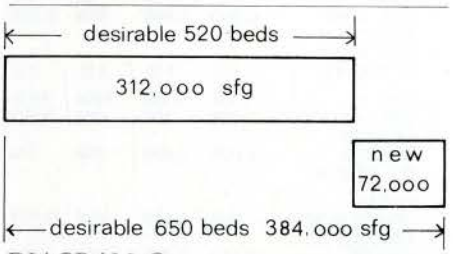


DIAGRAM C

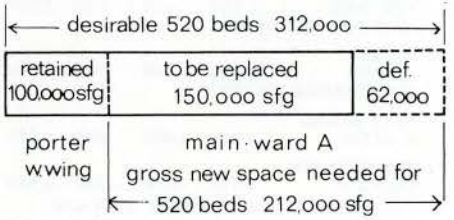


DIAGRAM D

agent. We discovered that a team of two architects and a mechanical engineer could cover even the larger hospitals in one day. It didn't take much longer to go through the large ones than the small. Obviously this means a superficial inspection but with attention to each department we found it quite possible to form judgments so that following the inspection we could meaningfully evaluate the amount and cost of necessary alterations. This was harder to do with the mechanical plant and our technique there was to have the mechanical engineer inspect it with the hospital's engineer and then evaluate the plumbing, the heating and ventilating, the steam generation, fuel supply, electrical distribution systems, lighting fixtures, communication systems, elevators, pneumatic tubes, and utilities outside the building. These are things that are not superficially appraisable, but with the knowledge of the local engineer a judgment can be formed on them. So an evaluation of the condition of the buildings generates cost items which become part of the final cost calculations.

Following this process is a step which we call salvage evaluation. The schedule lists the four buildings in our hypothetical hospital, giving a subjective but judgmental evaluation of various factors, including the building's age, type of construction, arrangement of departments, and fire safety. On the latter point the first two buildings were strictly illegal. Seldom does the structure call for a replacement of the building. Finishes can be maintained, plumbing can be replaced and kept fairly up to date, even air-conditioning is often installed for comfort, but electrical systems and both water and steam piping generally get overlooked because they are hidden. Elevators vary with the buildings and are one of the main complaints of old buildings. There are never enough elevators and they always run too slowly and are never at the right place, so that in our experience as much as 10 per cent of improvement costs may go into modernization of elevators in order to get the kind of service that we have become accustomed to in office buildings. Communications equipment can be added rather readily, as it was in this case. Built-in equipment is also a factor. So we evaluate these factors building by building and finally form a judgmatical recommendation, without serious regard for the economics of it. In the example the recommendation is to replace the two old buildings and fix up the other two, at least for a period of time. Again we mix judgmatical methods and statistical methods, which I contend is one of the best ways to get a good result.

We return now to the question of the hospital size and undertake Step No. 6, which is to calculate the building space needed both to make up deficiencies and to expand the program. Diagram A shows what is necessary for deficiencies. The 250,000 gross sq. ft is the size of the total existing plant of 520 beds but the 312,000 gross sq. ft are needed to get it up to the recommended 600 sq. ft per bed. Thus subtraction reveals that even without adding beds you should add 62,000 sq. ft of building just to meet today's standards. This is usually the first real surprise that comes out of these studies because few hospitals have any idea of true deficiencies in the supporting departments, or at least they don't know that it takes as much as is indicated to fix them up. The second shocker comes when you start looking at what really ought to be replaced, and diagram B shows that standing still at 520 beds, this poor hospital really has a residual usable floor space of only 100,000 gross sq. ft and that buildings Main and Ward A, which ought to be replaced, contain 150,000 sq. ft. Add this replacement area to the deficiency of 62,000 gross sq. ft and you get the incredible fact that in order to stand still at 520 beds, you ought to build 212,000 sq. ft of new space, replacing 150,000 and retaining 100,000. That's a real blow. The third blow comes when we look at future needs (diagram C). Stage I of the long range plan calls for another 130 beds and for this, applying the area standards of 590 gross sq. ft per bed to 650 beds, we find that 284,000 gross sq. ft of new building are needed to reach the calculated area of 384,000 gross sq. ft (diagram D). This comes close to replacing the whole plant.

These figures then become the basis of cost calculations for size. The improvements recommended take into account new space, alteration costs of re-located departments, and the alteration and modernization costs of remaining departments. Of these four categories, three involve remodelling costs and are separated because our experience in testing the method showed it was not satisfactory to pick one unit cost for new space and another unit cost for altered space, but that there really were three levels of cost. When you re-locate a department, such as

moving X-ray, with its machines and electrical service and lead shielding, it is so expensive that it costs almost as much as a building. At the other end, when you simply paint and put new floor finishes in, and perhaps some light fixtures, a lower unit cost will do. So we establish four levels of cost — the highest being for new space; the next highest for re-location; the next for alteration and the lowest for modernization. We apply these units to departments according to their judged needs. For the illustration hospital, the schedule indicates the several categories.

These figures totalled $3,000,000 for the main building; $1,400,000 for Ward A, which was about half the size; $500,000 for Porter; and $700,000 for the new wing. Even the 1954 wing reveals needs for sizable alterations after nine years. The units used bear some explanation. Even modest improvements will equal one-eighth to one-quarter of the cost of new construction. Most modernization will cost up to one-half of new construction. Remodelling for other uses mounts to about three-quarters of the cost of new construction, and mechanical and electrical improvements alone can increase any one of these another 25 per cent.

MODERNIZATION COSTS
(IN THOUSANDS OF DOLLARS)

	MAIN	WARD A	PORTER	W WING
FIRE & SAFETY	450	200	30	20
STRUCTURE & FINISHES	600	200	70	80
PLAN ARRANGEMENT	1,000	400	150	200
MECHANICAL & ELECTRICAL	850	600	250	350
ELEVATORS	100	—	—	50
TOTAL	$3,000	1,400	500	700

We now move into Step 7, which is calculating the land need using a formula which we find generally applicable. Automobile parking is the one determinant of land size that seems always to be critical. There are rules of thumb which say that anywhere from one to two parking spaces per bed will take care of the parking needs of the whole hospital, depending upon geographic location. Diagram E indicates a little less than two and assumes 1,000 parking spaces to be needed for a 520 bed hospital. You can get 140 cars per acre with self parking including aisles. Thus, dividing 1,000 by 140 gives 7.2 acres of land needed for automobile parking. The next rule of thumb says you really should cover no more than one-third of your land with cars. Too often we cover one-half the land or more, but this is an offensive use of the land. Multiplying 7.2 by three, we get a total land requirement of 21.6 acres for the existing 520 bed hospital. The present land is six acres. Thus the hospital is fifteen acres short of land right now — a common experience. For the future 650 beds, applying the same rule with a factor of two gives 1,300 parking spaces, which generates the need for 27.6 acres. Thus the final accounting shows that the hospital ought to buy 21.6 acres more, which is three and one-half times what they now have. This finding, too, is generally a shock. Sometimes the hospital buys the land, sometimes not.

When it comes to cost estimates, local units or actual prices should be used. To this should be added cost items for surfacing, utilities outside the building, and landscaping.

SITE DEVELOPMENT

A. LAND NEEDS

FOR EXISTING 520 BED—1000 PARKING SPACES

$$\frac{1000}{140} = 7.2 \text{ ACRES X } 3 = 21.6 \text{ ACRES}$$

FOR FUTURE 650 BED—1300 PARKING SPACES

$$\frac{1300}{140} = 9.2 \text{ ACRES X } 3 = 27.6 \text{ ACRES}$$

B. COST ESTIMATES

ACQUISITION	21.6 ACRES	$210,000
SURFACE PARKING LOTS	9.2 ACRES	184,000
UTILITIES		30,000
LANDSCAPING		60,000
	TOTAL	$484,000

We now come to the only really detailed and controversial analysis in this whole method involving replacement economics. (Diagram F) The first line shows the floor area of the buildings, and the second line their replacement costs. Lines three, four and five are concerned with figuring the residual value of the old buildings. In the Main building, shown as depreciated 75 per cent (i.e. down to one-quarter of its replacement value) the building is so old that you might say it has no residual value, but the fact is that it does have a use value. The controversial issue is whether or not you should place a dollar amount on the residual value, and if so, how to use it. The next line shows that to modernize Main, we must spend $3,000,000. Therefore, there would have been a total investment, if you wanted to carry it on the balance sheet, of $1,000,000 depreciated value plus $3,000,000 of improvements or $4,000,000 invested in that building. The cost of replacing Main building would be $4,100,000. Thus the premium for new building may be considered as the difference between the depreciated value plus improvements and the replacement cost plus depreciated value. This would be a $1,100,000 premium for an all new Main. Considering alterations for change of use this may be taken simply as the difference between what must be spent on modernization and what new buildings would cost, or $100,000. Thus even if the residual value is ignored, you will still pay a premium for a new building, even considering the age and condition of the old 1890 building. Here I must make the uncomfortable point that we often say it doesn't pay to put money into an old building, yet if you decide on the basis of cost calculations only, you will find that it often does pay. Frequently, however, other factors enter. You may decide that it is time for a new building to boost morale, or that the layout is atrocious, or the building is hazardous, or you rationalize in some fashion and then tear down the old and build a new building. This is probably a good thing

REPLACEMENT ECONOMICS
(IN THOUSANDS OF DOLLARS)

	MAIN	WARD A	PORTER	W WING
1. GROSS FLOOR AREA	100	50	20	80
2. REP. COST SEE STEP 9	4,000	2,000	800	3,200
3. DEP. RATE % PER YR.	3%	3%	2%	2%
4. DEP. %	75M	75M	50M	16%
5. DEP. VALUE	1,000	500	400	2,688
6. MODERN-IZATION SEE STEP 9	3,000	1,400	500	700
7. TOTAL INVESTMENT	4,000	1,900	900	3,388
8. REPLACE & WRECK	4,100	2,050	840	3,400
9. PREMIUM FOR NEW LINE 8 MINUS LINE 6	1,100	650	340	2,700
10. ALTER-ATIONS FOR CHANGE OF USE	1,000	500	100	50
11. COST-MODR. & ALTN.	4,000	1,900	600	750
12. PREMIUM TO SALVAGE	—100	—150	—240	—2,650

ECONOMICS STILL FAVOUR SALVAGE

M—maximum Dep.—depreciation Rep.—replacement

and is in line with my feeling that in this whole process of evaluation there is no single formula, economic or otherwise, which will develop an infallible conclusion regarding replacement. But this method does take you through a thinking process which leads to a defensible conclusion and a defensible conclusion is better than an infallible one. An infallible conclusion is always subject to attack on its basic assumptions.

In summary, for the Main building only we can say that if you reckon replacement costs at $4,100,000 and improvements at $4,000,000 and the residual value of the building at $1,000,000, your maximum premium is $1,100,000, of which $100,000 is cash out of the pocket. It is this last figure which is usually the critical one because the residual value of the building represents money spent 90 years ago. You may not even carry it on the books. What does count is how much you are going to have to spend now in order to fix it up, and the comparison of that figure with the cost of new building shows a premium of $100,000 for salvaging this old building.

RELOCATE ENTIRE HOSPITAL

Figures shown salvage all existing space and add none

	MAIN	WARD A	PORTER	W-WING	
A. MODERNIZATION	$3,000,000	1,400,000	500,000	700,000	$5,600,000
SITE & EQUIPMENT					1,984,000
				TOTAL	$7,584,000
B. REPLACEMENT	$4,000,000	2,000,000	800,000	3,200,000	10,000,000
SITE & EQUIPMENT					2,184,000
				TOTAL	12,184,000
				DIFFERENCE	$4,600,000
C. SALE OF EXISTING PROPERTY					1,000,000
D. PREMIUM FOR NEW HOSPITAL (EXISTING SIZE)					$3,600,000

(If the recommendation to replace MAIN and WARD A is accepted and the hospital expanded to 650 beds, these calculations become academic.)

The final project budget — Step 9 of the method — is composed of four items: new buildings, $8,520,000; modernizing buildings which are to remain in use, $1,200,000; additional land and site development, $484,000; plus movable equipment; total project, $11,750,000. And that's what you have to face, quite a different figure from 130 more beds at $20,000 a bed ($2,600,000).

An excellent rule to follow is that in every stage of expansion it is well to project three kinds of improvements: namely, new building, replacement of at least one old building, and modernization of the remaining buildings. The usual emphasis is on the first or new building. To our regret we often overlook the second and third categories. I urge that they not be overlooked.

To recapitulate, the main steps we have been through are calculating the floor areas by departments, applying the area criteria to determine the space deficiencies, evaluating the plan arrangement and estimating the areas needing operation improvements, evaluating the condition of buildings, estimating areas needing modernization, inspecting the mechanical and electrical systems, calculating the building space needs to make up deficiencies and to expand the program, calculating the land, evaluating the equipment, and finally estimating the costs. Note, again, that I have presented no scheme, no specific solution for this hypothetical problem because I feel that you should have reached the conclusions described before you develop a plan. You might, for example, conclude that it is so costly to fix up the place on the present site that you would simply move elsewhere or the reverse. But you and your architect will be better guided if you have gone through the analysis described. The method takes no more than a month, usually less, of calendar time and would take less than a week of actual working time if it's followed in the manner I have described and if you don't try to become too precise with it. The method therefore, is only the beginning of planning and should precede schematic planning, with a detailed design to follow.

Cariboo Memorial Hospital

CARIBOO MEMORIAL HOSPITAL, WILLIAMS LAKE, B.C. • ARCHITECTS — THOMPSON, BERWICK & PRATT • PARTNER IN CHARGE F. S. BRODIE • PROJECT ARCHITECT — J. W. WALLACE • FIELD SUPERVISOR — F. N. URQUHART • ENGINEERS • STRUCTURAL CHOUKALOS, WOODBURN & McKENZIE • MECHANICAL & AIR CONDITIONING — D. W. THOMPSON & COMPANY LIMITED • PLUMBING — R. J. CAVE & COMPANY LIMITED • ELECTRICAL — SIMPSON & McGREGOR • GENERAL CONTRACTOR — NAROD CONSTRUCTION LIMITED

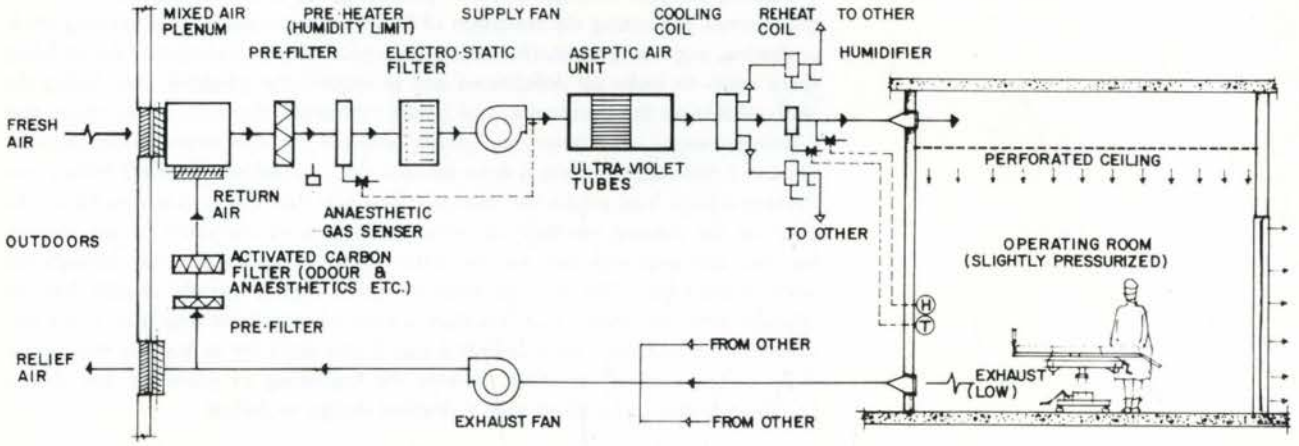
FULKER

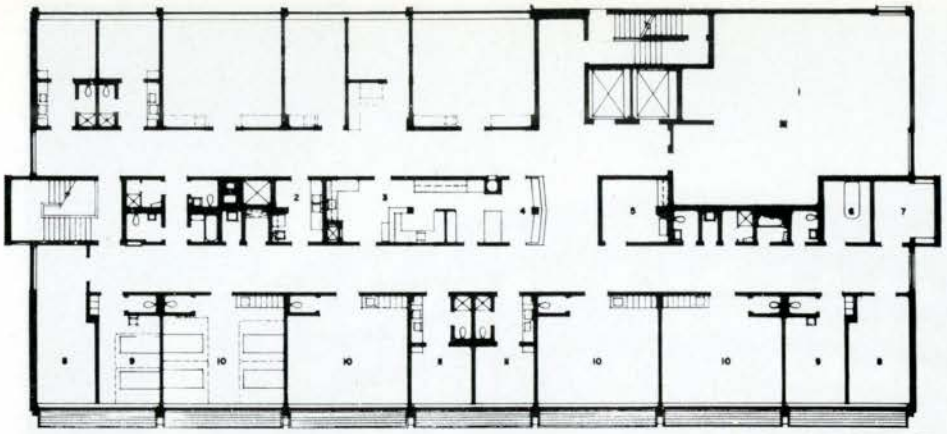
Structure: reinforced concrete with two-way floor slabs. Exterior materials: walls, concrete except for brick cavity walls at lower levels; windows, double horizontal sliding metal units with plastic laminate window stools. Interior materials: partitions, steel stud and concrete block; base, six in. coved terrazzo; floors, terrazzo (wards, toilets, clinical and dietary areas) and rubber tile (corridors, administration and staff areas); wall finishes, plaster and glazed tile (operating and delivery areas); ceilings, plaster (wards and clinical areas), removeable acoustic panels in T-bar suspension system (corridors, administration and dietary areas) and perforated metal pans in T-bar suspension system (operating and delivery areas); counter tops, plastic laminate and stainless steel. Gross floor area, 62,700 sq. ft. Cost, $20.83 per sq. ft. (9000 sq. ft. are only semi-finished).

The hospital is air-conditioned. The Robbins Aseptic Air System is installed for use in the operating and obstetric suites. (It is important to note that no other installations of the system are being allowed until an appropriate period for conducting extensive bacteriological tests has elapsed.) The system is designed to use 75 per cent re-circulated air. It is a low velocity system with re-heat and re-humidification for each of five separate zones served.

This system is arranged to kill 99.9 per cent of the pathogenic organisms in the delivered air stream by the use of ultra-violet irradiation. The aseptic air unit is composed of thirty seven inch diameter, 36 in. long tubes fabricated from alzac aluminum. An ultra-violet lamp is located at the centre of each tube. A spiral helix of a similar material is arranged between the tube and the shell to rotate the air stream. All the air delivered passes within three inches of a 2537 Angstrom ultra-violet source with a delivered intensity of 0.03 ultra-violet watt-minute per sq. ft. The relative humidity of the air entering the aseptic air unit is controlled to 50 per cent to ensure the maximum effect from the ultra-violet source. The air is supplied to the five rooms on the system through plenum ceilings at a space air change rate of twelve to fifteen air changes per hour. The space air is exhausted from the floor level at a rate of 75 per cent of the supply to ensure that the rooms serviced will always be under positive pressure. The air distribution is from perforated plate panels in a ceiling suspension to produce a piston effect of air displacement. The procession equipment includes activated charcoal filtration in the return air stream to absorb anaesthetic gases and electrostatic filters and in the main air stream to remove the particulate matter.

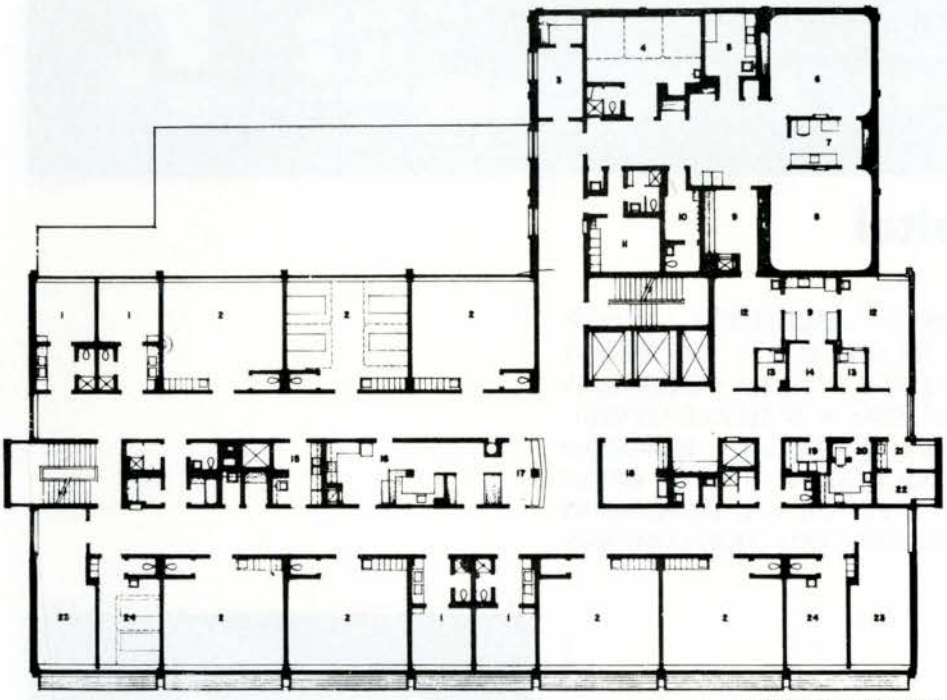
DIAGRAMATIC LAYOUT • CENTRAL AIR CONDITIONING WITH AIR STERILIZATION AND RETURN AIR





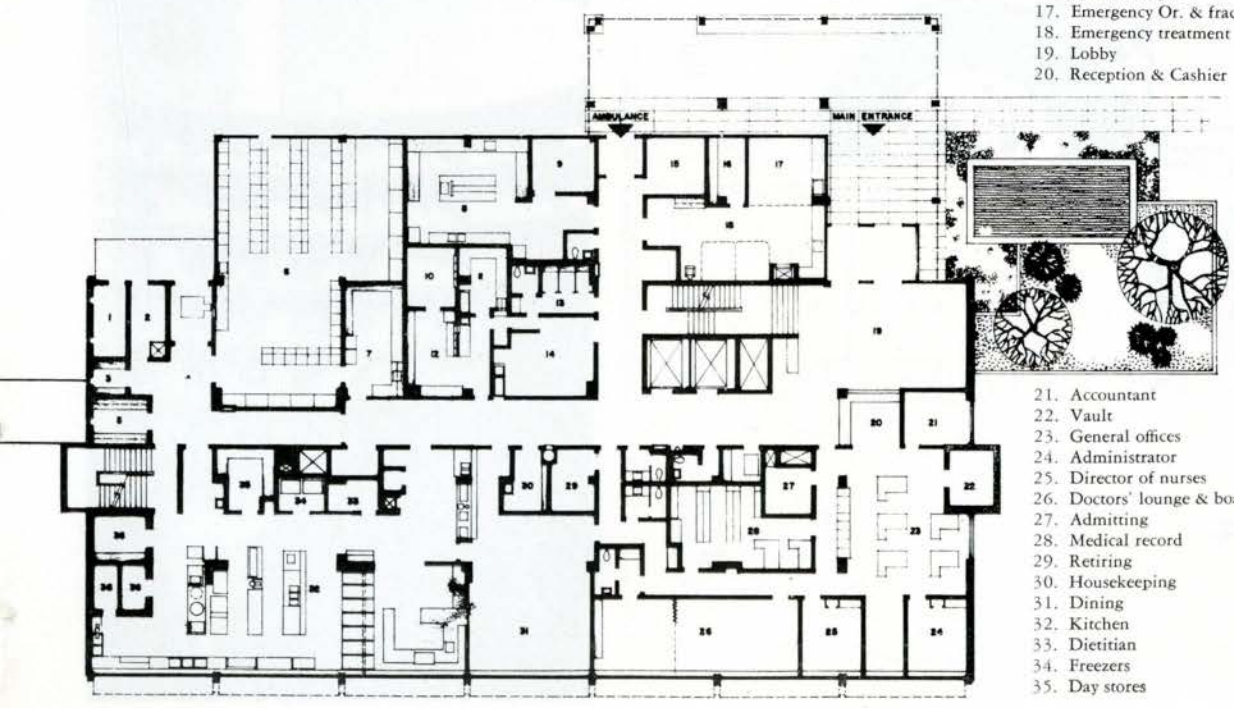
FOURTH FLOOR

1. Fan room
2. Soiled utility
3. Floor dantry & clean utility
4. Nurses' station
5. Treatment
6. Treatment bath
7. Floor storage
8. Day room
9. 2 bed ward
10. 4 bed ward
11. Isolation



SECOND FLOOR

1. Isolation
2. 4 bed ward
3. Office
4. Labour
5. Clean-up
6. Labour & emergency delivery
7. Sub-sterilizing & scrub
8. Delivery
9. Clean work room
10. Nurses' gowning
11. Doctors' gowning
12. Nursery (9 bassinets)
13. Examination
14. Charting
15. Soiled utility
16. Floor dantry & clean utility
17. Nurses' station
18. Treatment
19. Bottle washing
20. Formula preparation
21. Sub-sterile
22. Suspect nursery
23. Day room
24. 2 bed ward



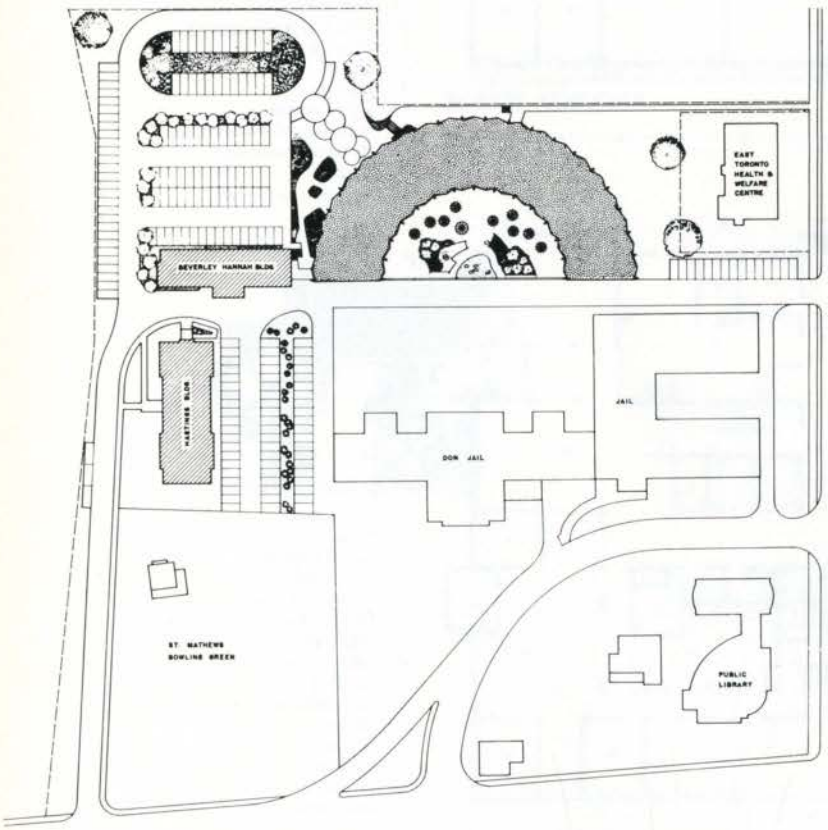
MAIN FLOOR

1. Oxygen manifold
2. Can washing
3. Anaesthesia storage
4. Receiving
5. Inflammable storage
6. Central stores
7. Pharmacy
8. Laboratory
9. Ecg. Bmr.
10. Radiologist — consultation
11. Dark room
12. Film files & wet viewing
13. Dressing
14. X-ray
15. Waiting
16. Splint storage
17. Emergency Or. & fractures
18. Emergency treatment
19. Lobby
20. Reception & Cashier
21. Accountant
22. Vault
23. General offices
24. Administrator
25. Director of nurses
26. Doctors' lounge & board room
27. Admitting
28. Medical record
29. Retiring
30. Housekeeping
31. Dining
32. Kitchen
33. Dietitian
34. Freezers
35. Day stores

PANDA

Riverdale Hospital

RIVERDALE HOSPITAL, TORONTO • ARCHITECTS — CHAPMAN & HURST • PARTNER IN CHARGE — LEN HURST LANDSCAPE ARCHITECT — GEORGE TANAKA • ENGINEERS STRUCTURAL — C. D. CARRUTHERS & WALLACE CONSULTANTS LIMITED • MECHANICAL & ELECTRICAL — MESCHINO & ASSOCIATES • KITCHEN CONSULTANTS — KEITH LITTLE ACOUSTICS CONSULTANT — PROFESSOR V. L. HENDERSON GENERAL CONTRACTOR — DELL CONSTRUCTION COMPANY LIMITED



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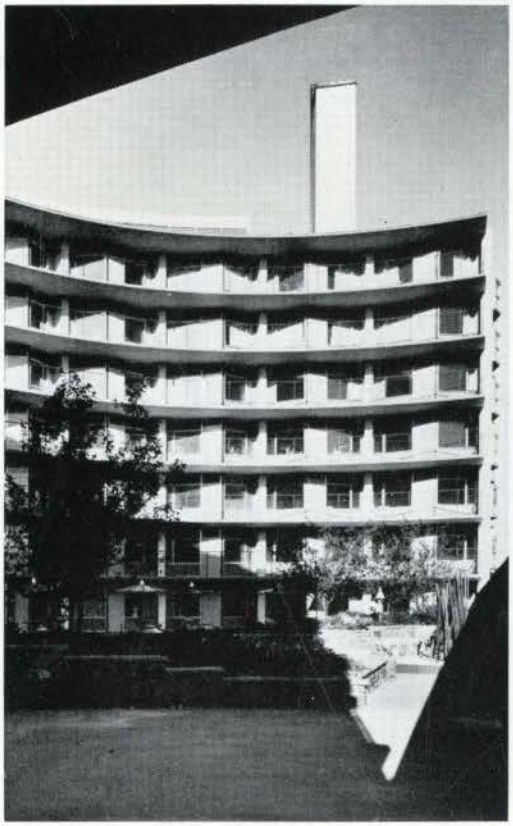
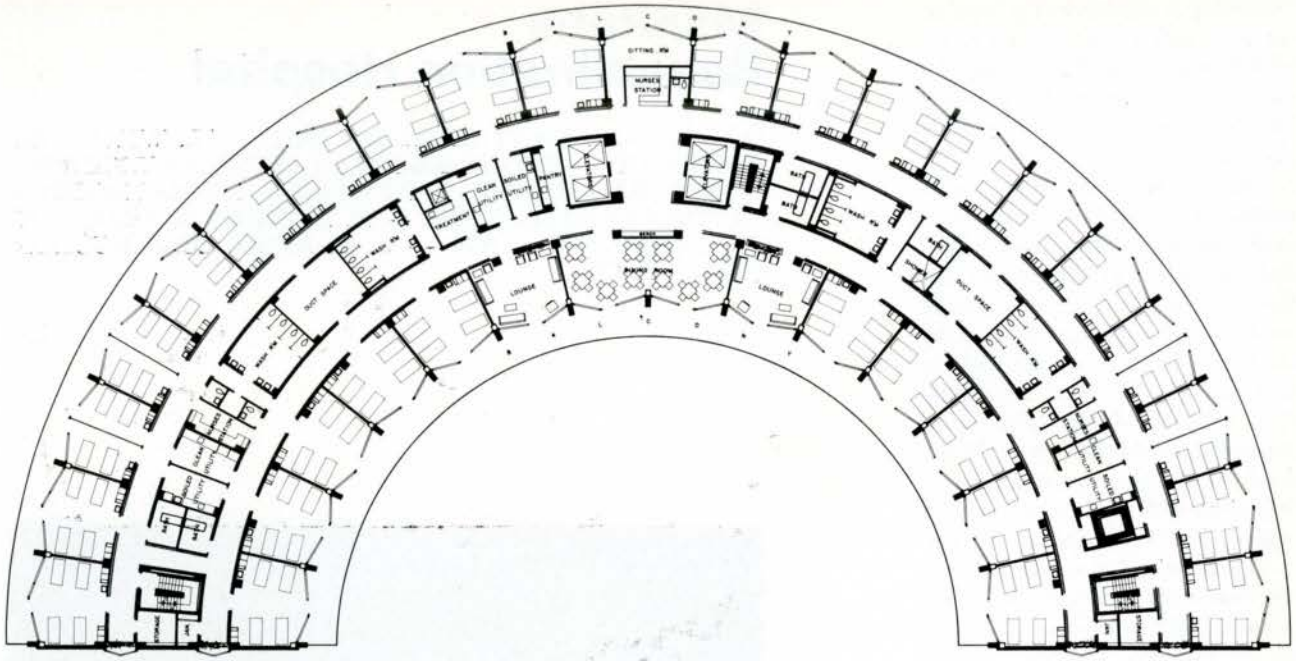


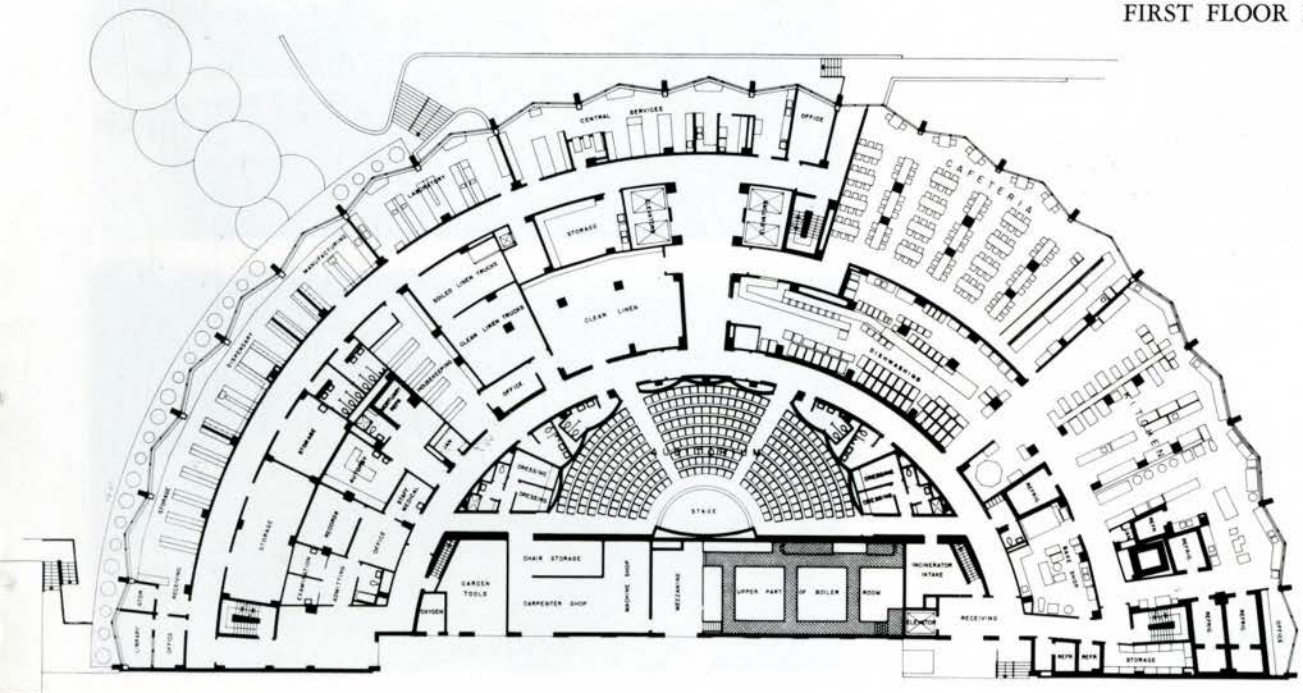


TYPICAL FLOOR PLAN

The curved form of the Riverdale Hospital was developed from the site conditions. The location is surrounded by parkland to the north, east and west with the Don Jail at the immediate south. The semicircular form allows two-thirds of the patients a view to the park and the remaining patients are grouped around a roof terrace and generally look onto themselves.

The hospital contains 808 beds and is designed to care for the convalescent and the chronically ill. Emphasis is therefore placed on therapy treatment rather than on operating rooms. For this reason each floor contains lounges and dining rooms to provide an incentive for the patients to move about as much as possible rather than be confined to their rooms. The roof terrace at the centre of the hospital is designed for therapy treatment and as well is equipped with a pool and fountain, landscaping and permanent sunshades.

FIRST FLOOR PLAN



Manitoba Rehabilitation Hospital

MANITOBA REHABILITATION HOSPITAL, WINNIPEG
ARCHITECTS — MOODY, MOORE & PARTNERS • ENGINEERS STRUCTURAL, ELECTRICAL, PLUMBING — MOODY, MOORE & PARTNERS • MECHANICAL — H. H. ANGUS & ASSOCIATES
GENERAL CONTRACTOR — G. A. BAERT CONSTRUCTION (1960) LIMITED

Occupying a city block, the hospital has three basic elements: a six storey rehabilitation wing, a four storey TB wing and a one storey therapy wing. The second storey auditorium projects over the entrance.

The rehabilitation wing has a double corridor plan with service areas in the basement; administrative offices and out-patient department on the first floor; chapel, library, and cafeteria on the second — opening out onto the sundeck and walkway on the first floor roof; School of Medical Rehabilitation, a faculty of the University of Manitoba, on the third floor. Upper floors contain areas for rehabilitation in-patients with wards on the exterior walls and services in the interior core.

The TB wing has service and storage areas in the basement with administrative, OPD, and X-ray departments on the first floor and wards on the upper three floors.

The therapy wing has facilities for out-patients and in-patients as well as a lounge overlooking the interior landscaped court.

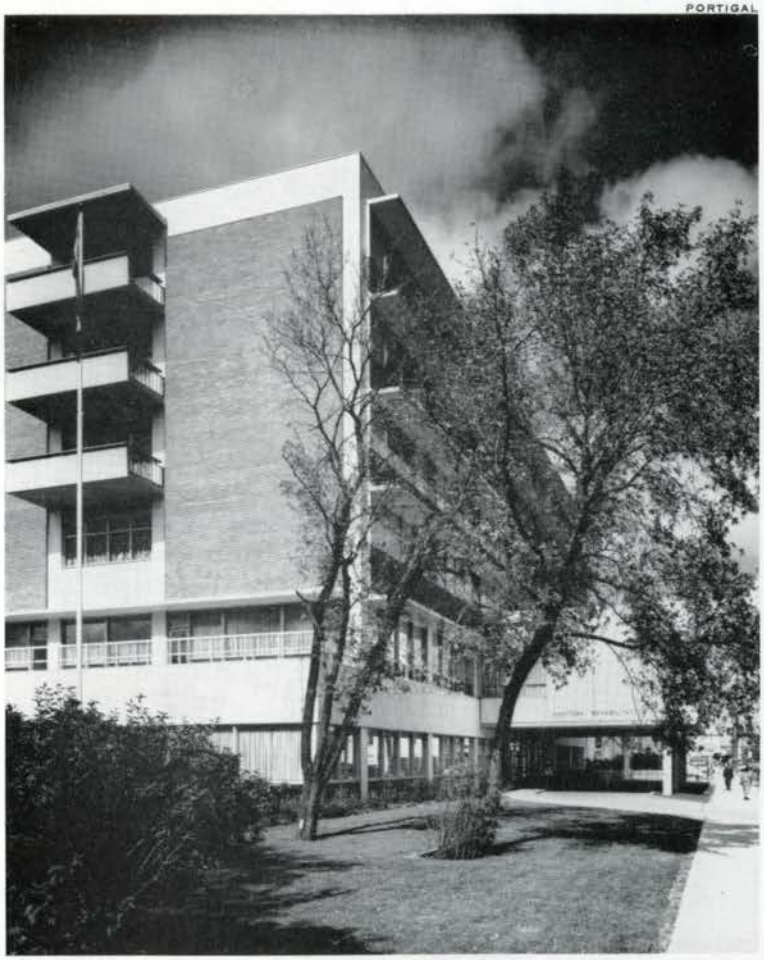
Structural system is concrete frame exposed on the exterior with dark grey brick infill panels and columns faced in white mosaic tile.

Interior materials include: floors — concrete, ceramic tile, quartz slate, terrazzo, Granwood, vinyl tile, linoleum tile, cork tile; walls — concrete block, glazed tile, plaster, sheet vinyl, and wood; ceilings, glass fibre acoustic tile; doors — formica matching the wood in the wards.

The color scheme employs muted tones with gay accents. Wards are finished in pastel shades of blue, turquoise, beige, and grey with off-white casement cloth drapery.

White marble and grey granite were used as facing materials for the first floor and auditorium. The lobby area is defined by a luminous ceiling and, from the corridor, in floor tile color.

PORTIGAL



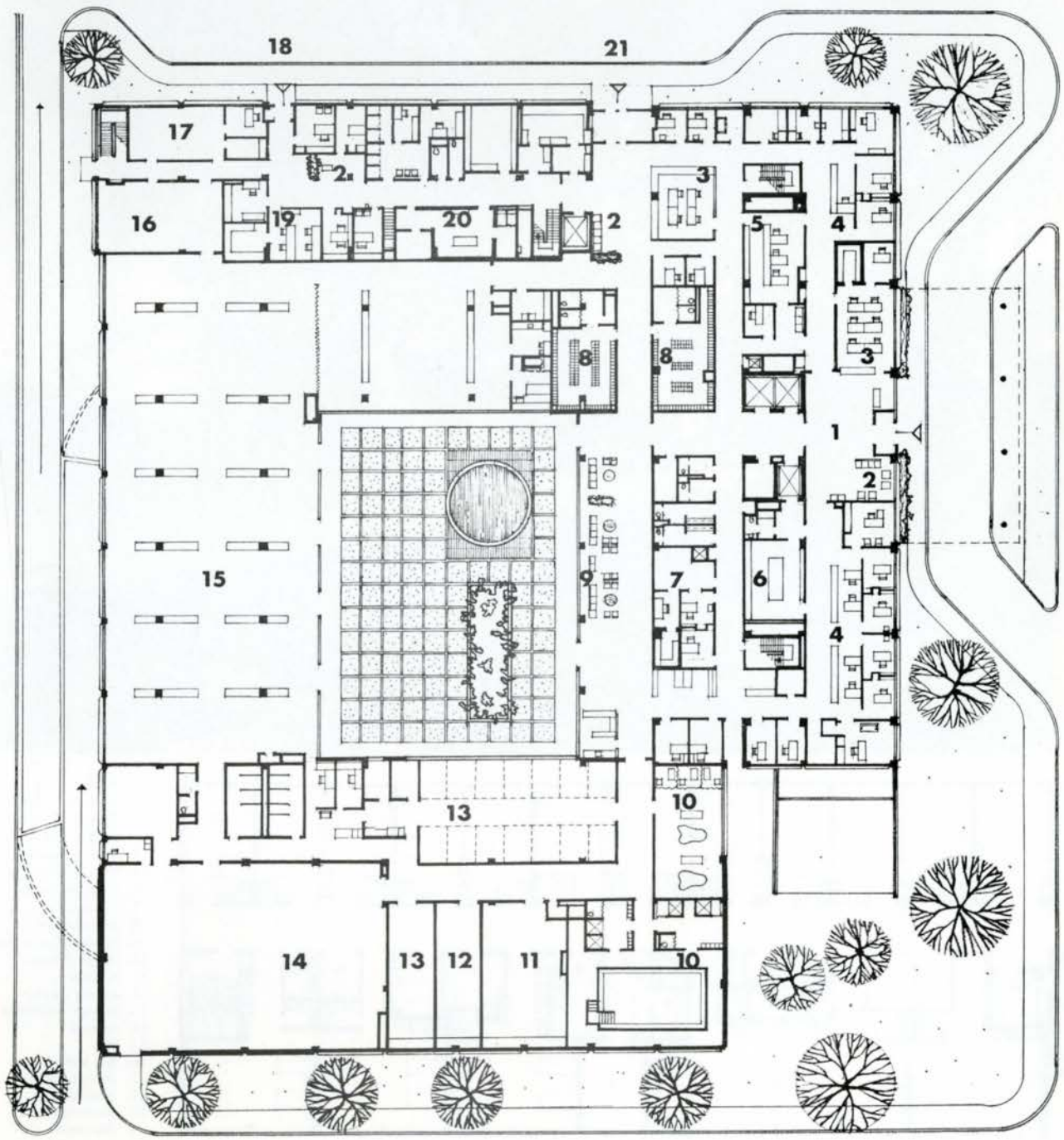
PORTIGAL

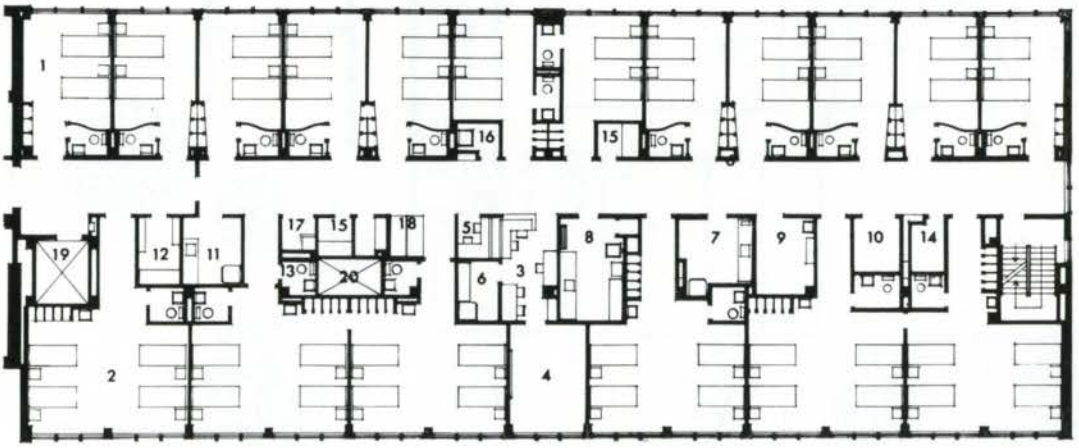
Above right: corner view of the six storey rehabilitation wing with the second storey auditorium projecting over the entry.
Right: ground floor, therapy wing interior court.

LEGEND

1. Entrance lobby
2. Waiting
3. Business office
4. Secretaries
5. Medical records
6. Board room
7. Accounting
8. Lockers
9. Patients' lounge
10. Hydro therapy
11. Heavy resistive area
12. Electro therapy
13. Physical therapy
14. Gymnasium
15. Occupational therapy
16. Seals office
17. Central therapy
18. T.B. clinic & office ent.
19. O.P.D. office
20. X-ray
21. Out-patients' ent.

FIRST FLOOR PLAN





1. Typical semi-private room
2. Typical 4 bed room
3. Nurses' station
4. Clinical teaching
5. Doctors' write-up
6. Medicine room
7. Clean utility
8. Soiled utility
9. Examination room
10. Waiting room
11. Kitchen
12. Flower room
13. Nurses' washroom
14. Storage
15. Bath
16. Sitz bath
17. Janitors' closet
18. Stretcher bay
19. Service elevator
20. Duct space

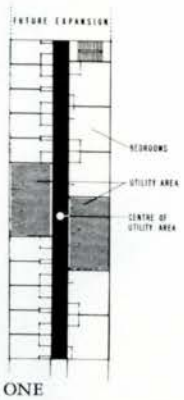
Oakville Trafalgar Memorial Hospital

OAKVILLE TRAFALGAR MEMORIAL HOSPITAL, OAKVILLE, ONTARIO • ARCHITECTS GOVAN KAMINKER LANGLEY KEENLEYSIDE MELICK DEVONSHIRE WILSON • ENGINEERS • STRUCTURAL — C. D. CARRUTHERS & WALLACE CONSULTANTS LIMITED MECHANICAL & ELECTRICAL — H. H. ANGUS & ASSOCIATES LIMITED • GENERAL CONTRACTORS — DELL CONSTRUCTION COMPANY LIMITED

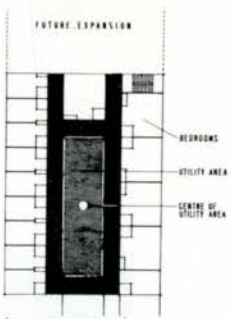
PLANNING THE NURSING UNIT

by B. Kaminker

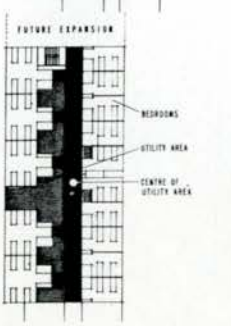
TYPICAL PLANS OF 40 BED NURSING UNIT



ONE



TWO



THREE

Two types of plans, commonly referred to as the single corridor and double corridor, have been generally used for nursing units. The purpose of this study is to compare these two plans and to submit a third alternative which will be called the wide single corridor.

Historically, the single corridor plan came first. In the days of poor artificial lighting and no mechanical ventilation it was a natural solution; the corridor took the dark central location and all rooms had windows for natural daylight and ventilation. Many of the old hospital buildings were narrow — some were only 28 ft between inside faces of exterior walls: the result was that corridor and stairway frequently occupied 30 per cent or more of the total floor area. With time, the width of the wing steadily increased. The custom of providing a washroom in each patient's room gave further impetus to this trend and today it is not unusual to see single corridor wings 50 ft and 52 ft wide. This widening of the building is, of course, achieved without adding to corridor length, so that the percentage of floor area occupied by corridor is considerably reduced. The result is that the single corridor plan offers a fairly economical solution for a nursing unit. Its disadvantage is the lengthy walking distances for nurses and other personnel from the service rooms to the extreme ends.

The double corridor plan is the result of an attempt to get utility rooms closer to the patients and reduce walking distances. The service rooms take the interior locations, which are now artificially illuminated and mechanically ventilated, and the patient rooms take the periphery locations where they can obtain natural daylight. The distances from service rooms to patients' rooms are thus reduced adding more area to the nursing unit as additional corridor space.

The third plan is an attempt to combine the best features of the single and double corridor plan in a compromise solution which we will call the wide (62 ft) single corridor but which, like the double corridor, gives almost the entire periphery to patients' rooms.

For a study of this kind, it is, of course, necessary to divorce the nursing unit from the rest of the building. The hospital planners, however, in deciding on the type of nursing unit must also take into consideration the restrictions of the site and the requirements above and below the nursing unit floor (or floors). These may well be the determining factors in the shape of the building and the type of plan selected. But these important considerations in no way invalidate the study.

	SINGLE CORRIDOR	DOUBLE CORRIDOR	WIDE SINGLE CORRIDOR
AREA IN SQ. FT.	7,644	8,502	7,493
PERIMETER IN FT.	410	374	372
TOTAL CORRIDOR LENGTH IN FT.	156	260	127

The foregoing is a quantitive comparison and is easy to calculate. Not so easy to calculate is the other basis of comparison frequently used — walking distances for nurses. It is generally assumed that if the utilities are centrally located, walking distances are reduced: this assumption is valid only if most of the nurses' walking is from utilities to patients' rooms. If, for instance, most of nurses' walking in the course of a day is from patient's room to patient's room, then there would be a good argument, in the single corridor plan, for putting the utilities at the end rather than in the centre where they separate the patients into two geographic groups.

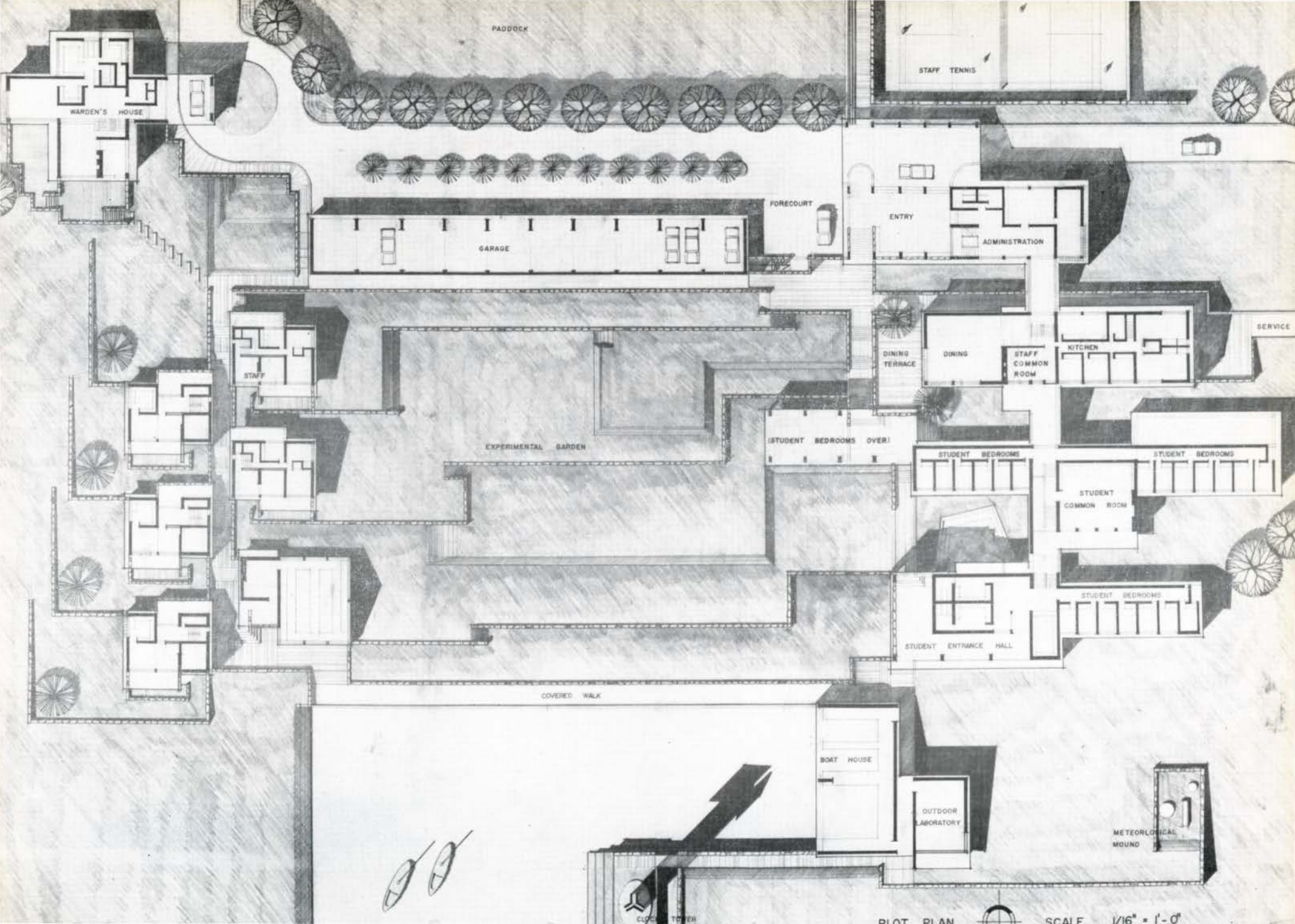
Since, however, there is no data to support such a revolutionary concept, we will break down nurses' walking distances into both elements.

1. Total one way walking distance from centre of utility area to door of each room. (In case of the wide single corridor an additional 4 ft is added in each instance to allow for extra distance from door to bed.)

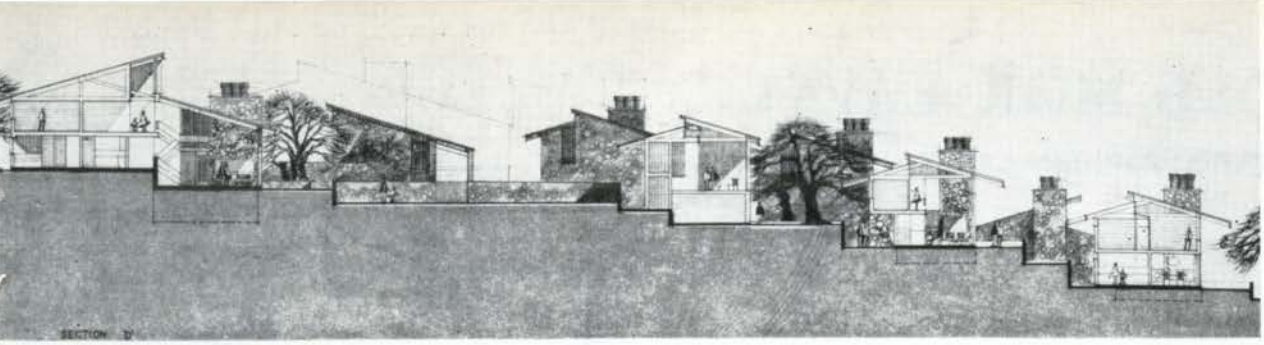
2. Total walking distance of a nurse making the rounds — that is going from patient's room to patient's room.

	SINGLE CORRIDOR	DOUBLE CORRIDOR	SINGLE WIDE CORRIDOR
FROM CENTRE OF UTILITY CORE TO PATIENTS' ROOM IN FT.	700	579	543
FROM PATIENT'S ROOM TO PATIENT'S ROOM IN FT.	296	222	248

There would appear to be good reason why the wide single corridor plan should be given serious consideration in any hospital planning program.



PLOT PLAN SCALE 1/16" = 1'-0"



A Rome Scholar

THE BRITISH SCHOOL IN ROME SCHOLARSHIP FOR ARCHITECTURE

The scholarship gives an architect of distinction and exceptional promise the opportunity of devoting one or two years to furthering his studies in the fine arts. Each year, in the various countries conferring Rome scholarships, similar awards are offered in sculpture, painting and engraving.

Candidates must be under the age of thirty and in this case the competition is open to citizens of the British Commonwealth.

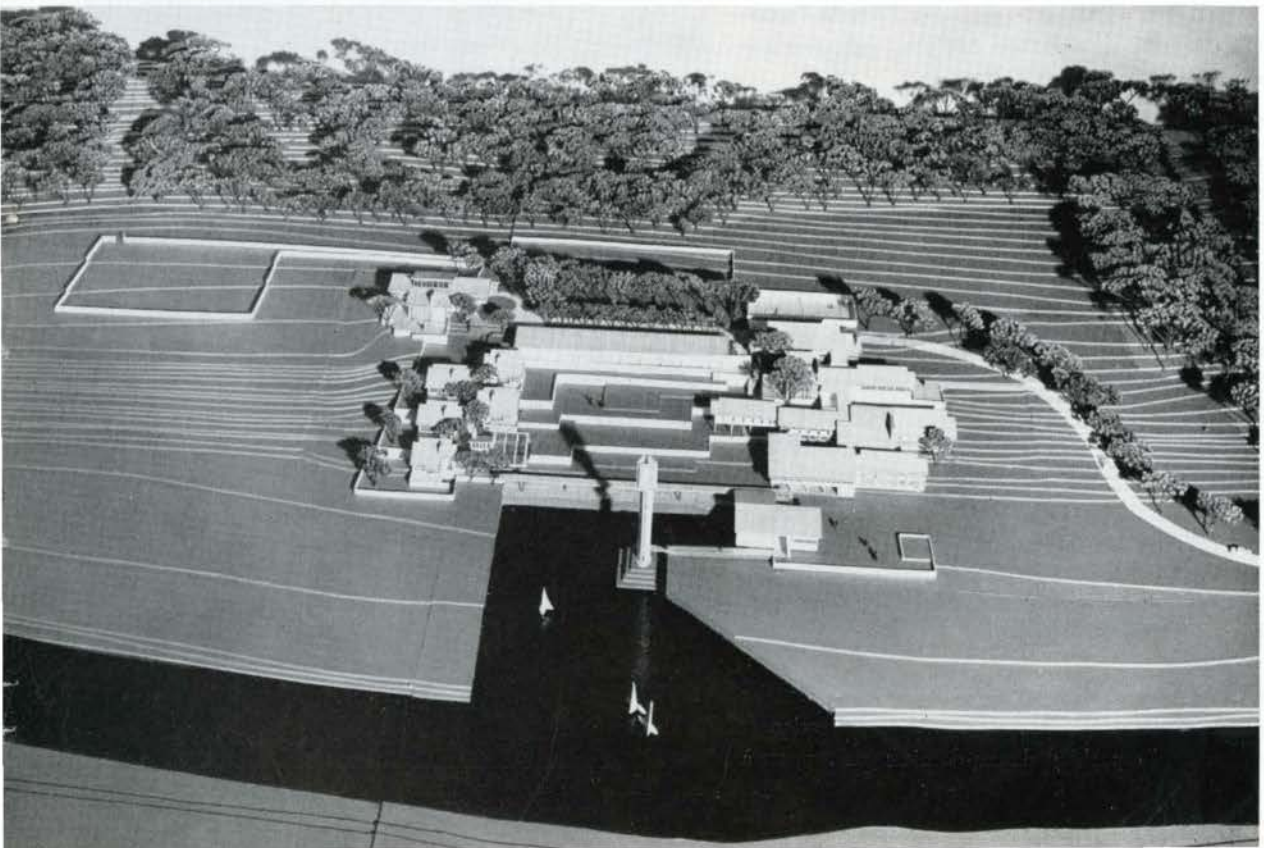
Eligible contestants, proposed by the faculty of their school, must submit a written thesis and samples of their work. Ten entries are chosen as finalists and these are assigned a design problem in mid July and given eight weeks to complete their drawings and plans which are entered under a pseudonym and judged by a jury from the RIBA.

THE WINNER

STEPHEN IRWIN, from Oakville, Ont., graduated in 1961 from the School of Architecture at the University of Toronto receiving the Toronto Guild OAA bronze medal for design. He has been employed by the firm of Gronwall & Hirsch, architects, in Sweden and travelled through Europe, the Middle East and Orient. In 1963 he received a Master's Degree from the Harvard Graduate School of Design and was afterwards employed by Page and Steele in Toronto. Mr Irwin is the first graduate of a Canadian school of architecture to win a Rome prize.

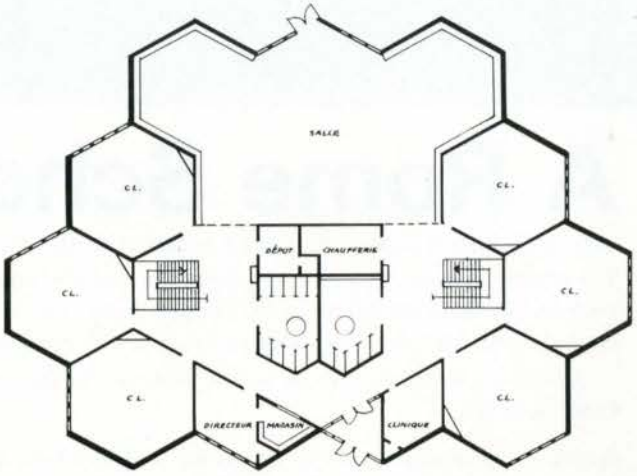
THE COMPETITION

The design problem, for the selection of a winner, was a field centre to be used as a residential adult education and research station in the subjects of ecology, zoology, botany, geography and biology. The winner's solution sets up the centre to express the research method. "Essentially man's intelligence comes from within, but his experience comes from without; that is, knowledge gathered and assimilated". Materials are slate for the floors and roofs, stone for the walls, and wood for the decking, trusses, and louvers.



ECOLE MGR LAVAL

PRESENTATION PAR JEAN GAREAU



ECOLE MGR LAVAL, CHOMEDEY, P.Q. • ARCHITECTES — DESROCHERS & DUMONT • INGENIEURS CONSEIL STRUCTURE — J. M. MARCEAU & ASSOCIES ELECTRICITE & MECANIQUE — HUZA, THIBAULT

This primary school, despite traditional relationships maintained between teachers and pupils in typical classrooms and the usual lack of facilities for teachers, emphasizes continuity of space and suggests that the articulated elevations and resulting smaller scale might relate the school with spatial experiences already familiar to the children. *J. G.*

L'école constitue, sur un aute plan que le milieu familial, une introduction à la vie sociale. Si, d'abord, elle est instituée pour communiquer les éléments du savoir d'une société, elle permet aussi à l'enfant de faire l'expérience d'un groupe social plus grand et plus complexe que la famille, face auquel il découvre sa personnalité et dans lequel il s'affirmera bientôt. L'enfant fait aussi à l'école l'expérience d'un milieu physique de dimensions telles qu'elles posent le problème du rappel de l'échelle domestique, en même temps que celui d'une discipline collective susceptible de sauvegarder la liberté de chacun.

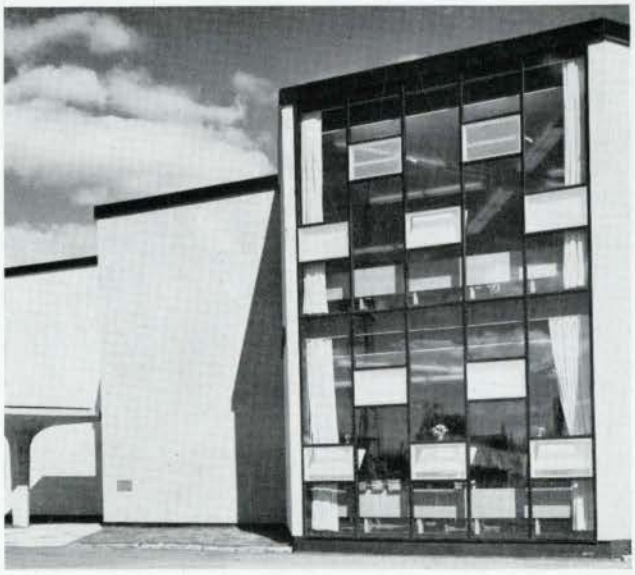
Si l'école a partagé longtemps le parti de la caserne — sa cour et l'enfilade de pièces de part et d'autre d'une circulation — et plus récemment celui d'une usine — aux élévations largement ouvertes et fonctionnelles, l'Ecole Mgr Laval suggère qu'il y ait une troisième approche.

L'examen rapide du plan de même que la visite d'une classe type rélèvent qu'il n'était pas nécessaire, bien que cela demeure nécessaire, de réformer la pédagogie ni les relations du maître et de l'élève, comme en témoignent la disposition des tableaux et du bureau du premier et des pupîtres des derniers. Le plan hexagonal retient l'avantage du plan carré, suggère la disposition en éventail des pupîtres — bien que les usagers n'en aient pas tenu compte — et il évite les réflexions gênantes de la lumière extérieure sur les tableaux. La réduction du mur mitoyen entre les classes représenterait un avantage acoustique s'il n'était annulé par les impostes vitrées pour assurer la continuité visuelle. Celle-ci est d'ailleurs réduite par la réflexion des luminaires.

L'ouverture du plan et la recherche de continuité visuelle sont tout particulièrement sensible de la salle de récréation et autour des escaliers. La position de ces derniers par rapport à

1

2



l'entrée de la cour, en diagonale de la salle, a rendue désuète la discipline qui voulait qu'on défilât en rang d'oignon à l'intérieur de l'école.

C'est de l'extérieur qu'est apparente la volonté de rattacher l'échelle de l'école à l'échelle domestique familière à l'enfant. Plutôt qu'une longue façade monotone arrêtée brusquement, chaque vue présente un groupe d'hexagones et de losanges dans lesquels on retrouve le plan et l'identification des cellules de l'ensemble: les classes. Le contraste entre ce volume discontinu et la continuité des espaces intérieurs mérite d'être notée.

L'école est implantée perpendiculairement aux deux rues qui bordent le terrain où ont été aménagés de part et d'autre un stationnement et une cour. La structure d'acier sur dalle de béton armé est composée de colonnes circulaires et de solives. Les murs de blocs extérieurs ont été peints suivant une polychromie étudiée par Mario Merola. Les vitrages doubles sont retenus pas de simples fers cornières vissés aux allèges et aux montants d'acier. Les sols sont de carreaux de vinyle. Les enduits de plâtres ont été exceptionnellement lambrissés dans la salle de récréation.

3

4

1. Vue de la salle de récréation vers un escalier. View from the hall toward the staircase.
2. Le décroché des façades. Baie vitrée type; les volets sont opaques, les convecteurs dégagés du sol. The staggered elevation. A typical window wall; opening sashes are opaque, convectors are well raised above floor level.
3. Détail de l'entrée. Detail of the entrance.
4. Dégagement du rez de chaussée. A first floor corridor.
5. Façade ouest, vue de l'entrée. West elevation, view of the entrance.

Photos by Marcel Corbeau except number 3.

5

QUESTIONNAIRE

An attempt to solve the problems inherent in school design and construction by means of a questionnaire produced the anticipated mediocre results. The Minister's Conference on School Design was a more successful means of stimulating thought and searching for basic solutions.

Listed below are some of the questions sent to architectural offices outside the province of Ontario and the answers returned. It would seem apparent that many architects are bored with questionnaires, if not with school design. However, the more seriously thought out answers discussed at the conference were covered in the summation by John Sullivan in the September *Journal* and are therefore not included here.

How much window area do you generally provide in relation to the classroom floor area, and where and how is it provided? What is the effect of orientation in your decision? 1 Small punch window; glare keeps children irritated and therefore aware. 2 Average of two per cent. We also attempt to have north and south light so south can be effectively screened. 3 Full length of room; seven ft six in. high in all standard classrooms. 4 Small windows, sliding tackboard to form blackout; 12 per cent of floor area; window four ft high; orientation no effect.

Do you see any immediate possibility of school boards accepting carpeting (with its apparently low lifetime, cost, and high acoustical value) in classrooms? 1 No. 2 Not in the near future in this area, but within about five or ten years. 3 Maybe if it's called acoustical floor covering. 4 Yes.

Are the allied arts beginning to find their place in school design? 1 Fine idea where money is plentiful enough to permit same. 2 Yes but will never reach a desirable state until legislation by public authorities makes it mandatory. 3 A good reproduction of art work is always better than a poor original. 4 Tom Thompson anyone? 5 Allied arts will never cover up poor architecture.

Should schools be designed for an established life expectancy and if so what should this be? 1 Fifteen to twenty years best; 50 years maximum. 2 Established life expectancy is architectural death.

In what area of school design do you think cost savings could be made? 1 Materials and layout. 2 Standardization of classroom components. 3 Use of two storey buildings; reduction of corridor space; elimination of unnecessary windows; flexible classrooms; prefabricated and movable units; modular materials; advanced programming and planning.

Is the traditional rectangular classroom still commonly used or are other shapes becoming more popular? 1 I have no idea what others are doing but I always use the rectangle. 2 Yes, square is best. 3 Have used most shapes. 4 Square or hexagon for teaching rooms due to site lines, distances; special usage rooms require special shapes.

Do you recommend that natural light be provided in a gymnasium or gymnasium auditorium? 1 At least one window for visual contact with the outside. 2 I do, the B.C. Department of Education does not. 3 Yes. 4 No.

Sweden and the United States sometimes provide outside covered areas (for bad weather) in recess periods. Do you have any views on this practice? 1 An excellent idea, especially for public schools; we have never replaced the old basement play areas in our modern basement-less schools. 2 Yes, we don't expect our household pets to stay out in the rain until we find it convenient to open the door.

Are green chalkboards still being widely used or are black chalkboards coming back into favour? 1 I prefer black. 2 We are still using green.

Have there been any recent developments in prefabricated building units or structural systems which have simplified building — particularly in areas where winter construction is a serious problem? 1 Lumber is no problem in B.C. coastal areas. 2 Yes, and prefabrication is the answer. 3 No comment. 4 Nothing specific as of August 3rd that I know of.

Has electric heating proven to be a feasible alternative to traditional heating methods? Have you any comments on some of the newer methods of heating which are being introduced in some parts of the country — such as all electric or heat pump versus traditional coal, oil, or gas? 1 Gas is best. 2 Electric heating feasible apart from ventilation requirements. 3 Electric heating non-existant in Saskatchewan because of costs. Natural gas or oil seems standard here.

What illumination levels are you generally providing in classrooms? 1 Varies from 70 to 100 f.c. 2 150 f.c. 3 35 to 50 f.c.

Do you rely on acoustical ceiling finishes for sound absorption or do you find other approaches more satisfactory? 1 Other approaches. 2 We mix. 3 Most of the time.

Have you tried modular construction on any recent school projects and, if so, were you pleased with the method and results? 1 No. 2 Our schools have always been of modular construction. 3 Yes.

Have you come across any interesting new materials or methods or interesting uses of traditional materials? 1 Not recently. 2 Yes everyday. 3 In every issue of all architectural magazines.

Are there any significant lessons to be learned from the recent federal assistance to technical school programs? 1 Architects went wild — money was wasted at every turn. 2 Yes, it works and is a boost to the entire construction industry and accelerates progress.

Are there any noticeable trends developing with regard to general concepts of school planning? 1 Larger flexible classrooms for group teaching with TV outlets in all rooms. 2 Yes, group and individual tuition instead of 35 pupil classrooms which revised the entire school plant concept. 3 Not much here in Saskatchewan. 4 Yes, fashions and taste as always. 5 Not in Alberta. 6 Integrated or team teaching. 7 Windowless rooms and compact schools.

Do school boards recognize the need for proper site development and landscaping and are sufficient funds being allocated for this purpose? 1 No, that is generally speaking. The architect usually has a fairly tough time advising the board that in planning the school the whole site should be considered. A board should employ their architect before they choose a site.

Are architects being inhibited by unreasonable regulations imposed by the various authorities having jurisdiction in this field? 1 The Marshal's office (referring to the Fire Marshals in Ontario) think they are the best thing that has happened to schools, but they have eliminated the use of any material other than painted concrete block. Yet apparently Ontario has had no fatality in a school fire since World War One. 2 Architects are always inhibited, to some degree, by regulations — more so by unreasonable ones.

Architects frequently complain about the lack of direction in educational policy, particularly at the secondary school level. Can this be corrected? 1 Perhaps by joint conferences. 2 Continuing research and the collation of all research data could contribute to the development of a consistent policy and program in the design of the educational plant.

Do you feel that architects designing schools should have an opportunity to discuss design with teachers rather than working through intermediaries such as school boards or superintendents. 1 No, utter chaos, we tried it. 2 Yes, but be careful. 3 Yes, we often do, also janitors.

Are architects being given sufficient time to fully develop a solution for each school project? 1 Architects are competing with the dry cleaning business — in by nine and out by five. 2 More time would generally produce better results.

Is it your opinion that boards are going to recognize adjustments in design concepts brought about by changes in educational methods? 1 Yes, if a logical background is given to them. 2 Very slowly; country school boards are dreadfully conservative. 3 No sign of major adjustments in Alberta. 4 One would expect so. 5 There are no educational methods, only a jungle of opinions.

Do you detect any revival of interest by school boards in school design as opposed to the mere provision of school facilities? 1 Yes, as a result of municipal competition. 2 Boards are usually influenced by costs. 3 Only to a marked degree by the separate school boards. 4 School boards are generally groping and hoping for better design. Architects are not. The main entrance lobby and canopy are seemingly the point where design is ended.

Have you any other comments on administrative questions which might be of interest? 1 The practice of some boards of rotating architects is not necessarily a good way to get the best designs; good un-tried architects are getting by-passed. Strictly limited competitions (with all entries paid) for major jobs might be a way out. 2 Architects would like to have some control over the choice of school furniture and furnishings so that they may achieve a unified and coherent design.

TECHNICAL COLUMN

Edited by Douglas H. Lee

ROOFING INSPECTION

by Wyndham J. Freeman

Mr Freeman, a well known roofing consultant from Toronto and Kitchener has inspected and advised on the construction of roofs throughout Canada. He was asked to comment on the subject of roofing inspection as it applies to architectural practice in this country.

It is understandable that today's architects are vitally interested in the subject of roof inspection. When the roof membrane fails, who is at fault? The roofing contractor? The general contractor? The manufacturer of one or more of the materials contained in the roof? Or were the design drawings and specifications at fault? The architect is usually faced with establishing responsibility for a failure and it is he who invariably initiates an investigation because the owner of the building, seeking restitution, looks to its designer for an explanation.

The writer has investigated a large number of roofing failures and the costs involved in correcting many of these only serve to confirm the principle that with roofing faults, as with sickness, "Prevention is better than cure". Therefore, besides being a means to determine the cause of failure, roofing inspection during the course of construction is a valuable and necessary activity in achieving a sound roof in the first instance. The Canadian Roofing Contractors Association has recommended procedures for the inspection of roofing membranes during the application stage; however the literature published on this subject over the past two years still seems to be inconclusive.

Important as inspection is during roof application, it should be emphasized that inspection, as such, is not the sole issue. Surely nothing is gained by enforcing, through inspection, quality workmanship and correct adherence to specifications and details when both the specification and the details may be at fault. The architect should be confident that the roof which he has designed and the materials specified for it meet the standards and performance required. If he does not have this assurance, he should seek the advice of a roofing expert, one who will either compile or check the specification and check the drawings for omissions and errors. The need for such consulting service may be confirmed by the fact that of some 300 roofing and sheet metal specifications compiled by the writer over the past two years, no two are alike. Its importance is underlined when one realizes that both the vapour barrier and the roofing insulation, the very foundations of the roofing membranes, are generally excluded from the roofer's guarantee. The great development in new roofing materials, application methods, and mechanical aids have caused more architects in recent years to enlist the services of a roofing consultant in the design of their buildings.

This writer firmly believes it is essential that the roofing consultant commissioned to provide guidance in the preparation of the roofing and sheet metal specification and the design details also be retained to inspect the work in the field. Only in this way can he accept full responsibility for the success of the roof. Inspection of the roof application by a party not concerned in the earlier stages is less than desirable; ideally, the roofing consultant should be asked. He should be prepared to check and finalize the roofing and sheet metal

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specification, to submit recommendations for the improvement of either the performance or economy of the product, and to carry out inspection and testing programs in the field as the work proceeds. "Cut Tests" are a part of such an inspection and testing program and should be carried out during application of the felts to maintain control over the roof construction and to establish corrective measures where necessary. Cut tests from all membranes are frequently necessary when investigating roofs which have failed.

Consultants such as described herein have been referred to as "Roofing Consultant Technologists". What are their qualifications? Foremost, they must be conversant with all phases of the bituminous built-up roofing, hot process mastic asphalts, and rolled asphalt paving industries; they must possess the ability to give counsel relating to specifications and drawing details, and advise on the nature and composition of all manufactured materials. They must have extensive knowledge of the techniques for the application of all forms of roofing and pavings, and be able to ensure, through their inspections, that all aspects are being adequately provided.

There is no course of studies or special training which qualify a person to become a roofing consultant technologist. Qualified consultants in the past have usually been people with considerable experience in a particular part of the building industry — experience which also gives them an understanding of estimating, labour and material cost analysis, manufacturing techniques, and laboratory work of a routine nature. The independent roofing consultant is relatively new to the building scene. His career was launched by the disappearance from the building scene of the bonded roof, and fostered by the fact that roofing problems were increasing in number and complexity as new roofing materials were developed and new requirements had to be met.

This writer looks forward to the day when an association is formed of roofing consultants; members of technical, administrative, or scientific organizations; and roofing material manufacturing concerns. Such an association could serve as a much needed link between the national associations, manufacturers, and contractors and could undertake studies, initiate research programs, and organize information on roof construction and materials. With such an association there is no question that the needs of the architects and engineers, as they relate to roofing, would be better met.

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Floor tile kit including glazed and unglazed ceramic mosaic and crystal glaze line. *Frontenac Floor & Wall Tile Limited.*

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Gyproc #100 Demountable System; a movable partition system, available in any module between 2 ft and 6 ft. *Domtar Construction Materials Ltd, 1 Place Ville Marie, Suite 2210, Montreal 2.*

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Only draperies with Rovana as the warp offer so many tangible advantages—for long life—beauty—economy.

THESE ARE THE ADVANTAGES: ■ permanently flame resistant ■ resistant to cracking, scratching or splintering ■ hand or machine washable ■ dry cleanable ■ colour fast ■ variety in patterns ■ resistant to solvents and chemicals ■ mildew proof ■ odourless ■ non-allergenic ■ weathers well ■ moderate in cost

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DR-294

Line of electric baseboard heating equipment; lengths from 28 in. to 96 in. at both 250 and 187 watts per ft. *Markel Electric Products, 23 Lewis Street, Fort Erie, Ont.*

Johnsonite Safe-T-Grip, a rubber stair tread with abrasive strips; made by the Johnson Rubber Company. *Jerry Smith & Co. Inc., Box 302, Kitchener, Ont.*

Miller System, dry wall construction, insulation with Styrofoam. *Dow Chemical of Canada Limited, Toronto.*

Circuit breakers as standard equipment on all heavy duty ranges and 2000 Series ovens. *Garland Commercial Ranges Limited, 41 Medulla Avenue, Toronto 18.*

Polyvinyl Chloride Swivel Neck Faucet and PVC Fittings. *D. J. Munro Sales Limited, P.O. Box 92, Station T, Toronto 19.*

Yellow Jacket, a bright yellow woven glass reinforcing membrane composed of glass fibre yarn saturated with synthetic resins; to incorporate into Flintkote protective coatings. *Flintkote Company of Canada Limited.*

LITERATURE

Booklets on architectural aluminum products titled: Rod and Bar; Sheet; Tubing and Pipe; "Slimline" Handrail; Extruded Shapes; Specification for Finishes; Window Sills; Gravel Stops; Care During Construction; Care in Service; Utility Sheet in the Building Industry; *Aluminum Company of Canada Limited, 1 Place Ville Marie, Montreal.*

Bulletin No. 150 describing the Cambridge Filter Corporation Hi-Cap filter. Designed to fill the gap between low efficiency panel and high efficiency air filters. *Douglas Engineering Co. Ltd, 124-132 Cartwright Avenue, Toronto.*

A manual of standards providing a text of qualities, methods, and workmanship requisite to the production of architectural millwork. *Millwork Contractors Association, 1644 West Broadway, Vancouver 9.*

Complete information on Best Universal's line of standard, removable core locks. *Best Universal Locks Ltd, 2537 Wharton Glen Avenue, Cooksville, Ont.*

Information sheets on Cantilever Library Shelving. *Sunshine Office Equipment Ltd, Waterloo, Ont.*

Catalogue on Tico Antivibration Machinery Mounting Pads, describing standard items and applications. *Electrovert Ltd, 3285 Cavendish Blvd, Montreal 28.*

Data sheets on Bell & Gossett Duo-Flo control fitting aids for the installation of primary and secondary hot water heating systems. *S. A. Armstrong Limited, 1400 O'Connor Drive, Toronto 16.*

Information available for specification writers on the use of Osmose Pressure Treated Lumber. *Osmose Pressure Treated Wood Products (Ontario) Ltd, Bancroft, Ontario.*

Monthly product information sheets. Bulletin No. 5, on laminated wood roof shapes. *Amfab Products Ltd, Burnaby, B.C.*

Brochure on Troffaline Fixtures, RAIC-AIA File No. 31-A troffer system for inverted T-bar, plaster, and snap-in T-bar ceilings. *J. A. Wilson Lighting Ltd, 2200 Lakeshore Blvd West, Toronto 14.*

Technical and descriptive brochure titled Arcadia Elan Heavy-Anodized Finishes for Architectural Aluminum, expanding the Elan, high chroma colour anodizing process. *Northrop Architectural Systems, 5022 Triggs Street, Los Angeles 22, Calif.*

Catalogue No. 91-381 describing Acme Flow-Temp (C Series), air-conditioning for apartments, hospitals, hotels, motels, offices, and residences.
Catalogue No. 91-519, Acme Flow-Cold Packaged Liquid Chillers (Model RM); 40 to 100 ton capacities, for industrial and commercial air-conditioning and refrigeration. *Aldite Corporation Ltd, 22 Howden Road, Scarborough, Ont.*

Bulletin detailing, in table form, modular and Ontario brick and block coursing dimensions; titled Standard Coursing Tables. *General Concrete Ltd, P.O. Box 46, Postal Station C, Hamilton, Ont.*

Brochure, RAIC-AIA File No. 4-C on Ritecure, a membrane for curing concrete. *G. F. Sterne & Sons Limited, Structural Sales Division, Brantford, Ont.*

Catalogue C100 giving coverage of all types of metal accessories for concrete construction. Includes lifting devices for precast beams; pick-up inserts for tilt up concrete walls. *Superior Concrete Accessories, Canada Ltd, 230 Belfield Road, Rexdale, Ont.*

Twenty-eight page bulletin, V106-R1, describing Rockwell Permaturn valves for water and waste services. *Rockwell Manufacturing Company of Canada Ltd, Municipal and Utility Division, 11200 Sherbrooke Street E., Montreal.*

Brochure featuring Royalmetal Viscount 65, free form lounge seating. *Royalmetal Corporation Limited, Galt, Ont.*

Brochure titled Specifying Carpet, RAIC File No. 28E. *Toronto Carpet Manufacturing Co. Limited, 1179 King Street W., Toronto.*

Booklet titled Fiberglas Reinforced Plastics, Selection and Design; includes diagrams and tables. *Fiberglas Canada Limited, P.O. Box 4002, Toronto 7, Ont.*

Brochure including specifications on the Polyhedron Chandelier; available in various tints of translucent glass. *AKA Furniture Co. Ltd, 550 Sherbrooke Street W., Montreal.*

Brochure No. Bu-107C, on Last-O-Roof, a membrane roofing with "non-bituminous plastic elastomeric materials".
Folder IN-393C, on Microlite Duct Liner, a Canadian made glass fibre material used to mute noise from fans and rushing air.
Data sheet No. TR-290C, on Transitile, a steam cured, asbestos sheet cladding material for commercial and industrial buildings. *Canadian Johns-Manville Co. Ltd, 565 Lakeshore Road East, Port Credit, Ontario.*

Seventy-two page catalogue on decorator lighting fixtures. *John C. Virden Limited, 19 Curity Avenue, Toronto 16.*

Brochure with price lists on drafting machines, drafting tables, and reference tables. *McVittie-Reeve Ltd, 895 Wilson Avenue, Toronto.*

Brochure, AIA File No. 35-P-1, on Kool-Shade for solar heat and glare control; consists of tiny fixed louvers of bronze with anodized aluminum rails. *Cresswell Pomeroy Ltd, Leon Harmel Street, Granby, P.Q.*

Brochure titled Beauty in Plywood — Canadian Birch, RAIC File No. 19E-9. *Canadian Hardwood Veneer & Plywood Bureau, Timber House, 27 Goulbourne Ave, Ottawa 2.*

Technical data and descriptive information on the use of sprayed "Limpet" Asbestos for plant machinery and equipment insulation. *Atlas Asbestos Co. Ltd, Montreal.*

Booklet on Fabri-Bond, RAIC-AIA File No. 4-E-2; a welded wire reinforcement fabric for bonding wire to concrete.
Brochure on hollow structural steel tubing in round, square, and rectangular shapes. *The Steel Company of Canada Limited, Advertising Department, Wilcox Street, Hamilton, Ont.*

Bulletin titled Maysteel "Hospital-Designed" Casework.
Catalogue No. 115FJ describing a complete line of Axial Flow Fans. *Canadian Armature Works Inc., 6595 St Urbain St, Montreal 14.*

Folder titled Drywall, to accompany the company's 3M Construction Manual. *Minnesota Mining and Manufacturing of Canada Limited, London.*

Bulletin and specifications on the Canadian manufactured FireHOOD prefabricated, metal, conical fireplaces. *FireHOOD Manufacturers Ltd, 1826 West 1st Avenue, Vancouver 9.*

Booklet titled Genseal, on glazing gaskets, AIA File No. 17-J. *The General Tire & Rubber Company of Canada Limited, Industrial Products Division, Welland, Ontario.*

Cost comparison guide for floors, RAIC-AIA File No. 23. *Terrazzo, Tile and Marble Association of Canada, 1727A Bayview Avenue, Toronto 17.*

Bulletin WCC. IE describing Munck window cleaning equipment. *Munck Canada Ltd, 10900 Hamon Street, Montreal 12.*

NEW OFFICES

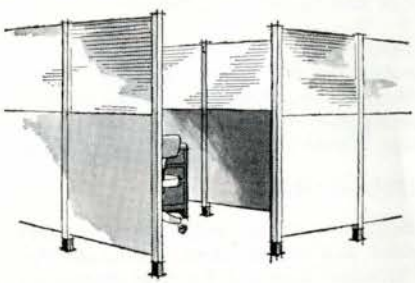
Omega Marble, Tile and Terrazzo Ltd, a Pigott Construction Company Ltd subsidiary will be in production near Perth, Ont.; a commercial marble quarrying operation. *Pigott Construction Co. Ltd, Hamilton, Ont.*

New plant for the production of precision aluminum extrusions. *Specialty Extruders Limited, Aurora, Ont.*

New office for the *Clay Brick and Tile Institute, Suite 705, Shell Tower Building, 1255 University Street, Montreal 2.*

New plant for the manufacture of adhesives, primarily for flooring and construction trades, in Brantford, Ont. has been announced by *Daymond Company Limited, and the Macco Chemical Company.*

LOCKERS



FREE STANDING
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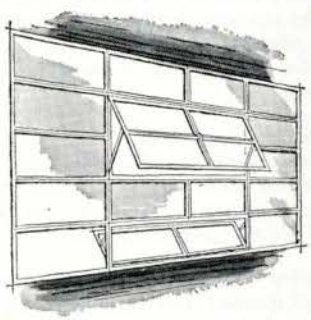
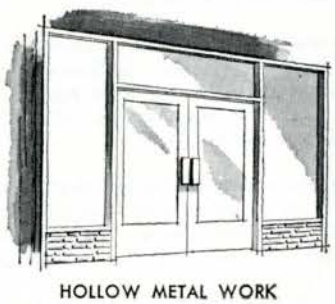


STEEL OR ALUMINUM
WINDOWS



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