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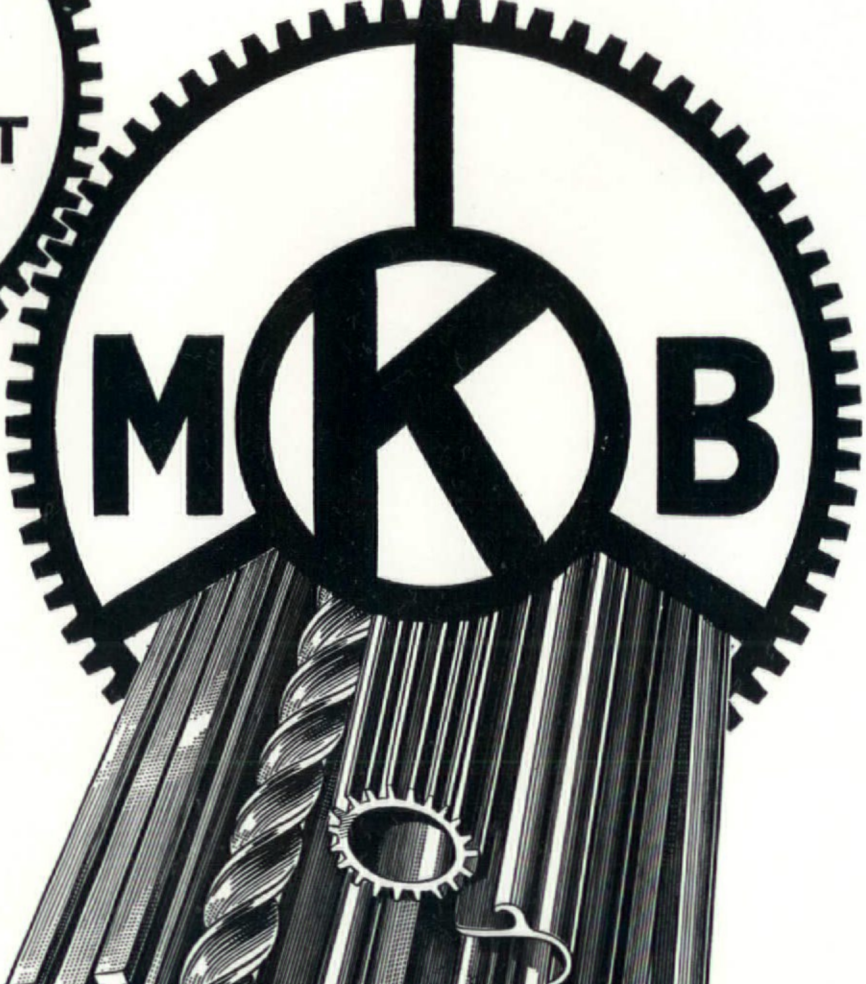

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Volume XXXIV
July 1964

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CONTENTS

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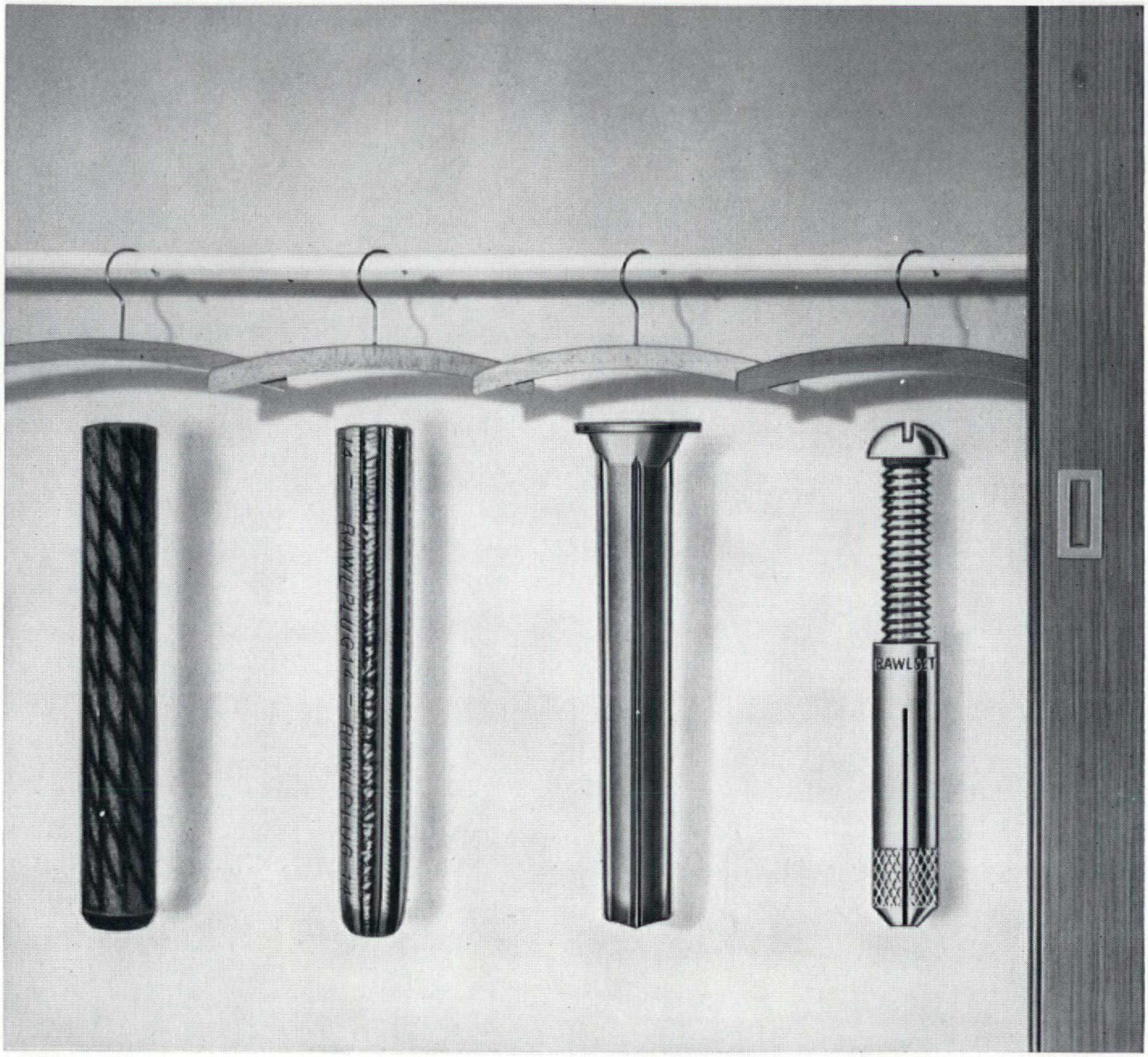

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Book notes

World architecture
Edited by John Donat. Studio Books. £4

This is the first edition of a publication that is intended to be an annual review of architecture. The inaugural volume presents recent works from 26 different countries, in form of photographs, plans, diagrams and explanatory text.

The book is divided into sections according to countries, each section carrying an introductory essay. The form of these essays varies from individual to individual. In most instances the essays are by contributing editors, while in a number of cases leading architects have outlined their own particular approach to the problem of architecture. On the whole the personal statements of approach seem to have produced the most interesting reading for professionals. Nevertheless national resumés are probably more to the point, for as the editorial maintains, the prime intention of the work is to bridge the gap between architect and public.

This is an extremely promising first publication. All the same, if it is to attract an intelligent lay public, perhaps it should attempt a more sensuous presentation of photographic material.

Zodiac II
Editor Bruno Alfieri for Olivetti.
Zwemmer (London agent).

The volume is introduced with an essay in English by S. Gideon on 'Architecture in the 1960s: hopes and fears'.

Brazil occupies quite a large proportion of the following pages, with articles on Brasilia, S. Paolo's university city, and Sergio Bernardes beautiful house in Rio.

Long overdue tribute is paid to Italy's brilliant architect-designer Ettore Sottsass Jr. in a fully-illustrated feature. Regrettably, the text is only given in Italian. (This goes for most of the other features in this edition. Has Zodiac ceased to aim at such an international market as hitherto?).

The contemporary architectural tradition in Italy is examined in its relation to the work of Ludovico Quaroni by Manfredo Tafuri, and recent work of Angelo Mangiarotti is illustrated.

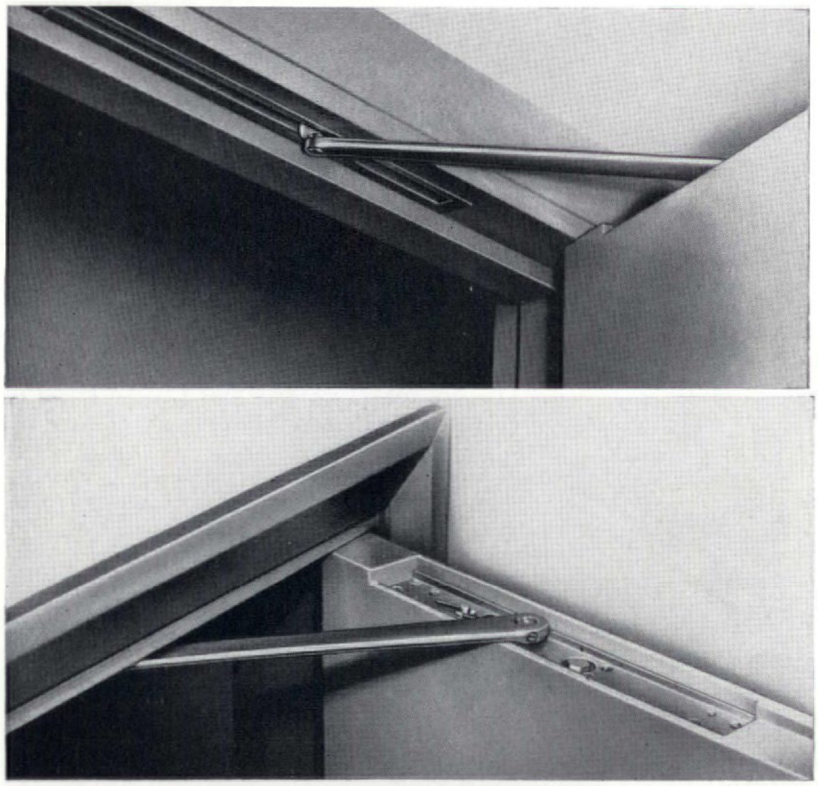
Motif II
Edited by Ruari McLean . Shenval Press Ltd.
£1 2s. 6d.

Modern sculpture features in Motif II in the work of Kenneth Armitage, with excellent photos of his 'Prophet', 'Sybil' and 'Pandarus' series of strange and evocative creatures. (Londoners can see 'Pandarus 8' in the current Gulbenkian exhibition at the Tate). Paolozzi robots adorn the cover.

Lettering, an architectural preoccupation, is illustrated and discussed by James Mosley in a study of English vernacular, and by C. Banks and J. Miles analysing the new lettering they have designed for London's Zoo.

Practical pottery and ceramics
Kenneth Clark . Studio Vista Ltd. 30s.

A recent title in the Studio Handbook series, the book deals with every aspect of the design and making of pottery and ceramics, and is liberally illustrated both in colour and black and white.



Illustrations, top, show nylon roller which ensures smooth and easy action and, bottom, how closer is neatly housed in top of door.

SfB (32)
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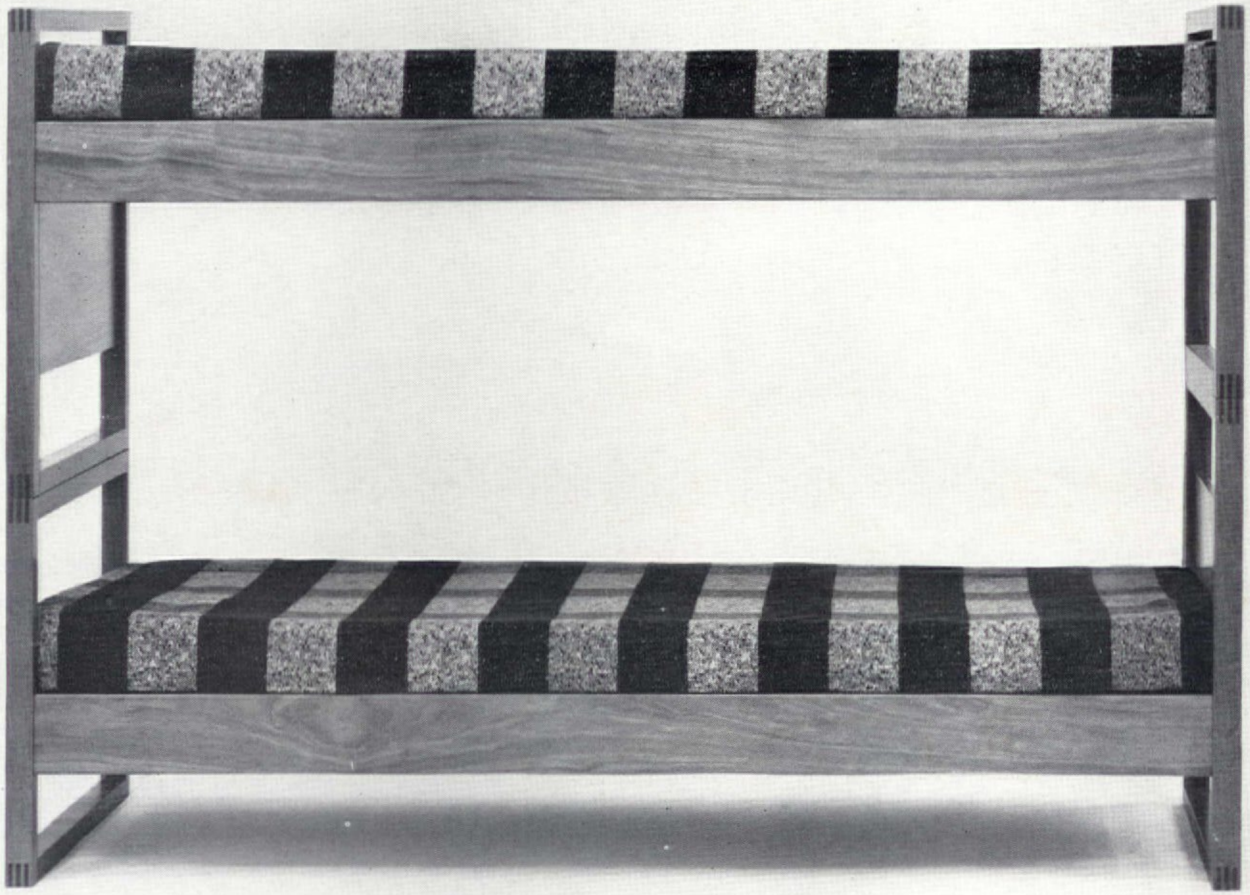

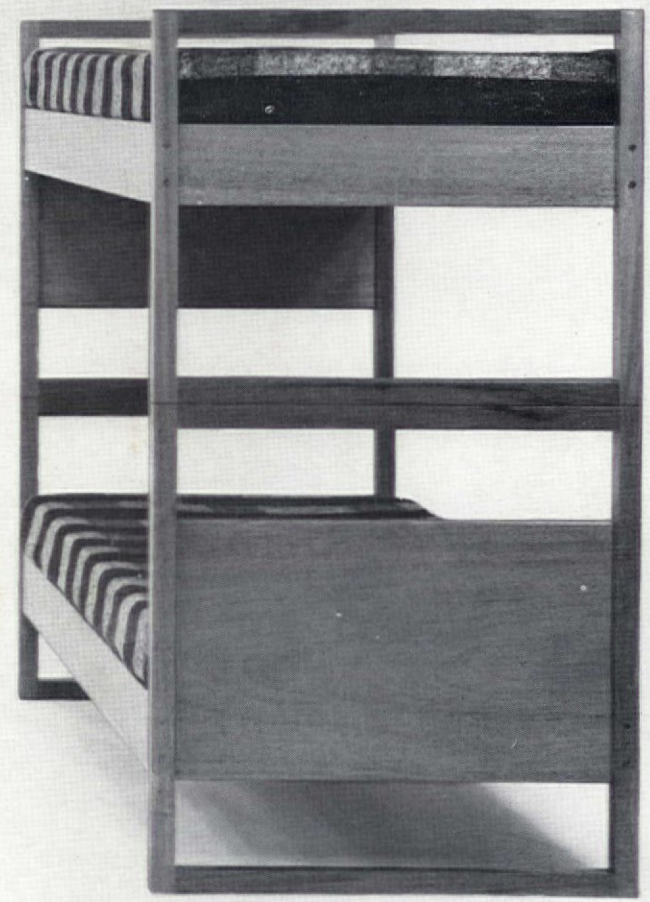

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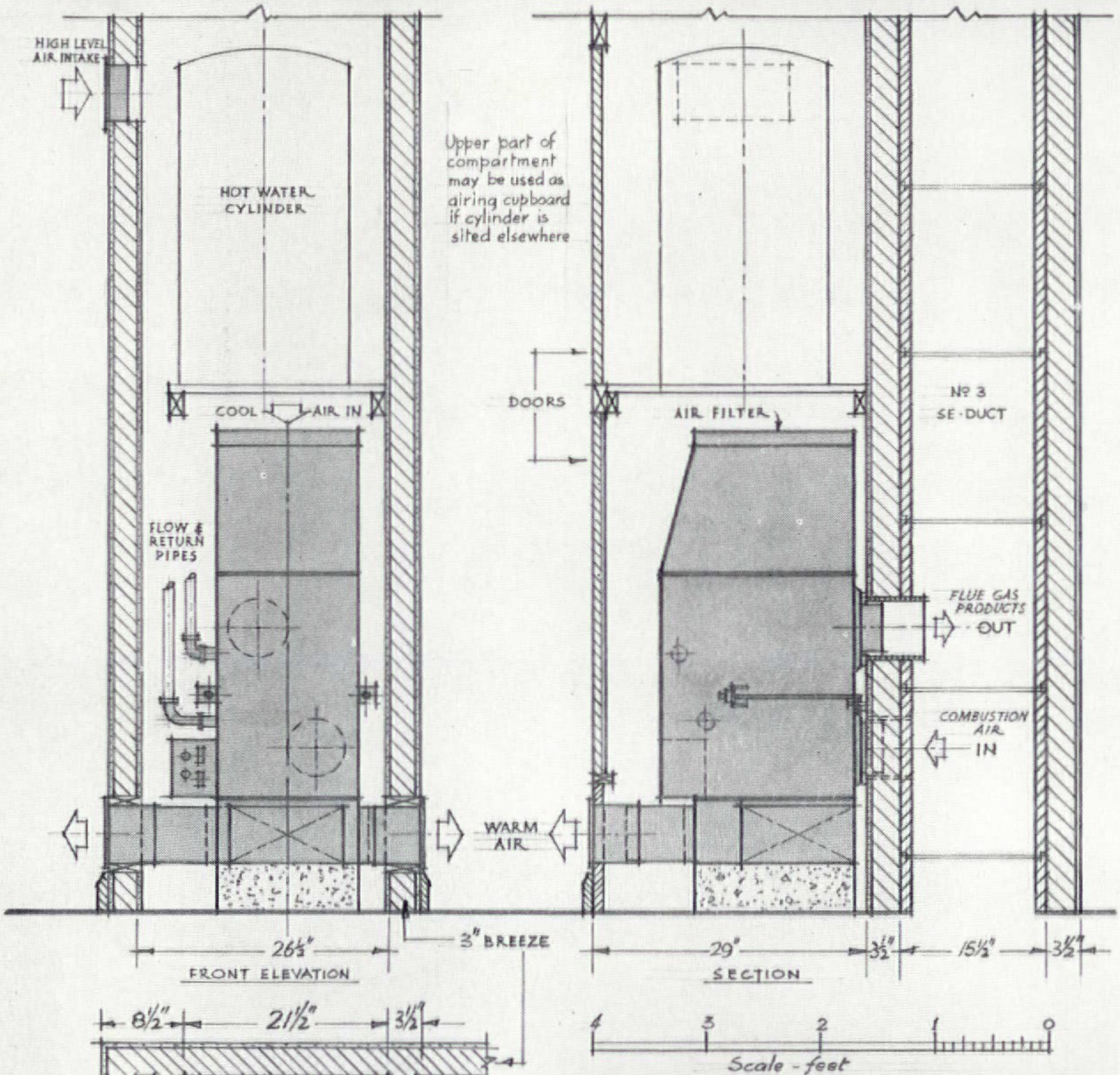

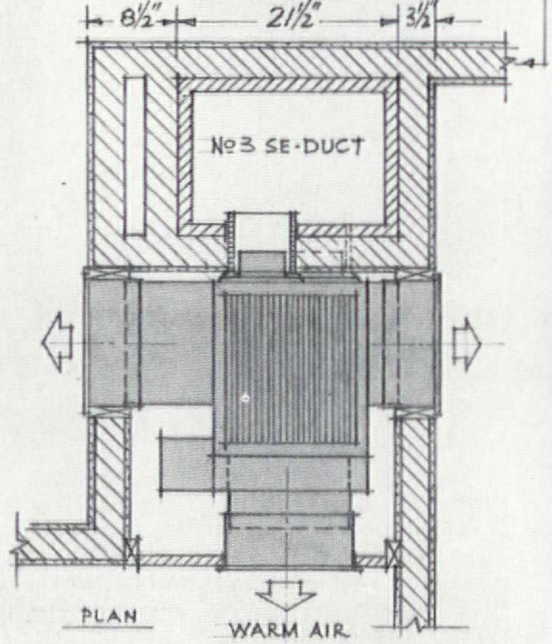

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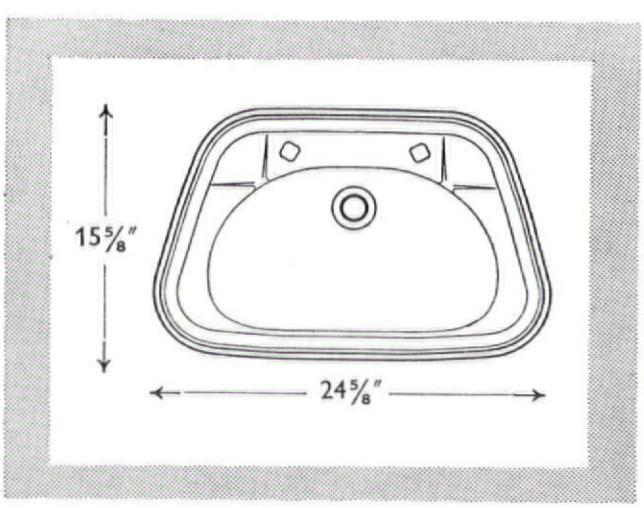

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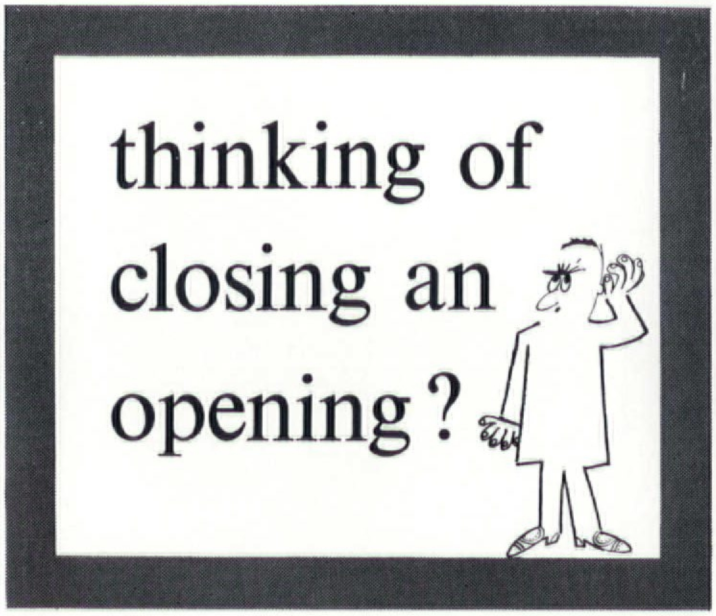

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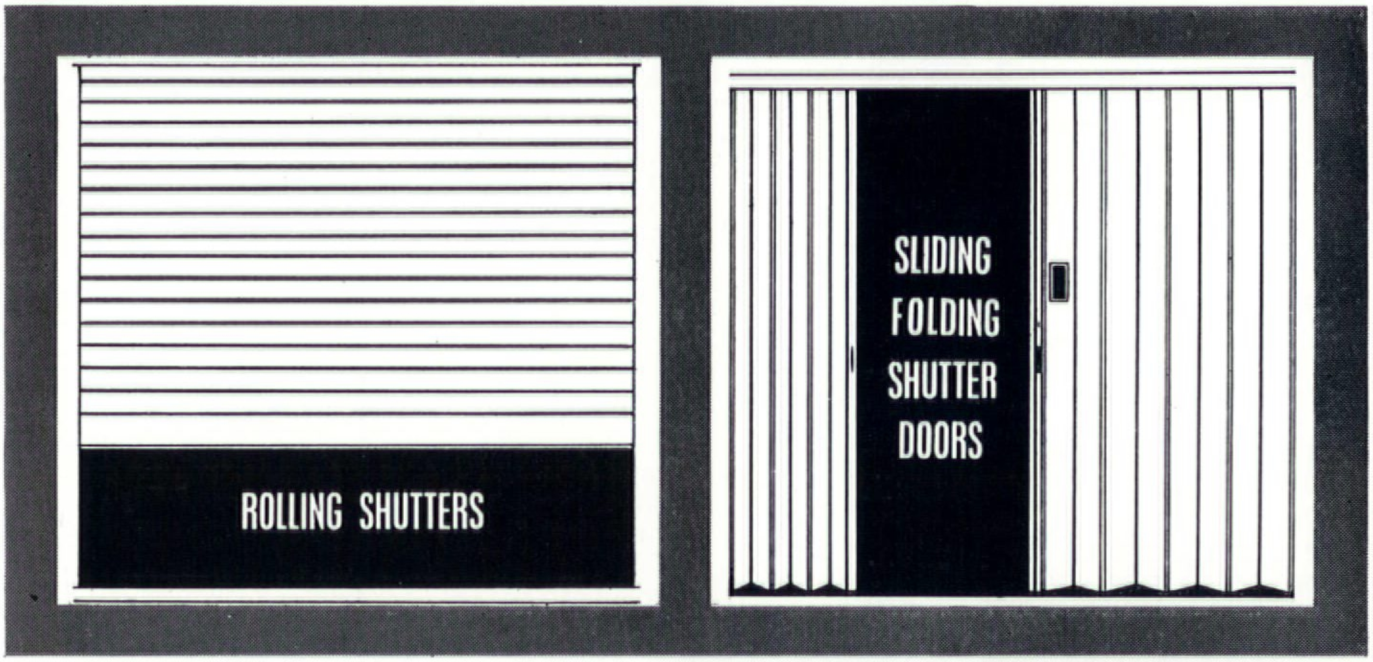

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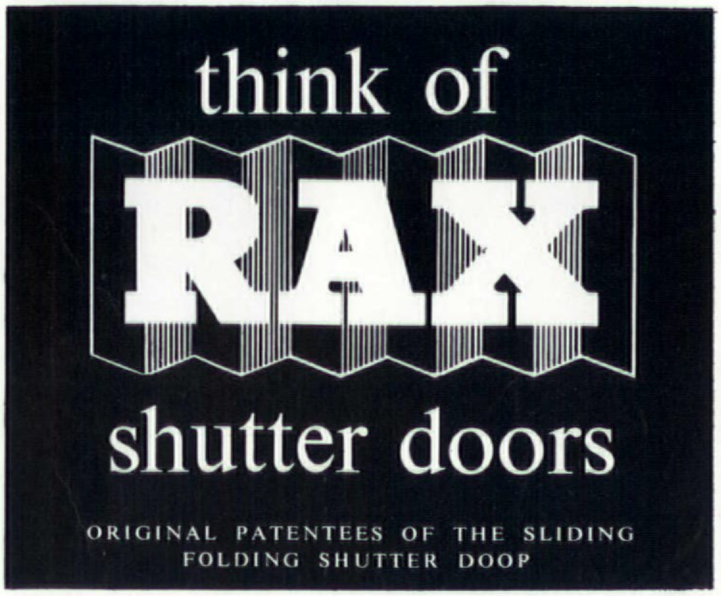

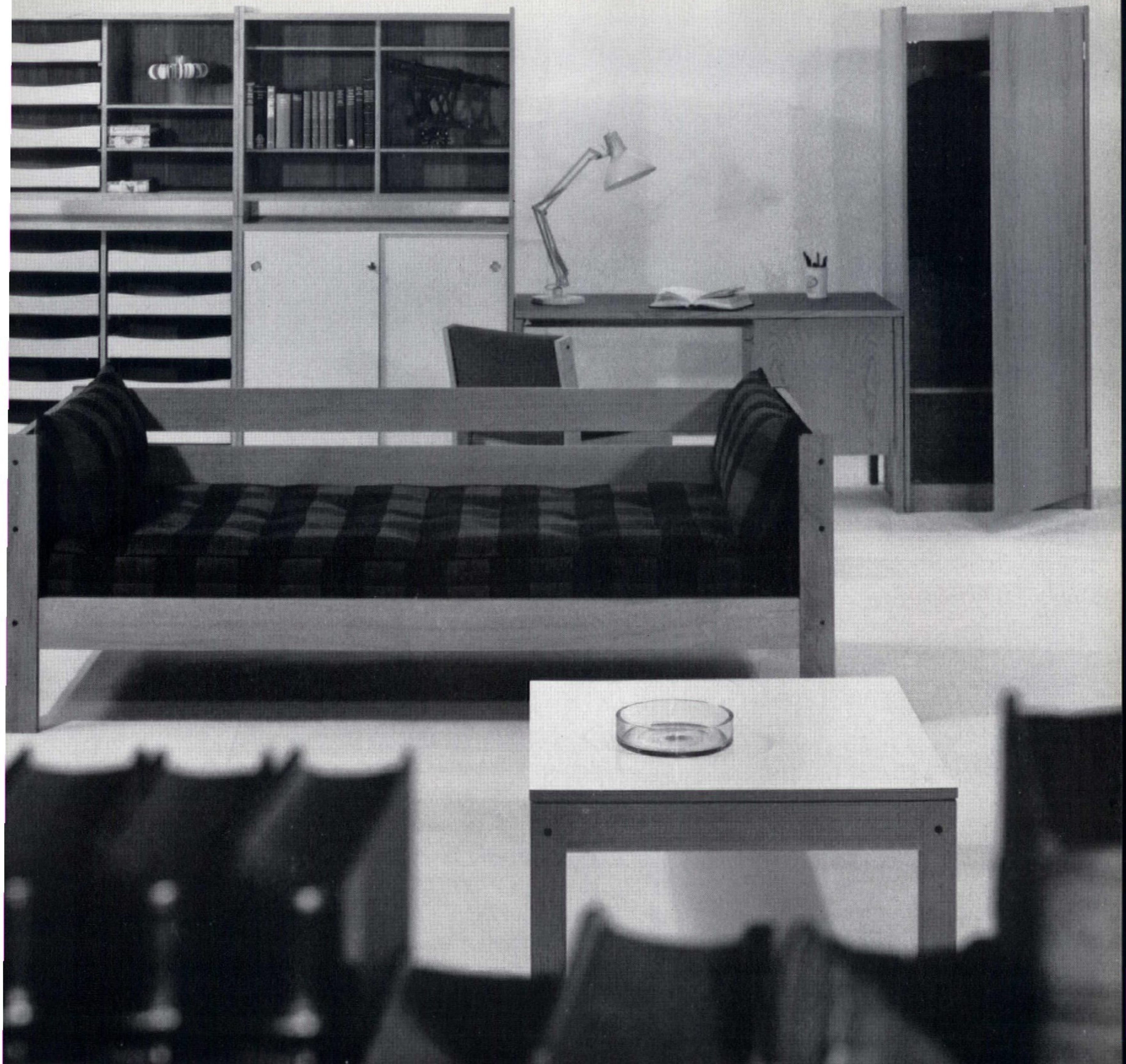

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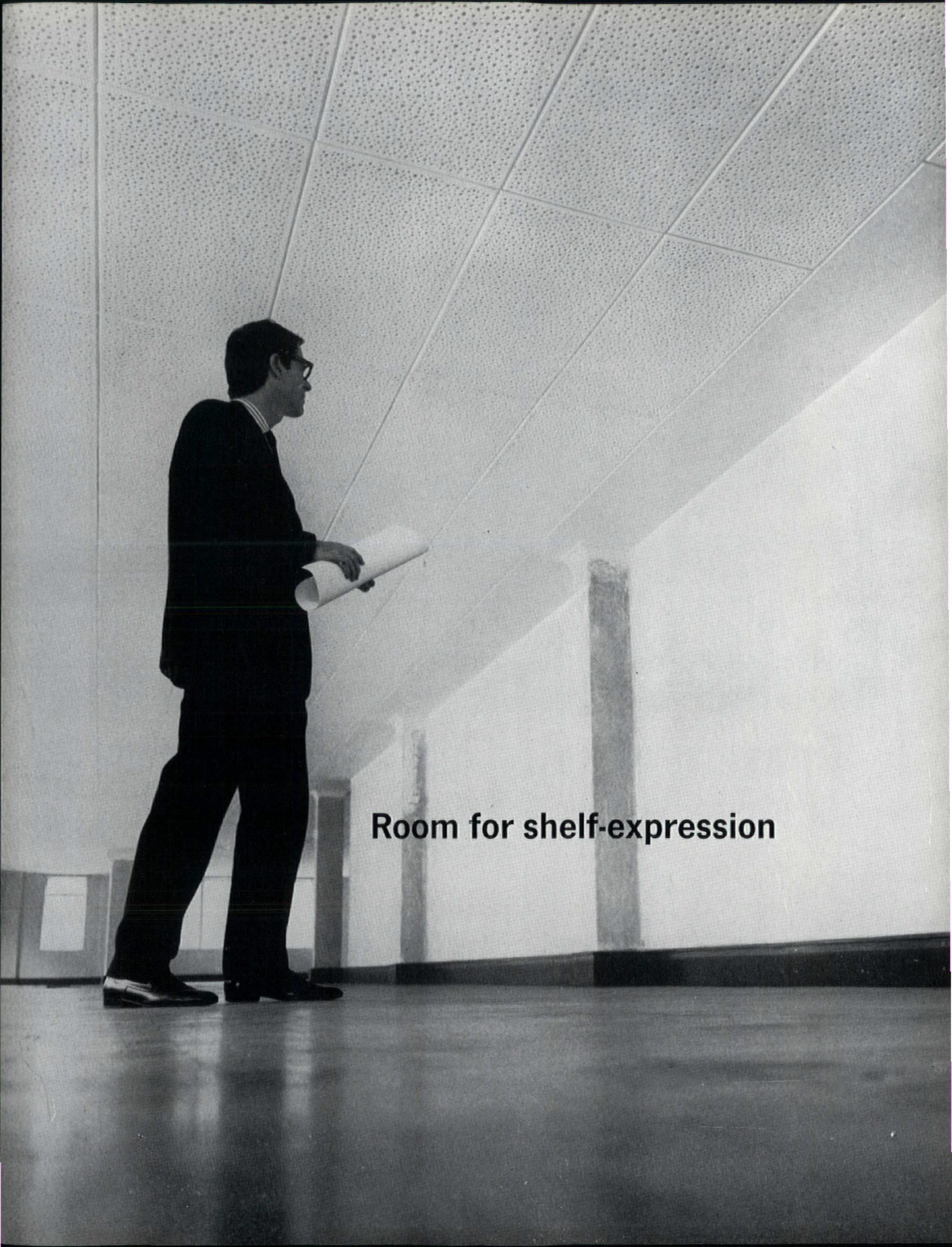
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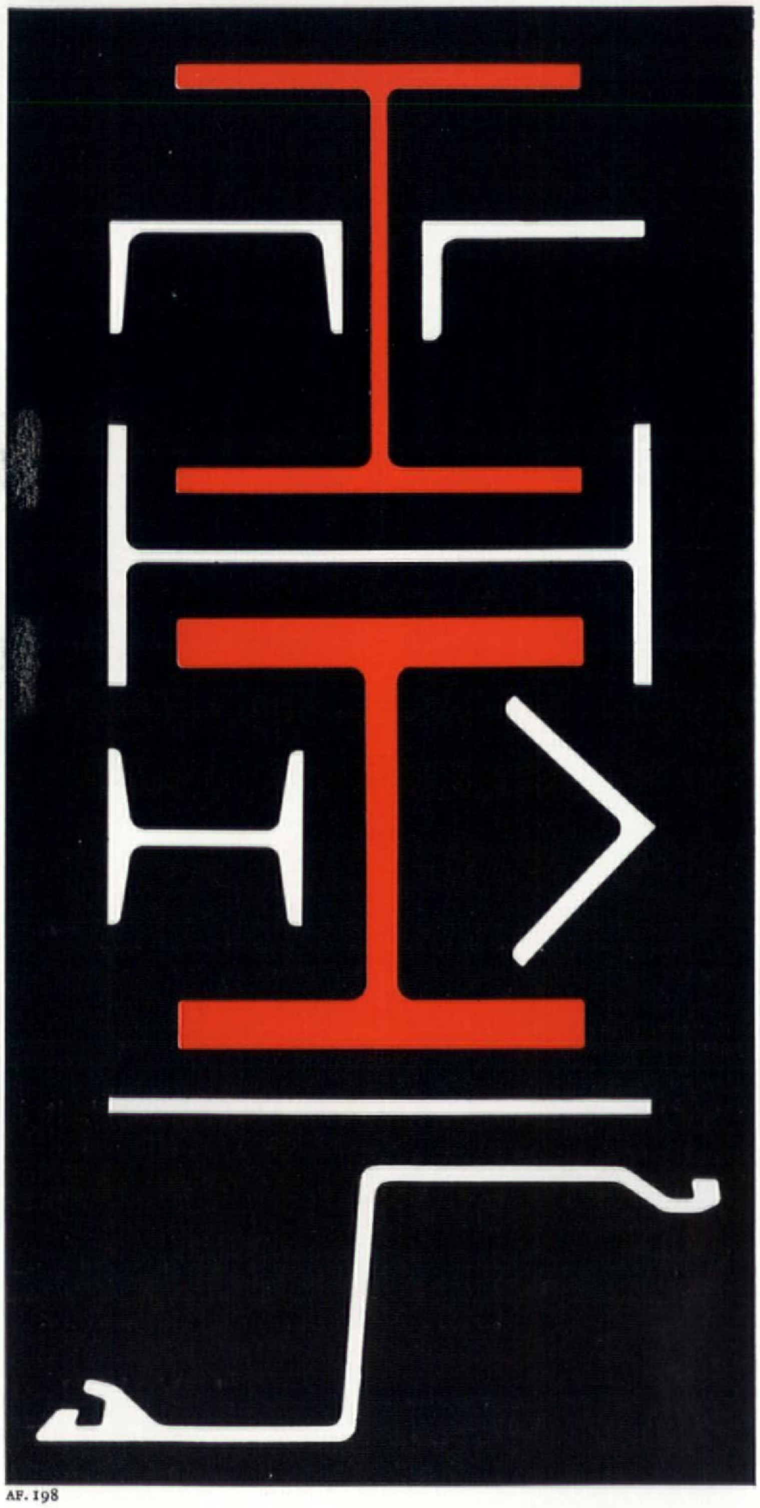

AF. 198

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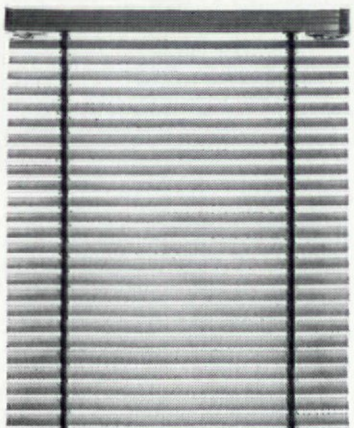

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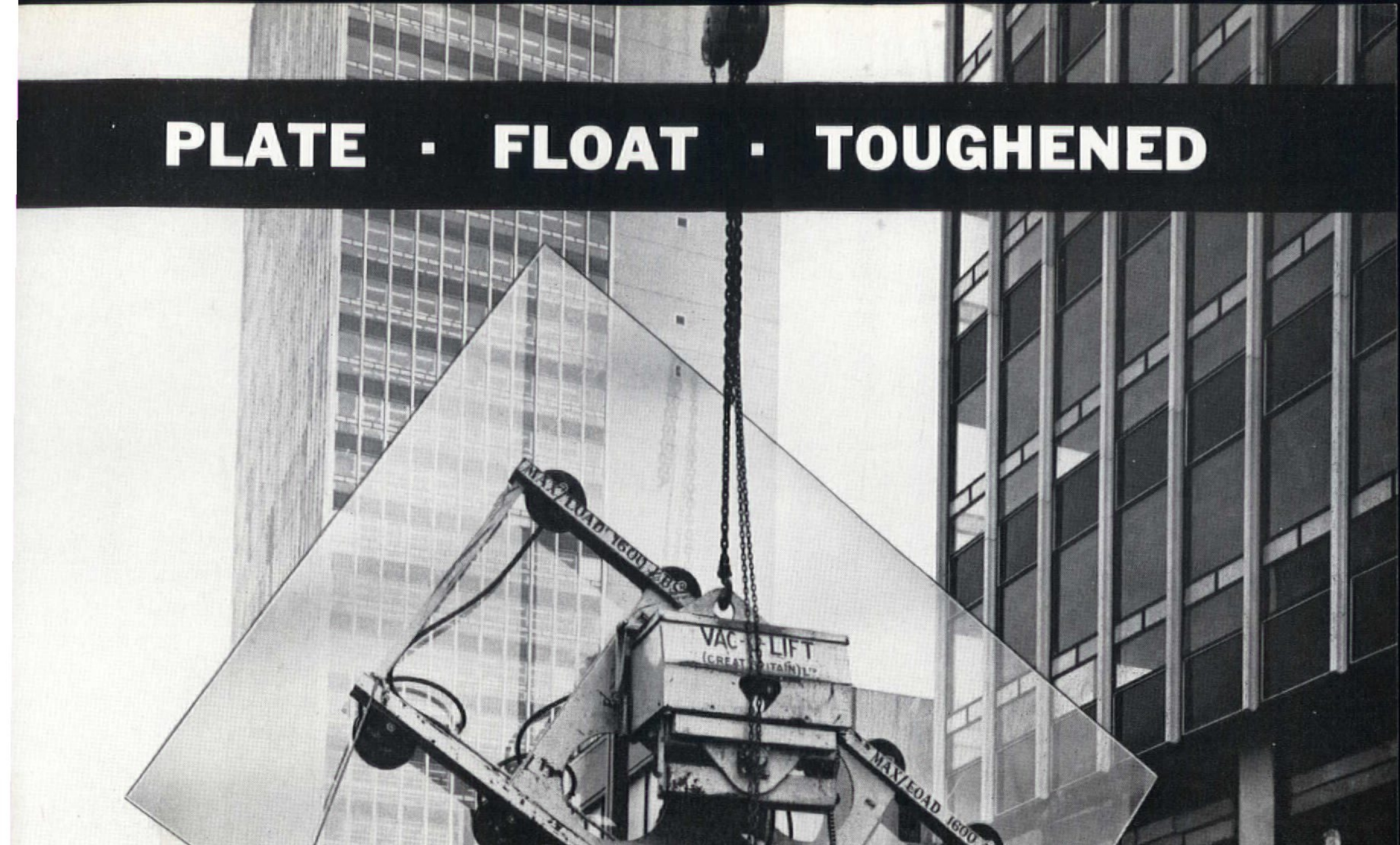

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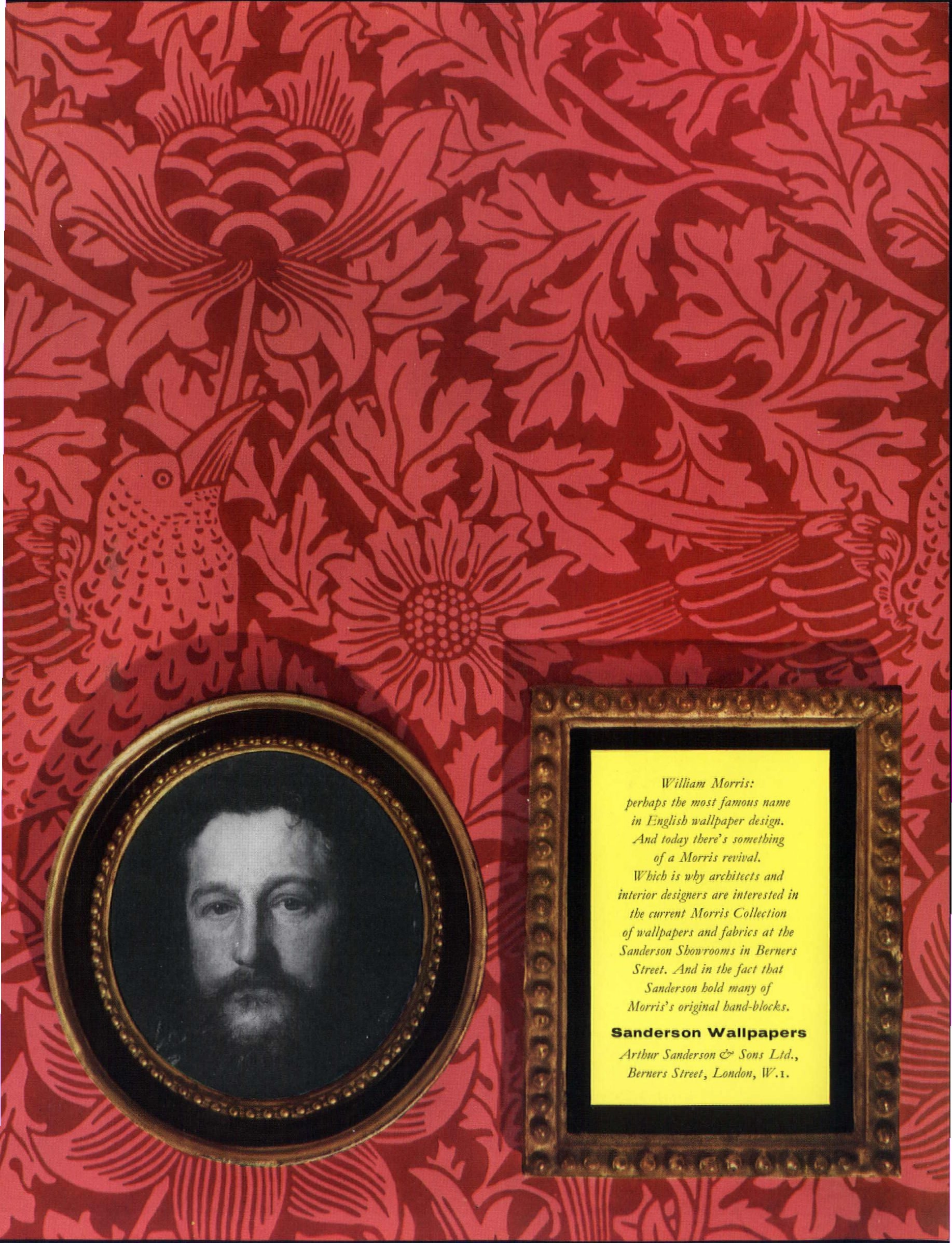
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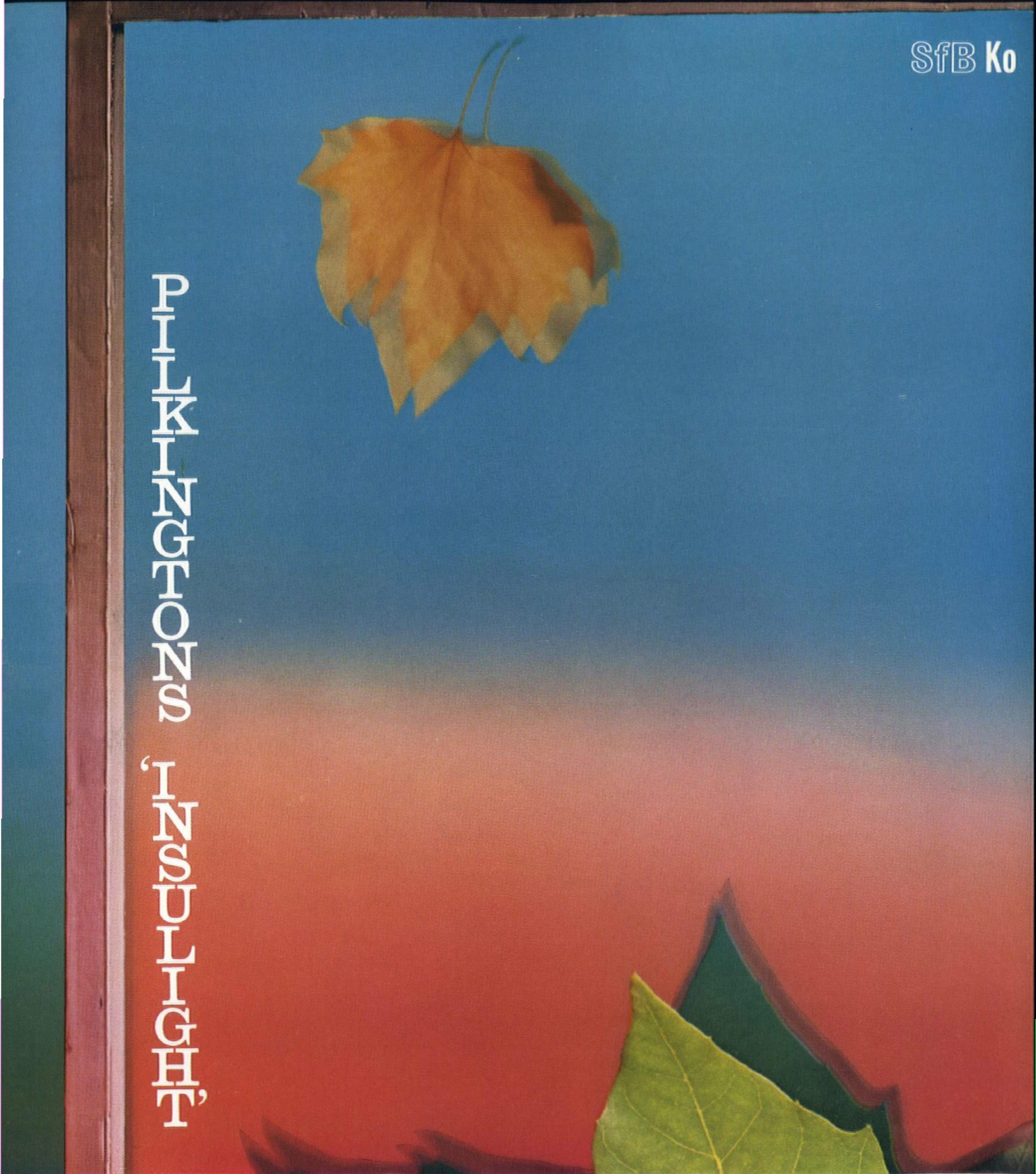

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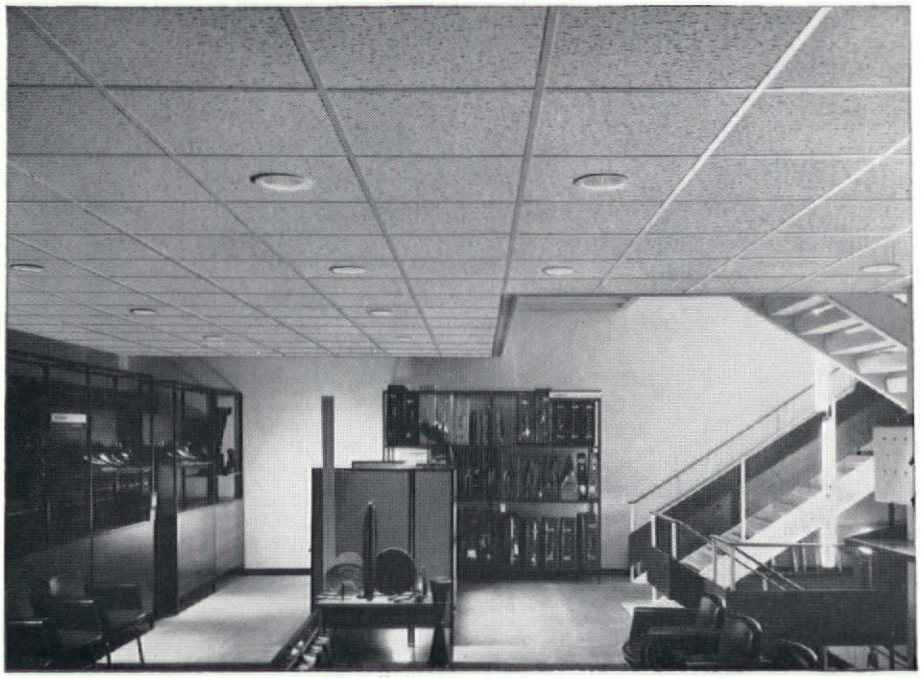

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AT 39

UK news

Diana Rowntree

Facts of life

Last month the planning department of the City of Coventry invited almost a third of the City's working population to take part in the consideration of future car parking and road requirements. A sensible move indeed. But our general attitude to the pressing problems of national organization is so amateurish and escapist that one can imagine Coventry's democratic behaviour being described as 'an experiment in twentieth-century living'. The nation-wide indifference to the government-sponsored population explosion among motor cars is revealed by the second Car Parking Survey by the British Road Federation. Although the number of cars has increased by 23 per cent in two years, most local authorities have what Lord Gosford described as 'the bomb site mentality'. It is over 20 years since those bombs dropped and provided the boroughs with the chance—apparently welcome—of parking their cars in derelict and disgraceful surroundings; yet the use of parking meters is in decline, multi-storey car parks are still a rarity, and the process of overall assessment and planning explored and recommended by the Buchanan team is hardly ever adopted. Sir Leslie Martin has commissioned Buchanan's firm to study the Whitehall traffic problem. No doubt others will follow, but the tendency is to regard the name 'Buchanan' as a prestige symbol and to forget that his traffic survey was after all only the sane approach to a problem that has been with us half a century.

According to reports from Milan, the British exhibit at the Triennale gives the impression that we are less apathetic in our pursuit of leisure than of life. (See page 399.)

Sir Leslie Martin **1** presented the *AD* Project Award* certificates to the winning architects and their clients on June 10th at the Building Centre, London, during the private view of the exhibition of all the 192 entries. Here he is seen shaking hands with Peter Womersley, winner of the Grand Project Award. Below **2** is shown the 12-inch gilded bronze plaque to be affixed to Mr. Womersley's hospital building when completed.

It is not easy to see why the jurors of *AD*'s Grand Project Award withheld the sixth award available to them. Team 4's Waterfront Housing looked extremely intelligent, and relevant to our national problem of land shortage and spoliation. However, since all entries were put on show at the Building Centre, and as this is to be a recurring feature of the Awards scheme, anyone interested in architecture—or in trends—can make up his own mind.

It is good that the Borough of St. Pancras knows so well how to pick its environmental advisors; some of the areas it has to cope with, eroded by poverty, dismembered by the railways, and subject to a steady rain of smuts, are as discouraging as any in Britain. The Report on West Kentish Town **3, 4** prepared by Armstrong & MacManus, with Gordon Cullen, Kenneth Browne and Ian Nairn as townscape consultants, shows what architectural skill, which in Cullen's case amounts to genius, can do for a run-down neighbourhood, even within the framework of existing legislation and the kind of financial outlay that might conceivably be forthcoming. The task in this area between Chalk Farm Road, Kentish Town Road and the Regent's Canal, is to complement the large blocks of sanitary housing provided by borough and LCC by an attractive urban setting. The Victorian pattern of terrace streets, neat in front, more casual on the garden side, must be replaced by some new 20th century pattern. By decking over parking space to create new levels where they want them, the authors of the report offer a sequence and variety in the enclosure of space. They suggest the creation of a collegiate precinct around the new buildings of the Northern Polytechnic, and a 'linear *quartier*' of traders and workshops under the arches of the redundant viaduct, which they also use to frame views through from one newly defined set of spaces to another. The few existing buildings of character are preserved as focal points in the residential development. Wide open spaces will be needed for youth. For older people leafy groves are offered that will make walking to the shops a pleasure, and the canal is to be opened up to the new LCC park.

* See *AD* June 1964, page 268.

The Central Electricity Generating Board should look to this example from St. Pancras. The Board appears to have lost all heart and stomach for design and has started to *camouflage* its gigantic artefacts. This is not good. In fact it is pathetic. Our civilization rests on power. The CEGB architects have a large task certainly. If they are frankly unequal to designing structures of which they are proud, they should resign and let the confident and resourceful young architects who are pouring out of our schools have a try. The man who should be leading this important team is Gordon Cullen.

Education

Architects

The catalogue to the exhibition of work by students of the Southampton College of Art bears a sad comment on architectural education. It says that (for the architects) each scholastic year 'is organized in two parts, *one* in which the requisite testimonies of study are prepared for submission to the RIBA, *the other* in which all years engage in a group project'. At Cheltenham, too, the intensely serious, experimental curriculum is interrupted so that the students can meet the RIBA demands, some of which are no doubt sensible, but which include a test in the ability to design superficially. Has our Institute abandoned the hot pursuit of education until its rich marriage with the universities is suitably solemnized?

Designers

When the Society of Industrial Artists and Designers discussed the designer's relationship with industry at a not very fundamental level recently, the voice of wisdom was, as so often happens, the voice of Misha Black. He said that however much the designer may, in his practice, have to compromise with popular taste and give way to commercial pressures, his training must be wholly free of compromise. For it is then that he must form the taste and strengthen the convictions that will form the basis of his professional integrity.

Building technicians

The question raised by the Incorporated Association of Architects and Surveyors, about the training of building technicians, is being given full consideration by the RIBA, who would like to bring the technicians within the Institute.

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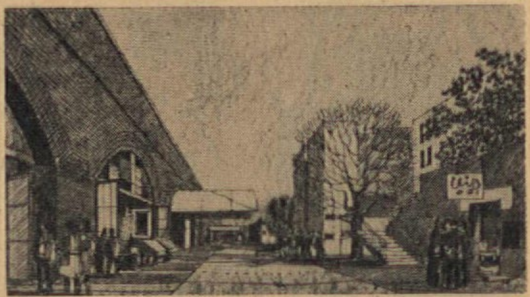

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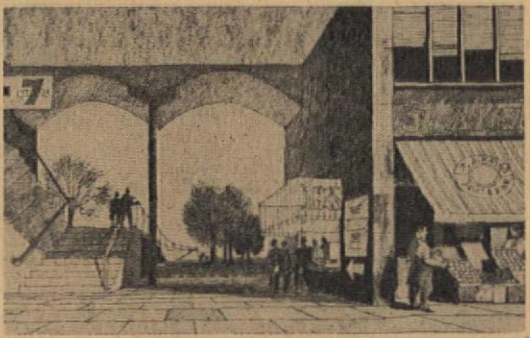

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Mums and Managers

Two courses to be held in September are: the one designed by the AA to help married women find the best way back into practice; and an intensive 12 days' course in architectural management at the University of Manchester.

High density for Kensington

The current planning philosophy of high density urban development finds expression in many good schemes, but the LCC will not budge from its maximum of 100 persons per acre. You can see why. Theo Crosby's Fulham scheme for Taylor Woodrow, recently turned down, or Eric Lyons' brilliant recreation of World's End, Chelsea, are one thing; high density in the hands of a commercial developer or a dim

municipality might be quite another. Nevertheless Lyons, Crosby, and now Julian Keable who has produced a scheme of courtyards for a Kensington site, claim that in order to finance the amenities, in the form of decked-in car parks, and sophisticated layout, that are needed to make anything pleasant of even medium density residential development, it is necessary to raise the density still further. They may be right. We do not know how we should like these schemes in practice. Surely it would be a good idea to carry out a few on an experimental basis, in order to test them by experience?

Old peoples' home 7, 8

On the theme of the octagon, comes an old people's home, White City, by Noel Moffett & Partners built up from hexagonal units. Architects working on old people's homes are currently preoccupied with the problem of expressing the multi-cellular character of their building rather than the institutional. The Moffetts' effort is externally very successful in this attempt. The scale is small, the character cosy, and they have dealt well with a difficult set of light angles. But will this make up to the people who spend the greater part of their time inside this building, for the appalling internal angles? These occur everywhere, beside your bed, at the corner of the draining board, in the siting of the WC and the plan of the broom cupboard. Fuller tells us that the hexagon is a strong structural formation, but as we are not yet weighing our buildings, this principle does not really apply to the old people's dwellings.

Comprehensive Redevelopment 5

The opening of the London College of Printing **5** marks another stage in the development of the Elephant and Castle district, one postwar scheme that London can be proud of. Covent Garden may turn out to be another. While amateur planners have been publicizing grandiose schemes for making fortunes from the private development of the market area, the LCC has been quietly pressing on with its comprehensive plan. The balance of uses will be tipped in favour of dwellings and public open space, as against offices and commerce generally. It is hoped that the Opera House too will benefit. At present it is undergoing some necessary repairs and discreet innovations at the capable hands of Peter Moro & Partners. It badly needs rehearsal rooms and all kinds of accommodation for its artistes.

St. Alphege's hospital, Greenwich 9, 10

The Ministry of Health Design Unit comes out of the stiff test of designing a complete new hospital, with its reputation enhanced. The object was to design a functional hospital, in the sense that it could be built quickly from standard units, and could be radically altered as requirements change. The particular hospital chosen for the exercise contributed a major problem of its own, as it was necessary to provide 800 beds on a very restricted site—less than 8 acres where 30 would have been ideal. The solution is a plan on three floors, each self-contained with its own kitchen and dining room, and four service towers at the spine of the plan. Primary circulation is in the form of a cross, with secondary circulation following the wards around the perimeter. Wards are lit by daylight but air-conditioned to keep out dirt.
Another means to this end is the 'sandwich storey' of services between each nursing floor. In this 5ft. 10in. space the engineers can alter and repair services without entering the air-space of the hospital proper. The structural grid is designed for pre-fabrication, and the design can be extended vertically or horizontally up to 50 per cent.

University of Warwick 11

The architects' perspectives for the first buildings for the new University of Warwick give the impression that what can be called the 'architectural' aspect of the design is being kept well in sight, in spite of a tight time schedule and a high degree of industrialization. Of the initial four blocks, for Sciences, Library, Humanities and Dining, the first is to be completed in 11 weeks and the others in 6 to 7, starting in July. The general proportions of these buildings, by Grey and Goodman, of Derby, are very like those of St Alphege's. The bays are broad and the division between glass and solid is of the simplest; but the drawings for Warwick, while less detailed than those for Greenwich, show a preoccupation with effect that may or may not have some connection with the architects' final intention.

District Bank Limited 6

Anyone who shares the fears of the Architect to the South Eastern Regional Hospital Board for Scotland that the general adoption of industrialized systems of construction is going to impoverish architecture should ponder the entries for the competition held by the District Bank Limited for its headquarters building in Manchester. Nothing industrialized about these. In fact, Sir Basil Spence, one of the assessors, likened the winning scheme **6** by Casson & Conder to a Dior dress.


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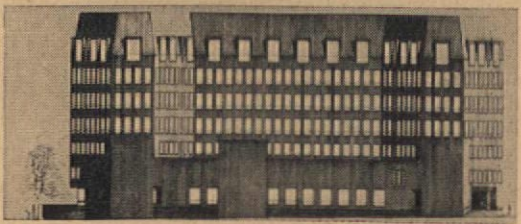
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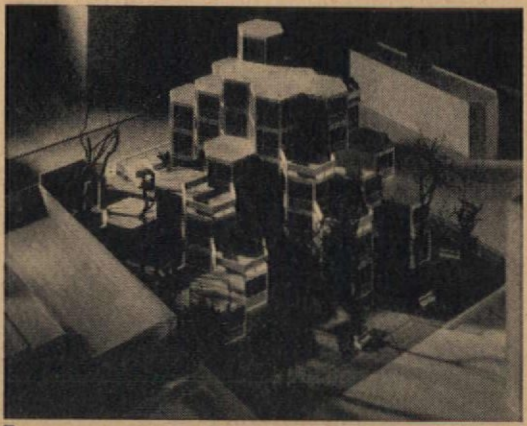
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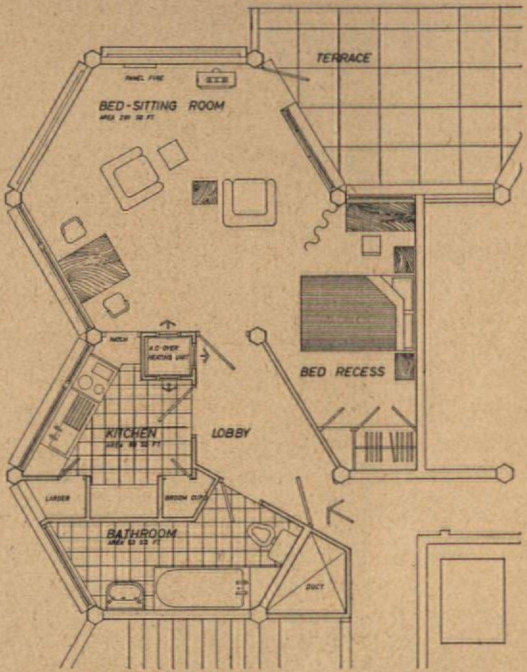

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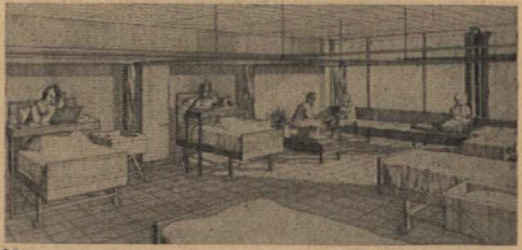
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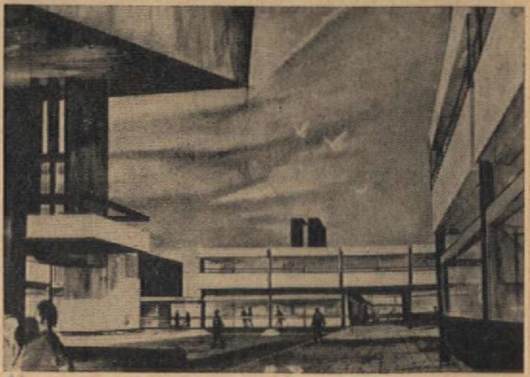
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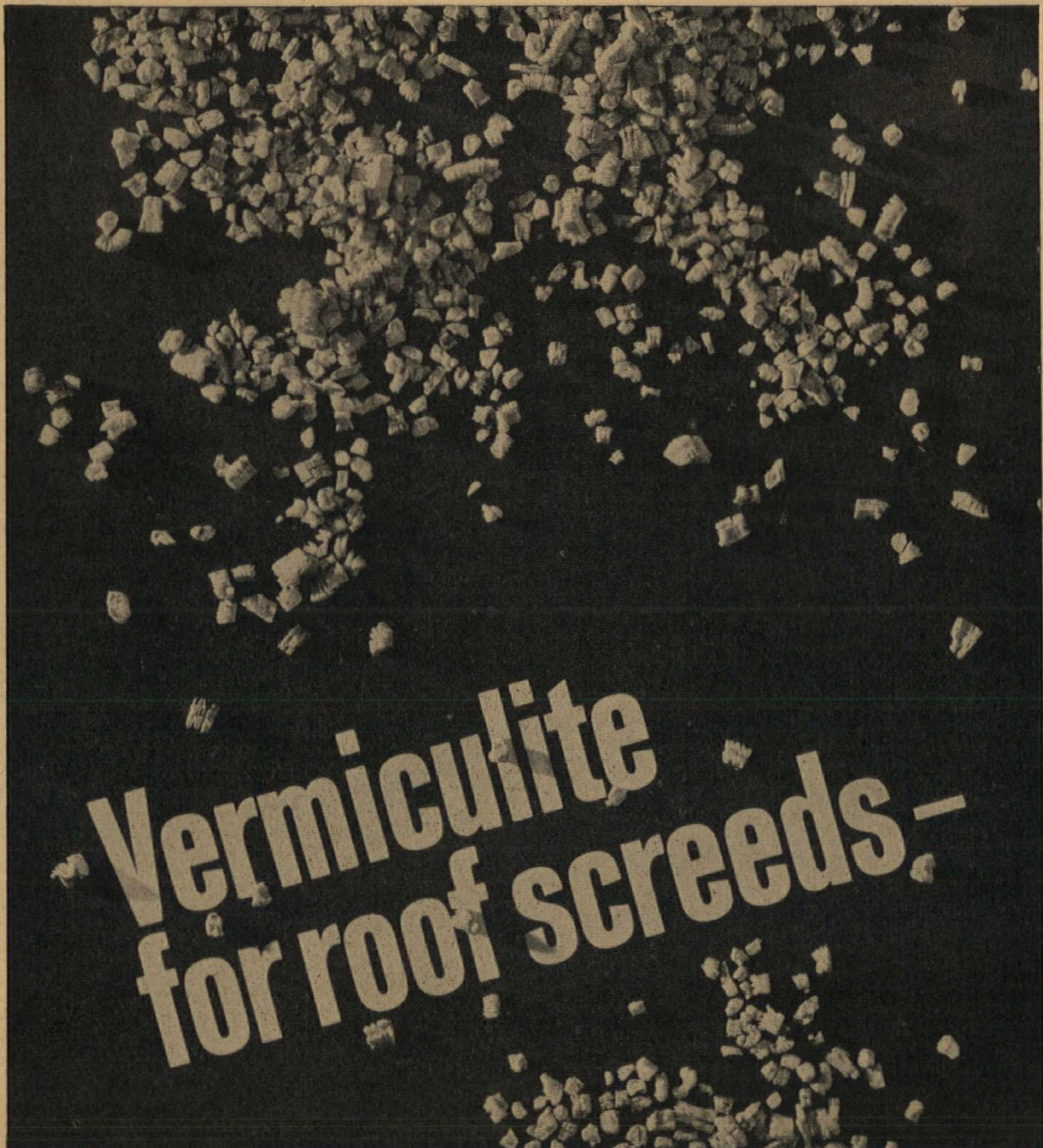

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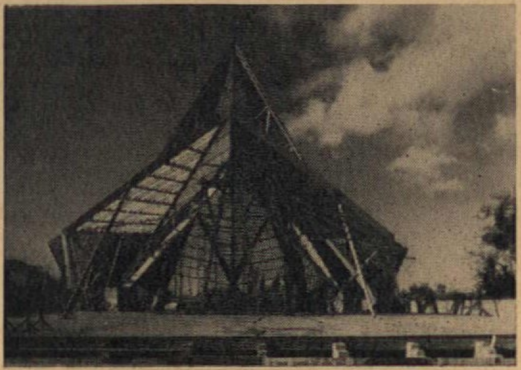
World News

France

Church, St. Cloud 1

One of the most exotic architects working in France today must surely be Alain Bourbonnais. Nothing save his notes can account satisfactorily for this exotic church built at St. Cloud. He writes: 'A unique volume designed to simulate three spiritual movements: a generous gesture of invitation and welcome to the man in the street, from the very heart of the building, the entrance; the gathering of the parochial community around the cultural centre which is the altar, under a protective mantle, the main building; a surging unified movement of the roof towards the sky, the spire.' In brief, one may say, structural expressionism.

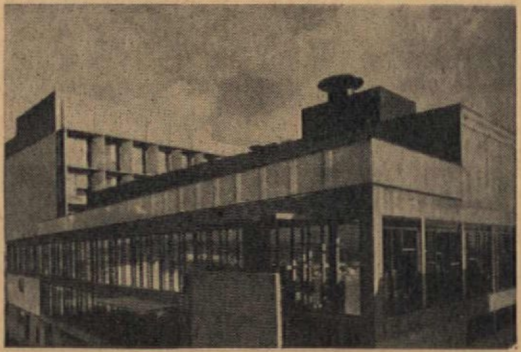


1

Youth hostel, Saint-Etiénne 2

After a period of apparent retirement, we are now once again able to appreciate the architectural talent of André Wogenscky in a new work that evidently comes from that small and unofficial 'ecole de Le Corbusier', that fitfully continues to produce work in Western Europe. (Galardi, Atelier 5, LCC Architects' Dept., etc.). This youth hostel at St. Etiénne in the Loire Valley consists of a seven-storey slab and a three-storey block linked together at right angles, around a court open at one end. Wogenscky's collaborators were Henri Chauvet and Jacques Larot.

Domus 414, March 1964



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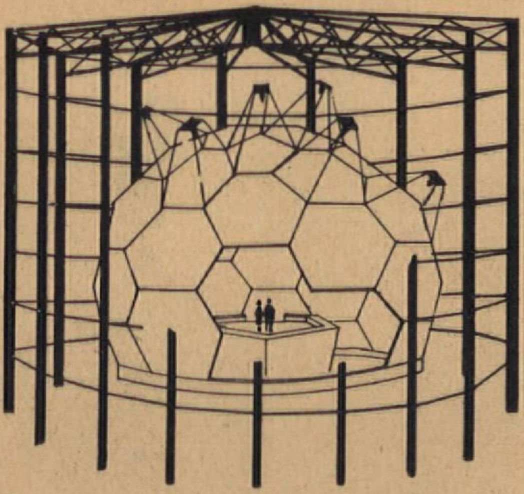
Switzerland

Cinema 3

This 'Spherama' cinema was specially built for the Swiss National Exhibition at Lausanne and is the world's first 'spherema' cinema.

The panorama is provided by a system of back projected individual coloured pictures on to hexagonal translucent flexible vinyl screens.

Each unit is 14ft × 14ft in size. They are mounted as closely jointed panels on a supporting steel framework 81ft in diameter by 49ft high to make a hemispheric enclosure. The whole project was developed by the English firm BX Plastics Ltd.



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Zurich Theatre/Competition

According to the *Schweizerische Bauzeitung* of 11 June, 1964, Utzon has been awarded first prize in the Zurich theatre competition (20,000 Swiss Francs).

Italy

British section, Milan Triennale 4, 5

The British pavilion at this year's Milan Triennale was designed by Theo Crosby. The display theme set was Free time, the constructive use of leisure, and hence the pavilion mainly exhibits indoor and outdoor British leisure goods, including toys, sports gear, gardening tools, fishing gadgets, and camping equipment, etc. Several artists collaborated with Crosby on this exhibition, particularly Joe Tilson who was responsible for 'packing case-inspired' decor over the timber ceiling of the main area. The disappointing aspect of this pavilion is the display of the equipment itself—whose loose random arrangement by Natasha Kroll tends to be entirely overwhelmed by the large scale of the pavilion structure. It is curious to find such rich material as sports equipment so unimaginatively displayed.

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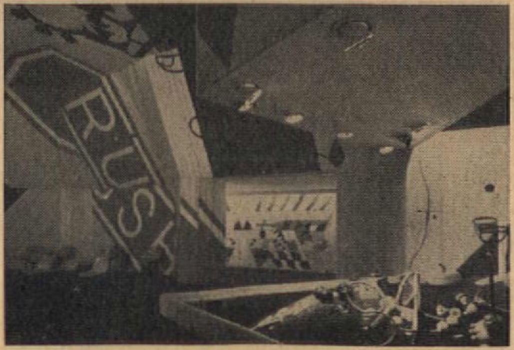

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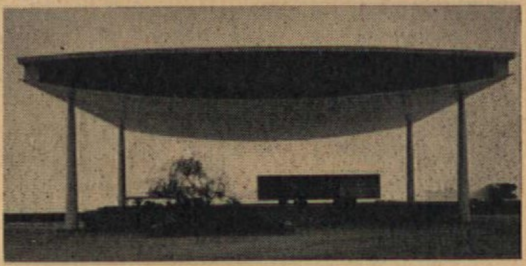
IRA Pavilion, Genoa 6

The Pavilion is situated on the east side of the 'Fiera Internazionale di Genoa', near the sea, at the mouth of the Genoese harbour. It consists of two structures, one of which is partially underground. The subterranean structure is in concrete and houses a large lecture hall, exhibition space and services. The upper part consists of a large metal structure supported on four columns rising outside the concrete roof of the subterranean area which is paved with grey marble slabs. The vertical columns and floating roof are of steel. Modular elements 22m. long and 1.02m. wide form the roof structure. These elements, which are loadbearing and weatherproof, are kept taut by a polygonal truss. Four pillars in the shape of truncated cones support the roof. Six large illuminated frames situated on one side of the platform display graphic material. The superstructure soffit is illuminated by indirect light.



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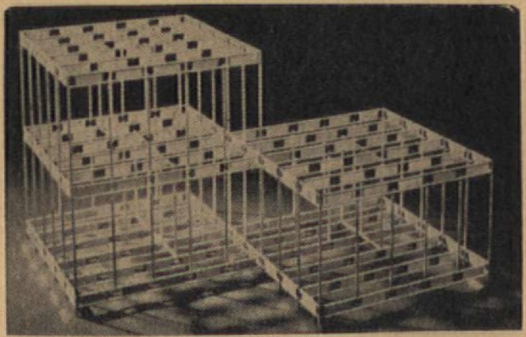
Germany

Project for row houses 7, 8

Georg Kaloyannidis designed these row houses as part of an advanced study course under Professor Egon Eiermann at Karlsruhe Technical Institute. The work stems in part from contact with Wachsmann, at one of his seminars conducted at Salzburg. The project as presented provides for three variable types of house, from left to right, a sculptor's house with gallery, a dentist's house with living level, and a family house (4-person). As the architect writes: 'And I am of the opinion that one single girder length with one single element dimension is very far from being the cause of *ennui* in architecture! I do believe that through increased intensity of application one day a very fine architectural idiom will be conjured up out of these monstrous technological resources!'

Bauen & Wohnen, April 1964



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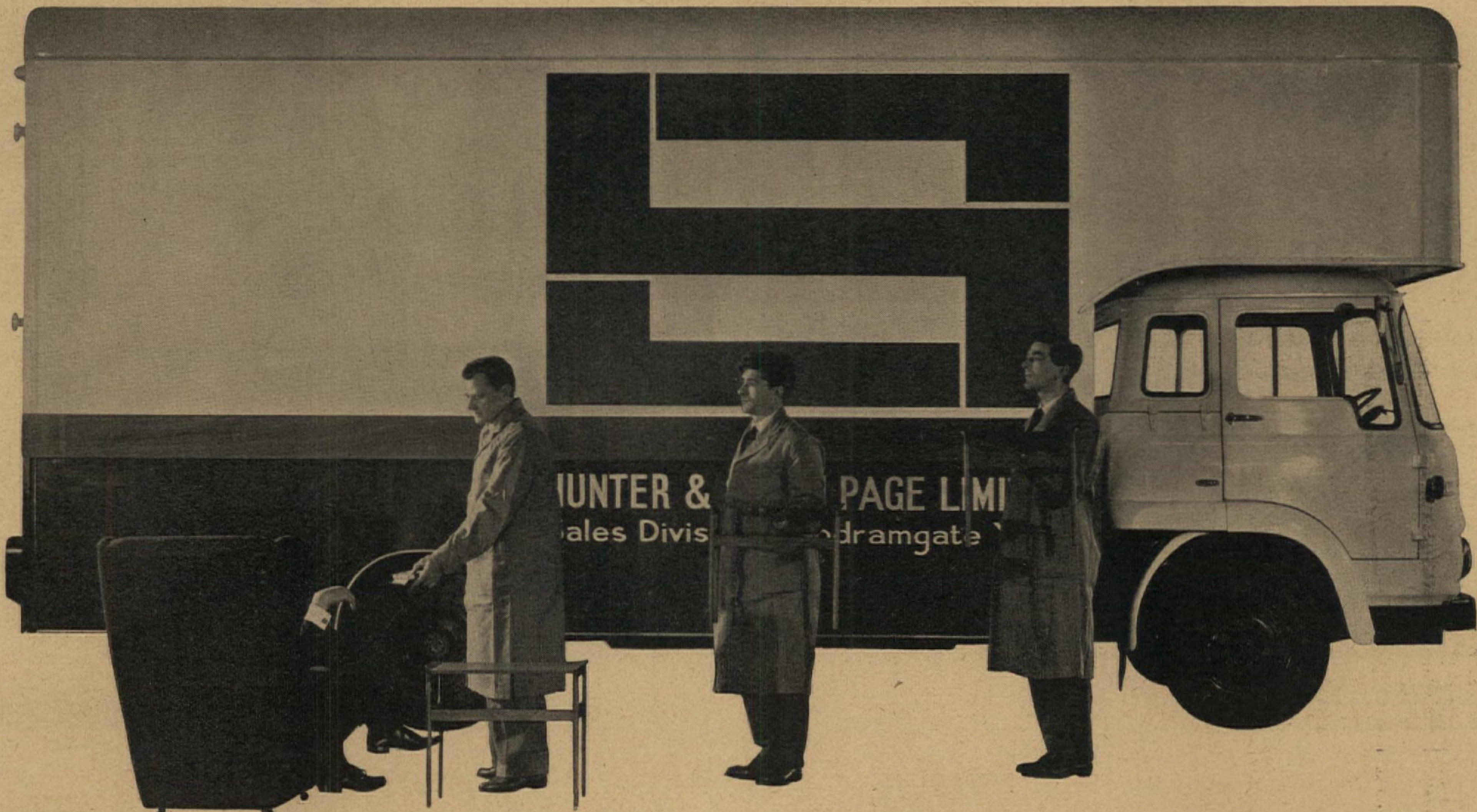

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Colombia

Glass factory at Zipaquira 9

As far as one can tell from the somewhat scant information received from time to time, Colombia remains one of the few South American states that still appears spontaneously capable of maintaining a vigorous architectural tradition. This project for a glass factory at Zipaquira appears to further this tradition. The architects are Carlos Martinez S. and Eduardo Londoño.
PROA No. 163, 1964

9

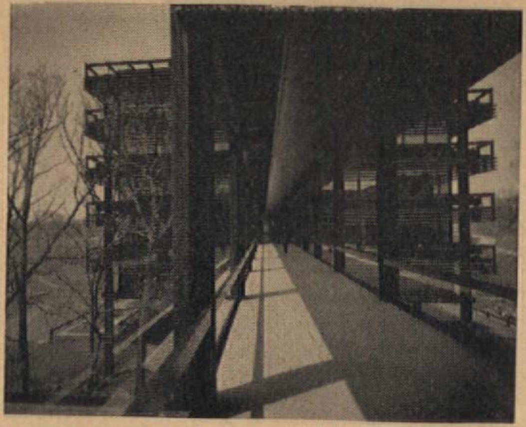
USA

Deere Centre, Moline 10

Four days after the contracts of this centre were let in the late summer of 1961 Eero Saarinen died, leaving behind him, amongst a number of designs this extremely elegant company office building recently completed at Moline. Apart from creating a vivacious and orderly skeleton structure Saarinen utilized for the first time the properties of Cor-Ten steel. This material was developed by the US Steel Corporation in 1933 for the fabrication of rail tracks. Cor-Ten has 50 per cent more tensile strength per pound than most carbon alloys, and remains permanently resistant to corrosion without the protection of paint. The first corrosion on the surface forms a dense protective coat that eventually turns olive green/grey and prevents further oxidization. Given such an economic, low-priced steel it is amazing that it has not been used more frequently—particularly when one considers that all the steel bridges built since 1933 must amass vast maintenance bills throughout the world.

New York State Theater 11, 12, 13

A further 'gem' has recently been added to the crown of the Lincoln Center. Philip Johnson's 2729-seat theatre is now complete. As one



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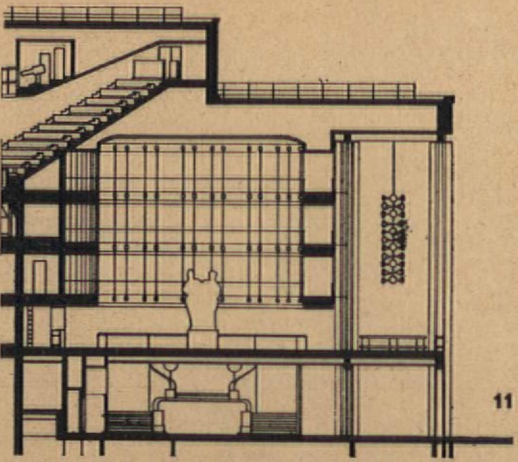

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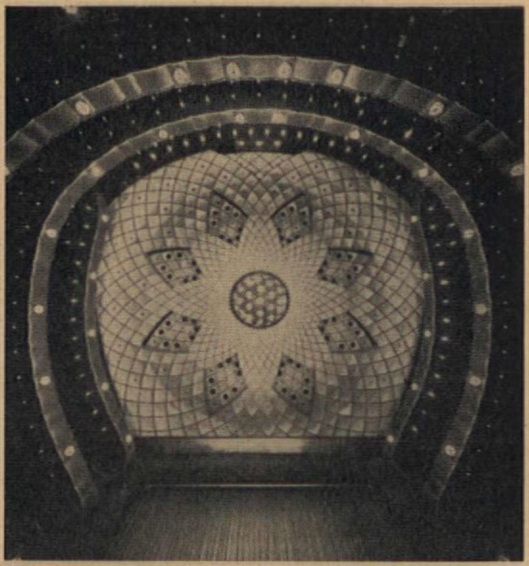
salutary editorial explains, its festive air is due in part to the architect's choice of rich materials and colours. There can be little doubt that this auditorium will work well as a theatre. The orchestra has continental seating, with no middle aisle and rows of seats 40in apart. The repeated curves of the horseshoe balconies establish the well-known and regarded horseshoe plan and serve, as they always have, to knit the large space of any auditorium into an entity. It's all in the good classic eighteenth-century tradition. But doubt starts where decor begins; where the structure more or less loses its mannered self in the spindly gilded trappings of the suspended galleries that flank all four sides of the four-floor foyer. This is cosmetic architecture at its best, and all the rationalizations for its presence in a theatre will never quite make amends for the insubstantial and effete quality of the final result.
Architectural Record, May 1964

PSFS Building Philadelphia 14, 15

Built over 30 years ago, 'it was and is', as Jordy and Wright state in the May issue of the *Architectural Forum*, 'an unqualified success, financially and aesthetically. The recipe for this result: good architects, good clients, good materials, and good luck.' Thus the authors, two historians, introduce their extensive account of the initiation, design and final erection of this building, which was completed after the Wall Street crash of 1929. The account is, as one might easily have expected, of a fine building resulting from a patient and understanding collaboration between a powerful client and intelligent and painstaking architects. Before the design of the building was finally agreed many letters were exchanged between Willcox, the bank president, and the persistent and reliable George Howe. Howe's letters on the subject amounted to essays in architectural theory and this lengthy exchange of correspondence was followed by equally lengthy meetings during which Howe, Lescaze, Willcox and rental advisers argued out the façade of this brilliant building. Our illustration **14,** shows the detailing of the strongroom, note stainless steel clad column etc. Below are three drawings **15;** top left is Howe's original design for the tower; right is the finalized design after the Swiss trained Lescaze (Atelier Karl Moser) joined the firm. Bottom right is a Lescaze sketch of 1929.

Architectural Forum

Rumour has it that *Architectural Forum* is being closed by its owners. No details or reasons are as yet available except that the last issue is scheduled for August. A good reason for closing a magazine with a reputed circulation of 63,000 would be hard to find and one can only hope that the rumour is unfounded.



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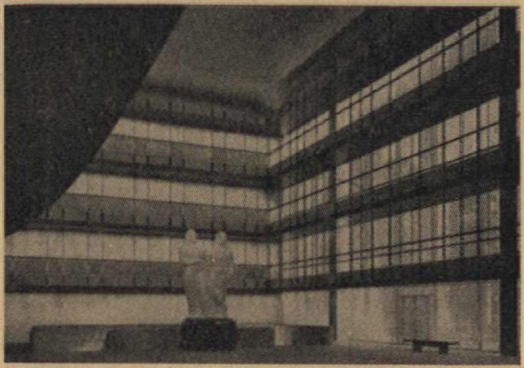

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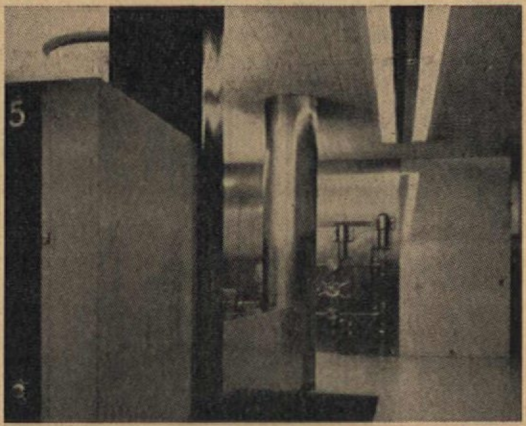

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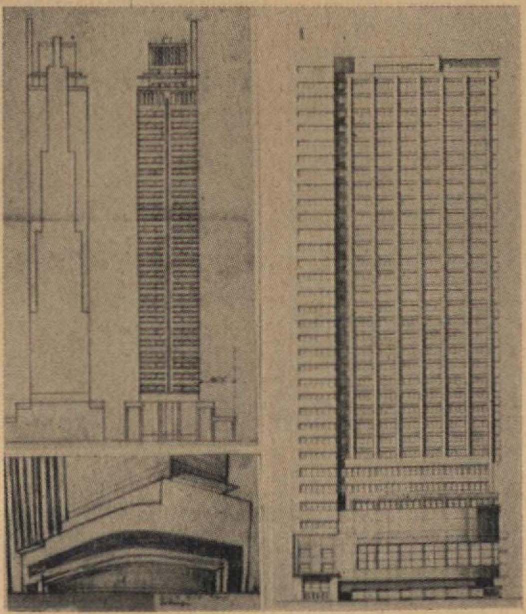

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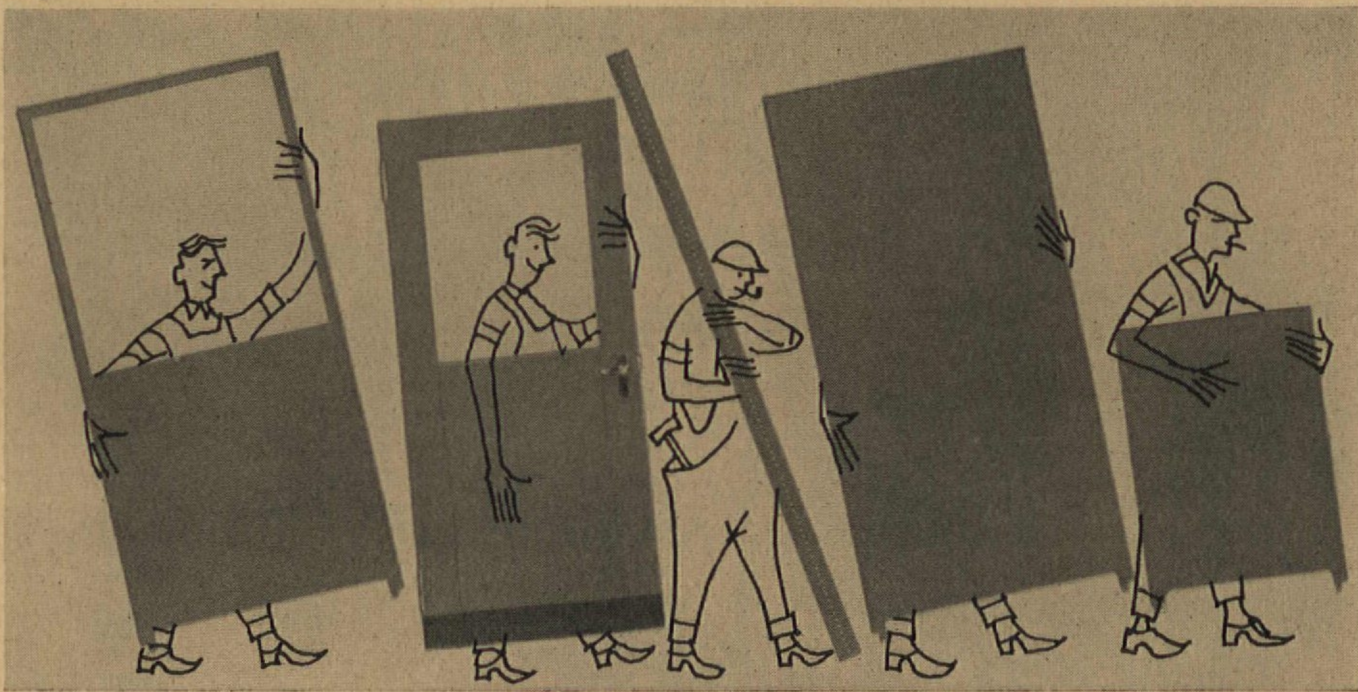

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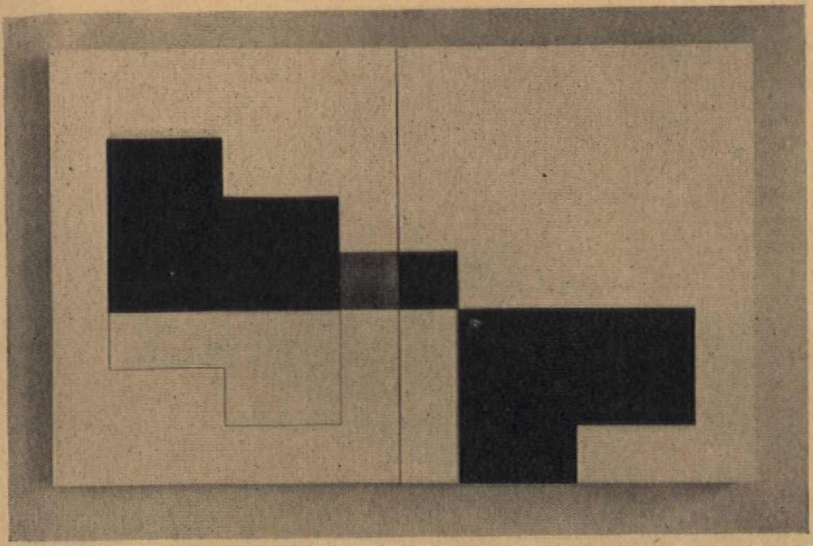
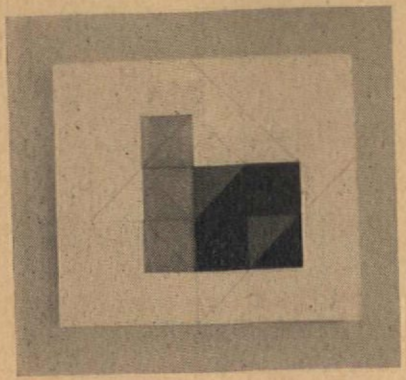
Art



John Ernest

Ozenfant pointed out that some of the primitive races, which are exceptionally sensitive to the direct influence of form, 'were able to realize that the top-hat owed the nobility of its appearance, not to the use which convention had dictated for it among Europeans, but to the specific appearance of the cylinder with its dominant verticals and its specially serious colour, black'. This is a good illustration of an everyday use of a form that is dictated by the character and atmosphere that this form suggests. When John Ernest uses certain forms in his constructions and reliefs it is also in response to the characteristic qualities they are endowed with, as opposed to any purely intellectual or mathematical deduction that one might expect. It is important to stress this point since constructed art is often confused with the notion that its outward visual manifestation is some sort of translation of a philosophical or a mathematical concept. Although this is sometimes true, it does not apply in the case of John Ernest.

At the basis of his work exists a fascination with the useless geometry of the nineteenth century that seems to have more in common with aesthetics than mathematics; and with self replicating shapes (like the L-shape that often appears in his work), because there is something extremely satisfying and harmonious about a form that is capable of producing a mechanical equivalent to the processes of nature. He is also fascinated by the thought that most concepts in subjects like biology and genetics can be expressed in terms of shapes, which become a sort of multifunctional universal language.



The forms that appear most frequently in his constructions are groups of vertical rectangles, mosaics built up of squares and triangles and the L-shapes. With this seemingly limited vocabulary the artist has devised an extraordinary variety of images. Not all the images he conceives materialize eventually into constructions, because from every 15 ideas based on the permutation of forms and colours only one or two are realized as finished works.

From these very simple elements John Ernest builds compositions of great intricacy with interrelated themes. One can follow the threads that comprise the structure of a particular work through the colour elements, diagonal lines, raised surfaces, geometric forms and finally the syncopation of all these elements.

John Ernest, whose one-man exhibition is on at the ICA during July, has been working in the idiom of construction since 1956. He was doing abstract paintings since 1949, and abstract sculpture since 1952. The development of his constructions and reliefs has been extremely interesting because he has passed through the stage of relating mathematical concepts to the plastic image, to arrive at a visual form which is extremely exacting in its execution, very disciplined and premeditated in its organization, and yet based on intuition rather than any intellectual process. To John Ernest applies Apollinaire's comparison that geometry is to the plastic arts what grammar is to writing, i.e. the basis of coherent communication.

Jasia Reichardt

Planning

Work in Coventry

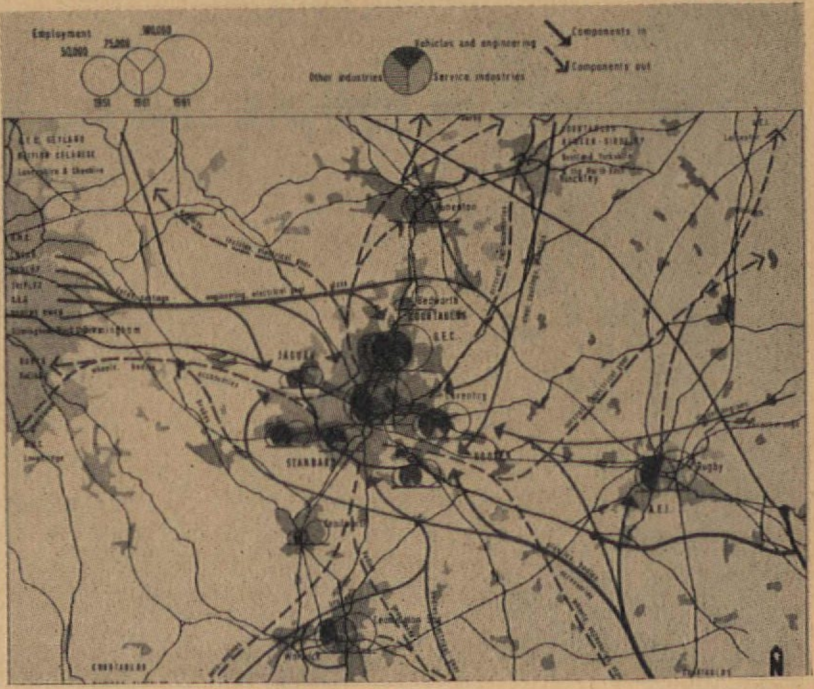
This is the third planning study leading to the Review of Coventry's Development Plan. The previous two volumes were concerned with Coventry's Road System (Survey Methods and Analysis, and Principles of Design). *Work in Coventry* is a comprehensive study of employment in the city over the past 10 years and an assessment of future trends. The detailed information which has been compiled is based on questionnaires sent to all firms employing over 20 people. The response was remarkably good and all of the factories employing over 1000 people cooperated in this survey. Thus valuable information was obtained on industrial ownership, floor space, numbers of workers, access, traffic and future needs.

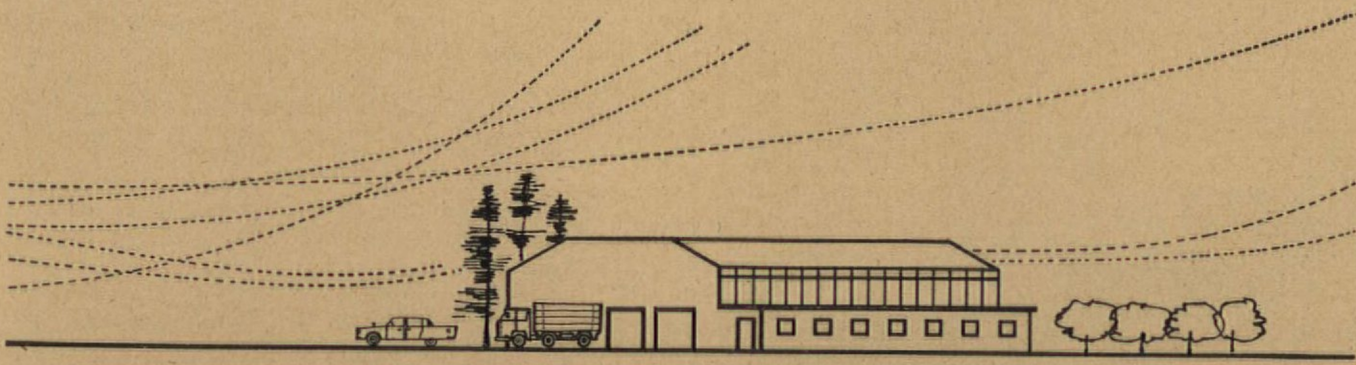
Some interesting facts emerge. The national policy of guiding new industry to areas of high unemployment has resulted in the direction by the Board of Trade of about half of the expansion of Coventry's industries to various Development Areas within the United Kingdom. Yet, in spite of this restraint on industrial expansion, Coventry has grown faster than any other city in Britain and almost 50,000 people have entered the region during the past 10 years. Since 1951 employment in Coventry has increased by 2·4 per cent as compared with a national increase of 0·8 per cent. A higher proportion of women of working age work in the city than in the whole of the country. Coventry and its region are dominated by rapidly expanding industries such as the manufacture of vehicles, electrical goods and man-made fibres and the city is linked today with the names of Jaguar, G.E.C. and Courtaulds. A pattern is emerging in which Coventry is the centre of development for some of the largest companies in the country.

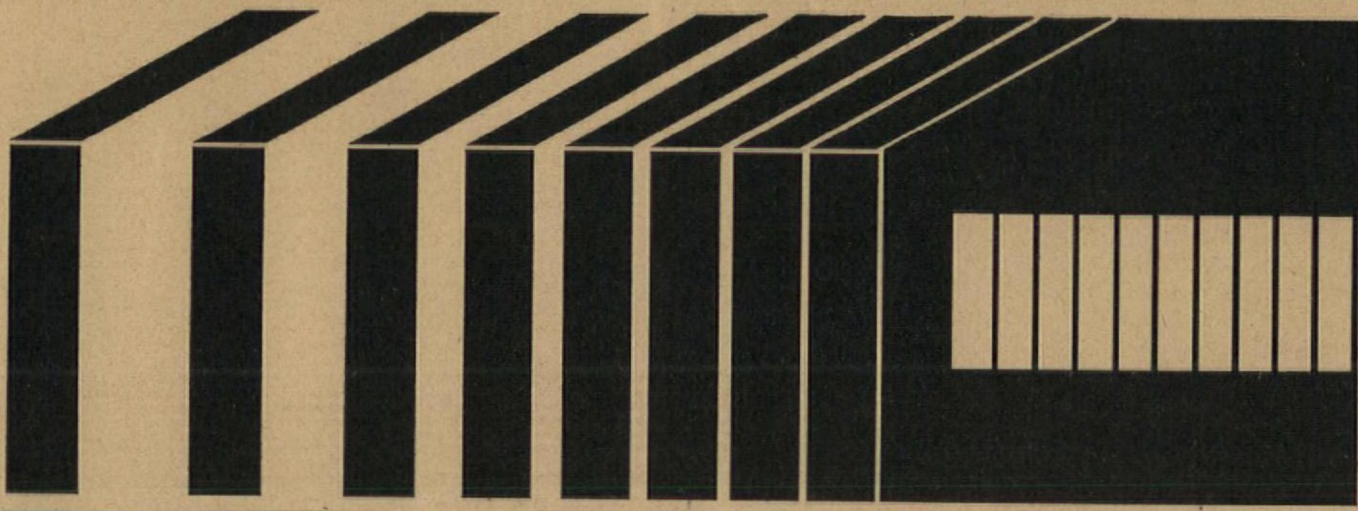
In these circumstances three alternative policies could be pursued; an expansionist policy of maximum growth which would raise the city's employment by half. However, such a policy would not only be undesirable nationally, but would result in undue pressure on the city centre, the transport system, etc. Total restriction of future growth on the other hand, while theoretically possible, would result in industrial decline since manufacturers can only survive by expansion. Unemployment would rise and emigration from this area could accelerate the drift south. The third alternative which is recommended is one of Controlled Growth which in fact has taken place since the war, based upon a national policy on the distribution of industry. Within such a policy, an employment increase of 105,000 is anticipated which in turn will support an additional population of 230,000 by 1981. To achieve this, some 380 acres will have to be added for new industry to the amount provided by the present Coventry Development Plan. In addition the City Council is recommended to encourage the growth of certain forms of employment which are in some way lacking in the city at present, such as offices, public transport, distribution, hotel and catering services.

This is probably one of the best studies of its kind produced in recent years by a local authority, as one would indeed expect from the Coventry Department of Architecture and Planning. One aspect, however, has not been brought out, which is of some interest: to what extent is the positive impact—both environmentally and financially—of the comprehensive city centre reconstruction reflected in the *Work in Coventry* success story?

Walter Bor







Dans ce numéro

Le Canada *Page 321*

La largeur du Canada est d'environ 3,000 miles: la plus importante ville au nord, Edmonton, n'est pas plus au nord que Blackpool, alors que Montréal au sud, est à la même latitude que Venise. Les deux capitales culturelles sont Montréal et Toronto. Ottawa, qui se trouve entre les deux, n'est pas seulement la ville où siège le Parlement mais aussi celle où l'on attache une grande importance à l'urbanisme.

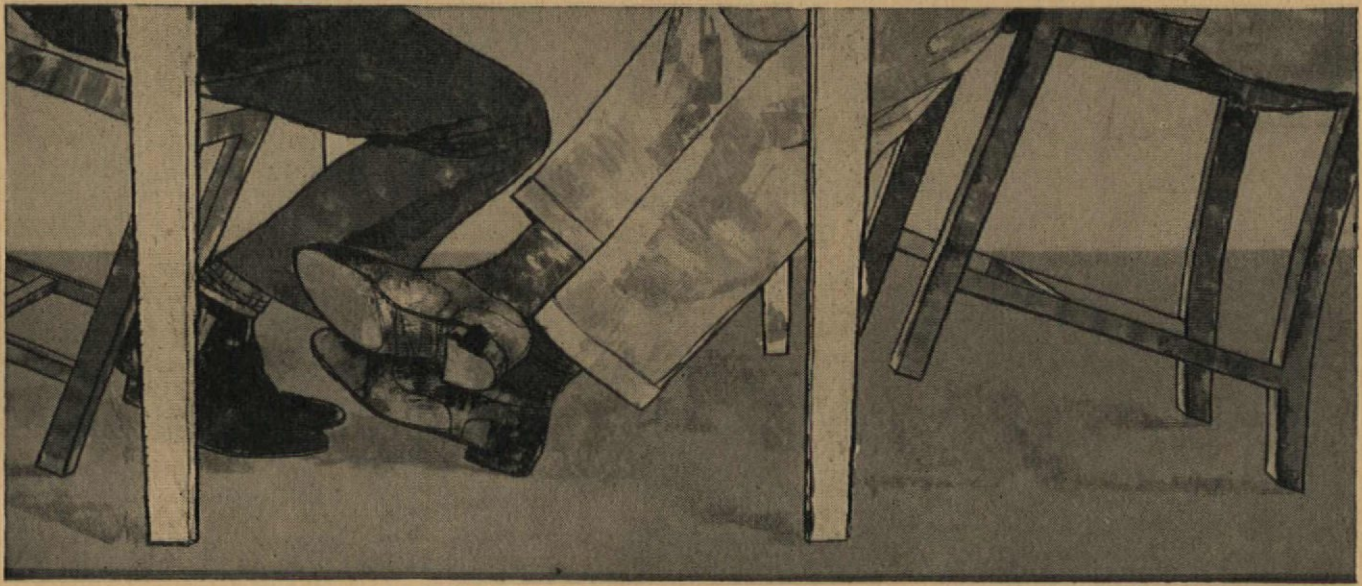
Des ceintures vertes, des autoroutes, un centre symbolique, ont été aménagés, malheureusement le Gouvernement Fédéral n'est pas responsable de la majeure partie de la cité, vraiment chaotique et digne de l'entreprise privée. Alors que la Commission Nationale de la Capitale d'Ottawa prépare un plan pour sa banlieue, Montréal construit son chemin de fer urbain et Toronto, qui en a un, pose ses fils électriques sous terre comme cela est déjà fait à Montréal. Les deux cités construisent aussi de grands immeubles civiques bien que ni l'une ni l'autre ville n'ait un plan de développement. Montréal vient d'ouvrir sa Place des Arts, une salle de concert, conçue par ses architectes les plus proéminents; Toronto terminera bientôt son Hôtel de Ville finlandais. Mais bien qu'ils soient tous deux d'un haut standard architectural, ce sont des oasis dans une ville sans aucun plan, ce à quoi l'on peut s'attendre d'une société capitaliste. Mais en fait l'entreprise privée fonctionnant sur le plan civique nous a donné le meilleur exemple d'urbanisme. Ainsi que le déclare le chef, William Zeckendorf, la Place Marie est l'étoile de Montréal. La conception des immeubles individuels fait un progrés semblable. Il y a dix ans, l'architecture existait à peine ici. Le style avait une tendance apparentée au sud dans les Etats Unis mais les influences européennes récentes ont brisé cette tendance. Un parallèle simple n'existe que sur la côte ouest.

A Toronto, l'influence anglaise se développa avant d'être dépassée par l'amour finlandais, qui, grâce à la présence de Viljo Revell, envoya les jeunes diplômés canadiens en Europe du nord. Les sources les plus anciennes venant de New York et de Chicago ne sont plus acceptables et même les plus vieilles compagnies se mettent au pas, offrant aux jeunes architectes la possibilité de créer. Ainsi à Toronto, l'architecture alimente son propre élan. Quant à Montréal c'est une autre histoire. La plupart du temps au Canada vous pouvez être sûr que la politique et l'argent parlent la même langue. Mais pas à Montréal. Un groupe construit l'hôtel de ville, un autre les banques et un troisième les centres commerçants. Alors qu'à Toronto il y a, peut-être, 15 compagnies pour lesquelles pourrait travailler un diplômé qui se respecte, à Montréal, par contre, le choix est négligeable. Les grandes entreprises sont toujours aussi réactionnaires alors que les petites entreprises sont obligées de se battre pour continuer d'exister. Une seule grande association produit une architecture moderne. Et, bien que les gratte-ciels de la banlieue aient modernisé Montréal, aucun ne fut conçu par un architecte local.

Le Canada est encore au stade du développement où il n'est pas facile de savoir qui l'on doit connaître. Il n'est pas rare que la mère de votre garde d'enfants ait été à la même école que la femme de votre supérieur. Aussi la meilleure politique est-elle d'être ami avec tout le monde. Si cela vous est impossible vous pouvez au moins être ami de 'l'établissement'. L'Institut Royal d'Architecture Canadien est une collection d'associations provinciales qui détiennent le pouvoir de reconnaissance. Ce qui a donné lieu à un cercle fermé dans la plupart de provinces et où se maintient la vieille garde. Etre accepté par l'Institut, comme obtenir des affaires, n'est pas simplement une question de réussite mais on doit être personnellement acceptable. Par exemple, les immigrés anglais, qui sont passés par une école non-universitaire d'architecture, pourront être rejetés par un professeur qui désire maintenir le mythe de sa propre supériorité académique.

Au fur et à mesure que les membres âgés prennent leur retraite, l'Institut s'adapte petit à petit et commence à s'acquitter de ses responsabilités sociales. Une commission créé il y a trois ans pour examiner la conception des quartiers résidentiels a eu pour résultat la formation d'un centre de recherches urbaines et régionales. D'autres manifestations visibles sont les aéroports des services de transport et les activités communautaires du groupement central d'urbanisme et d'hypothèque.

Par contre le service des travaux publics fédéral a dépensé plus d'un $1½ million par an en honoraires et employé les plus mauvais architectes canadiens. Malheureusement l'attitude gouvernementale permet aux architectes les plus évolués et travaillant pour le secteur privé d'intriguer pour que des architectes ne travaillent pas pour le secteur public. Il en résulte qu'il n'y a aucun centre de recherches pour des constructions telles que écoles et hôpitaux.



In dieser Nummer

Canada *Seite 321*

Quer durch Canada sind es ungefähr 4.800 km. Die beiden kulturellen Mittelpunkte sind Montreal und Toronto, und Ottawa.

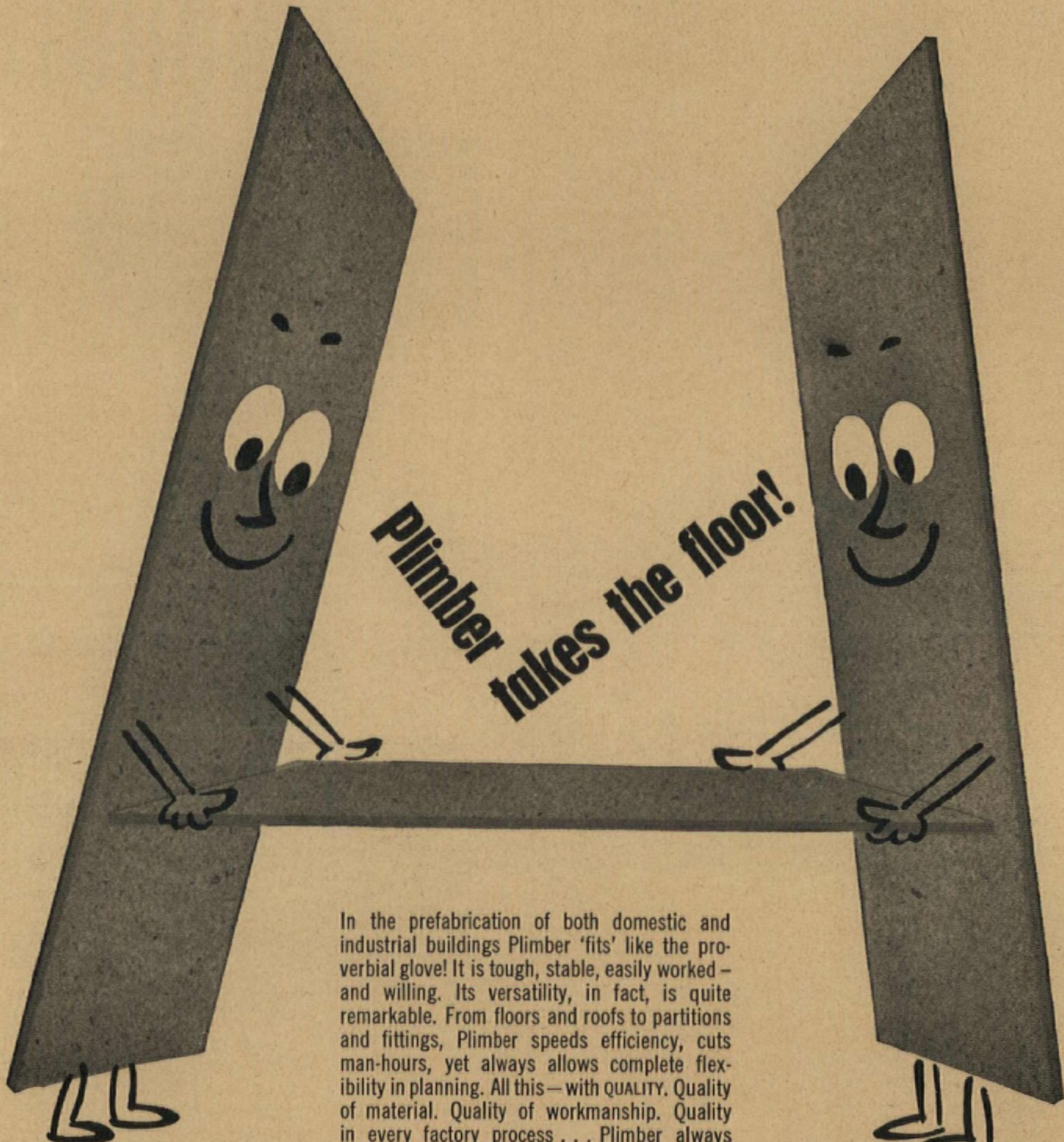
Grüngürtel und Anlagen, ein symbolischer Kern, viel ist schon erreicht, aber unglücklicherweise ist die Regierung nicht verantwortlich für den Hauptteil der Stadt, der, wie es bei freiem Unternehmertum bezeichnend ist, völlig chaotisch ist. Während die Nationale Hauptstadtkommission in Ottawa die ihr unterstehende Unterstadt baut, beginnt Montreal eine Untergrundbahn, und Toronto, das diese schon hat, verlegt das elektrische Leitungsnetz unter die Erde, was in Montreal schon geschehen ist. Beide Städte bauen auch große städtische Gebäude, obwohl keine von ihnen eine Entwicklungsplanung hat. Montreal hat gerade seine Place des Arts eröffnet, eine Konzerthalle, die vom kultiviertesten Architekten entworfen ist, und Toronto vollendet bald die finnische Stadthalle. Aber während beide hohen baulichen Maßstab zeigen, sind sie nur Oasen in einer ungeplanten Stadtwüste, wie man es in einer kapitalistischen Gesellschaft nicht anders erwarten kann. Tatsächlich ist es der private Architekt, der in städtischer Größenordnung arbeiten kann, der das beste Beispiel von Stadtplanung geliefert hat. Wie der Leiter, William Zeckendorf, sagt; Place Marie ist der Etoile von Montreal. (Und, nebenbei, selbst in einer kleinen Stadt wie Halifax, gehen 35 Millionen Dollar in eine kommerzielle Neuplanung, entworfen von Robert Matthews und Percy Johnson-Marshall.) Einen ähnlichen Fortschritt sieht man auch bei Einzelbauten. Vor zehn Jahren gab es hier kaum moderne Architektur. Der Stil pflegte sich nach Süden, nach den Vereinigten Staaten, auszurichten, aber europäische Einflüsse haben jetzt dies Schema unterbrochen. Nur an der Westküste gibt es eine Parallele dazu. Dort teilen Amerikaner und Canadier die pazifische Lebensweise und überlassen das Wettrennen den Unglücklichen drüben im Osten. Abendländischer Komfort vereint sich mit orientalischer Eleganz, und die Architekten versuchen, ihren Hausbaustil zur kommunalen Größenordnung von Hochhäusern auszuweiten.

In Toronto begann der englische Einfluß sich zu entwickeln, bevor er durch die finnische Schwärmerei unterdrückt wurde, die zusammen mit der Anwesenheit von Viljo Revell junge Graduierte veranlaßte, nach Nordeuropa zu gehen. Die älteren Quellen, New York und Chicago, sind nicht mehr recht annehmbar, und sogar ältere Firmen gehen mit der Zeit und geben auch jüngeren Architekten eine Schaffensmöglichkeit. So lebt in Toronto die Architektur aus ihrer eigenen Kraft. Mit Montreal ist es anders. In den meisten Städten in Canada kann man sicher sein, daß Geld und Politik die gleiche Sprache sprechen. Nicht so in Montreal. Eine Gruppe hat die Stadtbauten, eine die Banken und eine die Geschäftsviertel. Während es in Toronto etwa 15 Architekturfirmen gibt, bei denen ein Graduierter, der auf sich hält, arbeiten kann, ist in Montreal die Auswahl gleich null. Die großen Firmen sind reaktionär wie je, während die kleinen Firmen um ihr Dasein kämpfen müssen. Nur eine große Gesellschaft baut modern. Und wenn auch die Hochhäuser in der Innenstadt Montreal modernisiert haben, so wurde doch nicht eines davon von einem örtlichen Architekten entworfen.

Canada ist noch in dem Entwicklungszustand, wo es nicht leicht ist zu wissen, wen man kennen muß. Sie können manchmal feststellen, daß die Mutter Ihres Babysitters mit der Frau Ihres Direktors in die Schule gegangen ist. Es ist daher am besten, mit allen freundlich zu sein. Und wenn Sie das nicht fertigbringen, dann bleiben Sie auf gutem Fuß mit dem Institut. Das Königliche Architektur-Institut von Canada ist ein Zusammenschluß von Vereinigungen aus den einzelnen Provinzen, die die Zulassungen vergeben. Dies hat in den größeren Provinzen zu einer Politik der geschlossenen Gesellschaft geführt, wo die alte Schule die Kontrolle hat. Die Annahme durch das Institut ist, wie das Erhalten von Aufträgen bei den Kunden, nicht so sehr eine Frage, ob man was kann, sondern eher ob man persönlich annehmbar ist. Zum Beispiel können englische Einwanderer, die eine Architekturschule, nicht im Universitätsrang, besucht haben, leicht von einem Professor abgelehnt werden, der den Mythus seiner akademischen Überlegenheit bewahren will.

Da die älteren Mitglieder nach und nach ausscheiden, wird das Institut allmählich mehr aufgeklärt und fängt an, einige seiner gesellschaftlichen Verpflichtungen zu übernehmen.

An der Spitze steht das Bundesamt für öffentliche Arbeiten, das mehr als eineinhalb Millionen Dollar im Jahr für Gehälter ausgegeben und meistens die schlechtesten Architekten in Canada beschäftigt hat. Unglücklicherweise erlaubt diese Haltung der Regierung es den besseren Architekten in der Privatwirtschaft, gegen die Einstellung von Architekten im öffentlichen Dienst Sturm zu laufen. Die Folge davon ist, daß es keine Forschungsstellen für den Bau von beispielsweise Schulen und Krankenhäusern gibt.



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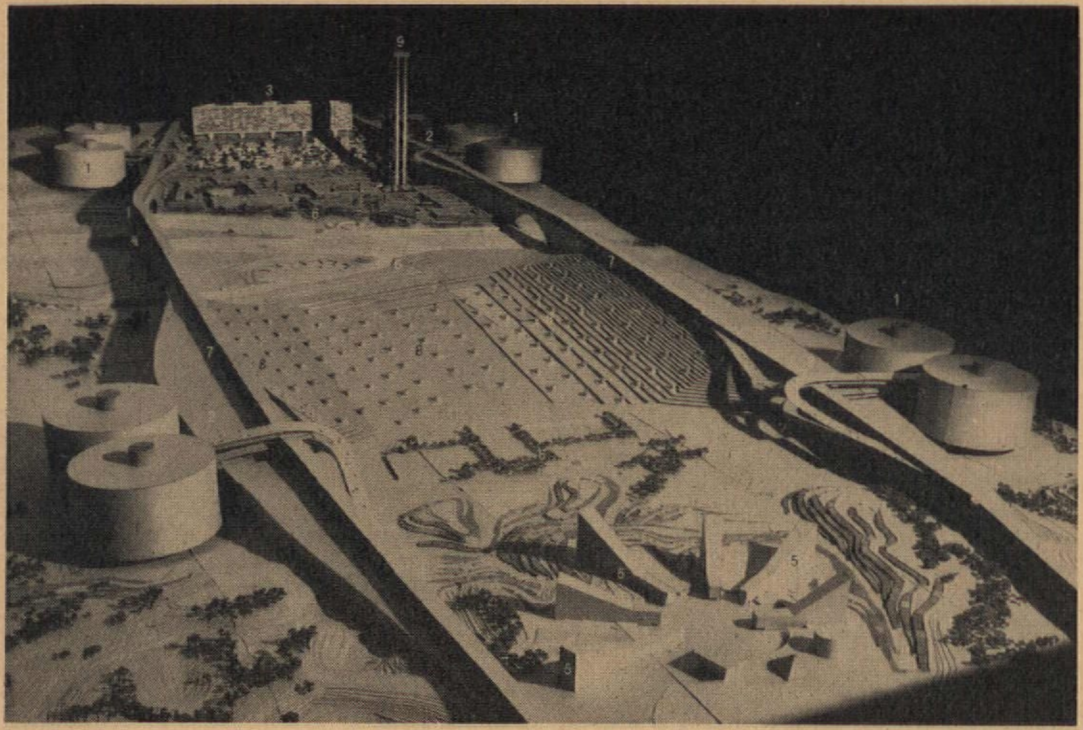


1

1
Town centre/Troy, N.Y.
1 car storage
2 goods and services
3 housing
4 commercial/cultural
5 university
6 recreation
7 intercity transportation
8 research/industry
9 office tower

Student Projects: Rensselaer Polytechnic USA

Project 1: Town centre Troy, N.Y.

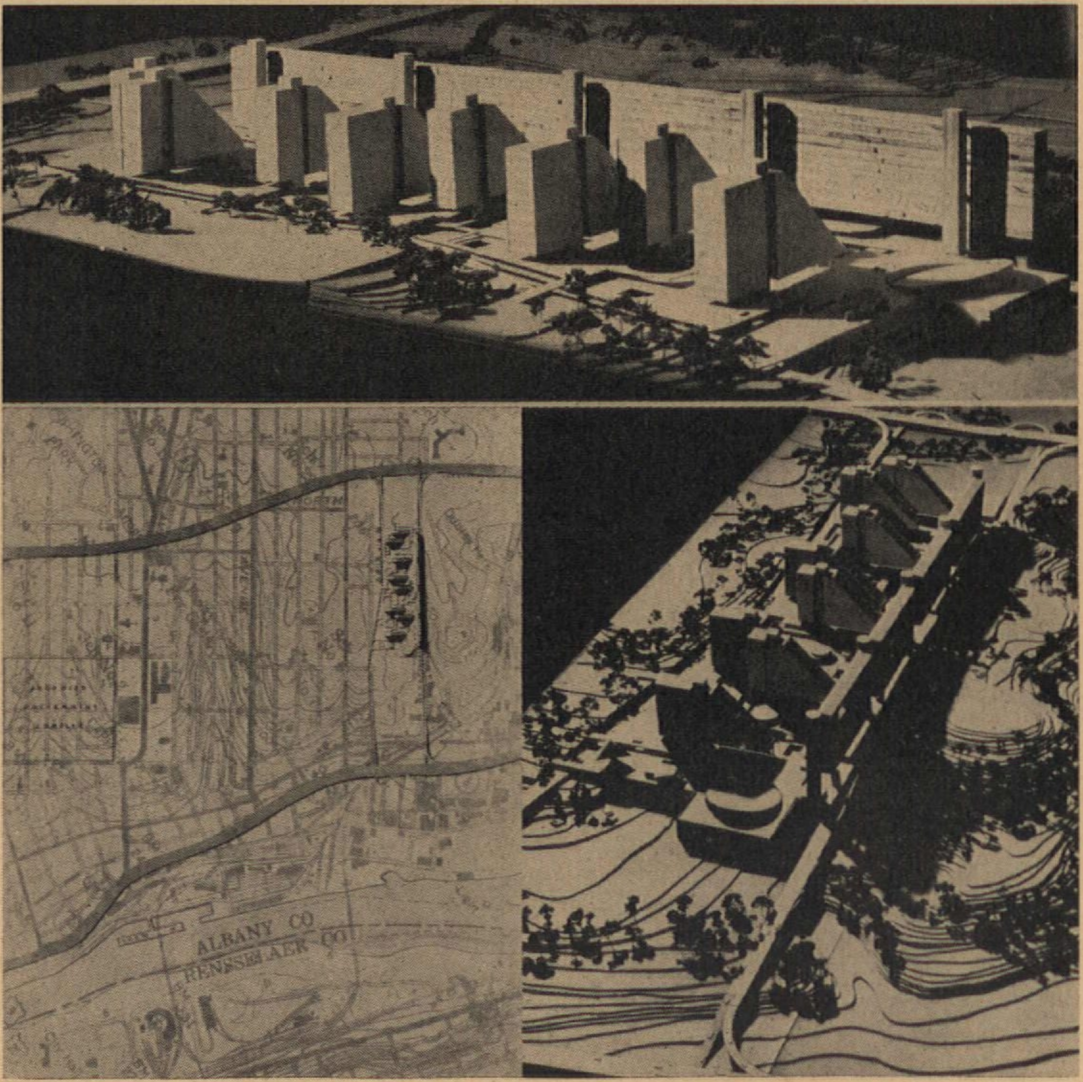
P. R. Bromer, W. M. Danusier, J. Jensen, R. G. Matteson, Professor H. C. K. Liu

Using the home city of Rensselaer Polytechnic Institute as the guinea pig, a team of students has advanced a hypothetical plan for the recreation of the city's urban core.

Rather than acting as a divisive element, the Hudson River valley in this scheme becomes the factor that binds the disparate activities of the city together. The valley is spanned by two elevated connector highways spaced 2000ft. apart, beneath which are located storage facilities for goods and services. Four circular parking structures act as entrances to the core. A system of rentable underground carriage units seating two to four is proposed for transit within the urban core.

Offices—both business and governmental—are placed in a single tower 120-stories high. The tower would be 'perforated' at several points to provide public spaces. Commercial and cultural elements are placed between the riverfront recreation area and the housing.

Across the river, an area devoted to research and related light industry is located between two recreation strips, and a university complex tops the rise.



2

Project 2: Housing Albany City, N.Y.

Team 1: W. M. Cohen, A. M. Harden, H. Korenstein

This work is the result of an 11-week problem given to fifth-year design students. The problem required the detailed development of plans for housing for approximately 10,000 people in the City of Albany, New York. There were three teams of students and three designs, but owing to lack of space only one scheme is illustrated here. The directors of this study were Henry C. K. Liu and Peter Pragnell.*

** Student publication of the school of Architecture Rensselaer Polytechnic Institute, N.Y., volume 1, Fall 1963*

Basic considerations

(1) To provide urban housing which would reflect the needs of contemporary society and offer the benefits of concentrated living. (2) To recognize the different scales of pedestrian and automotive movement patterns. (3) To establish the significance of the transition between pedestrian and vehicular movements. (4) To provide a hierarchy of urban spaces which would facilitate all levels of social activity and interaction. (5) To re-establish the pedestrian as the natural occupant of urban spaces. (6) To show the advantages of the urban environment in terms of human activities and interest, and to express these through architectural form. (7) To provide a definition between the existing urban structure and its surroundings.

2
Housing unit/Albany N.Y. Top and right shows unit, with roads feeding. Bottom shows relation to arterial routes

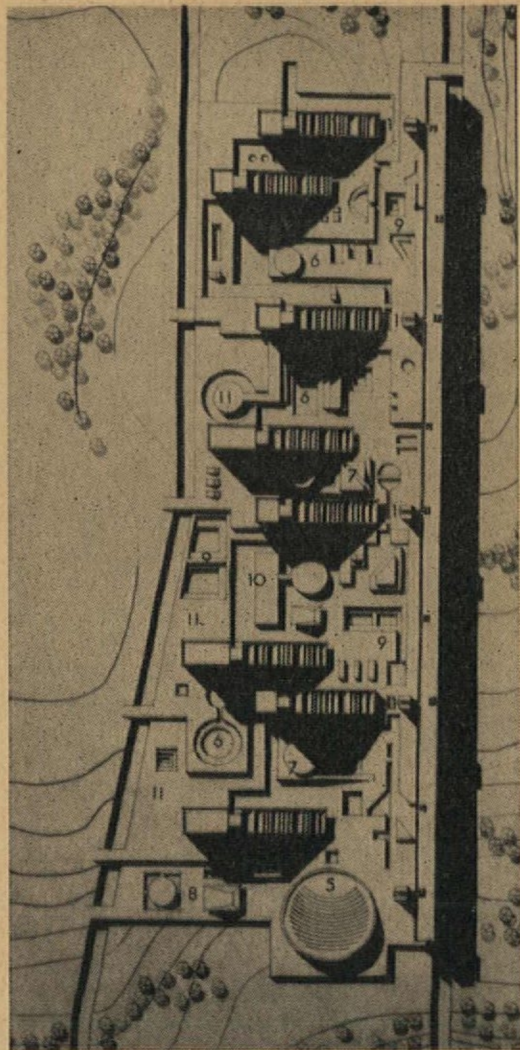
Description

The site is located approximately one-half mile north of the core and state government centre of Albany, and is defined by two parallel arterials which serve the area. Vehicular traffic flows into the parking level of the complex on two roads that connect the arterials. The transfer from vehicular to pedestrian circulation is defined by courts which create the feeling of entrance into the complex. The courts, which are 60ft wide and extend for 180ft are placed 400ft apart. These are the places of maximum pedestrian movement and, as such, are the generators of shopping concourses that occupy the upper levels of the courts. Community facilities, such as schools, playgrounds, offices, restaurants, museums, theatres and large comercial facilities, are located on the upper plaza between the entrance courts.

The sloped apartment structures are oriented east-west and permit the present urban development to grow into the fabric of the housing complex. A 2000ft-long apartment structure is located perpendicular to the sloped buildings on the north side of the complex and provides a finite ending for the city.

The 12ft-wide open corridors are conceived as part of the urban spaces which are vertically removed yet retain their activity and liveliness. Each 'street' or corridor serves three apartment levels.

The apartments are designed on a 15ft module as interlocking duplex units that provide 1-, 2-, 3-, and 4-bedroom apartments. Efficiency units are interspersed in order to provide a larger variety of apartments. Each duplex unit has a 15ft high living area and a 10ft by 15ft terrace. A variety of living spaces is provided within the individual apartment unit.



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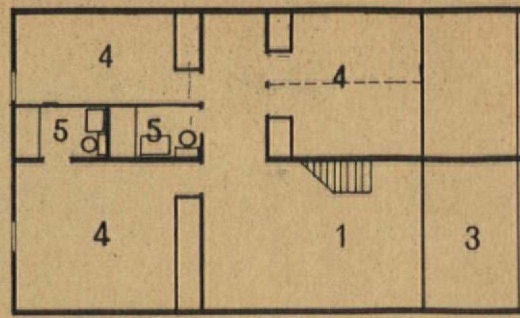

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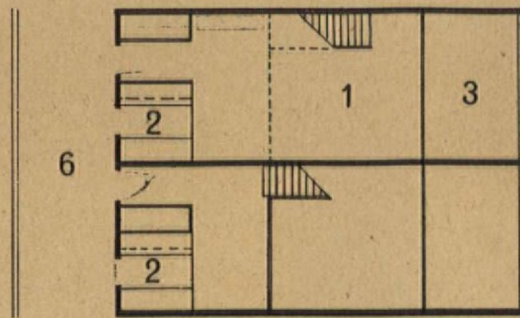

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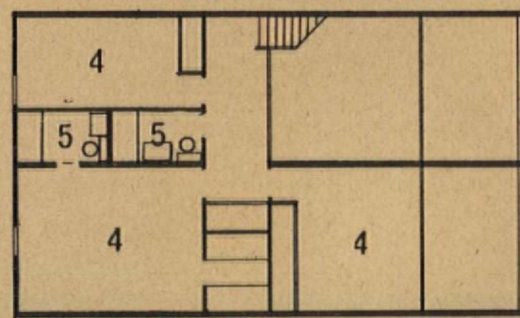

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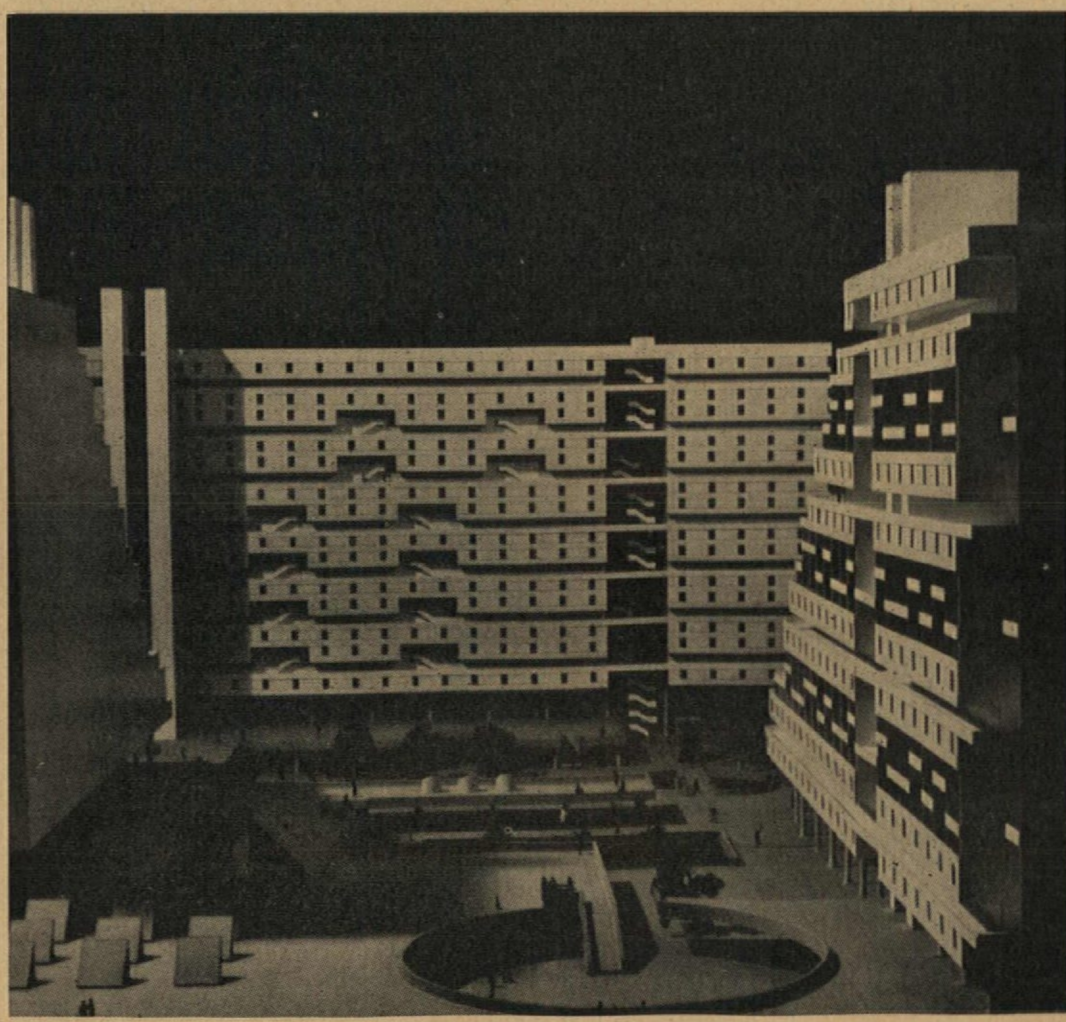

5

1
Plan of the whole housing assembly (10,000 persons)
1 entrance core
5 amphitheatre
6 school
7 theatre
8 religious complex
9 office space
10 cultural centre
11 playgrounds

2, 3 & 4
Plans of a typical housing unit
1 living
2 kitchen/dining
3 terrace
4 bedrooms
5 bathrooms
6 access gallery

2
Plan of lower level (Unit A)

3
Plan of gallery level (Units A & B)

4
Plan of upper level (Unit B)

5
A general view of inner courts within the whole housing assembly

The buildings featured on the following pages have been selected and introduced by **Anthony Jackson** (until recently, editor of 'The Canadian Architect') as being representative of the best architecture currently to be seen in Canada. We present the work according to the alphabetical order of the architects' names.

CANADA

Anthony Jackson

We must always start off with a few statistics. It's roughly 3000 miles across Canada, but Europe is only six hours to the east and Japan is 12 hours to the west. New York is a pleasant drive of 500 miles from Toronto around Lake Ontario and over the Thruway. Chicago is the same distance the other way. Montreal is only a nine-hour drive from Boston or New York or Toronto. Vancouver, like Paris, is on the 49th parallel; Toronto is the same latitude as the South of France, Montreal as Venice; and the most northern major city, Edmonton, is no further north than Blackpool. When a transatlantic cable was laid and celebrated over one Christmas, the English commentator complained how cold it was in London. In Montreal it was 65°F colder. In Winnipeg the temperature has been known to drop to minus 50°F and frost is recorded for six months of the year. But in summer the skies are high and blue and it's hot enough for Bermuda shorts. Montreal has a population of 2 million and 1·5 million of them speak French. Toronto has 1·6 million spread over 240 square miles; its largest minority group is Italian. Montreal and Toronto are the cultural capitals, while Parliament sits in between in Ottawa. Toronto has a public art gallery, a dozen private galleries, a very large popular theatre, other experimental theatres, some foreign movies and coffee shops, a couple of symphony orchestras, a university quartet and the rambling vitality of a city becoming a city. Give or take a bit depending what you like for culture, Montreal has about the same, though there you're expected to be bilingual. If you prefer the outdoor life and you live in the east, then there's just about a lake for everyone except they've mostly been bought up and you can't get near them. But there's sailing and hunting and fishing and being bitten by mosquitoes and black flies and ski-ing. If you don't ski you can watch the snow fall from December to April, and if you live on the Prairies then you don't have any choice, as everything's too flat anyway, and you've got other worries. To the north there's the Pole. To the south there's Montana, Dakota, Wyoming, Nebraska. Space you've got.

The country is beautiful. The Pacific Ocean, the Rocky Mountains, the Niagara Falls, the St. Lawrence River. Most of the towns have superb locations, but what's been done with them is unbelievable. From Vancouver to St. John's it's all the same mess. Drive north from Montreal into the Laurentian Mountains and you'll get to a gas station, a Coke machine and a few suburban houses dropped around. Drive 2000 miles west into the Rockies and you'll get to a gas station, a Coke machine and a few suburban houses dropped around. Pass through any town and you'll find the typical Canadian street: used car lot, church, used car lot, roadside stand, town hall, used car lot, gas station, funeral parlour, used car lot. And so it goes on. But it's getting better. Ask any local inhabitant and you'll be told you should have seen it 10 years back. It's true. Twenty-five years ago there was still a depression. Fifteen years ago everyone was as busy as possible making money in case the depression came back. Now there's time for the finer things of life, the country's become planning conscious.

Probably the best example is Ottawa, where they've been working at it since before the Second World War. Greenbelts, parkways, symbolic core, much is being achieved, but unfortunately the federal government is not responsible for the main part of the city which in typically free enterprise fashion is truly chaotic. While the National Capital Commission in Ottawa is designing the form of its downtown area, Montreal is building a subway and Toronto which has one, is putting its electrical wiring underground like Montreal which has it there already. The two cities are also putting up large civic buildings though neither city has a development design. Montreal has just opened its Place des Arts concert hall designed by the most sophisticated of its architects; Toronto will soon complete its Finnish city hall. But while both are of a high architectural standard, they are oases in an unplanned city landscape which is what you might expect in a capitalist society. Yet in fact it is the commercial developer operating at a civic scale that has provided our best example of urban design. As the boss William Zeckendorf says, Place Ville Marie est l'Etoile de Montréal. (And incidentally, even in the small Atlantic town of Halifax, $35 million is going into a commercial redevelopment designed by Robert Matthews and Percy Johnson-Marshall.)*

*See *AD* March 1964, page 109

Similar progress is being made in the design of individual buildings. Ten years ago, modern architecture hardly existed here. Stylistically it tended to relate south into the States but recent European influences have broken up this pattern. Only on the West Coast does a simple parallel exist. There, Americans and Canadians share a Pacific way of life and leave the rat race to the unfortunates back east. Occidental comfort clothes oriental elegance while architects try to broaden their domestic style into the communal scale of highrise buildings. In Winnipeg the situation is peculiar. The place is isolated, there is little tradition and clients have few preconceptions. Firms are few and the good designers go the rounds leaving their styles behind them. In Toronto, the English influence started to develop before it was capped by Finnish romance which, with the actual presence of Viljo Revell, sent off young graduates to northern Europe. The older sources of New York and Chicago are no longer so acceptable as who wants a box if there's something better. Even the older firms are keeping up with the times and giving young designers a chance to create. So in Toronto, architecture feeds on its own momentum. Montreal is another story. In most places in Canada you can be fairly sure that money and politics speak the same language. Not in Montreal. You have French architects, English architects, Jewish architects. One group does the town halls, one the banks and one the shopping centres. If most Canadian building is generally dull and mediocre, French Canadian building is aggressively bad. Most architects keep fairly closely to an industrialized aesthetic; the French search for the A in Architecture. Seemingly with no other organizer than their emotions, they pile up motifs in an orgy of self-expression. Of the few French architects comprehensible to English tastes, one extreme leans to the glass box school while the other, perhaps more suitably, learns from Taliesin. This is not to say that the French do not contribute, only that you can't photograph the spirit of creation. While in Toronto there are maybe 15 architectural firms where a self-respecting graduate might work, in Montreal choice is negligible. The big firms remain as reactionary as ever, the small firms have to struggle for existence. Only one large partnership produces modern architecture. And while the downtown skyscrapers have modernized Montreal, not one was designed by a local architect.

Whereas the architects in Ontario try to be professional gentlemen, architecture in Quebec is a more intense business. It's seldom that a young man gets much of a chance. Elsewhere, getting clients is a bit of a game that is part of the fun of living in this country. The game goes something like this. Suppose a city wants a new city planner. It advertises all over the world, finds that there isn't really time to interview suitable candidates and promotes the sitting deputy planner. Now. The deputy planner may or may not be good. It isn't this that has influenced his choice, only the incompetence of provincial mentality. Take another case. A developer wants to promote a large building. He hasn't any money to spend, but he needs a design before he can get anyone interested. So he shops around to see who will give him the cheapest service. A young architect finally gets the commission. He may be good or bad. This doesn't influence the choice. What matters is what will sell. A third example. An architectural magazine needs a new editor. It has two applicants. One has a beard. Is he good or bad? That's not the question. Is he safe? The country is still at the stage of development where it's not so easy to know whom to know. You can still find that your baby-sitter's mother went to grade school with your boss's wife. So the best policy is to be friends with everyone.

But if you can't, then at least you should keep on friendly terms with the establishment. The Royal Architectural Institute of Canada is a collection of provincial associations that hold the powers of registration. This has led to a closed shop practice in the major provinces that are controlled by the old guard. Once again however it's not a systematized persecution but a spiteful vendetta of personalities. Typical rejections are of English immigrants who have been through non-university architectural schools, by the professor on the board who must maintain the myth of his own academic superiority. Or even more zany, the occasion when an immigrant who had received his master's degree from a Canadian university was turned down because his bachelor's degree came from Scandinavia. So if you want to keep your nose clean you learn to roll with the punch.

As the older members gradually retire, the Institute slowly becomes more enlightened and begins to perform some of its social responsibilities. Three years ago it set up a committee to inquire into the design of the residential environment. Three architects travelled around the country and tried to make sense out of what they saw and heard. After which they wrote a report which included recommendations. One of these was for an institute of urban studies, and now there is a Canadian council of urban and regional research with the excellent secretary of the original committee as director of its programme, though perhaps it's a judgment that he's an architect-planner who some time ago resigned from the Institute. Other manifestations of enlightenment are the airports of the department of transport and the community activities of the central mortgage and housing corporation. Overbalancing these is the federal department of public works which has spent over $1\frac{1}{2}$ million a year on fees and mostly employed the worst architects in Canada. Unfortunately this governmental attitude permits the more enlightened architect in private practice to lobby against the use of architects in public service. The result is there are no centres of research for such buildings as schools and hospitals, and every time an architect is commissioned he communes with his navel and pulls out a plum that may be tasteful, but adds nothing to our knowledge of how to build schools and hospitals. So you find that while we might be getting along with our architecture, our approach to building is primitive. Architects are very much part of the system in which they live, and while theoretically they're all one happy family, it's really every man for himself. If you want to investigate building performances it's no use asking architects, as according to them everything's always perfect. If you want to compare costs of buildings it's no use asking architects because they cannot divulge their client's secrets. The classic instance of professional non-cooperation took place during the extension of the University of Toronto campus where every commission was separate and the architects didn't speak to one another.

Life then is primitive, but life is just beginning. Our old masters are in their early forties. If you've got a pioneering spirit, this is the place to be. The future is here, not to be entered but to be made. (And if you don't make it, you can always cross into the States.)


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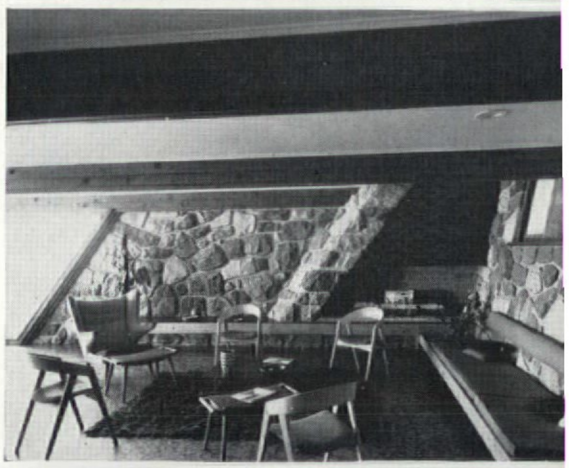
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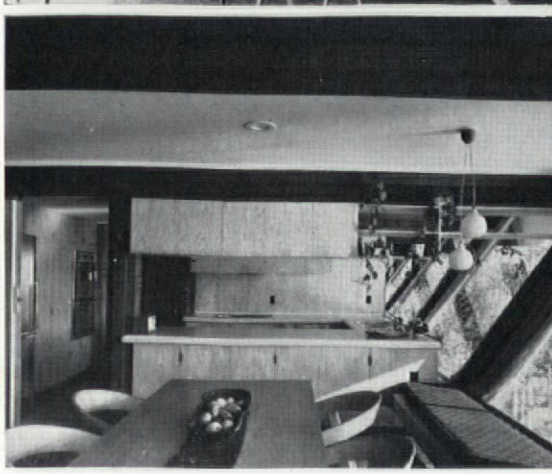
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1
Upper level approach from the east

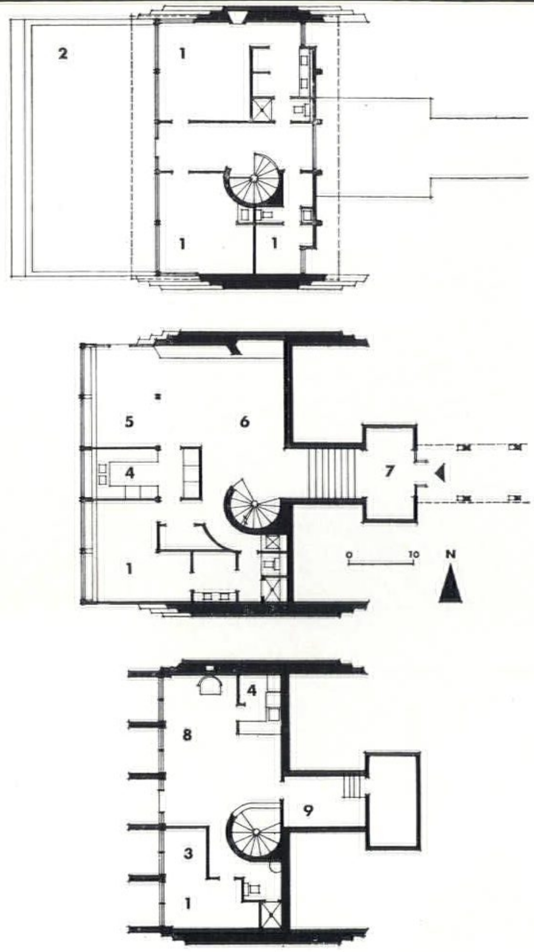
2
The stairwell at the top (bedroom) level

3
The stairwell and main entrance at centre level, seen from the living room. Interior finishes are: floors, flagstone, cork and vinyl; walls, stone and ash ply; ceilings, gypsum board

4
The north-east fireplace corner of the living room (centre level)

5
The dining end of the living room and the kitchen enjoy a view of the lake

6



7

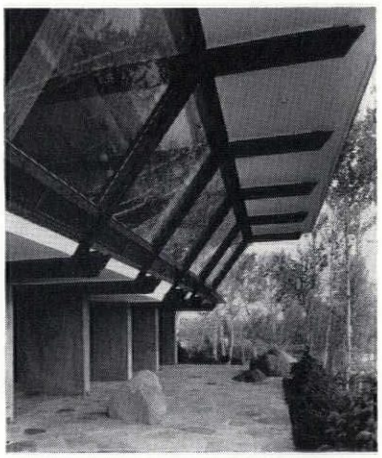
Simard House, Esterel, PQ

Roger d'Astous

The house is perched on a three-acre rocky cliff site facing west over Lac Masson.

The structural system is British Columbian fir post and beam set on a concrete foundation. Walls are wood frame or stone; the floors and roof are spruce joists. Exterior finish is cypress.

8



6
The approach to the centre terrace from the north

7
Plans. Top, centre and bottom levels read respectively from top to bottom.

1 bedroom
2 terrace
3 nursery
4 kitchen
5 dining
6 living
7 entrance
8 recreation
9 laundry

8
The bottom terrace onto which the recreation room opens

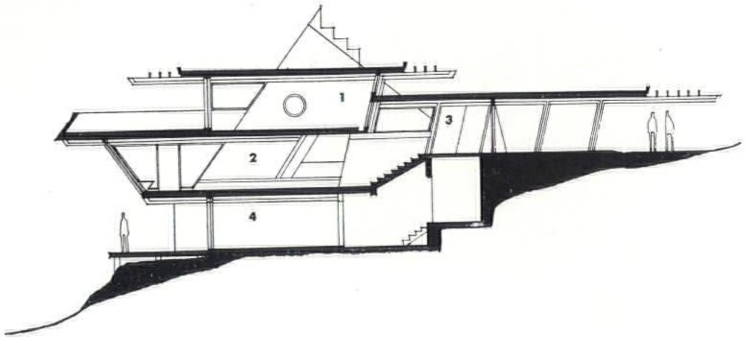
9
The west side of the house

10
Section

1 bedroom
2 living
3 entrance
4 recreation

Photos: Marcel Corbeau

9



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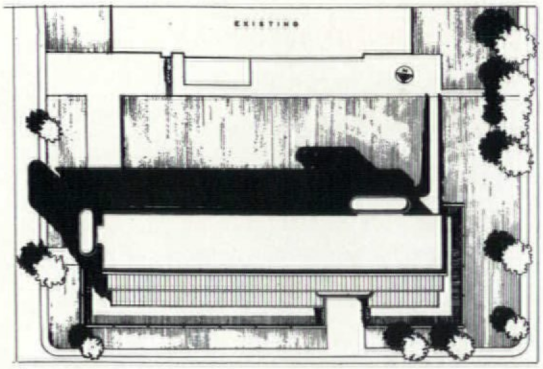

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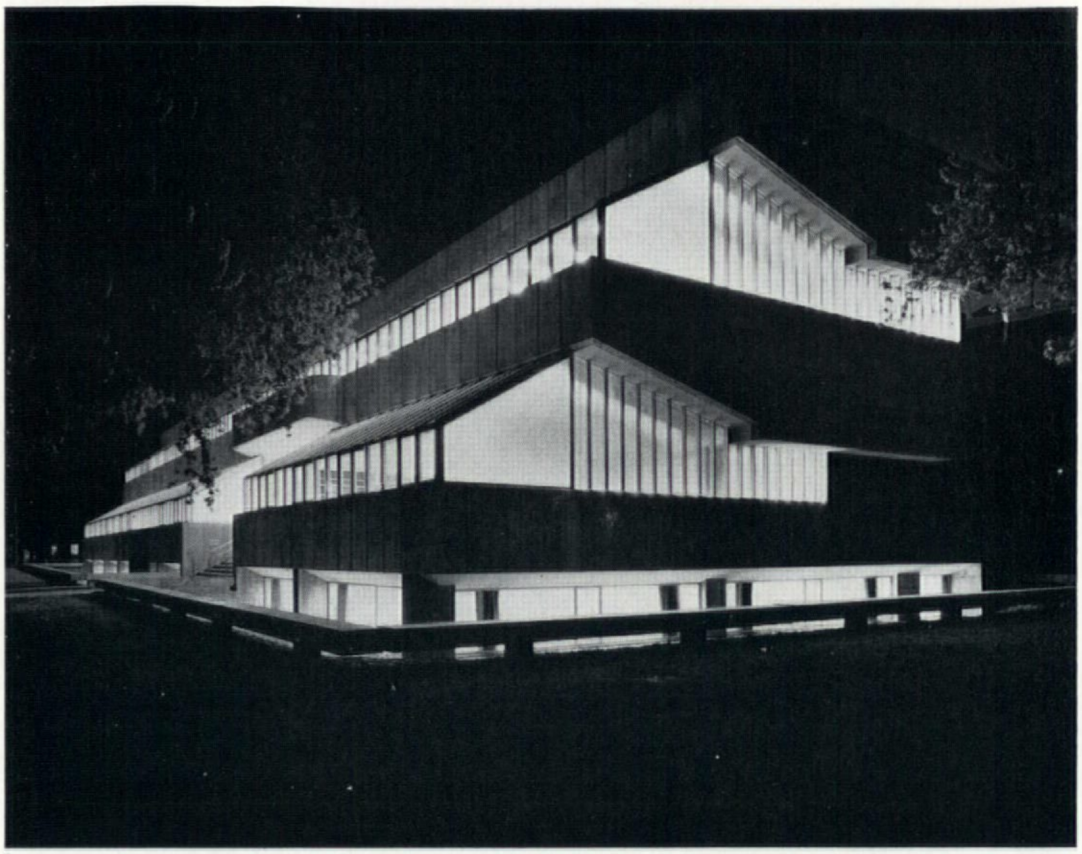

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Central Technical School Art Centre, Toronto

Robert Fairfield Associates

Associate in charge, Macy DuBois

Chief architect for the Board of Education, F. C. Etherington

The existing 'Central Tech' is housed in a Gothic edifice. The new Art Centre, which lies parallel to it on the north side, accommodates in about 38,000 sq. ft 360 day students and 800 evening students.

Concrete was chosen as the material for the new building, being ruggedly utilitarian and strong enough to stand up to the stone massif of the old building; plastic enough for the architects to 'achieve purposeful sculptural form with directness and simplicity'; and, in its untreated state, appropriate to a school devoted to the arts, rough enough to be worked in but never crude. The general colour of the building is therefore grey and aluminium.

All of the studios face north, and those on the two main levels are partially roofed in glass. The upper storey is recessed and cantilevered over the floor below it, to afford the same penetration of light into studios at both levels. The floors are stepped out at each end to show the cantilevered nature of the structure and to avoid the uncertainty and abruptness of the shear end wall.

The rounded stair towers distinguish vertical circulation and emphasize the points of entry.

Form marking of concrete has been coordinated with a plywood panel form system employing uncut standard size sheets of material. The same quality of the building exists in the interiors by the use of exposed concrete and concrete masonry. Welsh paving tile has been used on all floors. Storage and counter spaces between the corridors and studios are of light aggregate block masonry. Plaster is used where wall profiles are of a more plastic shape and where contrast and light reflection is desirable. Clear plastic coatings have been applied to all exposed concrete materials to provide serviceable finishes.

Artificial lighting has been designed to enhance the spatial feeling of the studios under both day and night conditions. The studio ceilings are of white enamelled expanded metal mesh, alternating with four-lamp lighting panels. The open ceiling provides full access to electrical services for the rigging of special lighting which might be desired in any particular studio. The ceilings also provide air return to the exhaust duct system without ceiling grilles.

One of the most interesting aspects of the planning is the treatment of corridor spaces as communal spaces embracing circulation space, gallery space, stairs and lockers, thus providing a meeting place for students and staff alike.

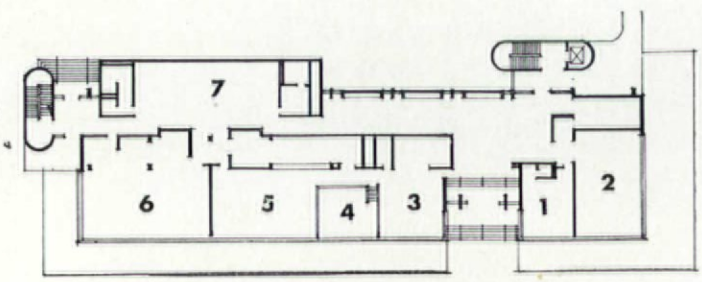
1
Site plan showing relation of old and new buildings

2
Night view of the entrance front from the north-west. The old brick building can just be seen to the right

3
Plan of lower level
1 office
2 classroom
3 casting
4 pit
5 sculpture
6 pottery
7 lockers

4
Plan of upper level
1 lockers
2 painting studio
3 still life
4 design
5 illustration
6 design

3



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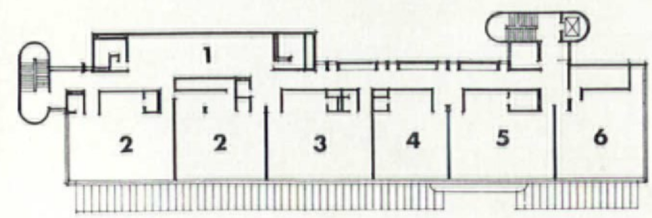

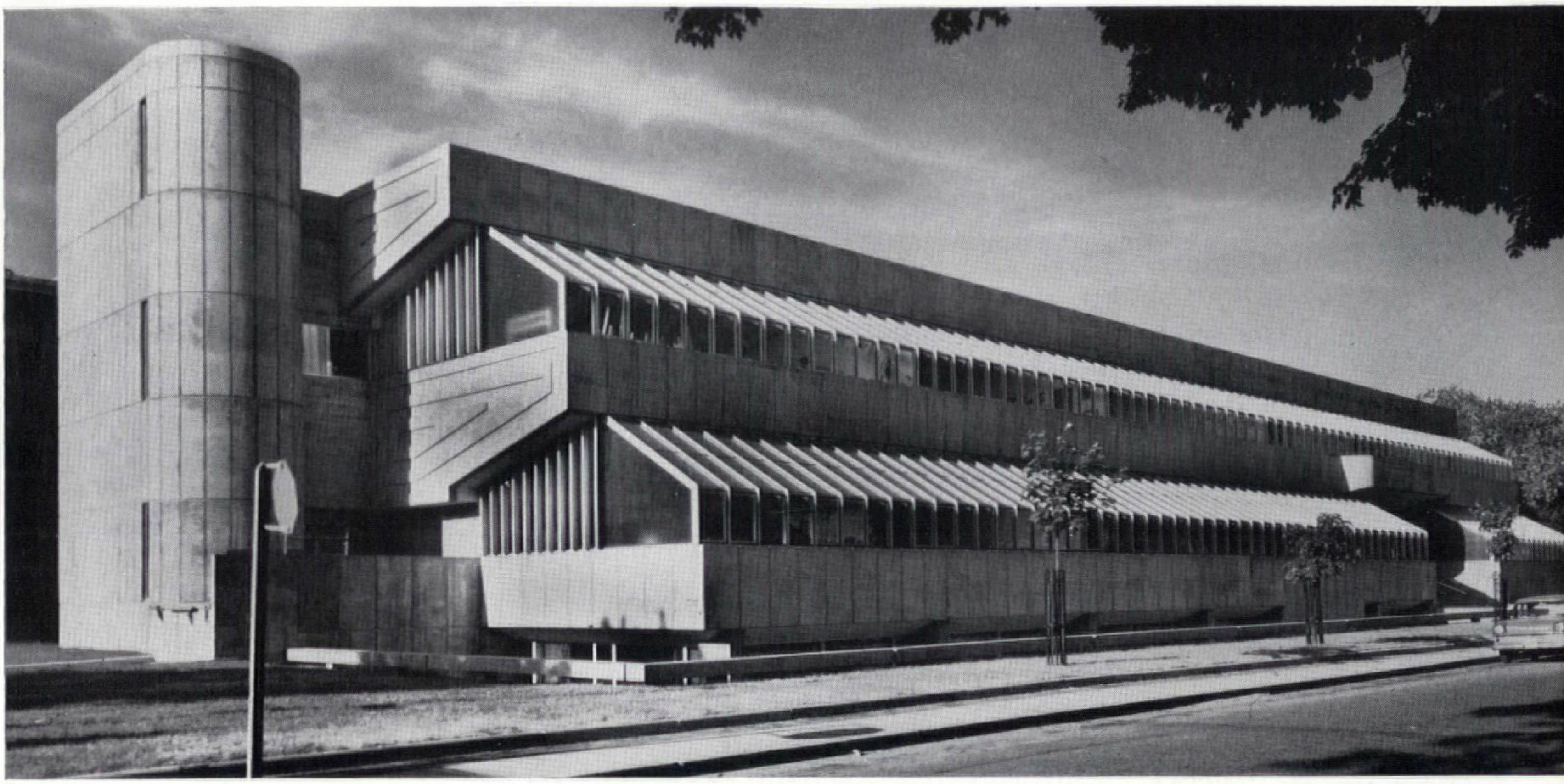

5

5
The main entrance elevation from the north-east

6
Section
1 studio
2 corridor
3 storage
4 staff room
5 expansion

7
Inside one of the studios on the north side

8
The west elevation showing exposed concrete in relation to glass and sun louvres

Photos: Panda Associates

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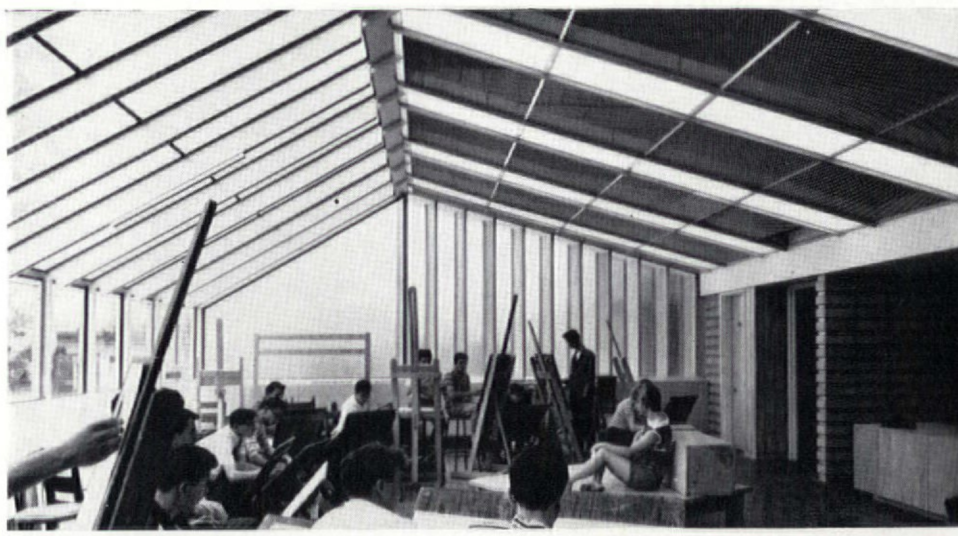
7



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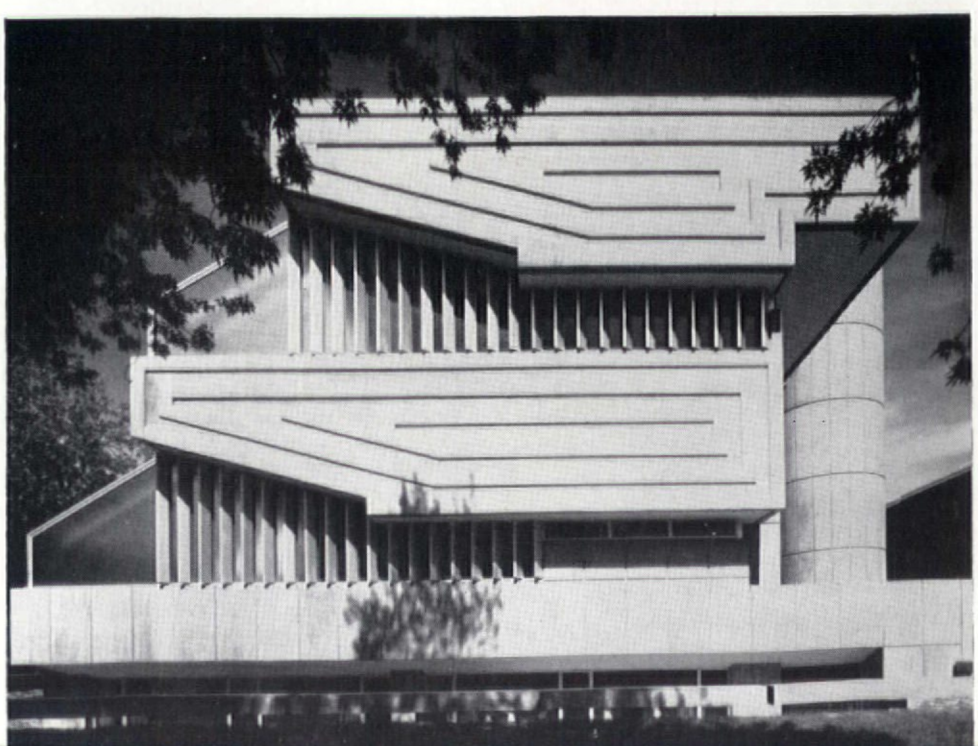

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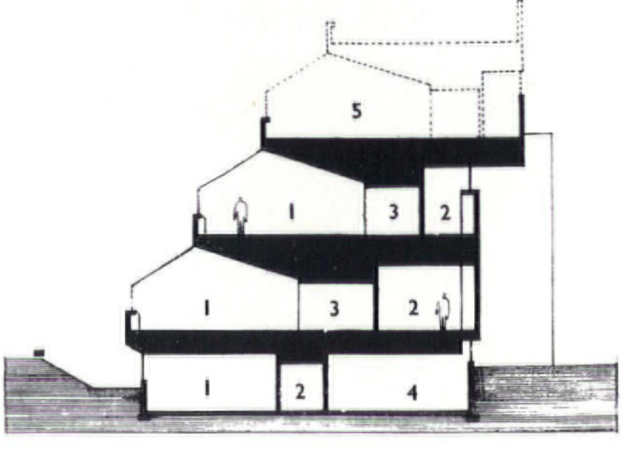

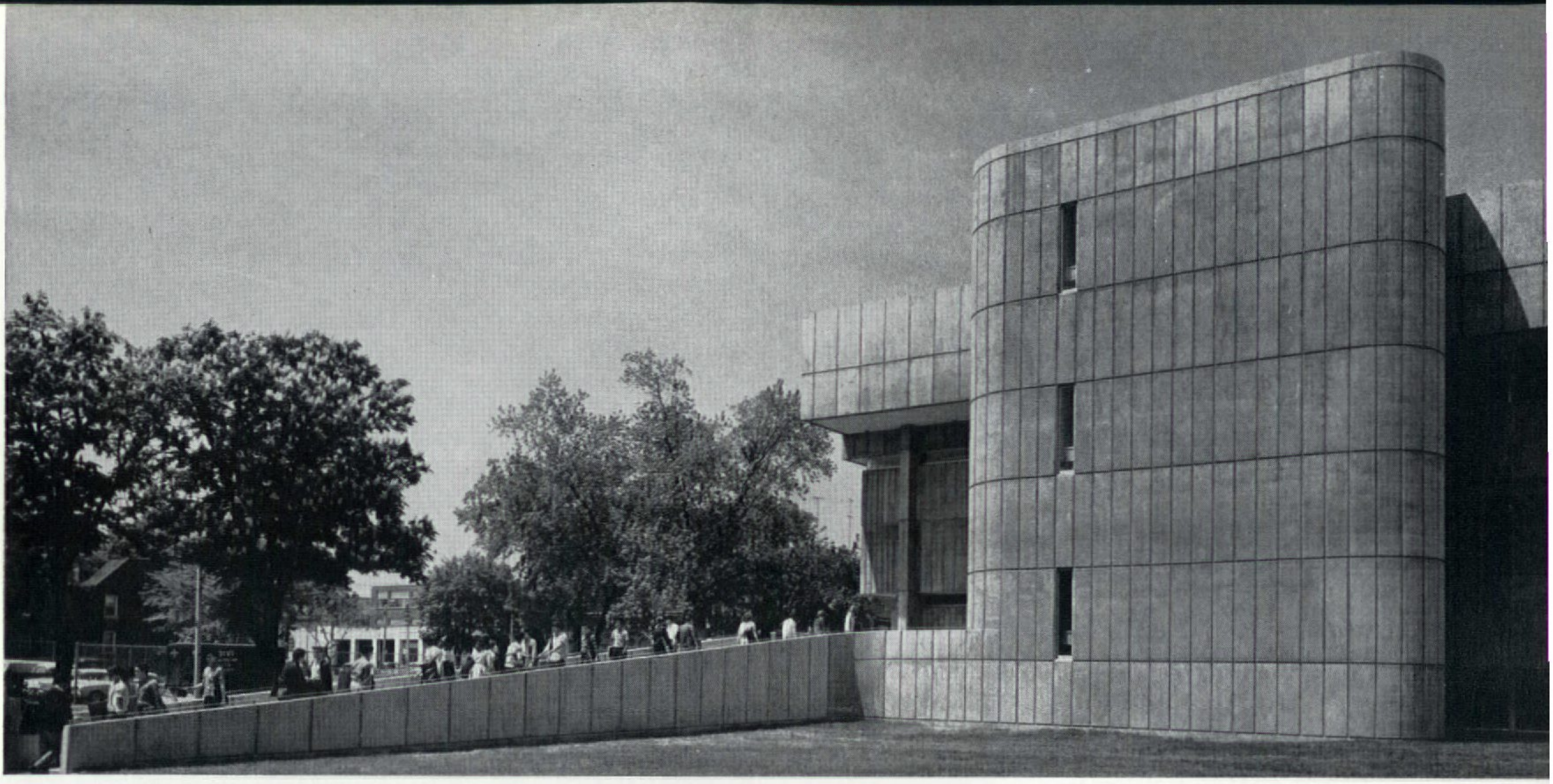

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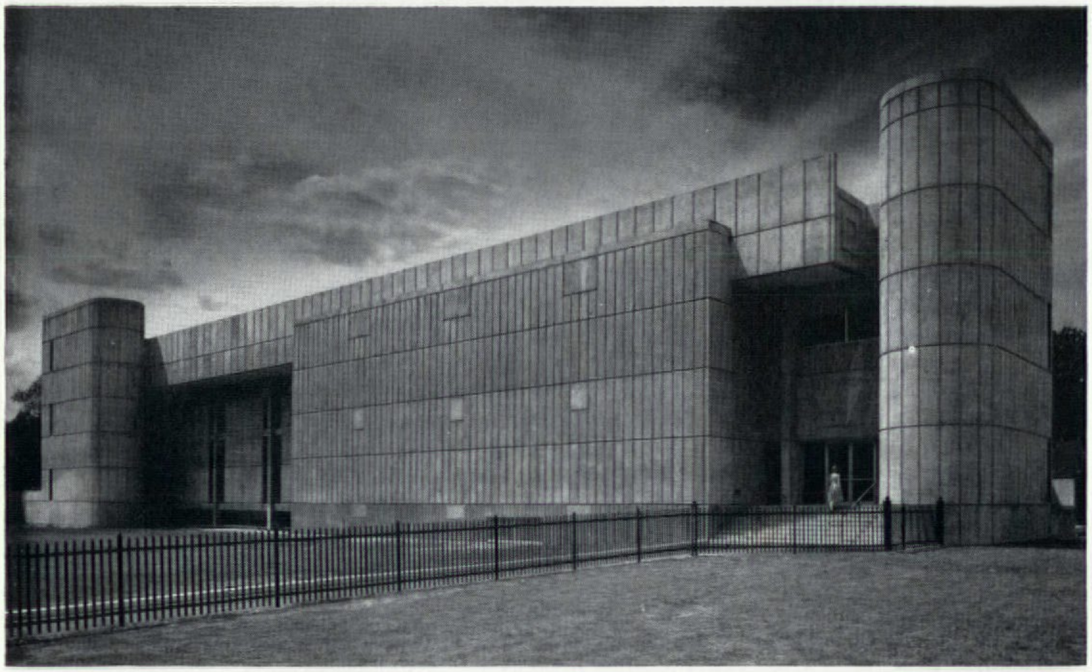

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1
The ramp on the south side

2
The south side

3
Corridor exhibition space

4
One of the free standing staircases

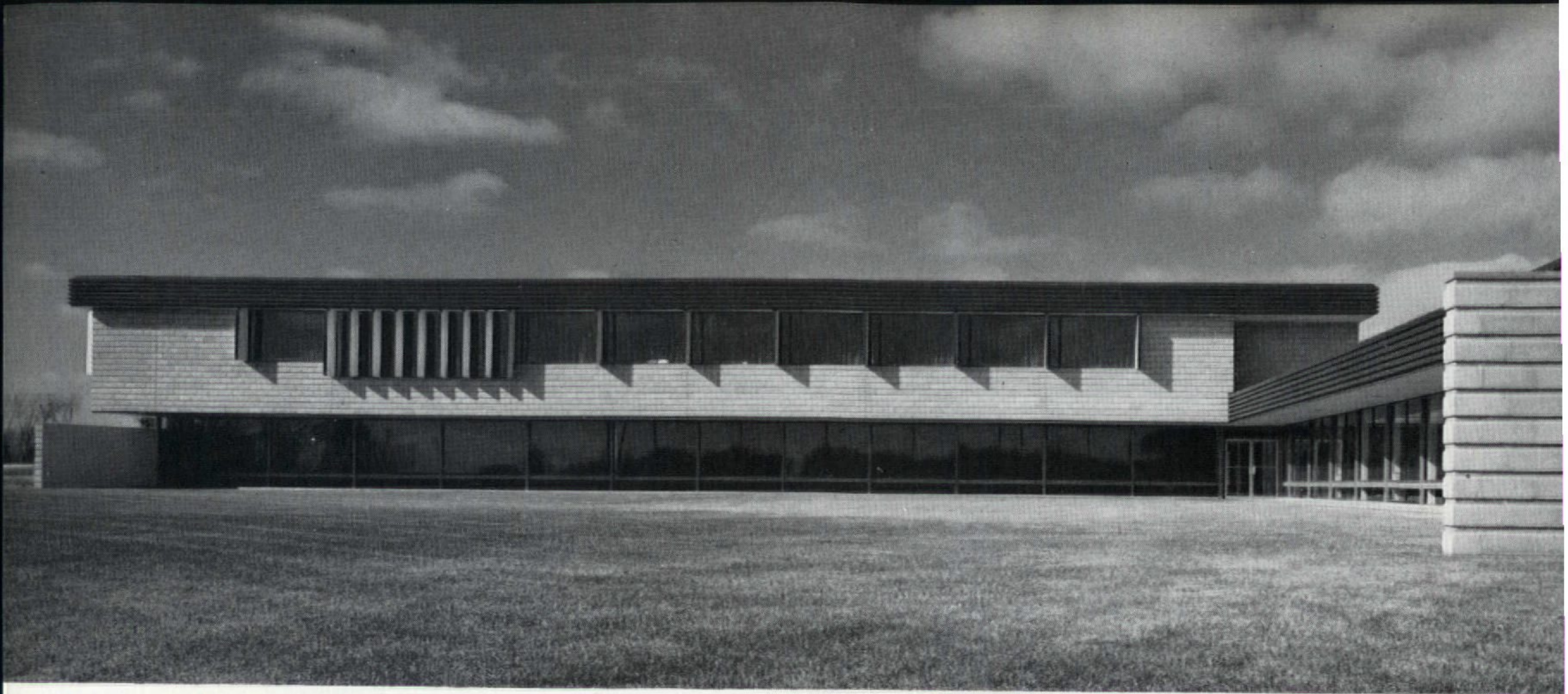
5
One of the two entrances on the south side

Photos: Panda Associates 1, 3, 4, 5; H. R. Jowett 2

3

4

6



1

Oxford University Press, Flemingdon Park, Don Mills, Ontario

Fairfield and DuBois

The architects aimed to emphasize both the separate functions as well as the unity of purpose of the building.

Externally, the building masonry is of purpose-designed concrete block treated with a protective coating of reinforced silicone.

The original design called for garden walls 7ft high, creating two completely enclosed courtyards. The enclosure of these landscaped courts has been left to a later stage when the light industrial area in which the building is situated becomes more intensively developed.

The building fascias are of deep-reveal standard metal deck material, vinyl coated in a deep olive colour before erection. The fascias are designed to reflect the same linear striations of the masonry and to unify the three roof planes of the total building.

1
The south end of the east elevation (see 4)

2
Detail of the louvres in 1

3
Site plan

4
The north end of the east elevation (see 1)

5
View from the south-west

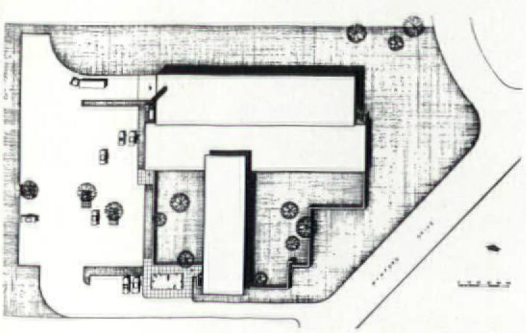
6
View from the south-west of the link between the two-storey and the single-storey blocks

7
Upper floor plan

8
Ground floor plan

Photos: H. Roger Jowett

3



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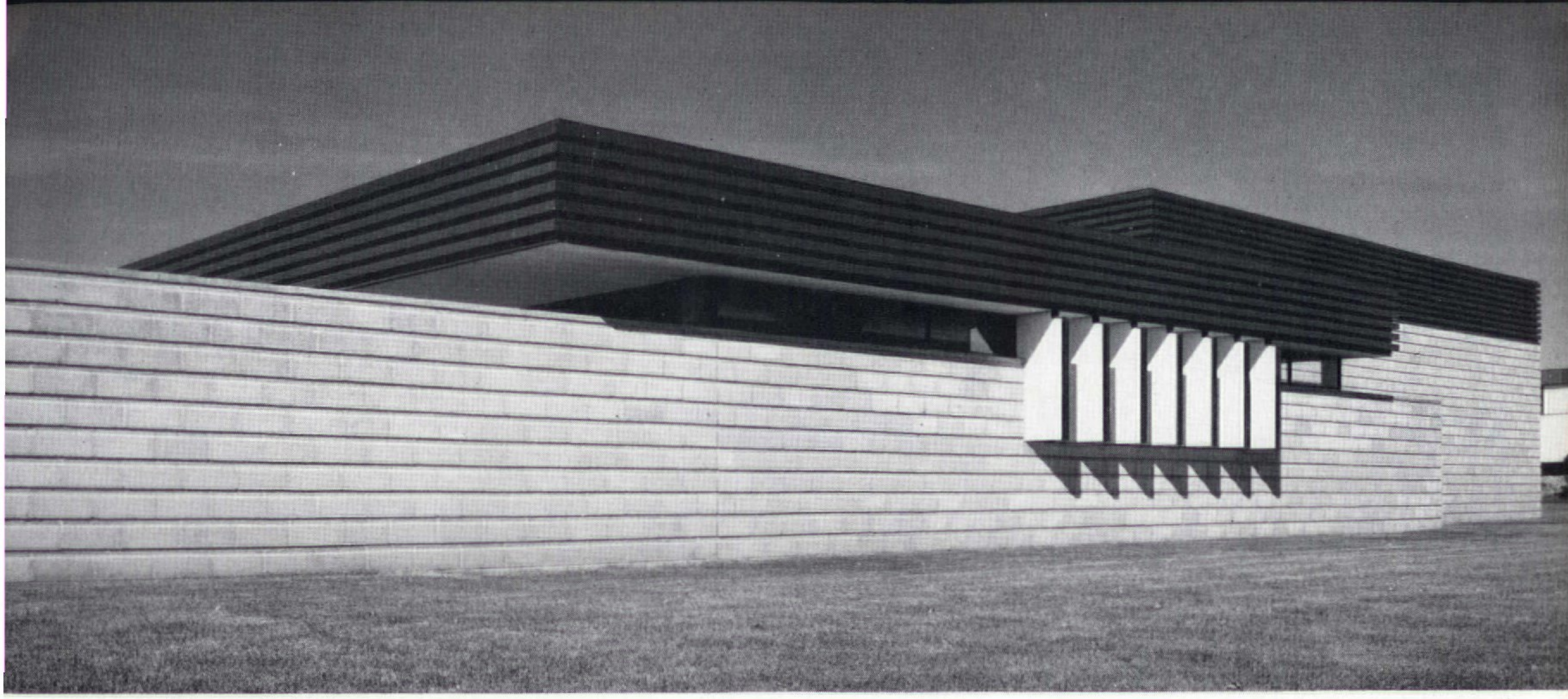

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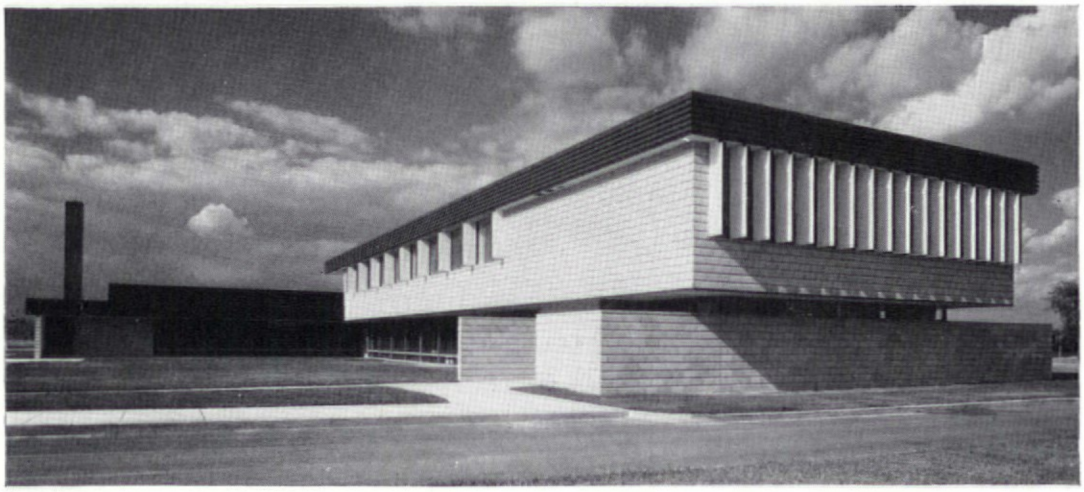

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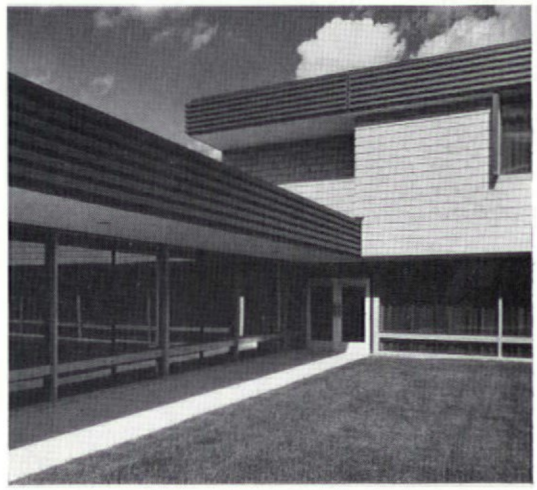

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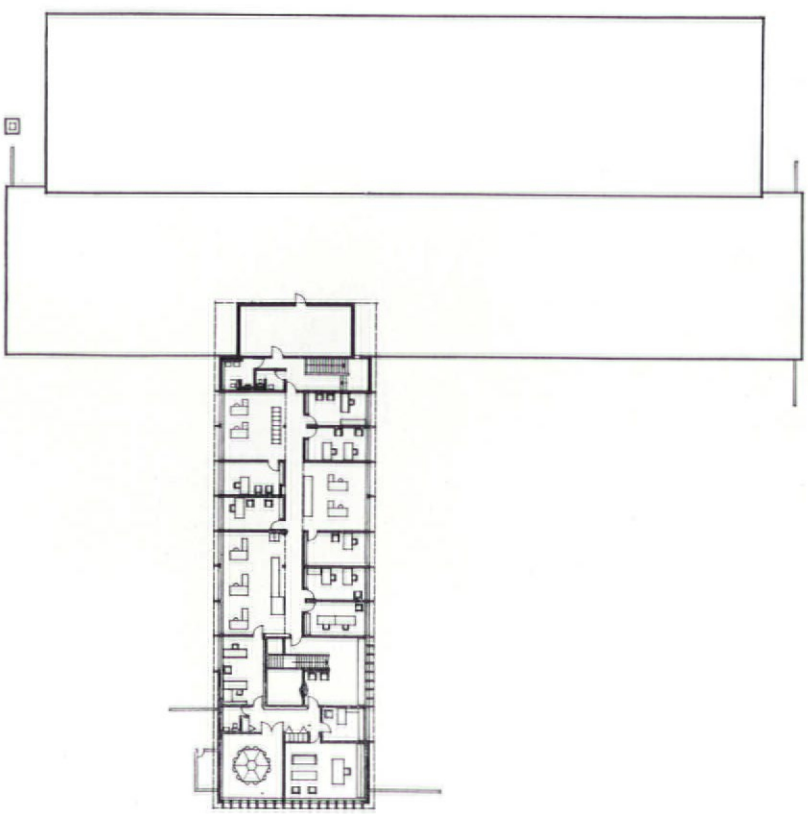

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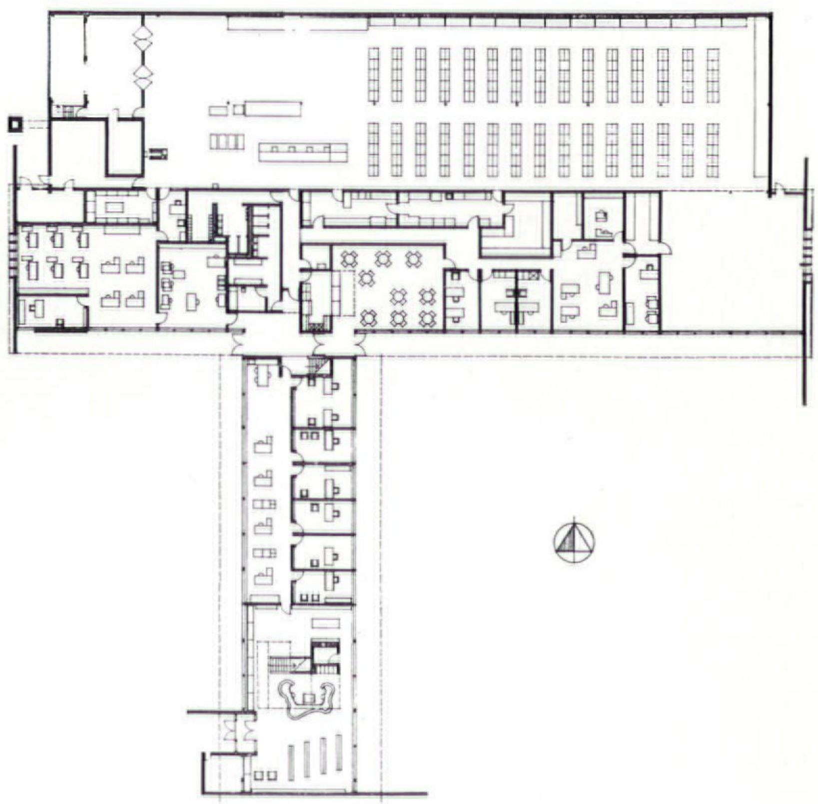


1

Architect's own house, W. Vancouver

Wolfgang Gerson

2

This house is located on a steep western slope. The site overlooks an ocean bay to the south-west, and the mountains to the north. The house is at right angles to the contours so that it will catch all views and the maximum sunshine. To facilitate outdoor living on this steep site three flat outdoor platforms were created each one accessible to another level of the house. The lowest one is the play area for the children, and connects to the indoor playroom. The middle platform is a roof terrace connecting to the living room, and to a formal lawn-garden. At the upper level a wide bridge forms the entrance to the house.

The house is designed for a family with four children. All childrens' areas are concentrated on the ground floor, and left as a rough informal space to allow for the children to 'express themselves'. The adult area above is a large open hall for entertainment, chamber music, or just simply sitting at the fireplace.

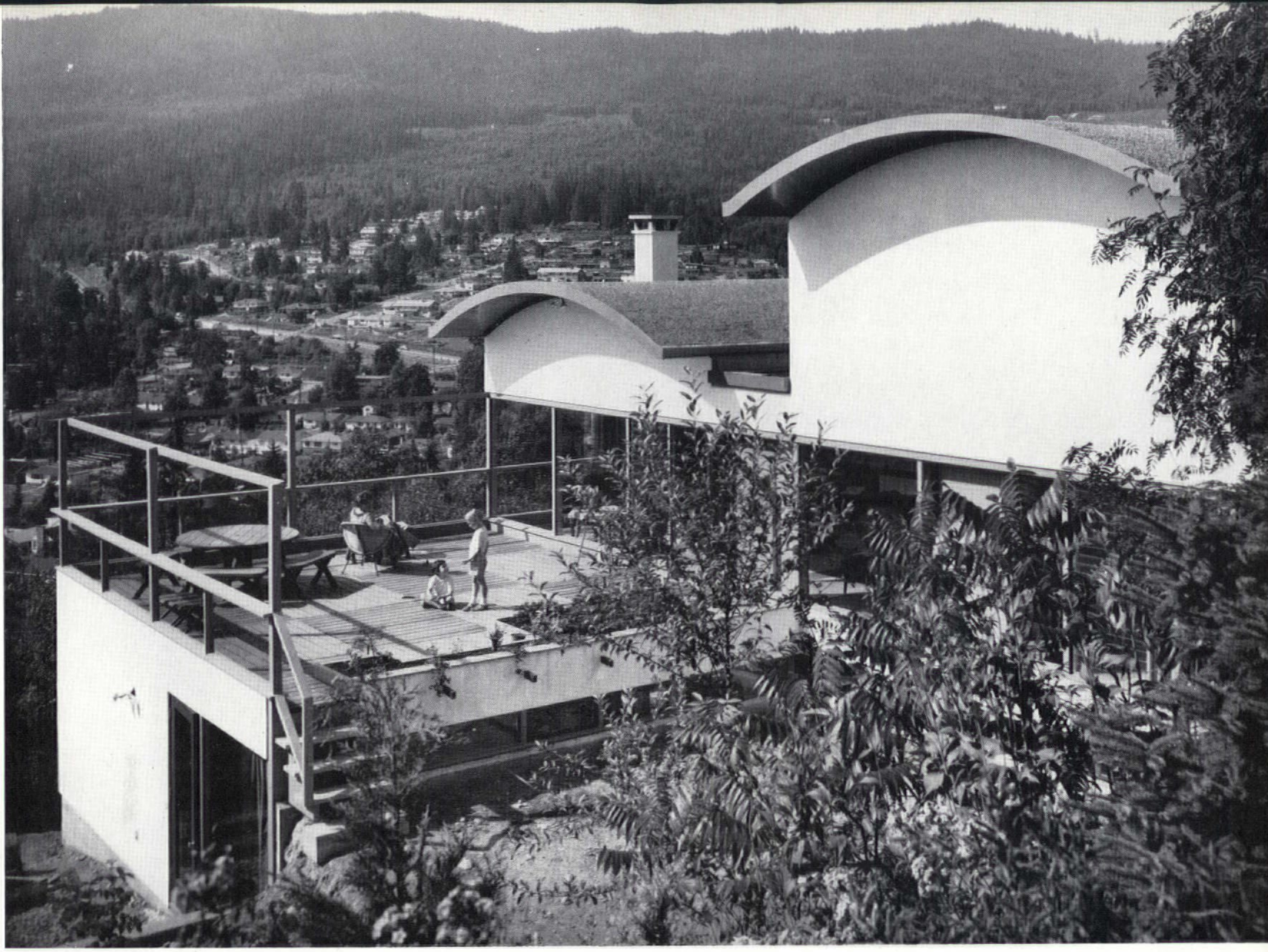
The structure is a conventional balloon frame. Even the vaulted roofs are constructed with wood joists, a plaster ceiling, and plywood soffits and roof decks. The walls are finished with stucco outside and plaster inside. Natural wood finishes have been kept to cabinet work. The staircase has been treated as a piece of cabinetwork forming a podium in the living room. The long walls with the curved profile have a grey sand-finish, contrasting with the white ceiling. All other walls have a putty finish plaster and are painted. The plaster fireplace hood as an 'artificial sun' is painted a bright orange on a yellow wall.

1
View from the north-east. The garage is at the highest point on the site. Beyond it, out of sight, there is a bridged approach across to the entrance in the upper level of the central portion of the house. The lower level of the central portion contains the living area which spreads through into the upper level of the right hand portion, and out at right angles onto a terrace (see 3) commanding a view over the ocean. This terrace is the roof of the projecting wing of the lowest level of the house which contains the bedrooms

2
Part of the staircase

3
View from the south, showing the living room terrace over the bedrooms

4
Section (keyed the same as the plans)



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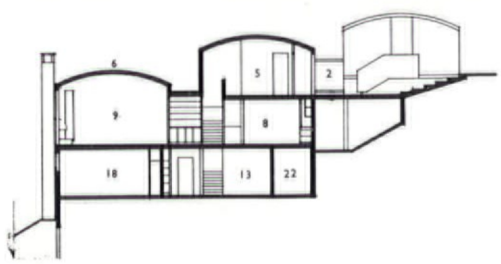
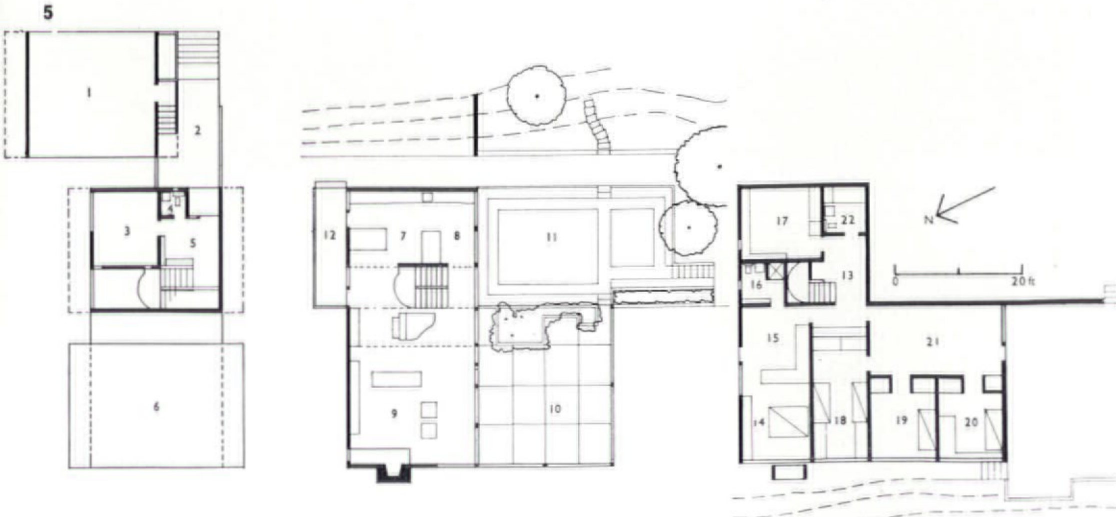


4

5
Plans of all levels
1 car port
2 entrance bridge
3 study
4 powder room
5 entrance hall
6 roof of living room
7 kitchen
8 dining
9 living room
10 roof terrace
11 upper lawn
12 shaded porch
13 lower hall
14 master bedroom
15 dressing space
16 bath
17 utility
18 bedroom
19 bedroom
20 bedroom
21 play room
22 bath

6
The living room extends onto a terrace with a magnificent view south-west over the ocean
Photos: Selwyn Pullan
continued on following page

5



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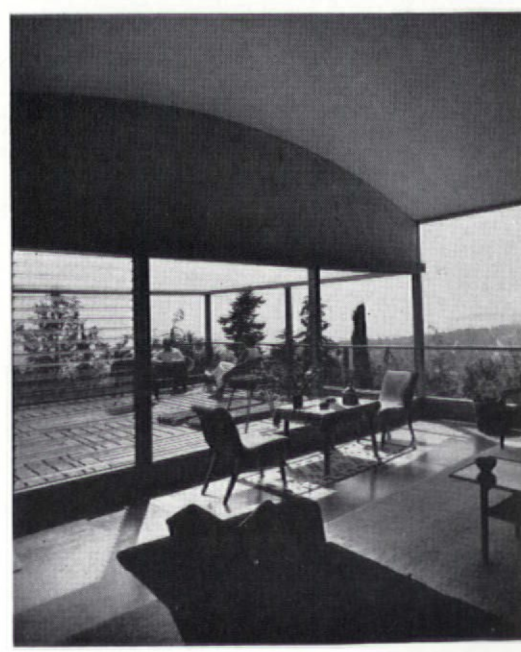

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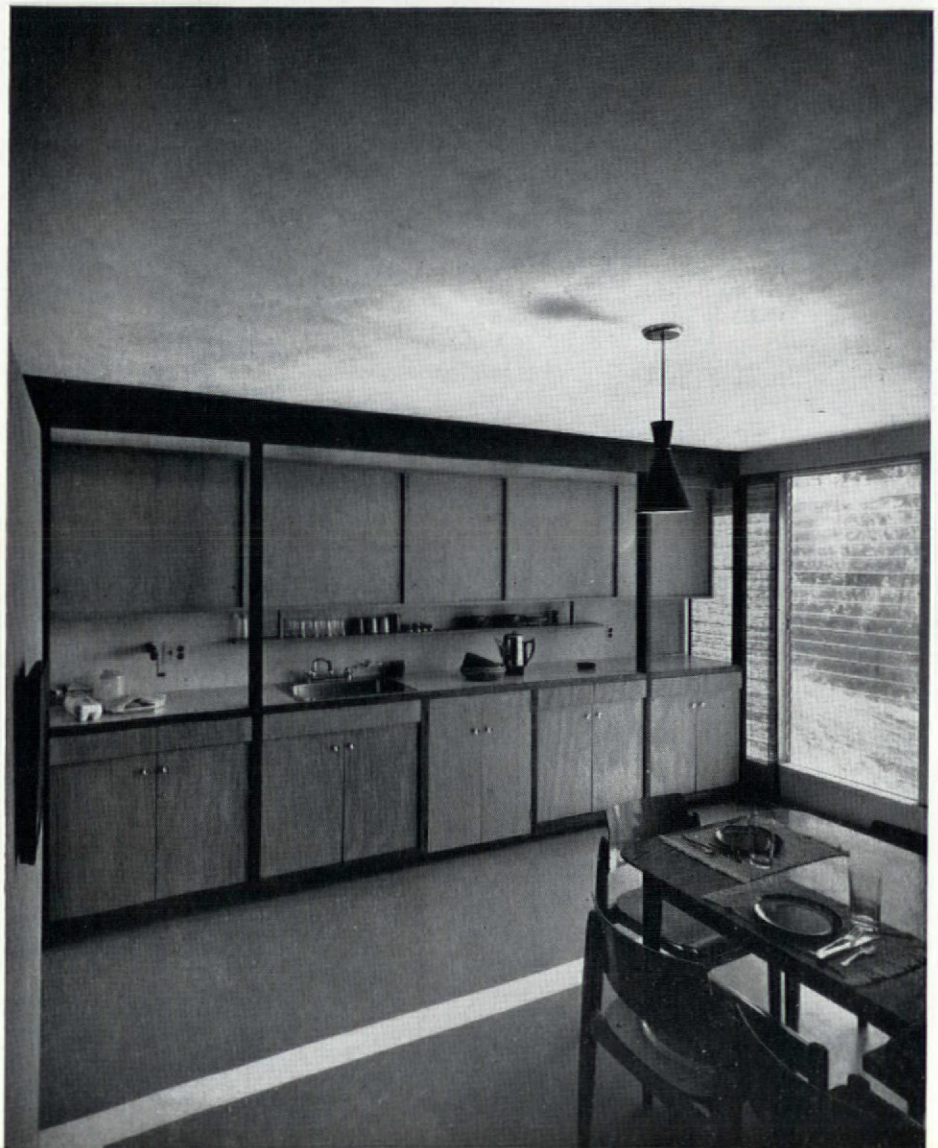
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4

1
The staircase approach from above to the living area (see 4). The dining/kitchen space is to the left

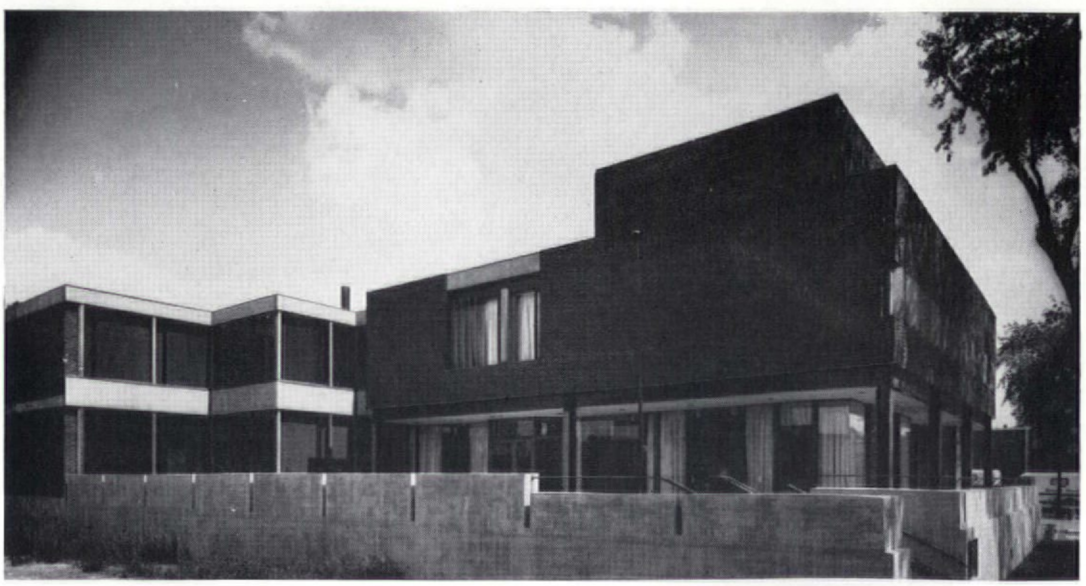
2
The dining/kitchen

3, 4
Two views of the living area

Photos: Selwyn Pullan

1

2



Girl Guides HQ, Toronto

William J. MacBain & Associates

The headquarters building houses facilities for national, provincial and city girl guides, with administrative and mail order departments. The building is on a side street, but visible from a main street (Yonge Street), so design importance had to be given to it in relation to this approach.

Maximum warehouse space is provided in the basement; offices are kept to the rear, while board room, lunch room, retail store and entry are on the street side. Gross floor area is 26,000 sq. ft.

The structure is steel frame and concrete slab. Exterior finish is brick with precast concrete spandrels. Interior finishes are: plaster and exposed block walls; acoustic tile and plaster ceilings; vinyl tile floors; plywood partitions. The building is air-conditioned.

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1
The main south elevation facing the street

2
View from the south-west. The main entrance is in the foreground

1

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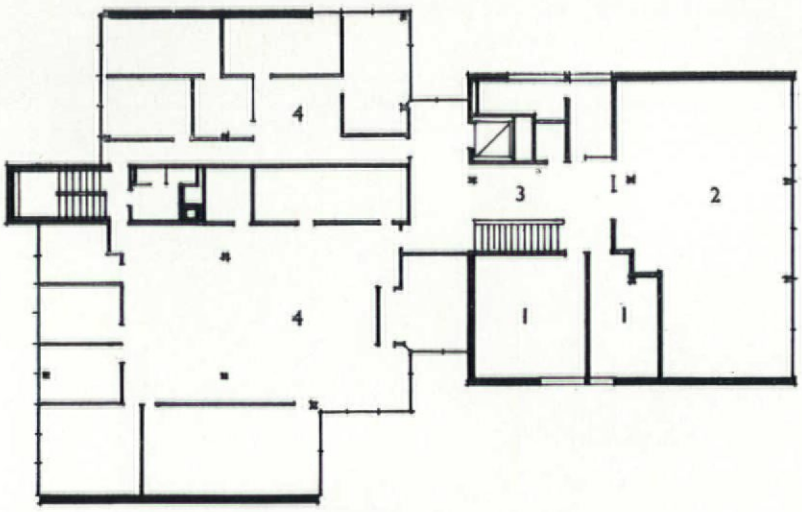

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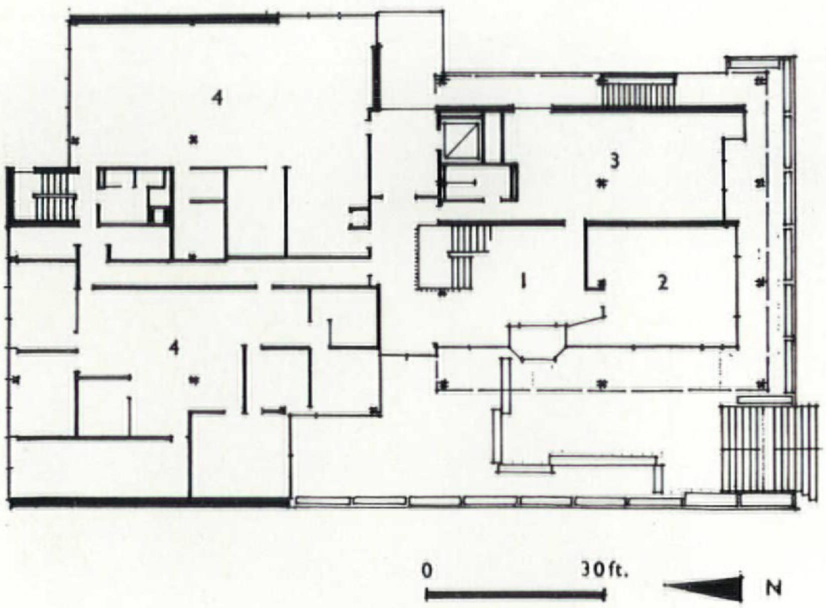


3

1
The south end of the east elevation (see 5)

2
First-floor plan
1 committee room
2 board room
3 lobby
4 office

3
Ground floor plan
1 reception
2 store
3 lunch room
4 office

4

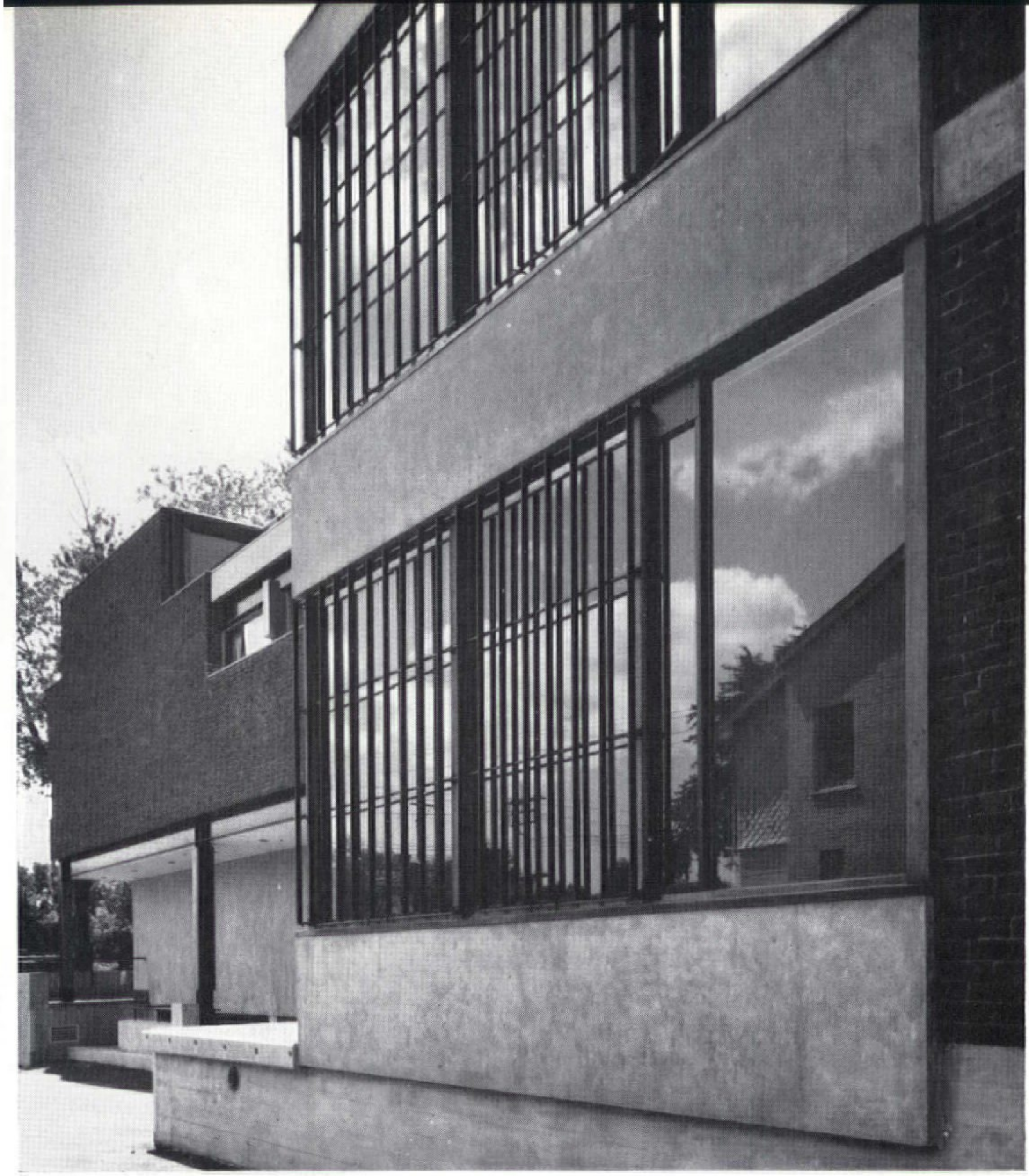
4
Lunch room facing south

5
The east elevation

6
Section through the skylighted conference room with concealed artificial lighting
1 plaster
2 tilting glass in pivoted steel frame
3 exposed steel beam
4 fixed glazing
5 fluorescent

7
The conference room

8
The north elevation



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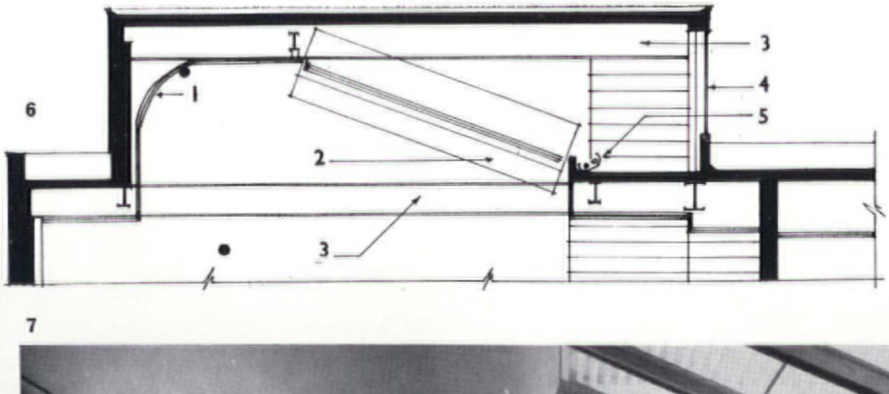

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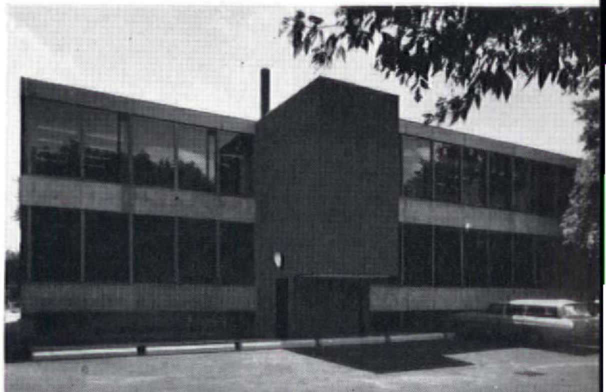

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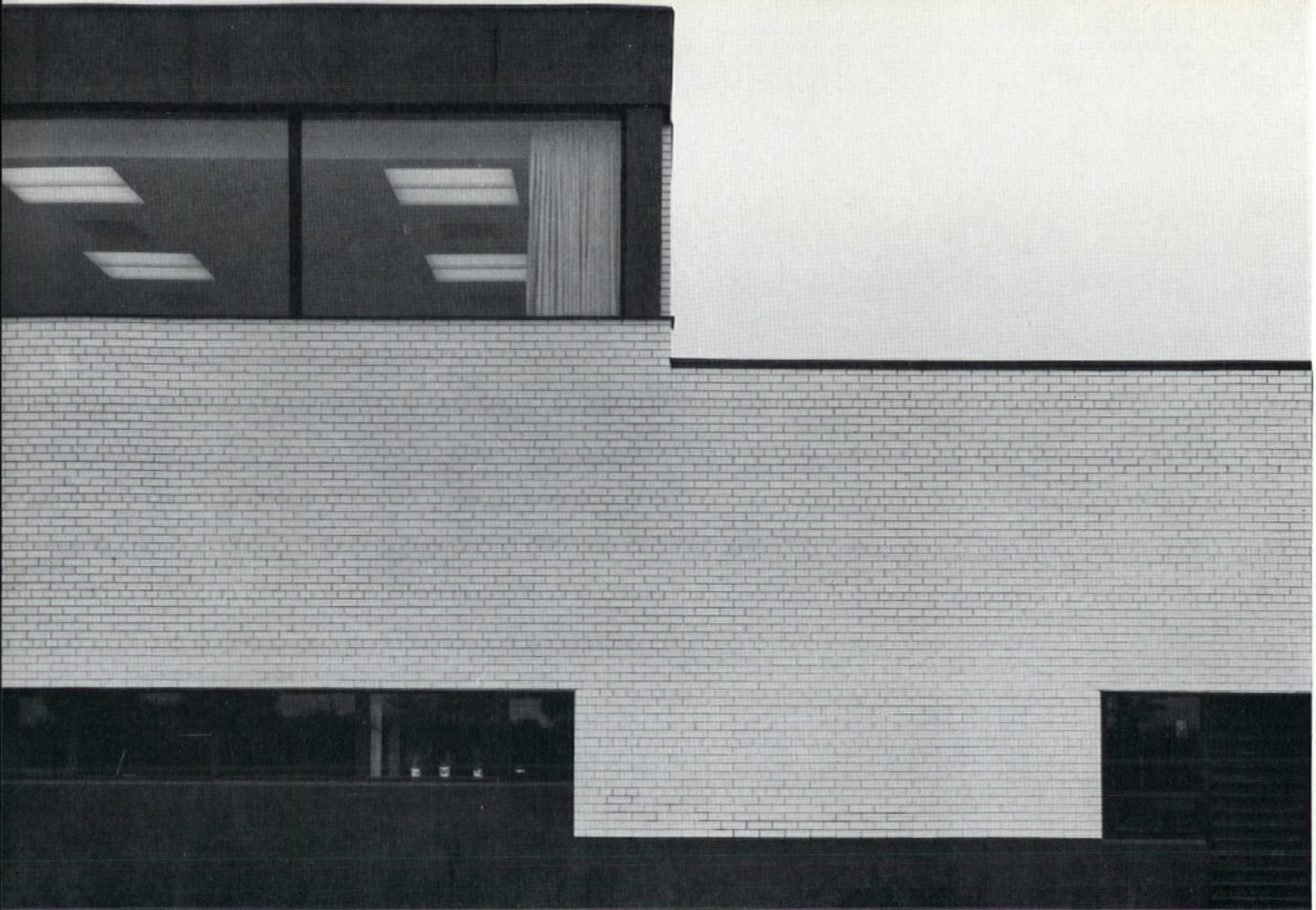


1

CCH offices and plant, Don Mills, Ontario

William J. MacBain & Associates

The plant is situated on the highest point of an industrial estate north of the Flemingdon Park residential neighbourhood.*

The structure is steel frame with poured slabs and long span joists. Exterior finish is mainly white glazed brick, with a painted concrete base and a slate fascia. Interior finishes for walls are exposed concrete block with painted ply partitions in the plant; and mainly painted plaster in the office area. Ceilings are suspended perforated metal pan.

The gross floor area is approximately 40,000 sq. ft. The building is air-conditioned throughout.

* See AD May 1962, page 242

Photos: Morley Markson

1
Part of the continuous white glazed brick wall of the north elevation, with second floor office block above

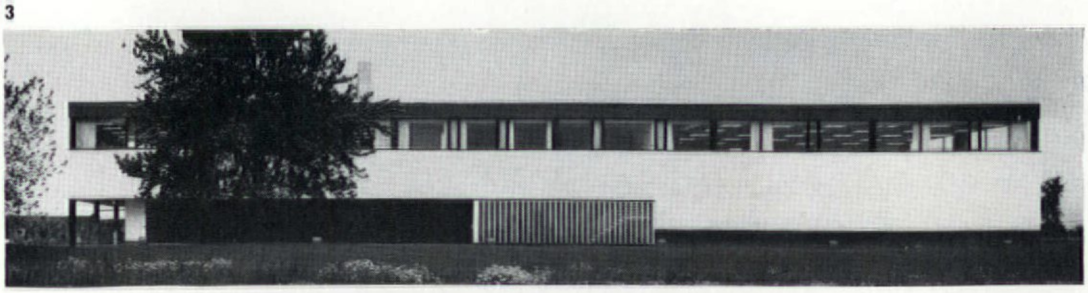
2
The east elevation

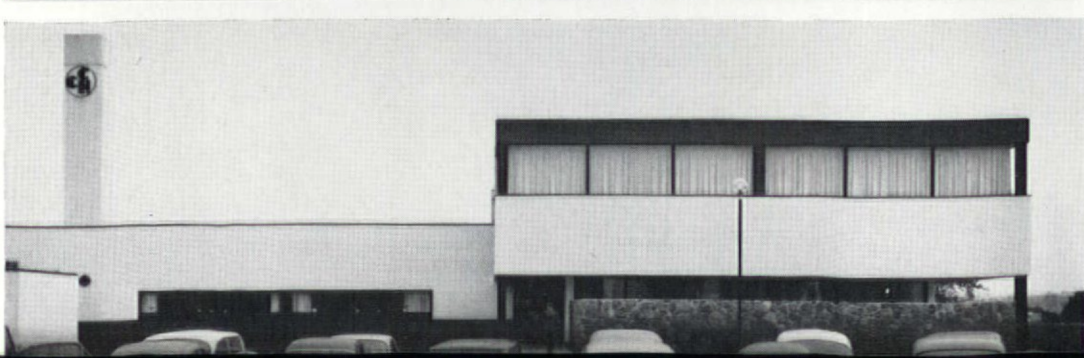
3
The south elevation

4
Plan. The shaded area represents the office block at first floor level
1 reception
2 cafeteria
3 typesetting
4 plant
5 storage
6 compilation
7 boiler
8 shipping

5
The main entrance on the east side

2
3





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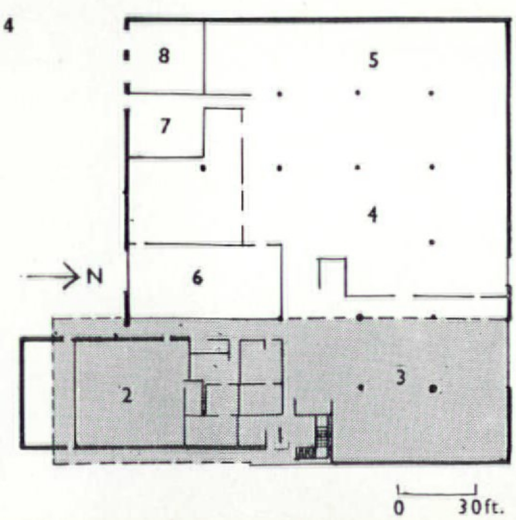


Bradford district high school, Ontario

William J. MacBain & Associates
Associate architects, Salter & Allison

The second addition at the back of the original three-storey building includes new classrooms, offices, a cafeteria and a gymnasium. An upper-level expanded corridor links with the old school and the new entrance via a broad staircase.

The structure is of steel on 15ft by 25ft bays, with brick and block walls, concrete slab floor on steel joists, and steel roof deck. Interior finishes are block, vinyl tile and terrazzo, and acoustic tile. Windows are wood with steel casements.

1, 2 & 3
The staircase in the central hall, with its complicated toplighting (see section 8)

4
The gymnasium, which has a suspended ceiling of 4in and 6in wide planks spaced apart on cross framing

5
View of the building from the north, the high part being the gymnasium. The main entrance is to the extreme left

6
Lower floor plan
1 lobby
2 office
3 staff
4 health
5 guidance
6 cafeteria
7 boiler
8 changing rooms

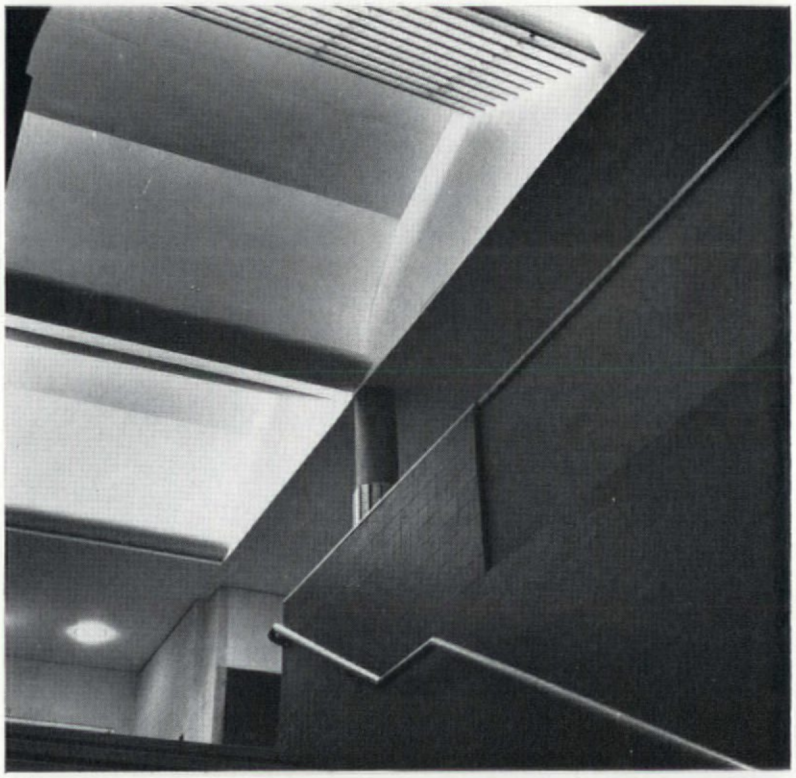
7
Upper floor plan
9 classroom
10 laboratory
11 home economics
12 gymnasium
13 stage

8
Section through the skylighted central hall

9
The laboratory


4


1

2


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5

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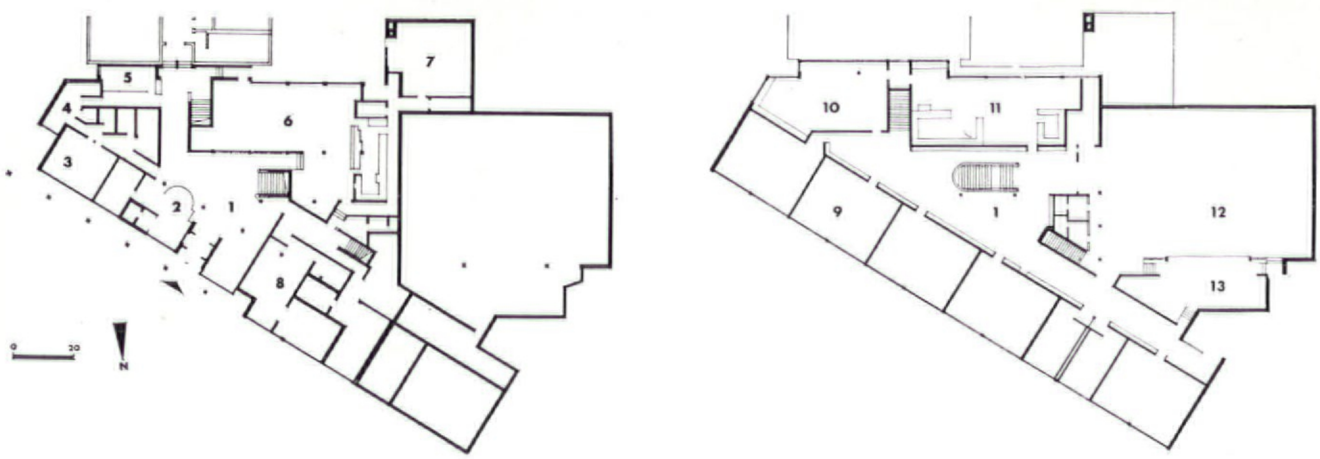

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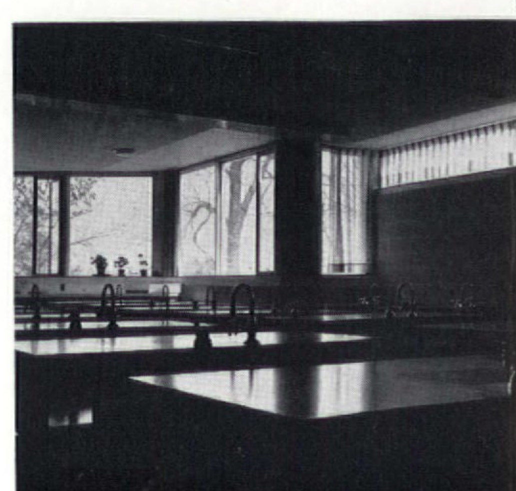
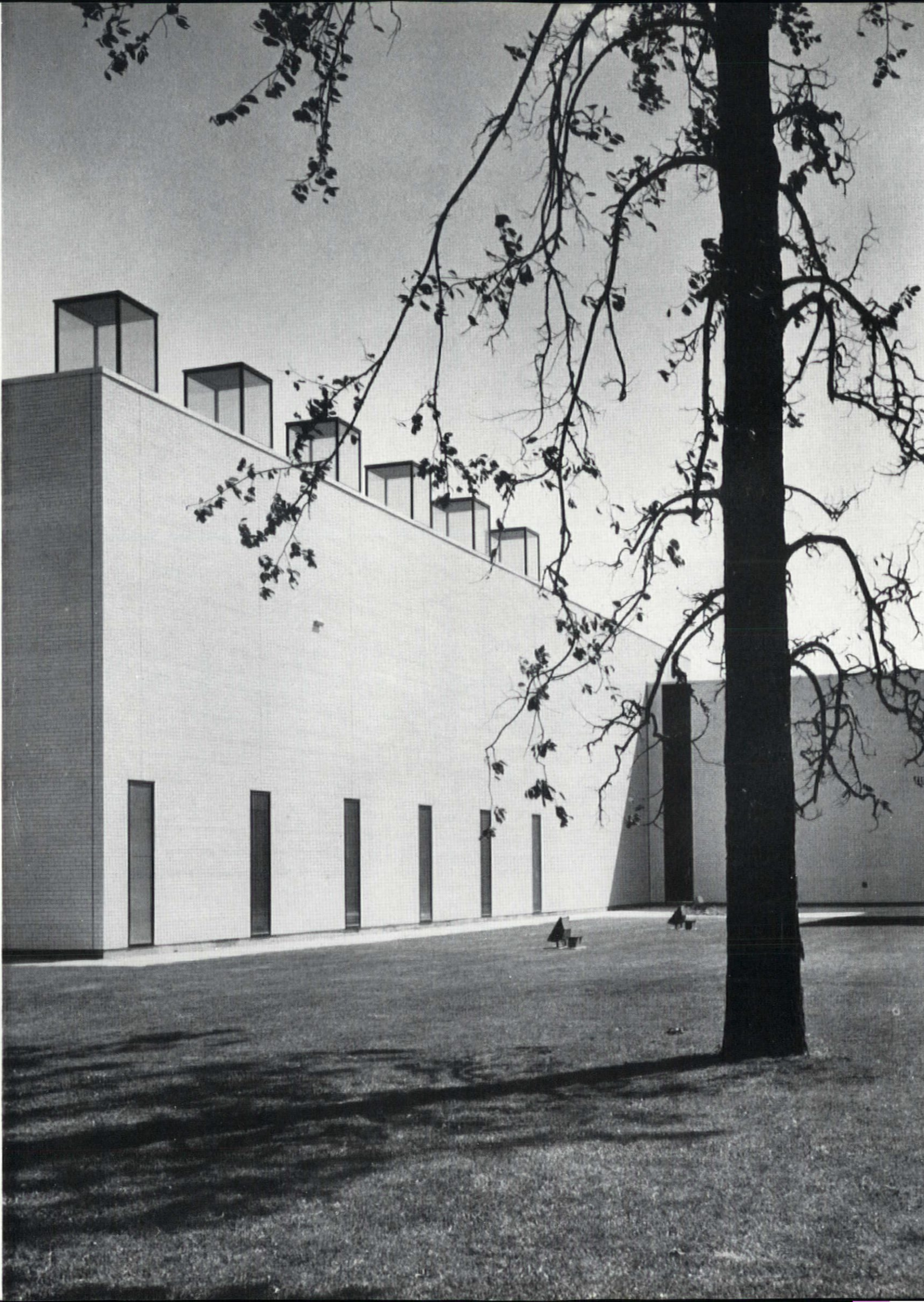




1

Plant and offices for Thomas J. Lipton Ltd., Bramalea, Ontario

John B. Parkin Associates

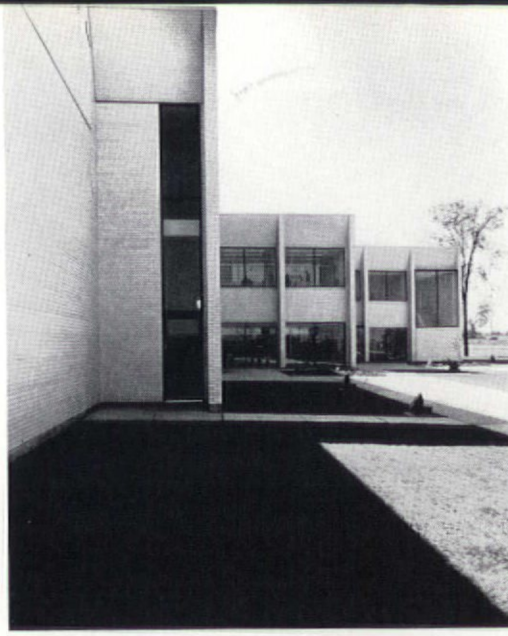
Administration, warehouse, and manufacturing facilities are housed in three distinct blocks of the food manufacturing company's plant and office building. It has been designed to permit expansion up to 50 per cent over the present 155,000 sq. ft area.

Large, unobstructed expanses of brick on the exterior resulted from the need for temperature control and in turn minimum window space in storage and process areas. White glazed brick is the principal sheathing material on the welded steel structure. Window frames and sashes are steel, painted black.

The high ceiling required for the machinery and pipes in the process rooms was maintained in the office area and because there are no large windows here (facing west, undesirable heat absorption would have resulted) 12 prismatic skylights illuminate the general office.

Surfaces throughout the process and manufacturing room had to be specially treated against infestation and one application is in the cement plaster with a protective thermal plastic finish used on the concrete block walls. Floors in the warehouse are hardened concrete and in certain process areas are covered with a tile resistant to acids.

The offices are fully air-conditioned; heating and ventilation were considered sufficient in the warehouse area. Closely controlled air-conditioning and low relative humidity are maintained for the process rooms. The warehouse has rail and van transport facilities.



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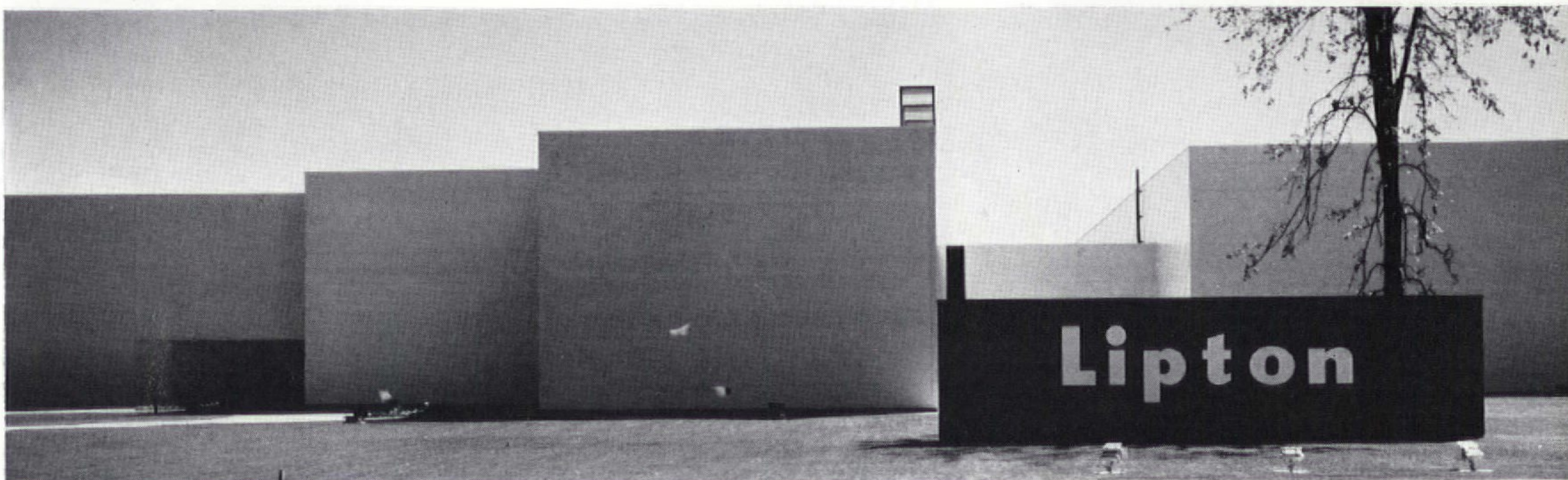


3

1
View from the north-west. The two-storey office block with its prismatic skylights. The vertical dark line is a black steel panel to give prominence to the doorway below

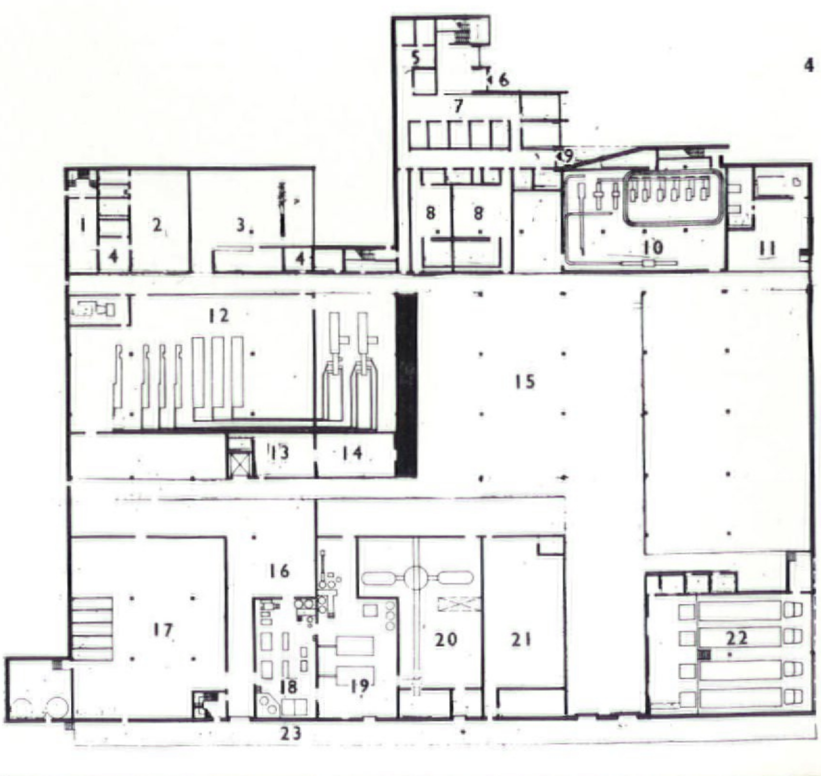
2
The east with entrances for staff and public

3
The north elevation presents blank walls to the road, the entrances being out of sight between the staggered planes

4
Ground floor plan
1 product development
2 quality control laboratory
3 cafeteria
4 kitchen
5 purchase office
6 public entrance
7 general office
8 lockers
9 employees' entrance
10 tea processing
11 office
12 soup packing
13 machine shop
14 maintenance shop
15 warehouse
16 receiving
17 dressings
18 process room
19 drying room
20 freeze drying room
21 mechanical room
22 garage
23 loading dock

5
First floor plan
1 raw ingredients
2 after drier
3 batch make up
4 paste mix
5 bin storage
6 wet process
7 long goods
8 flaking and drumming
9 upper part of warehouse
10 tea processing
11 office

Photos: David G. Harris 1; King's Hart Publishing Co. 2, 3



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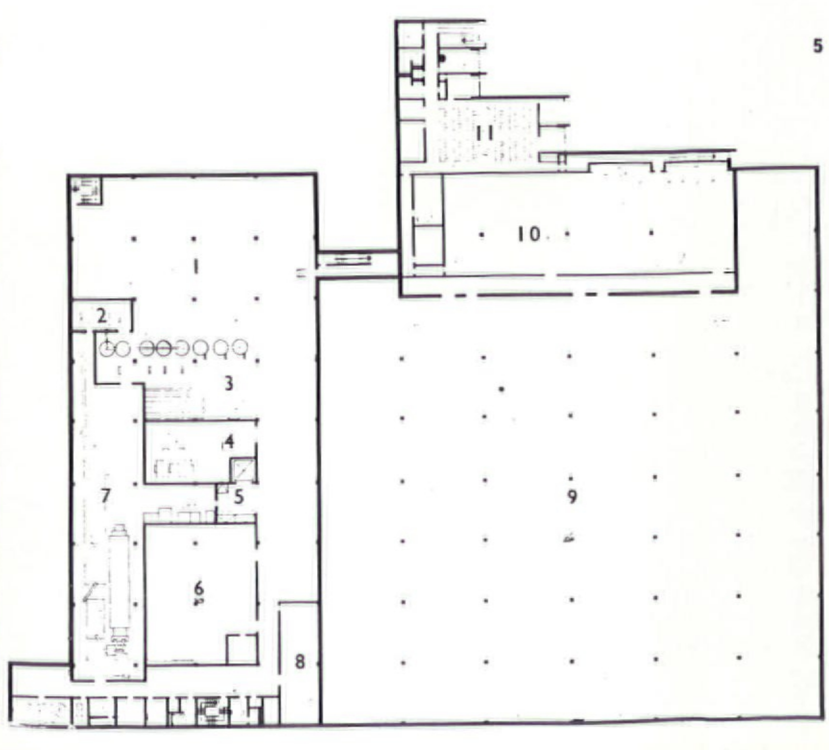


5

1

Offices for Imperial Oil Co. Don Mills, Ontario

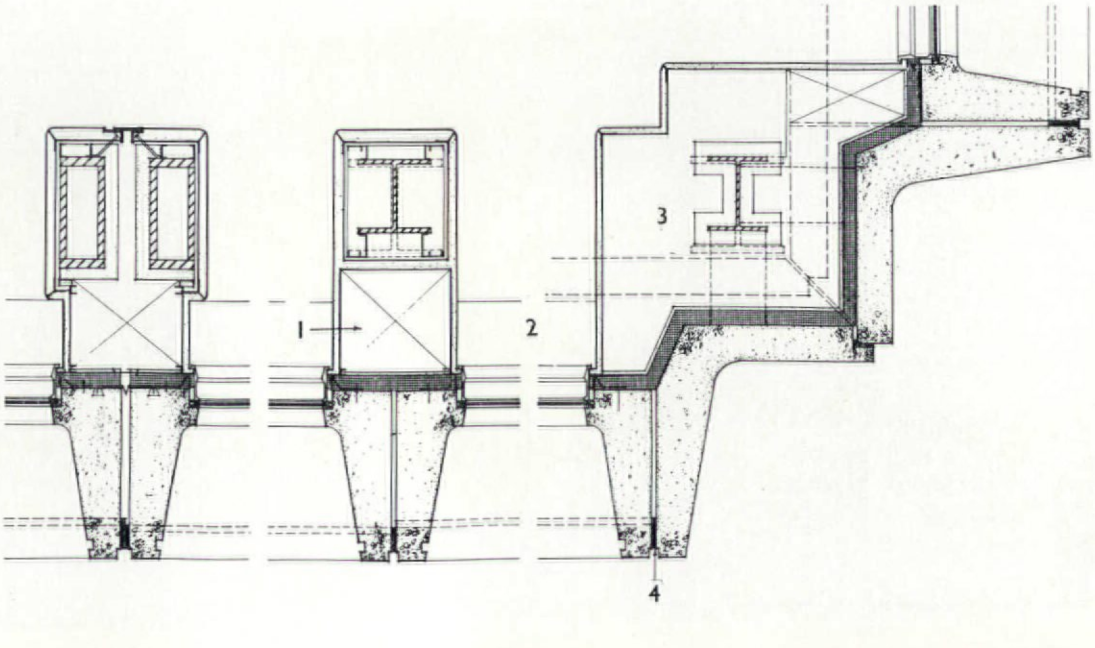
John B. Parkin Associates

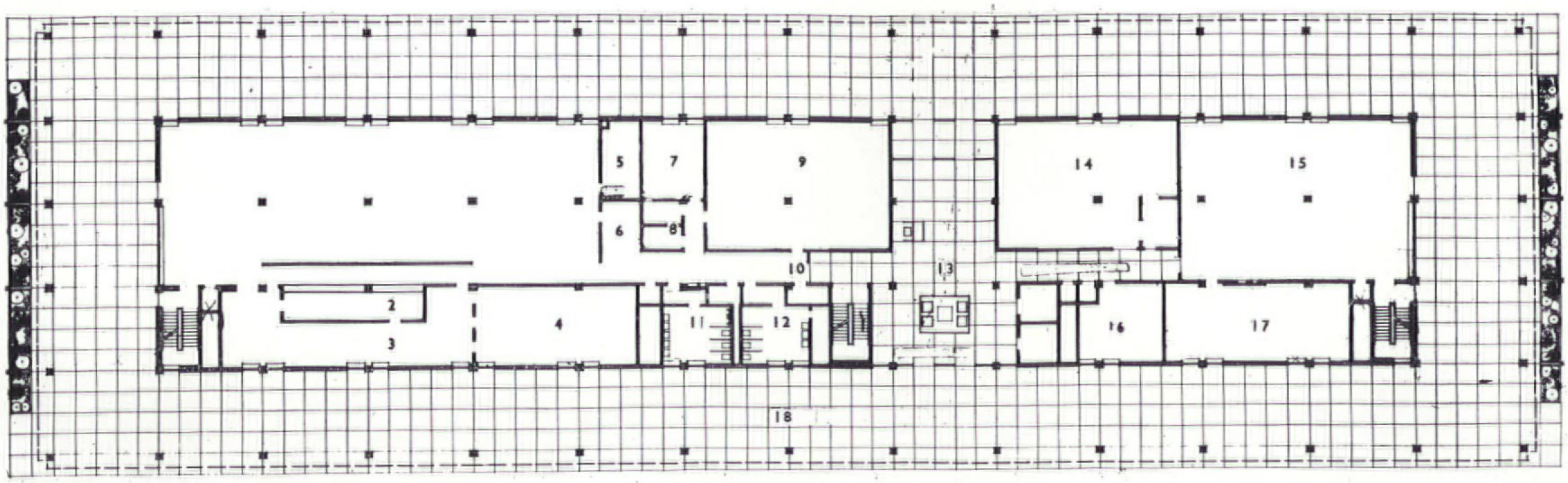
With the new office building for Imperial Oil Ltd., Toronto's planned community of Don Mills continues to demonstrate that commercial and industrial structures can make fine neighbours for housing.

The slim, 350ft-long building is raised on a low podium and in summer is screened from the road by a grove of trees. The top two office floors, which extend one full bay (20ft) beyond a recessed base, are enclosed by clear glass set into precast, exposed aggregate wall panels 5ft wide, and backed by extra-narrow horizontal blinds. All corners are slightly rounded off, softening the bold pattern of the façades.

Vertical circulation is provided by an elevator at the off-centre lobby and by three stairs, one at each end of the building and one near the middle. A mechanical core, rising from the basement equipment area, ends on the roof in two circular stacks.

2





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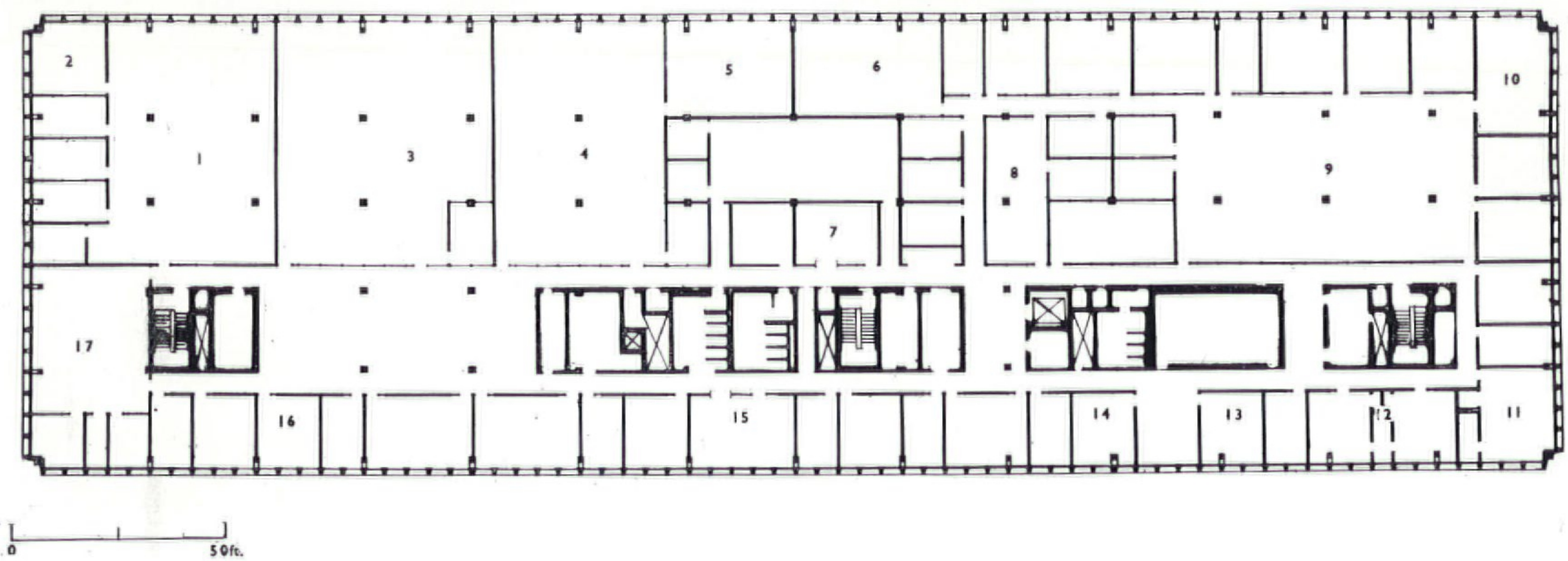


1
View of the building from the south-west. The rhythm of the elevations is established by the modular precast concrete panels with fixed glazing

2
Plan detail of corner of the upper floors
1 ventilation duct
2 window aperture
3 encased column
4 joint filler

3
Ground floor plan
1 cafeteria
2 servery
3 kitchen
4 storage
5 Esso club
6 tuck shop
7 telephone switch board
8 w.c.'s
9 medical section
10 corridor
11 men
12 women
13 entrance lobby
14 mail out
15 mail in
16 office
17 addressograph
18 podium

4
Second floor plan
1 region engineer
2 engineering
3 financial books
4 stenographic pool
5 multilith
6 distribution dept.
7 teletype
8 sales engineer
9 office sales and service dept.
10 head office and agency
11 region manager
12 assistant sales manager
13 distribution
14 office
15 cashier's dept.
16 accounts section
17 welfare

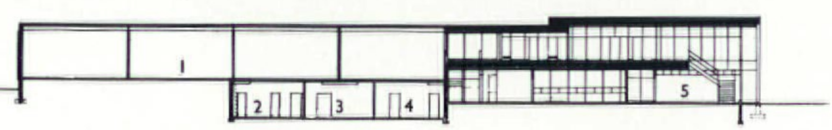
5
The cafeteria on the ground floor

Photos: H. R. Jowett

5

1

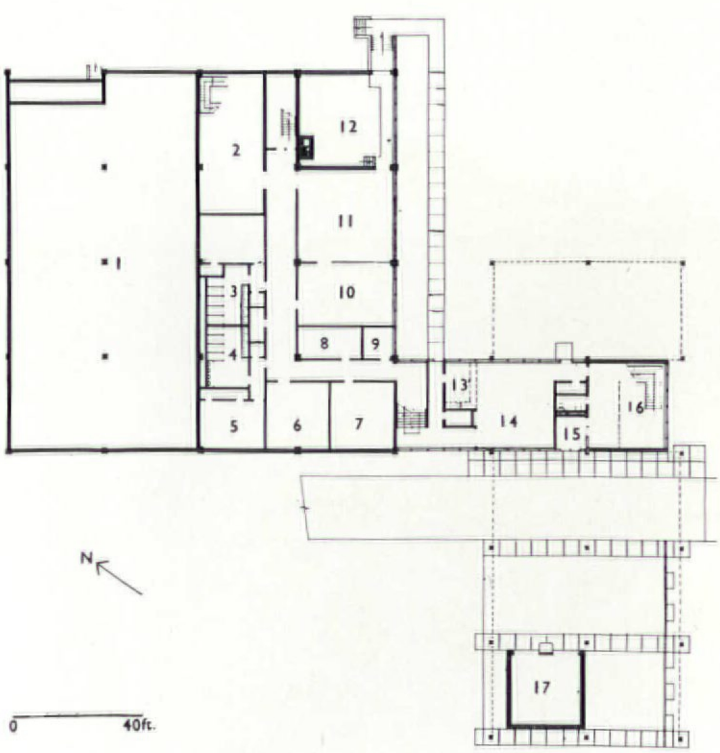
2



Factory and offices for Ortho Pharmaceutical (Canada) Ltd.

John B. Parkin Associates

3



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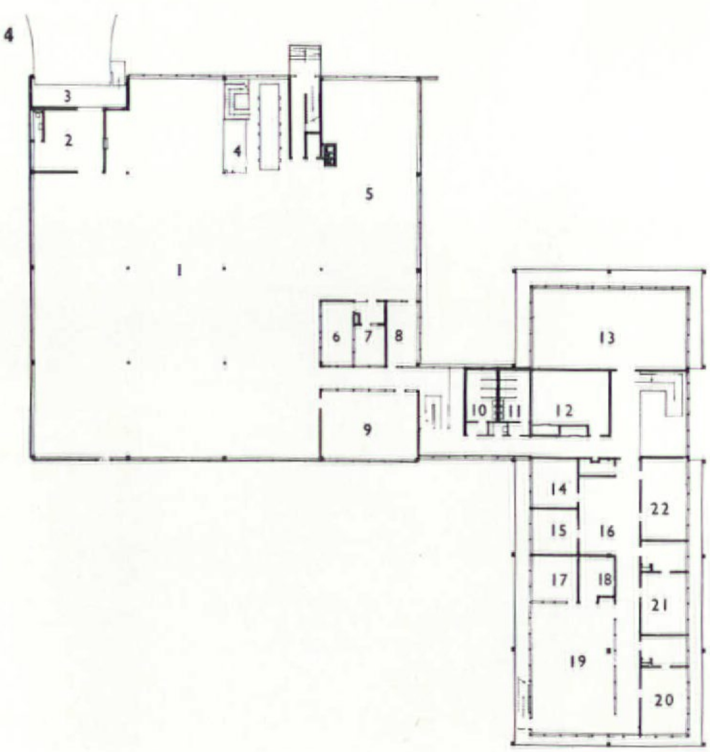


In Don Mills, a suburb of Toronto, only light, clean industries are permitted, and there are comparatively high restrictions on building set backs, land use, and so on.

The site chosen is off a future diversionary highway by-passing the residential centre.

The building consists of office and plant sections, each separate and expressing its own function and connected by a service 'neck'. Advantage was taken of the sloping site to provide an economical, partial service area to the plant section, which accommodates the various service rooms and the two-storey compounding production equipment. The slope also permitted the lifting of the offices to first floor level, where a view is available to the north and west. This also provided a sheltered main entrance, visitor's parking and a two-car garage under the office wing.

The structural frame of the building is encased in concrete on the exterior. In the office section the frame is completely free of the exterior walls, while in the plant section the structural frame is expressed behind the exterior masonry walls. The interior finish of the plant section is exposed concrete block and pre-cast concrete slab ceiling, with the sterile rooms and laboratory highly finished with glazed tile and metal-pan ceiling tile.

White glazed brick is the predominant material on the exterior. The glazed brick and the white concrete frame reflects the cleanliness and orderliness of the client's pharmaceutical processes. Areas of dark brown brick, split field boulders and cypress wood soffits and screens are used in contrast to precise glazed brick and coloured glass spandrels.

The building is heated by a hot water heating system, with provision made for future air-conditioning in the office section and laboratory. The sterile rooms are completely air-conditioned and provided with germicidal lamps.

1
Main entrance elevation from the south-west, consisting of offices raised to first floor level. The factory can be seen behind, to the right.

2
Section
1 storage
2 men's locker room
3 storage
4 mechanics
5 reception

3
Ground floor plan
1 unexcavated area
2 compounding service
3 women
4 men
5 men's lockers
6 office filing and stationery
7 mechanical equipment
8 sample store
9 first aid
10 electrical
11 mechanical
12 boiler
13 kitchen
14 cafeteria
15 vestibule
16 reception
17 garage

4
First floor plan
1 storage
2 shipping and receiving
3 loading
4 compounding
5 light manufacturing
6 large sterile
7 small sterile
8 production
9 laboratory
10 men
11 women
12 conference
13 office
14 sales manager
15 sales and promotion
16 general office
17 office manager
18 machines
19 general office
20 general manager
21 secretariat
22 purchasing

5
View along the side of the raised office block, from the south-west. The fence screens the open car-parking area underneath

Photos: Neil Newton

1

2

Whitby Town Hall, Ont.

Rounthwaite and Fairfield

The site is an entire block close to the centre of town. Location of public parking, and car and pedestrian access from the street, determined the position of the building. It had to be designed to allow for future expansion and a high degree of flexibility of interior spaces. Budget restrictions resulted in the use of simple, durable finishes.

The gross floor area of the building is approximately 15,000 sq. ft. The structure has poured concrete foundation walls with reinforced concrete columns on a 16ft grid; columns support poured in place waffle formed floor and roof slabs. Exterior finishes: panels between windows, granite and quartz-faced precast concrete; large panels, precast concrete with an exposed aggregate.

Interior finishes: walls, lightweight aggregate modular concrete block; ceilings, mainly vinyl asbestos tile with terrazo in the entrance and stair area, and washrooms; partitions, cherry wood plywood.

1
View from the north

2
View from the south-west

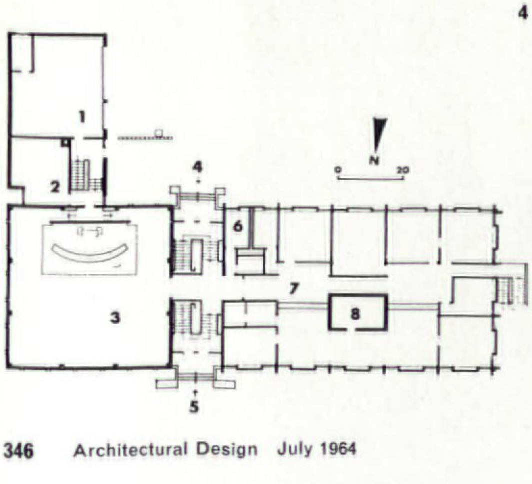
3
Detail of the north-west corner

4
Ground floor plan
1 police garage
2 committee room
3 council chamber
4 entrance from parking
5 entrance from street
6 washroom
7 offices
8 vault

5
The west end of the building

3

4



5

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1
2

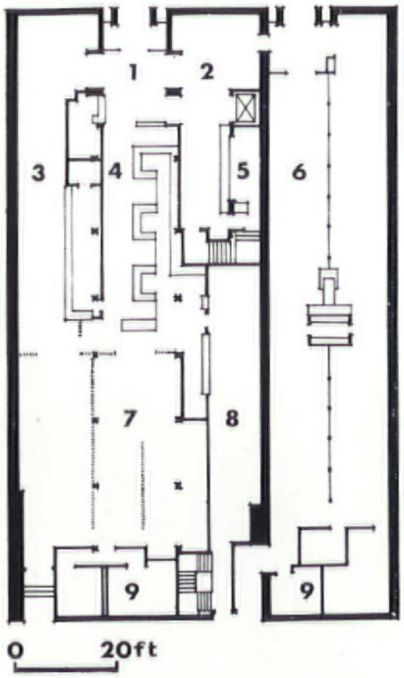
3
4

1 & 2
Roof and wall details. Panels between windows are granite and quartz-faced concrete: layer panels, concrete with exposed aggregate; columns and projecting fins, smooth concrete. Fascia units are separated by copper flashings

3 & 4
Interiors of the upper and lower storeys, showing the exposed waffle slab ceilings

Photos: Neil Newton 3

1



1
Plan
1 entrance
2 hotel lobby
3 cocktail lounge
4 coffee shop
5 desk
6 beer parlour
7 restaurant
8 kitchen
9 washroom

2
The main street entrance, with sculptured frieze by George Norris

Photo: Selwyn Pullan

Castle Hotel, Vancouver, B.C.

Thompson, Berwick and Pratt

When redesigning the hotel, it was decided to create not only cocktail and dining facilities, but also a smaller beer parlour that would be finished with the care and completeness of a cocktail bar. Materials are: exterior and interior walls, buff brick and cast concrete frieze; ceilings, plaster and wood, and silk screened acoustic tile in the beer parlour; floors, carpet. Partitions are oak screens. The architects worked in close collaboration with artist Rudy Kovak and sculptor George Norris. Architect in charge of design was Ron Thom.

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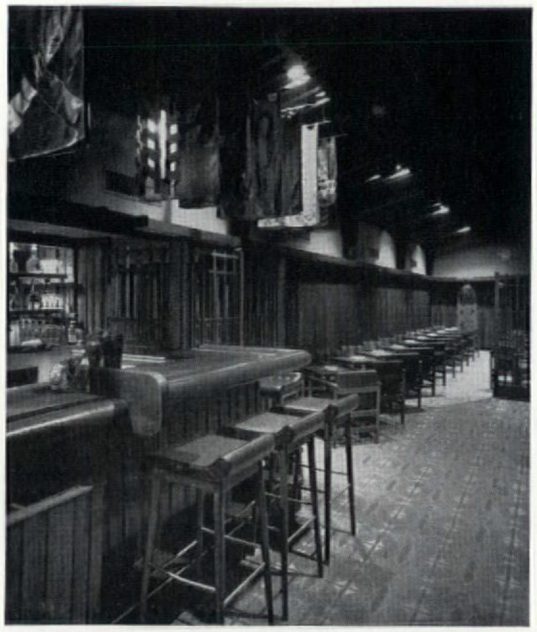
2

1



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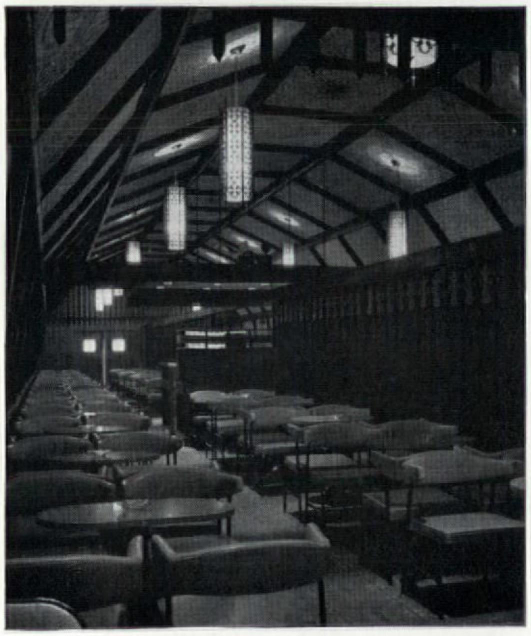

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1
The cocktail lounge

2
The coffee shop

3
The restaurant

4
The beer parlour

5
The hotel lobby, with lift and reception desk on the right, and doors from the entrance lobby on the left

Photos: Selwyn Pullan

5

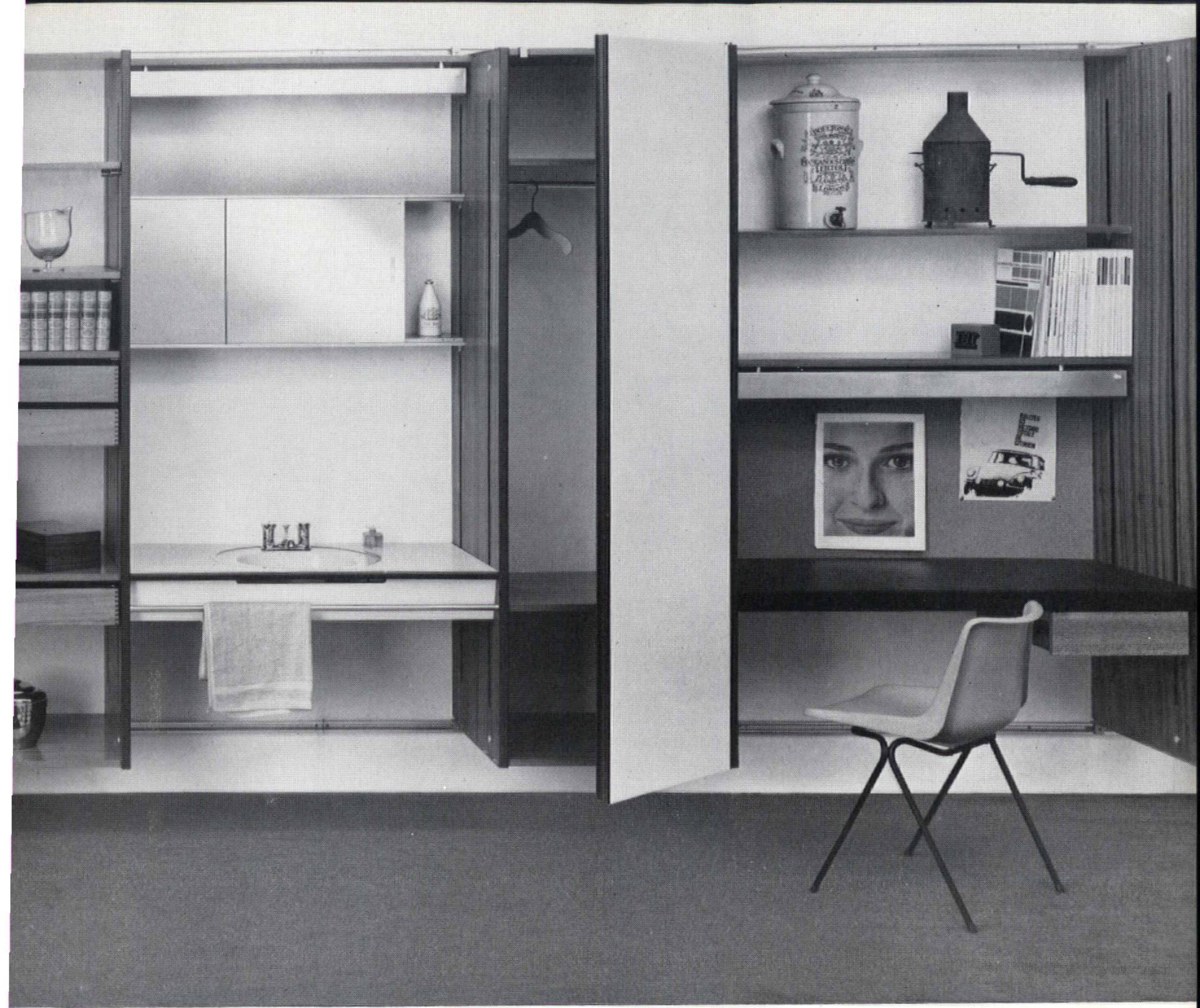
Now from Hille comes a true modular wall storage system which can be housed on existing walls or can form its own wall, simply, strongly, handsomely.

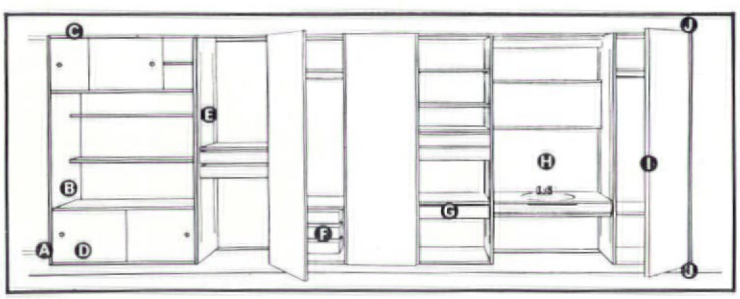
Semi-skilled labour can now produce a highly skilled result: factory prefabrication by Hille makes it possible. Quickly, economically, the system can be assembled on an existing wall (so firmly that a grown man can swing on the doors). It can also form its own partition. The Hille Storage Wall, designed by Alan Turville, L.S.I.A., and John Lewak, offers an almost limitless variety of arrangements. It is based on the international 4" module. It is flexible, functional, handsome, and suitable for very many applications. Its cost structure makes it competitive with traditional methods of interior fitting and furnishing, which it supersedes. A complete planning and design service is available.

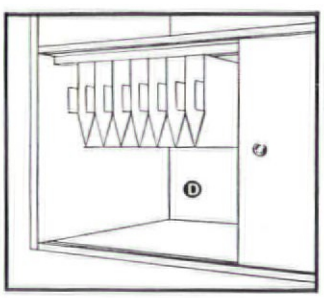
Examine the Hille Storage Wall System at, or write for literature to, Hille Showrooms: 41 Albemarle St., London, W.1 (Hyde Park 9576), 24 Albert St., Birmingham 4 (Midland 7378), Sackville St., Manchester 1 (Manchester Central 6929) or 134 St. Albans Rd., Watford, Herts.

hille

CONTRACT DIVISION



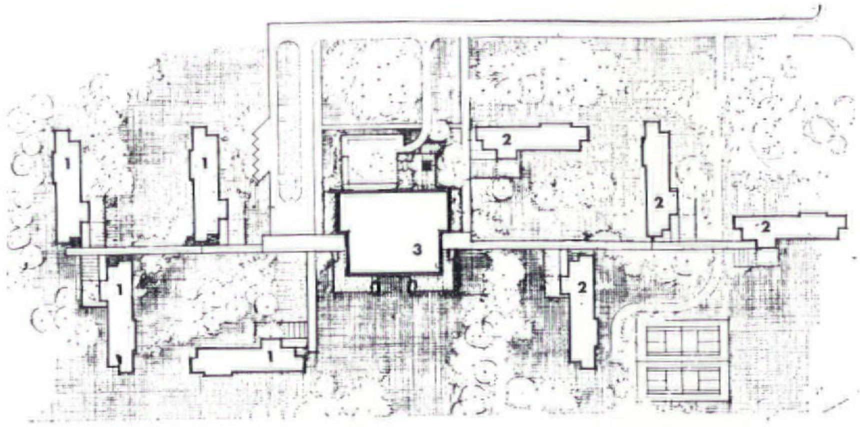




(**A**) Level and parallel "U" section steel channels are first wall-mounted 6' 6" apart. (**B**) Vertical panels are then secured by simple brackets: the whole assembly requires only semi-skilled labour. (**C**) Tops and bottoms next slide and are bolted into place to make the cupboard rigid: note that all stand clear of the floor to simplify cleaning. (**D**) filing system cabinet offers quick access, by sliding doors, to suspended lateral files: door locks available. (**E**) Inset PVC guideways allow horizontal members to be secured at any height and adjusted at any time: with similar vertical flexibility, the system is infinitely variable. (**F**) Various trays are available. (**G**) Drawers are fitted beneath working tops. (**H**) Vanitory unit incorporates: splash-back and towel rail, shelves covered by sliding mirror doors to provide storage cupboard, circular basin, shield for strip light. (**I**) Extruded PVC hand-grip runs full length of door to buffer shocks. (**J**) Patented pivot hinge imparts great strength.

PANELS, SHELVES, TOPS AND BOTTOMS are lipped with a patented plastic extrusion to buffer shocks. Veneered finishes are mahogany, elm, rosewood, or Hille melamine laminates (large contracts to other specifications if desired). All woodwork polished with heat and scratch resistant catalytic melamine lacquer. Fittings include hanging and towel rails, cork board, mirror, lighting shields. Magnetic door catches are standard. Locks are available.

Design Registration No. 913733.
Provisional Patent Application Nos. 38967/63, 39072/63, 39073/63, 50956/63.



1

University of British Columbia

Thompson, Berwick and Pratt

1. The common block

Partner in charge, Roy Jessiman

In 1957 the architects completed a revised master development plan for the university campus in which the car was banished from the teaching areas. Since the campus is large and caters for 12,000 students plus faculty and staff, the architects aimed to offset this and preserve the individual student, by providing pockets of smallness at human scale.

The common block is centrally located between the women's and men's halls of residence, and connected to them by covered walkways.The two-storey-plus-basement block contains dining, social and recreational areas, and has raised planting areas at second floor level.

Structure is reinforced concrete column, beam and slab with brick infill walls. Materials are wheat-orange brick and green-grey stained fir.

1
Site plan
1 women's residences
2 men's residences
3 common block

2
The west side of the building seen from Marine Drive. Access is not, however, from this road, but only from the east, north and south
Photo: Selwyn Pullan

2

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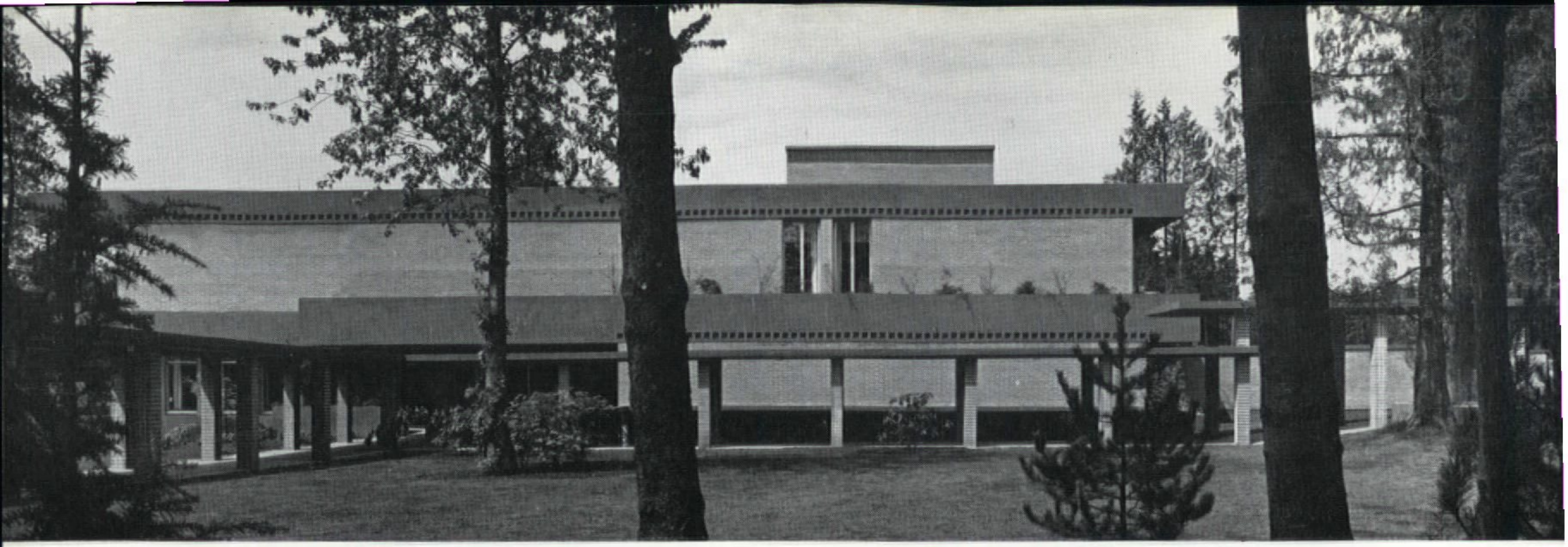

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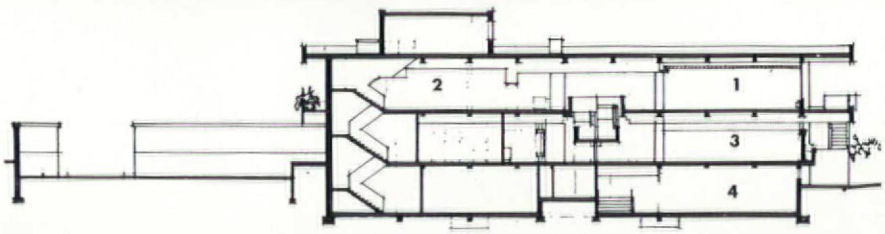

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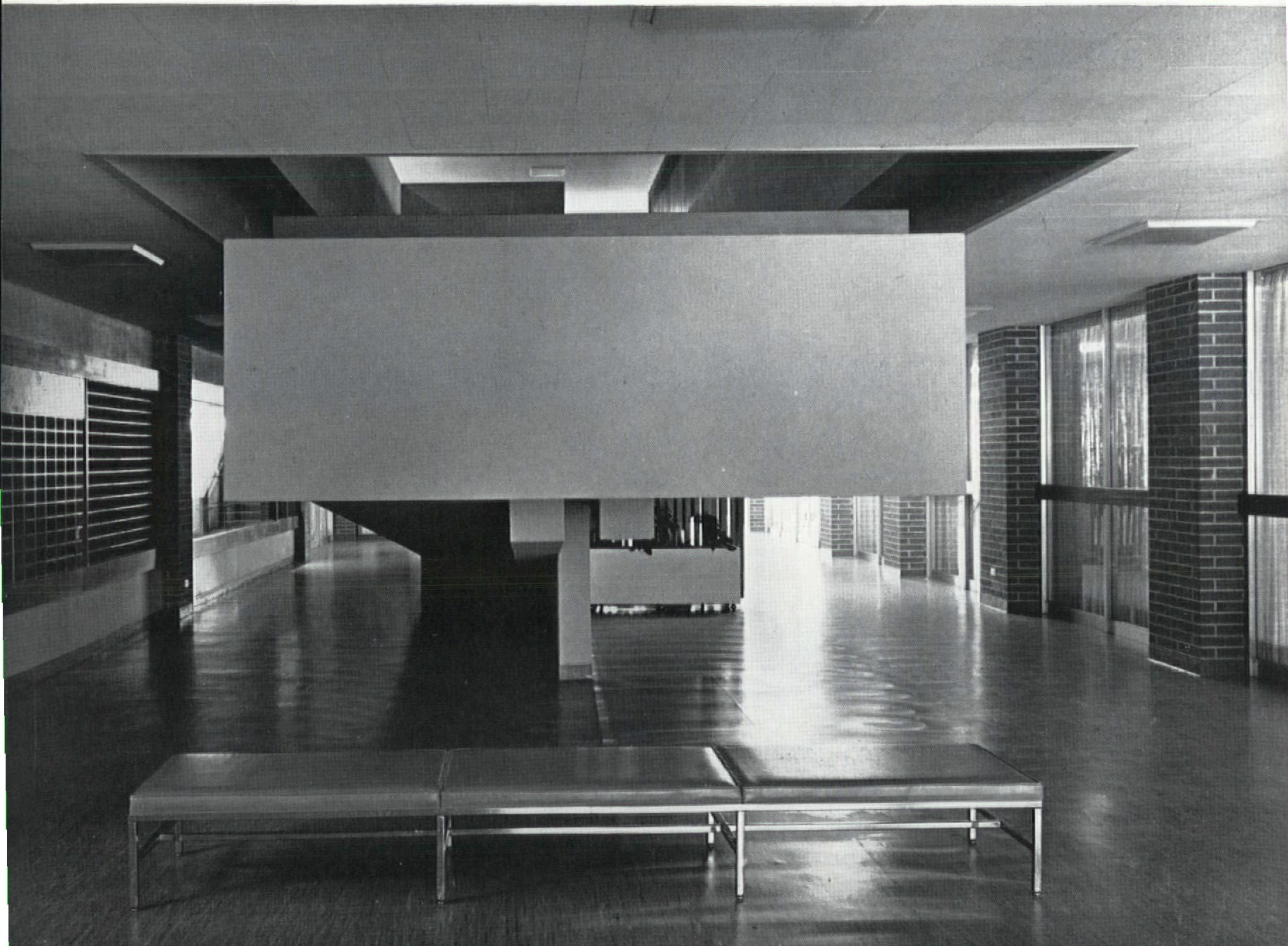

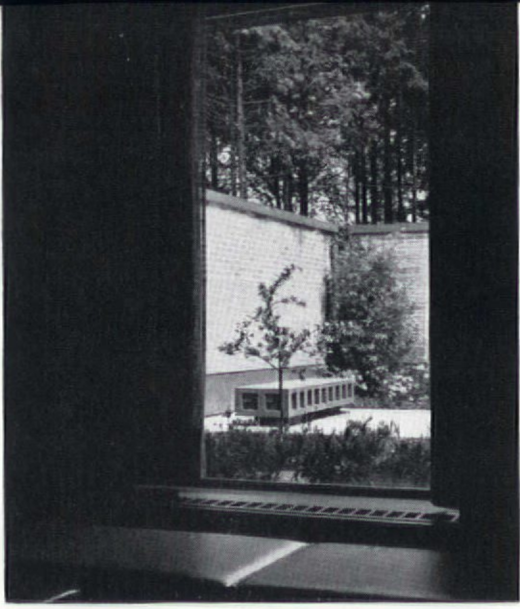

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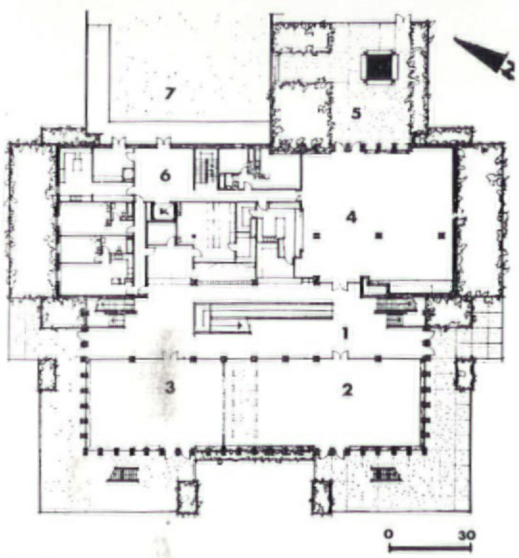

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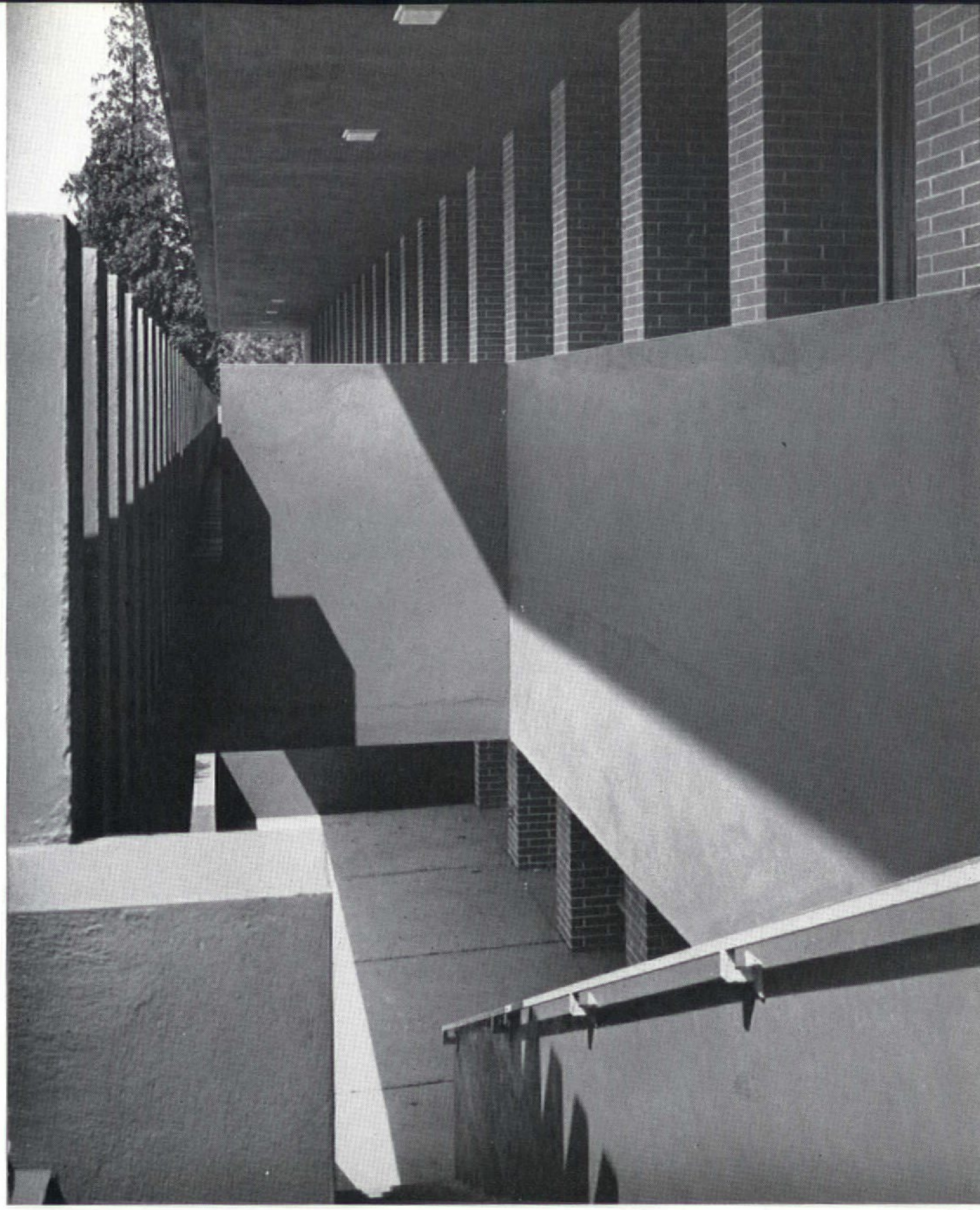

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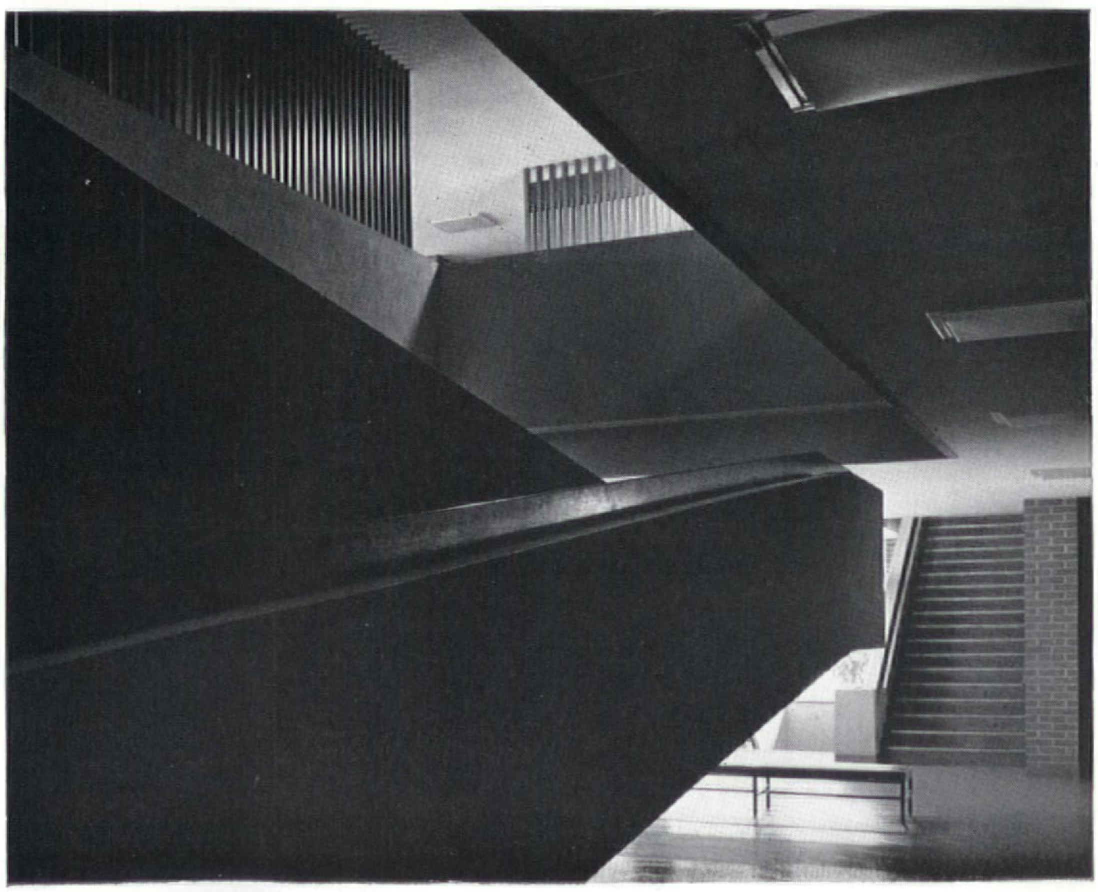


7

1
View from the south and the men's residences

2
Section
1 dining
2 kitchen
3 lounge
4 recreation

3
The entrance floor lobby and the underside of the ramp up to the dining area on the top floor

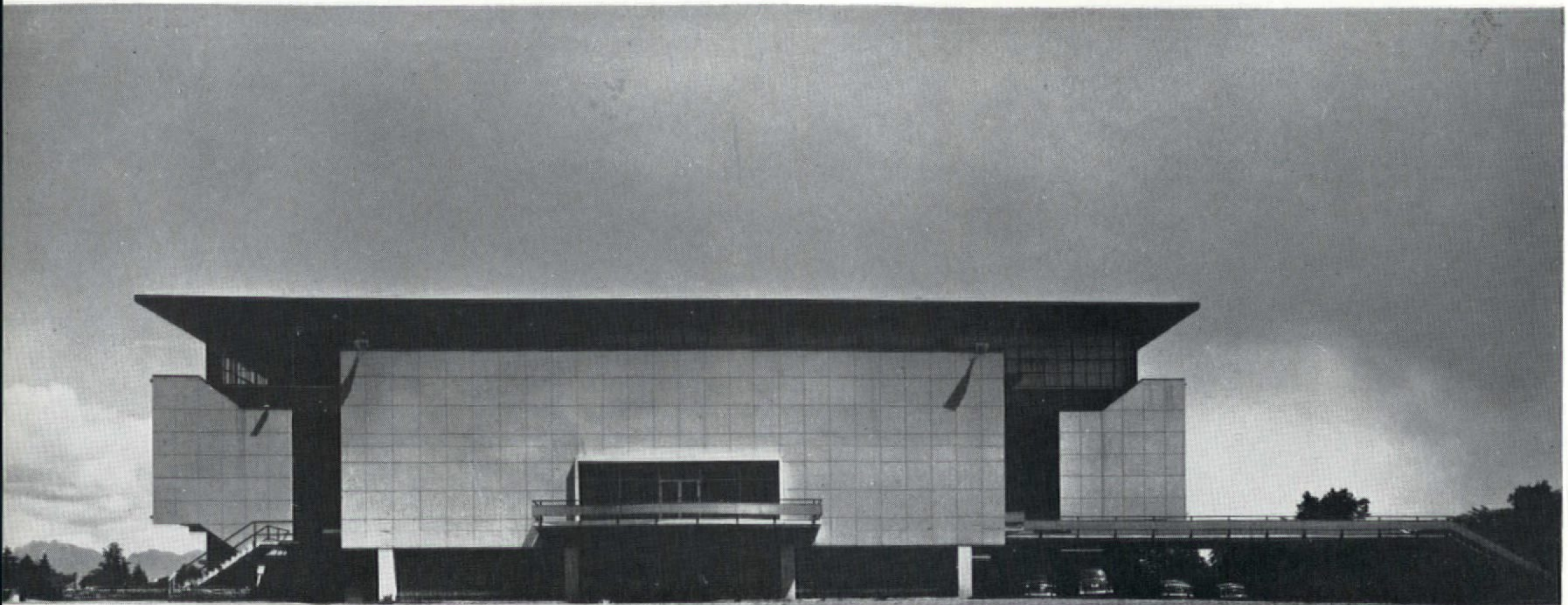
4
The enclosed garden off the recreation area

5
Ground floor plan
1 lobby
2 reading room
3 lounge
4 recreation
5 walled garden
6 reception
7 service area

6
Stairs from dining balcony on west to ground floor

7
Ramp from ground floor to dining area

Photos: Selwyn Pullan



1

2. War memorial gymnasium

Associate architect, Fred Lasserre
Partner in charge, Fred Brodie

The gymnasium was the first of the modular buildings on the campus, but its roof line, stairwells and entrance lobby gave a modelling to the exterior form not evident in subsequent curtain-wall structures.

1
The south-west elevation. The bridged approach to the memorial hall is on the right

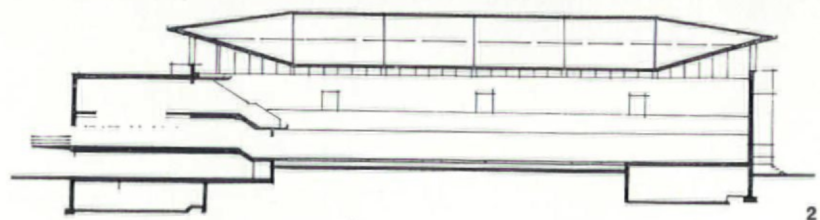
2
The gymnasium interior

3 & 4
Section and ground floor plan
1 gymnasium
2 memorial hall
3 lecture room
4 upper part of small gymnasium
5 lounge
6 offices

5
View from the south, with the bridged approach in the forefront

6
View from south-east of the main entrance to the memorial hall

Photos: Selwyn Pullan 5, 6



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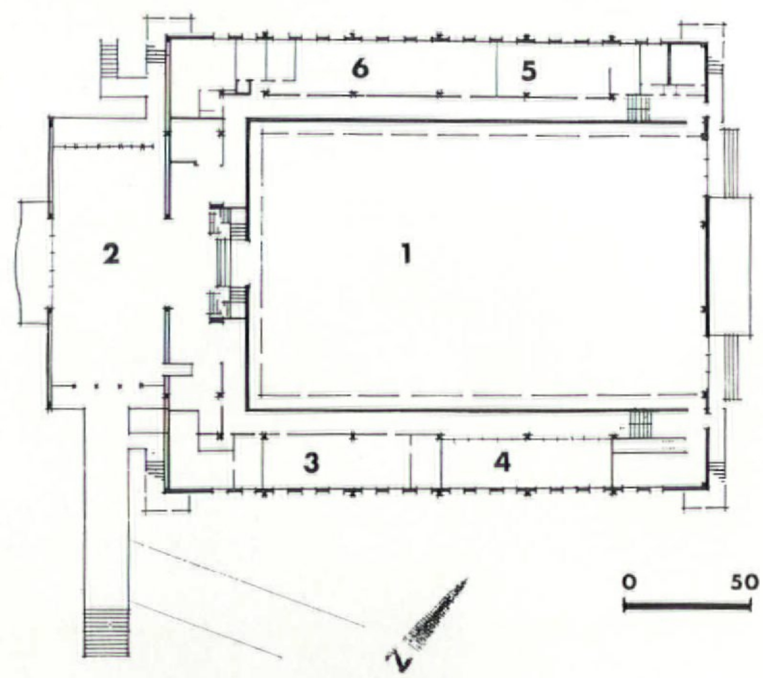

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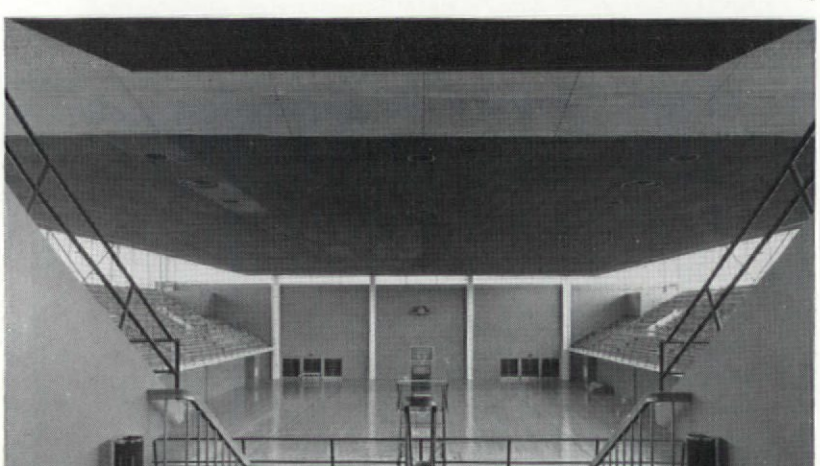

4

5

6

Anderson House, West Vancouver, B.C.

Ronald Thom

Ronald Thom is a senior partner in the firm Thompson, Berwick & Pratt. The house was built for two adults and four young children. The plan allows for the separation of the two age groups in both living and sleeping areas. This idea was even carried into the planning of the outdoor areas.

Because the site was somewhat small in relation to the size of the house, the architect was concerned with having the house seem secondary to the site when viewed from the street and in maintaining privacy and an intimacy with nature from within.

The structural system is wood frame set on a concrete foundation, ceilings are V-jointed cedar. Exterior finish is cedar siding.

Total cost (basement unfinished): $23,000. The general contractor was C. H. Nelson.

continued on page 357

1
The south-west terrace to the living and dining rooms

2
View from the south, with the living room in the foreground, and the master bedroom showing beyond to the right

1

2

In the best buildings nowadays you'll find Sisalkraft building papers all over, and under, the place. Sometimes they are keeping things in, like heat. More often they are keeping things out—like damp and dirt; cold and fire; wind and wet. Occasionally they are keeping things apart: preventing bonding or chemical interaction. Shown here are five of the Sisalkraft papers widely used as building membranes*. For details of these and all other building grades of Sisalkraft, just ask J. H. Sankey.

*Sisalkraft for sarking. Sisalation reflective insulation. Pyro-Kure fire resistant moisture vapour barrier and insulant. Copper Armoured Sisalkraft. Moistop polyethylene faced waterproof underlay plus slide layer.

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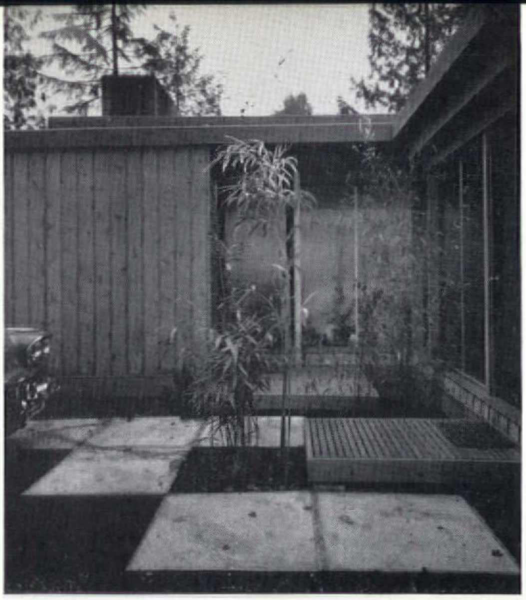


1

continued from page 356

1
The entrance court

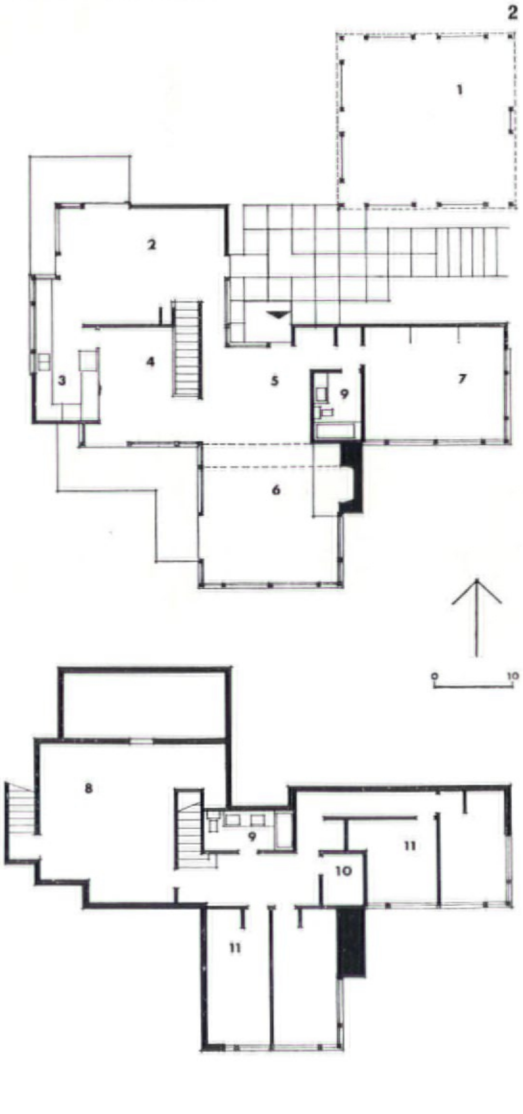
2
Upper and lower floor plans
1 carport
2 recreation
3 kitchen
4 dining
5 hall
6 living
7 master bedroom
8 storage
9 bath
10 boiler
11 bedroom

3
The south-west corner

4
The living room fireplace

Photos: Selwyn Pullan

2



3

4

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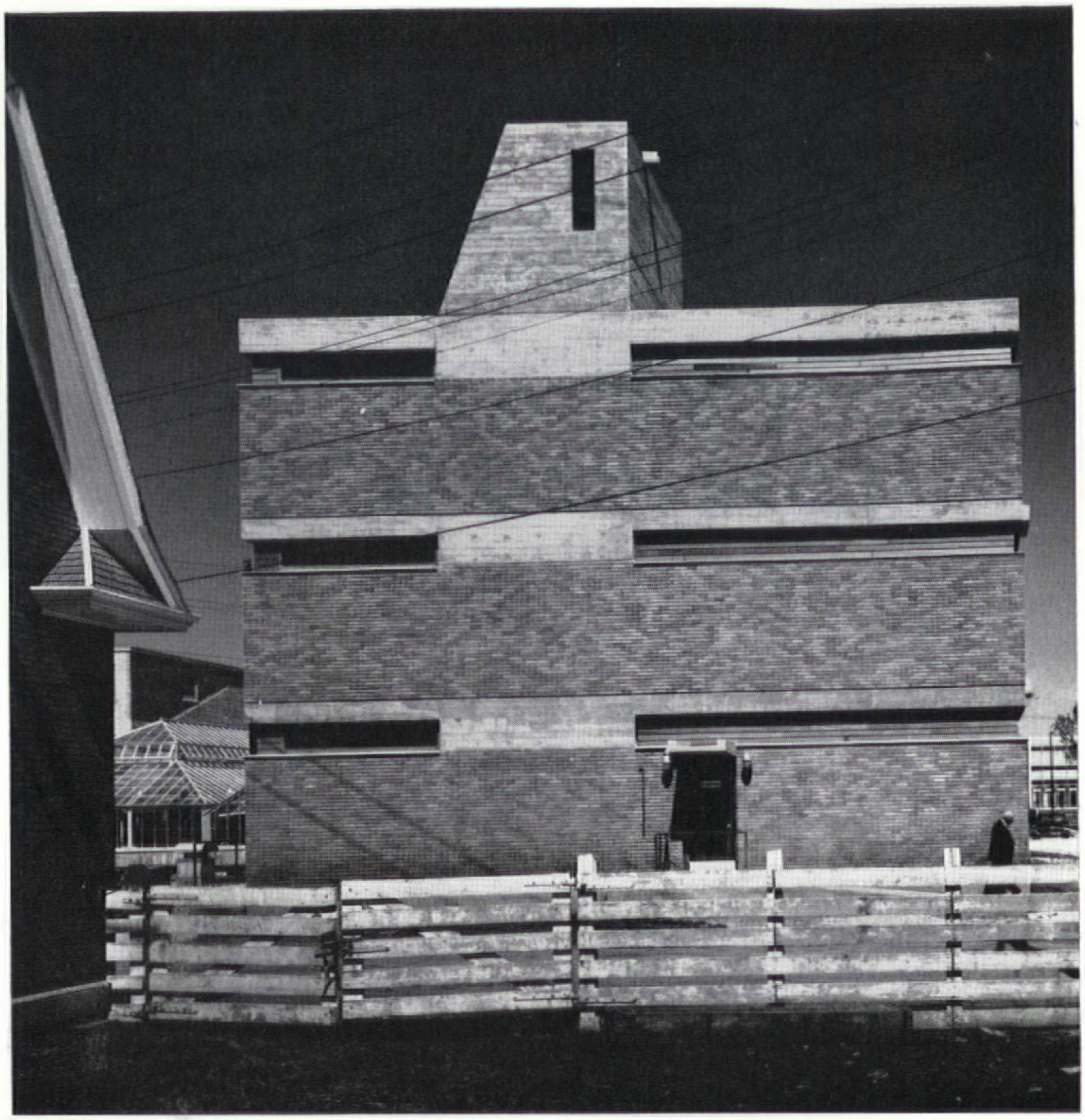
F3055

Crop research centre, University of Manitoba, Fort Garry, Manitoba

Waisman, Ross and Associates

The three-storey reinforced concrete research laboratory building, completed in April 1961, is located on an extremely limited site connected to an older agricultural building. All floor plans are the same basically with labs facing east and their related offices facing west. Some specialty labs and cold storage facilities are in the basement. The structural expression and the detailing of the exterior was carried out with regard for the existing masses and material surrounding the centre. The ruggedness of the elevations by the use of exposed concrete, brick, and natural redwood put together with a subtle, but forceful interplay of negative connections, was further felt to be in sympathy with the tone of the agricultural complex.

The entire structure is exposed reinforced concrete with ribbed floor slabs over piles. Concrete projecting shrouds cover the individual air conditioning intakes. Exterior walls are face brick; interior walls are plaster with suspended acoustical ceilings and vinyl and quarry tile floors. The building is fully air-conditioned.



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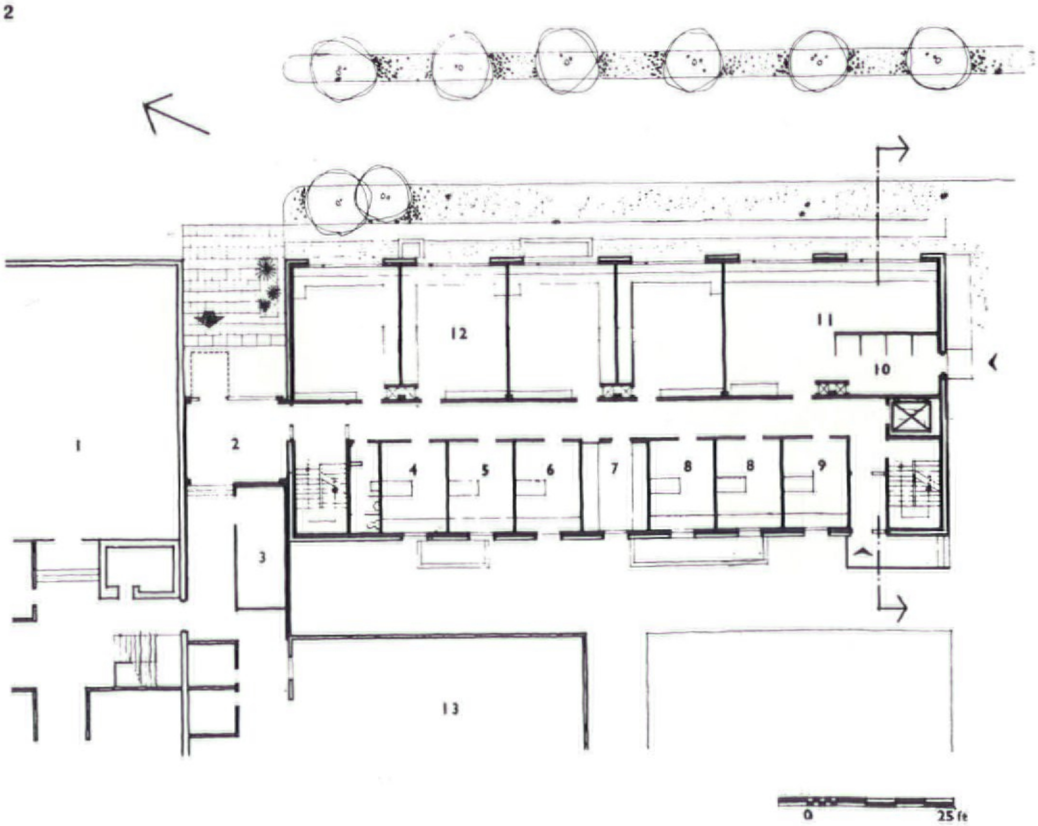

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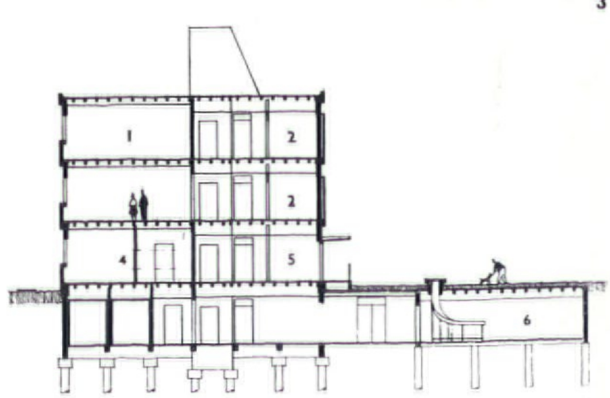


3

1
The south elevation

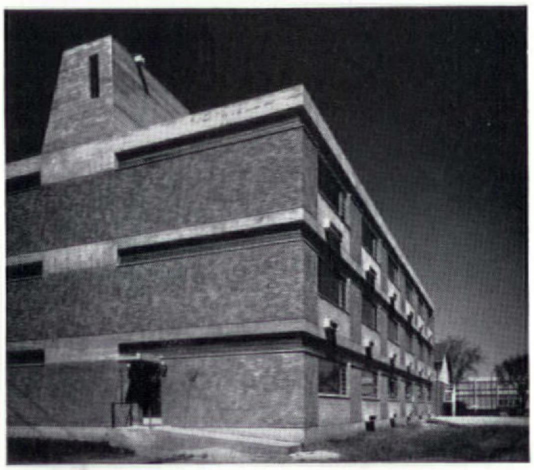
2
Typical floor plan
1 existing plant science building
2 vestibule
3 electrical
4 technical office
5 weeds office
6 winter grain
7 students
8 cereal
9 superintendent's office
10 storage
11 plant processing
12 laboratories
13 existing green house

3
Section
1 kjeldahl room
2 store
4 plant processing
5 vestibule
6 root house

Photo: Henry Kalen

continued overleaf

1
View from the south-east
2
Typical staircase
3
Typical corridor
4
Office door detail in a typical corridor
Photos: Henry Kalen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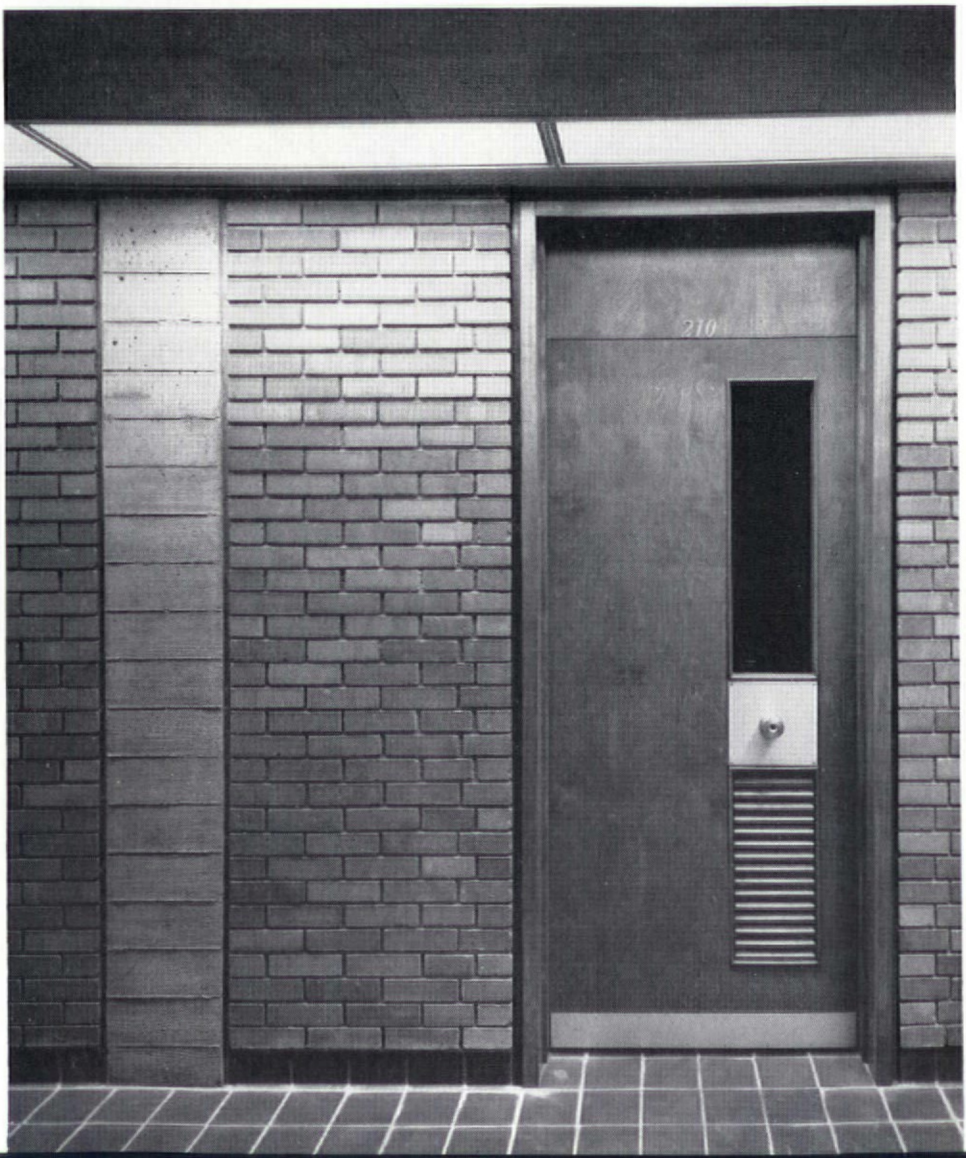
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MARLEY the first name in British neoprene gaskets

Mechanization comes to the structural design office

Prof. Henry J. Cowan

Replacement of the manual process by mechanization has been our great pre-occupation over the past half-century. Not everybody would agree that this is a good thing; but few doubt its necessity. An architect or structural engineer who had departed from life in 1910 and suddenly turned up on a building site would find it full of surprising innovations. On calling in at the design office, however, he would find himself quite at home. We still carry out our design processes by the same manual methods with a pencil and pen and a few simple instruments as the only equipment.

Structural design is in a special category, because it involves numerous complex, but repetitive, operations which are in principle much more suited to the machine than to the human brain. The machine does not get tired and make mistakes; on the other hand, it has to be told what to do. Attempts have been made for many years to find more accurate and more efficient methods of designing structures, and there are indications that they are at last meeting with success. The development of the bulldozer and of the crane has made it possible to handle large quantities of soil and heavy components, and architects have for many years based their design on the premise that the shifting of these heavy weights presents no unusual problems. In structural design we have always been able to solve complex structures by hard labour; but this has of necessity been reserved for special problems. Mechanization of structural design could therefore have far-reaching consequences for architectural design.

The classical structural design procedure

Before considering the potentialities of mechanized design, it is worth while to review the two great changes in basic structural theory which have influenced architectural design. Structural design of a sort is almost as old as building itself. The Greeks had some quite elaborate rules for proportioning columns and lintels and we find geometric details of buttresses and vaults in the notebooks of the Gothic masons. During the Renaissance there was a rapid multiplication of such rules (*see*, e.g. Alberti's *Ten Books of Architecture*), and measured drawings through the centuries have added to the number.

A feature of the empirical structural rules of classical architecture is their essentially geometric character. The strength of deformation of the structure and its general stability is not considered, except in a broad empirical sense, and there is no clear distinction between the proportions which make an æsthetically satisfactory building and those required for a sound structure. A fortunate by-product of this emphasis on geometry rather than on statics is the generally good proportioning of structurally well-designed classical architecture.

We have by no means abandoned structural design by specifying proportions. Every building bye-law contains some rules for dimensioning structural members by proportions, because there is no satisfactory statical design method, and sometimes these rules are very ancient.

The main weakness of empirical rules lies in their limited range of applicability and in the difficulty of distinguishing those bases on sound empiricism from others derived from old superstitions or from mistaken generalization of features found on measured drawings.

Although proportional rules are no longer used as the main basis for determining structural dimensions, few engineers fail to inform themselves about previous work before embarking on the design of an unusual structure. Ratios of depth to span and depth to width of comparable structures are commonly consulted before a new design is undertaken, and many important details are derived from previous work. The main difficulty of relying entirely on dimensions of comparable previous structures is the verification of the design. In a complex structure statical calculations of the conventional type may give only a crude approximation, not always on the safe side. We can no longer afford to build a substantial prototype structure, as was frequently done in previous centuries, to test the design. The pace of innovation is too fast to make gradual adaptation from previous structures feasible, and the public reacts more unfavourably today to collapse or serious structural damage when the scaffolding is struck. Two methods of gradual structural improvement used in previous centuries are therefore no longer practicable today.

While proportioning of structures based on intuition or past experience has not lost its validity, and is certainly one way of obtaining an æsthetically more satisfactory result, the problem arises how a complex design of this kind can be verified effectively and economically

The first revolution in structural design procedure

Before considering this aspect it is necessary to have a look at modern structural design methods. As with so many other changes, the basic principles of statical calculations have been known for centuries. The parallelogram of forces, used in the composition and resolution of forces, was discovered by Leonardo da Vinci in the fifteenth century, and the lever principle can be traced back to Archimedes in the third century B.C. From this a method of structural analysis developed very slowly, its first recorded practical use being in the middle of the eighteenth century during repairs to the Dome of St. Peter's in Rome. The new methods of structural design came into use only in the nineteenth century with the development of iron and steel construction.

The reasons for this long delay are mainly economic. The old masonry structures were very complicated and it was, and still is, difficult to obtain simple statical solutions for them. Due to the slow pace of structural development, design by specifying proportions was quite practicable, and conservation of material was not of primary importance in masonry construction. In iron structures, on the other hand, conservation of material was important because of cost, and easily achieved by using a smaller casting. The structures were mainly formed from simple members, simply connected, so that statical analysis could be used without difficulty.

A factor less clearly understood at the time, which distinguishes the classical masonry structure from the iron structure is the different mode of failure. Ultimately a statically determinate iron structure fails because the material is overstressed at some point, whereupon the damaged member collapses or breaks. Classical masonry structures rarely failed that way. Usually they became unsafe through the opening up of joints when tension between the individual blocks developed. The structure then lost stability without overstressing of the material in the individual blocks.

Structures which depend for their stability on the balancing of small individual blocks are no longer used today, except for domestic construction and for additions to old buildings, so that the methods of their analysis are now mainly of historical interest.

The second revolution of structural design procedure

Although we still use this simple statical design in very many calculations, the structures for which it was originally devised have virtually disappeared today. The early beams simply rested on walls and columns. Trusses were formed from cast iron and wrought iron members terminating in circular holes, and they were simply joined together with dowel-pins. These structures were truly pin-jointed and statically determinate. Today steel structures are connected with welded or bolted cleats which impose considerable restraint, and these structures are far more rigid than the early iron structures.

The limitations of the simple statical analysis were realized at an early date, and the first method for dealing with rigid structures was devised in the eighteen-seventies by Castigliano, at a time when simple statical design was a new-fangled notion to most architects. The real impetus to the investigation was, however, given by the development of reinforced concrete, which could not easily be constructed without producing a rigid frame. Reinforced concrete introduced a further problem. It differed from classical masonry construction by introducing reinforcement to resist the tension, instead of shaping the structure to prevent the opening up of tension cracks. This meant, however, that one had to distinguish the tension from the compression face. In steel construction a reversal in bending moment is not serious; in reinforced concrete, unless allowed for, it causes failure.

The devising of methods for the design of rigid frames has therefore been the main pre-occupation of structural research during the twentieth century. There are now several methods for computing plane rectangular frames, which form the skeleton of nearly all modern multi-storey buildings; for curved structures the choice is more limited. Unfortunately all these methods are very laborious for multi-storey buildings, and as a result most structural calculations are carried out by approximate methods adapted from simple statical design. It seems at last as if a more accurate design procedure based on the theory known for decades may become possible by mechanizing the computations.

Principles of the design of statically indeterminate frames

The complexity of the solution depends on the number of degrees of redundancy of the structure. A structure which is statically determinate has just sufficient members to prevent collapse. If one member is removed it becomes a mechanism, and its shape can be freely altered by a very slight force (Fig. 1). A statically determinate structure can be solved by the simple laws of statics. Since the structure and every part of it, is in equilibrium under the forces acting on it, the horizontal and the vertical components of all the forces acting on it, and their moments about any point, must balance. This gives just sufficient equations to determine the forces in the structural members.

continued on page 362

continued from page 361

If further members are added, the structure becomes more rigid and does not become a mechanism as soon as one member is removed. Each additional member introduces a new internal force which has to be determined, and which may in turn alter the magnitude of all the other internal forces. Since the conditions of statical equilibrium yield only the same number of equations as before, the structure becomes statically indeterminate, and some additional equations have to be derived from its elastic deformation. The more members are added, the more rigid does the frame become, and the more equations are needed for its solution. If, say, seven restraints must be removed before a structure becomes statically determinate, it is said to have seven degrees of redundancy and seven equations are needed for its solution in addition to those derived from the conditions of equilibrium.

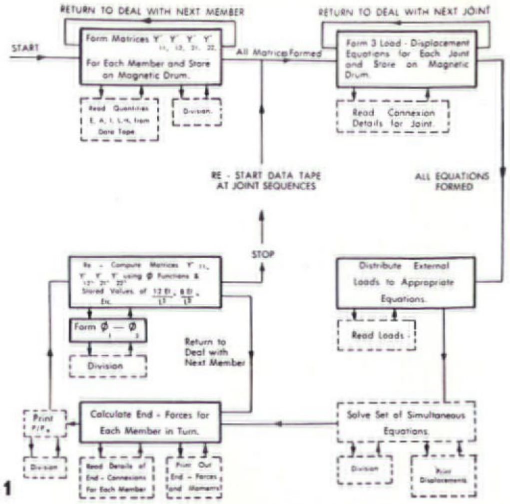
It will be apparent from Fig. 1 that a rigid joint is equivalent to a diagonal member as far as the rigidity of the structure is concerned. Thus a simple multi-storey frame with rigid joints may have over a hundred degrees of redundancy. The complete solution without mechanical aids may involve a structural designer in several months' work with a slide rule and, apart from the work involved, this is an extremely monotonous job unsuited to the temperament of a highly skilled engineer.

Solution of statically indeterminate frames

Basically there are three methods of solving rigid frame problems. The first and oldest equates the work performed by the loads acting on the structure to the internal energy stored in it by the straining action of the loads. This is known as the *strain energy method*. The second method considers the deformation of each member in turn, and derives general expressions for the slope and the deflection at the ends of each member. It then utilizes the factor that the slope and the deflection at the junction of two members must be the same because of the continuity of the structure, whether one starts from the right- or the left-hand side. This is called the *slope-deflection method*. The third method assumes that each joint is initially clamped, causing a discontinuity of the moment at the joint. Each joint is then released in turn, and the unbalanced moment is distributed until the error is negligible. This is called the *moment distribution method*.

Of these three methods the last and most recently developed is the most convenient without mechanical aids. It is widely used, and the acceptance of moment distribution methods has led to a great increase in the accuracy of skeleton frame design. It depends on a process of successive approximation, so that the result can be made as accurate as the problem warrants, and unnecessary time need not be wasted on unwanted precision. However, for a large unsymmetrical frame the amount of time required for even a rough determination can be quite excessive.

All three methods can be adapted to mechanical computation, but the second is the one best suited to the electronic digital computer which at present seems the most promising tool for mechanizing routine structural calculations. The slope-deflection method can be written down in the form of simultaneous equations, as many as there are degrees of redundancy. These are simple linear equations phrased in terms of the stiffness and length of the members of the frame, and the digital computer is particularly well adapted for the solution of a large number of simultaneous equations.



1

The digital computer is a very fast adding machine which can perform several thousand additions per second. Most machines work on a binary system, i.e. they use two digits in place of the customary ten of the decimal system (a hole on the punched tape fed into the machine represents one digit, and the absence of a hole the other); this is, however, an electronic detail which does not enter into its use because the input mechanism is automatically converted from decimals. The essential features of electronic digital computers are their enormous speed of operation and their 'memory', which is capable of storing instructions for performing a sequence of operations. A digital computer will therefore produce rapidly and economically a solution by performing a series of additions and subtractions in accordance with a standard routine instruction stored in its memory. It may well be possible to produce a shorter and simpler solution by other mathematical methods; but if the computer can obtain the result more economically by its routine of additions, it is worth while to use it instead. The problem of using computers is therefore one of finding standard routine instructions which can be fed into them on punched tape or cards and used over and over again (Fig. 2). As electronic digital computers are a development of the last ten years, there is still much to be learned about their utilization. They are obviously most economical for long repetitive calculations.

The function of the electronic computer is quite different from that of the slide rule, which has had such a profound effect in taking the drudgery out of simple multiplication and division. The slide rule is a portable, inexpensive and essentially personal computation aid. Electronic digital computers cost tens or hundreds of thousands of pounds. It is not at present possible to visualize conditions when a structural design organization, however large, could afford to maintain its own computer.

One could, however, visualize an organization (which could be a commercial firm, a university or a public utility) operating a service for structural engineering firms. The present operating costs of computers are of the order of £30 to £60 per hour, and it should be possible to obtain a precise solution for the skeleton of a 20-storey frame building for about half that sum. Since the precise solutions would take weeks of very boring arithmetic work, this really means that the solution has become possible as a routine operation for the first time, whereas previously it could only be used for problems of quite exceptional importance.

Analogous computers

Before a digital computer can be used, a code must be devised which turns the problem into a series of arithmetic operations. This is not always an easy task and for many structural problems it appears at present to be extremely difficult and time-consuming, if not impossible.

Some mathematical equations are more easily solved with the aid of an analogue computer. While all digital computers are based on the same principle, there is a whole range of analogue computers. As the name implies, these computers utilize mechanisms or electrical circuits which are mathematically analogous to the structural problem. Some analogue computers are of general application, i.e. they perform normal mathematical processes, such as multiplication, division, differentiation or integration. The slide rule, incidentally, is a simple computer of this type. Others are more specialized and may rely, for example, on the mathematical similarity of the equation of an electrical circuit and of the equation for the slope of a beam. Usually the more general computers are more expensive; but they can, of course, be used more efficiently, because they are suitable for a wider range of problems.

A number of special electrical analogues have been devised for the solution of structural frameworks. Most of these consist of electrical circuits, which are adjusted to the general dimensions of the frame and the stiffness of the members by altering electrical resistances (Fig. 3). These analogues can be manufactured for less than £1000, and they yield a solution fairly rapidly, so that computers of this kind may find a place in the larger design offices.

Structural models

The main expense in the use of computers lies in devising a method of obtaining a solution. Prolonged research may be needed to devise a programme for a digital computer, or to design a special analogue for the particular problem. Computers and analogues are therefore mass-production tools in structural design. The cost of analysis declines rapidly with the number of identical problems to be solved.

Mass production is, of course, an essential feature of structural design. Although no two structures may be exactly alike, most conform to a few general types. Most buildings are rectangular, with regular column grids. These structures are essentially suitable for digital or analogue computer solution.

However, 'made-to-measure' structures survive, and they are frequently found in buildings of considerable size and importance, so that elaborate design methods are warranted. Unique structures do not lend themselves to design with computers, but they are well suited for model analysis. A model is usually made especially for one structure and cannot be used

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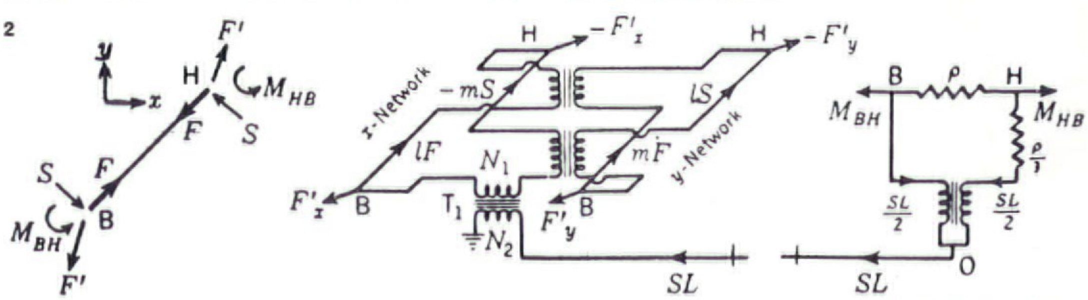
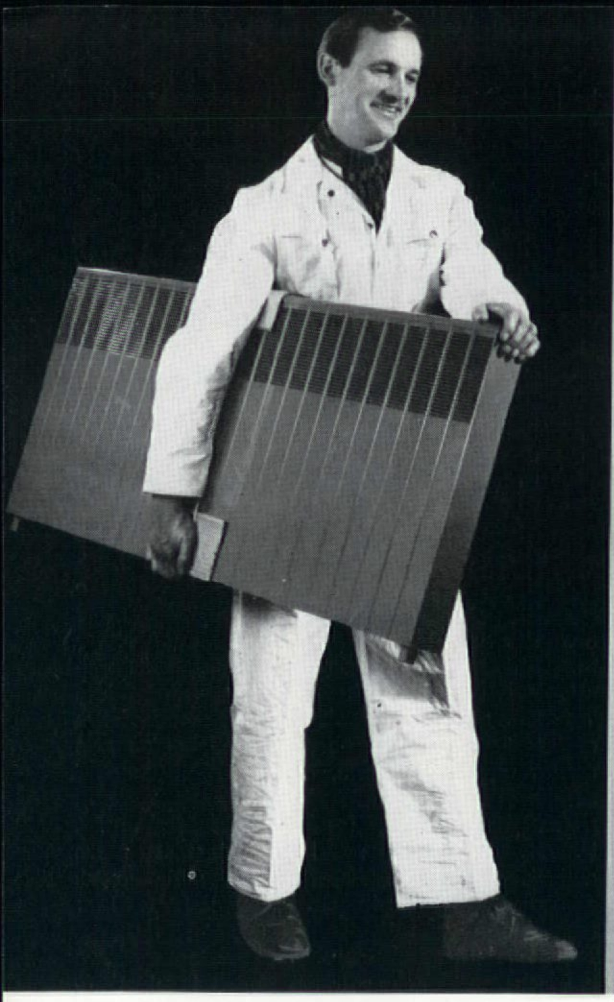
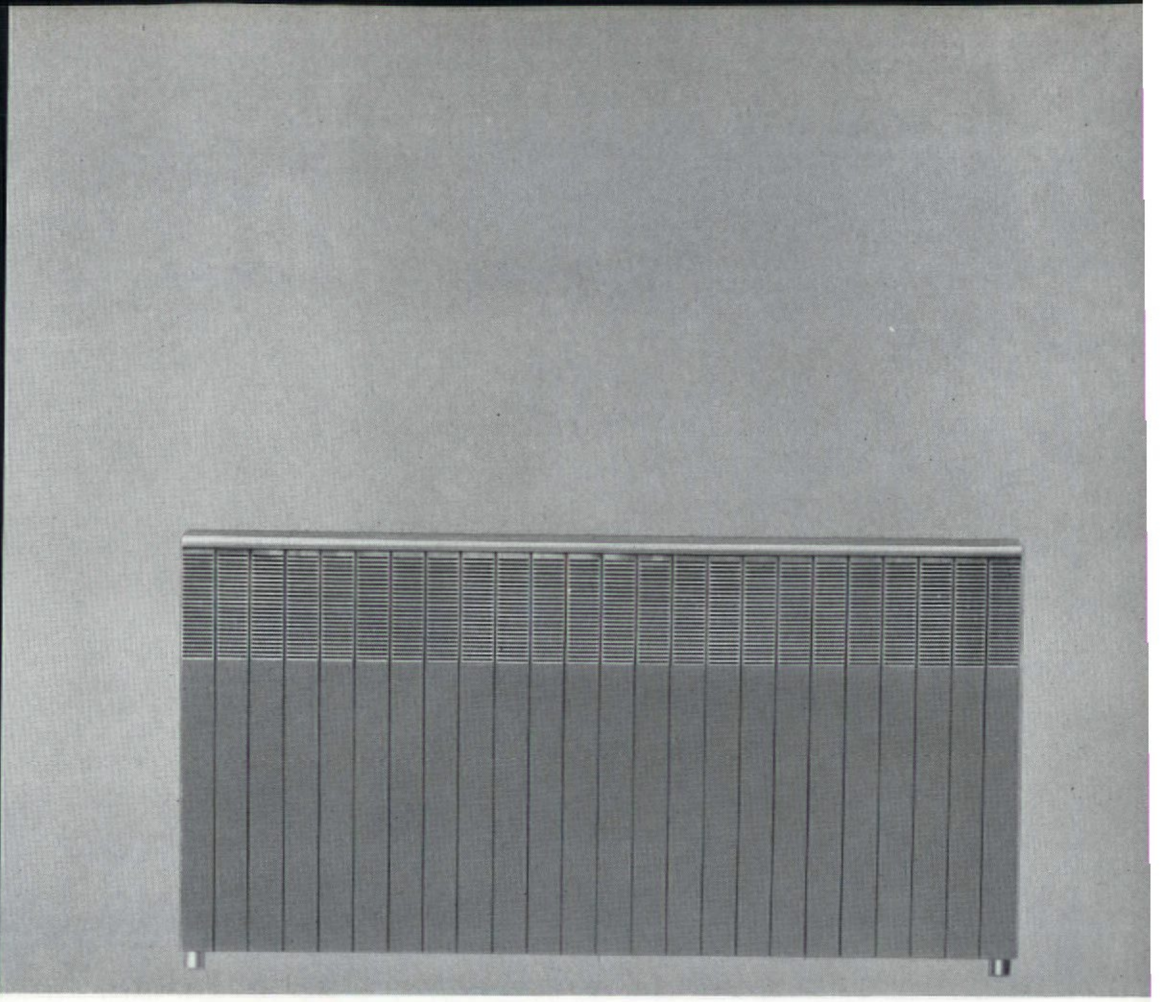
2



(a) MEMBER (b) FORCE ANALOG (c) MOMENT ANALOG



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AD2

continued from page 362

for any other. The instruments can be re-used for other models, and occasionally the model can be built from re-usable components. It is not uncommon to proportion a structure for an important public building in accordance with æsthetic rather than purely structural considerations, or even to use a structure of free shape which is virtually incapable of mathematical analysis. Although it is possible to make a guess at the structural dimensions by consulting previous work and exercising common sense, it is very desirable to verify the design for all but the smallest structures. Model analysis is then the only alternative to the erection of a prototype.

Indirect model analysis is the less costly method. It utilizes a structural theorem which enables a statically indeterminate force to be derived from the measurement of displacements. A point acted on by a statically indeterminate force is given a unit deflection in the direction of this force, and the deflections all along the structural model are then measured. From this it is possible to compute the statically indeterminate force. It is therefore necessary to perform as many experiments as there are statically indeterminate forces. The only equipment needed is that required for deforming the model and for measuring the resulting change in shape (Fig. 4). However, each structure requires a new model.

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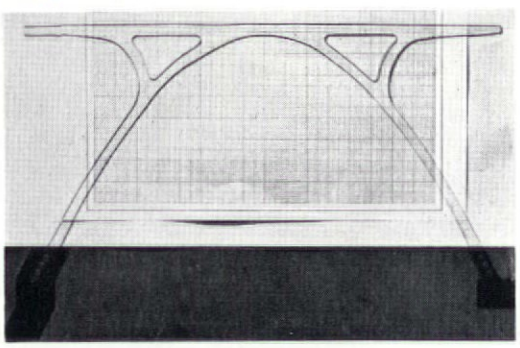
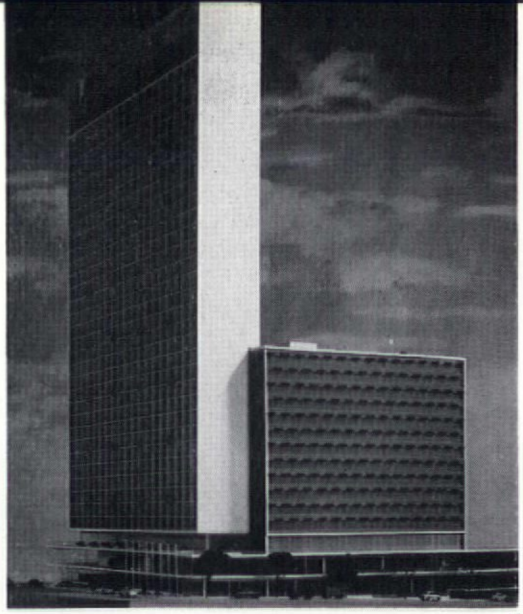


In direct model analysis the strains and deflections are measured with gauges, and the result is obtained directly by multiplying with the appropriate factors. Some quite elaborate and expensive measuring devices are needed, and again a new model is required for each structure.

Indirect model analysis is not well suited to three-dimension structures, but any free plane shape can be tested without difficulty. There are no limitations to the use of direct model analysis, except problems in making a true scale model (Figs. 5 and 6).

The manufacture of the model is a major part of the cost of the analysis, and it rises steeply with the size of the model, so that this is made as small as possible. However, model tests rarely cost more than a few hundred pounds. The structural model, unlike an architectural model, need not look like the structure, but it must behave structurally in the same manner. This means primarily that the model must be perfectly true to scale, and that the connections between the various members must exercise the same degree of restraint as in the actual structure. This can raise some difficult manufacturing problems when the reduction in scale is considerable. Perspex is the most common material for structural models, because it is available in a range of sections and is easily cut and joined. Casting resin, metal, cement and plaster are also used.

It should be mentioned that there are many other methods of experimental stress analysis which have found wide application in the design of machines and of dams. Brittle coatings, photo-



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elasticity and various optical methods have at times been used for structural design, but it is unlikely that they will have an important place in future development.

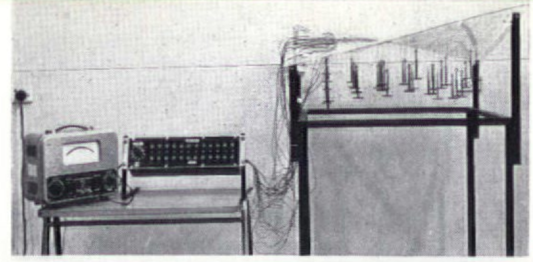
A comparison between models and computers

The accuracy of model analysis depends on the precision with which the model is made, the instruments affixed to it, and the measurements carried out. Even with the greatest care it is much inferior to that obtainable with computers. It is, however, worth remembering that extreme precision is unnecessary in structural design. Indeed, if one considers the uncertainty of the magnitude of the loads borne by the structure, the quality of the materials, and the structural interaction of the framework with the cladding and finishes, it is evident that an error of, say, 10 per cent in the final result is well within the limits of uncertainty.

One of the advantages of direct model analysis lies in the fact that it yields the final answer directly. In indirect model analysis and in design methods employing computations a much higher accuracy may be needed for the intermediate results. For example, if the final result is the difference between two quantities which are found to be 1·2 and 1·1, the answer is 0·1. However, if there is a possible error of ± per cent in either term, the true answer could in fact range from 1·21 − 1·09 = 0·12 to 1·19 − 1·11 = 0·08, a difference of 50 per cent. Thus the higher accuracy of indirect methods may well be necessary, particularly in certain design methods for curved structures, where differences between two similar numbers occur not infrequently.

Another advantage of the direct approach is the visual impression of the behaviour of the structure, and for this reason it has always been popular with architects. In indirect methods it is not usually possible to follow the process of analysis while it is in progress. A model resembles the structure quite closely, and its component parts interact in the same manner as in the structure. In computational methods it is usually necessary to make some simplifying assumptions; e.g. that joints are either fully rigid or are pin-connected. This may in itself introduce a considerable error which cancels out the superior accuracy of the computer.

In repetitive calculations of well-known structural problems these difficulties are known and can be avoided, and indirect methods are primarily intended for these. Direct model analysis is particularly suited to unique and unusual structures; in spite of its relatively high cost, it



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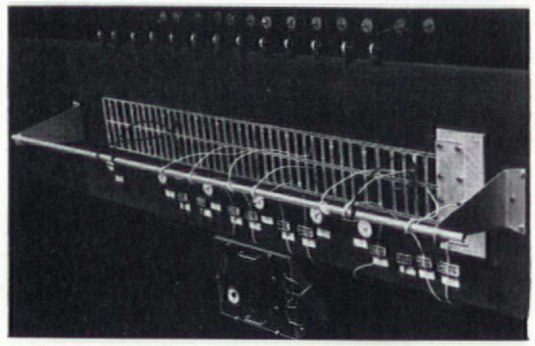

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has an important place in the future development of structural design. Indirect model methods occupy a place intermediate between direct model analysis and computation with analogues. At one end indirect models may closely resemble direct analysis, while at the other they may be regarded as highly specialized analogue computers, when the same components are constantly re-used for slightly different structures.

Whether mechanized structural designs will have a wide application in architectural work cannot at present be said with any certainty; but it seems a distinct possibility that the use of computers and, to a lesser extent, of models will become standard practice for many structural problems. If this happens, it should give us more versatile and economical structures, while at the same time increasing the cost of design.

The equipment illustrated in Figs. 4, 5 and 6 was made in the workshop of the Department of Architectural Science, and the photographs were taken by the Department of Illustration of the University of Sydney.

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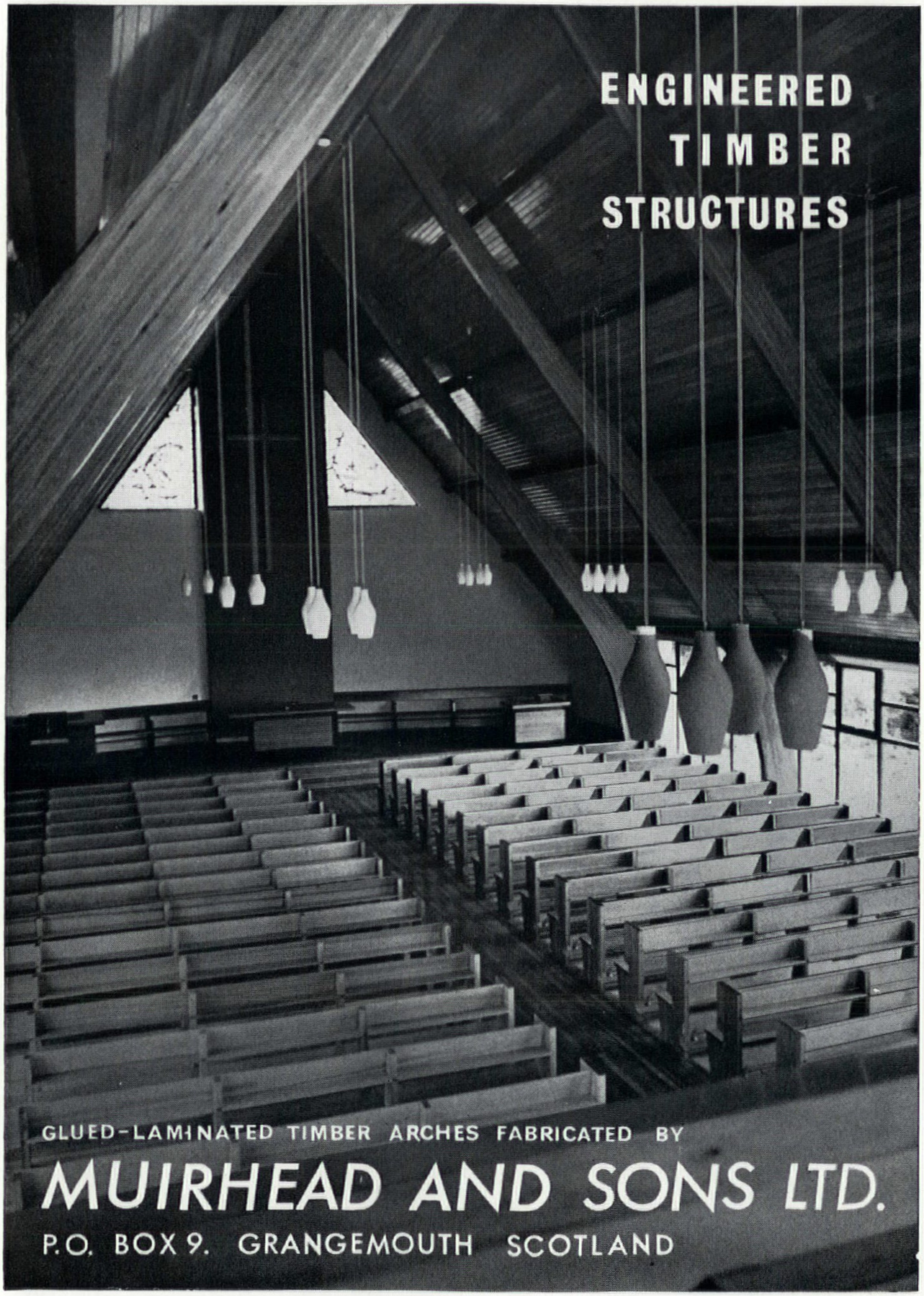

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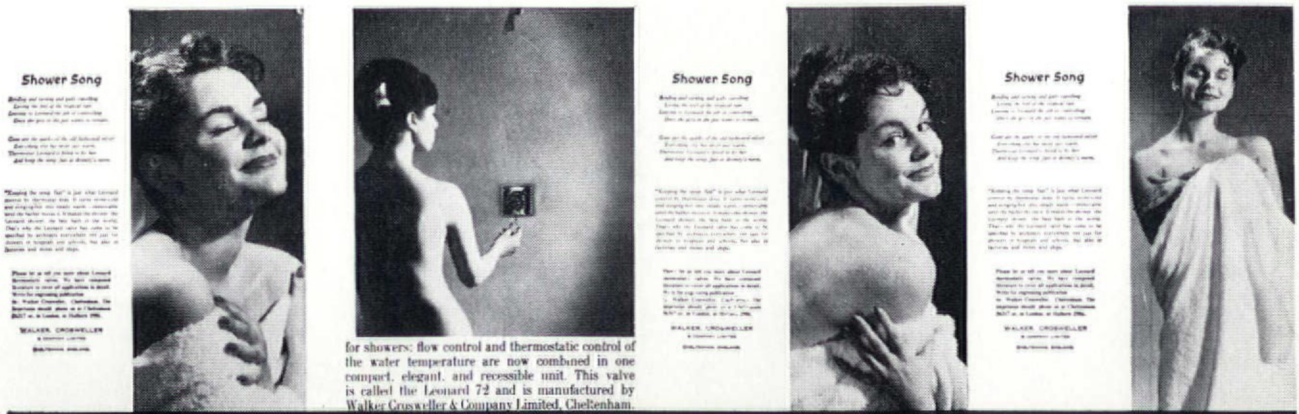

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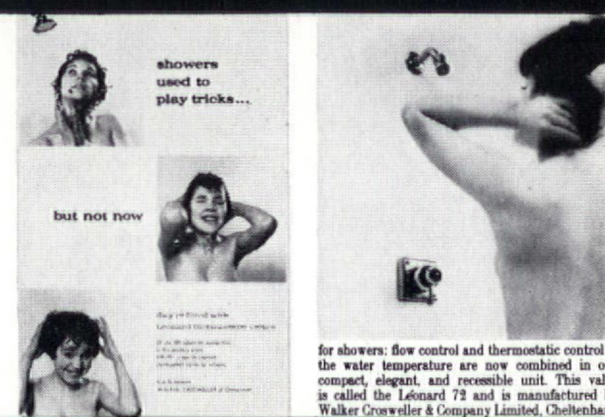

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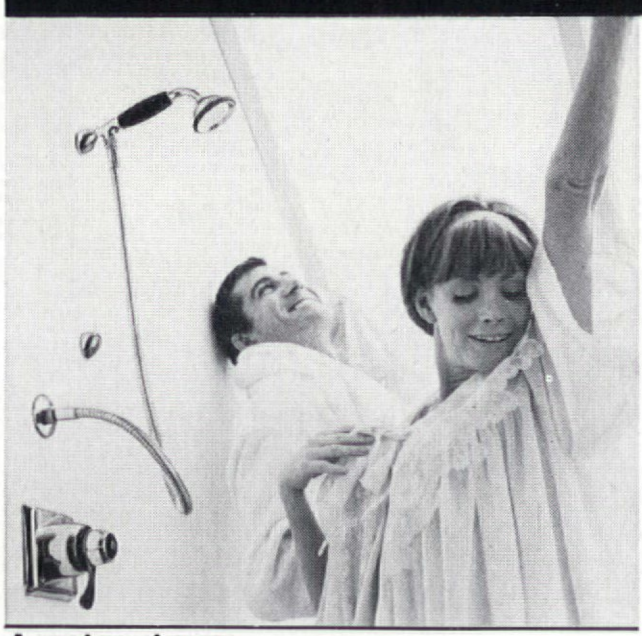

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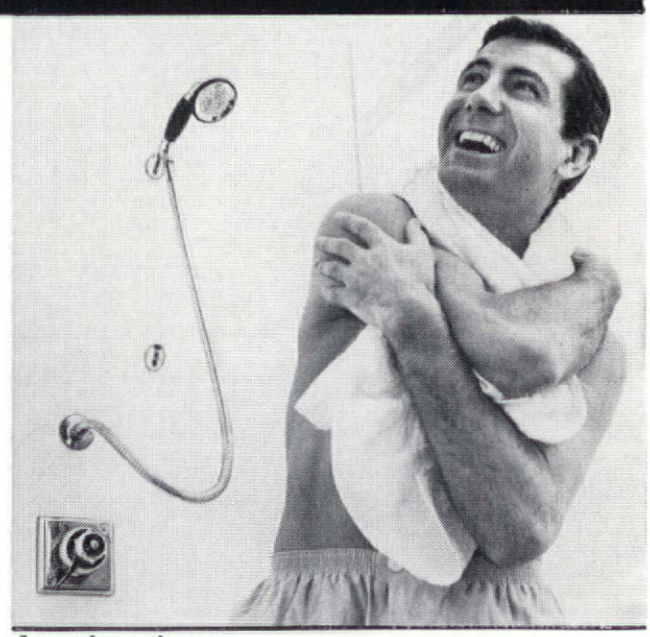

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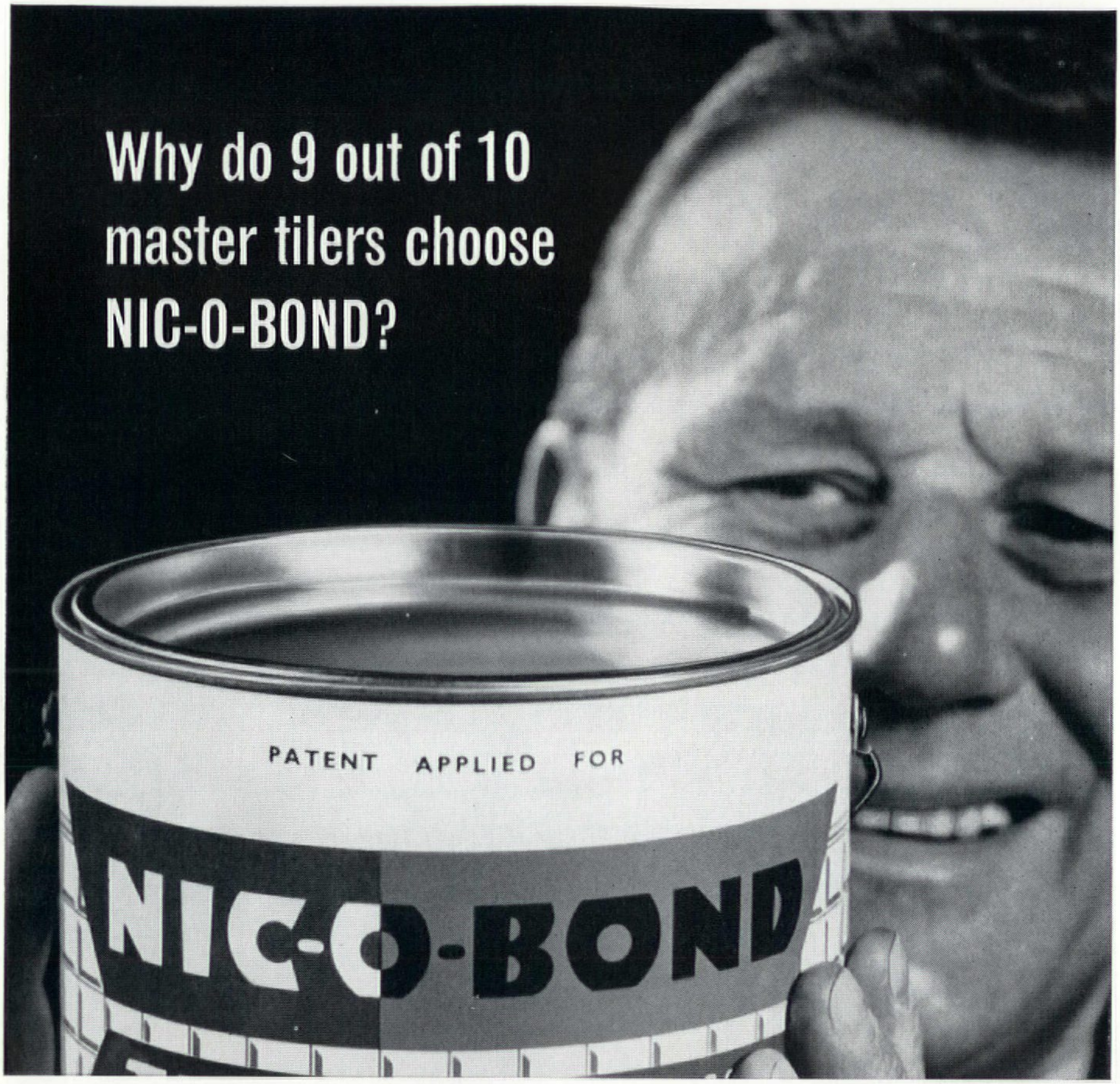

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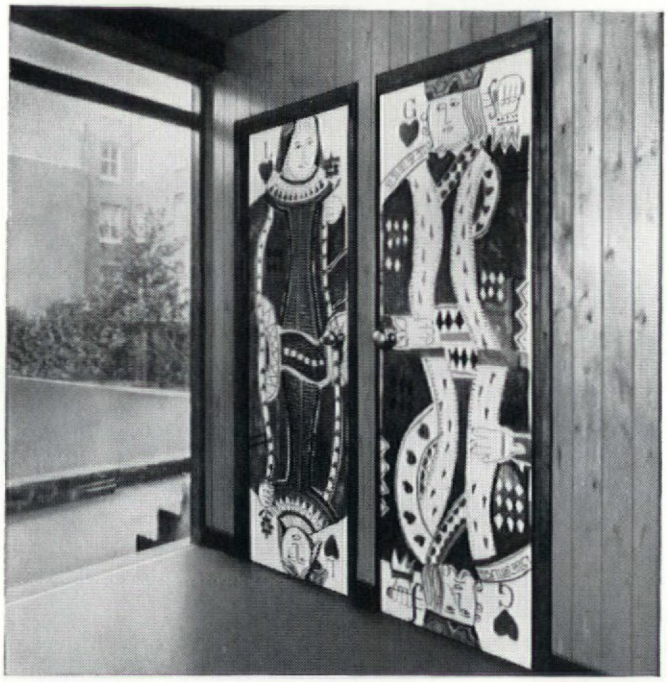

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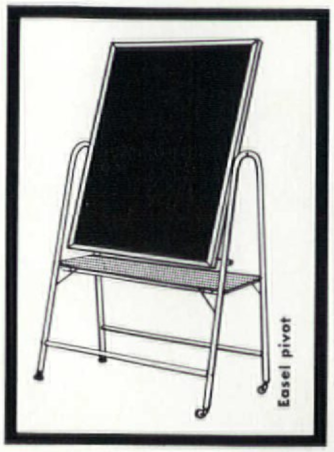

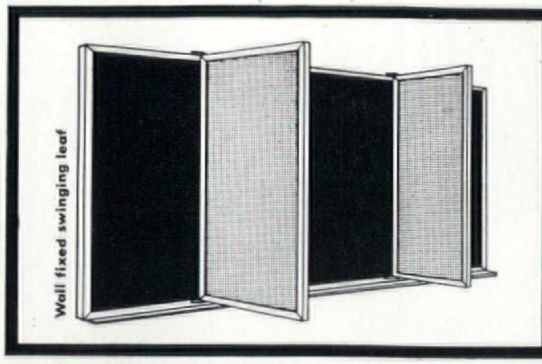

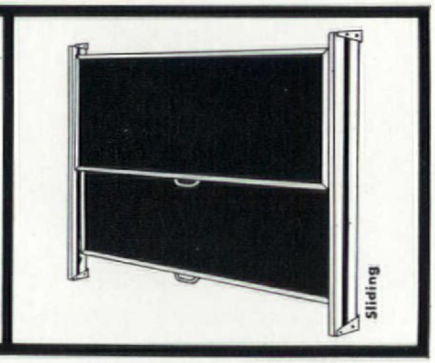

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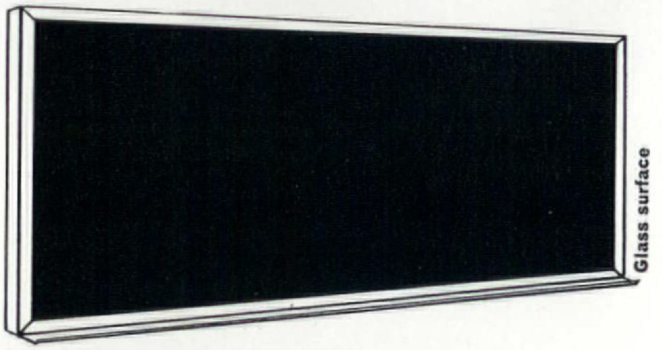

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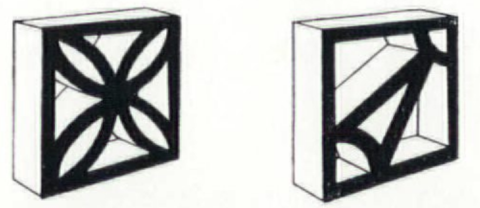

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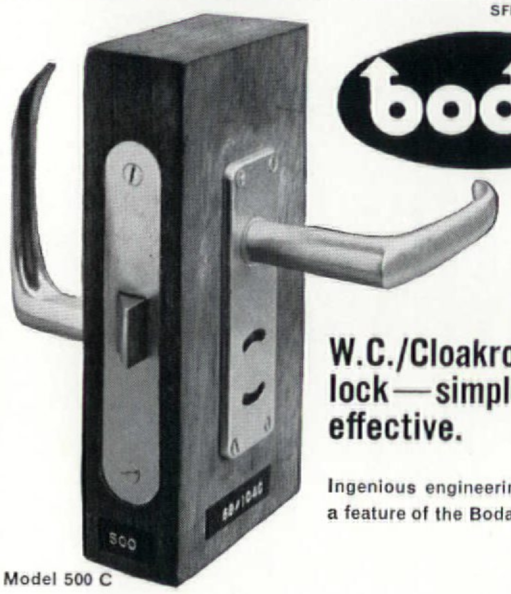

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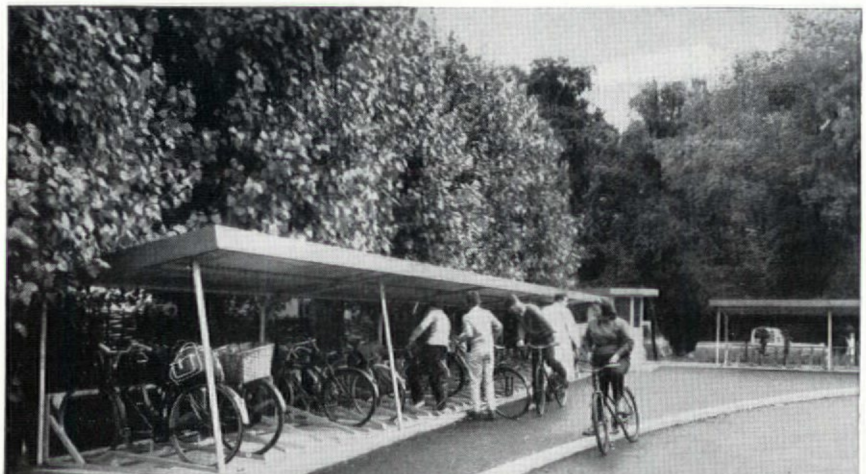

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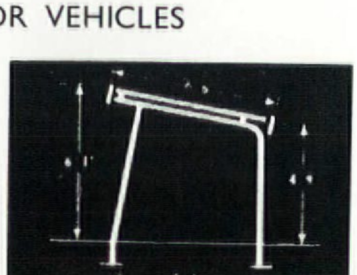

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