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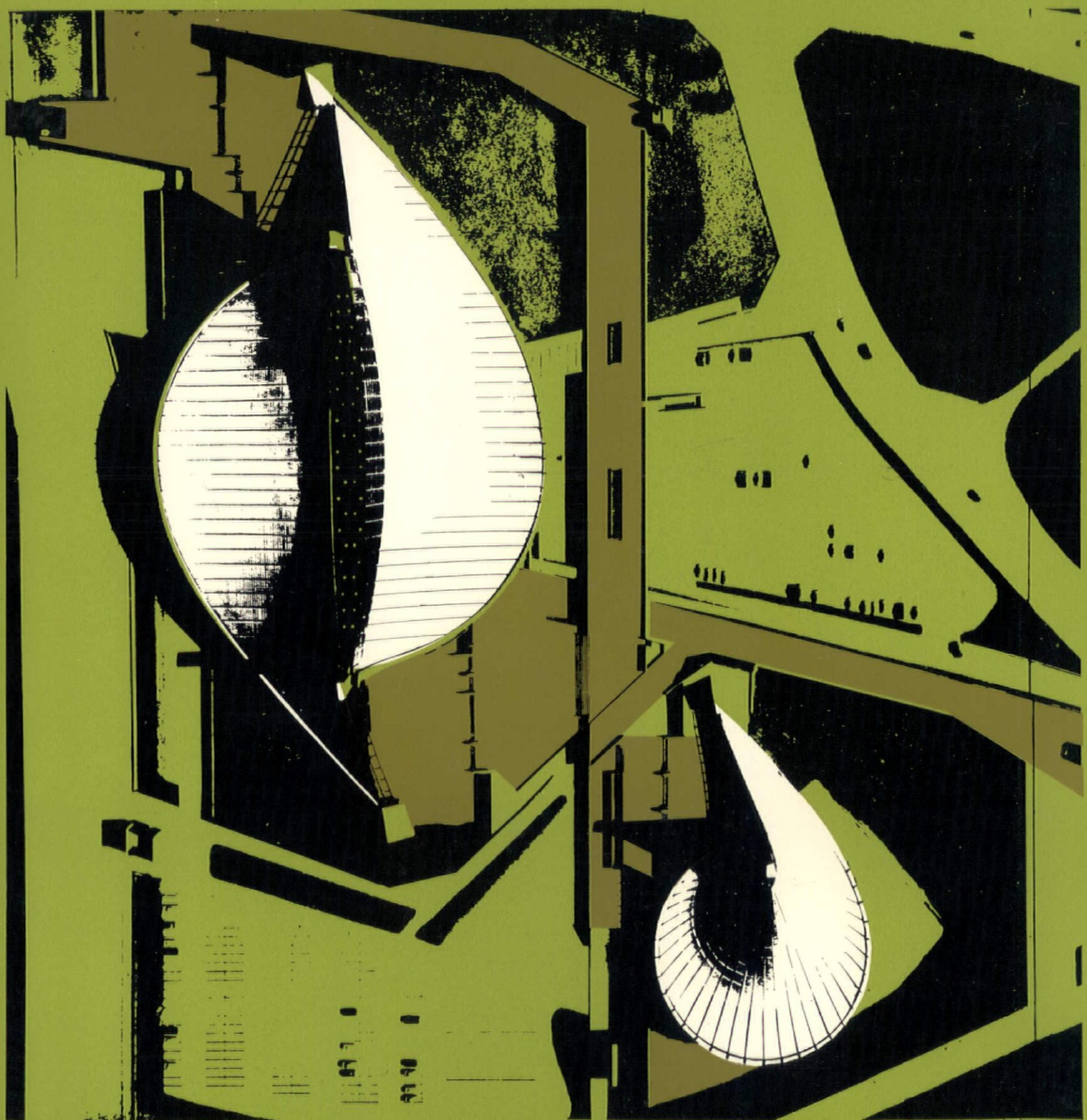

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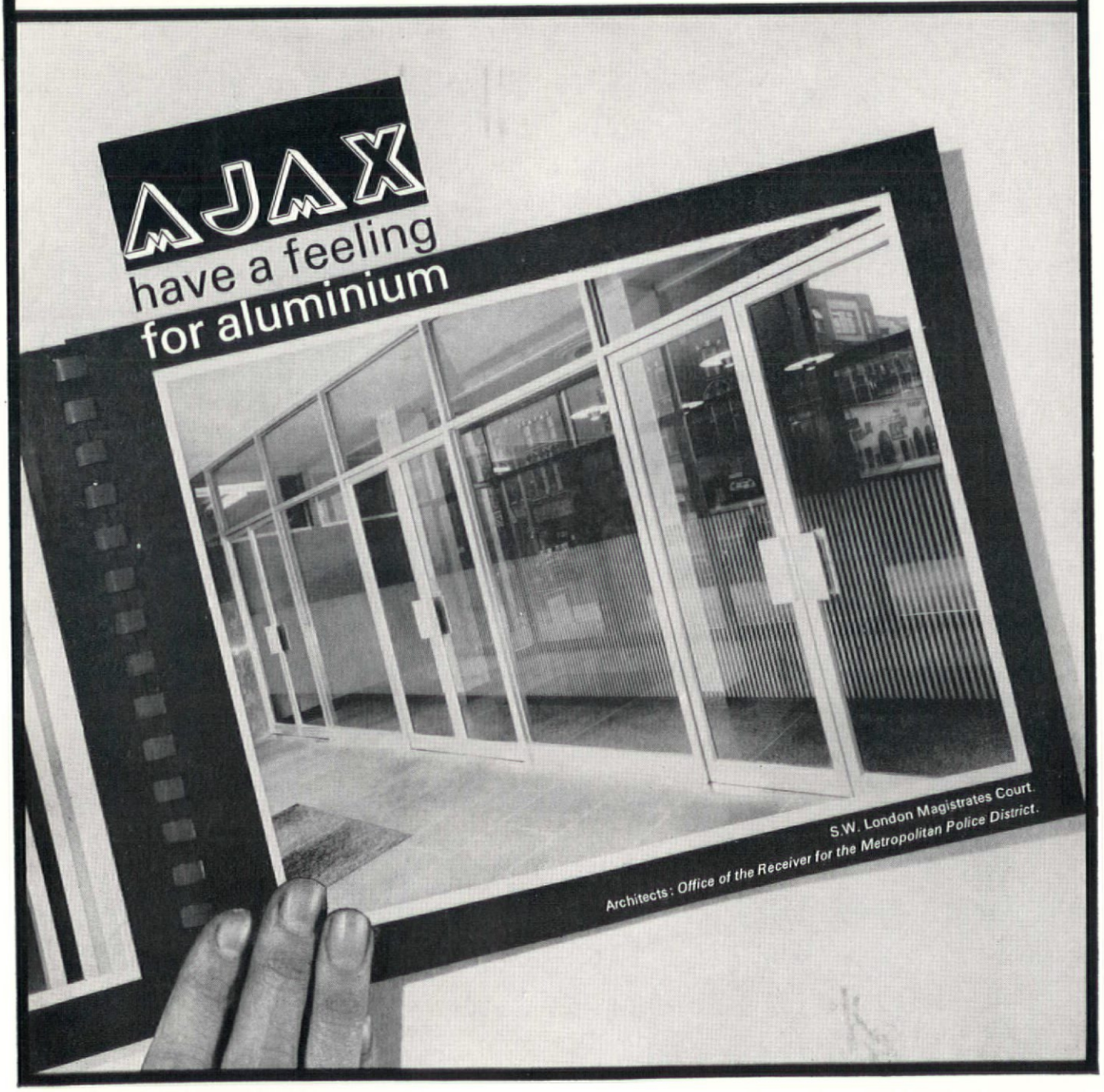

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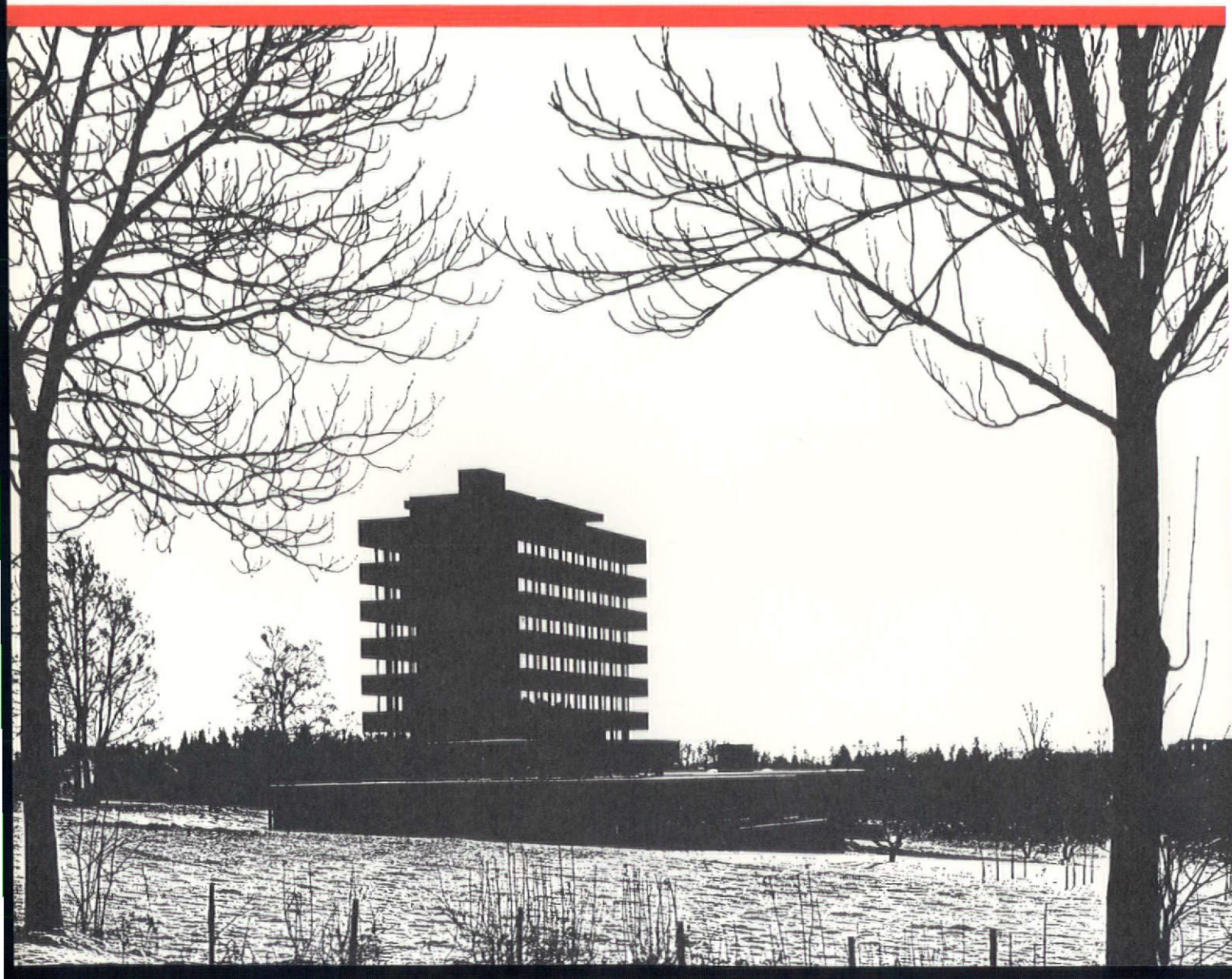
WORLD ARCHITECTURE 2



WORLD ARCHITECTURE 2

Edited by John Donat

World Architecture 2 contains lively contributions from seventeen countries. (The growing panel of contributing editors now represents well over thirty countries).
This issue concentrates more information and coverage on each item than was achieved in the first volume. The choice has been more rigorous and more specific so that each building, development or project could have more space devoted to it and could be covered at greater length and in greater depth.

In addition to detailed treatment of forty exceptional buildings, projects and planning ideas, World Architecture 2 includes an exploration of the process of design on a fascinating project in the USA—a stinging comment on the new tourist environment in Spain—new planning ideas by young Japanese architects—and a marvellous study of the way the Africans in Western Native Township have recreated their own environment with a personal language of vivid signs and symbols.

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May 1965

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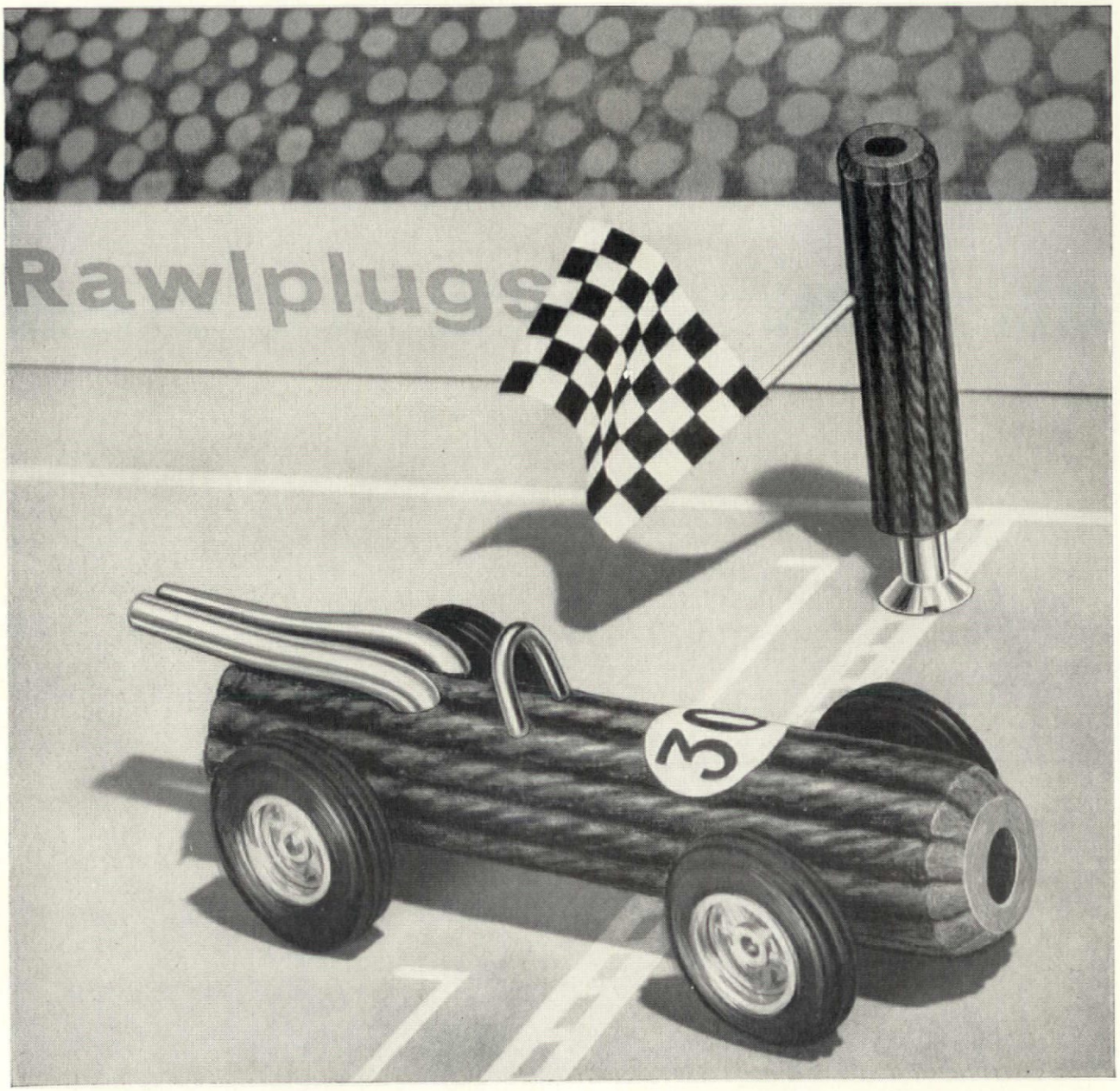

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Book notes

System building 2

Edited by Edmund Ward, Jane Shields and Jennifer Baxter. Interbuild. 7s 6d.

Reports on building systems submitted to the NBA consist of 30 pages of highly critical matter—proof enough that few of them are fault-free. Without access to these confidential reports or close inspection during construction, our assessment of each system must rely on either well-informed criticism or evidence of output beyond the prototype stage sufficient to eradicate faults and to justify acceptance.

Neither assurance can be found in *System Building 2,* which reinforces the growing catalogue of industrialized building techniques by 61 methods and 14 major components. Failure to discriminate between methods which make a serious contribution to our building programme (and may therefore be validly classified as systems) and mere prototypes and mock-ups, makes interpretation of their significance difficult. The extent of information on each example varies from detailed drawings to bare description, and whilst the book is of value as a record of 'off the peg' structures, the earnest protagonist of mass-production in building will seek in vain for philosophies of design or manufacture that might provide even a hint of future advances in this field. *A. Pike*

Adhesive materials. Their properties and usage

Irving Katz. Foster Publishing Co., Calif. $9.50

Over 250 specifications from many different sources have been abstracted to prepare this guide through the maze of available adhesives on which we come to rely to an ever increasing extent. The reluctance of some British manufacturers to publish the constituents of their products makes identification with these US standards difficult, if not impossible, and severely limits their value in this country. Nevertheless, the large section of the book devoted to the correct use of appropriate adhesives in specific situations will help to reduce the wide voids in existing literature on this subject. *A. Pike*

Modern gardens and the landscape

Elizabeth B. Kassler. The Museum of Modern Art and Doubleday & Co. 48s 0d.

While new building materials have produced a new style of architecture, the landscape has not changed. The basic media for this form of design is still earth, water and growing things. New techniques for use with these fundamentals have been developed, however, for the movement of earth for instance; and the use of the immediate space surrounding a structure has re-emerged as a usable area to be integrated with the building. This combination of building and landscape is often judged on aesthetic merit, but the final judgment must be a practical one. This goes without saying in architectural terms but needs re-affirming in the landscape. *Modern Gardens and the Landscape* is a beautifully produced small book doing just that.

The book also shows for the architect the three basic ways in which his building can be related to its site. It can form a complete organic contrast to the hard lines of a structure or the land can swing round and embrace the building which sits in, rather than on its site; and finally the landscape can filter through a complex of

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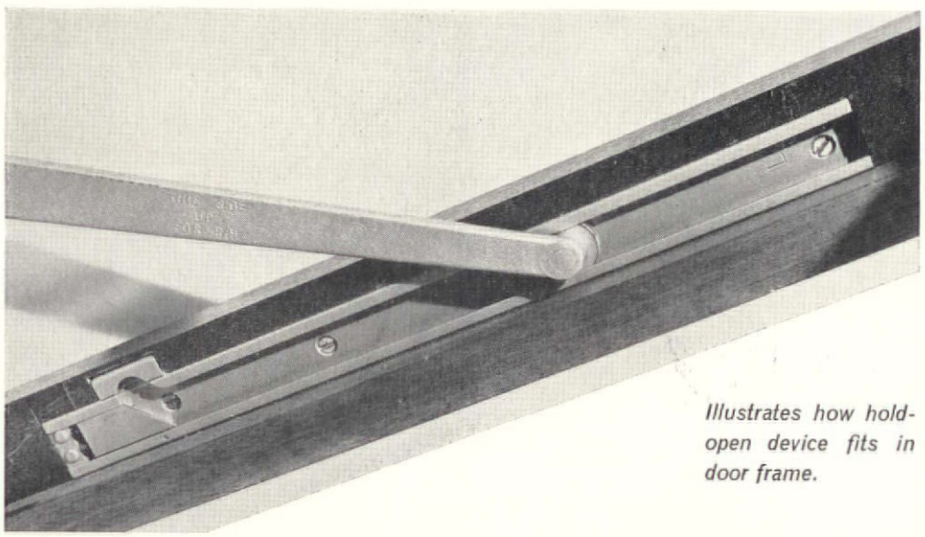

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buildings. Much of the work illustrated in the book is in North or South America, which, since it is produced by the Museum of Modern Art, is not surprising, although examples are drawn from some European sources. No current British work is included.

John Brookes

Landscape artist in America

Leonard K. Eaton. University of Chicago Press. 72s 0d.

The title of this book is confusing, Jens Jensen about whom it is written, was a landscape designer, although he used his materials so superbly the author might be forgiven for his title.

Jensen was a Dane who emigrated to the United States in 1884. He started designing in private practice, after considerable work in the public parks, about 1900. He worked with Frank Lloyd Wright producing gardens for many of his Prairie houses. Jensen is also responsible for the creation of the fine Chicago parks system.

His designs were in no way formal or architectural, and in terms of brick and mortar were not integrated with the structure which they surrounded. In the spirit of a conquered west and the realization of the fast diminishing open prairie Jensen created for his clients a wild sylvan scene penetrated by mown walks which led right up to the house. His plant selection was always indigenous and he relied on grouping his material, its form and leaf colour on more than the profusion of its bloom. Broadly, Scandinavian design as we know it, produced with mid-western plants which were to hand.

Much of Jensen's work has been destroyed, much is reaching maturity. Will the American passion for preservation extend to that of his surviving work? It is to be hoped so. This book has at least contributed by putting down his creations on record, although it tells more of the man than the actual manner in which he designed. For anyone interested in the history of landscape design, and some sidelights on the early American architectural scene this is a most readable book.

John Brookes

Architecture—forms and functions

Anthony Krafft, Editor. Editions Anthony Krafft, Lausanne. 67s. 8d.

With the stacks of unread magazines growing inexorably year by year, a hard covered annual dealing with the same variety of subjects and themes seems scarcely necessary. The first part of this compendium is made up of a medley of articles ranging from Victor Lundy's version of the evolution of American architecture (he designs in jukebox Baroque for both I. Miller and the Lutheran congregations) to notes on Le Ricolais' skyrail, marquetry in fifteenth-century Italy and Aztec pyramids. But it does include one diatribe that almost justifies the whole publication; Felix Candela attacking those architects from Boullée to Le Corbusier, and more particularly Niemeyer and Utzon, who have pursued structural expressionism to its illogical limits. He has a simple precept for architects: 'la qualité d'un dessin de structure est inversement proportionelle à la qualité et la complexité des calculs nécessaires pour son execution.' For the rest the book is made up of reports from a handful of countries, including Turkey and New Zealand, that throws up nothing new—though Jürgen Joedicke's historical survey of the modern movement in Germany should not be dismissed—and a Swiss Panorama that focuses on the Lausanne exhibition but gives inadequate coverage to such items as Max Bill's pavilion. *RM*

Ville d'oggi (Today's villas)

Roberto Aloi. Ulrico Hoepli, Milan. £8 10s.

Here we have another super glossy book of houses, fairly representative of the international scene, with an excusable preponderance of Italian examples.

The English preface is obscure, even allowing for the fact that it has been translated from the Italian. Anything worth saying can be said simply, and a passage in the middle of the preface like 'honestly accepting that it is what it is and giving up the tolerable synecdoche from which its name was born, with a certain intolerable gratuitous architectonic hyperbole', has no meaning for anyone except perhaps Team Ten devotees. Plain prose represents clear thinking and literary fireworks and long words are usually only attempts to obtain significance for insignificant ideas.

The selection of villas endorses the impression of a muddled approach by being erratic in architectural quality. It is hard to see any unifying element and the villas vary from a kind of stone/timber baronial that might have been *avant garde* in 1930 to Jacobsen, Neutra, Breuer, Erskine, Atelier 5 and Spence.

Although for anybody concerned with domestic architecture this is an interesting book, it has little practical value. The buildings illustrated are large and expensive and way outside the modular/industrial field. Romance and hairy concrete are OK for those who want to afford them; but clip-on, demountable, lightweight expendible houses are reality today—if it is today's villas that are to be considered.

Michael Manser

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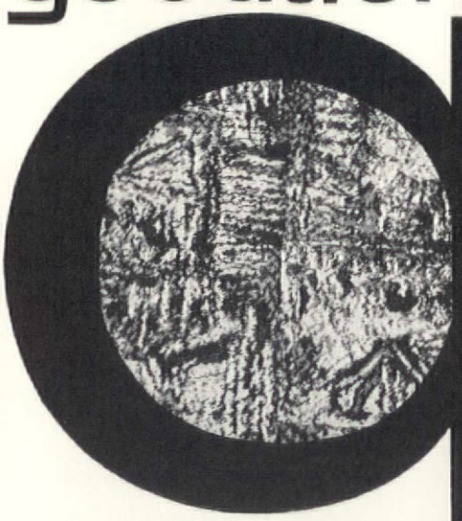

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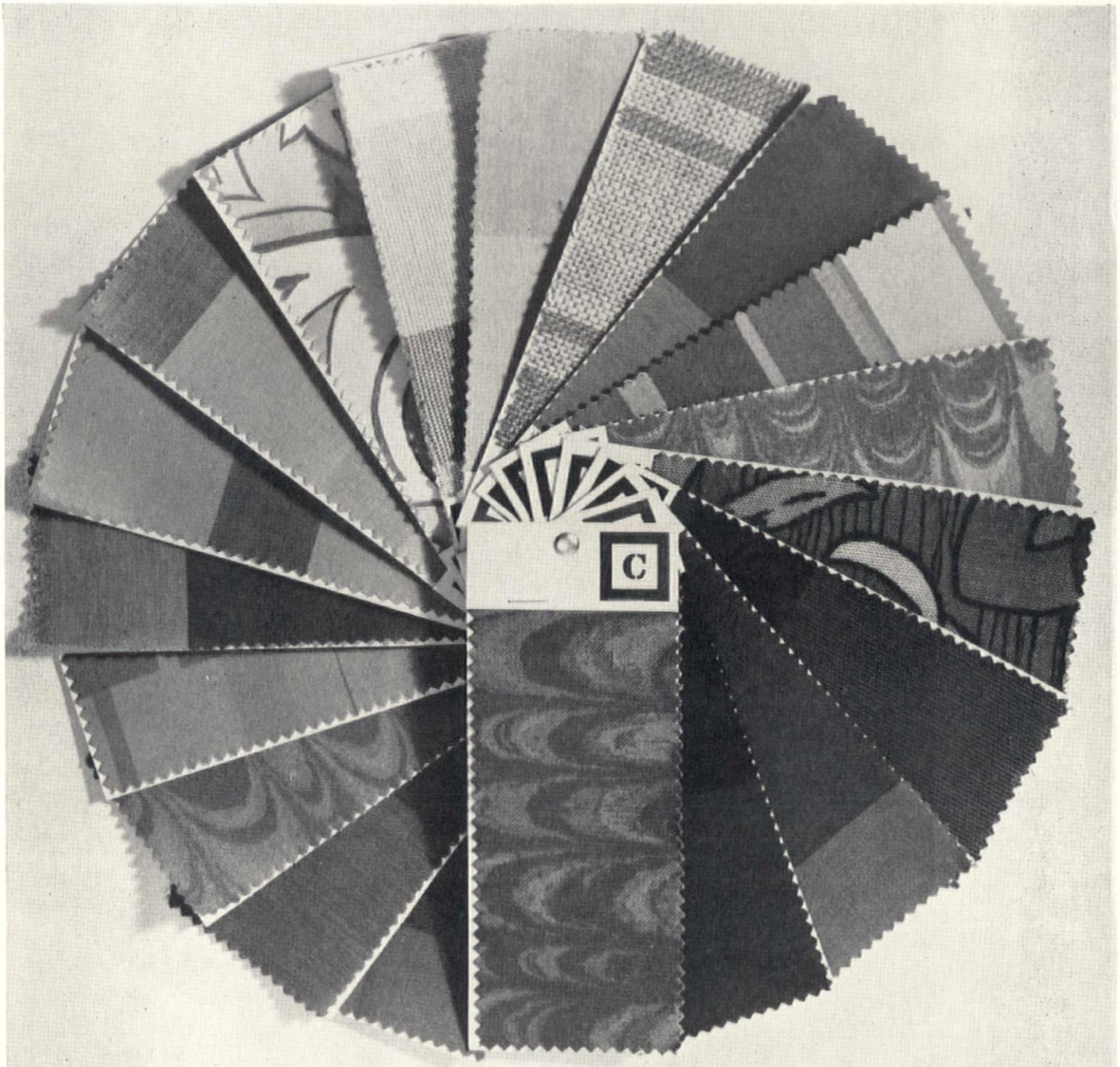

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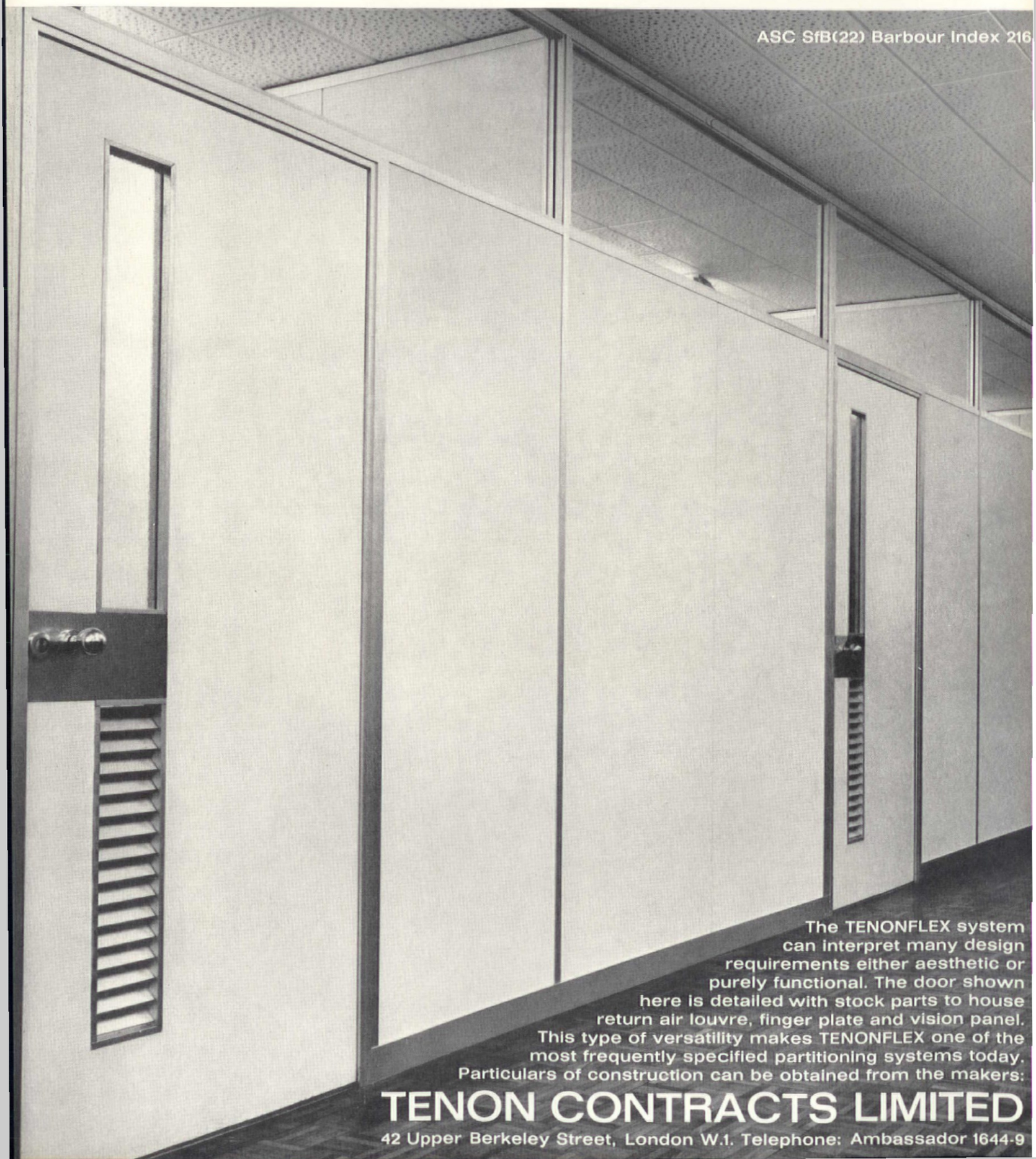

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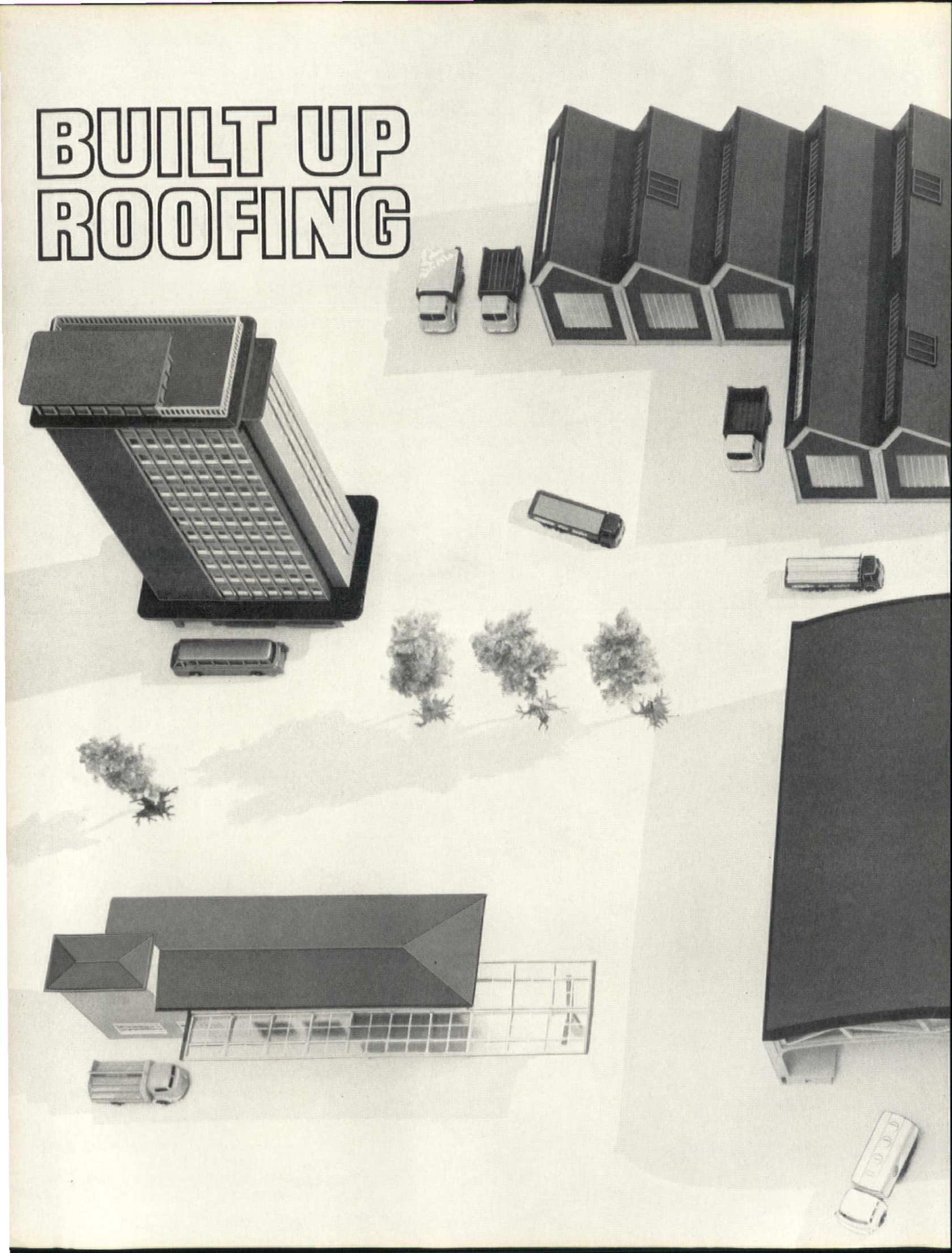

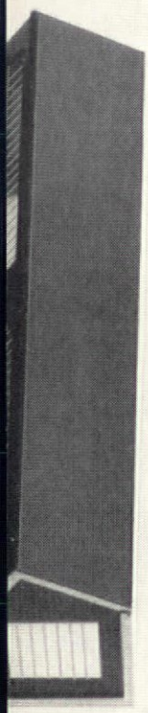

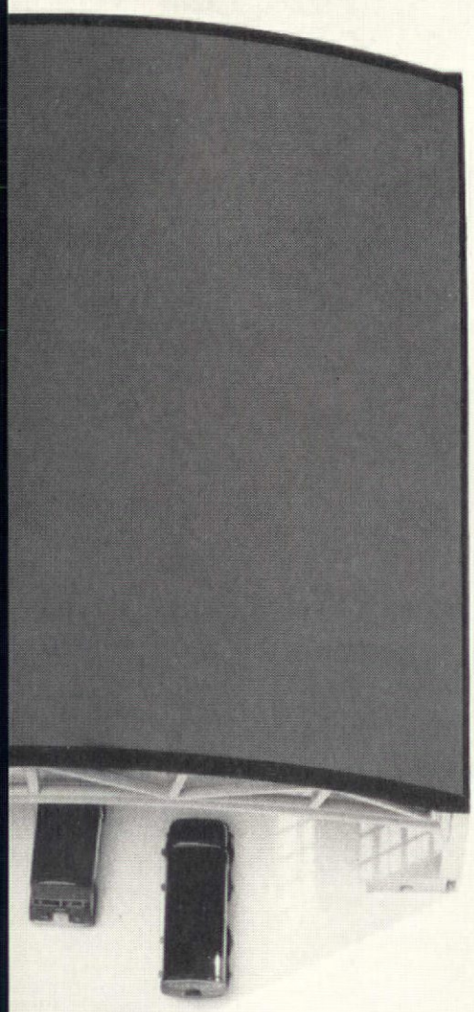

SURVEY OF ROOF SUBSTRUCTURES

The selection of a weatherproofing specification by the designer must be made in relation to the type of substructure and its shape —flat, pitched or curved. Other factors which have considerable influence on the long term performance of the roof covering are thermal or moisture movement, deflection under load, and the cycles of moisture vapour migration.

TIMBER BOARDED SUBSTRUCTURES

The finished timber thickness must be adequate ($\frac{3}{4}$" T and G or 1" close butted) and properly supported for reliable fixing and performance to be achieved. Normal humidity within a heated building will diffuse into the roof substructure, and since the weatherproofing is impermeable, ventilation must be provided between the roof soffit and ceiling to prevent timber decay and dry rot. Timber, being combustible, requires a weatherproofing specification which complies with the Building Regulations or with the stipulated fire test designation.

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IN-SITU CONCRETES AND SCREEDS

In-situ concretes with sand/cement or insulating screeds contain residual structural moisture in varying degrees; some lightweight screeds are very porous. Moreover, normal humidity within a heated building will diffuse into the roof deck. Solar heat vaporizes this moisture, and the consequent pressure weakens the bond between weatherproofing and substructure and a blister forms unless special techniques are used. Shrinkage hair cracks which may rupture the weatherproofing membrane present a further factor in this type of substructure. On large roof areas, thermal movement takes place according to the coefficient of expansion of the substructure material, and movement joints should be incorporated in the structure at points determined by the designer. These joints must be satisfactorily mastered on the roof.

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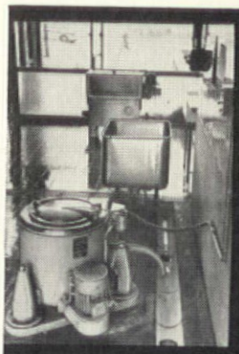
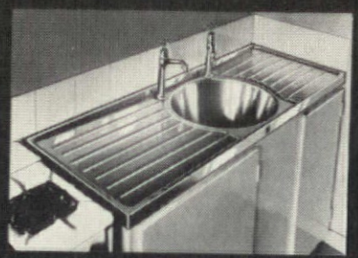


The Park Hill Development Scheme, Sheffield.



STAINLESS STEEL

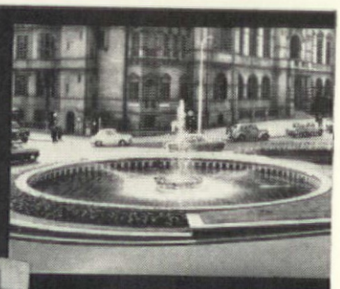
Stainless steels are being used increasingly for architectural applications by virtue of their strength, durability and resistance to corrosion; they lend themselves to good design and offer long life coupled with simple maintenance.

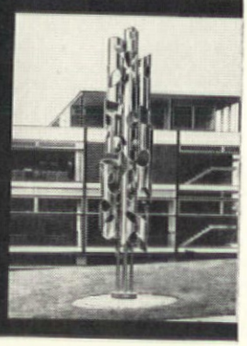
In the Parkhill Development scheme, Sheffield, each of the 995 flats is fitted with a stainless steel sink unit whilst extensive use of the material is made in the communal laundry installation. For such applications 'Staybrite' F.S.T. steel (type 302) is ideally suited. This general purpose 18/8 austenitic steel possesses excellent ductility and is suitable for all cold forming processes.

For all external applications 'Staybrite' F.M.B. steel (type 316) is recommended. This 18/10/3 molybdenum quality is one of the most highly corrosion-resistant grades of stainless steel and over one hundred and twenty tons were used for doors, windows, mullions and fasteners in the construction of the Millbank Tower, London.

'Staybrite' F.M.B. steel was also used exclusively for the centre-piece and lighting reflectors of the Goodwin Fountain and for the sculpture shown above. This quality is readily weldable by all processes; it is highly ductile and is suitable for rolled or drawn sections and pressed panels of all descriptions. Further information on the use of stainless steels for architecture is obtainable on request.

The Goodwin Fountain, Sheffield.





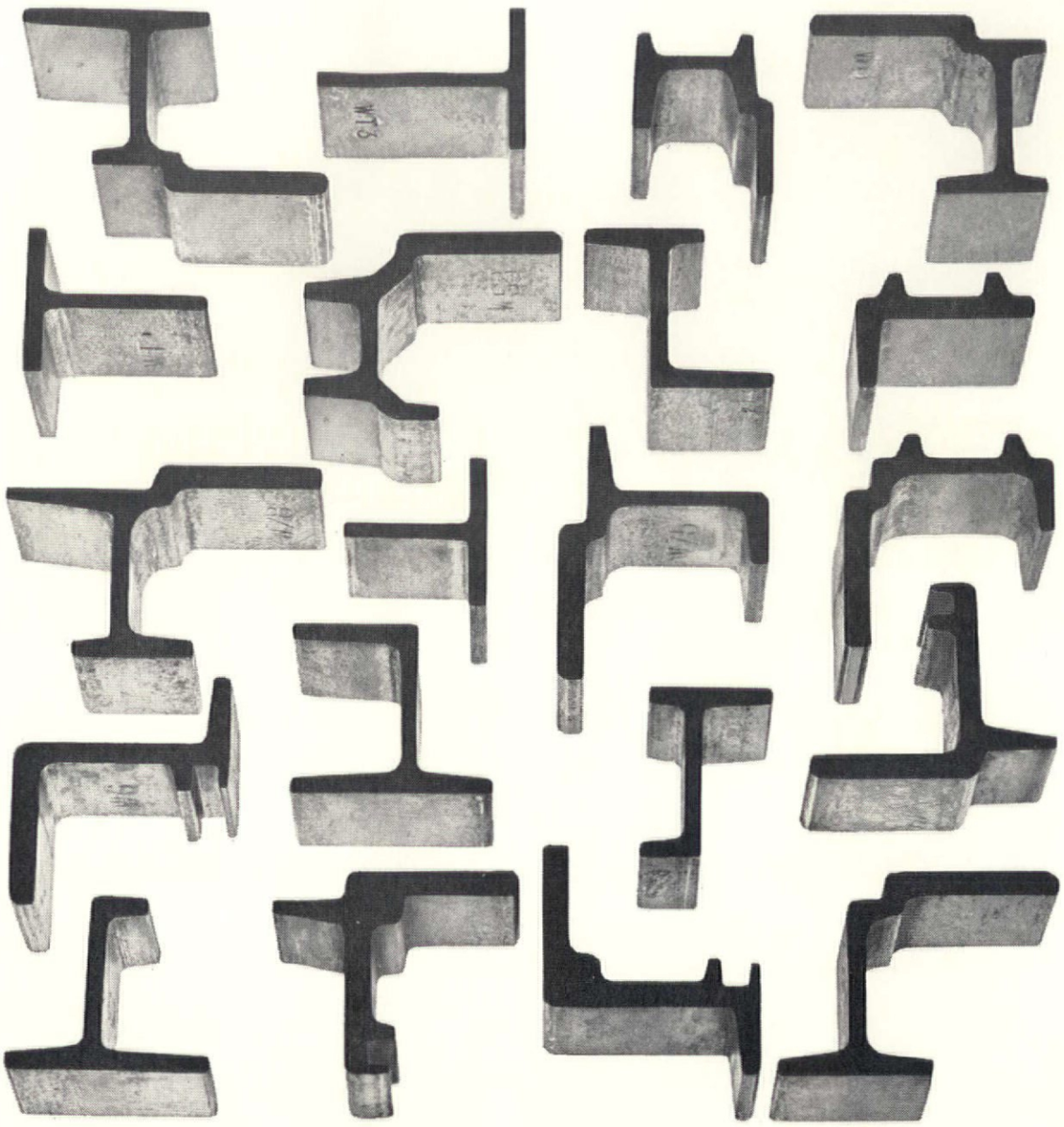
Stainless Steel Sculpture, Sheffield University.

Stainless Steel

Millbank Tower, London. *Architects — Ronald Ward & Partners.*

Firth-Vickers STAINLESS STEELS LIMITED

Staybrite Works Sheffield



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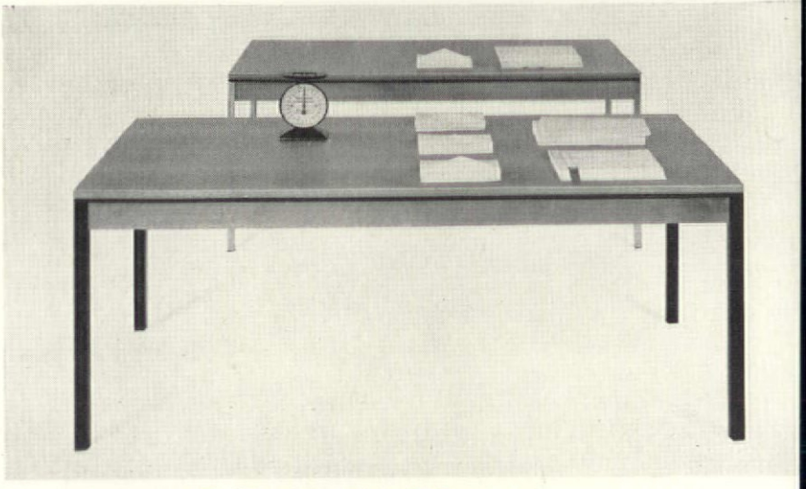
Executive desk EUD-UD-UF with C101 chair



Executive desk with storage unit EUD - ESW/B2 - UF



Desk ED2 - D3 - F



Executive table EUT with table ET1 at rear



Conference table UT2 with C101 chairs

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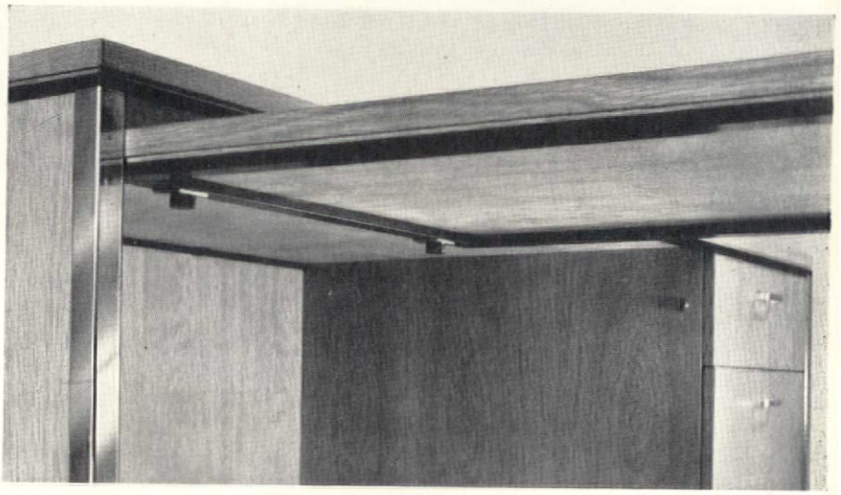
)esk with L extension ED2 - EXL - F with C103 chair



Desk ED3 - D3



rawer pedestal D3 showing pen/pencil/pin tray PT and
allow stationary slopes SS



Method of attaching extension EXL to underside of desk ED2



Bookcase unit EBG on storage unit ESW/B2

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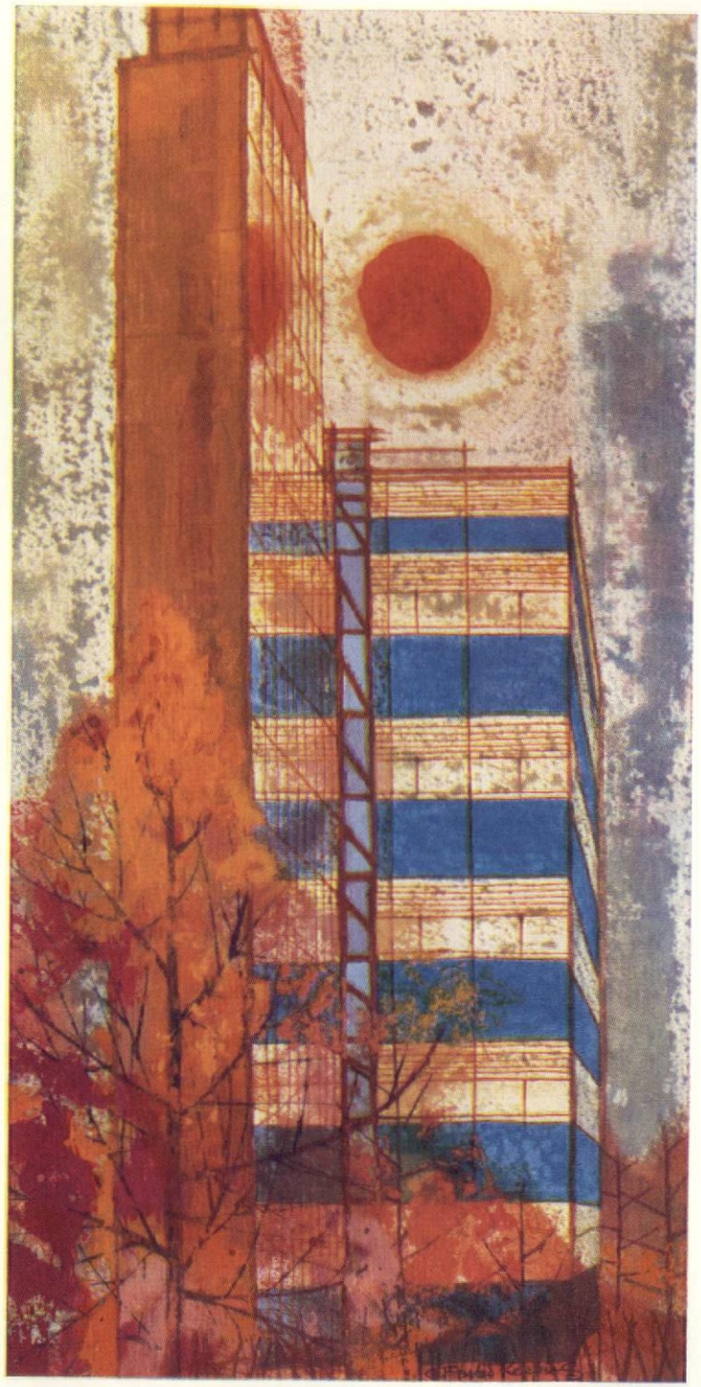

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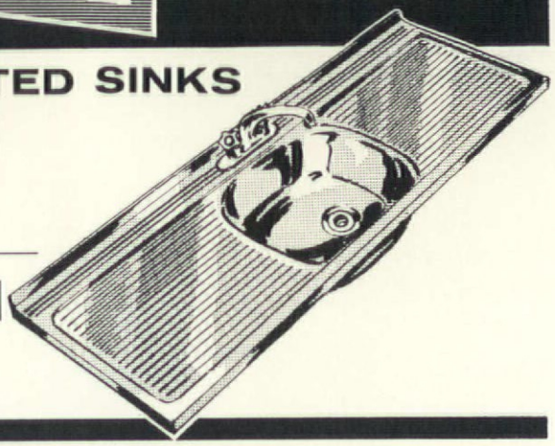

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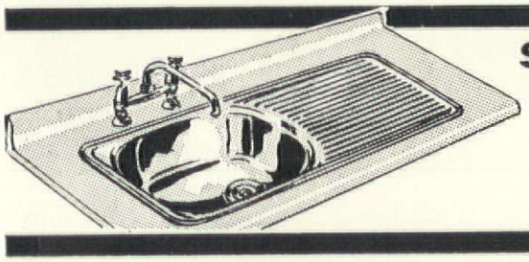

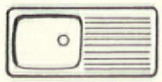

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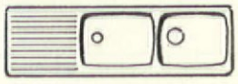

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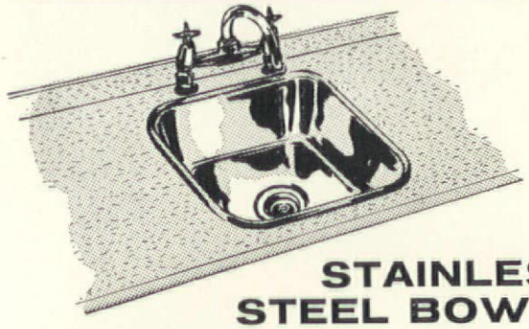

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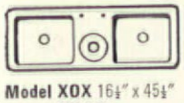

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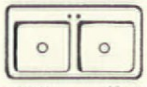

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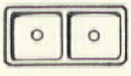

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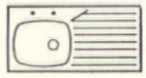

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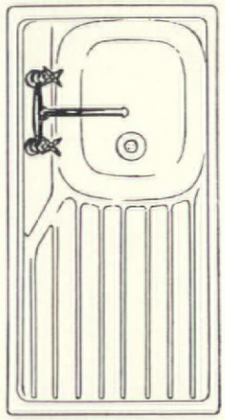

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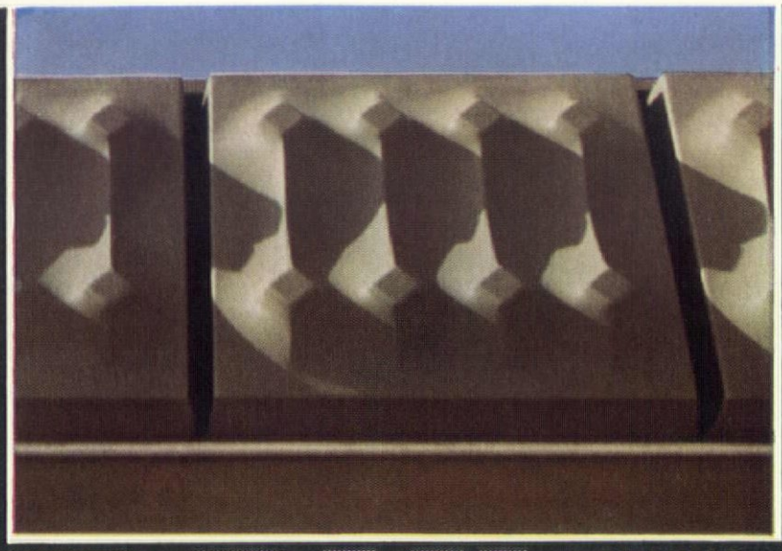

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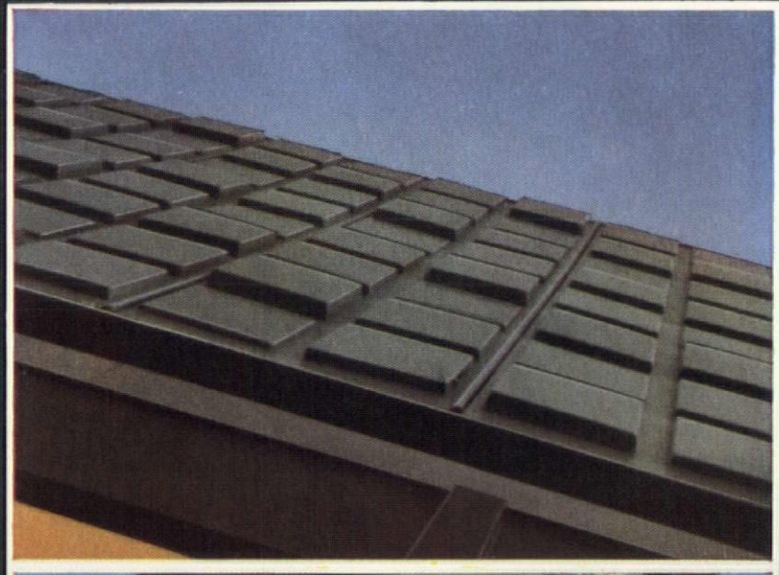

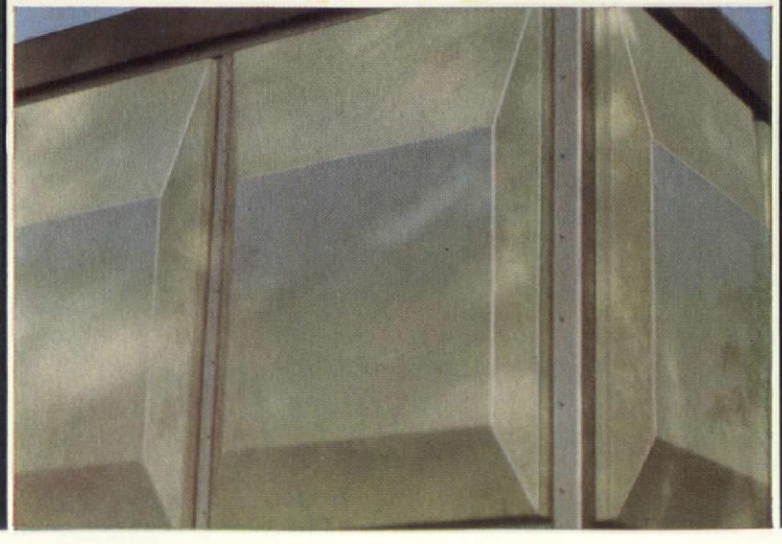

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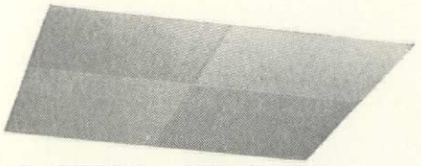

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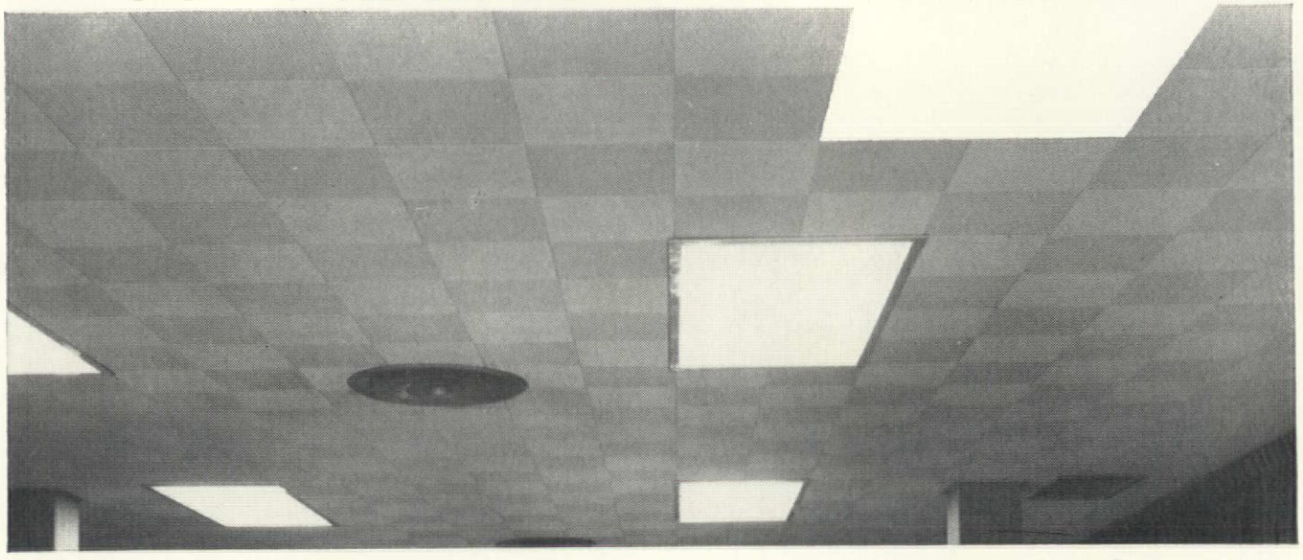

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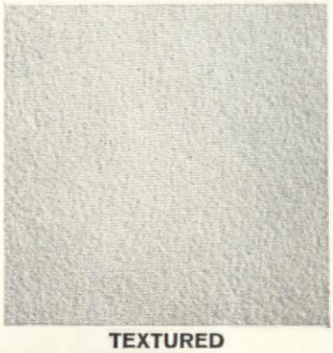

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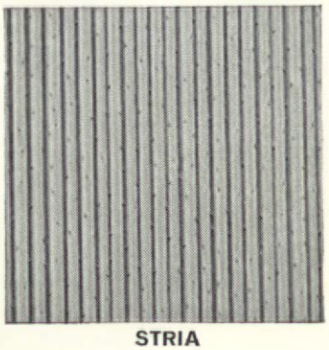

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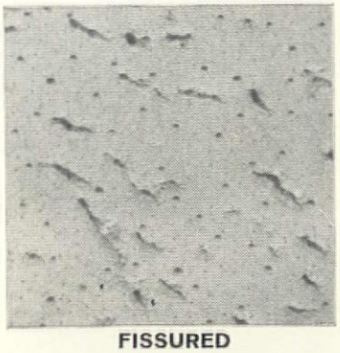

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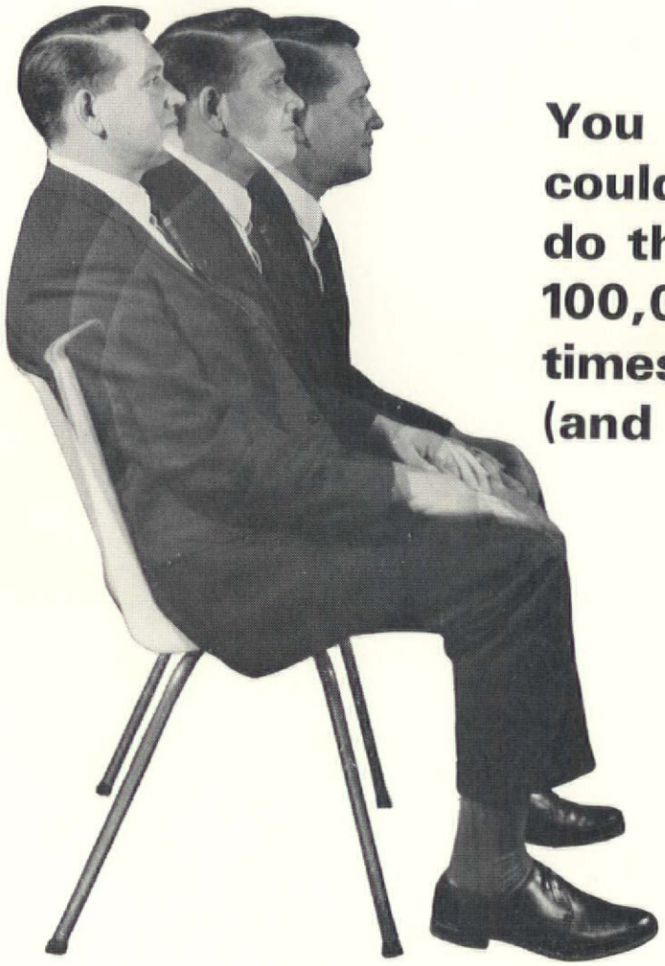

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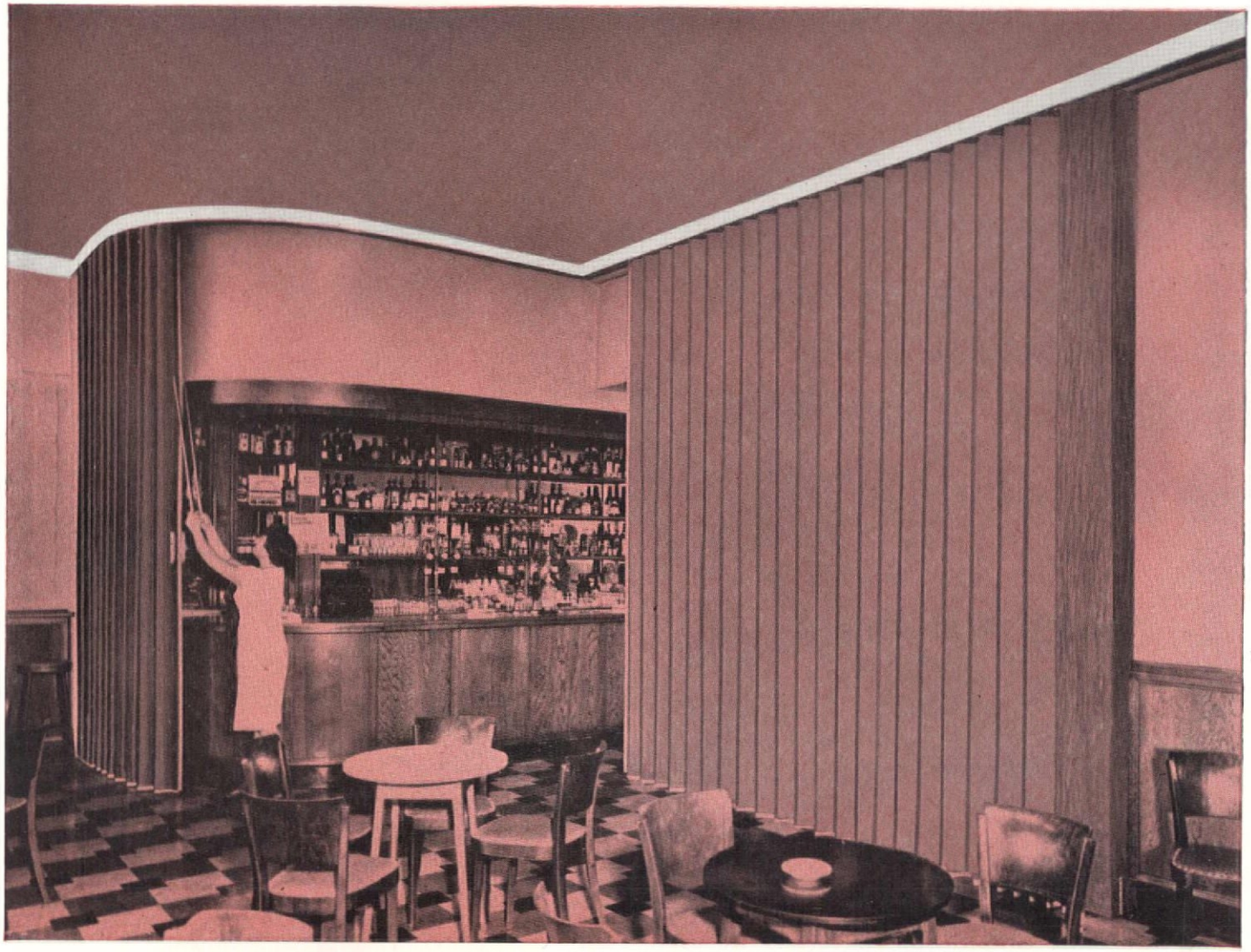



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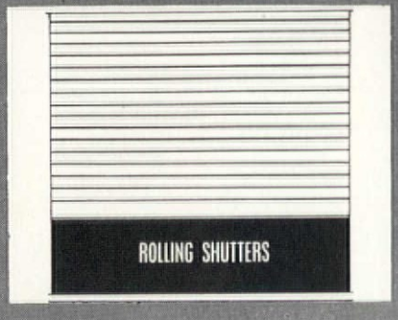

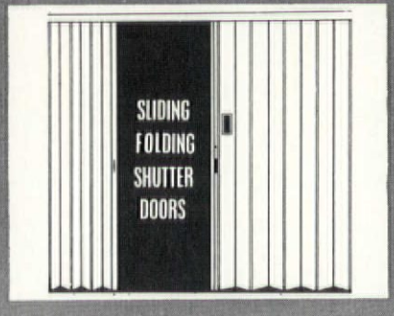

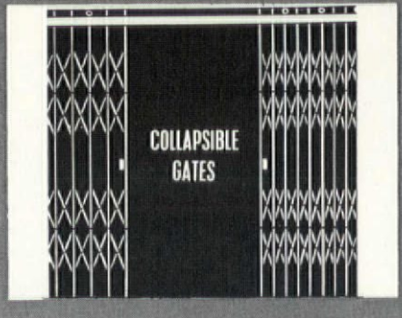

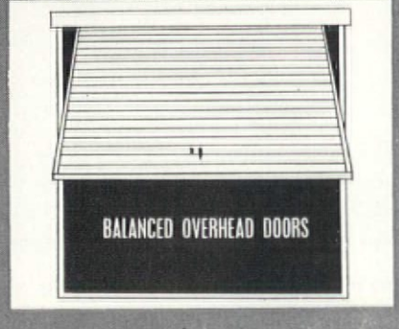

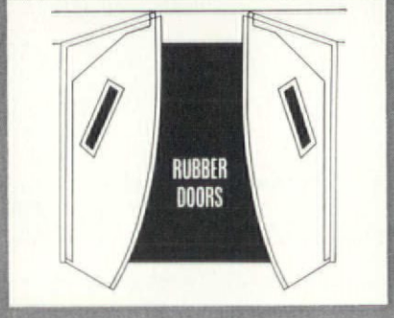

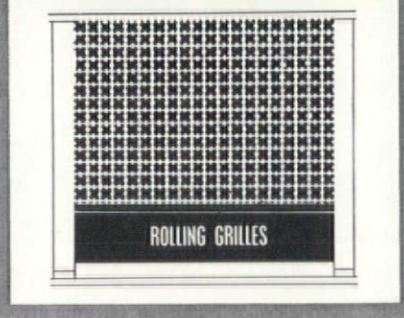

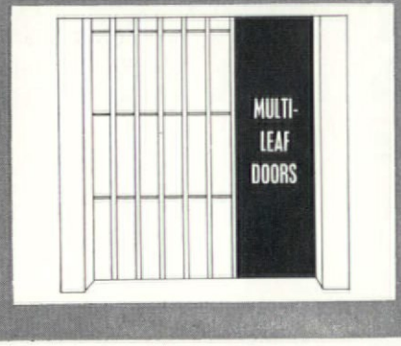

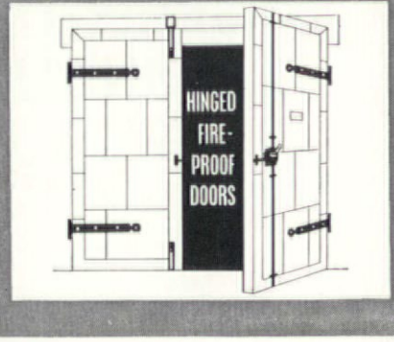

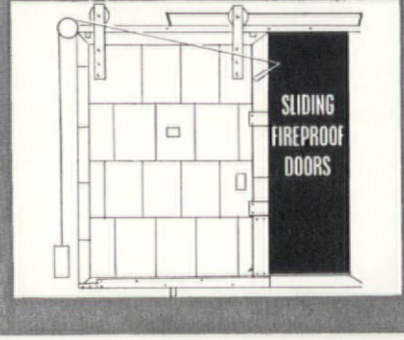

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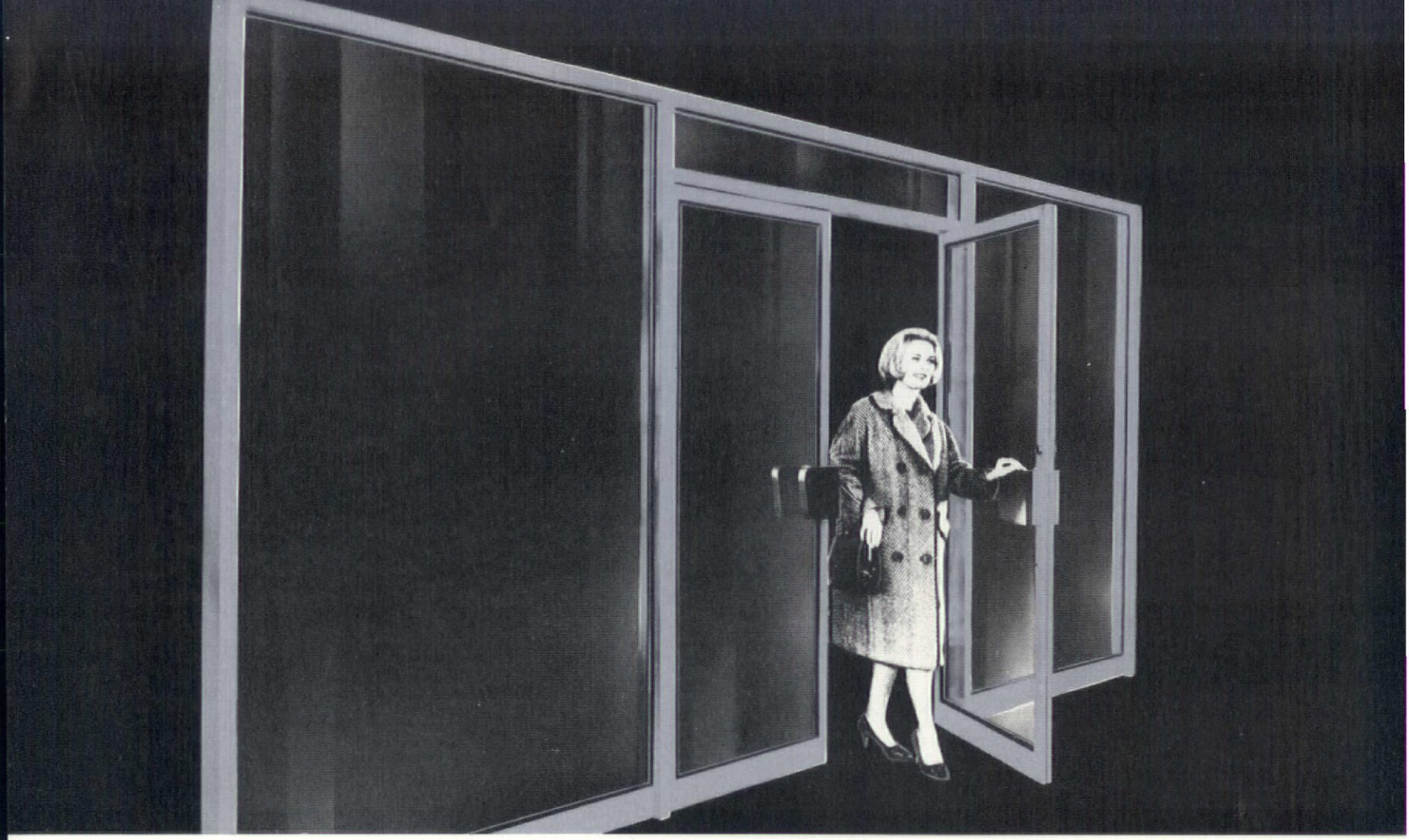

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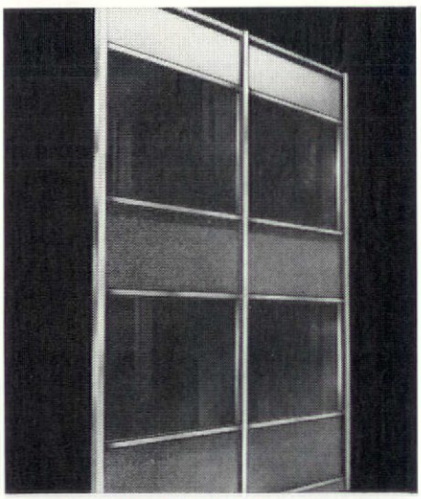

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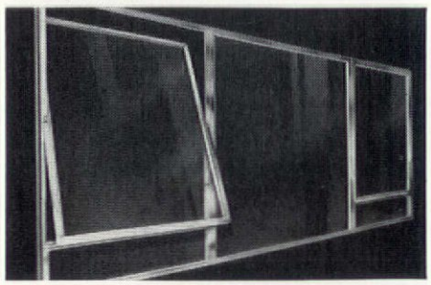

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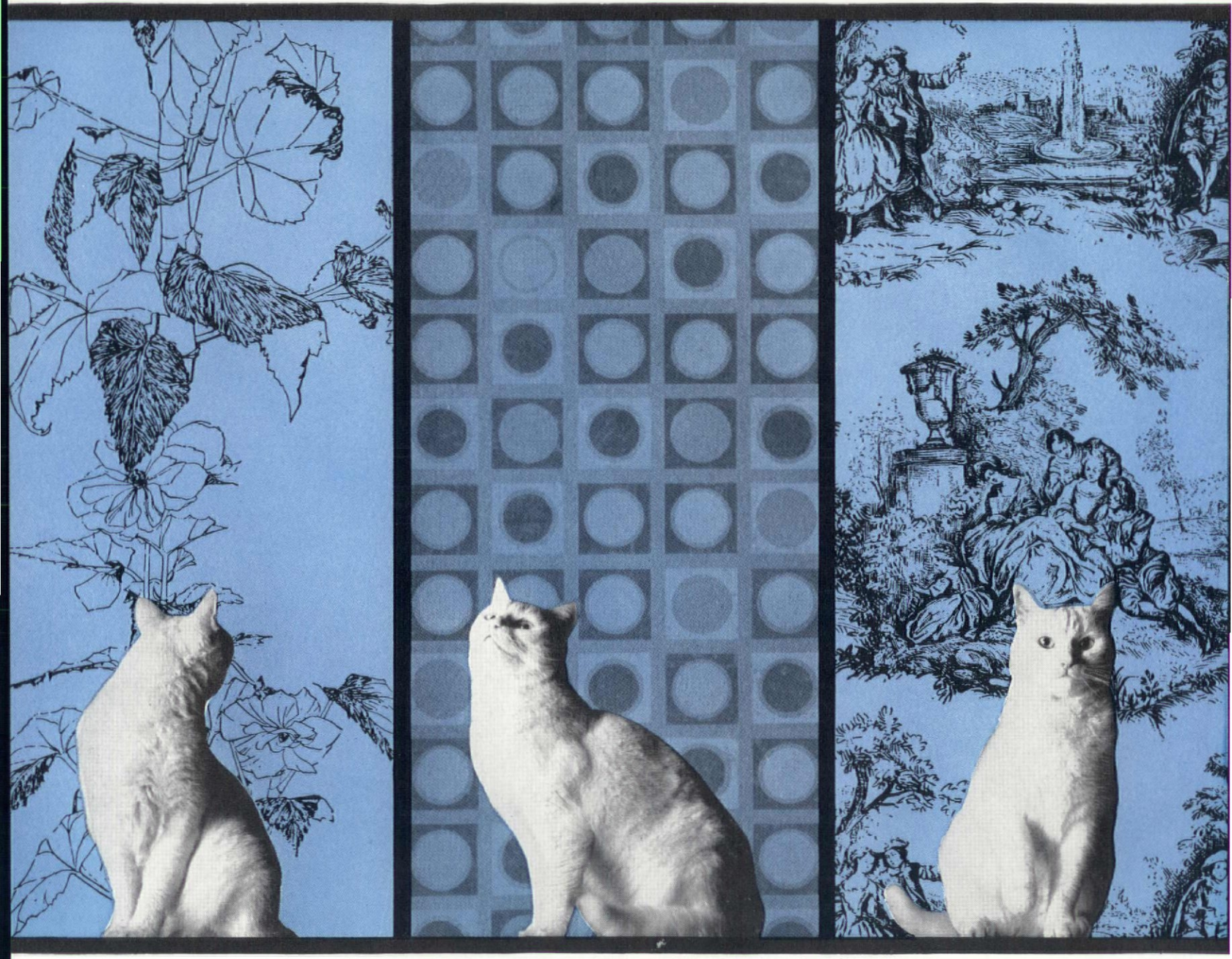

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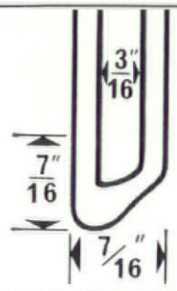

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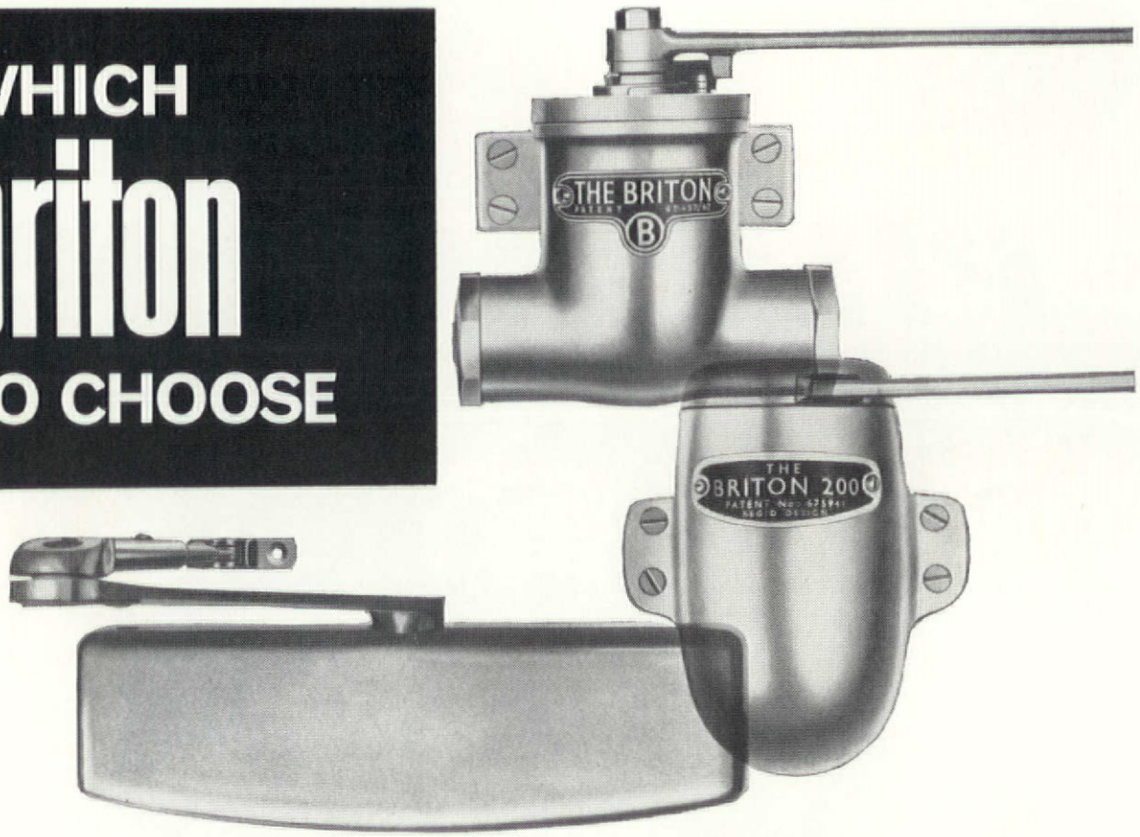
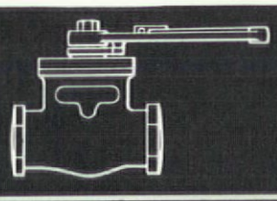
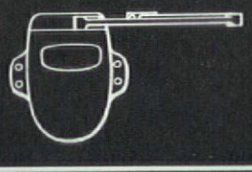
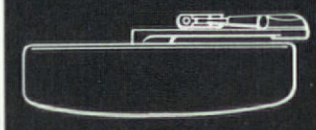


FOR MAXIMUM ECONOMY AND EFFICIENCY

briton		The orthodox surface fixing closer that is made in various sizes and types to suit every door whether internal or external. Suitable for both left and right hand doors without alteration.
briton 200		A stylized version of the Standard Briton, for internal or external doors up to 112 lbs. Suitable for both left and right hand doors without alteration.
briton 502		A new closer styled to blend with today's architecture. With the projection from the door being only $1\frac{3}{4}$" the Briton 502 is ideally suited for situations where the space behind the door is limited. For internal doors weighing up to 112 lbs.
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See our exhibits at the Building Centres, London, Birmingham, Manchester and Glasgow. All details can be found in the Barbour Index, File No. 53 and the Gorco Bureau, File No. 44/3.

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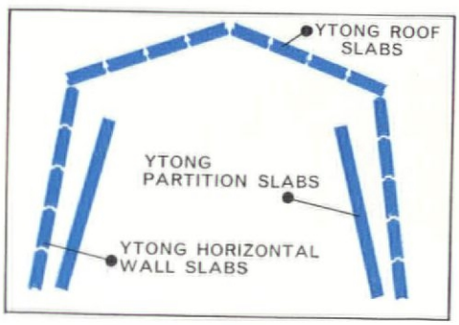
"The earth hath bubbles..."

(Macbeth)



and so do the walls and roof of Southampton University's new Nuffield Theatre. Ytong reinforced slabs in lightweight aerated concrete form the complete outer shell of Sir Basil Spence's students' drama centre. Inside too, timber clad Ytong slabs are used to form auditorium walls. Thus the Nuffield Theatre is a fine example of the use of Ytong slabs as both an insulating layer and structural members. Write to us for full details of Ytong slabs or look us up in your Barbour Index.

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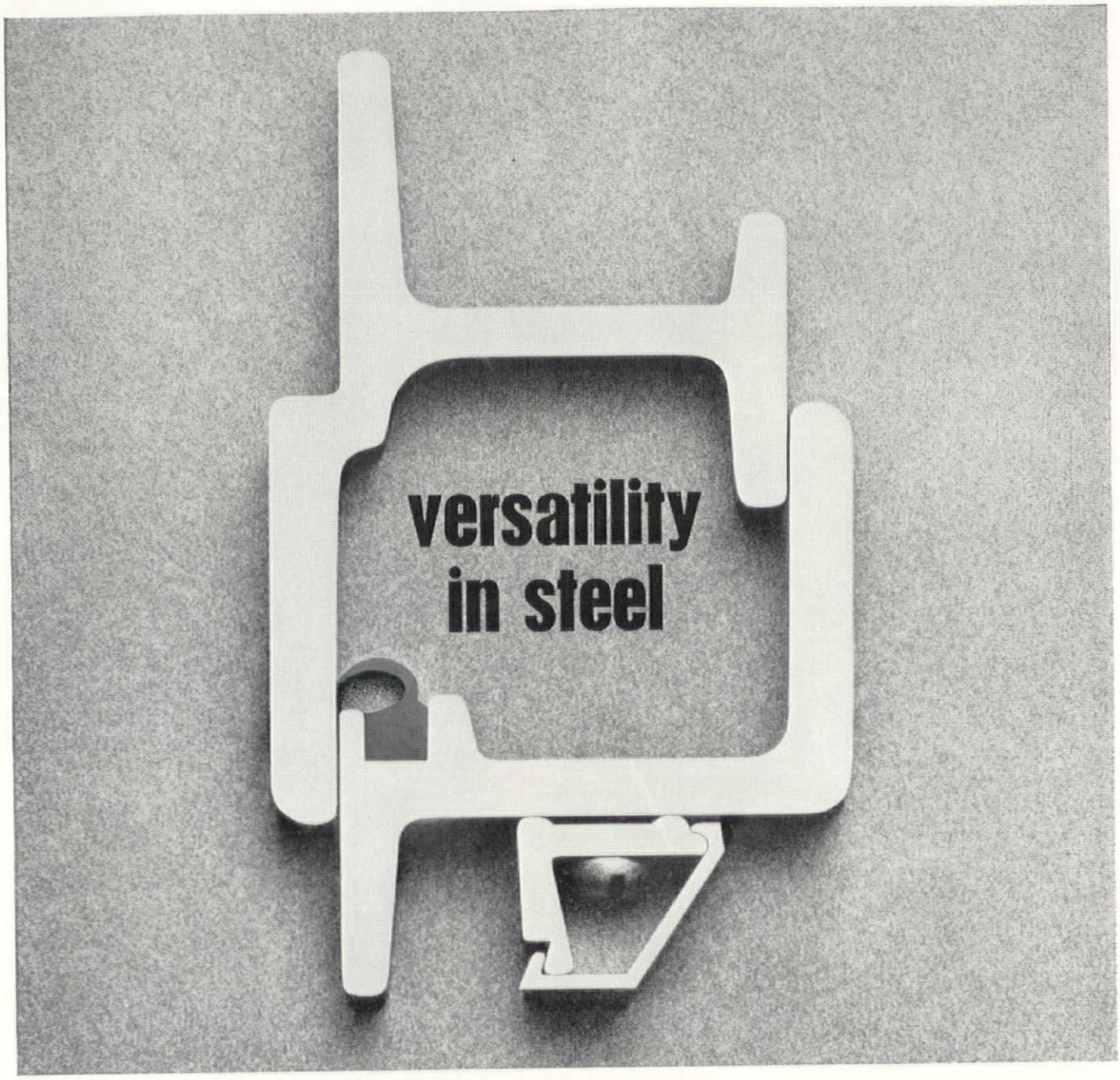

Crittall purpose-made W20 casements – weatherstripped

The increasing height of new buildings, the need for minimum heat loss to ensure maximum efficiency of central heating at lowest possible cost, the introduction of double glazing, larger pane sizes for single or double glazing and modern building techniques have dictated the necessity for a new suite of sections for purpose-made windows to provide greater versatility to meet all these requirements.

The solution is to be found in the W20 suite of sections, which takes all the best from the past with these additional new features.

□ Although traditional steel to steel contacts are maintained, a groove is now provided to receive neoprene weatherstripping for additional heat conservation and weather protection in high exposed positions.

□ The size limits of both the old Medium and Large Universal sections can now be achieved by either the normal or heavy sections of the new W20 suite, both of which have the same external dimensions and appearance.

□ A wider glazing table to accommodate plate glass or double glazing units up to ½" thick without additional inserts or face beads.

□ A longer glazing nib for extra edge cover for large panes of glass or double glazing units.

□ Longer fixing nibs with a greater external extension to meet most new fixing requirements.

This new suite of sections for purpose-made windows strikingly demonstrates that the economic and practical benefits of steel need no longer be lost for lack of versatility in the material.

All Crittall W20 casements are positively rustproofed by the hot-dip galvanizing process. Crittall leaflet 311 gives full details.

CRITTALL

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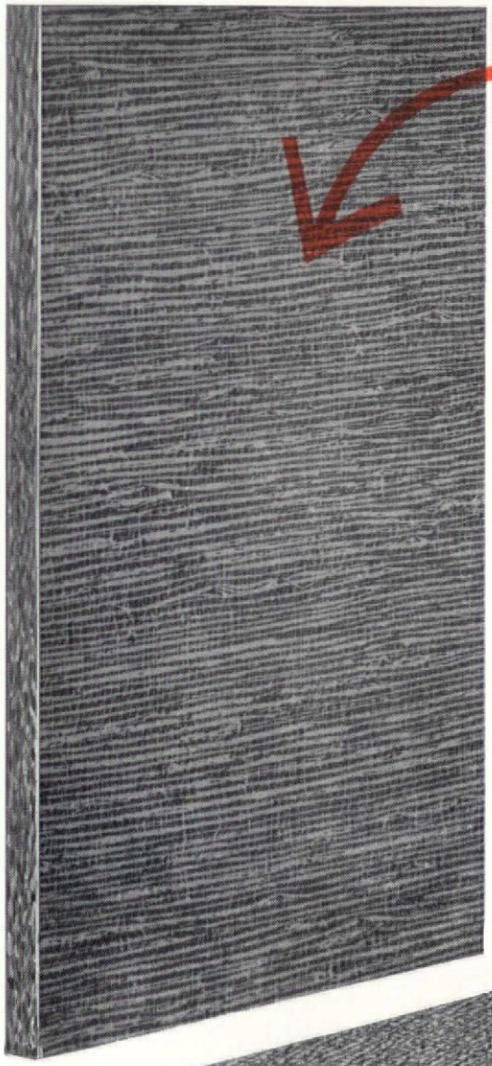
decorative boards for many a purpose



This is

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12 and 18mm Weyroc, with a hard-wearing melamine surface on one or both sides. Ideal where structural boards with integral plastic surfaces are required, as in shop and bar fitting and furniture making. Particularly suitable for fitments in hospitals, catering establishments, schools and laboratories.

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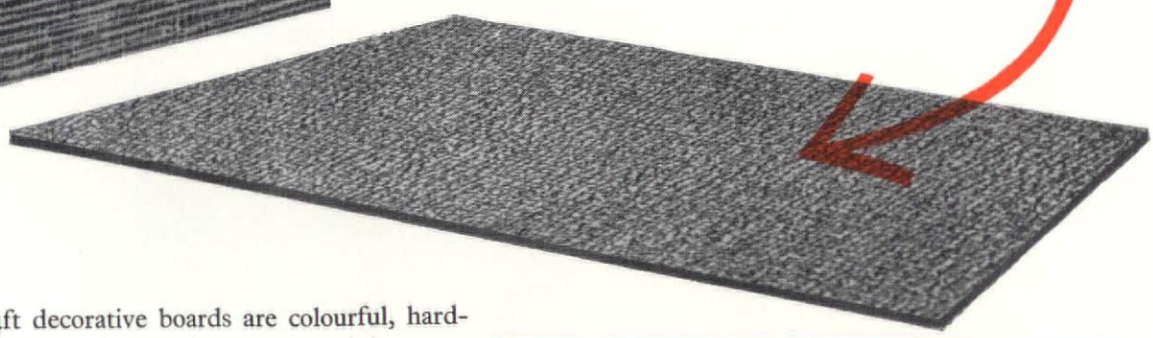
$\frac{1}{8}$in selected hardboard, with an integral hard-wearing plastic surface on one or both sides. Excellent for wall linings, sliding cupboard doors, door and bar facings and other applications where hygienic plastic surfaces integrally mounted on non-load bearing boards are required.



Both 8ft x 4ft decorative boards are colourful, hard-wearing, scratch and heat-resistant, non-staining, easy to clean, maintenance-free and permanent. Both are economical—costing less than board and surfacing material purchased separately.

Barbour Index File No. 252.

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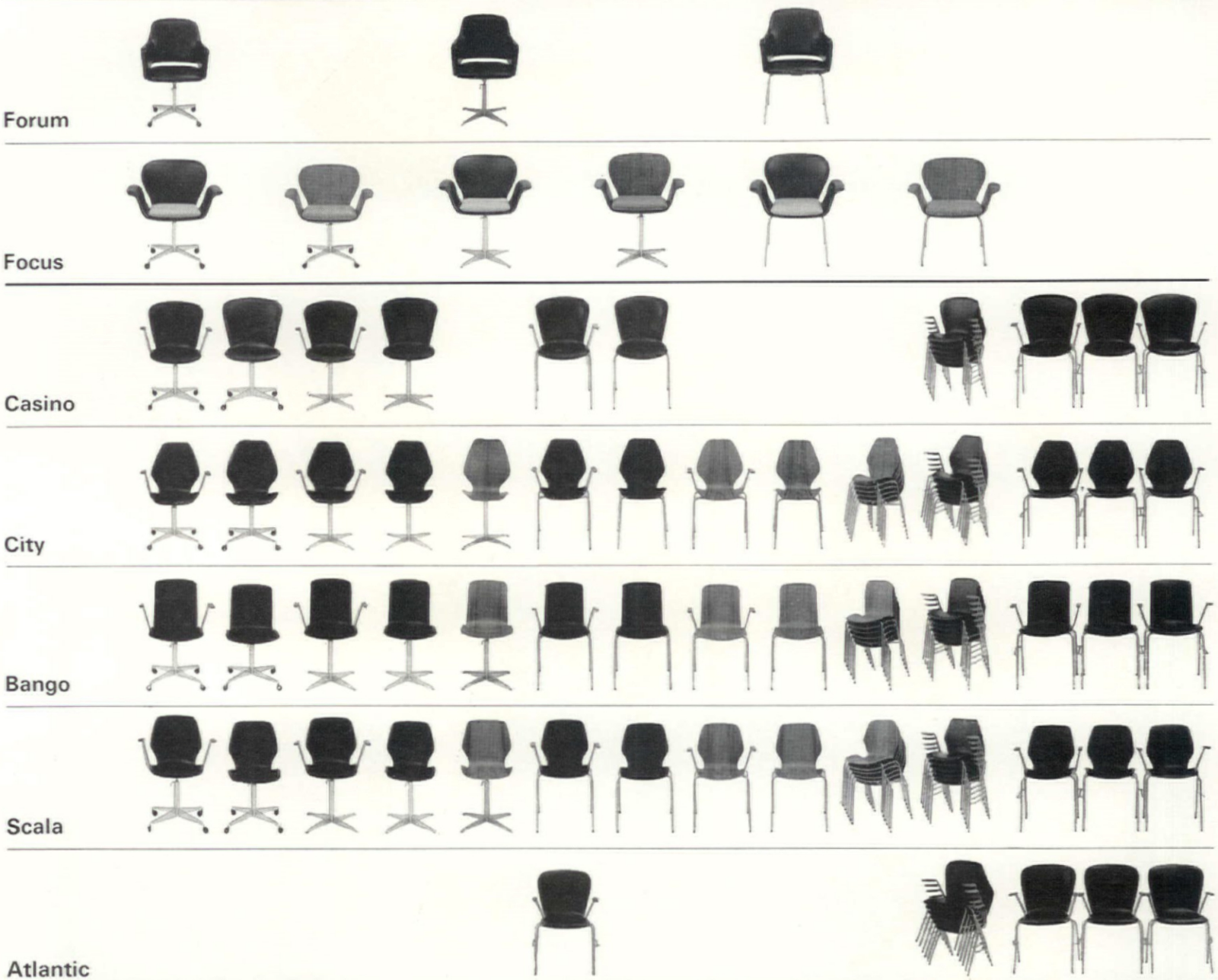

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Quantum Range consists of seven chairs made from moulded plywood supported on steel frames.

All the shells can be supplied upholstered and most of them are also available in a variety of natural wood finishes. The shells can be mounted on swivel bases with or without castors and arms, or on leg frames, with or without arms and linking device.

Each chair in **Quantum Range** is a distinct design on its own and can be used alone or in conjunction with the other chairs. The many models available give **Quantum Range** a high degree of flexibility as regards design, function and price. The components are to a large extent inter-changeable.

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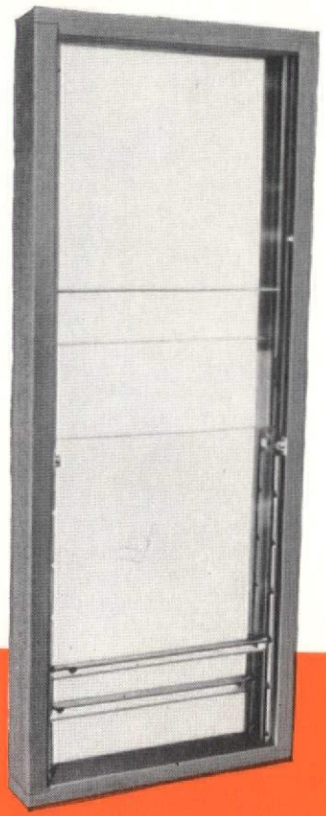

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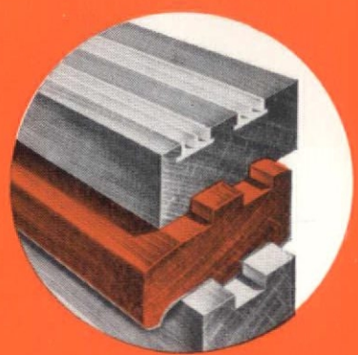

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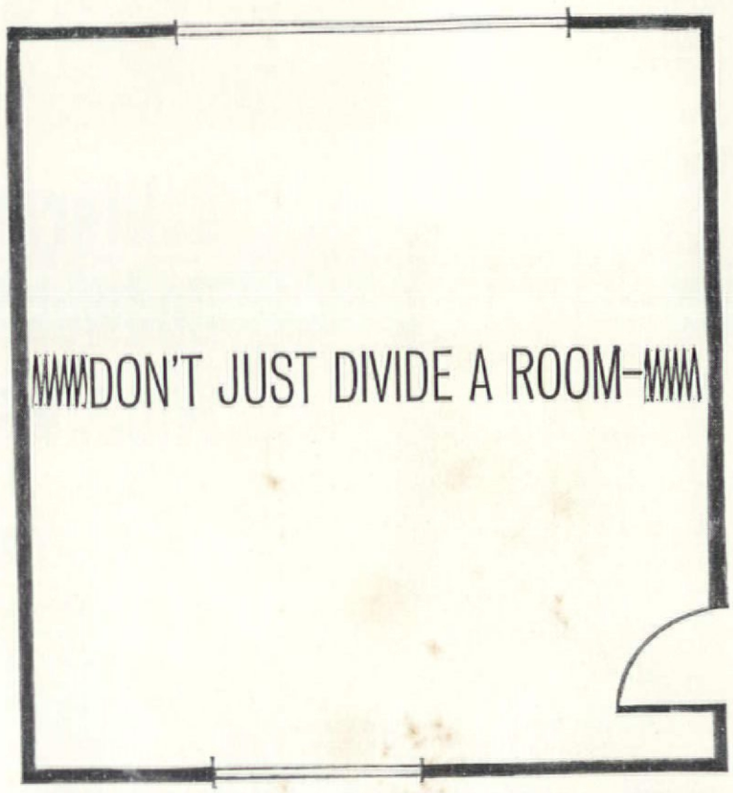

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UK news

Ian Brown

AD Project Awards

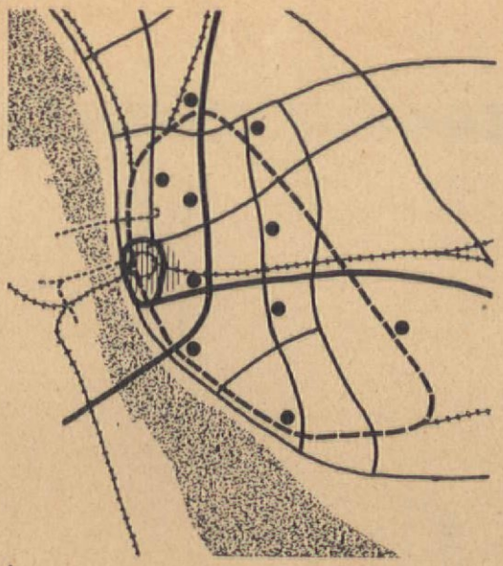
Professor Kenzo Tange presented *AD* Project Awards certificates to the six winning architects and their clients at the Building Centre on April 8th. In the photograph **2** he is seen shaking hands with Peter Phippen who won an award for the second year in succession.
This year the jury felt that no scheme emerged as an outright winner and so no Grand Project Award was made.
Details of the 1966 Project Award Scheme will be given in October 1965.

Liverpool interim plan

In May 1964, the Minister of Housing set up a Planning Advisory Group to review the process of national physical planning. The latter, founded until then in the development plan system, had been severely 'thrown' by the Buchanan report and patently needed reformulation and a spelling out of new goals. By what he calls a fortunate coincidence, Walter Bor, city planning officer for Liverpool, was recruited to this group at a time when he was commencing the draft of a new plan for Liverpool. The new techniques incorporated in Bor's newly published Liverpool Interim Planning Policy Statement have been influenced by the new thoughts emerging in the PAG. Bor warns however that the form—not yet announced—to be taken by any new generation of development plans will not necessarily follow that of the Liverpool Interim Plan.

The statement, a glossy middleweight, has two main parts: the first an outline of the city's history and environmental problems; the second a draft of proposals for their solution. This complex task, says Bor, requires an approach to urban planning radically different from that implied in the preparation of present development plans. Liverpool's own, now overdue for review, is largely a confirmation of existing land uses. It is this rigidity of land use pattern, prescriptive of the existing plans, that Bor finds most intolerable, and unreflective of the accelerating rate of change. What is needed, he believes, is a new plan, which would define basic policies and objectives and yet be capable of maximum adaptation as conditions and opinions change, and new opportunities occur.

The future Liverpool has been reframed, with the above in mind, on a simultaneous reassessment of the whole transport system in relation to the city **1** and the surrounding region; and a redistribution of the major traffic generating uses. The new system will embody a revitalized outer rail loop and a new inner underground loop. The proposed road hierarchy will be of primary roads defining environmental areas, with secondary, local, and service roads within the areas. The primary roads will be motorway standard, connecting to the national road network and to the Mersey Tunnel, thus freeing the lived-in environment from the erosion that today's through traffic inflicts on its way through the city to it. Priority parking mechanisms will stem by discrimination the to-centre inflow of private cars, and 'park and ride' arrangements related to rail links at the perimeter will cater for the unfavoured. A grid of cross-city roads, would provide efficient and non-erosive cross-city vehicular movement.



1

These broad-sweep renewal plans are possible because so much of the city has become 'ripe'—that is to say 'rotten'—at the same time. A third of the whole city and two thirds of the central area must be redeveloped in the near future. Liverpool's slow start in post-war reconstruction, says Bor, has proved a blessing in disguise. Fortunate Liverpool.

Urban renewal. How 'in' are your fillings?

New though the new planning may be, nevertheless it is as thick with OK words, that draw a veil between us and what we are really doing, as any old planning. Environmental area, urban renewal, points of growth, forces of gravitation, fabric of the city, regional complex: Bor's report has them all and more. However, it steered clear of 'infill', a word which is becoming almost as obscene through abuse as did 'contemporary' some years back. 'Infill', of course, is what we do most of. Badly done, it represents a lost chance, not only for itself, but for the area into which its image and function reverberate in the city, town or country. Unfortunately, these days, most of the fillings come large and not gold.



2

What characterizes most of these items is the single-minded concentration on FORM, of the solid, walk all round variety, and to this same end, the feckless, insensitive fragmentation of form and the group identity of form at the expense of that much more environmentally pertinent element, space: urbane, unrhetorically contained space. We have, as Harold Wilson would say, our priorities wrong: a single building in a town is a space container first, and a form second. Bewitched by Le Corbusier, we doggedly set down our vile lumps, 'pure aesthetic objects in an abstract landscape'.

None of the specimens illustrated seem to have any other aim from the point of view of external environment than to make the maximum shrill shriek against the skyline, and the existing floor lines, come what may. 'You have,' said Kenzo Tange, 'too many Lever Buildings.' There is a perverse, almost superstitious disinclination to establish any but the most tortured relationship with any adjacent building, space or street, even within any one complex.

The Piccadilly Plaza development **3** is by Covell, Matthews and Partners. 'We feel rather unhappy,' wrote A. E. T. Matthews in the *Guardian*, 'at the relationship between the tall and short blocks.' However, the smallest block, the one with the 'roof' 'is exciting in design'. Where were the planners for this, but a stone's throw in the region from Liverpool? 'It was inexplicable,' wrote Matthews, and one can believe him,



3

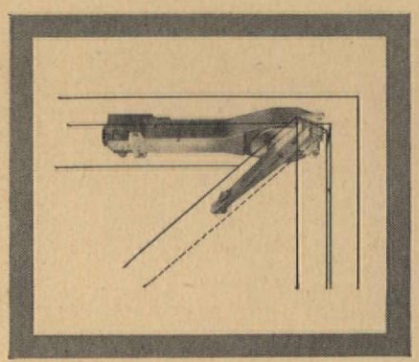
ALL YOU SEE IS THE DOOR CLOSE



With the Briton 1100 concealed overhead door closer the surface of the door and its surround is left completely free from all visible fittings. The Briton 1100 is designed to be fitted into the soffit of either wood or metal frame doors with the arms concealed in the top rail of the door. The use of butt hinges is eliminated as the door is hung on a bottom centre. The Closer occupies a space only $3\frac{3}{4}$" wide x $1\frac{1}{2}$" deep x $12\frac{3}{4}$" long. A special feature is that the dimension from the back of the closer to the spindle is only $2\frac{3}{8}$" thus allowing maximum clear opening when doors are fully opened.

The closers may be used for either double or single action doors and can be supplied to open through an angle of 90° or 105° with hold open at 90° available if so ordered. The arm, fully concealed in the door, is adjustable both for centre alignment and for horizontal positioning. Adjustment is provided for general closing speed, and latch action in last 10° of closing. The Briton 1100 is a strong and efficient closer, capable of controlling doors measuring 7' 6" x 3' 6" weighing up to 200 lb. in either internal or external situations. It is supplied boxed, complete with adjustable arm, bottom centre and fixing instructions for wood or metal doors according to type ordered. The Briton 1100 is particularly suitable for aluminium framed doors.

briton 1100

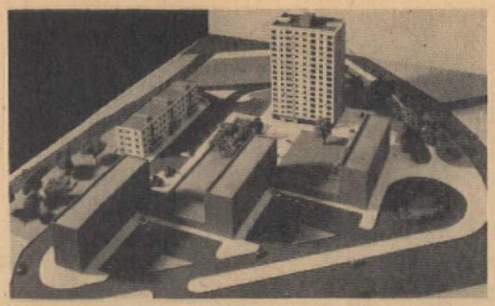


NEWMANS WILLIAM NEWMAN & SONS LTD., HOSPITAL STREET, BIRMINGHAM, 19

'that a parcel of land so large, and in the centre of Manchester, should be so neglected. Obviously, it seemed, there must be plans.' Some time later it emerged that, as far as the Council was concerned, 'the future of the site was uncertain.' This is the centre of the centre of Manchester.

The tower and terrace **4** is by F. Ley of Hornsey Borough Council for the Council, in collaboration with the Architects' Department of Bernard Sunley and Sons. These are the first 114 dwellings of a 182 dwelling scheme with shopping and other ancillary accommodation. The main entrances to the terraces are especially choice. 'As far as one can see from this project,' says the handout, 'and from the Allbetong System, is that the architect can plan freely to make an attractive, economic building which is quite unusual compared with many of the present industrialized building systems which are being used today' [*sic*].

The Elephant and Castle shopping centre by Boissevain and Osmond **5** for the then LCC does little as the latest arrival to bring into coherence a major urban space in the capital which has gradually unfolded as the most hellish result of so-called urban renewal, of environment opportunity thrown away as one could find in UK. The startling thing is that every one of the buildings is at least a pleasant enough object in itself, if set down in a field, and if one were not looking for masterpieces. One, the Goldfinger building, probably is even that. The space created, however, by the whole complex of forms, or whatever the planners' umbrella-word is for it, is one from which all but the most punch-drunk, visually, would wish simply to flee. The underpasses that circle the 'space' between the buildings deserve a complete circuit from the dedicated, to capture the full flavour of what someone (who?) has done here. And yet this was one of the LCC's prize attempts at comprehensive, urban renewal. What happened, what happened?



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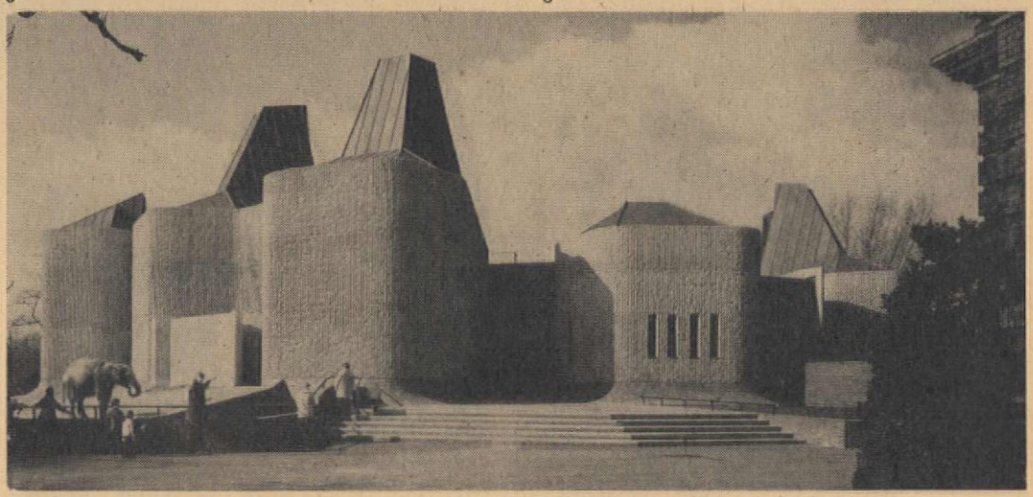


7

Zoo elephant house

Zoos, one likes to feel, are in the end for children. The temptation, therefore, to architect the animal houses in such a way as to simulate the specific beasts therein on show is doubtless kindly and innocent enough. Casson, Conder and Partners new elephant and rhinoceros pavilion **7** at London Zoo is clearly of this genre and within these limits, successful. Plainly these buildings do not house chipmunks, and market research amongst the under-tens on their tastes in forms for fauna might throw a light usefully somewhere. The shapes are bold and good second-grade Aalto (Cultural Centre Helsinki, and Viroksenniska Church) with acknowledged Rudolph epidermis. But in scale the buildings, in consequence, leave the beasts behind: the elephant might as well *be* a chipmunk. And deflation of scale of the exhibits resulting from this sort of architectural programme music is not, one would think, what the audience is after. Elephants must not only *be* big, they must be seen to be big, and so on. What Lubetkin did for the penguins and the gorillas without any ham of this sort could have been done for the rhinos and jumbos with a considerable real gain in the function as well as the architecture. Lip-service to Lubetkin has become a way of ignoring him: this was flagrantly an occasion when what little we have of unquestionable greatness in this country could have been given the accolade of source.

Showrooms and offices, London

Sloane Street is no Tottenham Court Road, but it is no Chester Terrace either. The streetscape is nondescript, the old buildings, like the KLM near to Knightsbridge tube, frequently ugly. The recent hotel at Cadogan Place was in-fill with a vengeance. Now next door to KLM itself, nonchalantly cheek to cheek, comes a crisp prism **6**, a little mannered about the mezzanine, but nevertheless, in the context, something to be more than moderately grateful for. Except for the rough-cut white-work which runs through into the interior, the new Sekers building by Brett and Pollen, showrooms by Dennis Lennon, is almost wholly smooth, a sauve, opulent showcase for luxurious fabrics, with offices over. There is no back elevation let-down: the prism has three faces. The floors hang from the four columns all the way up, which has made for neat handling of the corner glazing of the upper works. The ground floor staircase screen in what looks like old pewter, is by Robert Adam; the furniture by Eirichtungshaus Pesch of Cologne, and worth viewing if only through the plate glass. There is a macabre, basement, windowless dining room, lined wall to ceiling with deep purple silk, spookily but effectively dim-lit, a plausible set for 007. Also in the basement, the main showroom hung with Rembrandt-rich stuffs, clean-cut and impressive save for the warehouse-grade ceiling. Bristling though it is with a fortune in spot-lights, services guts viewed between the interstices of driftwood style planks make upwards not the way to look. Conversely, the sheer white octagonal-tiled floor of the mezzanine is a joy to walk upon. Both it and the street floor over which it more or less ethereally floats, can be let off for the evenings for receptions and like events, linked, one supposes, with the dining/kitchen suite. The offices above are free spaces, unlet at time of view, pierced only by the giant columns, with coolly articulated ceilings. Compare for interest with the Hille building in Albemarle Street by Peter Moro.

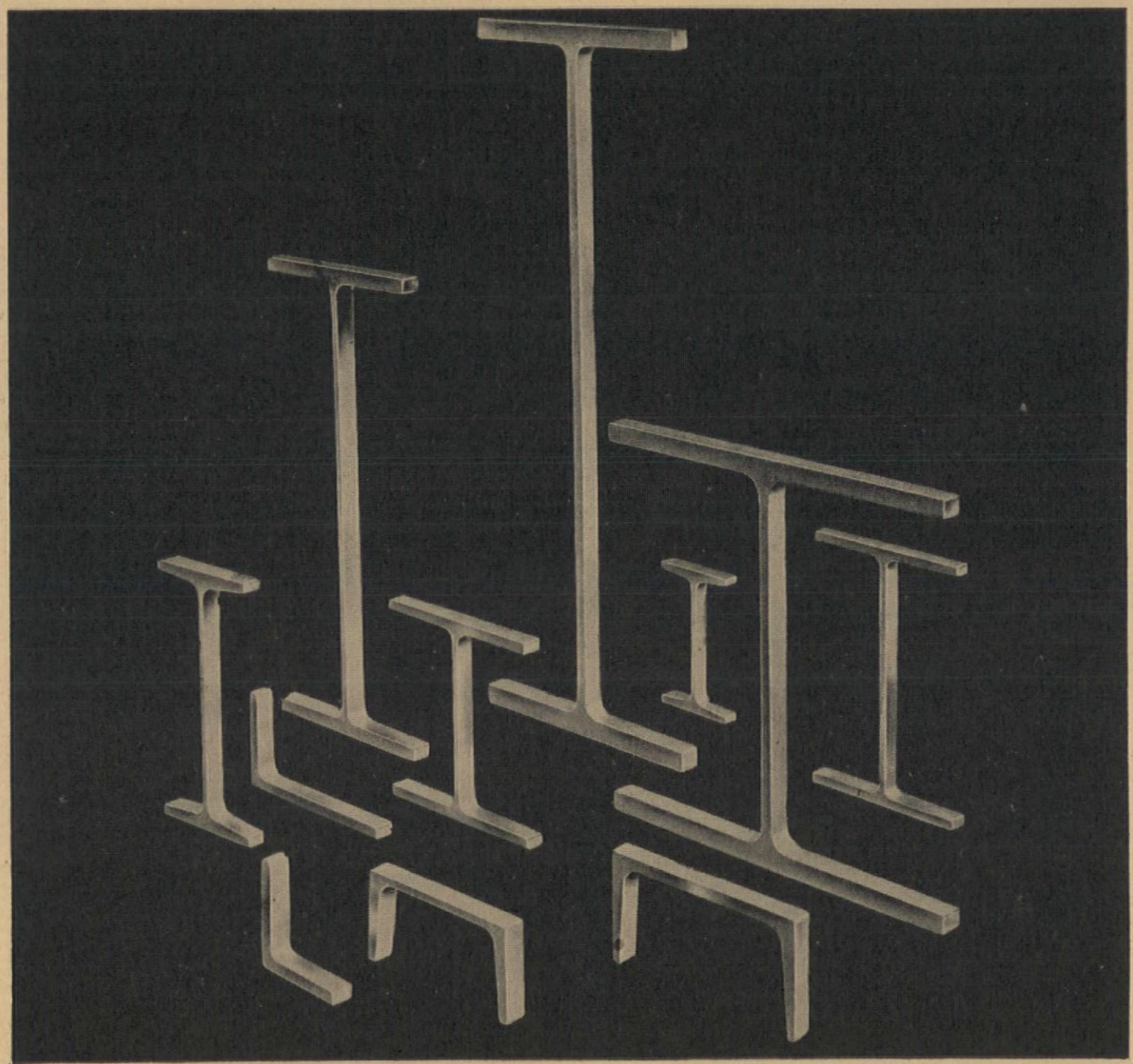
New York charter flight

The ICA are organizing a charter flight in mid-October to New York, and a tour to take in the eastern states of the US. The fare is £70 for the return flight. Particulars from the Secretary, 17 Dover Street.

Betty Campbell

We were deeply shocked to learn of the death of Betty Campbell. During the last 18 years she was responsible for the content and design of all the Cement and Concrete Association's publications and exhibitions, as well as editing their excellent magazine *Concrete Quarterly*. She will be greatly missed by all her colleagues.

APPLEBY-FRODINGHAM
STRUCTURAL STEEL SECTIONS



The structural steel sections shown here are just a few of the many rolled by Appleby-Frodingham Steel Company, who also roll a large proportion of the steel plates made in Britain. Appleby-Frodingham are experts in the production of steels for boilers, pressure vessels and highly-stressed structural components.

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AF 207

World news

John Donat

Germany

The fifth of a series of architectural details published in *Architectural Record* is on Walter Gropius, father of the curtain wall. His designs for the first glass wall (1911) for the Fagus works, for the curved glass wall (1914) for the Werkbund exhibition at Cologne are shown with his most influential design of all, the Bauhaus in Dessau (1925) **1, 2.** About detailing, Gropius writes: 'The designer can establish a significant personal handwriting with the selection of the details and their proportions from an infinite potential variety of functional solutions. His credo becomes apparent from the degree of the consistency and peculiarity of the details and proportions which serve as elements for the creation of architectural prose or poetry.'
Architectural Record, February 1965.

Lightweight moulded cladding units of polyester resin and fibre glass are the most interesting feature of a prototype for an industrialized house by Dieter Schmid **3.** The units are supported over an open ground floor on a framework of light steel tubes and are designed for easy transportation, handling and erection. The prototype is for a three-bedroom house with two bathrooms with a garage underneath. The integral garage ties the design to suburban road layouts—all right for small village scale groupings, but the problems begin when you have to cope with thousands.
Deutsche Bauzeitung, April 1965.

Austria

J. B. Bakema is holding a course in urban architecture at the International Summer Academy of Fine Arts in Salzburg from July 28th to August 28th.

Italy

In an issue devoted to Italian art and architecture, *Aujourd'hui* has produced a bizarre impression of the formalist obsessions that beset Italian architecture. Three examples: a block of flats in Florence **4** and a villa project **8** by Savioli and Santi and a competition entry for the Chamber of Commerce in Arezzo by Marco Dezzi-Bardeschi **5.**
Aujourd'hui, 48, 1965.

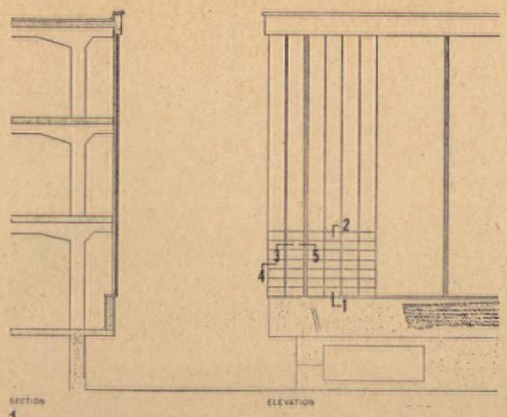
Spain

Francisco Cabrera has designed a conference and exhibition centre in Madrid, in homage to Gaudi **6.** The design aims to integrate the plastic arts and architecture and has been treated as a mammoth piece of reinforced concrete sculpture. The central feature is a little tower chapel dedicated to Gaudi's memory. *Photo: Cabrera.*

The Spanish headquarters of Olivetti in Barcelona **9** by Belgiojoso, Peressuti and Rogers is a fascinating example of street architecture, exploiting the limitations of a tall and narrow city street frontage. The architects have deliberately animated the façade with a shimmering curtain wall of narrow strips of glass stepped out on plan to produce a vibration of planes and reflections.
Cuadernos de arquitectura, 57, 1964.

Poland

An open-air opera house for the Lesna Opera takes advantage of a natural amphitheatre in a beautiful forest site **7.** A translucent tent is stretched across the space and tied back into the hillsides, providing a very elegant and economical enclosure. The structure was designed by a team of engineers led by Mieczyslaw Wizmur.
Architektura, January 1965.



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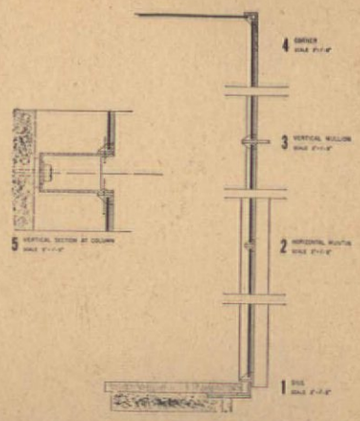
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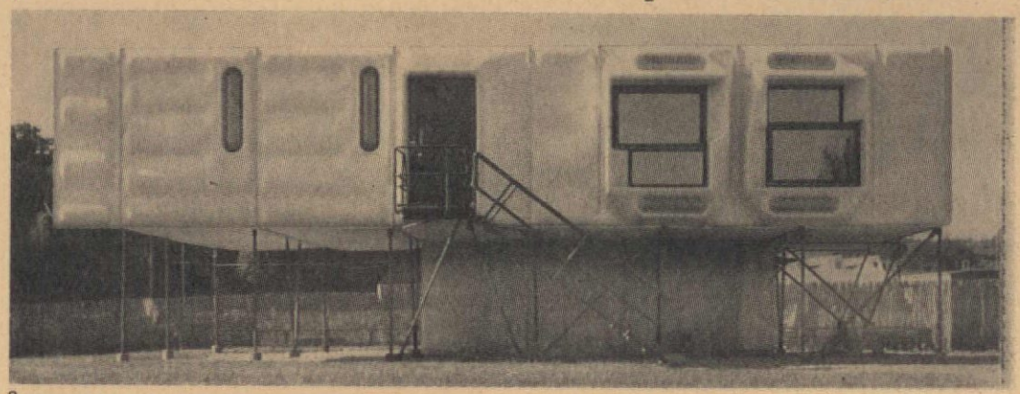
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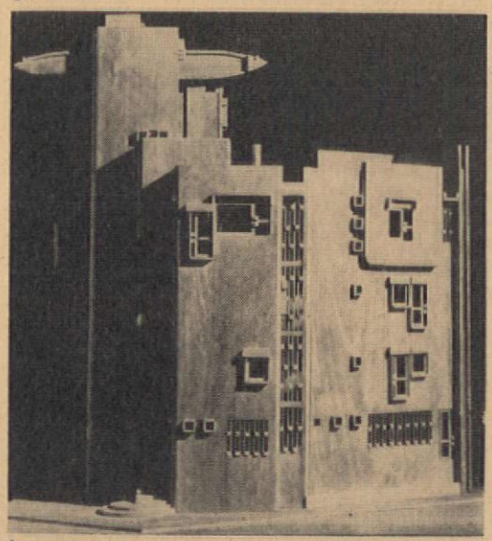
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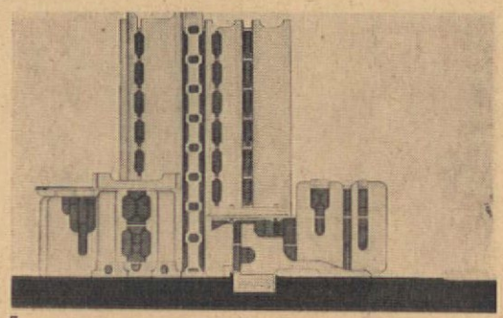
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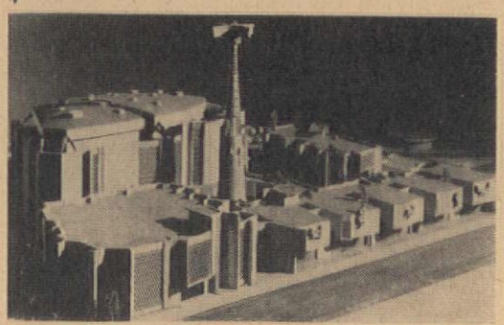
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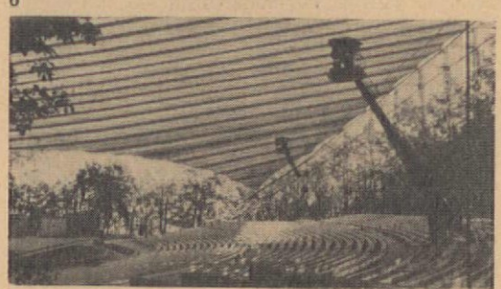
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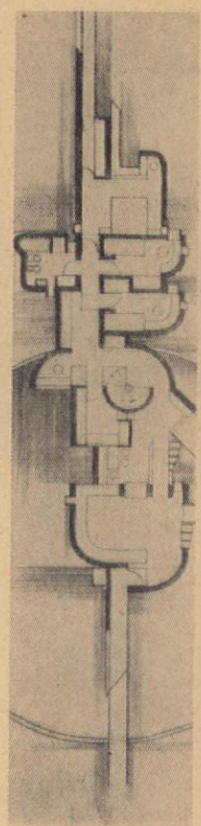
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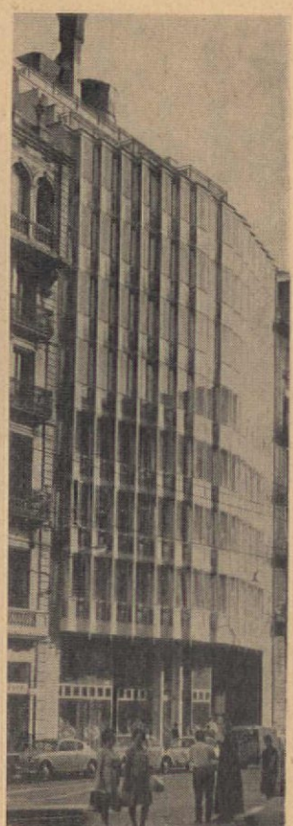
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Morocco

We welcome a new magazine of architecture and urbanism in Africa *A+U*, published in Morocco. Each issue will contain a monograph on an individual designer in addition to general articles on urban theory. The second issue features Elie Azagury, a pupil of Perret who has worked in Morocco since 1949 after a brief collaboration with Ralph Erskine in Sweden. The buildings illustrated are the architect's own house **10** and low cost housing **11**, in Casablanca.
A + U, 2, 1964.

Canada

Moshe Safdie's ambitious design to create a total environment as part of the Canadian exhibition 'Habitat '67' (*AD* Dec '64) has been drastically pruned because of high costs. The design aimed to provide all the amenities in the centre of a city that usually attract people out into the suburbs. Every dwelling includes a garden or patio and the buildings also contained shops, banks, schools and swimming pools. But the cost of each unit has turned out to be about four times the Montreal average for top residential accommodation and the original scheme for 1200 units has been cut back to only 200—hardly enough to support the social facilities that are the mainspring of the idea. The Swiss architect Jean Duret has also submitted a design for housing on the Mackay Pier site in Montreal for the '67 exhibition. An ambitious Y-shaped section **12** encloses an indoor communal space **13** with the dwellings stepped out from the centre of the Y.
Canadian Architect, February 1965

USA

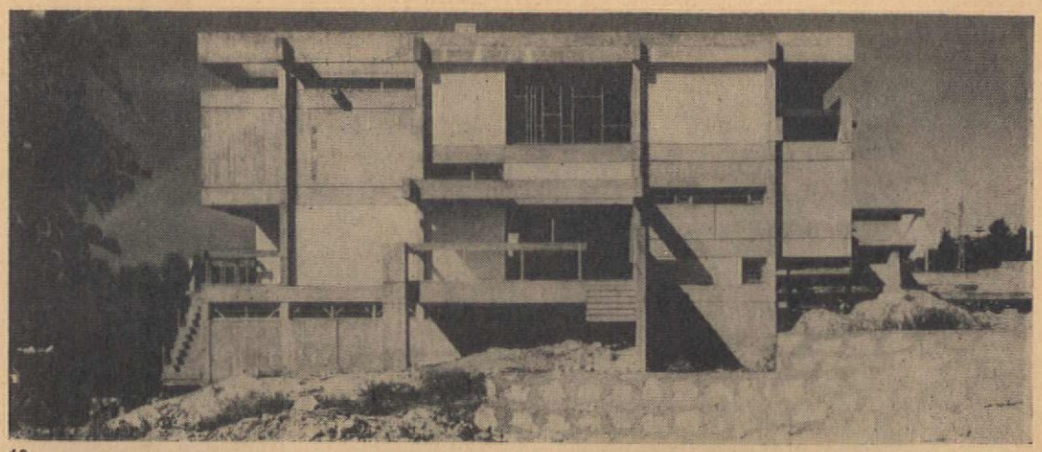
The Diamond Heights project in San Francisco **14** by Jan Lubicz-Nycz has much in common with Safdie's H'67 design. The thesis is that three-dimensional urban architecture should replace 'planning' as it is now practised with its fragmentation of urban functions into arbitrary zones for housing, shopping, business and industry. A 'total architecture' embracing all functions assumes the form of tapering towers that provide open-air spaces to each dwelling on the upper levels and spread out in a continuous curvilinear form at the lower storeys.
Werk, March 1965.

A techonological breakthrough (or 'How I learned to stop worrying about orientation') is signalled in a series of nine hexagonal towers in San Diego by C. J. Paderewski **16.** The 24-storey structure will be anchored to a 20ft diameter revolving core which extends 60ft into the ground. A 10 horse-power motor will rotate the building one complete cycle every three hours.
Photo: Fox

Japan

From Metropolis to Megalopolis

Kenzo Tange has published a thesis on 'The Future Image of Japan' in which he rejects both the 'Ekumenopolis' pattern advocated by Doxiadis and the type of city planning that creates strongly centripetal satellite cities, in favour of an organic system that integrates the whole of the southeast of the Japanese archipelago into one continuous and related urban pattern **15.** These ideas are a natural extension of Tange's proposals for a Tokyo Plan (1960) and his observations on population, economics and communications in the future. 'Is Megalopolis Inevitable?' asked Dr Margaret Mead in her second lecture at University College; Tange answers in the affirmative and seems to imply 'not only inevitable, but desirable'.
Japan Architect, February 1965.



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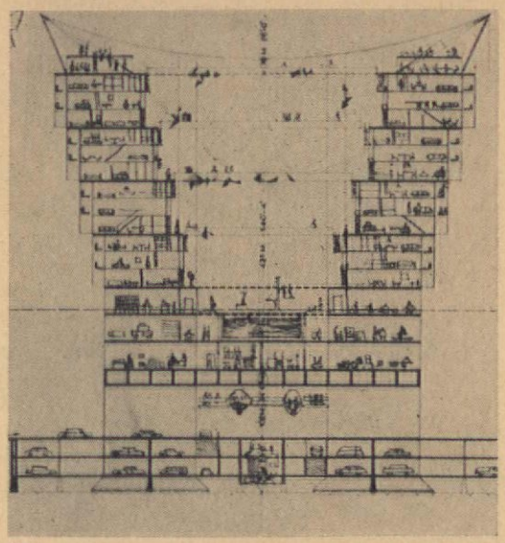

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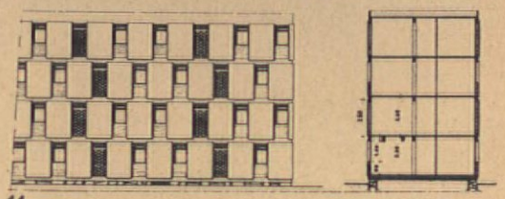

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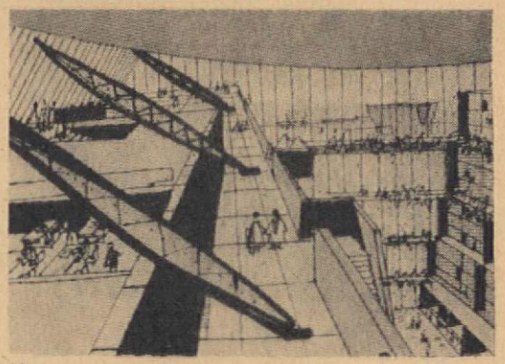

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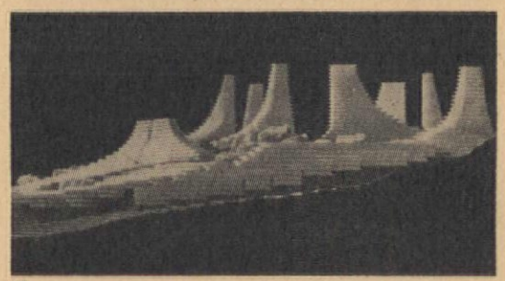

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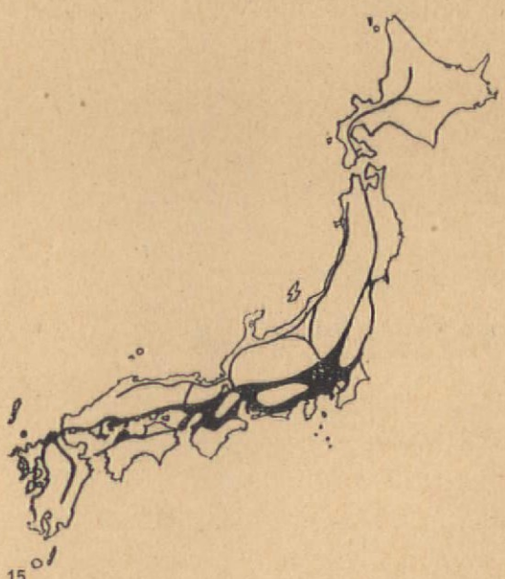

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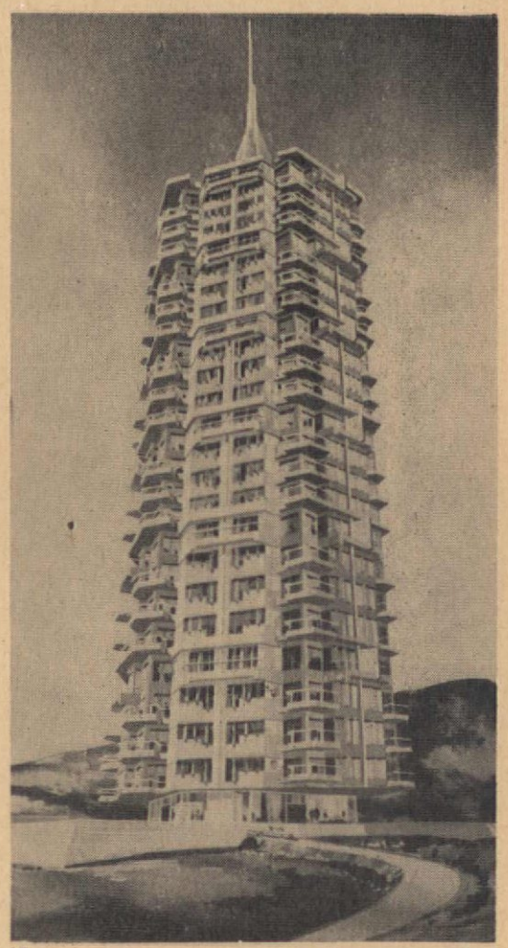

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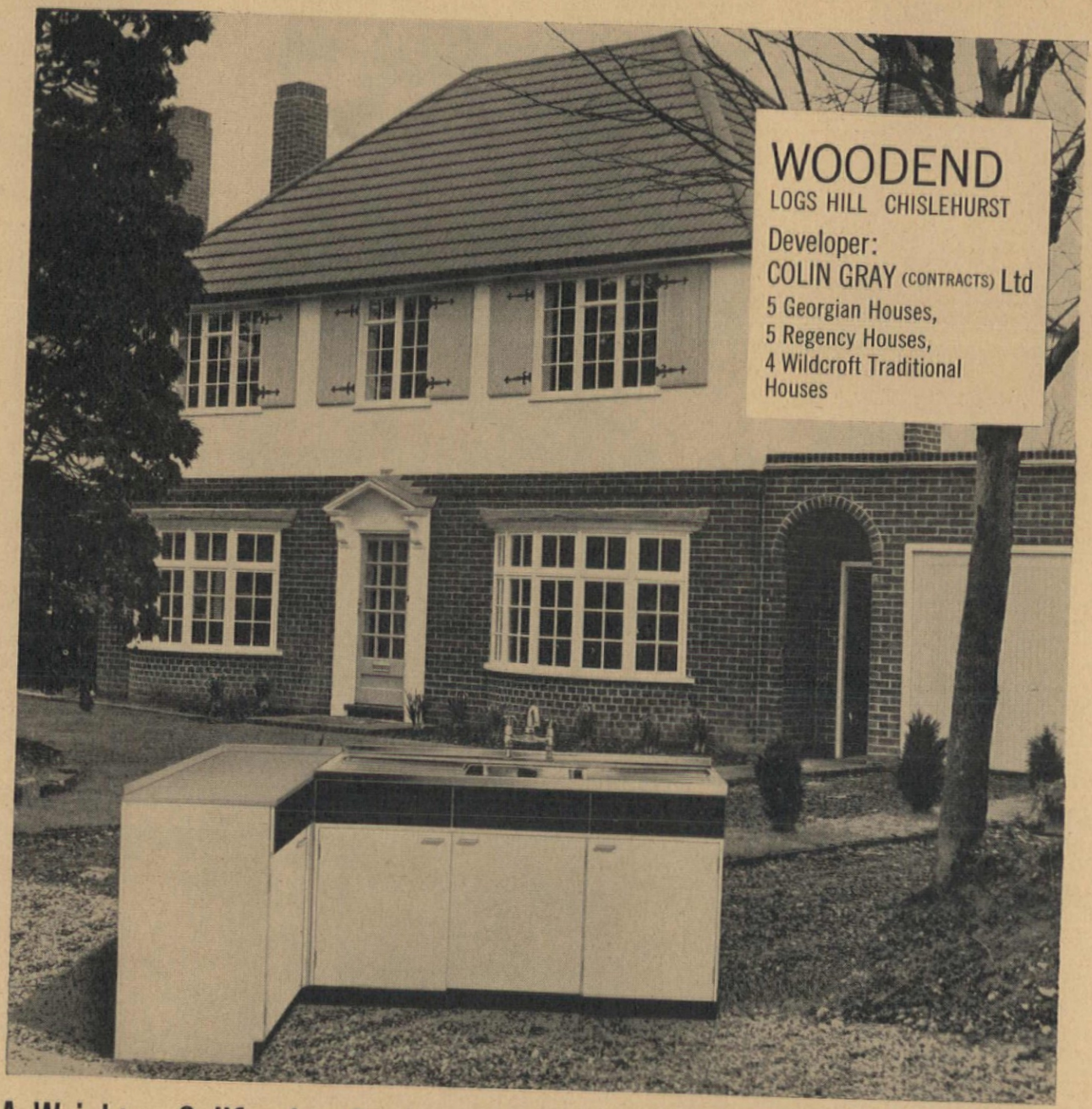

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Letters to the editor

Ove Arup

Sir,
Your special article on Ove Arup for his seventieth birthday does him less than justice.
It was he who first advocated and, I believe, first used concrete cross-wall box-frame construction, which is now such a usual method in flat construction; and his firm have certainly been the pioneers in shell construction.
His thoughts on the relevant uses of modular construction and its limitations have been a breath of fresh air and common sense at a time when standardization has by itself become a kind of religion.
A very great number of the blocks of flats going up at the moment owe, structurally, a very great deal to Ove who pioneered lift shutter work, and it can be said about Ove that there is no structure with which he has been involved where the construction is ugly and probably for this reason he has always found work with the better architects.

Yours, etc.,
Jane B. Drew, London

Madrid Opera competition

Sir,
I am in disagreement with your *decadent* (World News) 'judgement' of the premiated design in the above competition. Less spectacular than Utzon Sidney Opera House (you must know something about its structural failures) the winning Polish entry displays not only a mastering of the complex needs of the theatre in the vein of Mies' approach, but solves the shading of the circulation, thus giving the building a nobility appropriate to lyrical theatre.

Adam M. Kaas, Rock Island, U.S.A.

[Ed: *In our February issue we inadvertently attributed the design of project A-62 for the Madrid Opera to Arangnen, Corrales, Paredes, de la Sota and Molezún. The design is in fact by Francisco F. Longoria, of Madrid, and will be published in more detail in our June issue.*]

Entr'acte

What happened to the lovely crispy Pollocks we used to have just after the war?

I.

At the Guggenheim Exhibition I saw again last Sunday the first Pollock I ever saw—at least I am sure one of them must have been it—but somehow it had changed.
Every time I see a Pollock, I wonder when I shall see that original, wonderful, Pollock again—that Pollock that is in my head that is blue and red and black, but mostly blue and red, on a whitish canvas about eight feet by five.
It was the Pollock of my liberation.
Wonderful for what it did for me. Not necessarily for what it was and is—for there are two values involved.
Values that confuse the art market.

II.

Critics hear artists talk.
Great, they say, or if older, Its OK
That is, *useful*, as fuel, or a sign (as that crispy Pollock was a sign to me that art could go on and therefore architecture might).
Not great and OK for ever.
Or maybe great and OK for ever, but they're not involved with that. Judgement is for pundits: ego for artists.
Artists' talk heard by critics about Cézanne is still confusing the art-market 50 years later—and confusing the citizens at large as well which is worse—like everyone working away at the Cantos to see what it is they've missed and never finding it. Because Eliot said Pound was OK
Meanwhile Eliot gets dead before he's ever reread.
How many years before the bones of art begin to shew through the decaying flesh of opinion?
How old does one have to be before one can sort out what one really thinks from what one has been told to think?
About 50 in each case.

III.

And the National Gallery has wasted half a million on an 'example', not bought a work of art. (Cézanne was a 'carrier' artist who painted some good pictures.)
Critics should look and keep their ears blocked when artists are around for they are using the same words to mean something quite different.

IV.

At the Guggenheim.
How tasteful and old-masterly seem the Mondriaan drawings on brown-paper mounted on corner-blurred softboard—better than Leonardo by half.
How amateur that cubist Braque.
(Most 20's art found in the attic would be thrown-away as in the poker-work class.)
How beautiful, how well painted the brown Duchamp ('Nude Descending a Staircase' is handsomer than any Goya).
What a rotten *painter* is Ernst.
(Liberator of the 1930's be with us yet, lest we forget that our Pollock looks like that to those who were 5 in 1949.)

V.

And what is Tunnard doing here amongst these browning titanic swells?

Waldo Camini

Art

Derek Boshier

The problems which so clearly manifested themselves in the renaissance perspective, where illusionistic space became the crucial factor in painting, have their parallels today. The illusion of forms jutting forward, disappearing into the distance and extending beyond the confines of the canvas have been explored in various ways by artists like Richard Smith, Allen Jones and Derek Boshier. In all these cases the illusion is created with planes, three dimensional forms and outlines extending beyond the rectangular canvas. Boshier's spatial ambiguity is explored with the aid of horizontal and vertical planes carrying a continuous pattern. His paintings, which largely consist of a syncopated rhythm of curving coloured bands, deal with the manipulation of illusionistic space when a third dimension is introduced. What in fact happens is that the extended three dimensional panels appear to have two dimensions and vice versa. Partly because each work has a directional flow of rippling forms, one is very conscious that one reads them from left to right or from the bottom to the top. For that reason alone they have something in common with abstract patterns on film, as a definite sequence in time.

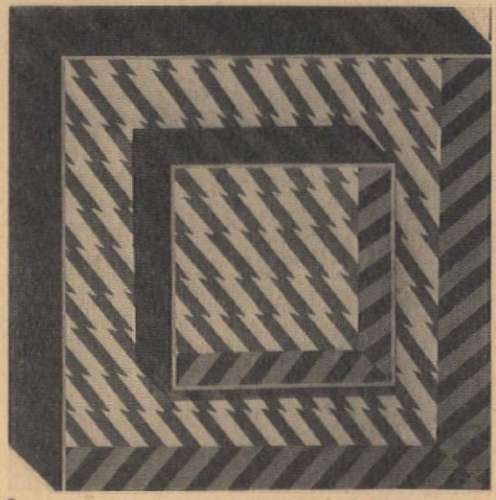
Boshier is not aware that his themes come from any specific sources, but what he does extract are various pictorial devices seen elsewhere which he adopts as a part of his vocabulary. In the process of painting the outlines come first—derived from linear and diagrammatic sketches. The colour which is used in both tonal and chromatic way is introduced later. It is in this particular respect that Boshier's work stands apart from Op art, where tonal colour is hardly ever introduced. Op art, despite the various generalizations that always accompany this title, is usually concerned with virtual movement and colours that can hardly be considered without the new and startling properties of their relationships. Some of the works that come under the heading of Op today would have been in the category of Hard Edge five years ago. As each new heading passes into general usage, so all works that can possibly be fitted under it are considered a part of the movement. Since Boshier's work is so dependent on its quality of illusion, which is also the essence of Op art, it is important to bear this in mind.

Boshier works slowly and during the past year produced only 13 paintings. It is during this period that his imagery has expanded throughout the entire canvas so that there is no background as such. What was particularly significant about his recent work at Robert Fraser Gallery, apart from its strange intensity, is that it belongs to the mainstream without being a part of any particular trend. *Jasia Reichardt*



1

1
Flicker, 89″ × 79″, 1964
2
Plaza, 81″ × 81″, 1965



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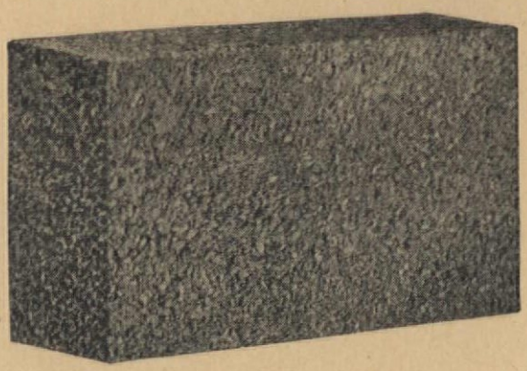

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Dans ce numéro

Junzo Sakakura *Page 222*

L'architecture pleine de vie de Junzo Sakakura émane d'un homme jeune d'esprit et qui s'adapte facilement. Agé de soixante ans il fut l'élève de Le Corbusier avant Maekawa. Après une licence en Histoire de l'Art à l'Université de Tokyo il s'orienta tout d'abord vers la peinture mais, déjà comme étudiant, s'intéressa de plus en plus à l'architecture. Après cette période d'étude avec des professeurs des Beaux-Arts, il vint en 1930 à Paris étudier la construction dans une école technique pendant six mois. Puis il travailla six ans chez Le Corbusier.

Peu après le retour de Sakakura en 1936, le premier prix pour le pavillon japonais à l'exposition de Paris fut attribué à Maekawa. Sakakura retourna à Paris pour surveiller l'élaboration du projet mais l'emplacement ayant été changé, il fut amené à proposer un nouveau projet. Le Corbusier lui prodigua ses conseils. Le grand prix de l'Exposition fut attribué à ce nouveau pavillon. On y reconnaissait l'atmosphère de la libre disposition des pavillons du palais Katsura, un édifice où une conception moderne s'alliait heureusement avec l'ancienne philosophie.

La vie n'était pas facile au Japon durant cette longue période d'effervescence militaire, Sakakura était occupé à la planification de divers communautés en Mandchourie. Il était fils de marchand et une bonne partie de ses travaux reflète le milieu commercial. Au début ses travaux eurent pour principal objet les propriétés Tokyu telles les grands magasins Takashimaya et Shirokiya qui furent audacieusement transformés et agrandis. Le grand magasin Tokyu à Shibuya, Tokyo, se distingue par sa gare pour trois compagnies ferroviaires différentes, chacune située à un niveau différent, qui s'intègre à l'ensemble. L'une des lignes, le métropolitain, passe à travers l'édifice. Sakakura a construit des maisons individuelles dans tout le Japon. Maekawa et Tange quant à eux ne se sont que très peu intéressés à l'architecture domestique.

Kunio Maekawa *Page 228*

Maekawa commença sa carrière chez Antonin Raymond mais ouvrit son propre atelier en 1935 déjà. Durant ses études Maekawa fut un grand admirateur de Le Corbusier. Dès le lendemain de son diplôme, il se mit en route pour le rejoindre. Après avoir séjourné deux ans à Paris, il retourna au Japon et entra à l'atelier de Raymond.

Maekawa voit les choses d'une manière vigoureuse et jeune; il continuera vraisemblablement comme il l'a fait par le passé à explorer les possibilités des problèmes de circulation, de texture et d'espace. A l'instar de Tange, l'industrialisation joue pour lui un très grand rôle. Dans un pays où fait défaut la tradition grecque de l'Agora, la création d'espaces publics au Japon compte parmi ses principales préoccupations. Ses beaux espaces dans les centres culturels de Kyoto et Tokyo sont publiques et on peut y pénétrer librement pendant la journée. On y décèle un sentiment plus humain que dans ceux de Tange. Par contre l'œuvre de Tange est plus disciplinée et intellectuelle, elle suit un développement plus ordonné. Mais Maekawa a énormément d'intuition, particulièrement en ce qui concerne l'articulation d'auditoires et de leurs foyers. Maekawa et Tange sont actuellement de grands architectes de renommée mondiale et sont considérés comme les chefs de file de l'architecture japonaise. Ils ont tous deux grandement contribué tant au développement du 'modern movement' au Japon qu'à restaurer la confiance que l'architecture moderne est un vrai produit du Japon.

Kenzo Tange *Page 236*

Kenzo Tange est un homme au dynamisme extraordinaire. Il dirige le nouveau département d''environmental design' qu'il a créé à l'Université de Tokyo; il maintient sa position d'architecte de renommée mondiale, il est un auteur accompli traitant de problèmes d'architecture et d'urbanisme et souvent est le premier Japonais à utiliser en architecture les dernières connaissances scientifiques. Sa chaire à l'Université de Tokyo fait de lui un fonctionnaire mais il ne montre aucune trace du bureaucrate traditionnel. Il s'avère d'autre part particulièrement brillant dans la conduite de comités gouvernementaux et universitaires vers des objectifs qu'il considère importants. Ceci est essentiel au Japon où tout progrès est le résultat de décisions communes réalisées par des luttes et discussions patientes qui finissent par des compromis, surtout en ce qui concerne l'action des autorités. Dans son propre atelier, au sommet d'un des plus hauts édifices commerciaux de Tokyo, il mène la discussion et pratique l'auto-critique à la manière de Gropius.

Le dynamisme de Tange, ses capacités de chef d'équipe ou de président de comité s'équilibrent avec son calme, sa modestie et son accessibilité. Tout en comprenant l'échelle et la profondeur des problèmes de la création d'un milieu digne de l'individu et surtout de la vie communautaire végétative et sans forme, il demeure humble et n'est pas un architecte 'prima-dona'. La force et les affirmations paraissant dogmatiques que l'on croit déceler dans son œuvre en l'examinant exclusivement par la photographie sont des hypothèses posées dans sa recherche constante de la vérité architecturale.

C'est à l'époque où l'Europe se débattait dans sa recherche d'une expression honnête dans la composition architecturale que Tange accompli ses études les terminant avec distinction en 1938. L'influence de l'Allemagne dans les domaines les plus divers mais particulièrement en architecture et en science s'exerça à l'époque avec force sur la jeunesse japonaise. Tange choisi le mouvement du 'Bauhaus' et Le Corbusier. Il participa durant la guerre à plusieurs concours destinés à des pays d'outremer. Malgré les restrictions stylistiques imposées de s'en tenir aux formes japonaises classiques, il parvint à démontrer son art de projeteur hardi.

Tange utilise souvent le language de Le Corbusier mais sans le copier; car le béton armé est le matériau de construction naturel au Japon, pays de tremblements de terre, riche en pierres et en ciment; il n'a pas de minerai de fer (bien que le Japon soit le troisième producteur d'acier du monde) mais le climat y est aussi favorable au béton brut que l'hiver anglais lui est défavorable. L'intérêt de Tange pour les problèmes sociaux et pour la production massive d'éléments de béton armé ou d'acier, sa profonde connaissance du Japon ainsi que de la tradition culturelle grecque, lui ont permi de réaliser ces dernières années des œuvres qui ont au moins autant de passion que celles de Le Corbusier, mais qui dénotent un sens infiniment plus développé des problèmes réels auxquels doit faire face l'homme d'aujourd'hui. Il a suivi la grande tradition japonaise de choisir, pétrir et recréer le meilleur en le rendant au monde plus simple, plus ferme et plus rationnel.

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In dieser Nummer

Junzo Sakakura *S.222*

Junzo Sakakuras lebensvolle Architektur ist das Werk eines anpassungsfähigen, geistig junggebliebenen Mannes. Er war Corbusiers Schüler vor Maekawa und ist jetzt sechzig Jahre alt. Als Absolvent der Schule für Kunstgeschichte an der Universität Tokyo wollte er ursprünglich Maler werden, fand aber schon als Student mehr Interesse an Architektur. Nach dieser Zeit bei Kunstprofessoren ging er 1930 nach Paris und studierte sechs Monate lang Baukonstruktion auf einer technischen Schule, und zwar auf den Rat Le Corbusiers. Dann arbeitete er sechs Jahre lang unter Le Corbusier. Bald nach Sakakuras Rückkehr 1936 erhielt Maekawa den ersten Preis für den japanischen Pavillon auf der Pariser Weltausstellung. Sakakura ging nach Paris um den Entwurf zu überwachen, aber Veränderungen in den Geländebedingungen veranlaßten ihn, einen neuen Entwurf zu machen. Le Corbusier beriet ihn dabei. In der neuen Gestalt gewann der Pavillon den Großen Preis der Ausstellung. Es war etwas von dem einzelstehenden Katsura-Palast darin, etwas von modernem, vorwärtsblickendem Denken, vereinigt mit alter Philosophie.

Während der langen militaristischen Periode war das Leben in Japan nicht leicht, und Sakakuras Aufgabe war es, verschiedene Gemeinden in Mandschuria zu planen. Als Kaufmannssohn hängt seine Arbeit oft mit Handel zusammen. Anfangs war ein Großteil seines Werkes in Verbindung mit den Tokyu-Grundstücken, wie den Takashimaya- und Shirokiya-Warenhäusern, die umgebaut oder in kühner und gradliniger Planung erweitert wurden. Das Tokyu-Warenhaus in Shibuya ist dafür bemerkenswert, daß es mit einer Station für drei verschiedene Eisenbahngesellschaften vereinigt ist, die auf drei verschiedenen Stockwerken liegen, und von denen die eine, die Untergrundbahn, mitten durch das Gebäude läuft. In ganz Japan hat Sakakura Privathäuser gebaut, im Gegensatz zu Maekawa und Tange, die sich kaum je mit Wohnarchitektur abgegeben haben.

Kunio Maekawa *S.228*

Am Anfang seiner beruflichen Laufbahn arbeitete Maekawa für Antonin Raymond, eröffnete aber sein eigenes Büro schon 1935. Als Student war er ein eifriger Bewunderer Le Corbusiers gewesen, und noch am Tage seiner Examen begann er bei ihm zu arbeiten. Nach zwei Jahren in Paris kehrte er zurück und arbeitete bei Raymond.

Maekawa hat eine sehr kraftvolle und junge Auffassung vom Leben, und er wird wahrscheinlich die Interessen seiner Vergangenheit, wie Verkehrsmöglichkeiten, Oberflächentextur und Raumfragen, auch in Zukunft weiterverfolgen. Industrialisierung ist für ihn immer von größter Wichtigkeit, ebenso wie für Tange. Er ist sich dessen bewußt daß auch in Japan öffentliche Plätze geschaffen werden müssen, obwohl die Tradition der griechischen Agora fehlt. Seine schönen Plätze in den Kulturzentren von Kyoto und Tokyo sind öffentlich und jeder hat während des Tages freien Zutritt. Sie sind menschlicher in ihrer Einstimmung als die von Tange. Andererseits ist Tanges Werk gezügelter und intellektueller und verfolgt ein geordneteres Entwicklungsmuster. Aber Maekawa hat viel Einfühlungsvermögen, besonders was Auditorien und ihre Vorräume betrifft.

Beide sind nun Architekten von Weltruf und sind die Führer in der japanischen Architektur. Beide haben sie viel dazu beigetragen, die modernen Bewegungen in Japan zu entwickeln und das Vertrauen wieder zu erwecken, sodaß ihre Architektur wirklich ein Erzeugnis Japans ist.

Kenzo Tange *S.238*

Kenzo Tange ist ein Mann von ungeheurem Antrieb. Er leitet die neue Abteilung für Umgebungsgestaltung an der Tokyoter Universität, die er selbst ins Leben gerufen hat, ist gleichzeitig ein Architekt von Weltgeltung, schreibt hervorragend über Probleme der Architektur und des Städtebaus, und er ist sehr oft der erste, neue Errungenschaften der Wissenschaft für die Architektur auszuwerten. Seine Stellung als Professor an der Universität Tokyo macht ihn zum Beamten, aber in ihm ist nicht die geringste Spur vom Bürokraten. Andererseits ist er sehr geschickt darin, Regierungs- und Universitäts-Versammlungen auf den seiner Meinung nach rechten Weg zu leiten. Dies ist besonders wichtig in Japan, wo aller Fortschritt nur aus Vereinbarungen herrührt, die geduldig ausgefochten werden, bis ein endlicher Kompromiß erreicht ist, jedenfalls bei offiziellen Vorgängen. In seinem eigenen Büro, ganz oben in einem der höchsten Geschäftshäuser von Tokyo, leitet er seine Geschäfte nach Art von Gropius mit Diskussion und Selbstkritik.

Tanges Antrieb und seine Fähigkeit, eine Gruppe zu führen, oder eine Sitzung zu leiten, werden ausgeglichen durch seine Ruhe, Bescheidenheit und Verträglichkeit. Da er die Maße und die Tiefe der Probleme versteht, die sich mit der Schaffung einer richtigen Umgebung für das Einzelwesen und mehr noch für das formlose, treibende Leben der Gemeinschaft befassen, ist er bescheiden und hat keine Starallüren. Die Stärke und die anscheinend dogmatischen Versicherungen, die sich schon in Fotografien seiner Arbeiten zeigen, sind Hypothesen, die er sich für seine Suche nach der Wahrheit in der Architektur gesetzt hat.

Während Europa kämpfte, um eine ehrliche Aussage in der Palnung zu netwickeln, besuchte Tange Schule und Universität, die er 1938 mit Auszeichnung verließ. Zu jener Zeit war der Einfluß Deutschlands auf allen Gebieten, besonders in Architektur und Wissenschaft, sehr groß auf die japanische Jugend. Tange wählte das Bauhaus und Le Corbusier. Er beteiligte sich an mehreren Wettbewerben für Bauten in Übersee während des Krieges. Trotz der verlangten stilistischen Beschränkung auf klassische japanische Formen, vermochte er doch, seine Geschicklichkeit als kühner Gestalter zu zeigen.

Tange benützt häufig die Ausdrucksweise von Le Corbusier, aber er kopiert sie nur selten. Beton ist ja das natürliche Material für Japan, ein Land mit Erdbeben, viel Stein und Zement, keinem Eisenerz (obwohl es der größte Stahlproduzent der Welt ist), und mit einem Klima, das für natürlichen Beton so günstig ist, wie der englische Winter ungünstig. Sein Interesse an sozialen Problemen und an genauen Vorfertigungsteilen in Beton und Stahl, sein tiefes Verständnis für alles Japanische ebenso wie für die griechischen Traditionen, haben ihm in den letzten Jahren die Möglichkeit gegeben, Architektur zu schaffen, die ebensoviel Leidenschaft zeigt wie die von Le Corbusier, aber weitaus mehr Verstehen aufbringt für die wirklichen Probleme, denen sich der Mensch in der heutigen gebrechlichen und drängenden Gesellschaft gegenübersieht. Er hat eine wertvolle japanische Tradition weitergeführt, indem er das beste Verfügbare nahm, es umgestaltete und neuschuf und es dann der Welt einfacher, stärker und vernunftgemäßer zurückgab.

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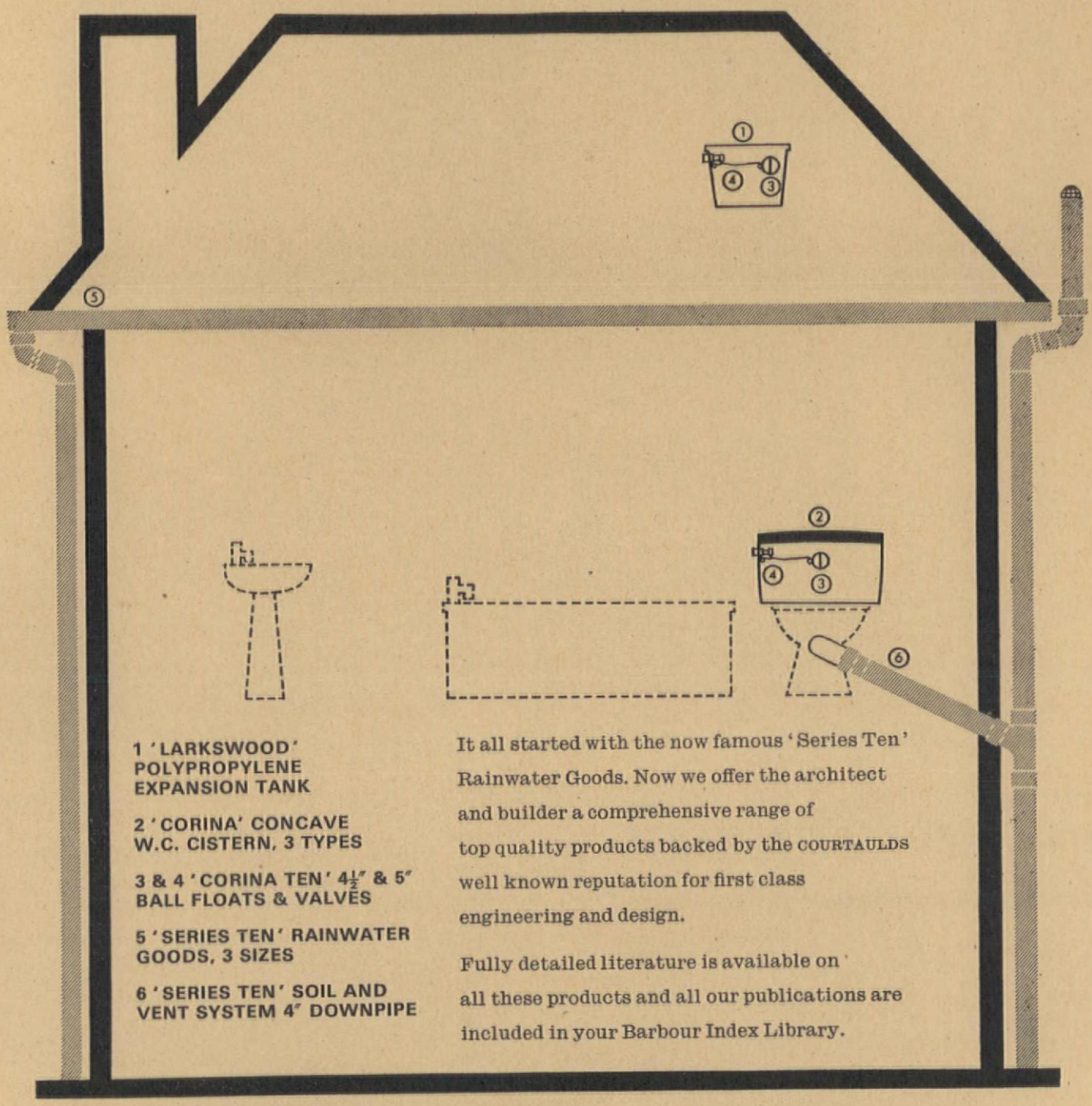

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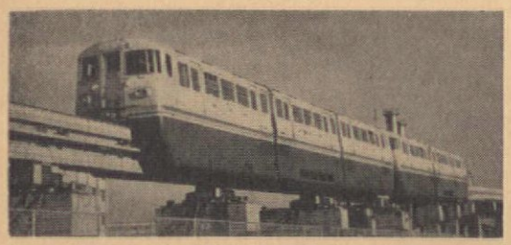
Japanese architecture today

Jeremy Dodd



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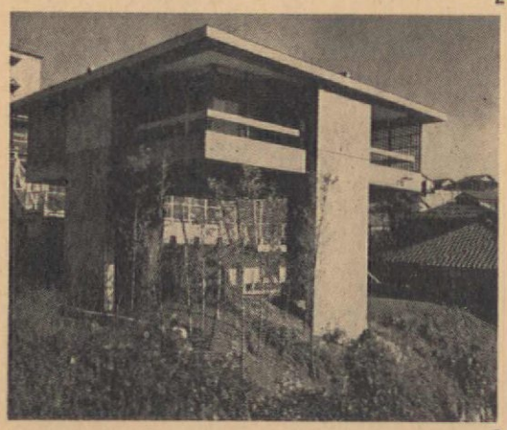

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1
The Tokyo monorail linking the airport to the centre
2
Typical central area in Tokyo
3
Kikutake's 'Sky House'
Photos: 1 & 2 Lehmann; 3 The Kentiku

In a sense the pioneering spirit of modern architecture, the initiative in moving forward to new solutions in architecture and urban design, seems to have moved out from the source, Europe, to nations who are in the process of leaving the 'undeveloped' status behind them. Japan, several South American Nations and Australia are good examples of this process. The arrival of a nation at the point where industrialization becomes an ever more rapid process, seems to liberate tremendous mental energy, some of which appears in the form of re-thinking on architecture and urbanization.

Since the virtual destruction of Japanese industry in the war made a new start inevitable, the process of reconstruction from scratch has given the country a chance to re-organize and re-equip. The shipping industry now has the largest output perhaps in the world, in consequence, while the steel industry is third in rank. Naturally the results show in the architecture and city planning. Taking the city planning first, it is clear that, apart from zoning, with its negative character, there has been little city planning actually carried out—although there are now many plans and ideas being discussed, some of which are half-hearted, others too revolutionary to interest political powers, in or out of the government (see *AD*, October and December 1964).

Tokyo and Osaka, and other cities to a lesser extent, have risen from the delicate piles of wood-ash to become fantastic, sprawling jungles of buildings of all shapes and sizes, built on tiny plots, and on the same streets in most cases, that served the old city when a huge area around the central core—the Imperial Palace—was inhabited by feudal lords' residences. These streets and alleys are just right for the pedestrian, bicycle and even scooter; but in the ordinary streets there is no pavement and the citizens are increasingly pushed around by vehicles—the poles supporting the dense overhead wirescape, often provide the only safe refuge!

The canals used to provide a kind of open space as well as definition to the various 'quarters' of the city, but gradually they are being converted into expressways. The parks in Japan are frequently filled with buildings, as in the urban USA, with the justification that the buildings are for public purposes. In Tokyo, there is less than one square yard of open space per person, and it continues to fall as the population builds up at the rate of over 300,000 a year in Tokyo alone. One must actually consider the whole conurbation of Tokyo-Kawasaki-Yokohama, whose total population is some twenty million, in thinking of urban problems of these cities.

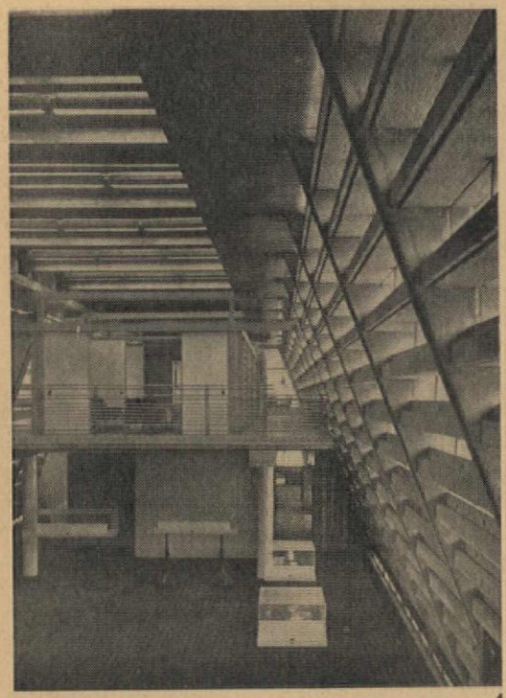
For the 10 million people or so in Tokyo, there are now nearly one million vehicles, running on streets that occupy one-third of the street area found in the cities of the Western world. The expressways are in nearly all places elevated or depressed, which is unusual, and suggests that a vehicular 'layer' could well be established above the natural ground level. The old (and merely palliative) idea of road widening has been applied to over a 1000 miles of roads. Future plans are based on a three-ring and eight-radial-road system. The inner ring runs around the lovely moat surrounding the Palace, with a diameter of about three miles. The middle ring follows the line of the loop railway with a diameter of about eight miles and serves the existing subcentres, the outer ring with a 15-mile diameter picks up the newly developing subcentres and will sweep across Tokyo harbour on the world's longest suspension bridge.

Public transportation above the ground is packed to capacity. Trains on the loop line run at two-minute intervals and can be lengthened no further. So there are plans to extend the two existing subway lines and add a whole series of new lines. In special cases, such as the International airport to down-town Tokyo route, a monorail has been constructed—the world's longest. (These days there is a distinct delight in creating world 'firsts' in Japan!)

Architecture of reinforced concrete buildings, i.e. of all buildings over three floors and most other ones in the central area, is on the whole straightforward, but undistinguished. The factors of earthquake danger, with the subsequent fires, need for economical construction, good climate and small sites, tend to produce a sort of 'standard answer' for most commercial buildings. A heavy concrete frame is formed with fairly rough shuttering, steel of aluminium sashes are placed on the frame centre line, panels are formed of hollow concrete blocks, rendered a natural sandy colour. Roofs are flat often with stub columns for the structure that the owner anticipates building on top—if he can get funds or planning permission to exceed the allotted floor area. Each individual building owner follows his fancy, which results in a varying degree of chaos these days. In the past there was architectural unity—when the basic module was applied to all buildings (the *ken* = six feet), and they all had exposed frames with either full windows or panels for the most part within the bays, and all had blue-grey pantiled roofs, this freedom of expression gave vigour to the urban scene. Further the house was one unit with the garden, the eight- or nine-foot high walls of uniform appearance or at least harmony which enclosed them both formed a good visual barrier. The interior of the Japanese house, with its flexible spatial character is already well known.* But in any study of Japanese modern architecture it is well to remember its deep underlying influence. The quality of light available through the translucent *shoji*, or soft rice paper inner windows, and the quality of light reflected from natural materials like the wooden framework, corridor floor and ceilings, the heavy paper of the *fusuma* or sliding doors used between rooms, and the *tatami*, or woven rice straw floor mat units, is something known to all Japanese. Foreign styles and fashions have some influence on the public, but there is still a strong preference for natural materials.

There is now a whole series of younger architects who are beginning to make a major contribution. Space limitations must restrict our discussion to the following. Kiyonori Kikutake, one of the foremost, has designed an interesting museum associated with one of Japan's famous Shrines—Izumo. The interior is a particularly interesting space, but the small scale of the exterior pre-cast units is surprisingly decorative in relation to the boldness of the old wooden shrine. His 'Sky House' (1957), carried

*The authorative work *The Japanese House*, is by Heinrich Engel published by Charles Tuttle & Co. $27.50. It gives the reader a true understanding of the facts, and detailed description of the materials and methods used.



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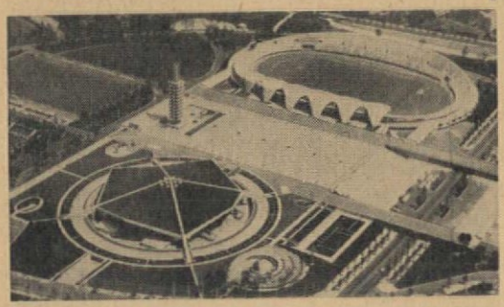

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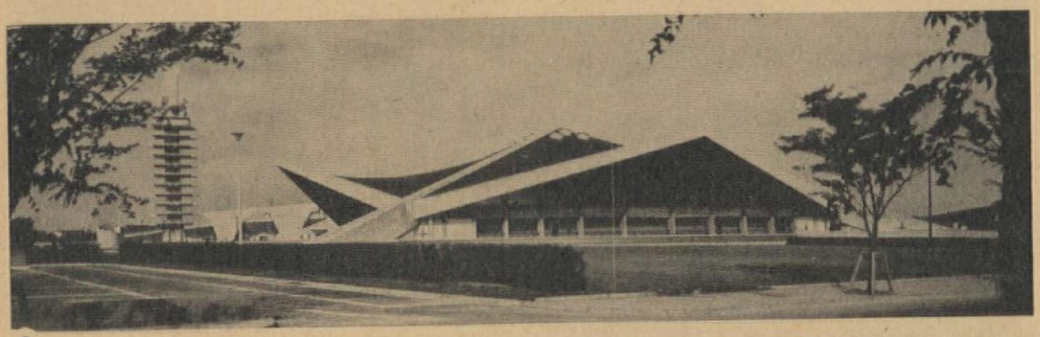

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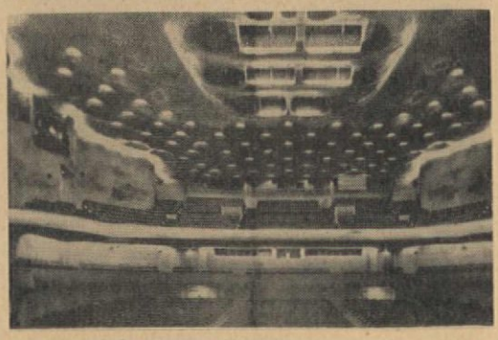

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on four broad 'wall' columns high above a sloping site, is a successful experiment in one room living, flexibly partitioned; the utility elements which may also change with technical progress, are designed for mass production. The children's room, again subject to changing needs, is suspended from the wall columns. Other works include the Toko-en hotel, with a new approach to earthquake-resistant structure, and the Ishibashi cultural centre.

Otaka is noted for his proposals to make extensive use of multi-level decks in urban renewal, from which buildings rise above services and parking. The high price of land in Tokyo, which costs up to £100 per ft²*, makes it essential to build densely; and at the same time the demands of circulation of vehicles, people and goods must be met in a new way, otherwise the city will come to a standstill. Otaka's ideas will be put into practice at Sakaide City, Saitama prefecture.

Yoshinobu Ashihara is noted for his attempts to fuse open space and architecture. He designed the gymnasium at Komazawa park to be used for the wrestling. Three bouts can take place simultaneously, watched by 4000 spectators. Around the building there are gardens for the participants. Nearby there is the 20,000-seat stadium designed by Masachika Murata with petal-shaped cantilever roofs over the stands on one side. (Both were Olympic buildings.)

Fumihiko Maki is developing plans for part of Osaka, on the same lines as Otaka. He has also designed an interesting auditorium.

Finally one must mention Togo Murano who is at times an innovator, and also an eclectic as in the new Nissei theatre. Externally it has a strange, almost Byzantine character. Inside it is like Gaudí in the auditorium, with a touch of Saarinen in the foyers. Around it, the offices are neat and modern, as is the exhibition hall on the seventh floor, where natural woods predominate. In every part one feels an extremely skilful handling of materials. Murano's literature building for Waseda University, is a brick infill and concrete frame building, built on a tight budget, but it is nevertheless a functional and pleasant design.

Considering Japanese architecture as a whole, it seems to be forward looking and vigorous. At its best it is continuing the tradition of modern architecture of Western Europe, and developing it further. Many mistakes are made, and many clichés from other lands are incorporated, but that must be expected with the rapid rise of modern architecture in this country.

* Good commercial land costs about £50 per ft² on average in the down-town and subcentres. The price rises about 7–10 per cent yearly.

4 & 5
Kikutake's museum for the Izumo Taisha Temple

6
The Komazawa Park stadium by Murata and gymnasium by Ashihara

7
The concrete canopy of Murata's Komazawa stadium

8
Ashihara's Komazawa gymnasium

9
Maki's plan for Osaka town centre

10
Togo Murano's literature building at Waseda University

11
The auditorium of Murano's Nissei Theatre

Photos: 5 & 10 J. Dodd & N. Hozumi; 6, 7, 8, 9 & 10 Japan Architect; *4 & 11,* Kenchiku Bunka

Japan's second heroic age—The age of barbarism?

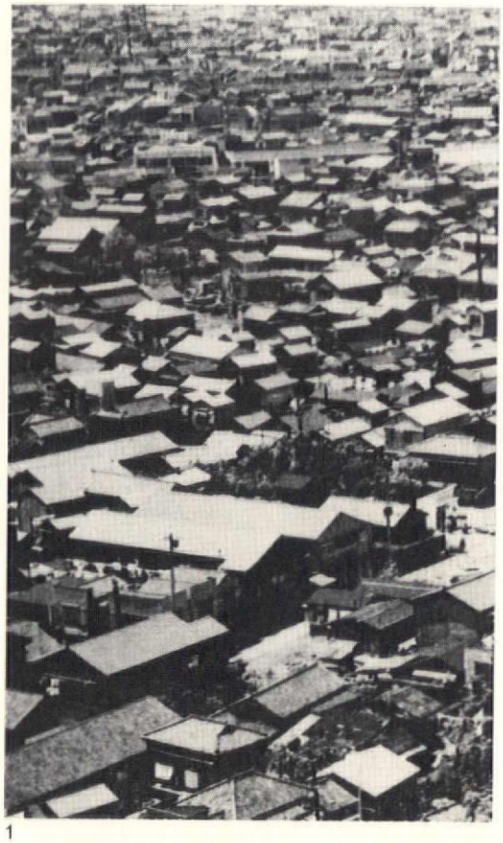
Günter Nitschke

Level of criticism

Criticism is not aimed here at the externals of contemporary Japanese architecture. Such would contribute only to the very confusion of thought and appreciation that I am concerned to reveal. A change in depth of understanding is needed. Our age has destroyed its interior order. We can expect no remedy from a new social order or from any heroic structural orders which are of necessity no more than clumsy reflections of them.

Nor should these notes be taken as the naïve hankerings of a traveller from an extroverted Western culture, who has found that intellect and rationalism have contributed little to inner happiness and who has thus found great attraction in the mystic, introverted culture of old Japan—this being the jibe of most young Japanese architects, who not unnaturally want to look forward, not backward. But whether to look forward or backward is surely not in question, rather whether to look deeply or at externals only. Nothing can have an end that is not in its beginnings. The alternative is the modern myth of indefinite progress.

My aim is to discover what is indeed happening behind the façade of the breathtaking architectural developments in Japan today.



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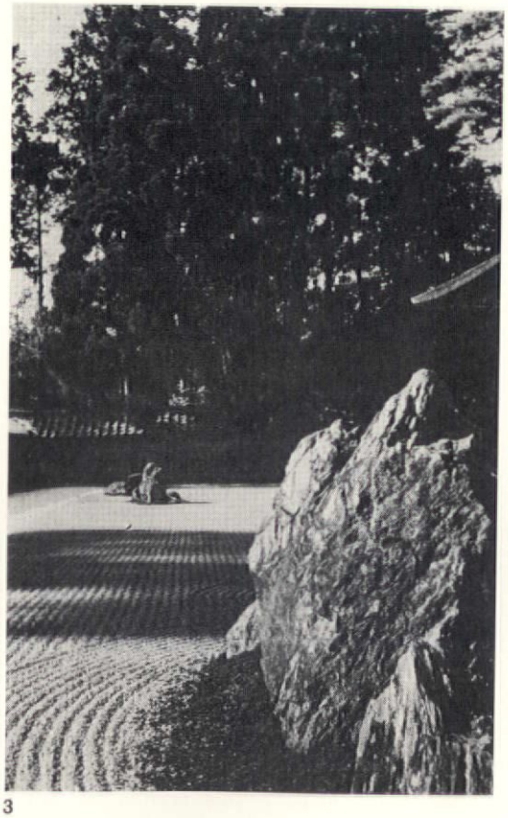
Changes—symptoms

To a European, it seems that all Japanese architecture — indeed, all Japanese art — is summed up in the Japanese handling of rocks

The *poetry* of the stone and sand garden of the Zen temple, Ryoanji



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Natural rocks, shaped by the elements over a long period of time, have for the modern Japanese architect no imprint of the human mind. The *naturalness* of the placing of the rocks hints at no duality between man and nature, the conflict between his mind and natural order.

The *realism* of the stone and water garden by Kenzo Tange in the Takamatsu prefectural offices



4

Carved rocks, cut in a quarry, representing to the modern Japanese the imposition of man's will on nature.
The *artificiality* of the pose, the uneasy verticality, indicate the hand of man trying to alter and overcome nature, forcing a new order upon it.

Photos: 1 Y. Futagawa ('Roots of Japanese Architecture' by Teiji Itoh) 4 Japan Architect

Balance is created by burying the rocks deep in the sand. The revealed portion suggests a latent force within the ground, a strength and quiet harmony with nature.

Poetry on the Buddhist theme of the voidness of all phenomena, is conveyed in the symbolical use of sand and rock in an aesthetically perfect arrangement. But it is not complete, not exclusive, it invites the human mind to partake in its contemplation. Indeed it is the human mind that is the essence of the arrangement. The materials of which it is made are unimportant. What is important is the way in which they are interpreted. In the garden exists, as it were, within ourselves; what we see in the rectangular enclosure is no more than what we are.

Unbalance is produced by the rocks towering above the surface of the water, with the smaller portion revealed to the human eye under the water on an image of unrest and man in opposition to nature.

The *realism* of the revealed rocks set in opposition to the water leaves no room for the human mind to enter and leads to no insight into the mysteries of one's life. The arrangement is aesthetic only, it is not true art in the sense that it manifests the eternal in time and space.

It is not unfair to compare these extremes: the one is the crystallization of ideals of a past age, the other the ideal dwelling for a future, mass society. What I oppose is the animating force of this vision of the future. Plato termed it the *Great Beast*, the *Social God*, an object of modern idolatry. To think and to act in accord with the emotions and prejudices of the multitude is a substitute only for a search for a true new order, a pseudo-renunciation of the self. The source of our present confusion is in our interior disintegration, which will in no way be halted by ordering ourselves in large scale buildings, however advanced they may be in technical terms.

Traditional living in Japan, culminating in the Katsura Palace—integration of man and nature

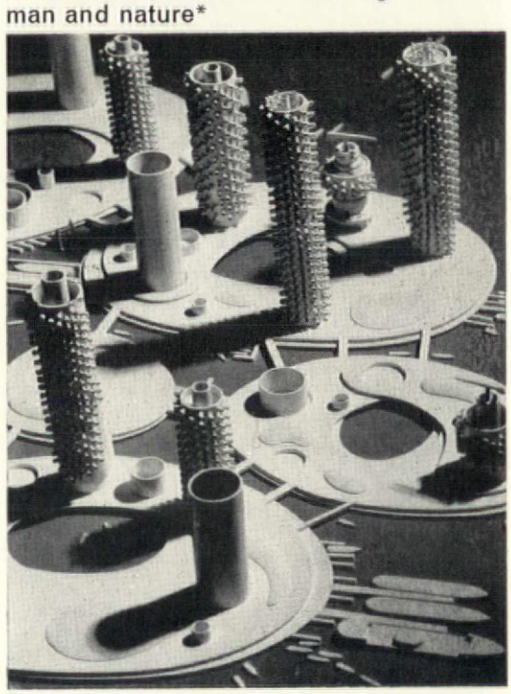


1

In the traditional way of living there is a conjunction between all natural characteristics of the country, a preference for wooden structure and an intimacy with nature.

No clear distinction is drawn between life and nature. They form a unity—in contrast to Western attitudes to nature in which it is conquered or exploited (as in romanticism), remaining always a counterpart to human existence, in Japan it is all as one. Nature embraces mankind. The realization of this unity in spatial terms has led to a truly human scale in old Japanese houses. 'Into the summer house came the garden and the mountains,' said Basho. For the technique of creating large openings was perfected early, the boundary between the interior and the exterior disappeared and the mountains in the distance became a part of the family within the house. Both internally and in the garden, living and dead materials are arranged so that the Western distinction between animate and inanimate matter has no meaning—the result of old Shintoistic animism and the Buddhist attitude to an object or form as an event and not a thing or substance.

Kikutake's concept of life in the towers of a marine civilization—disintegration of man and nature*



2

Living in mechanized towers is not a solution to the chaos of contemporary existence. Behind this vision lies modern man's desire to be free from an earth which represents to him bondage and restraint in his quest for external freedom. True freedom is to be found within and needs no towers in the air or plunges into the sea. Only a lopsided development of his intellectual powers can have made man conceive of so miserable an answer to human existence.

He has forgotten his other qualities or perhaps failed to understand that such one-sidedness leads to barbarism and is at the root of the mental unease both in individuals and in nations today.

*See *AD* October 1964, page 507

Changes—facts

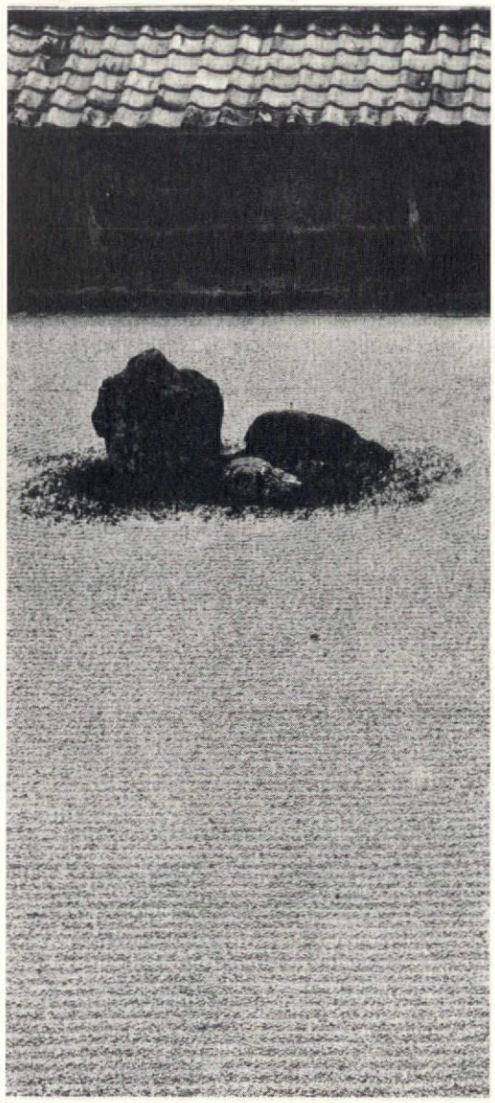
Both the broad massive rock sculptures at Ryoanji, pushing up as it were from the depth of the earth, and Giacometti's skinny, upstanding man, control to a great degree the space around them, but their difference in meaning is great.

4 Stone sculpture at Ryoanji
5 Bronze sculpture by Giacometti

Ku 空 Kyomu 虚無

Yu 有 Mu 無

Concept behind Buddhist space-expressions: nothingness, the all inclusive formless ground of everything



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The enclosure of Ryoanji is limited and defined, it is a space for introspection. The forms—the rocks—are not placed on the surface of the sand, isolated, individual objects in an empty space, but buried in the ground to emphasize their presence, their immovable weight and their belonging. The space around them is dependent on them, it is realized only through their agency. Form is emptiness and emptiness is Form.

In this *metaphysical nothingness* Buddhist consciousness uses the word Ku, void, emptiness in which 'nothing' is the positive complement of 'something' not the mere absence. According to N. Kitaro, void is the absolutely contradictory self-identity, made up of

Something and Nothing
Being and Non-being
Yu and Mu

It is the creative 'Urgrund' of everything, the transcendent and imminent unity and final 'place' in which all tensions and opposites are extinguished.

Past and Future
One and Many
Individual and Environment
Action and Reflection

Life and thus art are based on this concept of an ultimate, all-embracing, formless ground of self-unfolding nothingness, as revealed at Ryoanji, is no way pessimistic. On the contrary, it is personal, creative and liberating. It is a life utterly fulfilled.

Concept behind Existentialist space expression: nothingness, hopelessness and nihilism



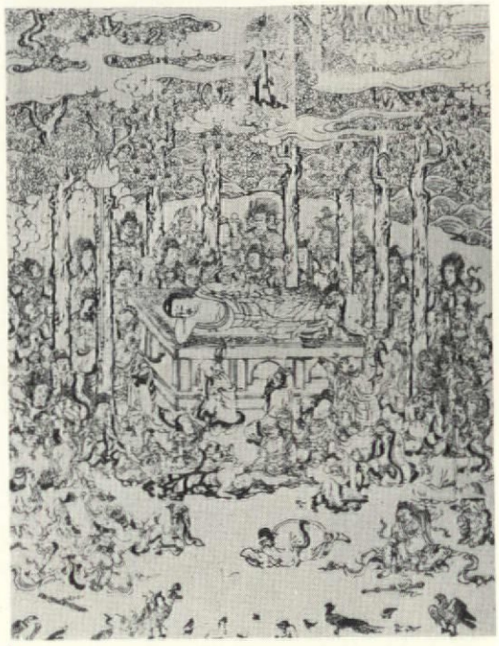
5

In Giacometti's sculpture it is the isolation of the form in space that is stressed; man is a figure lost in undefined and endless space. He is alone with nothing. This nothingness is entirely separate from man, it is the nothingness of black despair.

For this *ontological nothingness* of Western philosophy the Japanese have the word Kyomu, false nothingness, empty nothingness, implying the absolute absence of any entity.

Art based on such nihilism is, properly speaking, meaningless.

Emptiness, unity symbolized in the Nirvana pictures of Mahayana Buddhism



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Existence, duality, symbolized in representation of the Crucifixion



2

1 'Buddha entering Nirvana' Early eighteenth century
2 Rembrandt 'The three crosses'

In Mahayana Buddhism the *horizontality* of the dying Buddha implies contentment and repose not only within himself, but with all the world, animate and inanimate. Mahayana Buddhism rejects the idea of an external, higher existence, more real than the phenomenal world, it stresses the unreality or voidness of all phenomena. Void is made up of

Being and Non-being

Thus to believe in any form of *existence* is ignorance.

Buddha is not resurrected. In the East the transcendence of life is the transcendence of life and death, not *eternal life*.

In Buddhist philosophy there is a tradition of insentience (of no mind), which makes of matter and even of spirit itself, nothingness.

The Christian hero, suffering for the world on the *vertical* of the cross, conveys the eternal fight of the body and spirit. God is an external god, he has more reality than the phenomenal world.

His existence and ours are separate.

Christ is resurrected, that which has transcended life is *Eternal Life,* but as before it is not a part of our life. In Western philosophy therefore, idealism and materialism are inevitably opposed.

Conclusion

The young Japanese of today naturally sees things differently. He sees in his own tradition a spirit of resignation, a positive spirit of resignation as in old animistic belief—the *Mono-no-aware*, the 'emotion in things', or the *Suki* or *Sabi* of later times, culminating in the *Furyo* of the Edo period, the 'Floating with the wind'—all these he regards as subtleties of thought and feeling directed not towards the improvement of his surroundings, but as a means of ignoring them. They represent an unwillingness to fight against destiny, nature or one's situation.

It is not surprising that given a mystic, introspective tradition, the modern Japanese have been greatly attracted by the active, extrovert culture of the West, with which they have recently been brought into contact. Sadly, though, they have accepted too eagerly the science and technology of the West and have embraced with it the affirmative, aggressive Western attitude to nature. They have perhaps moved from one extreme to another. They have forgotten the teachings of their old masters who were aware always of the paradoxes and polarities inherent in everything. Any single-minded development—though it might bring momentum—is a mark of barbarism. True culture has always required a balance.

This decline from 'spirit' to mere 'intellect' is evident everywhere in modern Japanese architecture. Many architects are concerned only to glorify themselves in buildings that become monuments of false expression.* Others take social ends as the basis of expression, contriving an ideal architecture that is inhuman; a technical and mechanical triumph only. Worst of all, perhaps, they believe in material things and material ends, seeking to perfect matter and objects as ends in themselves, rather than to perfect the human soul through the agency of objects, which is the tradition of the 'Way', that unique concept of Japanese art and of the Japanese art of living.

*But obviously true humility or true art acknowledges that in what we call 'I' or 'human will' there is no source of self-sustaining energy.

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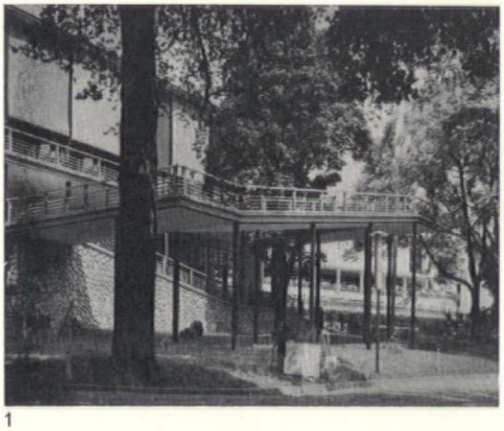
Junzo Sakakura, Kunio Maekawa and Kenzo Tange

In this issue we are featuring the work of these three architects who, more than any others, have been responsible for the introduction and assimilation of western ideas into Japanese architecture. All three were greatly stimulated by Le Corbusier in particular; Sakakura and Maekawa, who are contemporaries, worked for him in Paris during the thirties, and together supervised the construction of his Museum of Western Art in Tokyo during 1959. Tange, who has this year been awarded our Royal Gold Medal for Architecture, was instructed in Corbusian disciplines by Maekawa, for whom he worked during the early years of the war. Their followers who are legion and now dominate Japanese architecture have affected a wide range of styles from the contemporary commercialism which is rife in Tokyo to the projects of the Metabolists (see *AD*, October, December 1964); but all must eventually be judged in relation to these elder statesmen of Japan.

The material upon which this issue is based was collected and introduced by Professor Nobuo Hozumi and Jeremy Dodd.



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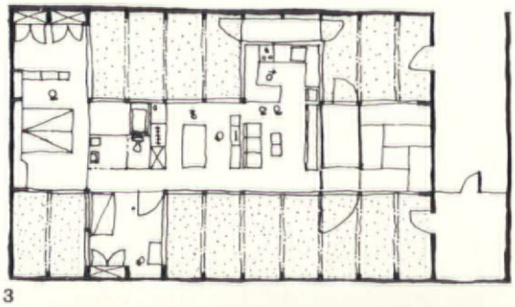

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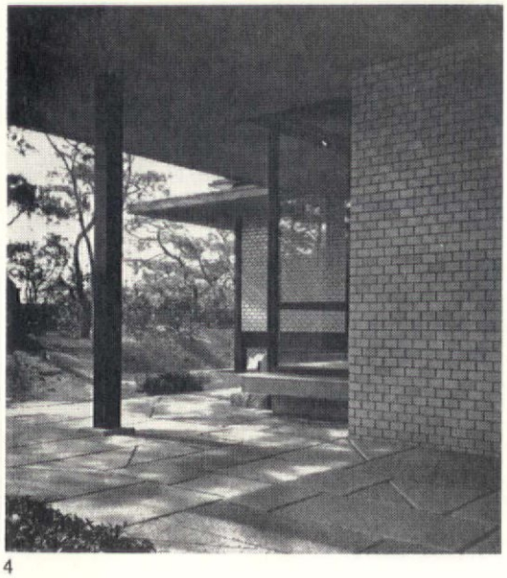

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Junzo Sakakura

Junzo Sakakura's lively architecture is the work of an adaptable man, young in spirit. He was a pupil of Corbusier before Maekawa, and is now sixty. A graduate of Tokyo University art history school, he wanted at first to be a painter, but even as a student became more interested in architecture. After this period under Beaux-arts professors, he went to Paris, in 1930, and studied architectural construction for six months in a technical school, on Le Corbusier's advice. He then joined Le Corbusier for six years, where, as with others, he was merely an unpaid apprentice and had to be supported by his father.

Soon after Sakakura's return in 1936, Maekawa won first prize for his Paris Exhibition Japanese pavilion. Sakakura returned to Paris to supervise the design; but changed site conditions made him propose a new design. Le Corbusier gave him advice on this. The pavilion in its new form **1** won the 'grand prix' of the Exhibition. It had grey walls, black painted steel columns, and stone covered slopes. The free flowing plan was based on the use of ramps. There was something of the feeling of the thirteenth-century Katsura palace in the detachment of the elements, an attempt to combine traditional arrangements and elements with contemporary architectural forms. This theme was yet more evident in his first important post-war commission, the Kamakura museum of modern art, designed in 1950 **2**. The framework, as in the Paris pavilion, is of exposed steel stanchions set on stone paving or, where they come down into the ornamental pool, on *kokkei-ishi* or moss-stones—the traditional Japanese column base. The white box supported by these columns is covered completely on the outer face with asbestos cement sheets, trimmed with aluminium; windows occur only in the interior court. The whole is conceived as a sharp and powerful contrast to the old trees and shrubs and shrines of the park in which it is set.

Life during the long period of militarism in Japan was not easy, and Sakakura was employed on planning various communities in Manchuria. In 1954 he designed the electrical generating station at Murayama, one of the most important of his early buildings and one which showed that he was capable of designing in a controlled western idiom, in advance even of the TVA's Norris dam, for example. He was a merchant's son and has largely drawn his work from commerce. At first much of his work was related to the Tokyu properties like the Takashimaya and Shirokiya department stores, which were remodelled or extended in a bold and straightforward manner. The Tokyu department store at Shibuya, Tokyo, is remarkable for its combination with a station for three different railway companies on three separate levels, one of which, the subway, runs right through the middle of the building. On the roof there is the planetarium and beer garden.

His more recent works have been even more ambitious. The Shinjuku redevelopment, also in Tokyo, involves not only a new railway station but a complete rearrangement of vehicle and pedestrian traffic routes in the area. The Ikebukuro sector of Tokyo is likewise being redesigned with traffic on various levels with towering buildings above. At Hashima he is responsible for the new town centre, once again connected to major rail and traffic routes.

Unlike Maekawa and Tange, who have hardly concerned themselves with domestic architecture, Sakakura has built private houses in all parts of Japan. In particular, his branch office in Osaka, under the direction of Nishizawa, has designed a range of court houses **3**. These follow the traditional pattern of the 'Kyoto house', which is built as a rule on a long narrow site, filling it from front to back with a series of small rooms and interrelated courts.

Generally the courts are looked onto rather than used as in the west where, following the tradition of Greece and Rome, they are regarded as an extra room. The Japanese design their courts as an enlargement or extension of the space of the rooms which overlook them, but in a conceptual rather than a physical sense. They are filled with water, moss or grass and rocks to give to the adjacent rooms a feeling of coolness and to allow contemplation.

Sakakura's modern versions of this customary arrangement are similar to the old and are often of traditional materials, though in recent works new materials have been used.

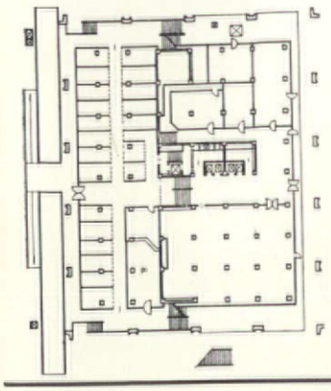
Brick paving has been introduced into many of the courts. And in such houses as that for the present foreign minister the whole has been conceived as a Miesian version of the traditional house **4** with stone paving everywhere and walls of hollow concrete blocks. The attempt to express the essence of Japanese architecture in modern terms is certainly less convincing than Sakakura's earlier design.

N H and J D

Photos: 1 Architectural Press, 3, 4 Japan Architect

1959 Silk centre, Yokohama

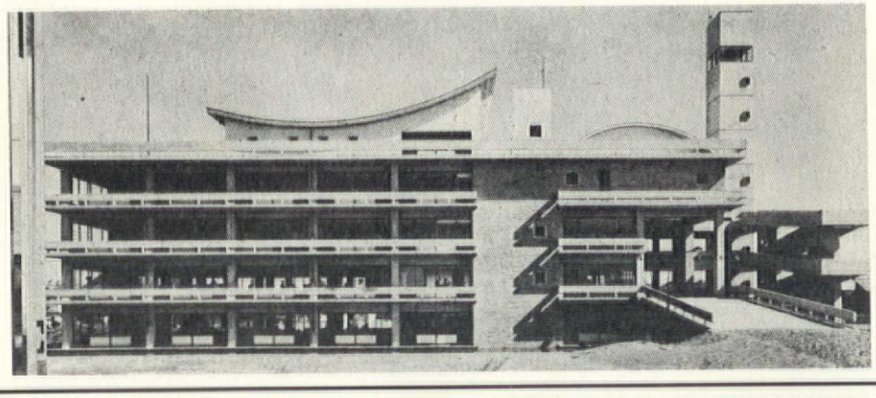
Photo: Kenchiku Bunka





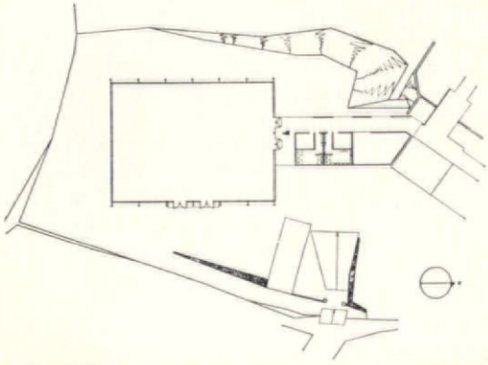
1960 Hajima city hall

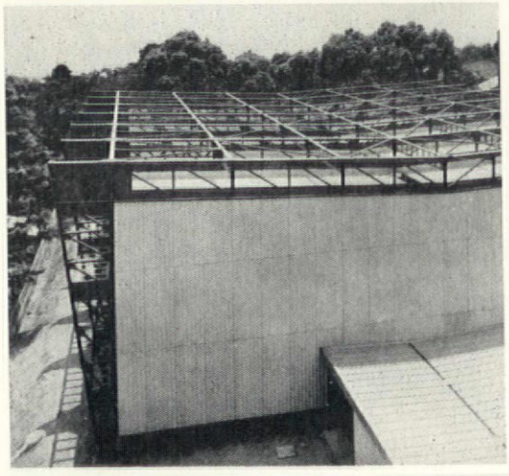
Photo: Japan Architect



1961 Ashiya Yamate school gymnasium

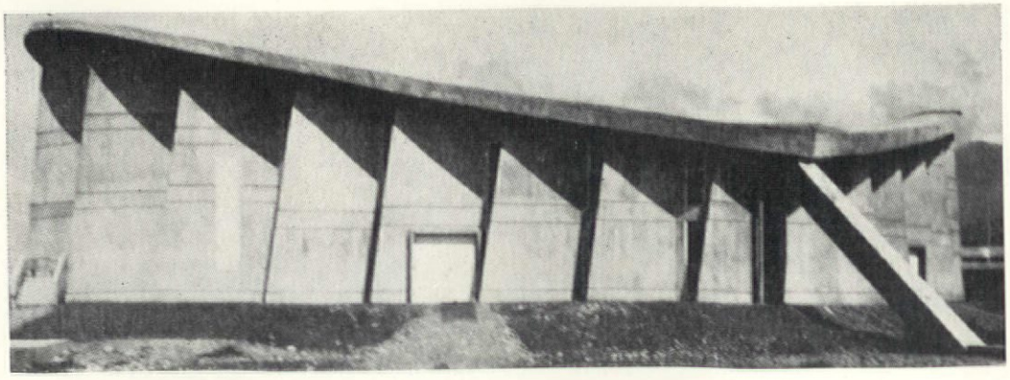
Photo: Japan Architect





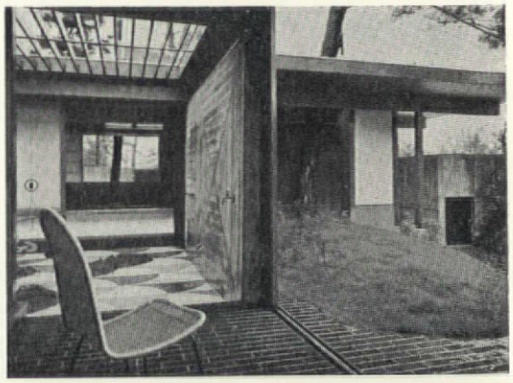
1961 Saijo gymnasium, Saijo

Photo: Japan Architect



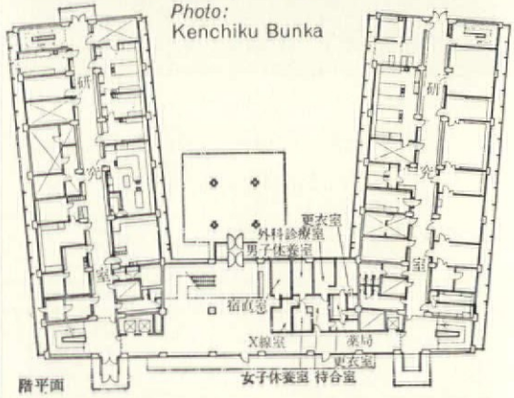
1961 House for Mr. K

Photo: Kenchiku Bunka



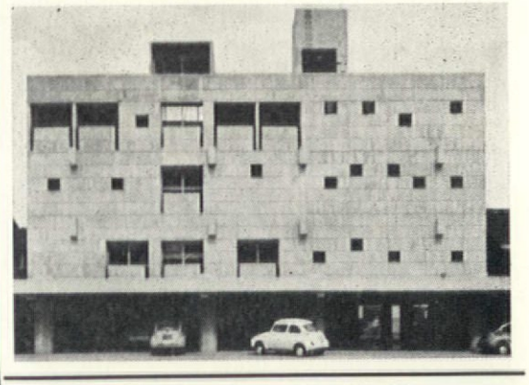
1961 Shinogi research laboratories, Osaka

Photo: Kenchiku Bunka



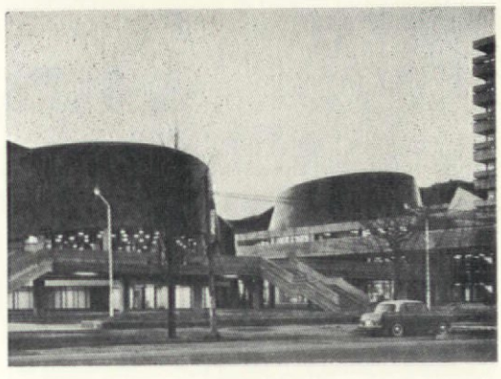
1962 Shinogi sales office, Kyoto

Photo: Kenchiku Bunka



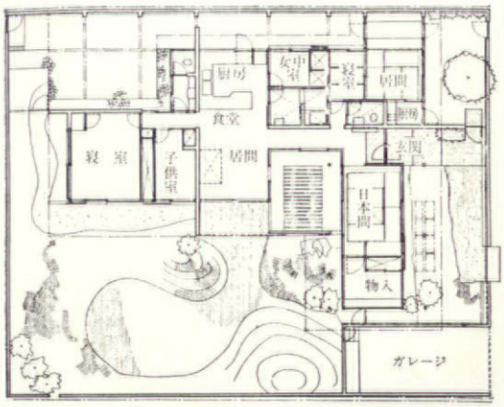
1962 Kure town hall, Kure

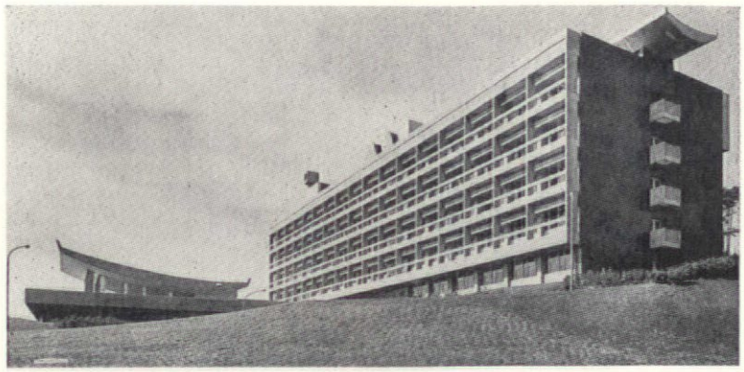
Photo: Kenchiku Bunka



1962 Toyo Rayon Co. laboratories, Ofuna

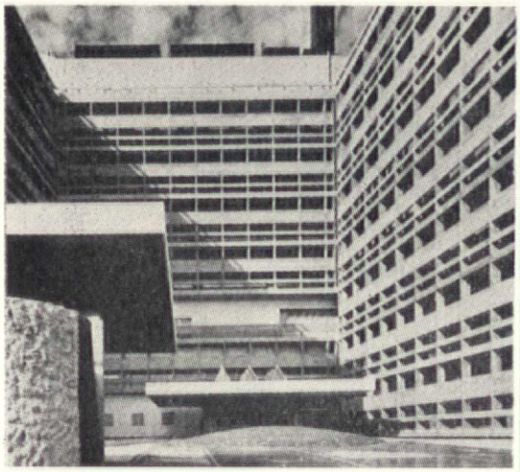
Photo: Japan Architect

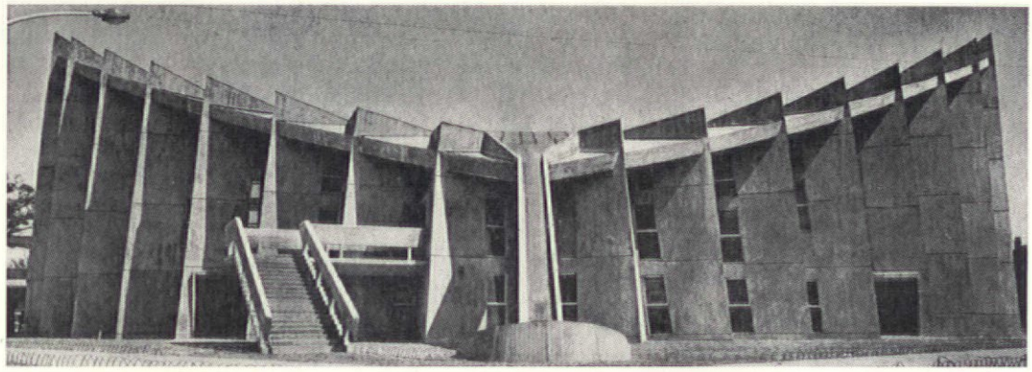




1963 Saga prefectural gymnasium, Saga

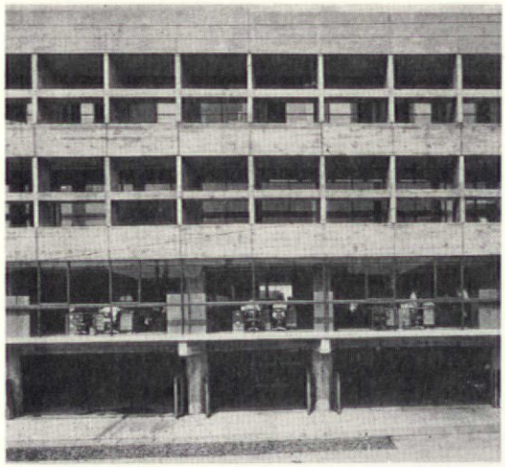
Photo: Japan Architect

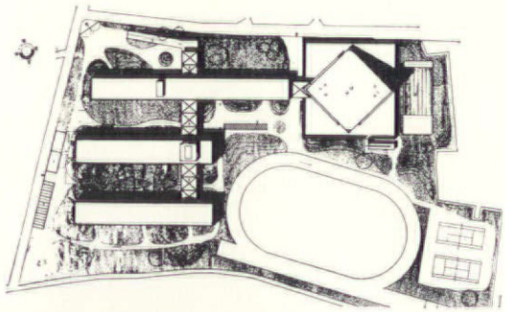




1964 Hannan high school

Photo: Japan Architect







1964 Senri town centre, Osaka

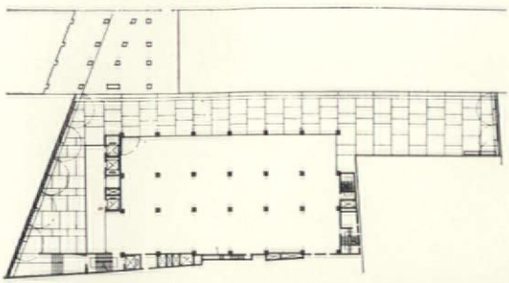
Photo: Japan Architect





Takashimaya warehouse and despatch department, Funaide

Photos: 1, 2 & 3 Japan Architect; *4 Toshio Taira*



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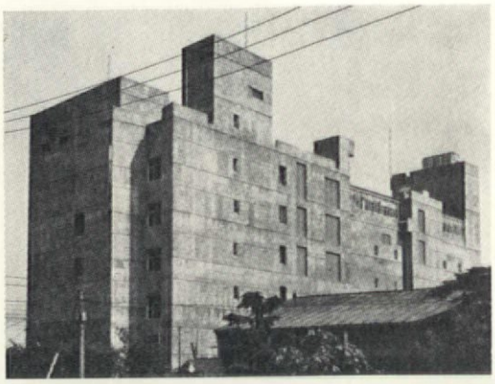

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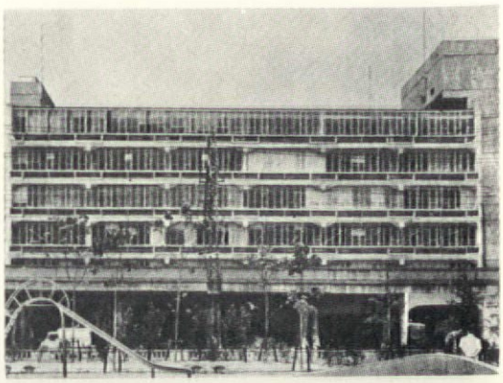

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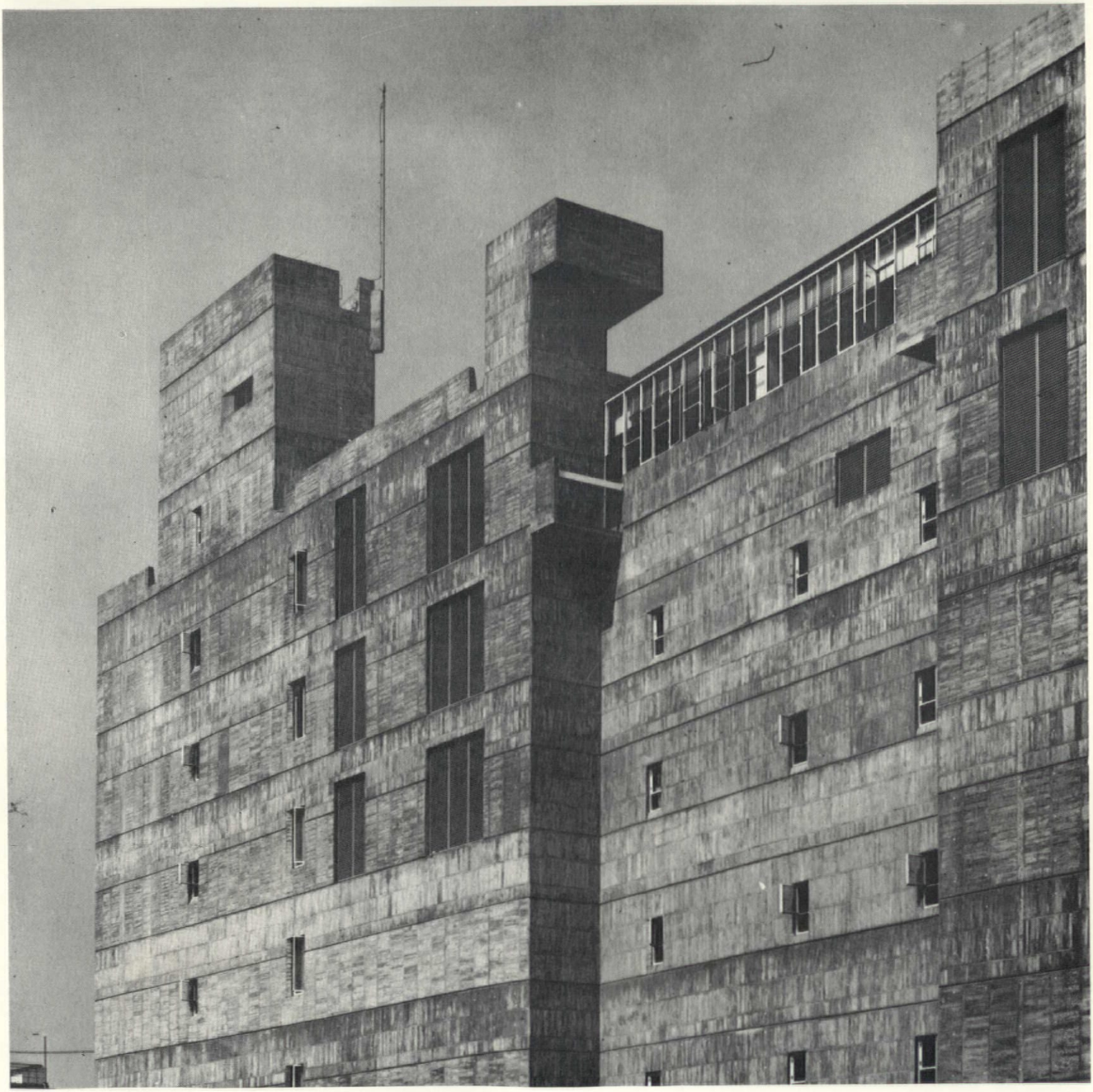
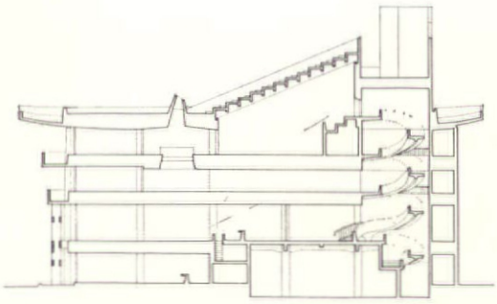


4

Hiraoka city hall

Photos: 1 Japan Architect; *2* Kendai Kenchiku; *3 & 4* Toshio Taira



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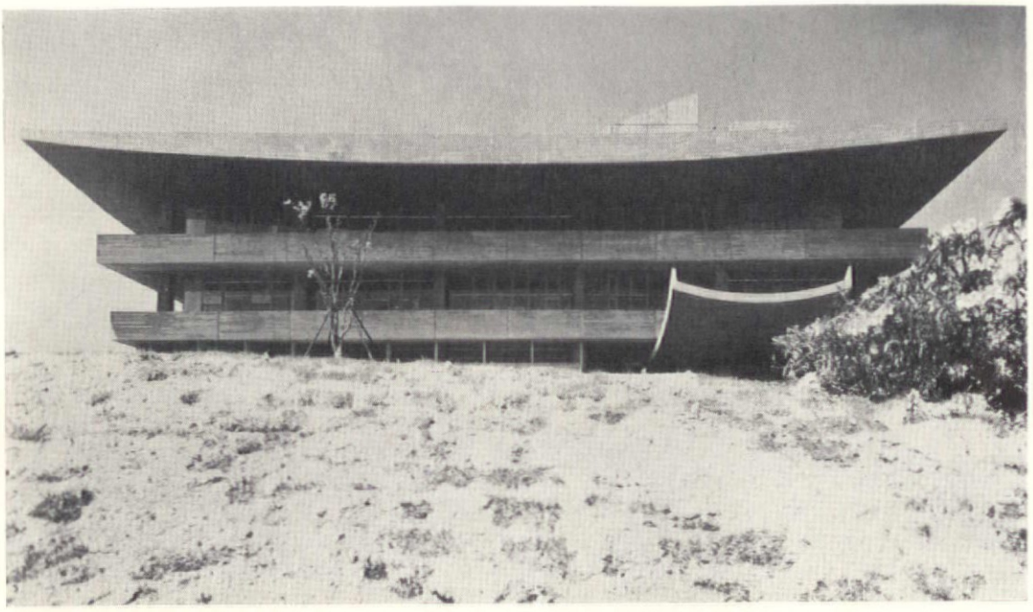

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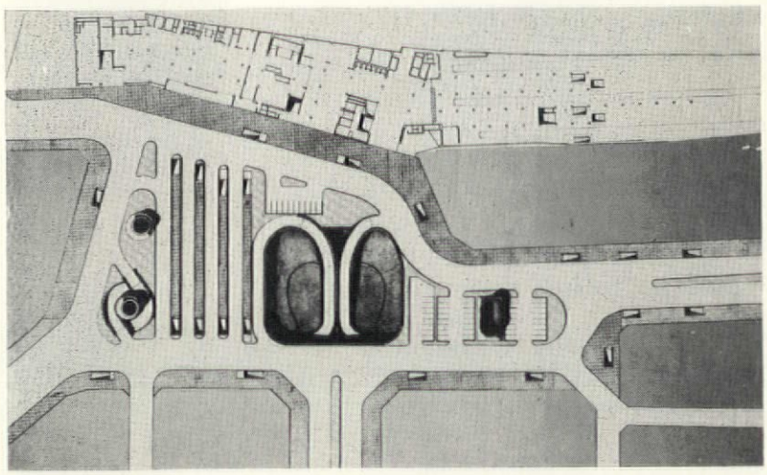
1964 Shinjuku redevelopment, Tokyo

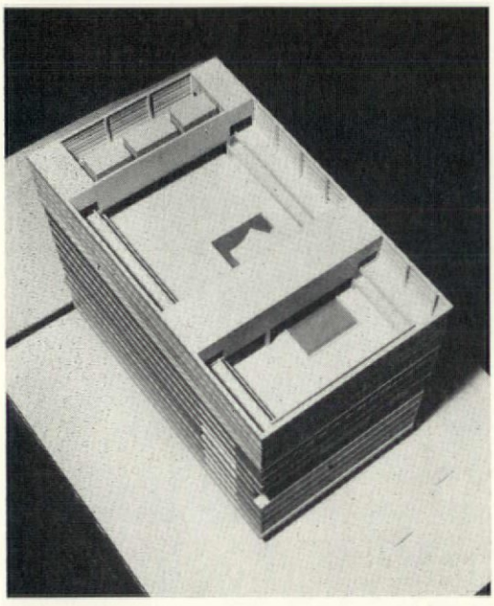
Photos: J. Dodd



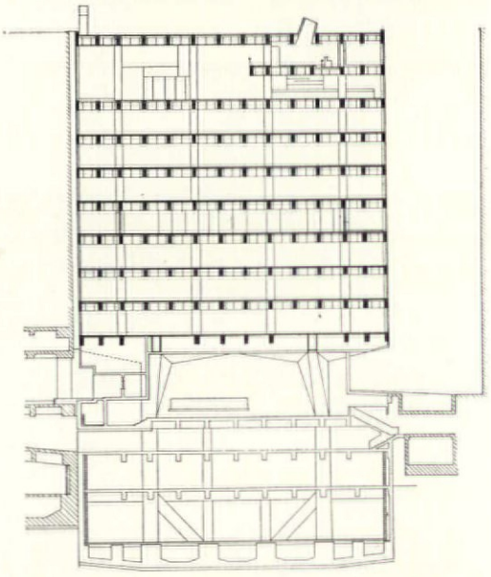


1964 Kintetsu building, Nagoya

Photos: J. Dodd

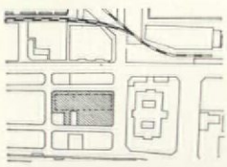


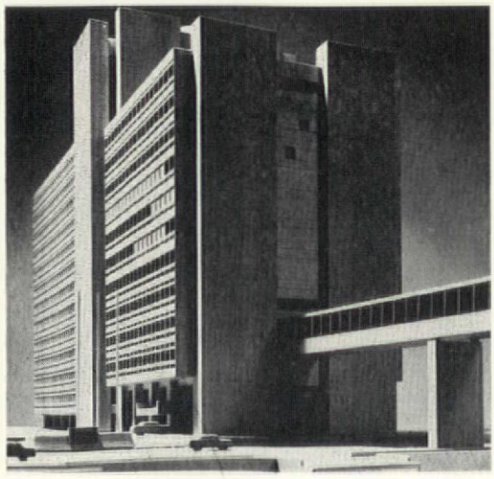


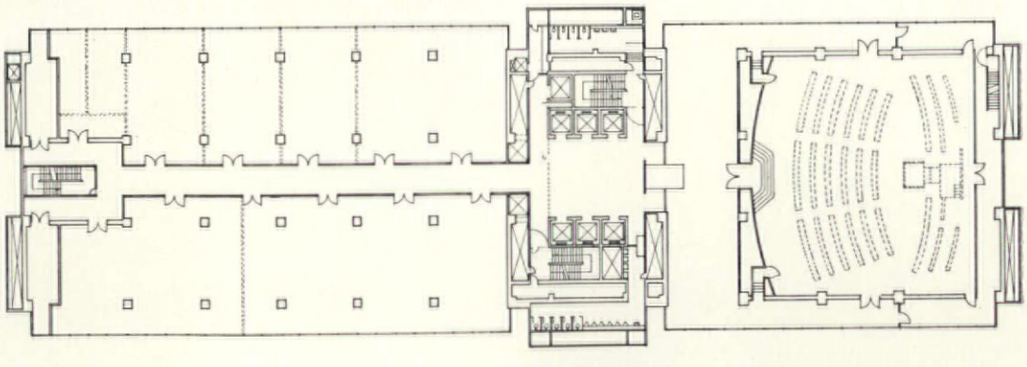


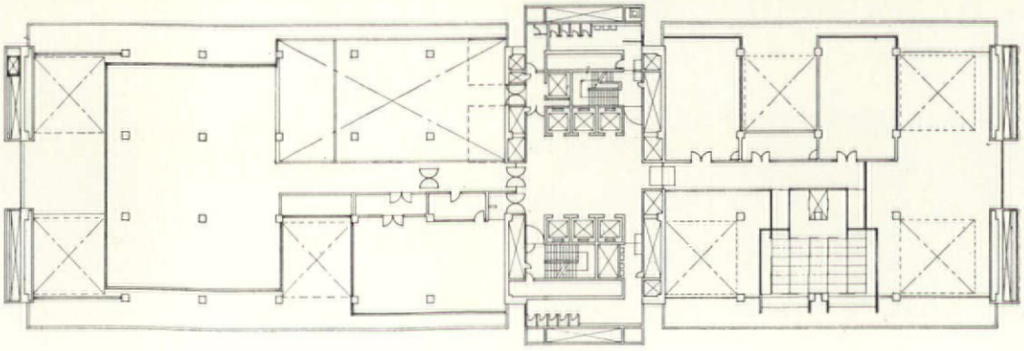
1964 Prefectural offices, Kanagawa

Photo: M. Otsuka









Maekawa began his professional career by working for Antonin Raymond, but opened his own office, in 1935, after winning third prize in a pre-war competition for Tokyo City Hall. His early work centred around remodelling of Morinaga Candy store and many branches, as well as competitions for the National Museum (1931, no award), Hinomoto Association building (1st prize, 1932), Darien City Hall, Manchuria (1st prize, 1938), Showa Steel Co., Head office in Manchuria (1st prize, 1938).

As a student Maekawa had been a very great admirer of Le Corbusier, especially after publication of his League of Nations design in 1927. His uncle was Ambassador in Paris at the time, so that with his help, the very day after graduation, he set out to go to work under Le Corbusier. After two years in Paris he returned and joined Raymond's office.

During the China war he designed various houses from a branch office in Shanghai, and continued with work arising out of military needs until the end of the Pacific war.

After what must have been a very difficult period for all architects in Japan, he began civilian work again with the two-storey wooden framed bookshop for Kinokuniya in 1947. He was one of the leaders in the movement for making prefabricated houses. There were some thousand units produced to various designs from his office. Unfortunately, due to low standards of finish and high cost when compared with traditional construction, they were not generally popular. His design for Keio University hospital, in 1948, as a two-storey wooden frame building was excellent, and had a great influence on young architects at the time. It was straightforward, made use of ramps and made no concessions to previous stylistic pretentions that characterized so many pre-war and wartime civic buildings in Japan. It is now destroyed, to make way for other buildings.

In 1951 he received the Japan Institute of Architects' prize for the Nihon Sogo Bank. Then followed Kanagawa Music Hall and Library and, in 1953, the Okayama Prefectural government office competition (1st prize but not built). In an open competition for the Diet library (1954) he won the first prize, but the actual building was designed by the Ministry of Construction architects. His design was not built, but was 'stolen' and adapted.

In 1953 he designed his own office building, in Yotsuya, near the railway station of the same name on Tokyo's loop line. It is a direct and simple three-storey block on piloti, the infilling to the frame being in special hollow blocks with drainage outwards from the cavity. From this time onwards he was working with furniture designer Mizunoe on good plywood furniture. The next year, 1954, he designed the Fukushima Institute of Education auditorium and the Nishihara plumbing company's distribution centre. The main interest in the latter small project is the use of precast concrete units to make a 'mantle' around the interior spaces. These are frames, about 5ft × 2ft and 5in thick, that are cast with steel sashes embedded in, or fixed glass panes, or tile panels, to suit the particular needs.

A six-storey dormitory for the Japanese Broadcasting Corporation (NHK) looking like a small 'Unité', was built in 1955 near Shibuya, on the Tokyo loop line. Like Harumi, it has corridor access on alternate floors. In the following year he designed Harumi and the Brussels Pavilion. In 1957 he designed the Hirosaki City Hall in the far north of Japan. A straightforward four-storey building, it has a strongly projecting roof and second floor slab, in an attempt perhaps to relate it to the ancient temple opposite. It is designed with a single storey section and a garden lies enclosed by walls behind it.

Two remarkably fine buildings were completed in 1958, Gakushuin University group, and the Kyoto Cultural Centre. In the same year, Maekawa entered the Leopoldville and Toronto city hall competitions.

Tokyo Cultural Centre was completed in 1961, and in 1962 the Okayama Cultural Centre was completed. In 1964, four important buildings were opened: Gakushuin University library; and the multistorey Kinokuniya bookshop in Shinjuku, on the loop line in Tokyo; a small but interesting museum, the Hiyashibara art museum in Okayama, a 'C' shaped building, with a roof structure of exposed concrete 'I' beams, the lower flanges narrower than the top so that while the top flanges form a continuous roof deck the latter leave space for all services; and a large office building in Tokyo Janome for one of Japan's largest sewing machine companies, a building which also makes use of the 'I' beams but they are treated with sound absorbent on the lower face.

Maekawa has a very vigorous and young outlook on life and will probably continue to explore the possibilities of circulation, surface textures and space, which have particularly interested him in the past. Industrialization is still of prime importance to him, as it is to Tange. He is very conscious of the need to create *public spaces* in Japan where there is no tradition of the Greek Agora. His fine spaces in the Kyoto and Tokyo cultural centres are public, and can be freely entered in the daytime. They are more human in feeling than Tange's. On the other hand Tange's work is more disciplined and intellectual and follows a more ordered pattern of development. But Maekawa has great intuitive power, particularly in relation to auditoria and their foyers—to people as a collection of individuals in relation to space, compared with the 'mass-human' Tange conception.

While Tange was working for Maekawa, he designed a two-storey wooden building (1940), the Kishi Athletic centre in Tokyo, Iidabashi. Although in poor condition now it is still standing

Now both men are great architects of world stature and stand as the leaders in Japanese architecture. They have both done much to develop the modern movement in Japan, and to restore confidence, so that the architecture becomes a true product of Japan, although it may have started from Europe, just as the Japanese house had its roots in fifth century China.

N H and J D

Thoughts on civilization and architecture

Kunio Maekawa

For the past 100 years, we Japanese have been engaged in a ceaseless effort to assimilate the civilization and institutions of Western society—not only to protect ourselves, but also because of our cravings for the amenities of the Western way of life. To compete with the West, we had to have the same implements as the Westerners. Furthermore, we had first to implant the civilization and institutions which had given birth to these implements. Whether or not this has been conducive to our happiness as human beings is, of course, an entirely different question. At any rate, at the present stage we are confronted with two big problems.

Firstly, have we not remained woefully ignorant of the spiritual background of the West which gave birth to this cultural complex? Furthermore, will this transplanted civilization be able to flourish by itself in Japan, which has a radically different climate and spiritual background?

The second problem is that Western civilization bears within itself the seeds of self-destruction. According to Toynbee, Christianity has at its very roots an innate spirit of intolerance. In search for a way out, Toynbee seizes upon Buddhist philosophy. I believe that such a plunge into Buddhism is too abrupt for Westerners.

I should like to deal in concrete terms with the manner in which the Post-Meiji Period Japanese assimilated the civilization of the West with such great difficulty. Also, the manner in which Japan's modern industry was built at the price of innumerable sacrifices by her people.

Research laboratories have recently been the vogue in Japanese industry. Although there may be some exceptions, I observe that in nearly all cases these research institutions do not differ essentially from research laboratories of universities in the past. They consist merely of rows of individual laboratories, each provided with its own equipment and staff. They are indeed huge, but size has merely the significance of arithmetical addition. One practically never sees a research institution with a network organization such as exist today in America in the field of industrial development and research. It has been reported that the US research for the development of the Polaris missile was performed by research institutions all over the country which were allotted more than 3000 coordinated research tasks. The problem of reducing the launching schedule by two years was successfully solved by using electronic computers to detect the weak points and bottlenecks in this vast research organization. It has been pointed out that future developmental research for industry must be carried out by just such a comprehensive research system. One may predict with certainty that Japan's present organization of research, with its motley aggregations of individual research teams, will be quite unable to cope with the conditions of industrial development in the future. I am also sceptical about whether it will be possible to formulate new patterns of research organization, if the typical Japanese human relations are preserved in their past traditional forms.

My interest in Japan's industrial development is focused squarely on the basic and decisive differences in human relations which exist between the Japanese and Westerners.

If I may digress for a moment, I should like to confess that when holding discussions with Westerners I am frequently bothered by an irritating feeling that we cannot develop a sensitive rapport between us. Of course, a great deal of this impatience is attributable to the problem of semantics. However, even at that, I often feel that the differences in emphasis in our arguments and, consequently, our misunderstandings of each other are quite serious. On careful consideration, it seems to me that the basic assumptions which each side assumes to be self-evident are by no means self-evident; rather, each party is merely flailing the air emptily on the basis of his own assumptions which do not have validity for the other person. There is a deep divergence in the thought patterns and in the human relationships between persons who from birth have been taught to say '(I) thank you', and persons who have grown up with a simple expression of gratitude like 'arigatō (thanks)', which lacks both a personal subject and an object; or between persons who have grown up hearing constant references to 'Mr such-and-such' and 'Mrs such-and-such', and persons who have not. These deeply ingrained divergences seem to be more and more important the more one thinks of them.

It is evident to everyone that it is impossible to ignore the mentality which has been tempered and grown up around the accumulation of the 2000 years of Europe's history. And it is only natural that language, the means of expressing these thought patterns, should be among the main elements supporting this mentality.

In this connection, the question of China comes to mind. It is well known that China is now conducting an extremely energetic campaign in the field of education in an attempt to eradicate illiteracy. In connection with the dissemination of education, one question which has attracted much attention is the simplification of the Chinese script. According to the explanation of Professor Yang, the vice-chairman of the UIA (Union Internationale des Architectes), a council of outstanding scholars has been formed to create a new script based on scientific foundations. Several years ago, on an airplane bound for Europe, I happened to meet an American medical scientist who expressed an interesting opinion on this subject. After spending many years in China, he concluded it was quite probable that the Chinese would carry through the reform of their national language. He said that in China, the reform would begin first with simplification of the script and unification of the dialects; the ultimate goal would be the adoption of phonetic writing. This, he said, is truly an immense undertaking which the Chinese would carry out at all costs. Upon its completion, he said it was quite probable that the traditional Chinese thought patterns would undergo a vast transformation, and at that time modernization of China would rush forward at a tremendous speed. He asked what Japan intended to do in this event, and suggested that we Japanese should now give due thought to these future eventualities.

One of the basic reasons why underdeveloped countries become interested in Western civilization and attempt to assimilate it is feelings of envy for the amenities of the Western way of life. Naturally, the underdeveloped countries must also focus their attention upon the social system which gave birth to these amenities. In Japan we imported and nurtured the Western system of parliamentary government. However, the problem still remains whether this system will be able to develop and flourish in a society where human relations are essentially different.

Although there may be some politicians who would characterize the present situation in Japan as a state of economic prosperity, and although the common people may be able to feel a certain satisfaction in the momentary comforts of life, our natural beauty is being marred by 'civilization', our once-green landscape is diminishing rapidly, and our modern cities are becoming full of corruption and crime. In such an environment, where could one possibly find any human dignity?

Today, there is no reason why we should feel any basic antipathy towards industrialization or modernization. But their speed has been so rapid that human beings have been unable to keep up with it, either spiritually or physically. Self-defence is one of the purposes for which industrialization of the underdeveloped countries is being pursued. One of the underlying reasons for the present world instability is the alarming gap between the advanced and the underdeveloped countries. Since backwardness in any one country is dangerous for that country itself and contributes to world instability, problems of this type can be solved only on a world scale. Certainly, today's antagonism between the Eastern and Western camps is a serious threat to the destiny of mankind as a whole. However, the disagreements in world view expressed in terms of liberalism and totalitarianism may well be regarded as being basically symptoms of the agonized dualism inherent in the modern Western spirit, with its contradictory ideals of 'freedom' versus 'equality' and 'egoism' versus 'altruism'. If the opposed camps of East and West would begin to reflect upon these agonizing contradictions in such terms, then I think the day may not be far off when today's antagonisms will be remembered as a historical episode like the old European religious wars, which can hardly be considered sane from today's viewpoint.

The *plan libre* and the *façade libre* were, so to speak, the leading slogans of modern Western architecture. They served as the rallying point in the struggle against the 2000-year-old tradition of spatial composition. On my return from Europe some 30 years ago, I decided to experiment with them in actual practice. However, it always proved impossible to carry them out in reality. For example, in order to have free partitions, one must have flat floor slabs and flat finished ceilings; only then is it possible to make the partitions simply and economically feasible. However, for structural reasons, flat slabs cannot be produced easily in Japan in a manner which will satisfy the feasibility of such requirements. For this reason, if one attempts to use free partitions, one must have large and small beams projecting out from the ceiling, and the partitions must be laboriously bent to make them fit properly into these projections. This work is extremely difficult and involves much trouble and time. Thus, if flat slabs cannot be realized in an economical manner, one must then abandon the whole idea of the free plan and the free façade, which are the guiding principles in modern Western architecture. At that time it seemed to me that modern Japanese architecture in Japan would have to make a fresh start

from the level of the architecture of Auguste Perret.

About 30 years ago, when I submitted my project for the Tokyo City Hall, I attempted to apply the principles of Perret almost without modification, and for this reason I was severely criticized by a senior colleague. Subsequently, during the isolated period of 15 war years, I never for a moment forgot these guiding concepts of modern architecture. It remained my dream somehow to realize these concepts in such a way as to raise the new architecture of Japan to the level from which modern Western architecture took its departure. During the post-war period, I grasped at several opportunities to carry out my ideal. But in each case, it has resulted in a compromise. My ideal has still not been realized. The extreme difficulties involved in the concept of balancing clients' wants and needs have been deeply impressed upon my mind. Nevertheless, an architect cannot abandon his ideals. This concept contains, I believe, the rudimentary principles of the noble mission which will some day burn in the breasts of architects when modern architecture has finally awakened to its rôle as a 'human architecture' in the true sense of the word.

Modern architecture is and must be squarely based on the solid achievements of modern science, technology, and engineering. Why then does it so often tend to become something inhuman? I believe that one of the main reasons is that it is not always created merely to satisfy human requirements, but rather for some other reason, such as the profit motive. Or an attempt is made to cramp the architecture into the framework of some budget formulated by the mechanical operations of a powerful bureaucratic system of the modern state, this budget having nothing to do with human considerations. Another possibility is that inhuman elements may be contained within science, technology, and engineering themselves. When man attempts to understand a certain phenomenon, science analyses it, breaking it down into the simplest possible elements. Thus, in structural engineering one attempts to understand a structure, the methods adopted are those of simplification and abstraction. The question arises of whether the use of such methods may not cause a departure from human realities.

Naturally one ought to take into consideration the friction which exists between the spontaneity and irrationality inherent in human beings, and the immaturity inherent in science and in the new architectural techniques.

At times we are powerfully attracted by masonry or lintel constructions. This is probably because such constructions are easily comprehensible. However, these masonry and lintel constructions can be analysed by today's structural dynamics in the case of low buildings; but the rigid frame construction must be adopted in multi-storeyed buildings. In higher, skyscraper-type buildings, one is usually forced to adopt an extremely simple and clear plan of a symmetrical type, if not for the purpose of analysis, at least because of budget difficulties. In this sense, it is possible that the cold, inhuman appearance of the modern architecture of today will be capable of solution if further technological advances are made or if society as a whole becomes extremely affluent. Although it is natural for us to cherish such hopes, we must still realize that under the actual conditions of today it is not possible to make too exacting demands of the structural engineering of modern architecture.

Another important question is the problem of the unbalance between the finishing materials used in architecture and the present state of structural engineering. For instance, a building is an artificial means of protecting us from wind, snow, and rain. Nevertheless, it is still no easy matter to keep out rainwater. I feel this particularly strongly when viewing the shell structures of Felix Candela. The structures themselves may indeed have the impressive forms unique to shell construction. However, how is the rainwater kept out? By black asphalt waterproofing of the time-honoured type. I do not understand why the architectural critics close their eyes to these glaring contradictions and continue their chorus of indiscriminate praise.

Modern architecture attained its true awakening as modern architecture in Europe, when it awoke to its responsibility to humanity. Yet, in spite of this deep sense of mission and this profound pride, architecture has with the passage of time been forced to betray the expectations lodged in it by humanity. However, we cannot turn back. Progress means a greater degree of freedom; on the other hand, it also means greater instability. We may say that contemporary man, who has now begun to think of the possibility of the total destruction of mankind, has won unprecedented freedom, unprecedented anxiety, and unprecedented progress. In this sense, his attainment of modernity was a step forward towards progress. Under these conditions, all that man can do is to choose his own colourful destiny.

However, it is only natural that these actions cannot be judged by nineteenth-century standards. This is the reason why a revision of the system of values, and a reform of ethics, are being called for. In this connection I am reminded of the patterns of thinking of the anarchists at the time of the French Revolution, who laid more emphasis on society than on the state, and on human needs than on the pursuit of capitalistic gains. The freedom purchased by the bloodshed of the French Revolution, turned out to be a mere illusion. Although the political system was supposed to have been based on liberty, equality, and fraternity, all that was evident was economic enslavement, social inequality, and the class struggle. Faced with this contradictory reality, socialist thought split into two camps. One group encouraged the proletariat to organize its own social forces into a power system in opposition to the state, which was the organ of power of the bourgeoisie, and its bureaucratic system. The other group stood for anarchism, which completely rejected all power. The former group, consistently working out and developing its unified world view, became a mighty power system which plays an important rôle today. But the latter attempted to overcome the contradictions between freedom and equality, between self-love and altruism, by a thoroughgoing denial of all power. This denial of force led to the absence of any powerful organization for self-protection, and contributed to the collapse of the movement. At any rate, I feel considerable and sympathetic interest in the fact that there existed at that time an anarchist movement which attempted to replace state power with human society, and to substitute human requirements for the arbitrariness of capital.

As I mentioned above, modern architecture came to a true realization of itself as 'modern architecture' only when it attained an awareness of its social mission. The question of whether something is 'economic' or not from the standpoint of the masses, was the precious rudimentary principle of 'modern architecture', and the modern architect was required to be the true representative of human requirements. From the very conditions under which it was born, a social tendency was engraved on modern architecture. It is only natural that so many of the pioneers of modern architecture are listed among the ranks of the Saint-Simonians and other groups of utopian socialists.

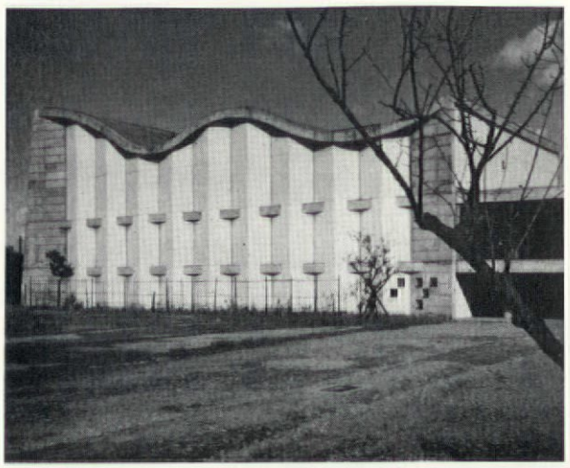
Capitalism, as well as utopian socialism and later forms of socialism, all cherished optimistic expectations concerning machine civilization. But has machine civilization been man's saviour? What has become of the sense of mission, the rudimentary principles of modern architecture? In the antagonism between the Western and Eastern camps in the world today, one notices very little significant differences in their basic thinking about the machine. In both cases, the most urgent task seems to be industrialization and modernization on the basis of a thorough-going worldly optimism. As was foreseen by the anarchists, there has been an ever-increasing accumulation of capital. State capital and international capital have become more and more powerful, and state power has been increasingly enhanced, while its bureaucratic system has been strengthened. And the human environment has steadily become more and more inhuman, as we can see all around us today. It is clear to everyone that it is the power structure of the state and the arbitrariness of capital which are distorting the sense of mission of modern architecture and are beclouding its rudimentary principles.

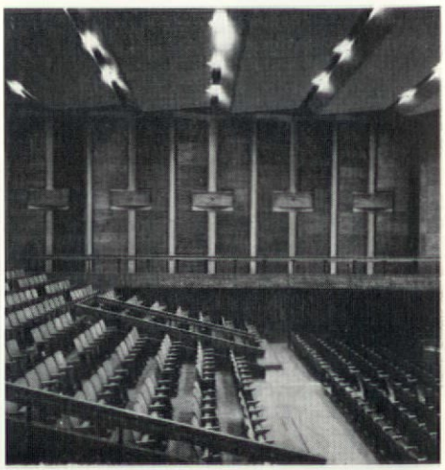
Modern architecture must recall its rudiments, its initial principles as a human architecture. Whereas science and engineering are the products of human brains, the modern architecture and the modern cities which are built by them tend to become inhuman. That which has beclouded the rudimentary principles of modern architecture, that which is distorting its sense of mission is today's ethical system regulating human action, and the system of value judgments concealed behind this ethical system. These ethical and value criteria are the forces which are moving modern civilization but are also obliterating human dignity and making a mockery of the Declaration of Human Rights. The conclusion of the tragedy is by no means simple. We must go back to the beginnings of Western civilization and discover whether the power to bring about such an ethical revolution can really be found in the inventory of Western civilization itself. If not, then we must seek it, together with Toynbee, in the Orient, or perhaps in Japan. I wrote above that many problems were involved in the question of how machine civilization will be developed in the future by Japan's own power, and how the patterns of Western civilization can be applied to the Japanese patterns of human relations, which cannot easily be altered overnight. These problems are connected with the question of whether Japan may possibly serve as a source of influences contributing to the future development of Western civilization.

In order to prevent our first principles from being forgotten, profound reflection and consideration must constantly be given to human dignity and to human destiny. At the same time, I think that we should beware of an excessively facile use of words such as 'humanity' and 'anti-humanism'.

1954 Fukushima cultural centre

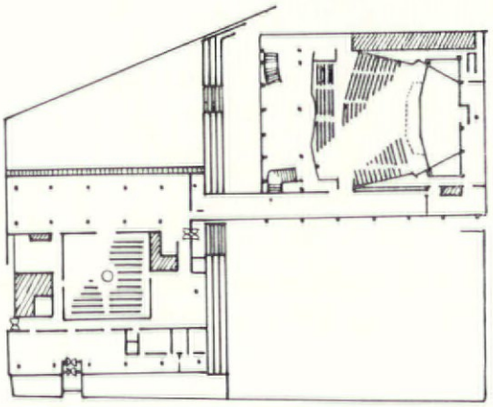
Photos: Y. Futagawa





1954 Kanagawa cultural centre

Photo: Y. Futagawa

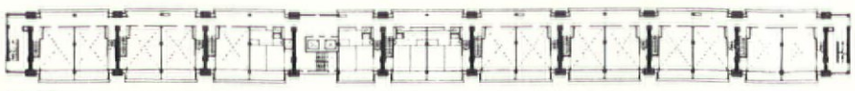






1956 Harumi housing, Tokyo

Photos: Casabella*; Lehmann*



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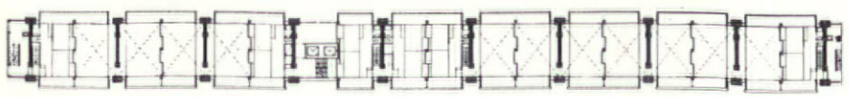

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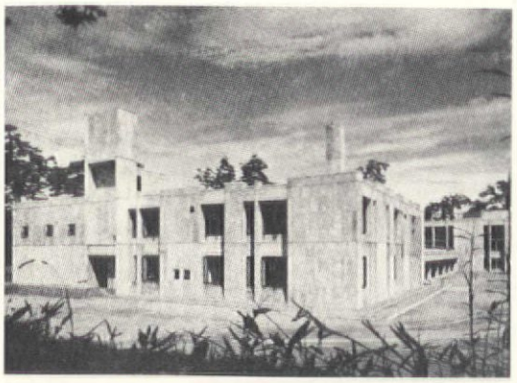
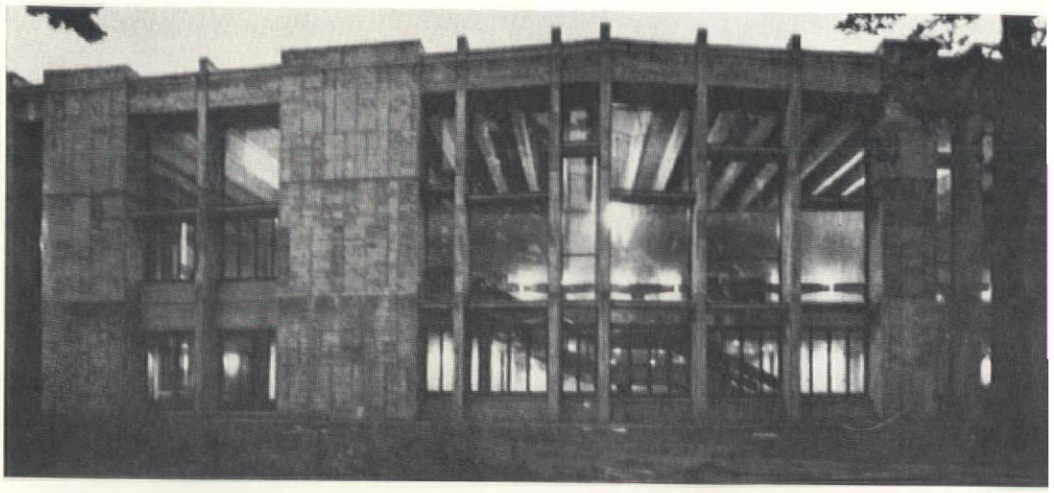
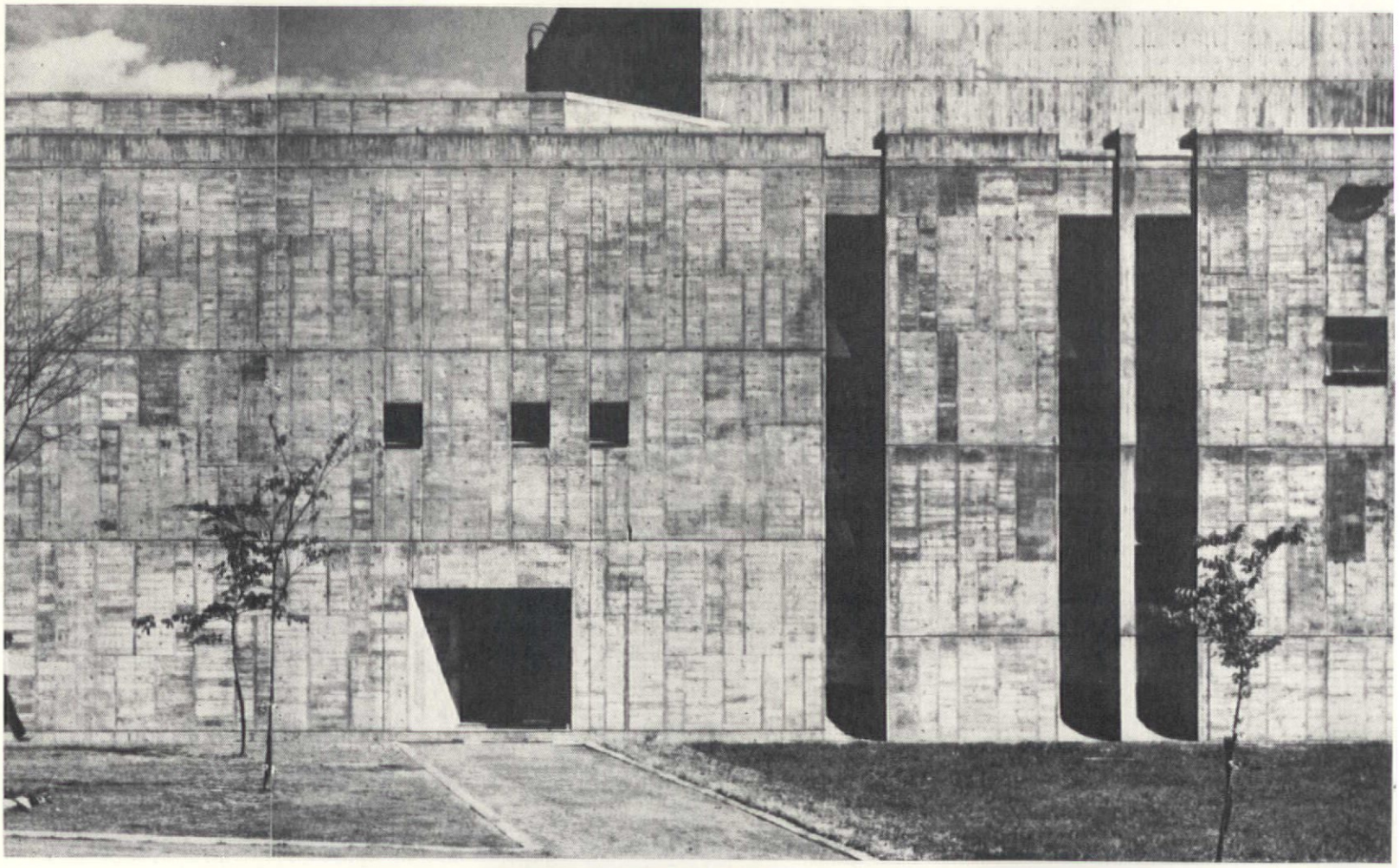
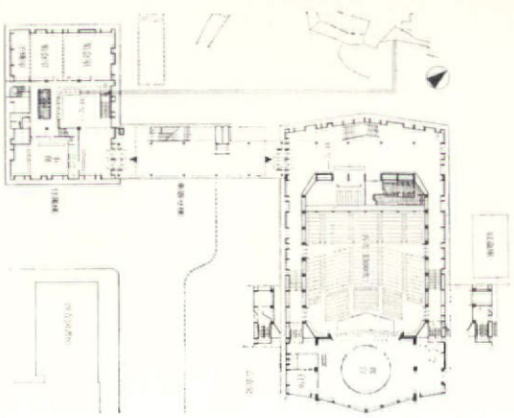
1964 Hirosaki cultural centre

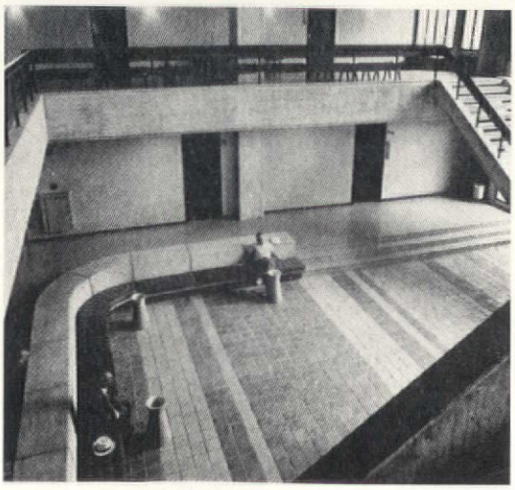
Photos: Kenchiku Bunka

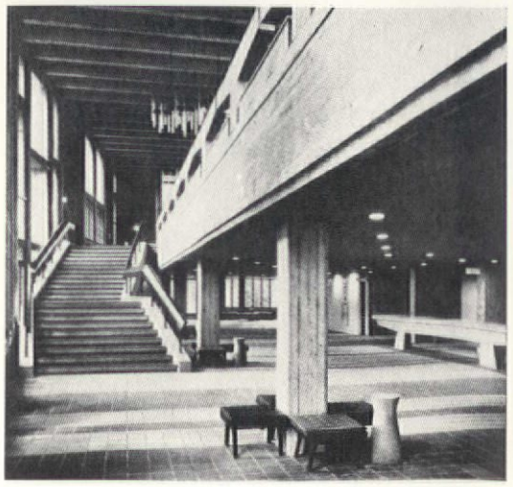




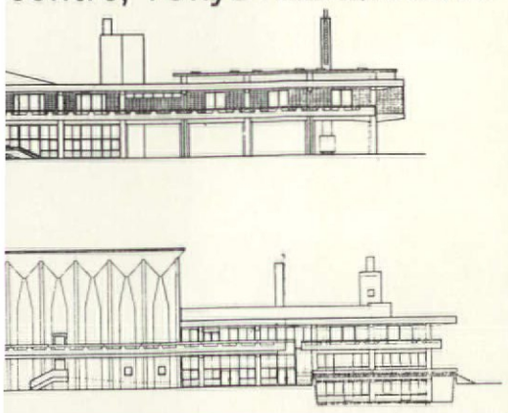


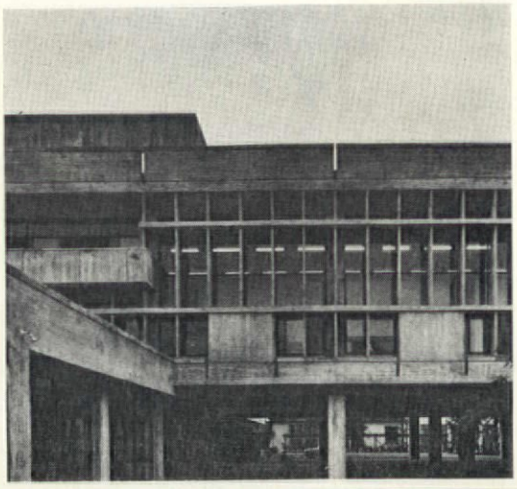




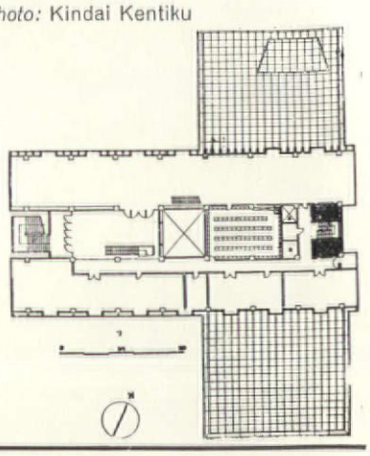


1958 Setagaya cultural centre, Tokyo *Photos:* Japan Architect

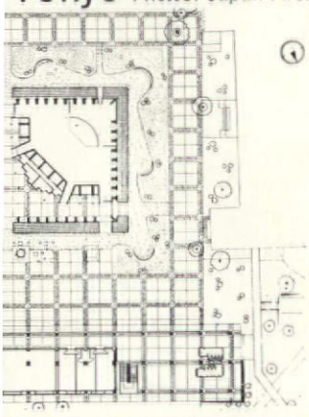




1962 Okayama cultural centre *Photo:* Kindai Kentiku

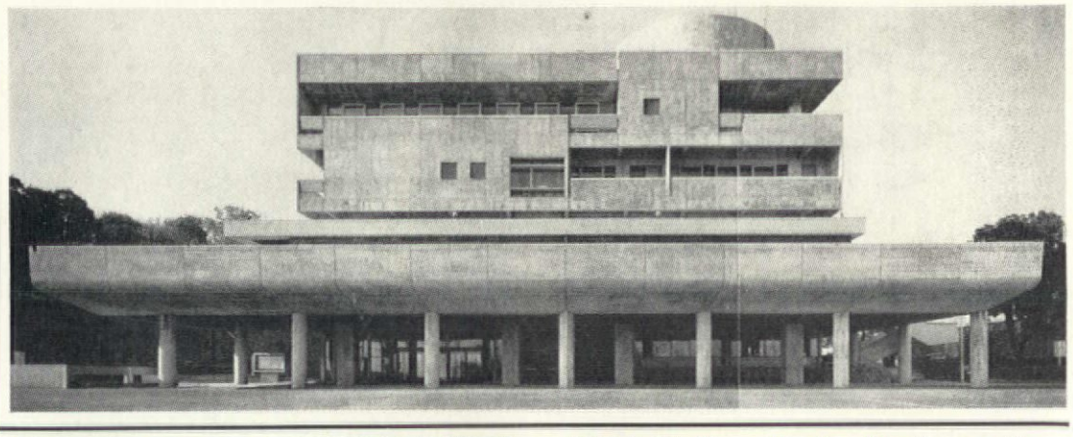


1958 Gakushuin University, Tokyo *Photos:* Japan Architect

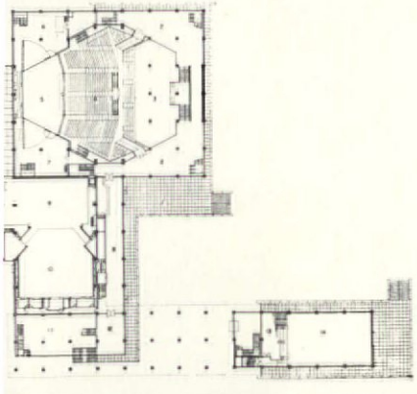


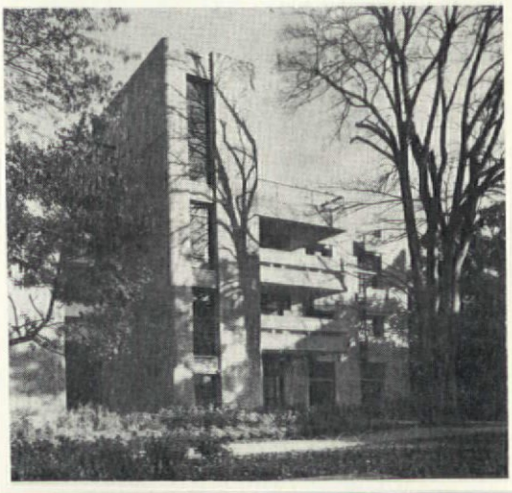
1962 Kanagawa youth centre, Yokohama

Photo: Japan Architect

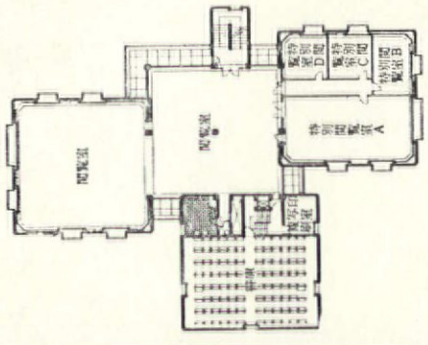


1960 Kyoto cultural centre *Photos: Y. Futagawa;* Kenchiku Bunka

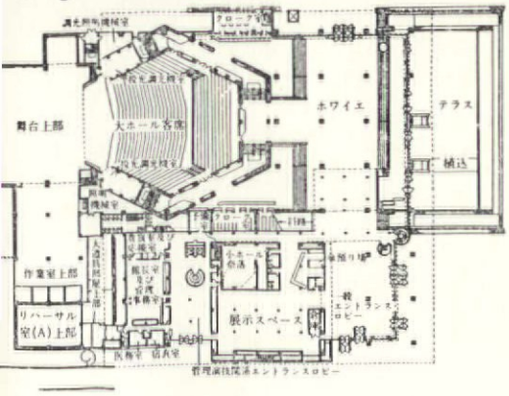




1964 Gakushuin University, Tokyo *Photo:* Japan Architect

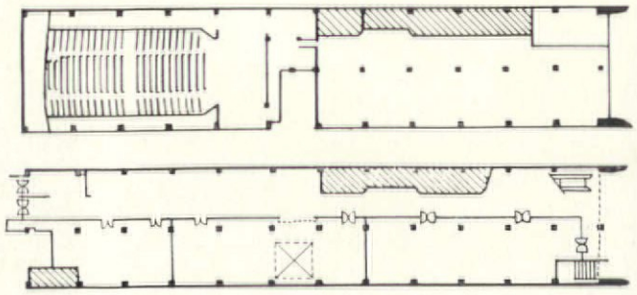


1960 Ueno cultural centre, Tokyo *Photos: Y. Futagawa*

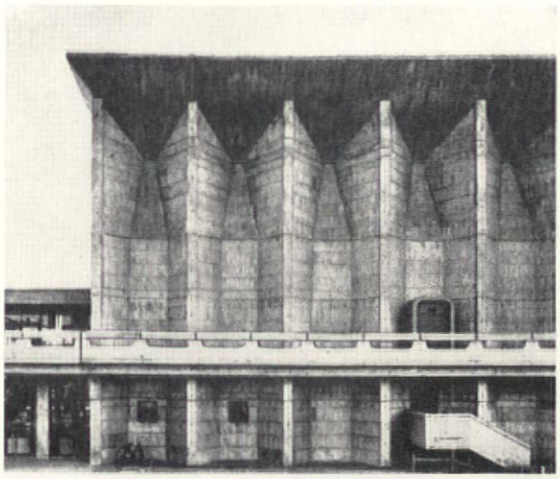


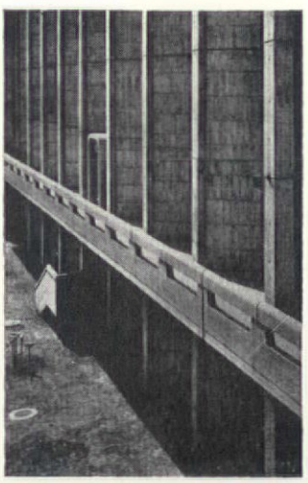


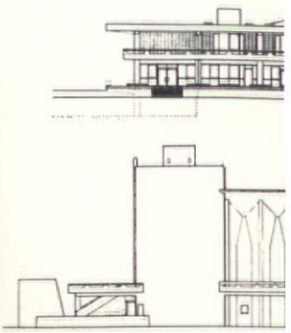
1964 Kinokuniya bookshop, Tokyo

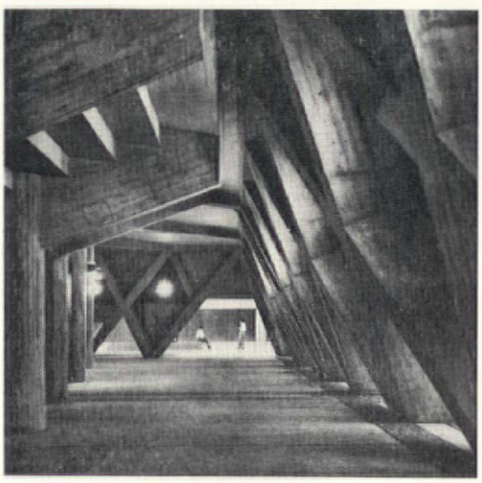


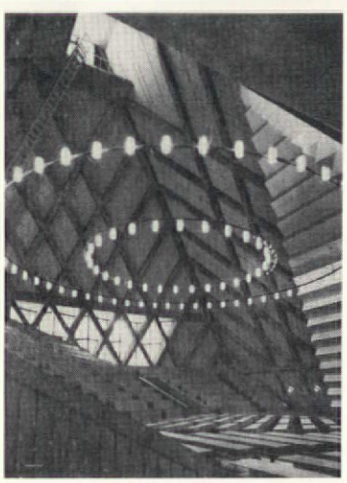


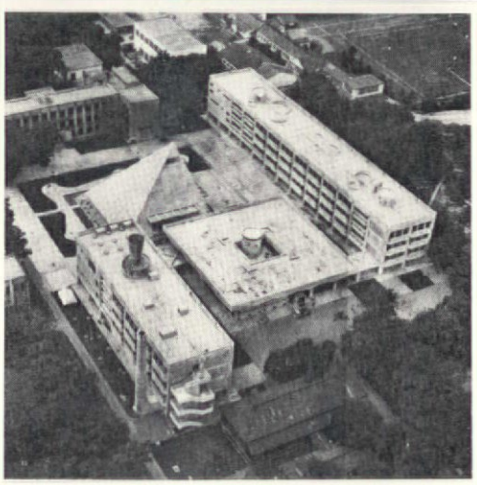


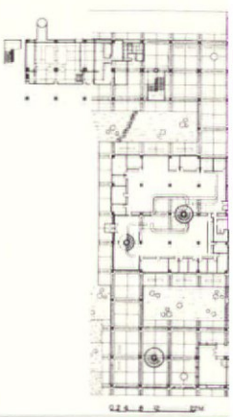




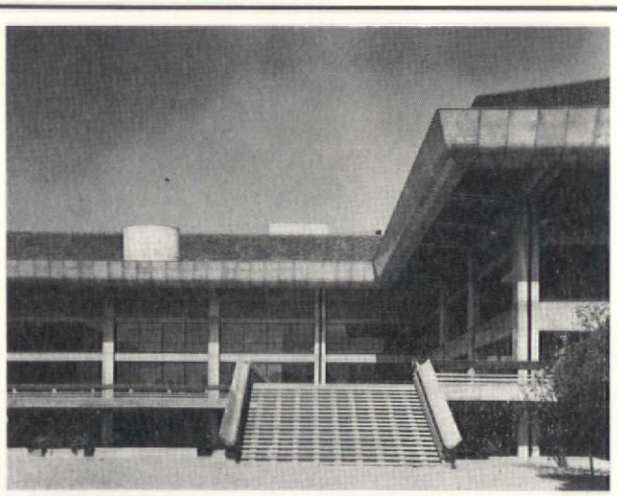




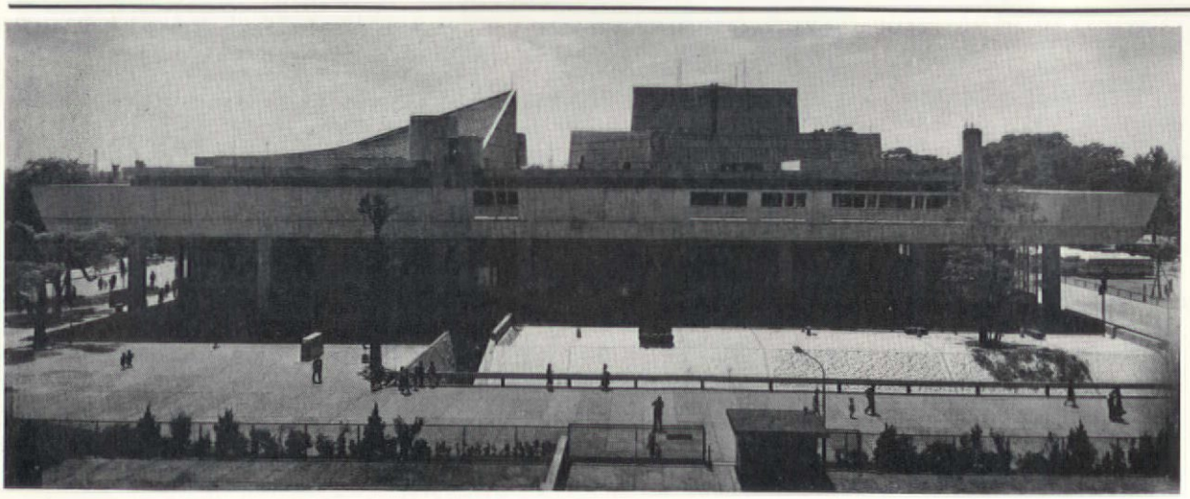


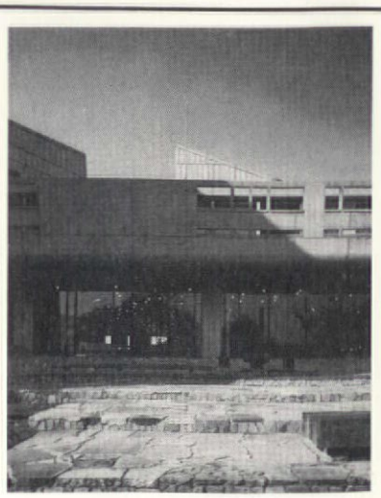




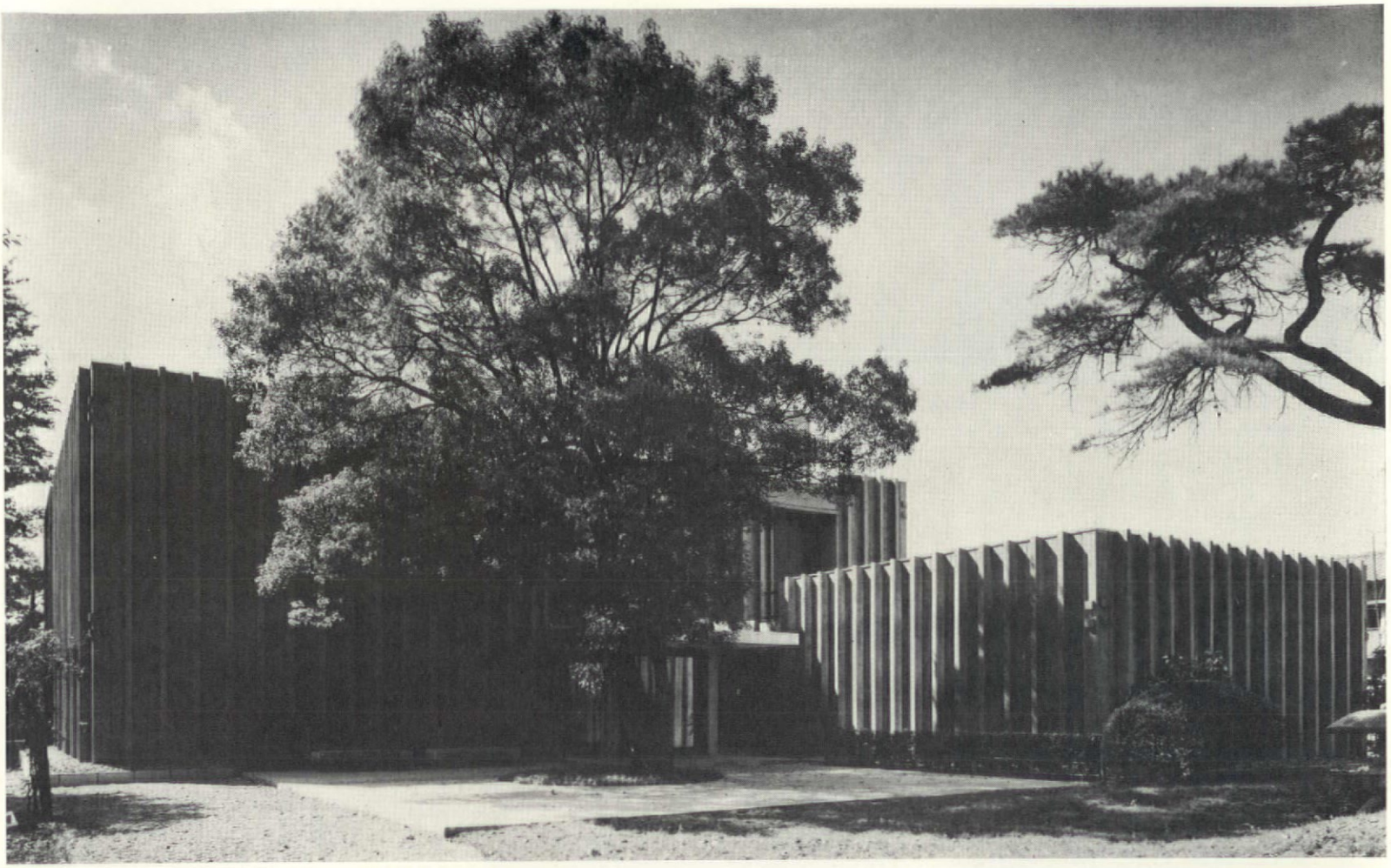








1964 Setagaya museum



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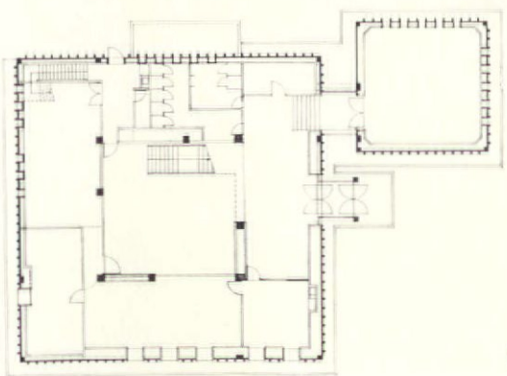

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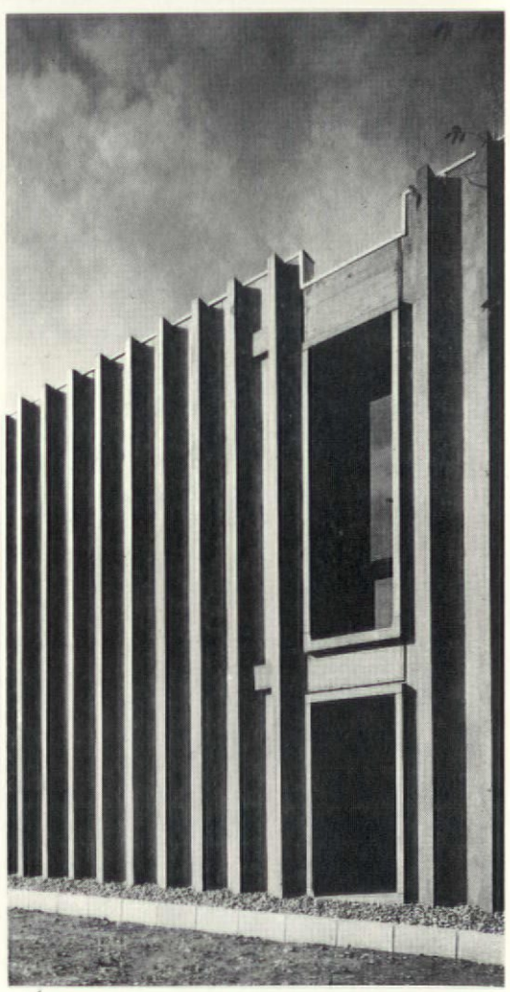

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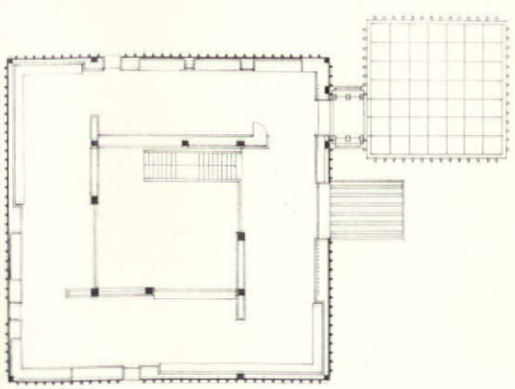


4

1
Main entrance

2
Ground floor plan

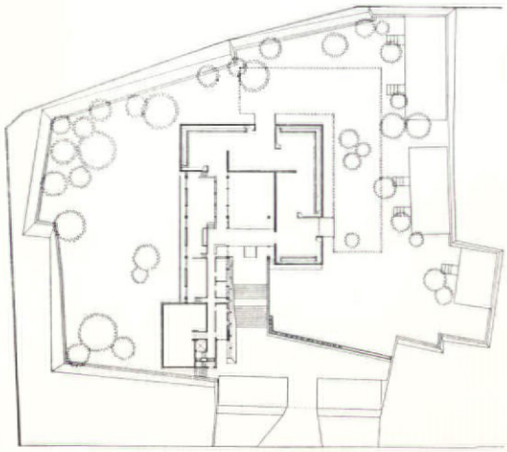
3
Exhibition gallery

4
First floor plan

5
Detail of the precast concrete members of the façade

Photos: T. Ohashi

1964 Hayashibara museum, Okayama



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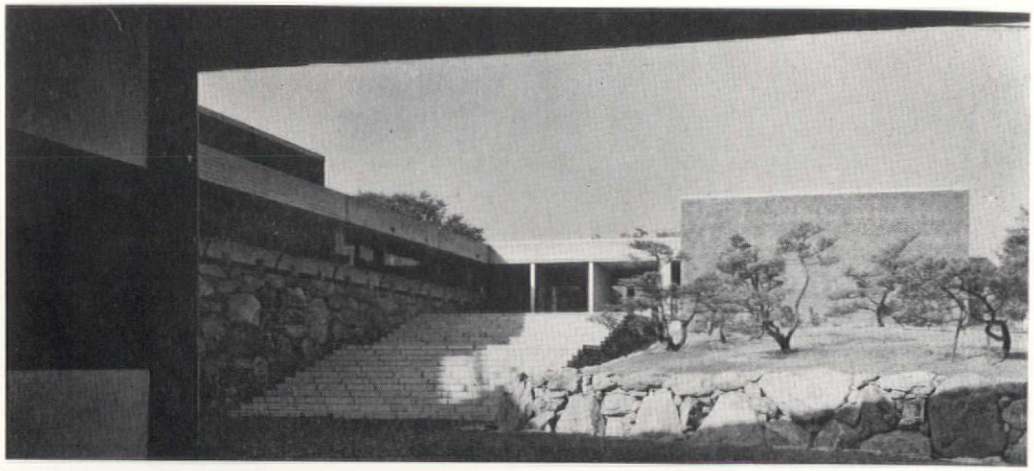

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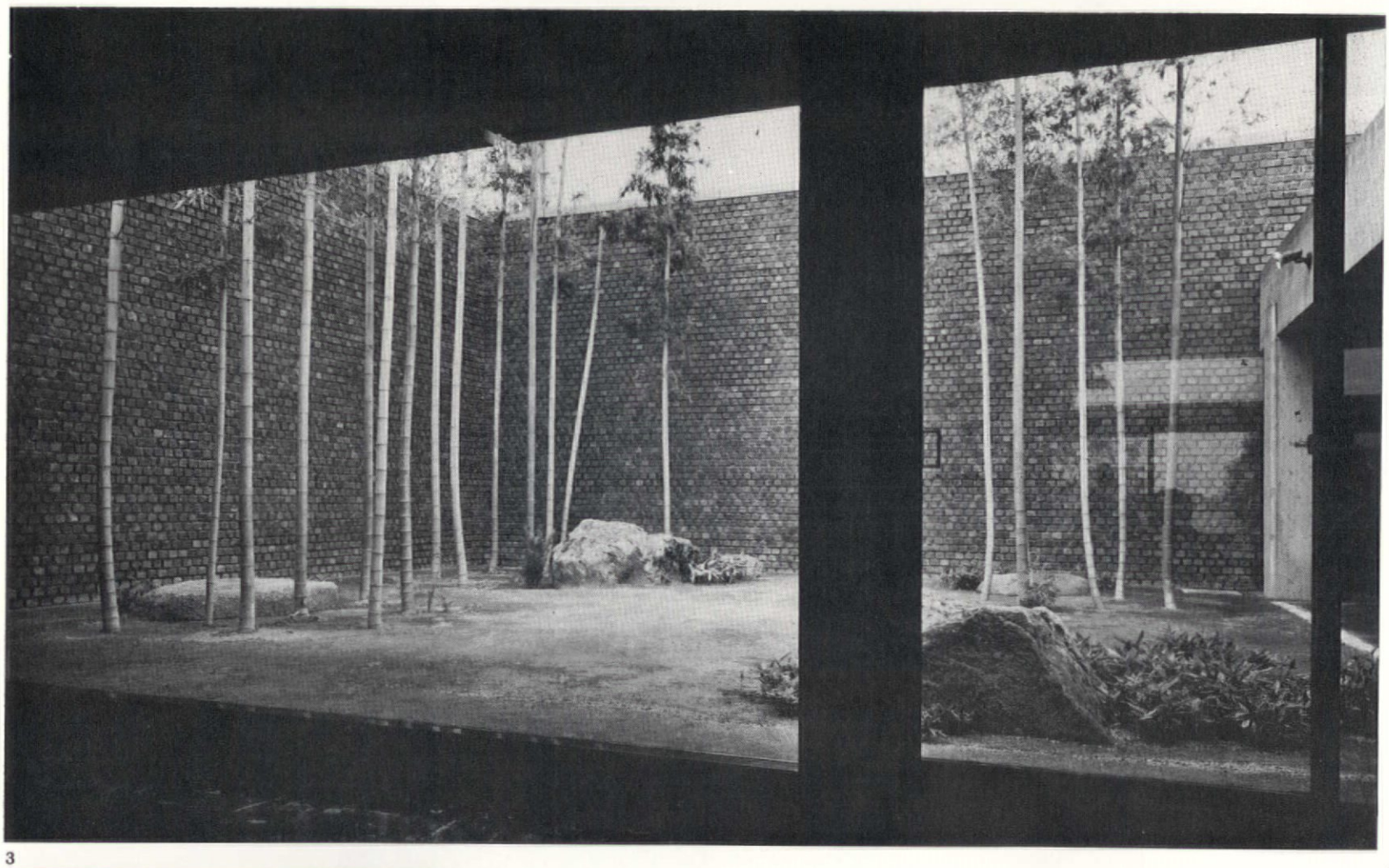

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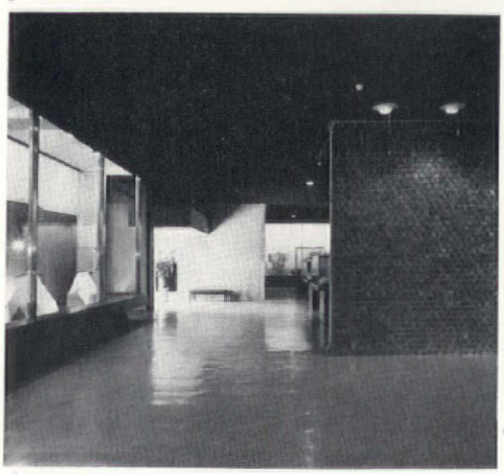


4

1
Ground floor plan

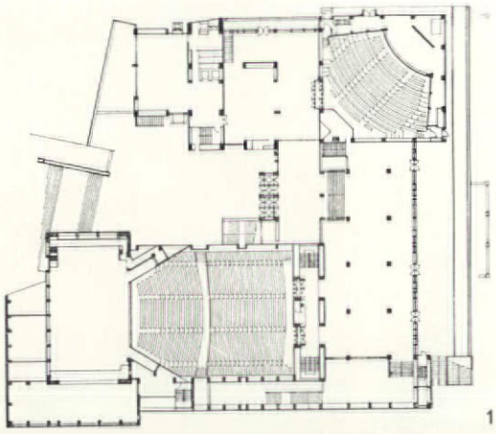
2
View of the entrance from under the white plastered storehouse of the old museum which has been retained as a gateway to the new enclosure. The structure of the new museum is of *in situ* concrete with prestressed T beams over. The concrete is for the most part exposed, though portions of the walls are brick tiled, both internally and externally

3
The central courtyard planted with moss and bamboo

4
One of the exhibition galleries

Photos: Shigeo Okamoto 2, 4; Hoshio Watanabe 3

1964 Projected cultural centre, Urawa



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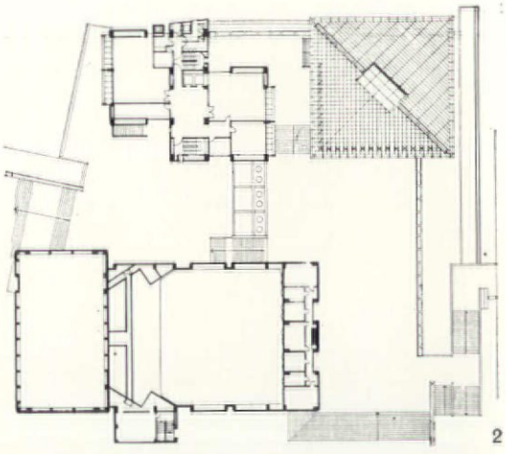
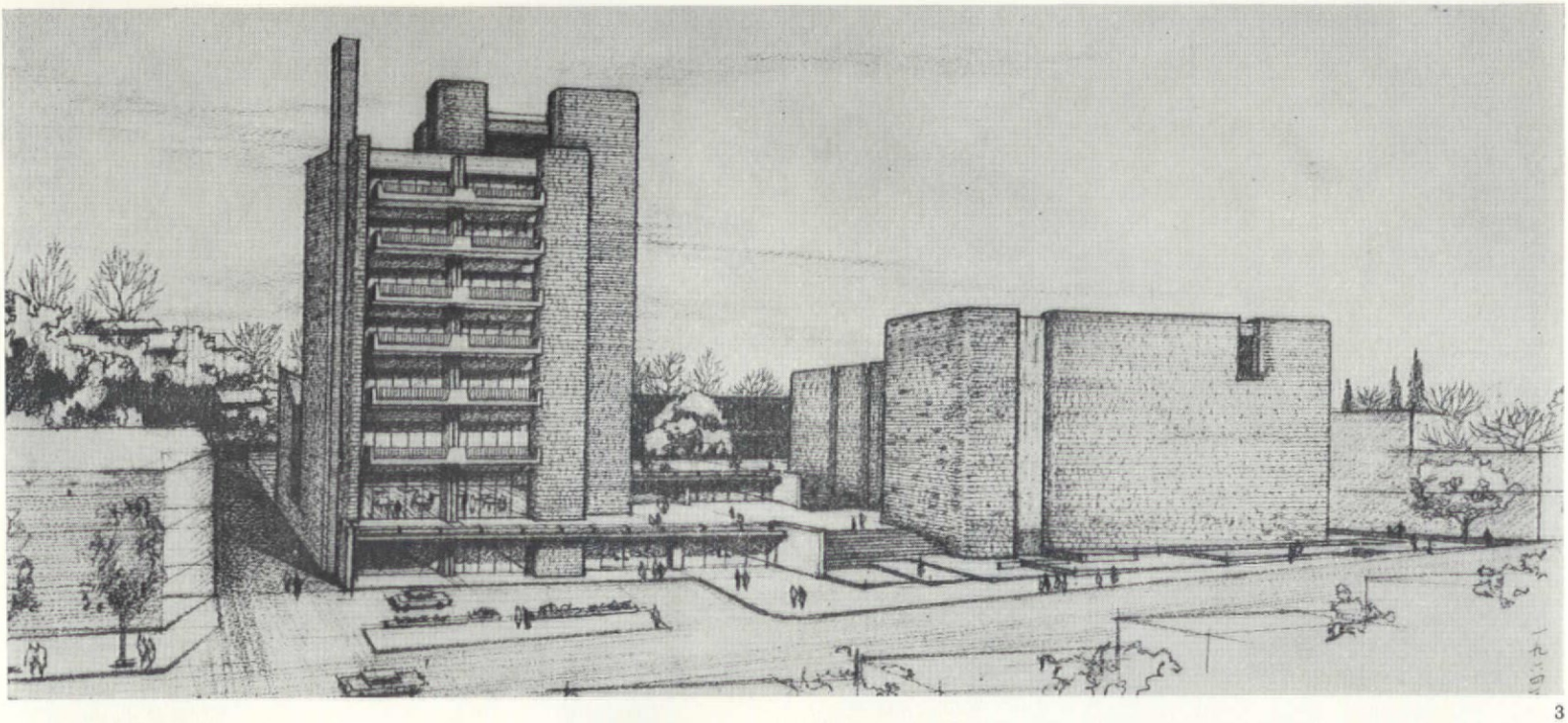


2

1
Ground floor plan

2
Second floor plan

3
View from the west

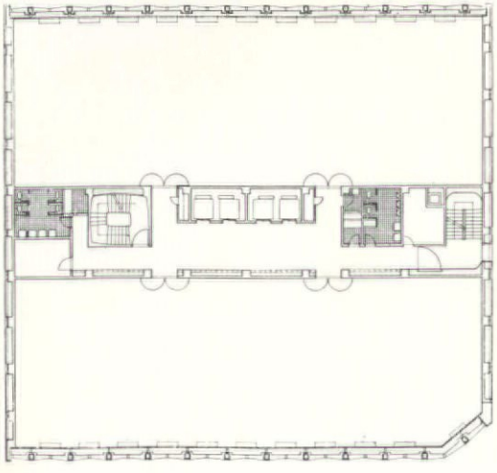


3

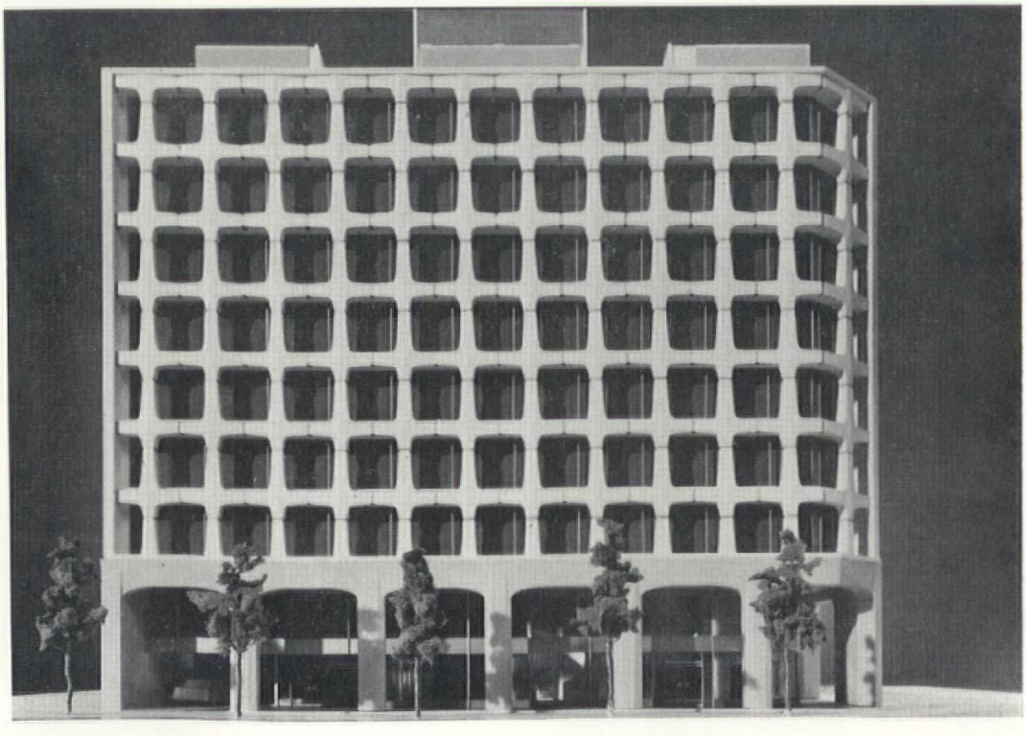
1964 Janome sewing machine co., Tokyo

1
Plan of a typical office floor. The service core is designed as an earthquake-resistant beam

2
Model of the building. The façade is made up of +-shaped precast units erected together with under-sill air-conditioning ducts and steel structural frames. Gaps between the units permit on-site welding



1



Kenzo Tange is a man of tremendous drive. He heads the new department of environmental design at Tokyo University, which he created, retains his position of an architect of world stature, is an accomplished writer on architectural and urban problems, and is often the first in Japan to apply the benefits of science to architecture. His professorship at Tokyo University makes him a government servant, but there is no trace of the usual bureaucrat. On the other hand, he is very skilful in guiding government and university committees in what he considers the right direction. This is particularly essential in Japan, where all progress comes as a result of agreed decisions achieved through patient in-fighting that ends with some final compromise, at least in the field of official action. In his own office atop one of Tokyo's highest commercial buildings, he leads a team of about twenty young architects. Here he leads by discussion and self criticism, after the manner of Gropius and with an equal skill.

Tange's drive and ability as a team leader or committee chairman are balanced by his quietness, modesty and approachability. Understanding the scale and depth of the problems of creating a responsible environment for the individual, and more particularly for the formless floating community life, he is humble and is no 'prima-donna' architect. The strength and apparently dogmatic assertions that, from photographs alone, seem to show in some of his works, are hypotheses made in his search for architectural truth.

While Europe was struggling to develop an honest expression of design, Tange went to school and university, graduating in 1938 with honours. The influence of Germany in all spheres, but particularly in the fields of architecture and science, was very strong on Japanese youth at that time. Tange selected the Bauhaus and Corbusian influences, but all around him the offices, barracks and banks were going up in a germanic neo-classic. He took part in several war-time competitions for overseas buildings. In spite of the imposed stylistic restriction to Japanese classical forms, he still managed to show his skill as a bold designer. These studies, and his three years at the Tokyo University graduate school of architecture, prepared him for his first buildings in the Hiroshima Peace Park. He won this commission by taking first prize in the open competition, at the age of thirty-seven.

His attitude to architecture is frequently expressed in print. However, it is perhaps important to set down the main principles on which he relies in his work. These may be summarized as follows:

(1) Importance of learning from tradition without copying its forms. Like many Japanese architects Tange is a knowledgable admirer of the old. At first he seems to have shied away from tradition, as if afraid of its powerful influence, but latterly he has come to terms with it. He had no intention of making his Kurashiki City hall a little like the massive interlocking log treasure houses of Kyoto. Now he considers tradition to be a necessary catalyst, and his latest works have nicely balanced a good deal of the feeling for the masculine *jomon* tradition with a little of the aristocratic and feminine *yoyoi* tradition.
(2) The importance of realism, in the face of human desires for comforting self-deception, and in the face of natural dreams of ideal buildings and cities.
(3) The vital need to give an image to an order of society higher than the individual, i.e. the community. The social implications of buildings are important here, because of their great indirect influence on people's lives. The individual ordered environment of the traditional Japanese house has not been extended outside the enclosing walls. Thus the mess of Tokyo must be affected by all creative architects of the community.
(4) The need to resolve the problems of scale; the individual versus the 'mass-human' scale as Tange describes it.
(5) The importance of an individual solution to an individual problem, and the merits of inconsistency which 'breeds vitality'.

Tange makes frequent use of Le Corbusier's idiom, but seldom copies as he does so. For concrete is the natural material for Japan, a country of earthquakes, abundant rock and cement, no iron ore (although now the world's third biggest steel producer) and a climate which is as kind to natural concrete as the English winter is unkind. His interest in social problems and in precise mass-produced precast concrete and steel products, his deep understanding of the Japanese, *as well as* the Greek traditions, has, in the last few years, enabled him to produce architecture which has as much passion as Le Corbusier's, but an infinitely greater sense of the real problems facing man in today's frail and urgent society. He has followed a high tradition of Japan in taking, reforming and re-creating the best available and then returning it to the world, simpler, stronger, and with a more rational content.

There seem to be five main phases to date in the development of Tange's works:

(1) The light and airy, almost *yōyoi* early buildings firmly rejecting tradition: Hiroshima museum and community building, Tokyo and Shimizu city halls, his own residence, the Tsuda college library, and Tosho printing company's factory at Numazu seems to mark the end of this period.
(2) Plastic structures with an even more international flavour than the first: the Hiroshima children's library, Ehime and Shizuoka halls.
(3) Increasingly showing a move to *jōmon* expression: from Kurayoshi to Kurashiki, via Sumi and Sogetsu *kaikan*, Imabari city hall, and Rikkyo library. The MIT/WHO/Tokyo Bay series show a similar development.
(4) Continuation of shells and development of suspended structures as in Tokyo cathedral and Yoyogi gymnasia.
(5) Core and structure which were independent at Tokyo city hall, were combined into a central structural symmetrical four-part core at Takamatsu city hall, early became major visible elements in Tange's residence, but elsewhere only appeared at Sogetsu and Atami garden hotel, and then strongly, at Kurashiki. Finally in the Tokyo Dentsu head-office now under construction, and in the proposed Shizuoka prefectural newspaper dormitory the supersized structural core is clearly the support for the whole building which assumes a bridge-like structure. Major elements are of the town-scale, the minor ones are placed freely as necessary on the permanent decks, as had already been demonstrated in the revolutionary plans for Tokyo Bay.

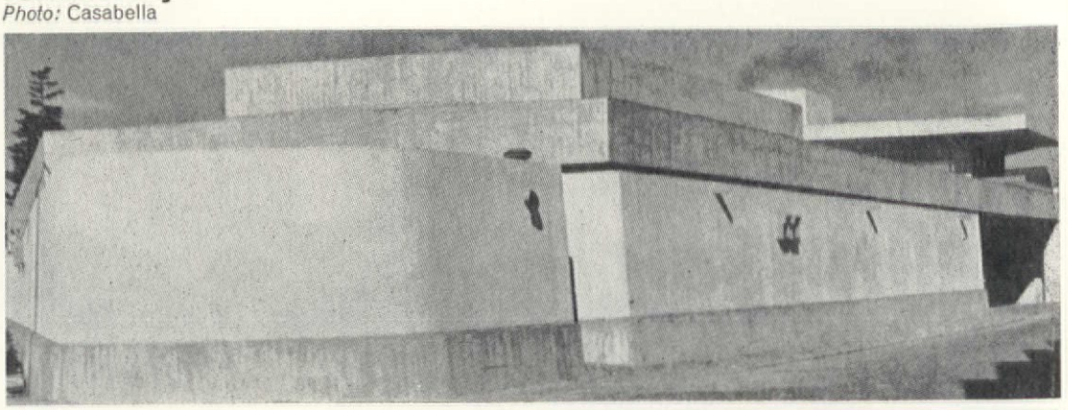
Ornament is rejected by Tange. But when he feels that architectural means alone cannot express his intent, he co-opts the help of other artists, as at Tokyo, Takamatsu and in the dramatic Nichinan—the last a building with a new and Japanese approach to plastic spatial enclosure.

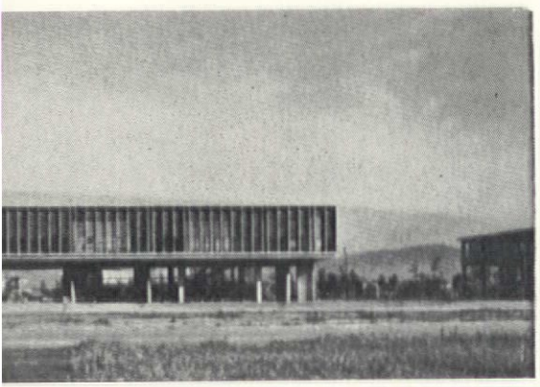
N H and J D



1957 Sumi memorial hall, Ichinomiya

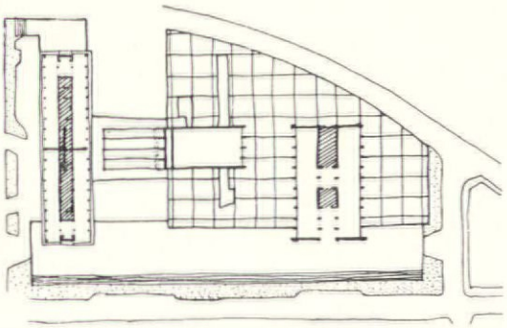
Photo: Casabella

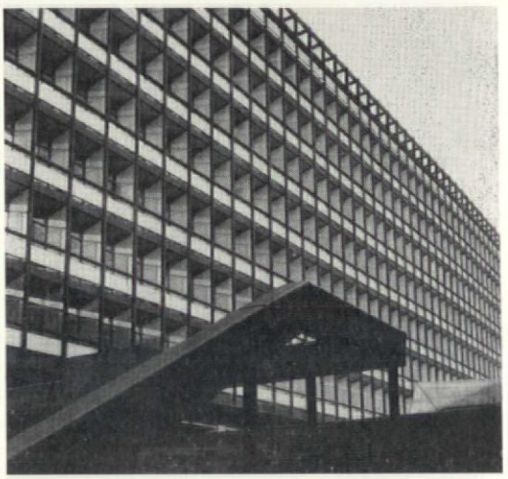


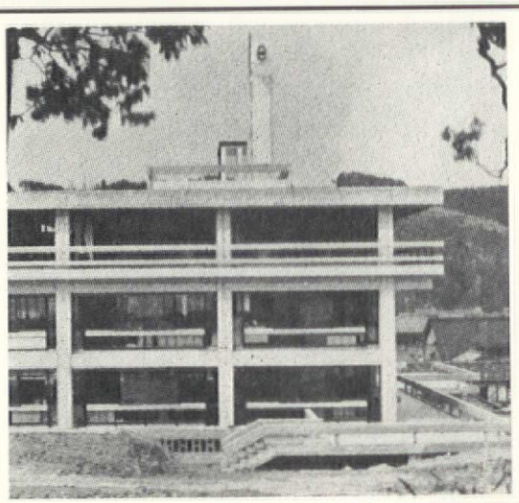


1957 Tokyo city hall

Photo: Y. Futagawa

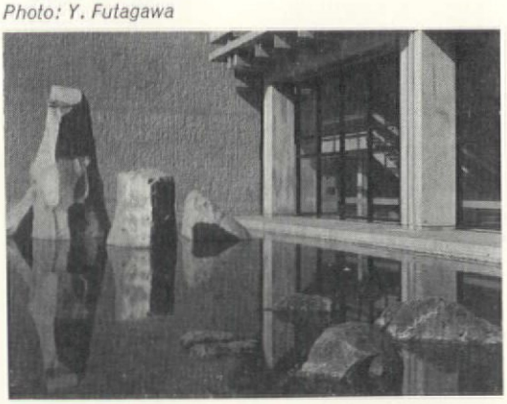


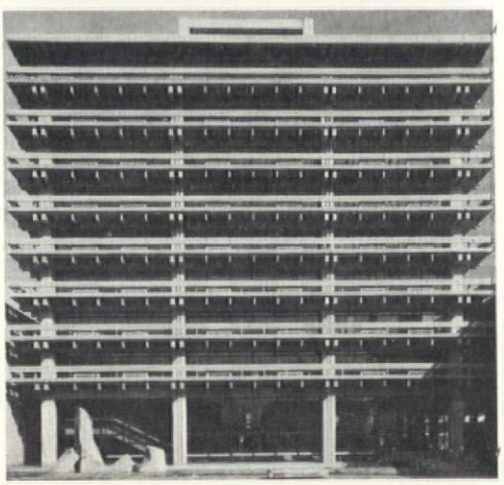


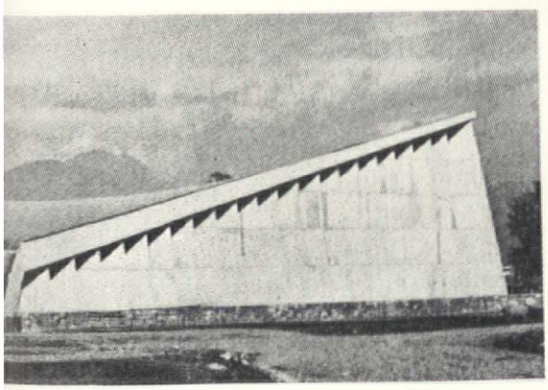


1958 Kagawa civic centre, Takamatsu

Photo: Y. Futagawa

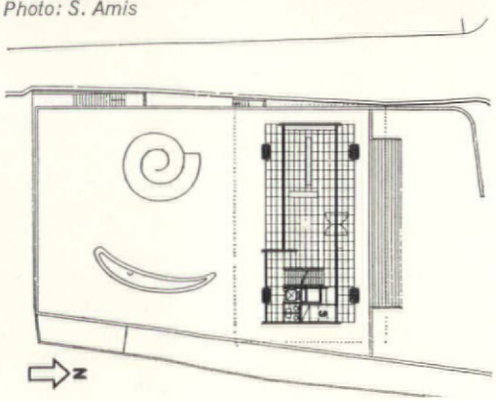






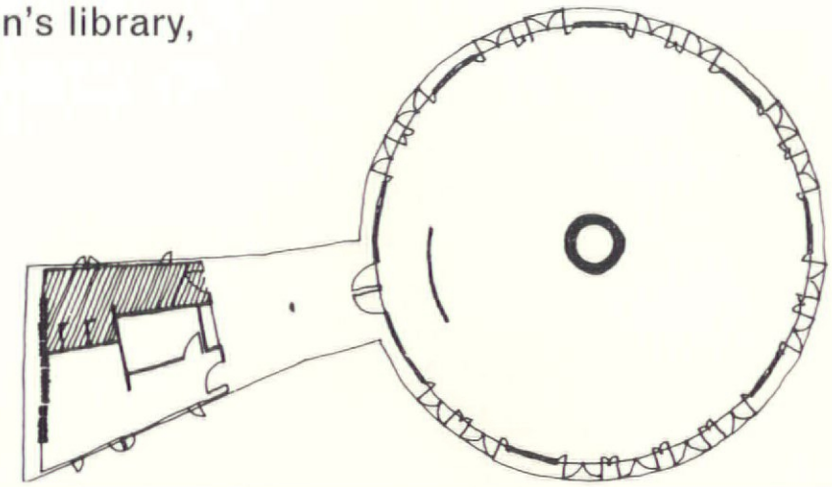
1958 Sogetsu flower school, Tokyo

Photo: S. Amis

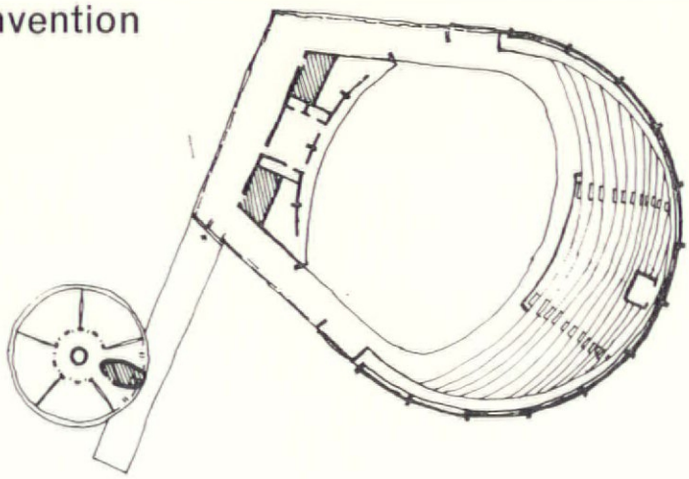




1952 Children's library, Hiroshima

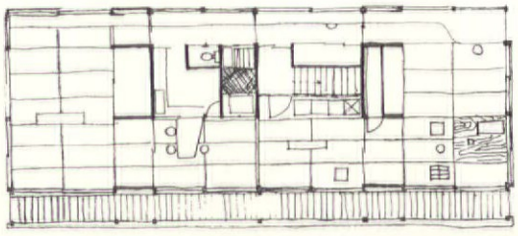


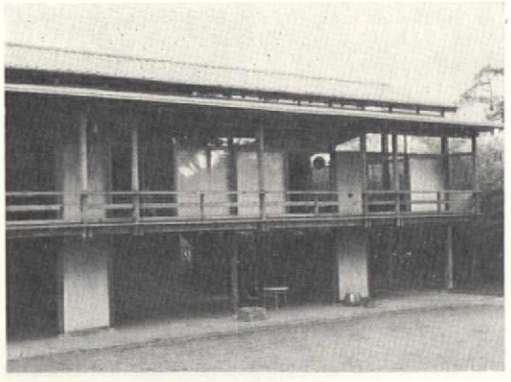
1953 Matsuyama convention hall, Ehime



1953 Tange's house, Tokyo

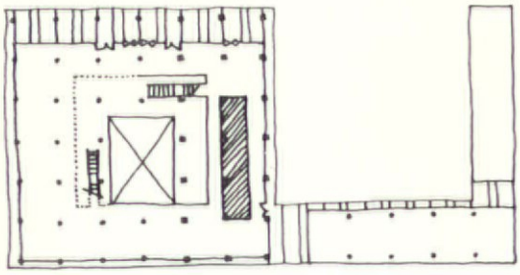
Photo: J. Dodd

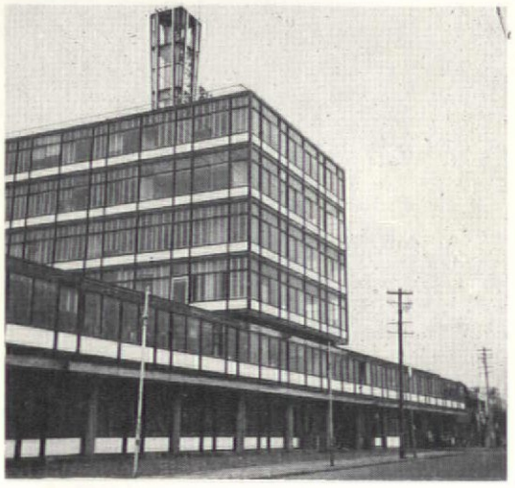




1954 Shizuoka civic centre, Shimizu

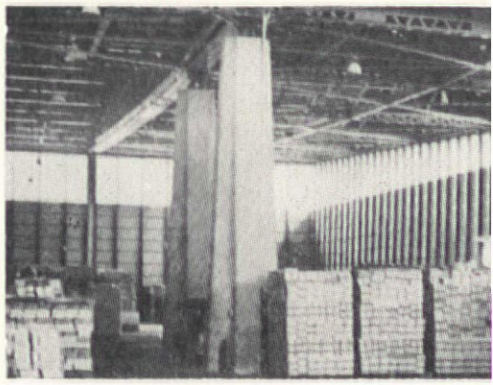
Photo: J. Dodd





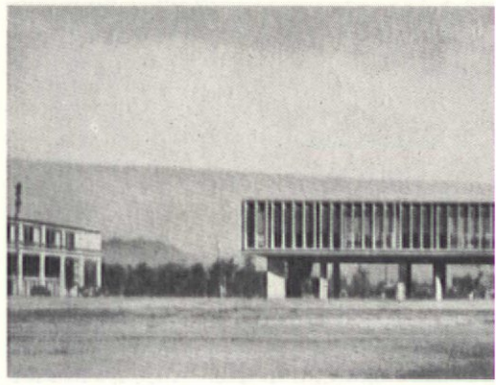
1954 Tosho Insatu Printing Co., Haramachi

Photo: Kenchiku Bunka



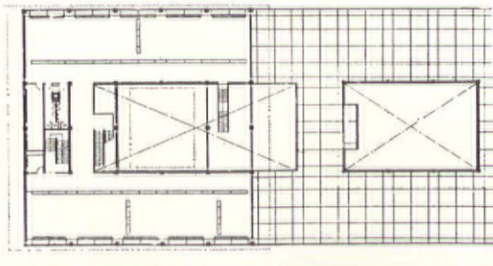
1956 Museum, Hiroshima

Photo: Casabella



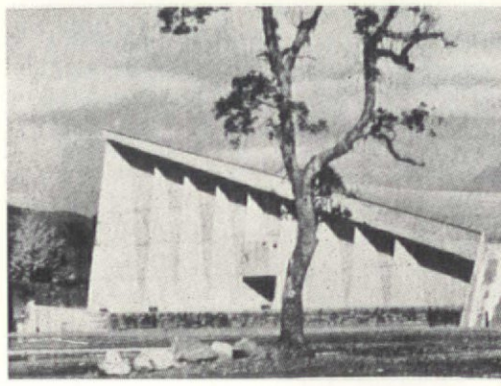
1956 Kurajoshi town hall

Photo: Casabella



1957 Shizuoka cultural centre

Photo: Casabella



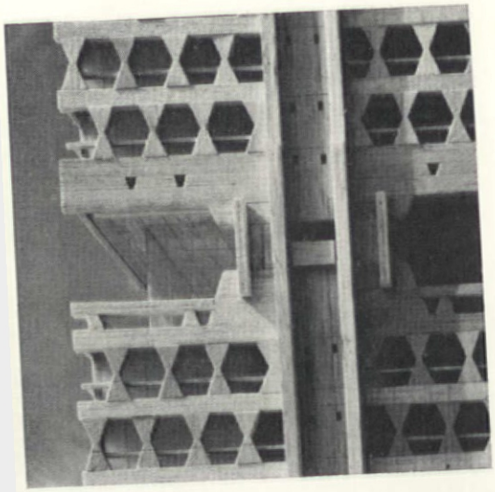
1964 Tsukiji redevelopment, Tokyo

1
Detail of model

2
Plan of the Dentsu corporation building, now under construction, which is to form the initial stage of the redevelopment

3
Model of the total scheme, with the Dentsu building in the left foreground

Photos: O. Murai



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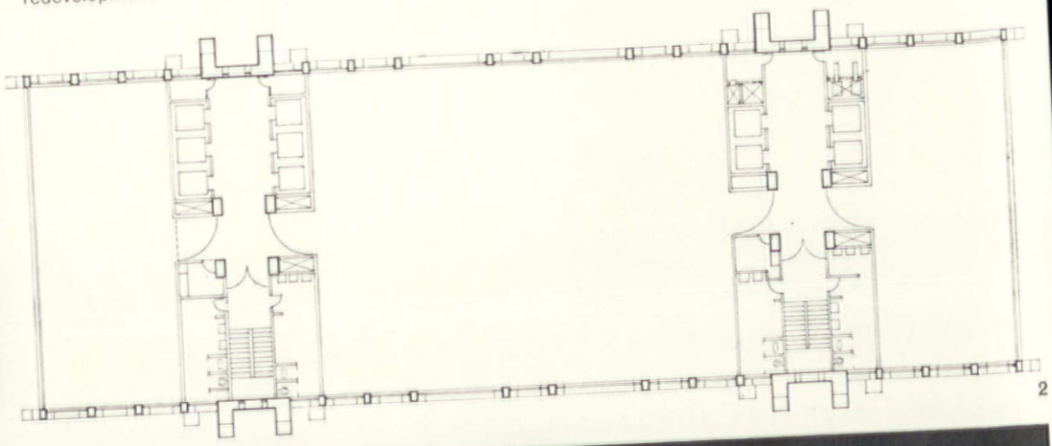

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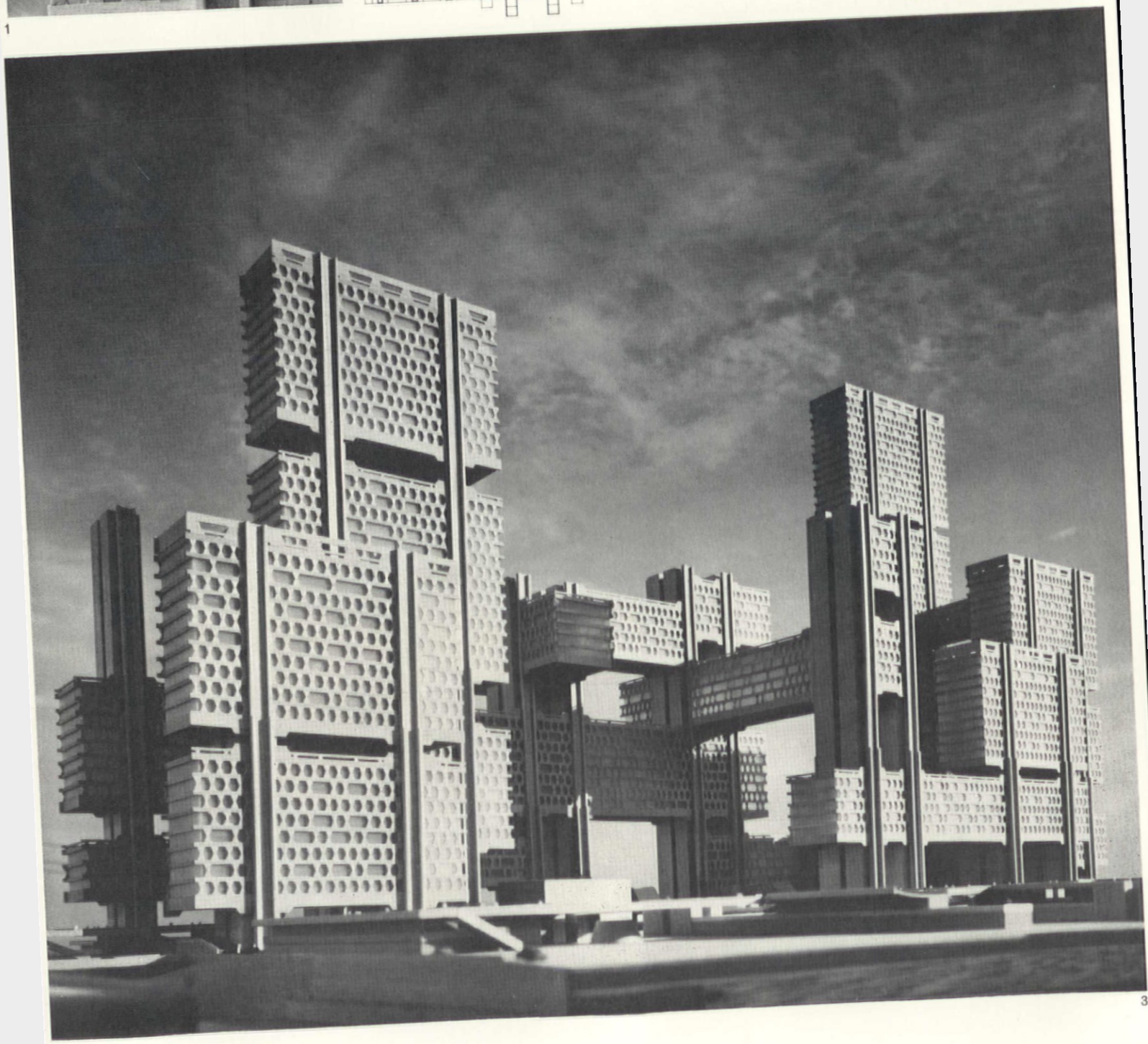
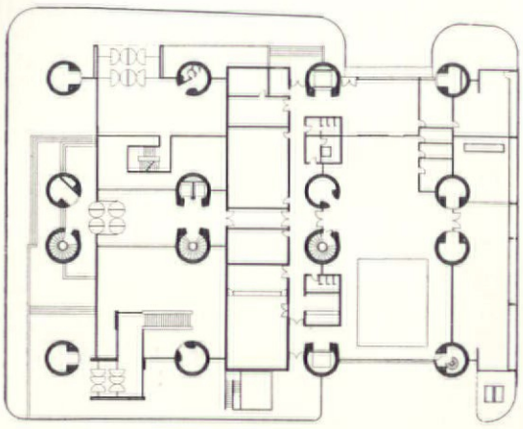


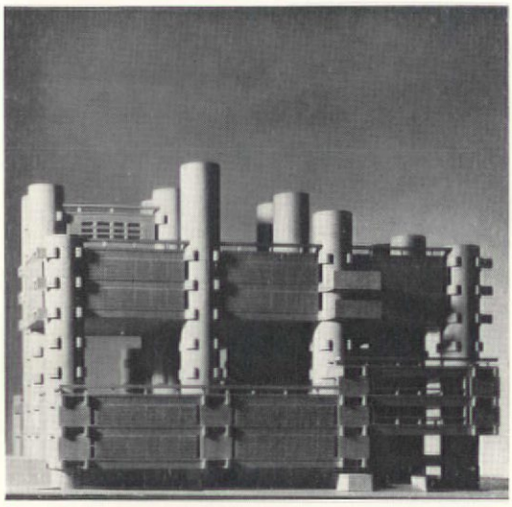
3

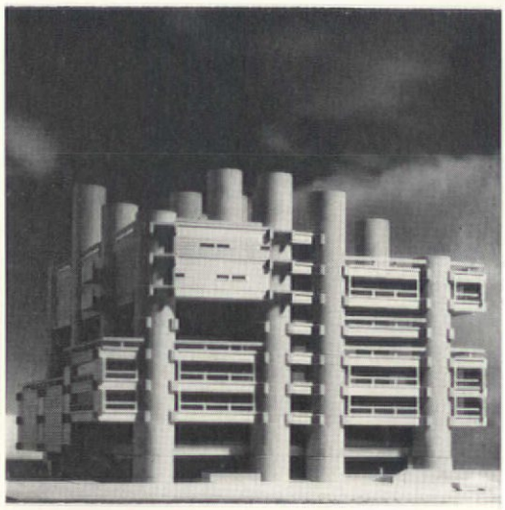
1964 Yamanashi Broadcasting Centre

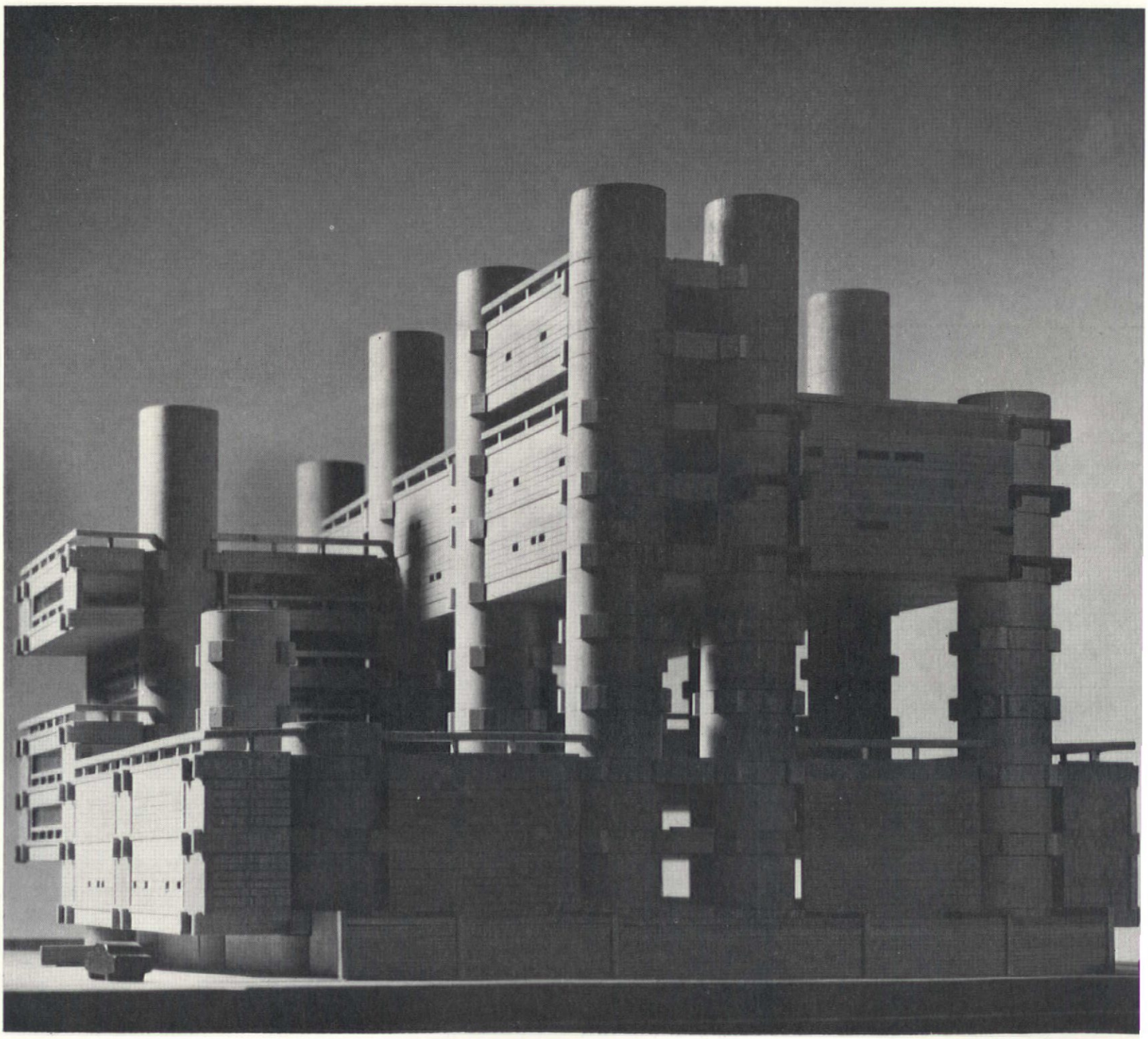
Photos: O. Murai

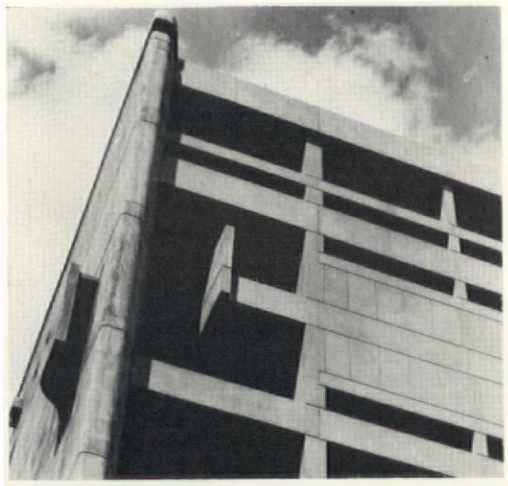
The centre is currently under construction





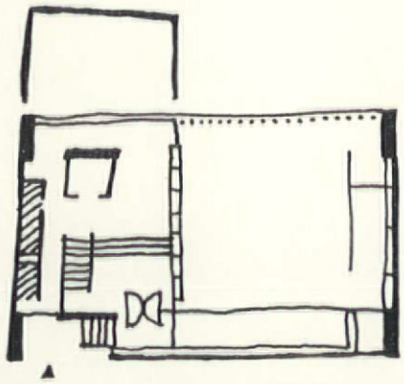


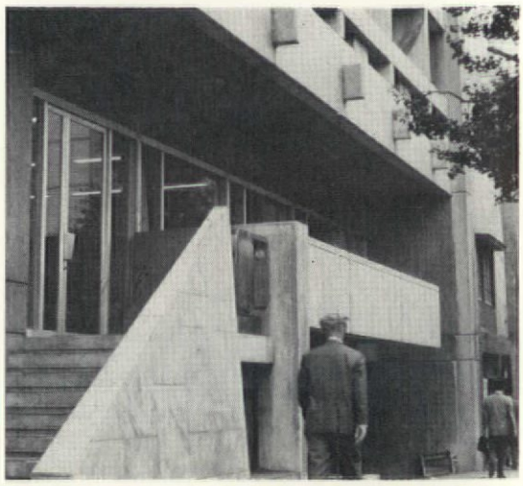


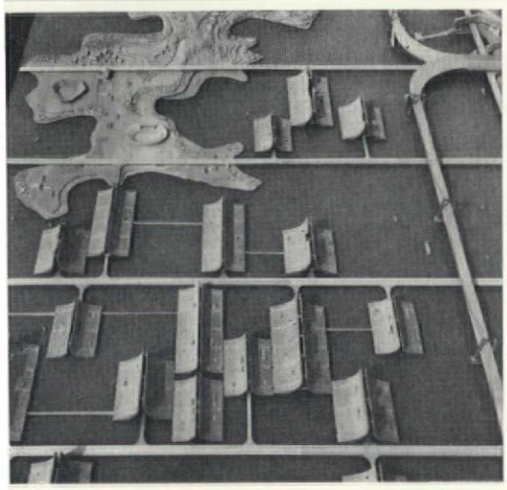


1961 Kokuyo building, Tokyo

Photo: J. Dodd and Hazumi

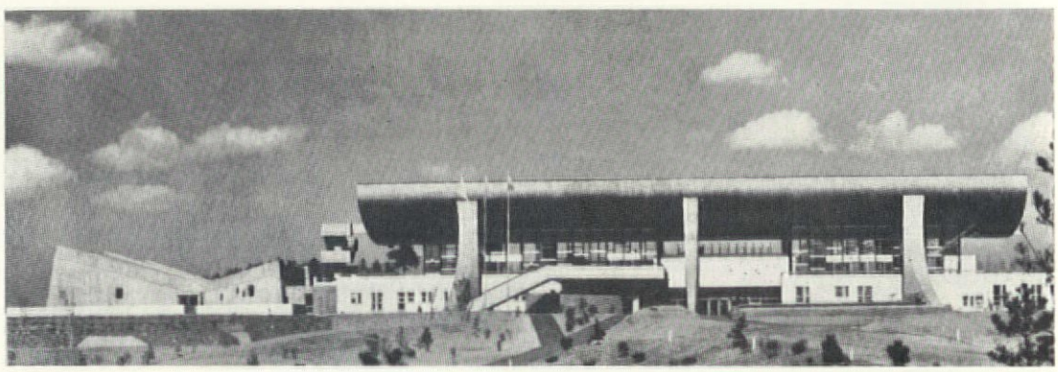






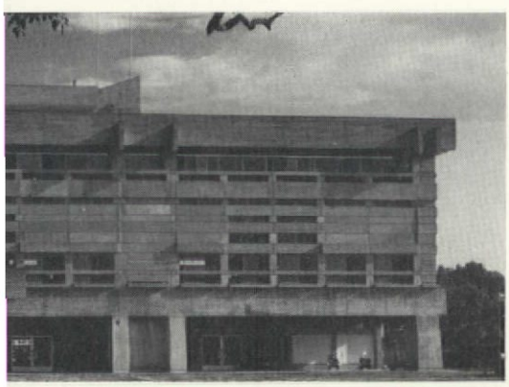
1962 Totsuka country club

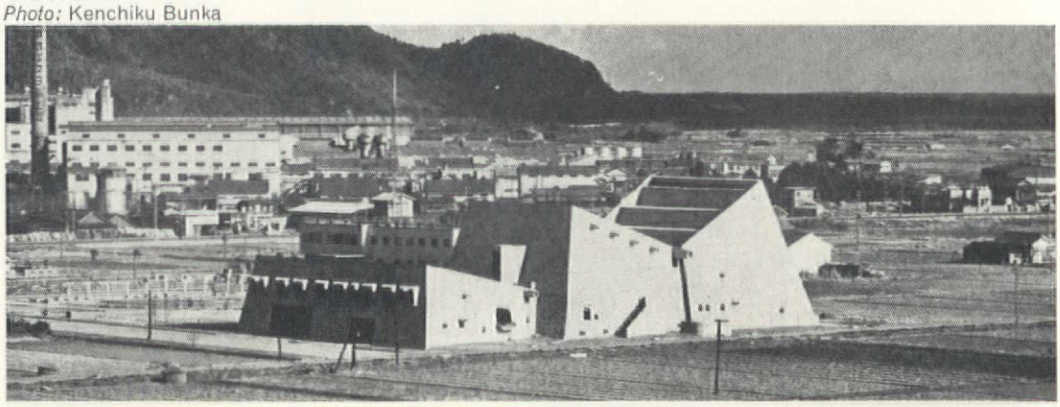
Photo: Kenchiku Bunka



1962 Nichinan cultural centre

Photo: Kenchiku Bunka

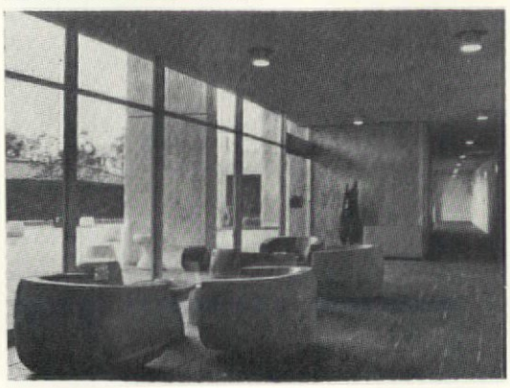


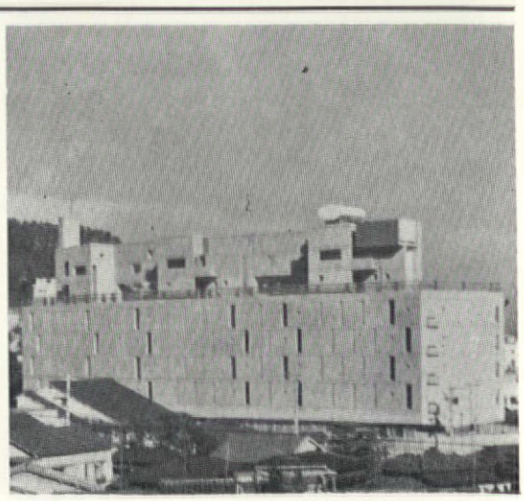




1963 Atami garden hotel, nr. Tokyo

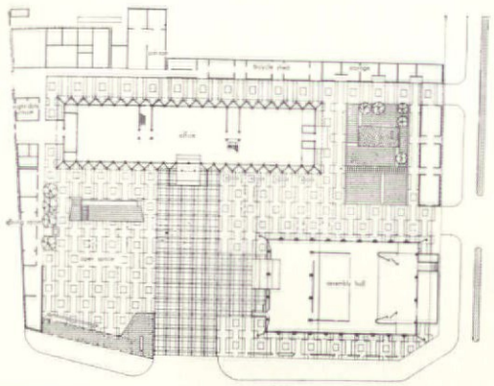
Photos: Bauen und Wohnen

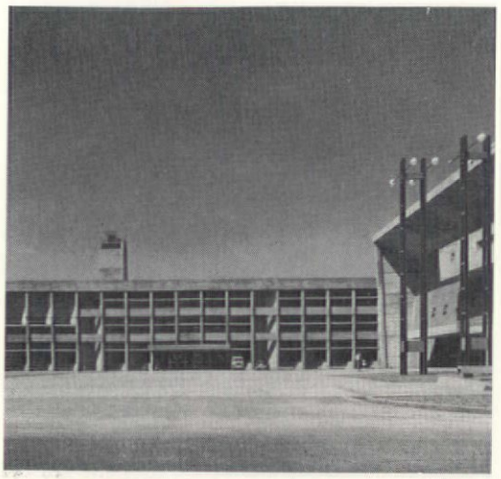




1959 Imbari city hall

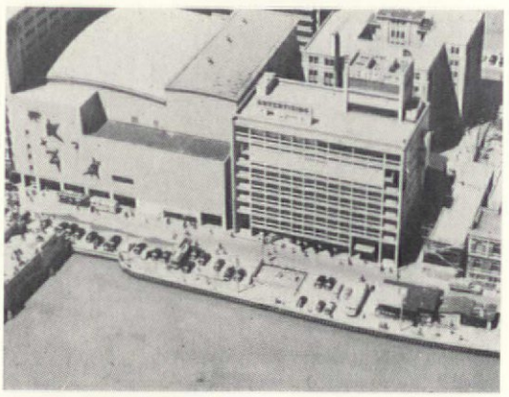
Photo: Toshio Taira





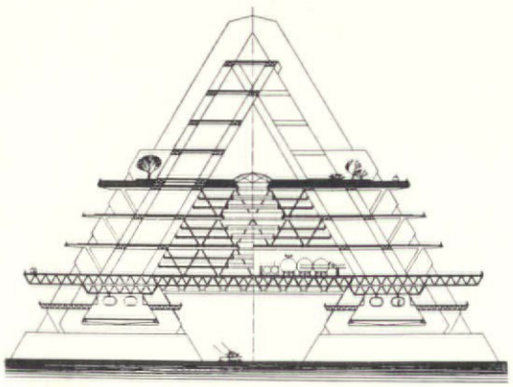
1960 Dentsu building, Osaka

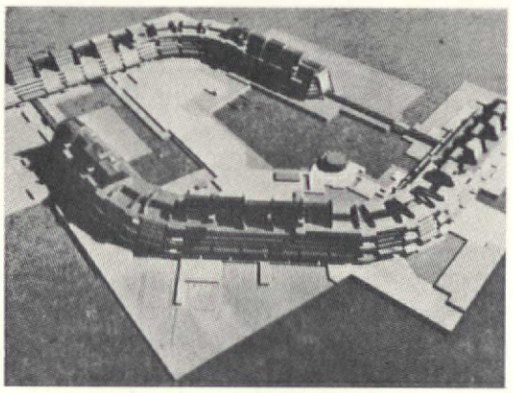
Photos: Kenchiku Bunka, *Toshio Taira*



1959 MIT project

Photo: Progressive Architecture

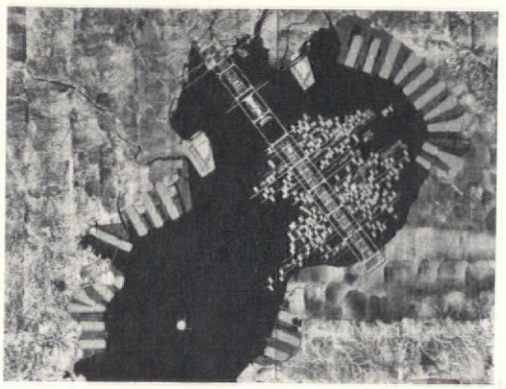




1960 Tokyo Bay plan

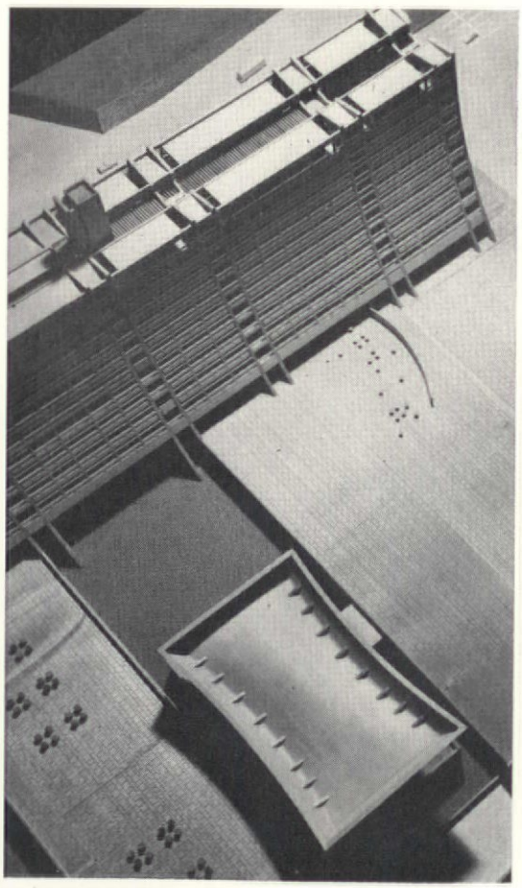
Photos: Kawasumi

(See AD, October 1964)



1959 WHO headquarters, Geneva

Photo: O. Murai





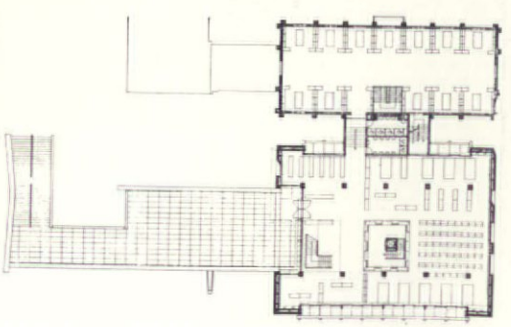
1960 Kurashiki city hall

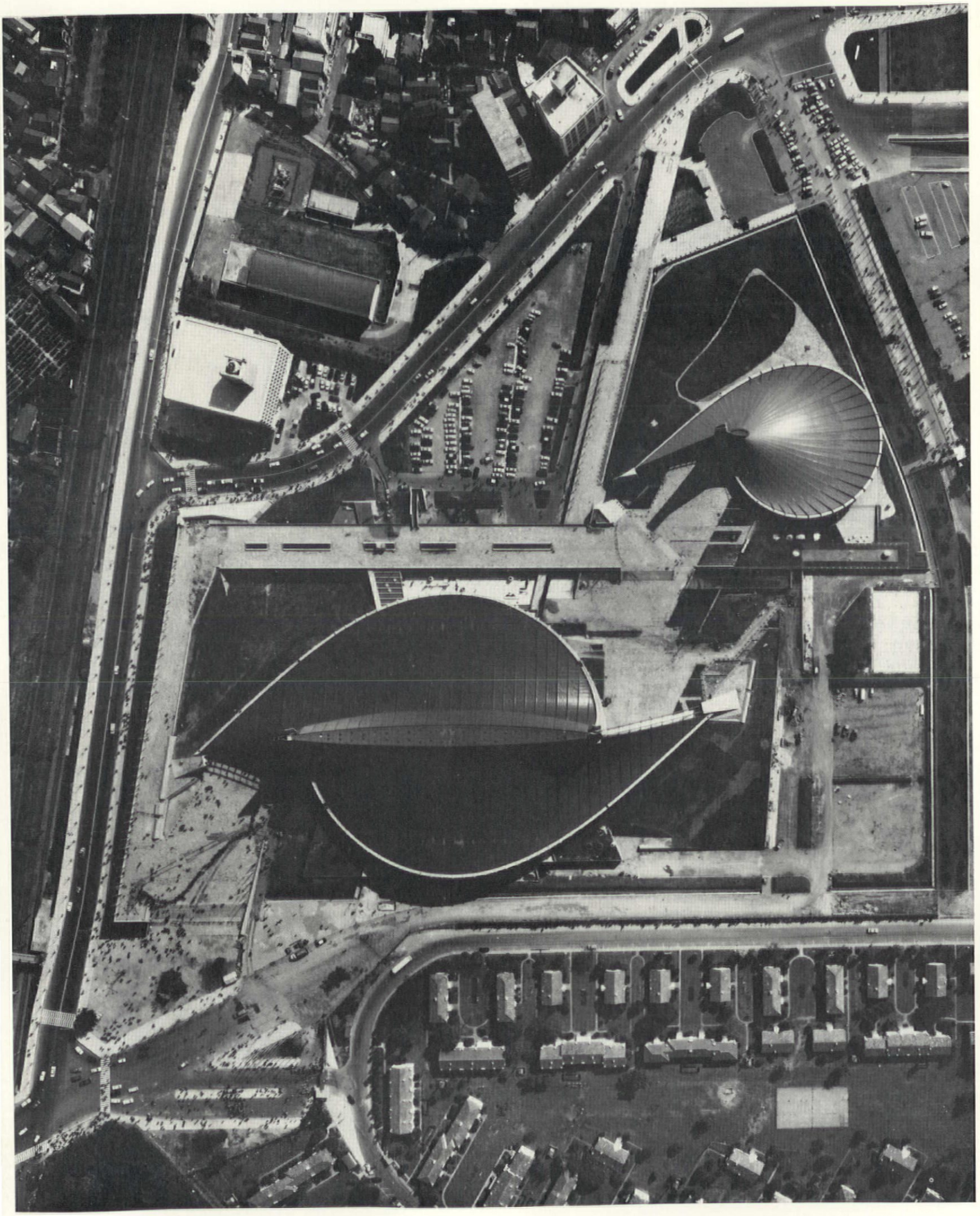
Photo: Y. Futagawa



1961 Rikkyo university library

Photo: Japan Architect





1964 national gymnasia, Yoyogi, Tokyo,

The roofs are the dominant element in the gymnasia at Yoyogi, about a mile from the main Olympic Games site. The basic principle applies to both, of a shell formed by a steel cable suspension structure that has a deck of innumerable small steel plates welded on. The underside is insulated by a sprayed-on asbestos finish, and the exterior is painted white to reflect the heat.

The basic supporting element is a concrete pylon developing into a great sweeping horizontal arch that carries the seat tiers high above the ground. The structure follows a helical curve on plan, while the seating is arranged on a circular basis, which produces a tapering gangway that widens towards the exit. In the large gym, designed for swimming/skating and seating 13,000, there are two arches, arranged in an interlocking plan with two exits. A bowed box-form steel bridge between the two pylons provides the top anchorage, the arch on each side, and the bottom anchorage. To tie the pylon on each side beyond the ridge and to provide support for the roof over the entranceways, there is a broad double cable between the pylon and a massive anchor block. Near the arena floor huge air inlets supplement the natural ventilation at the ridge.

The small basketball hall, with its single central tower and wrap-around roof, is designed for 4000 spectators. The halls are linked by a high level pedestrian deck for spectator-access to their seats. The wide exits provided here are essential in case of emergency. Below the public level are parking space, athletes' rooms and service facilities.

These are the first of Tange's sports buildings.



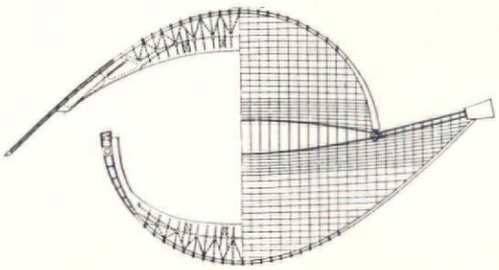
1 & 3 2

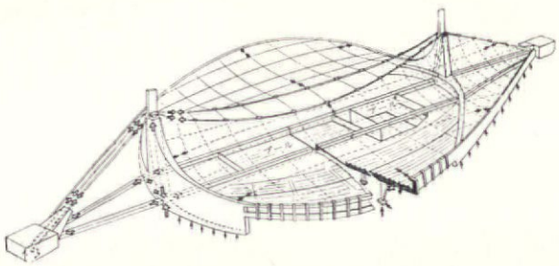
Aerial views of the gymnasia before completion.

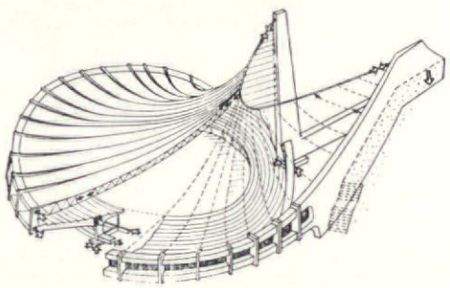
2

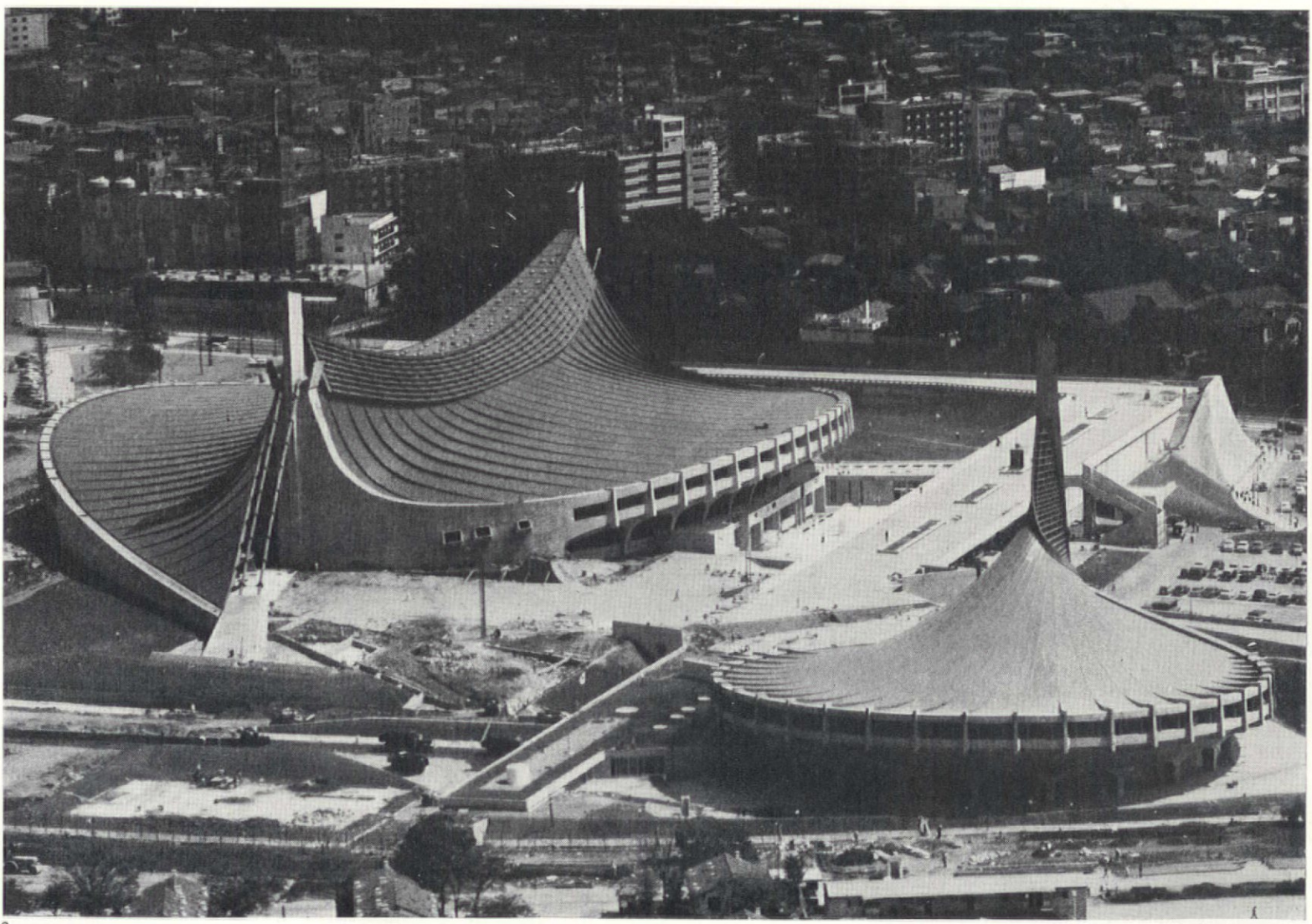
The public stroll on the high level pedestrian deck

Photos: Lehmann 2 Japan Architect *3*









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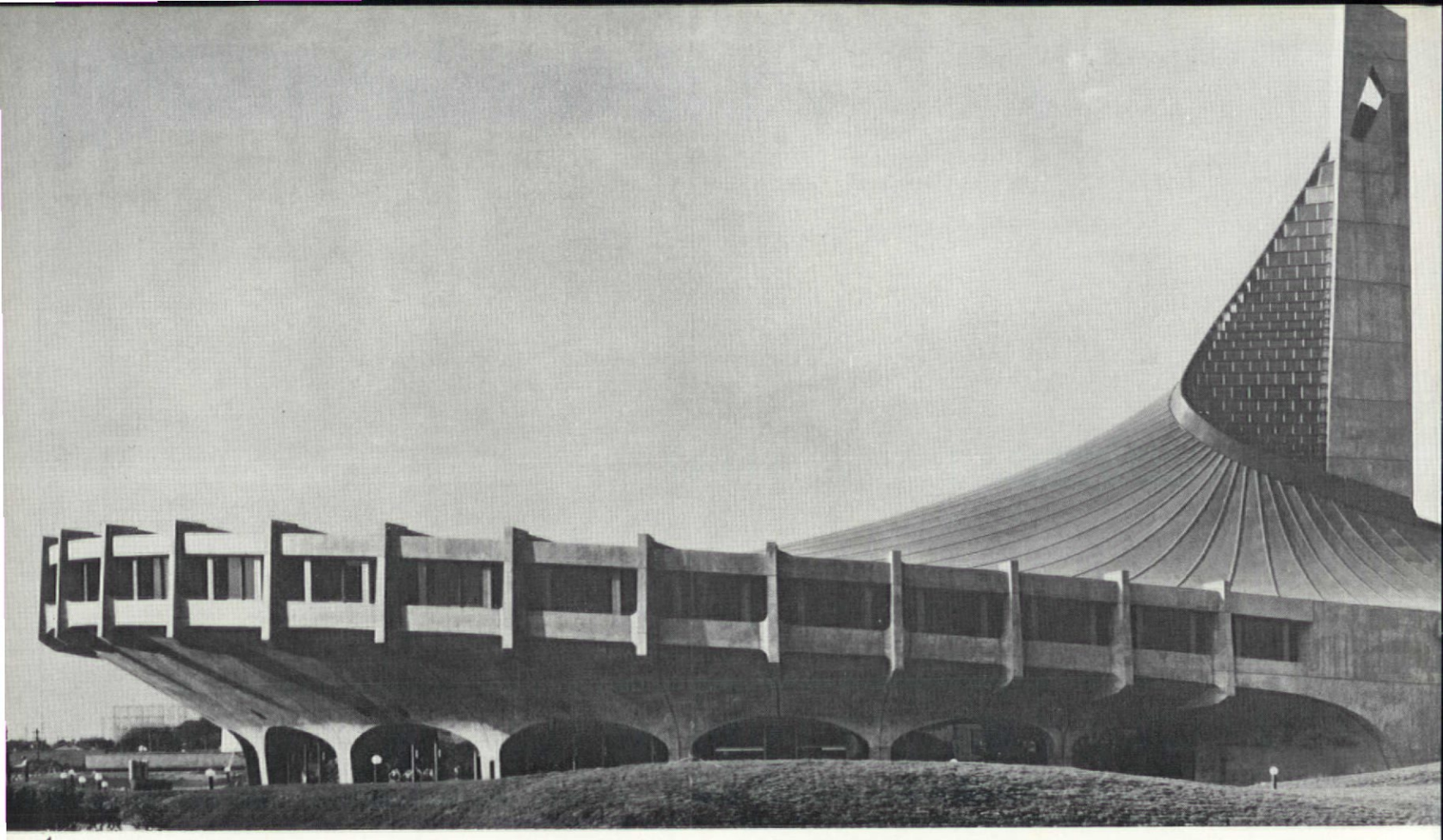

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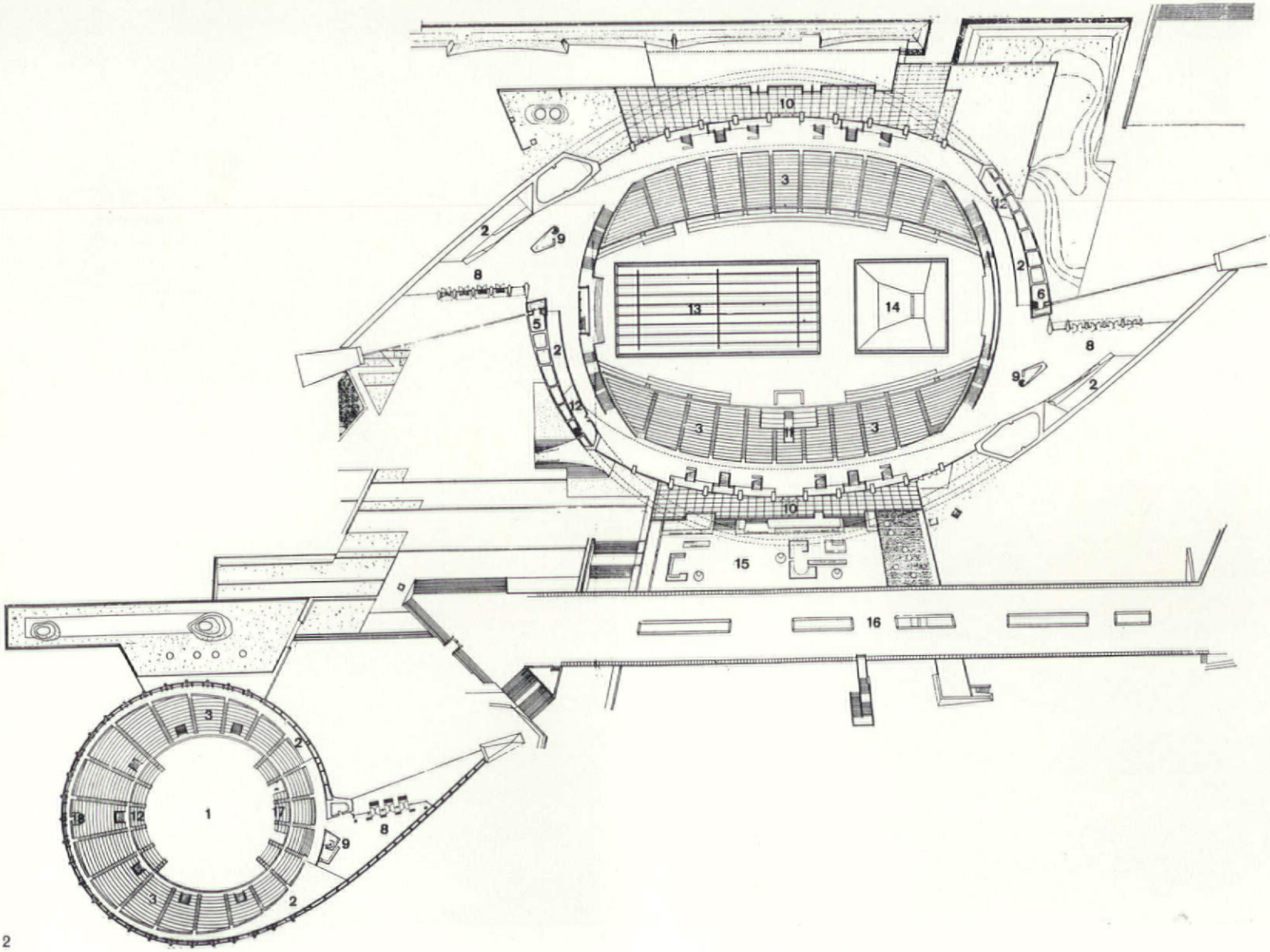

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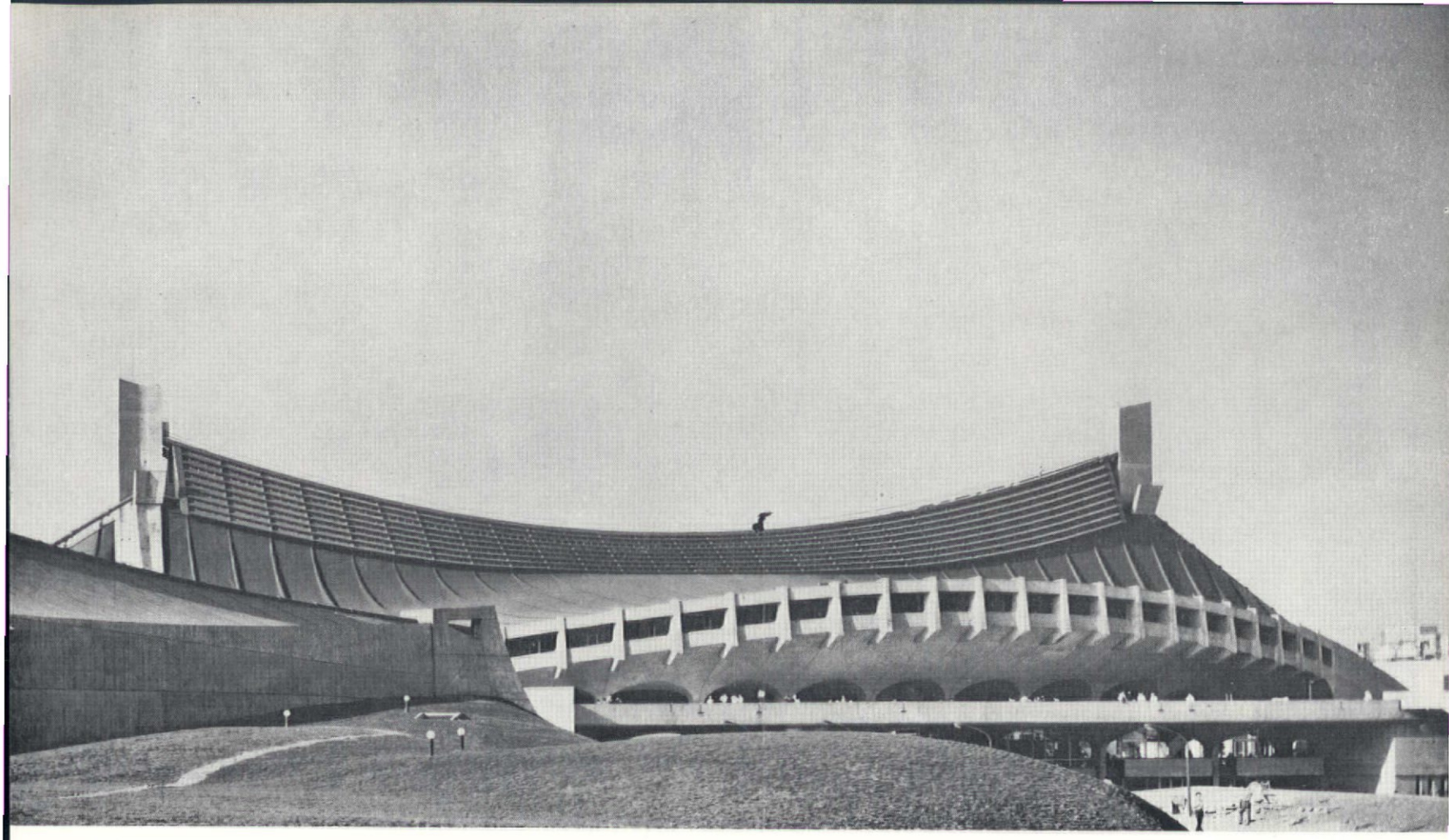
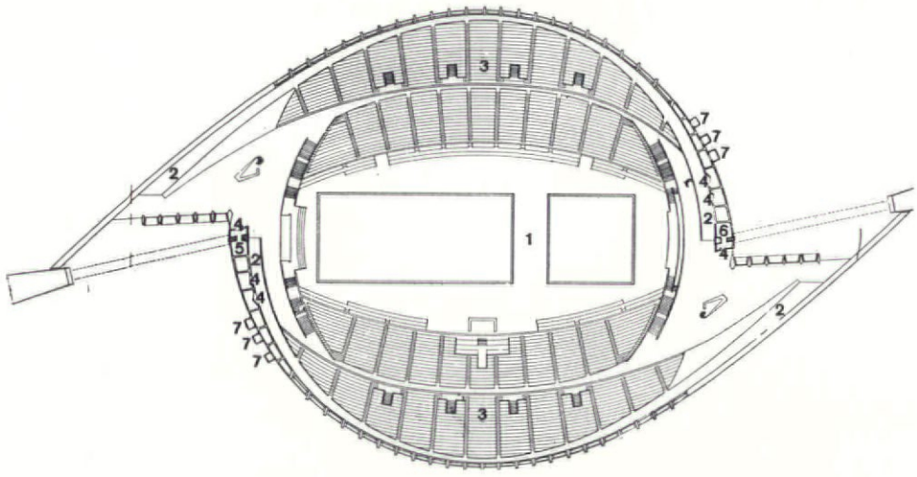




2

1
View of the buildings from the south. The basket-ball annexe is on the left

2
Plan of the two buildings at (left) entrance level and (right) first floor level of the main building
1 space above arena
2 ramp
3 auditorium
4 duct
5 elevator pit
6 staircase in main pillar
7 air exhaust
8 entrance hall
9 information
10 terrace
11 VIP seats
12 storage
13 swimming pool
14 diving pool
15 inner garden
16 concourse
17 auxiliary seats
18 photography area

3
Long and cross sections through the main gymnasium

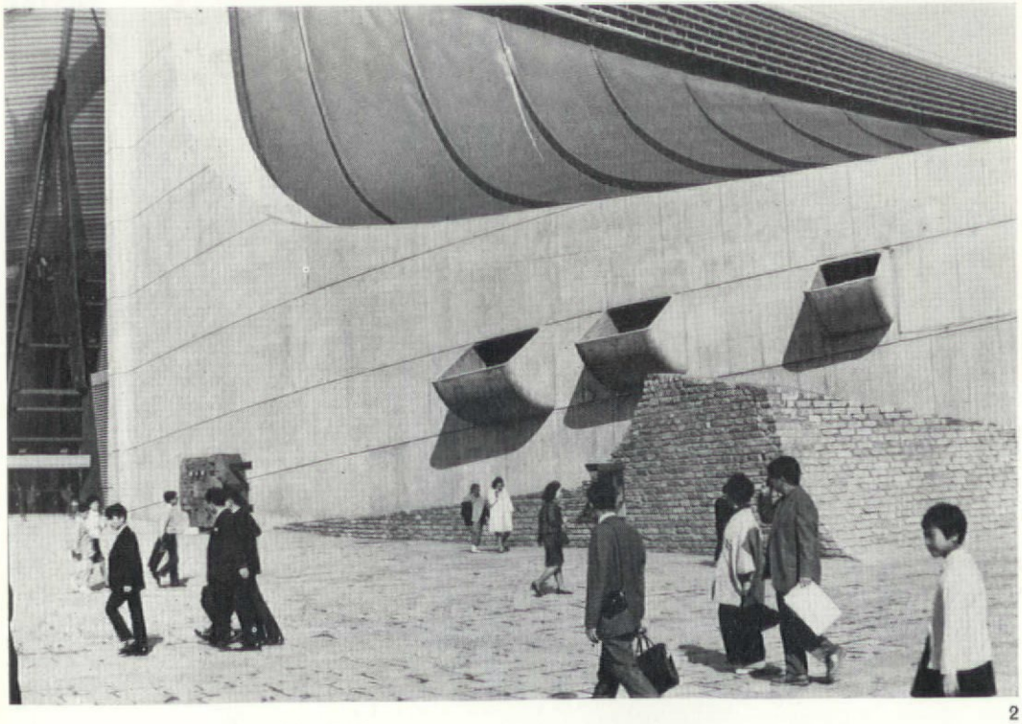
Photo and drawings: Japan Architect



3



1



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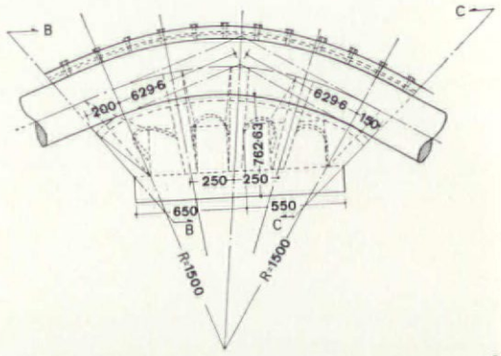
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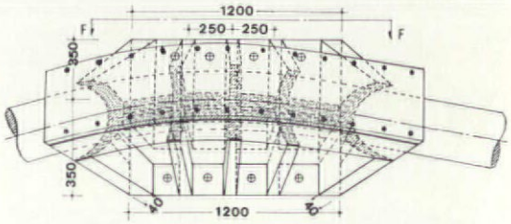
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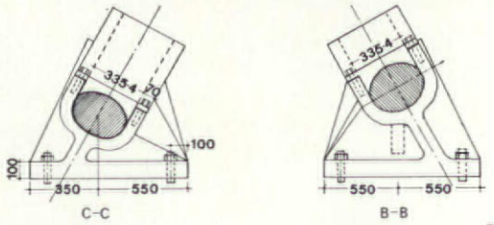
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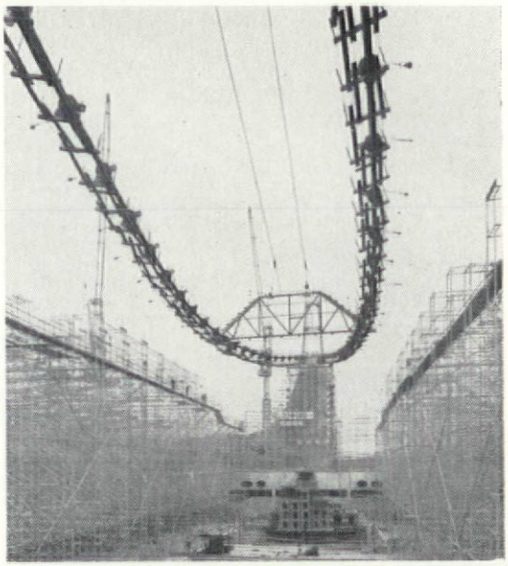

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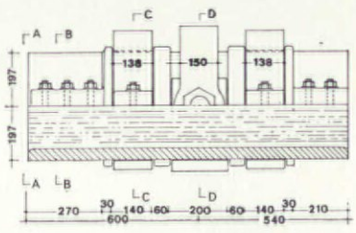
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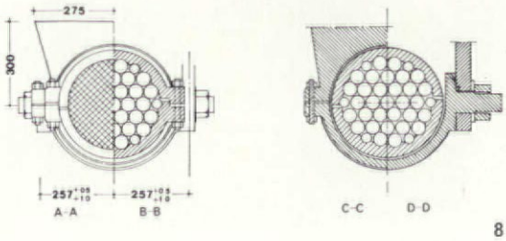
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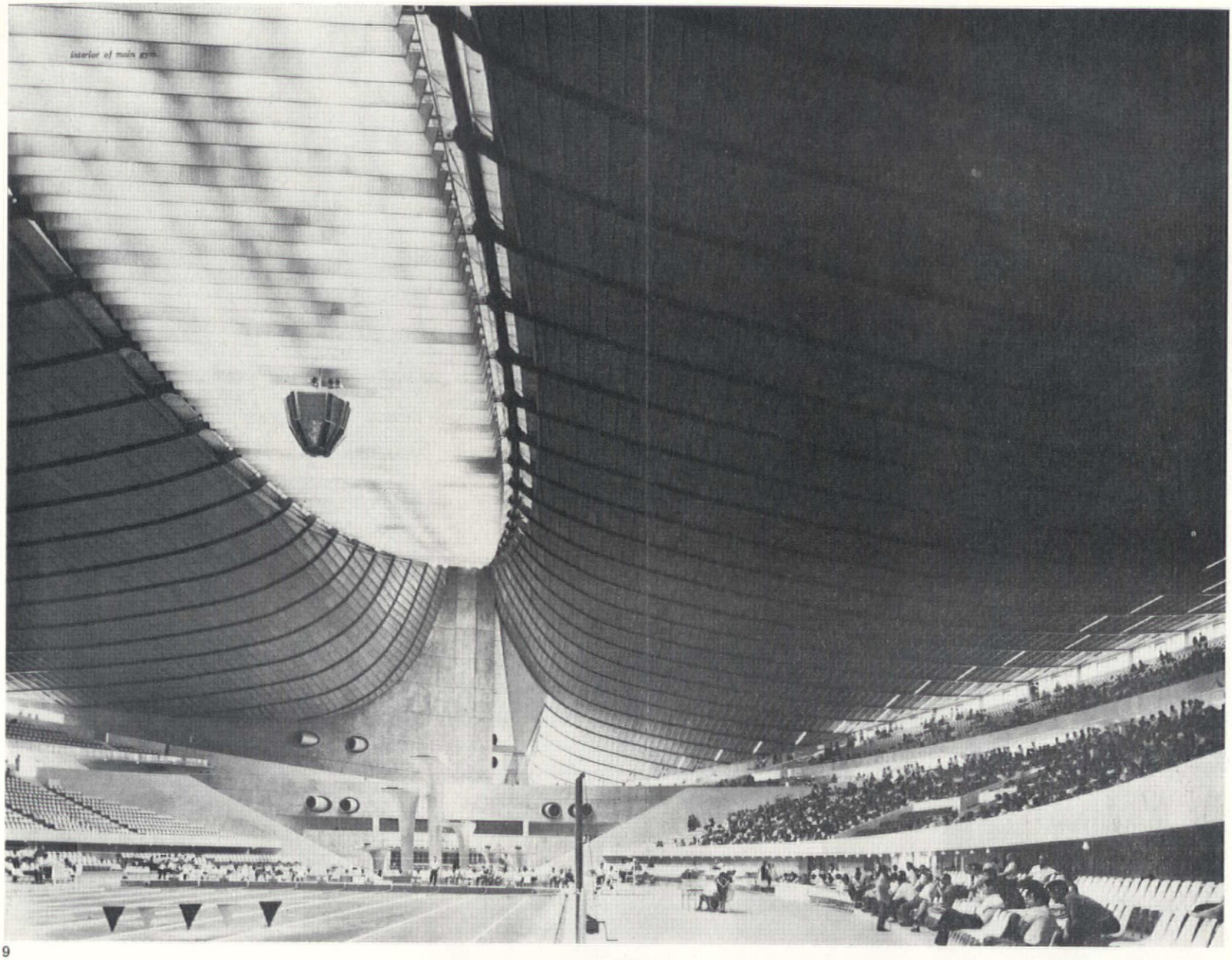


9

1
Main pillar and cables over the entrance to the main arena

2
Air intakes in the flank of the arena wall

3
Typical longitudinal section through the main suspension cables and bearings set on the two supporting pylons of the large gymnasium

4
Plan of the same cable and bearing

5
Cross-sections through the cable and bearing

6
The main suspension cables of the large gymnasium, with the first space frame in position

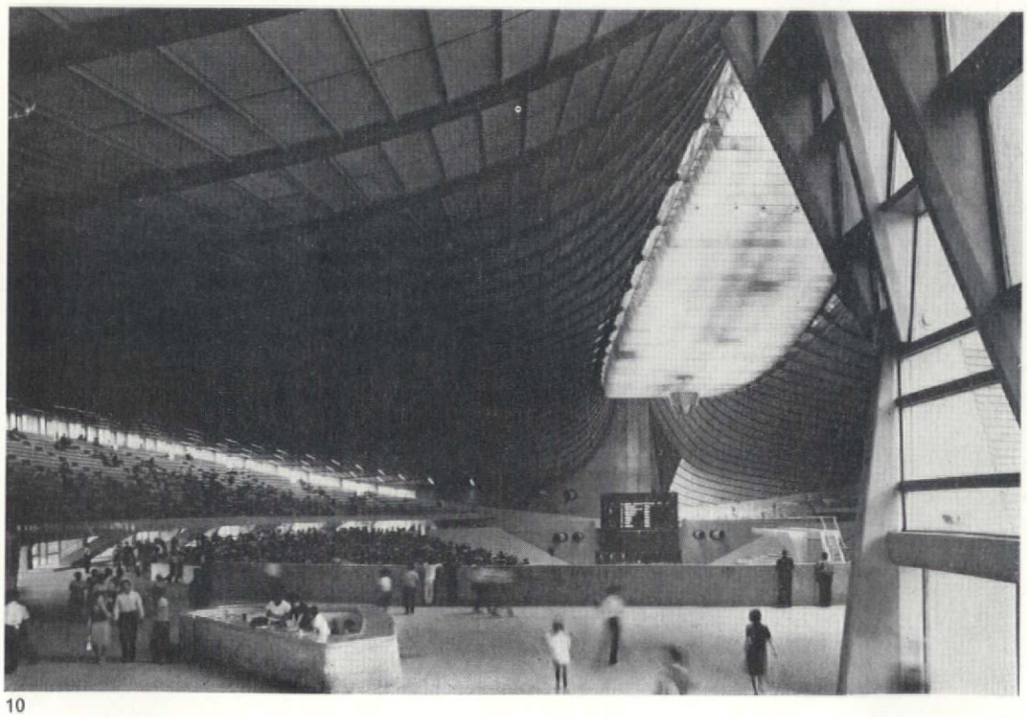
7
Elevation of the bands occurring at intervals along the cables slung between the main pylons of the large gymnasium, serving to bind the individual strands of which the cable is composed

8
A–A elevation, B–B cross-section, C–C cross-section and D–D cross-section through the same bands

9
Interior of the main arena

10
Interior of the arena seen from the Harajuku entrance

Photos: O. Murai 1; Lehmann 2; Kenchiku Bunka *6;* Japan Architect *9, 10*



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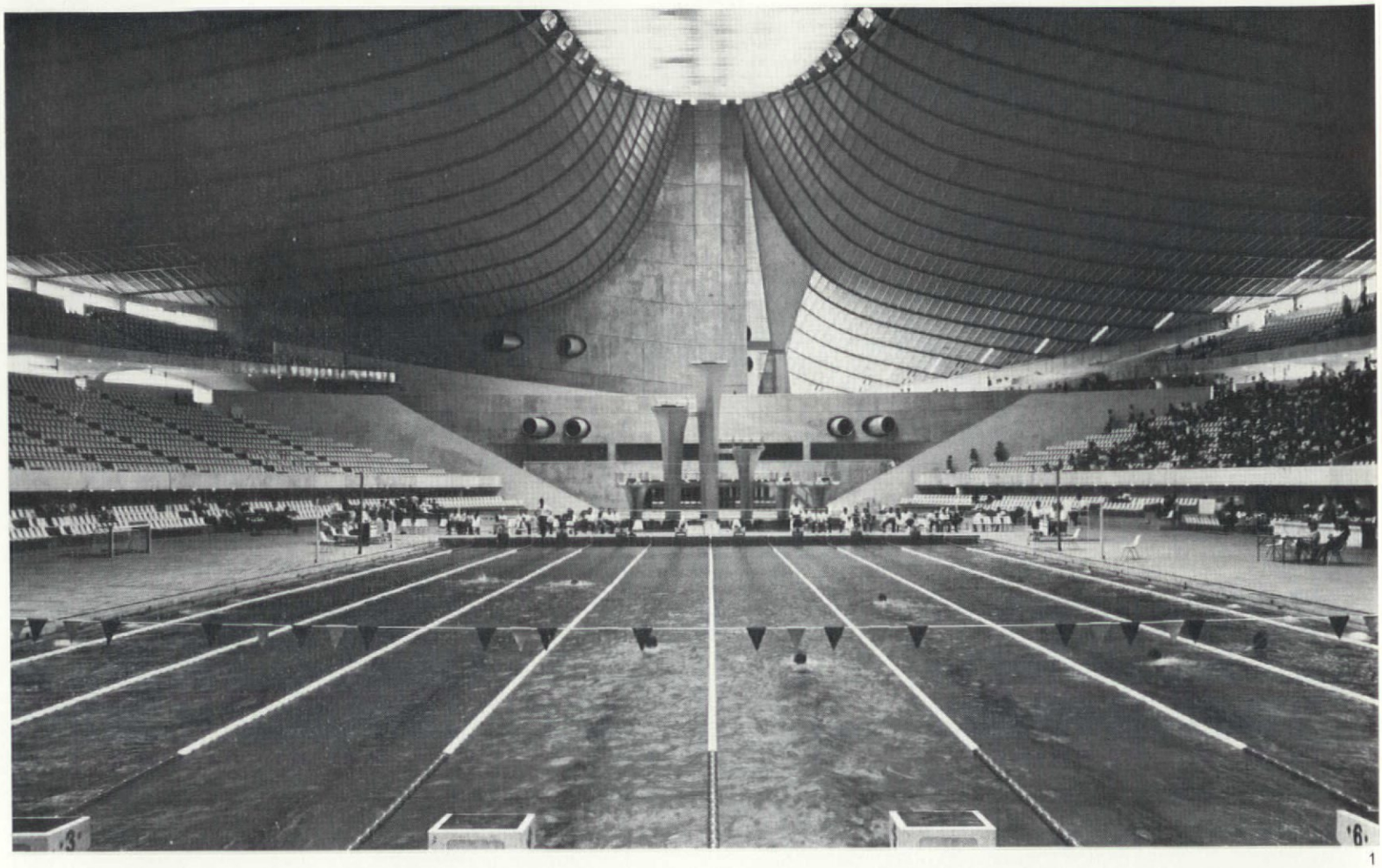

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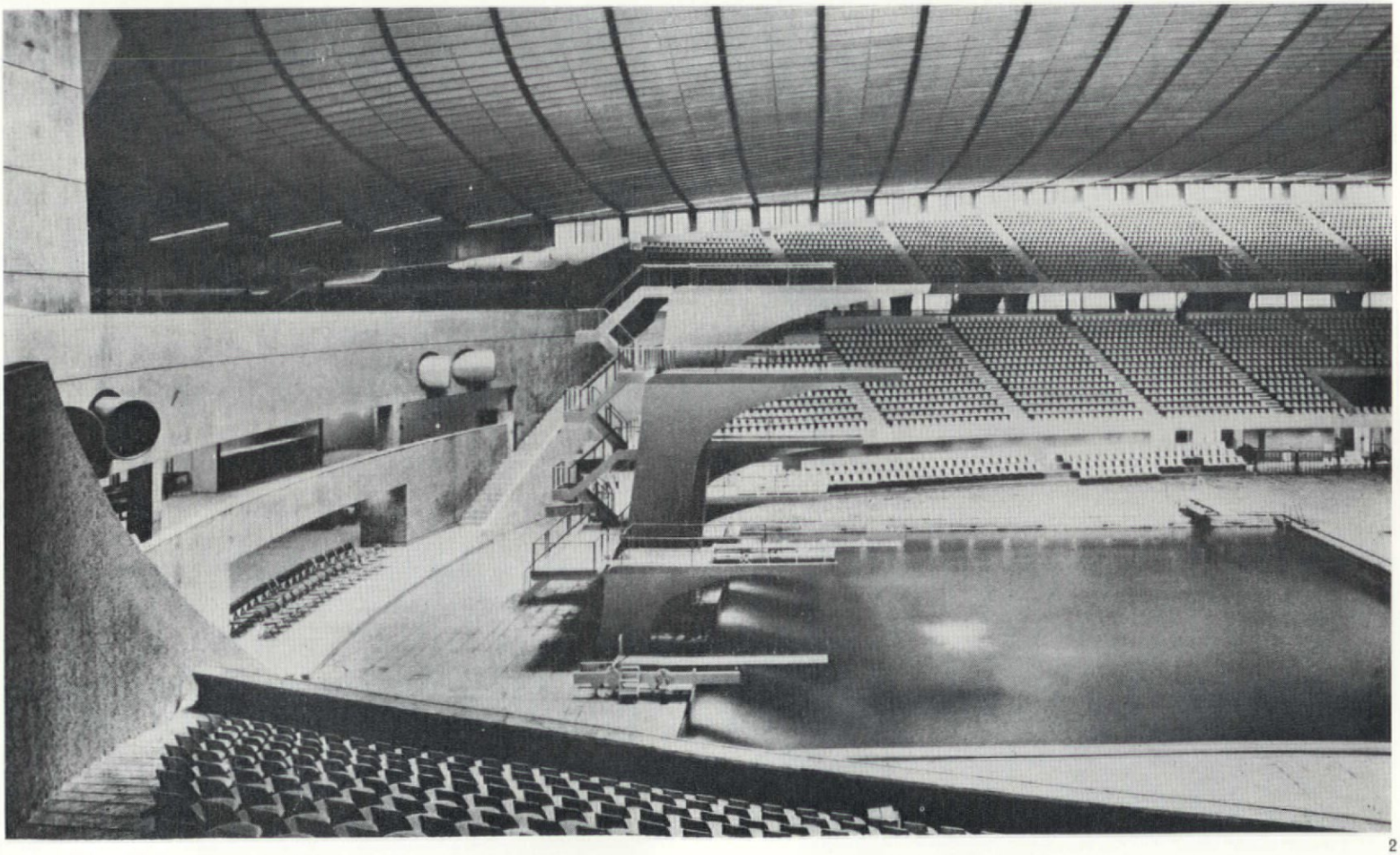

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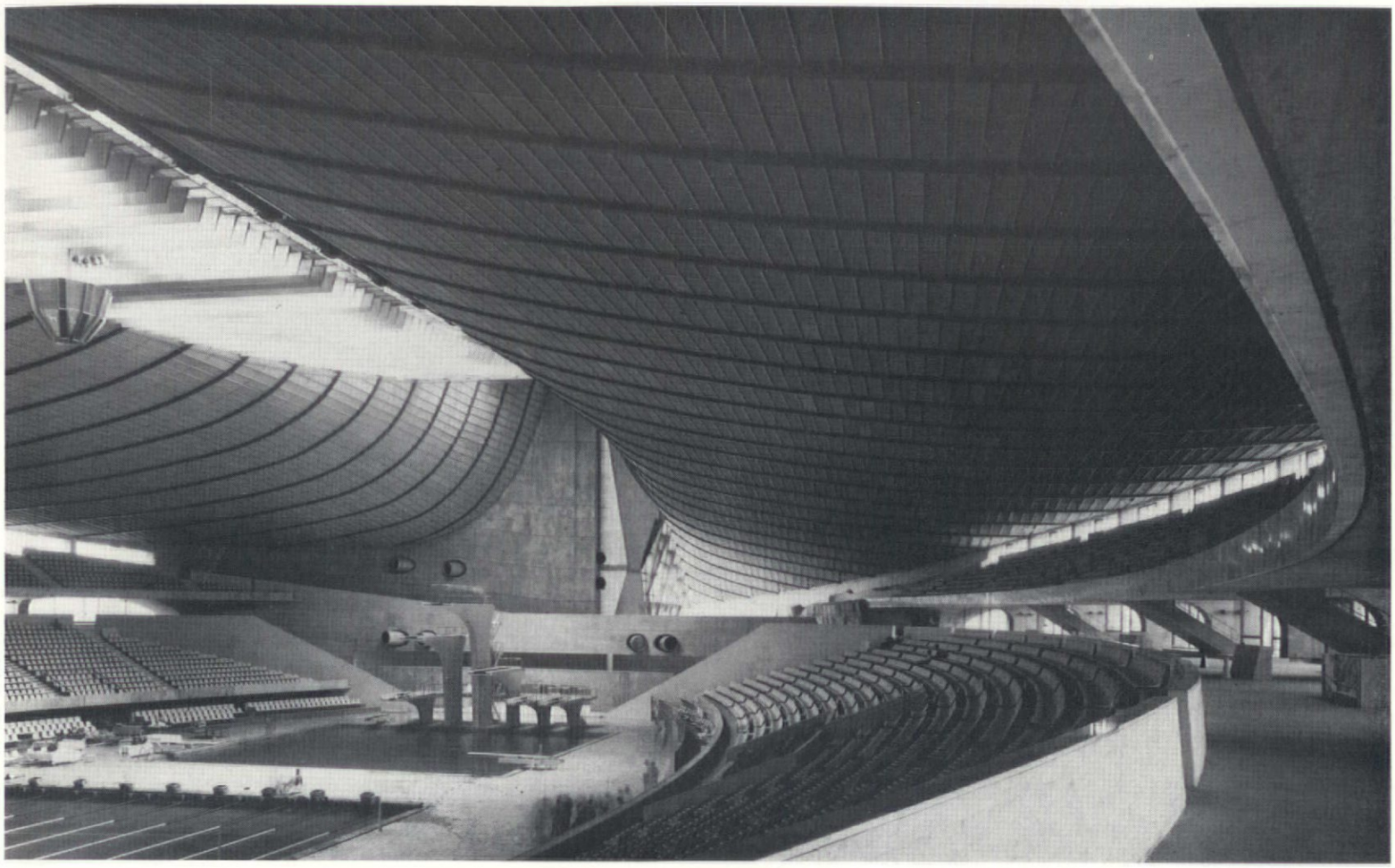


3

1
Interior of the main arena

2
The diving boards seen from the gallery

3
An upper gallery of the main arena

Photos: Y. Futugawa 1; Japan Architect *2; O. Murai 3*

Tange comments on the national gymnasia

The main problem in the design was a structure that would support the vast space of the main gymnasium. We fairly quickly selected a suspension structure from the various possibilities.

The special feature of steel is a tensile strength, which is in the process of development into high-tensile strength. The very positive and rational use of the tensile strength of steel is a result of a conviction that this, without mistake, indicates the course that contemporary architecture is taking. Moreover, I had a premonition that the limits of conformity would go through a transition from simple beam, to vault and dome, and then to suspension construction according to the span of the space—much as in the case of a bridge.

Aside from spatial economy, there were other reasons for choosing this structure. In comparison with the convex space of a dome, the concave configuration of a suspension structure encloses a great deal less space and lightens heating and air conditioning loads and makes acoustic control easier.

What made me personally decide on this structural method, however, was the possibility I saw in it of creating an 'open form'. From the outset, the structural form aside, we felt the need for openness to greet and see off vast numbers of people, but we also felt that this openness must not be merely a matter of hydrodynamic functions, but should also have a psychological meaning. Speaking conversely, we wanted to eliminate the feeling enclosure of the roof and the closed-in stands. We also gave consideration to the need for an open form for visual and physical connection between the main gymnasium and the gymnasium annexe—in the event that in the future other buildings are added to the group.

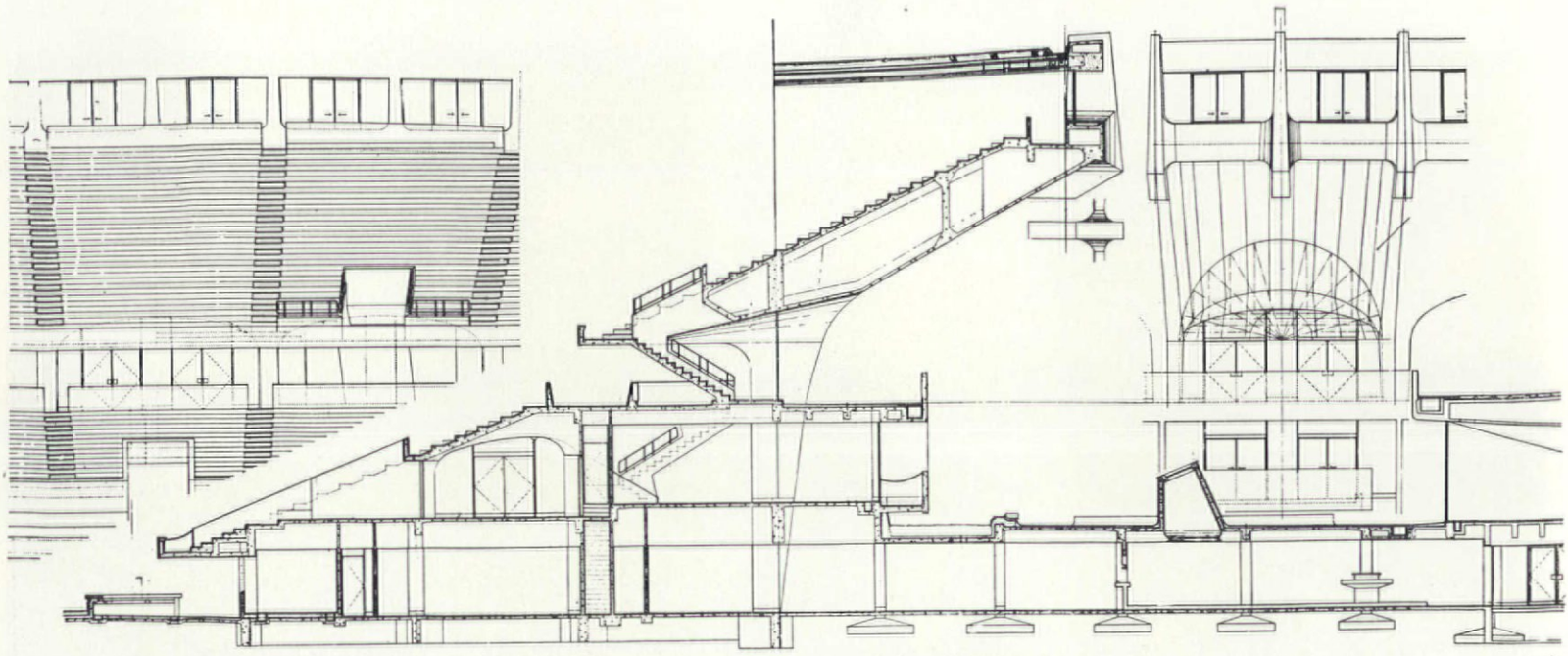
The placement of the building that, as we see it now, closely connects the two separated gymnasiums was chosen when the form of the gymnasiums themselves was selected; however, a firm relation with the other buildings was not forthcoming until a later stage in the planning.

That was when we experimented with guideways like roads, road architecture and plazas. We chose a long road-like building to join the two gymnasia and to serve mainly as a corridor. Along this corridor are various administrative offices, but the main function of the building is that of a connection between the main gymnasium and the annexe. There is a dining hall and a training pool at either end of the corridor. The pedestrian promenade on top of this building links the Harajuku entrance of the main gymnasium with the Shibuya entrance of the annexe and the main gymnasium.

My one disappointment is connected with the relation between the site and the building exterior and the city spaces around it.

From a visual viewpoint, this site is too small for such a vast building and even from the functional viewpoint, the smallness of the site means that there is not enough parking space to accommodate tens of thousands of spectators. In addition, it was necessary to build the overpass at the Harajuku entrance to handle the distribution of pedestrians and vehicles, but the actual overpass is a doubtful success. It is also a great pity that the Shibuya entrance is in such a very city-like area. The Shibuya ward office, public hall and the NHK building near the Shibuya entrance are all new buildings, but they have such differing advantages and disadvantages and such varying purposes that they fail to make an agreeable whole with the gymnasium.

Extracts from *Japan Architect*, November 1964



1



2

1
Typical interior and exterior elevations and sections through the main building

2
Lounge under the gallery of the main arena; the furniture is by Isamu Kenmochi, the painting by Toko

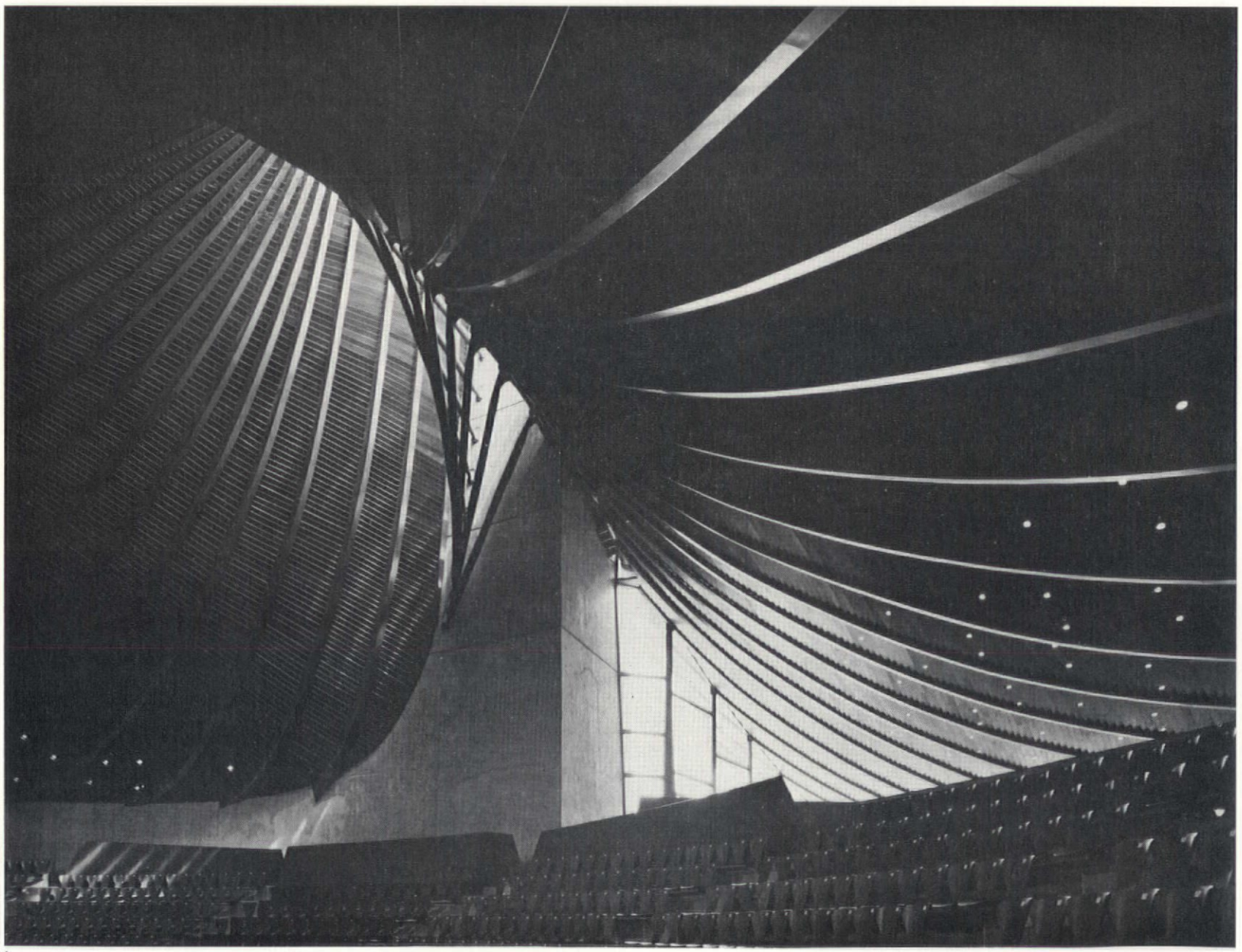
3
The annexe seen from the north looking across towards Shinoda

4
The ceiling of the basket-ball building

Photos: Y. Futugawa 2, 4; Japan Architect *1, 3*



3



4



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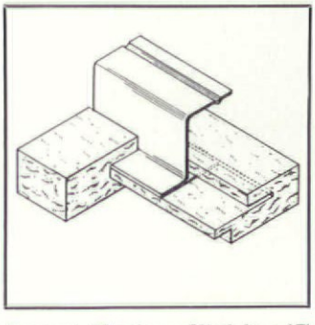

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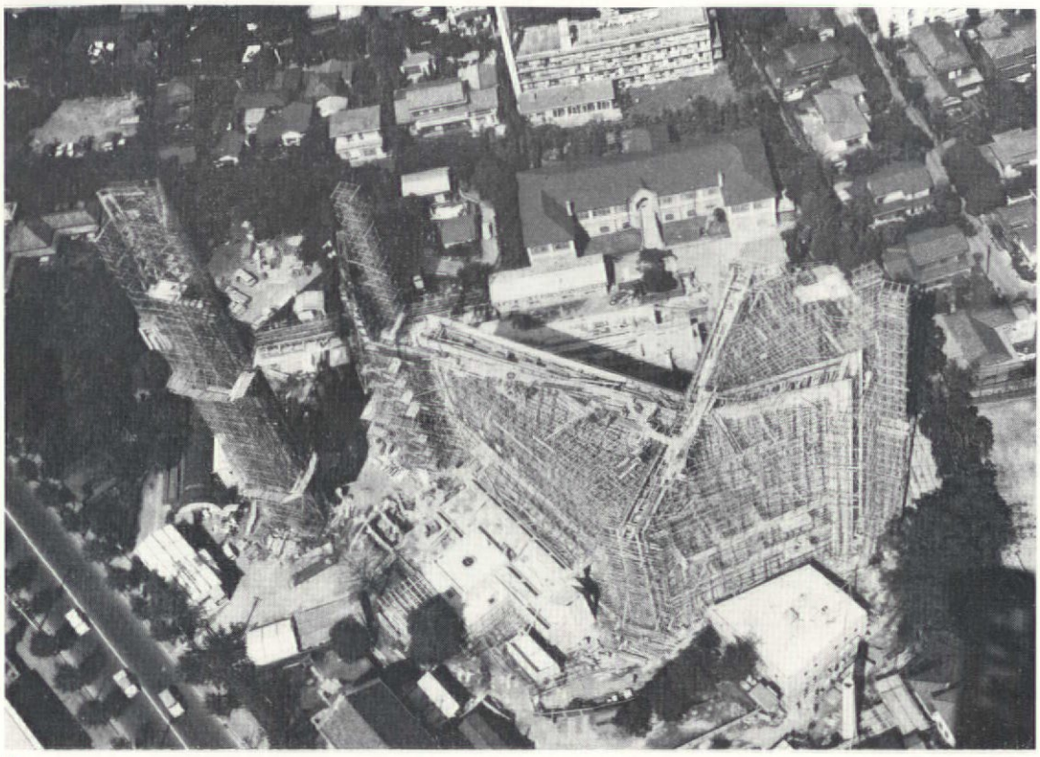
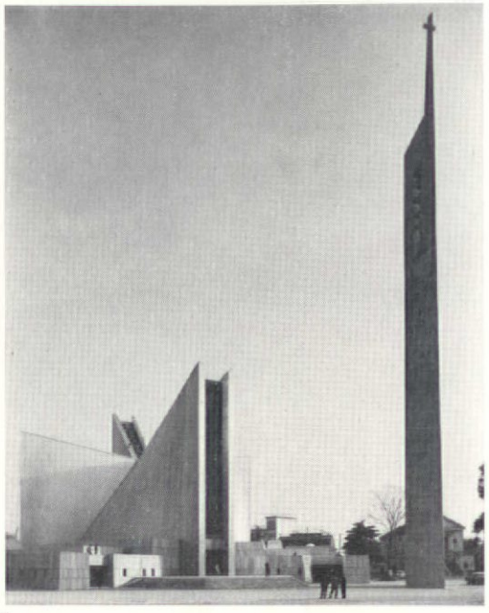
1965, Tokyo R.C. Cathedral



1

1
The building under construction
2
Model
3
The building nearing completion



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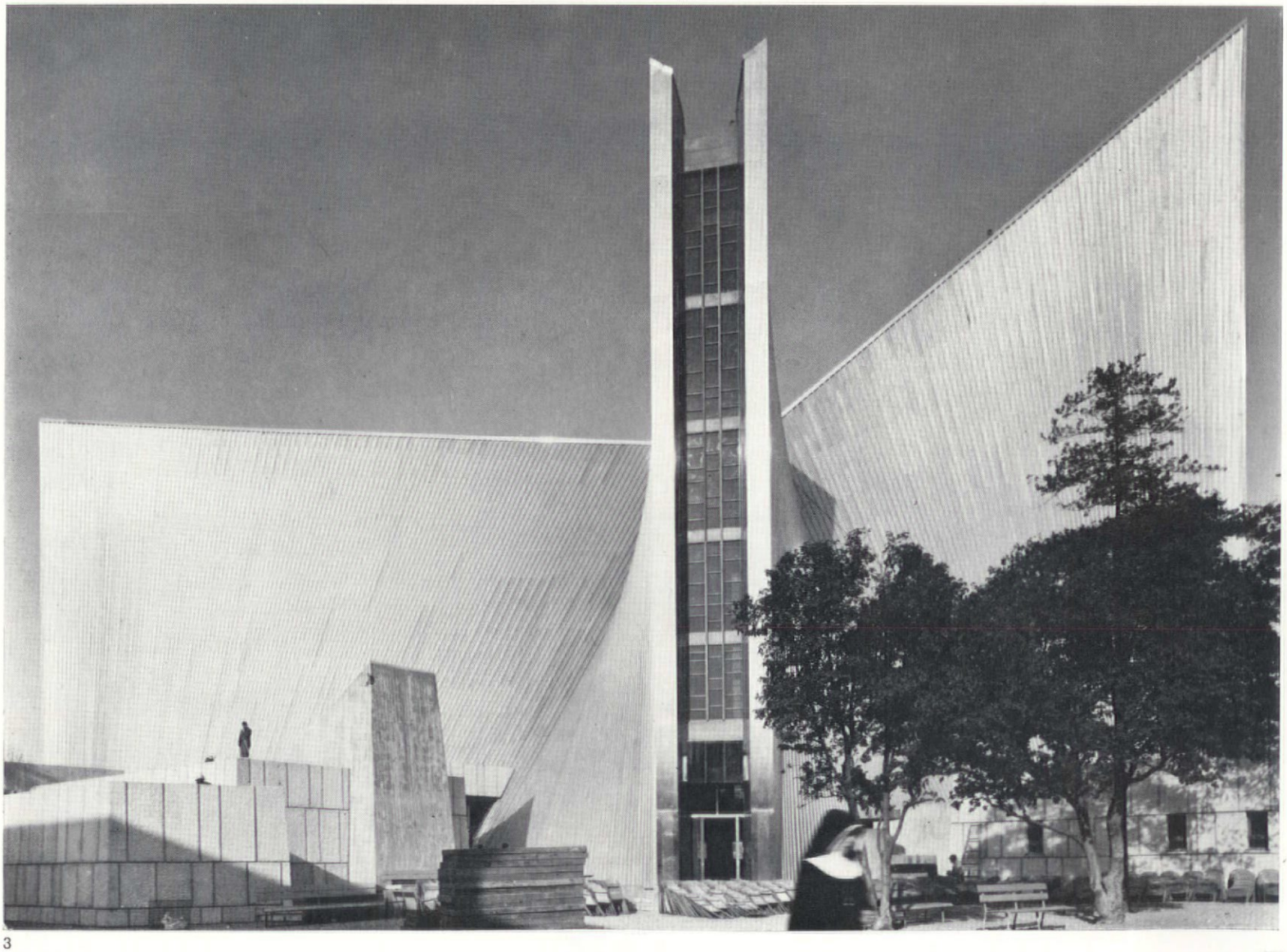

3



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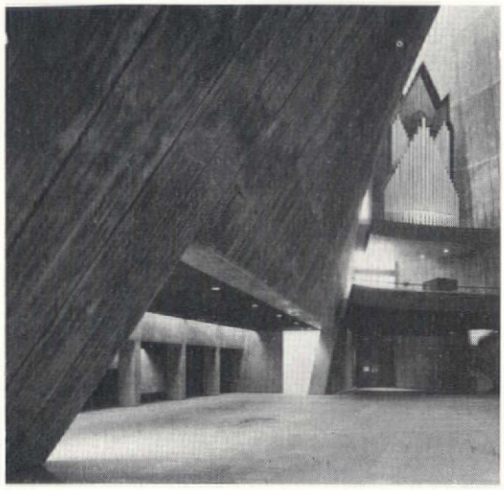

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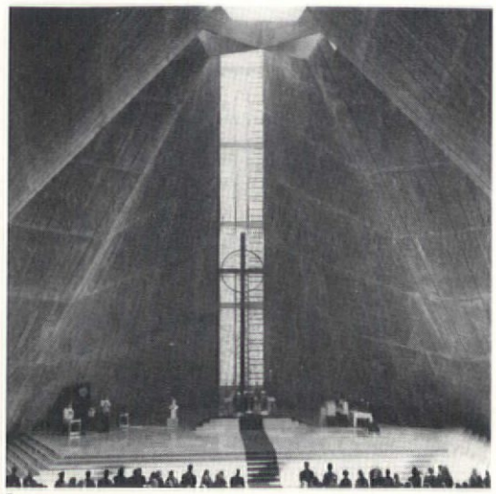

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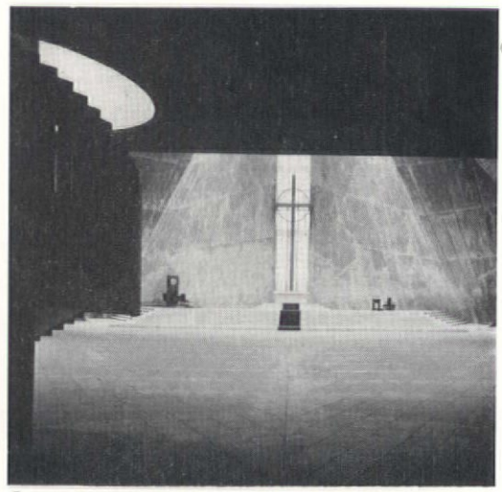


3

Won in a limited competition (with Maekawa and Taniguchi), the programme called for a space to hold 2600 worshippers—600 seated—processional space, organ loft, high tower, plazas in front and to the side of the building, and auxiliary buildings.

The design of the main 39·419m high building is based on four upright HP shells forming a Latin cross at the glazed ridge of the roof, and supported on columns on steel piles so that at eye level the transepts and nave flow into each other as in the Greek cross plan. The warped slabs of the walls are sheathed in ribbed stainless steel. The campanile, 61·680m high, kite-shaped on plan, changes in section as it rises, to split into cross and bell support and then link together again above. The surface is in steel pan finished concrete, with rounded stainless steel coves at the extreme arrises. The low surrounding terraces of buildings are faced with precast concrete slabs with only a limited number of windows, for they are mainly lit from above.

The low buildings, with their thick walls and draught lobbies, exclude all noise, and form a kind of ante-room in three sections to the single main cathedral space. There are various facilities such as the baptismal font, an octagonal cut out of a white marble floor filled with white pebbles, and, on the other side, a small lady chapel. Lighting intensity increases towards the centre, with both the daylight and artificial light coming from the same slots behind beams.

The main space is vast (25,000ft²) with an arresting simplicity of detail, especially at the crossing where a deep X-shaped beam keeps the wall planes in position. The grey fair-face concrete of the walls has vertical emphasized joints that increase the sense of enclosure in a tent-like tensile plane. Arrises on the concrete work are dead square and true—in fact, all the concrete work is a remarkable tribute to Taisei who, like other leading contractors in Japan, are often their own architects.

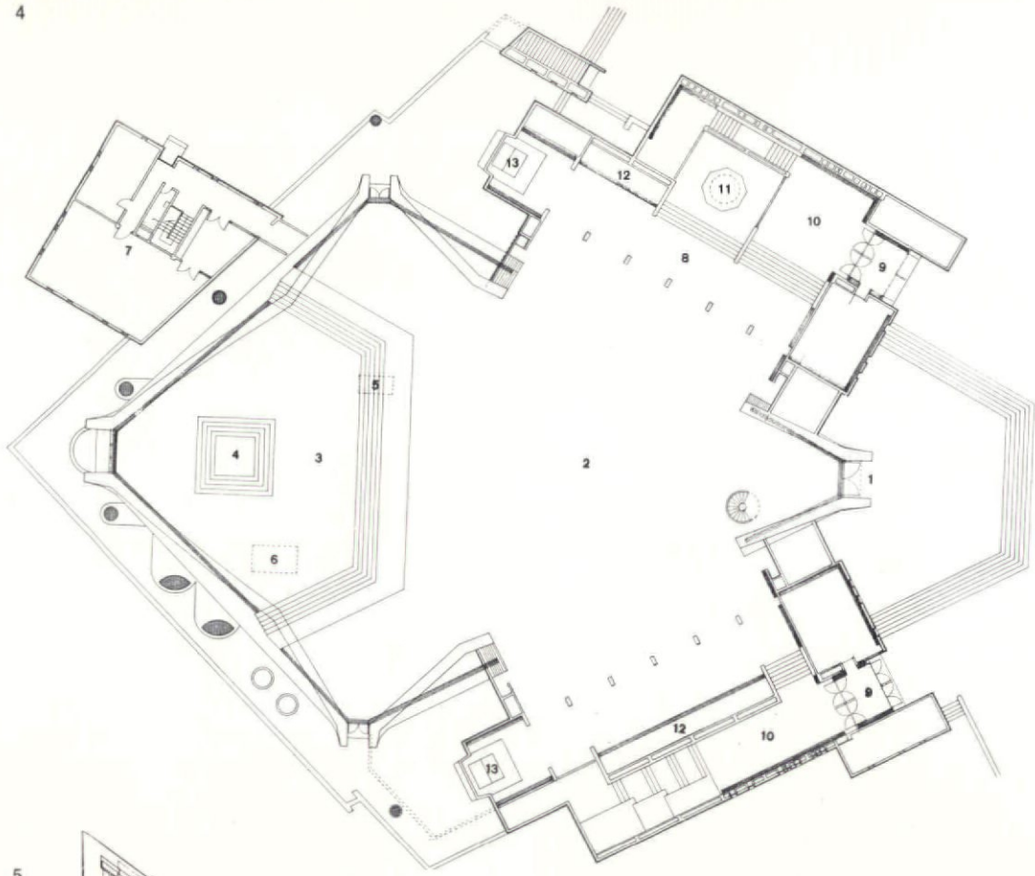
1, 2 & 3
Inside the cathedral

4 & 5
Plan and section

1 main entrance
2 nave (pews)
3 sanctuary
4 altar
5 pulpit
6 cardinal's seat
7 sacristy
8 side aisle
9 side entrance
10 side entrance hall
11 baptistry
12 confessional
13 side altar
14 choir
15 pipe organ

Photos: Jeremy Dodd 1, 2 & 3

4



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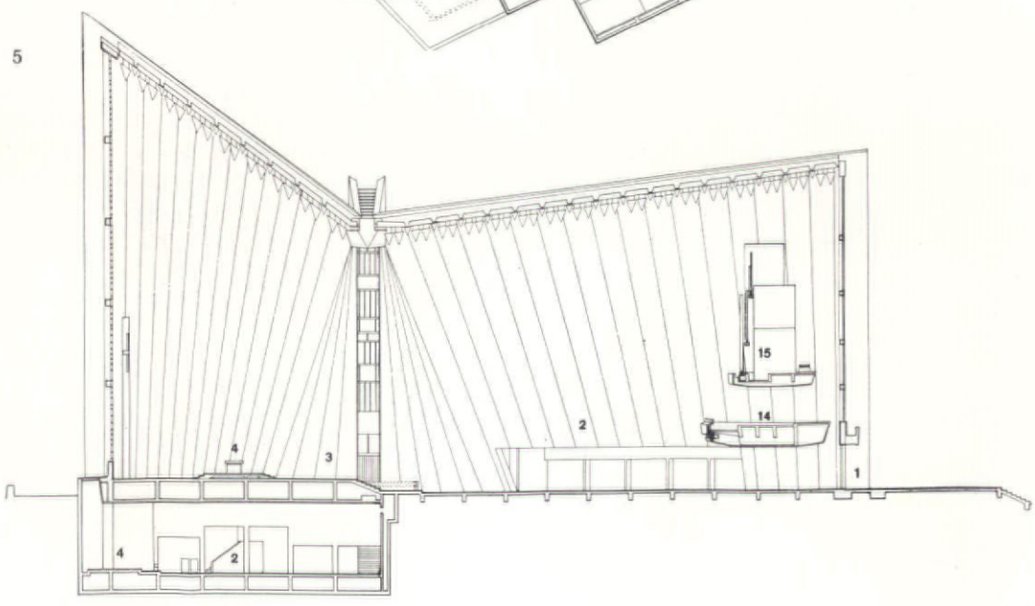
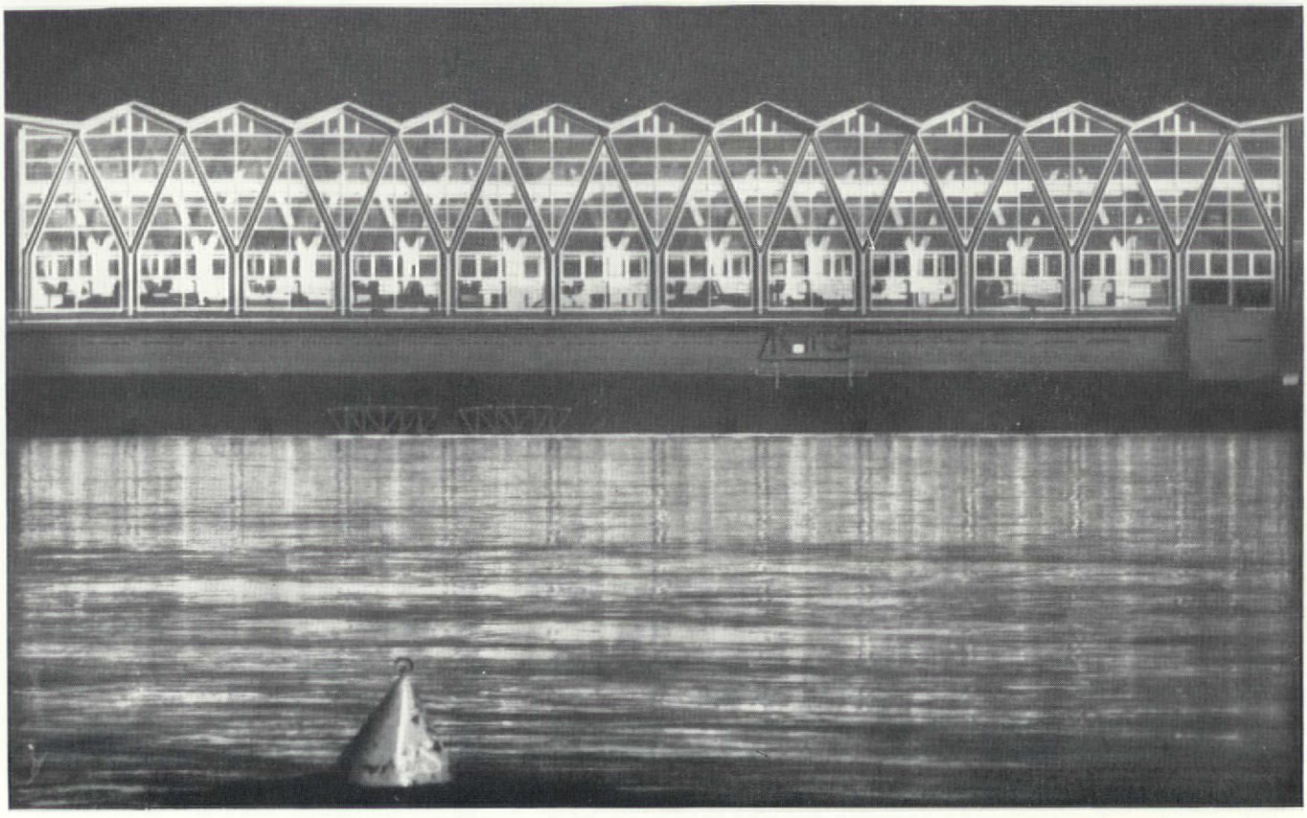
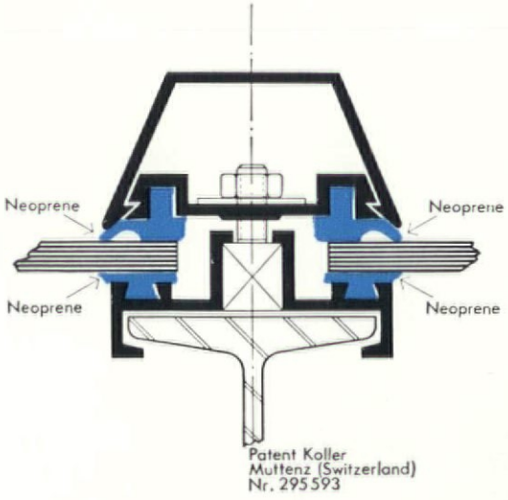




TEN YEARS' maintenance-free sealing with NEOPRENE



A major sealing task: two large and exposed glazed facades, each 130 yards long and 60 feet high. But the architect knew the properties of Du Pont Neoprene and specified preformed Neoprene sealing strips throughout.

The Birsfelden power station in Switzerland is just one of the hundreds of new buildings all over the world which have been effectively sealed against wind and weather.

Neoprene is well known for its resistance to ageing, weathering, oils and chemicals—but there are other important considerations for the architect too: its economy, saving time and materials; its thermal stability and permanent elasticity and the fact that Neoprene won't crack, dry out, harden or soften. Neoprene will not support combustion. It is architecturally non-restrictive, easy to fit, and requires no subsequent maintenance.

No wonder Neoprene was specified at Birsfelden! 13,500 yards of pre-moulded Neoprene sealing strip keep the power station water tight, weather tight—permanently.

To find out more about Neoprene, just complete and post the coupon below—or look at file No. 384 in the Barbour Index.

PROVED RELIABLE SINCE 1932

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ESTABLISHED 1802

Better Things for Better Living . . . *through Chemistry*

Please send me your booklet 'Neoprene gaskets for curtain walls' and a list of suppliers.

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A.J. 2/65

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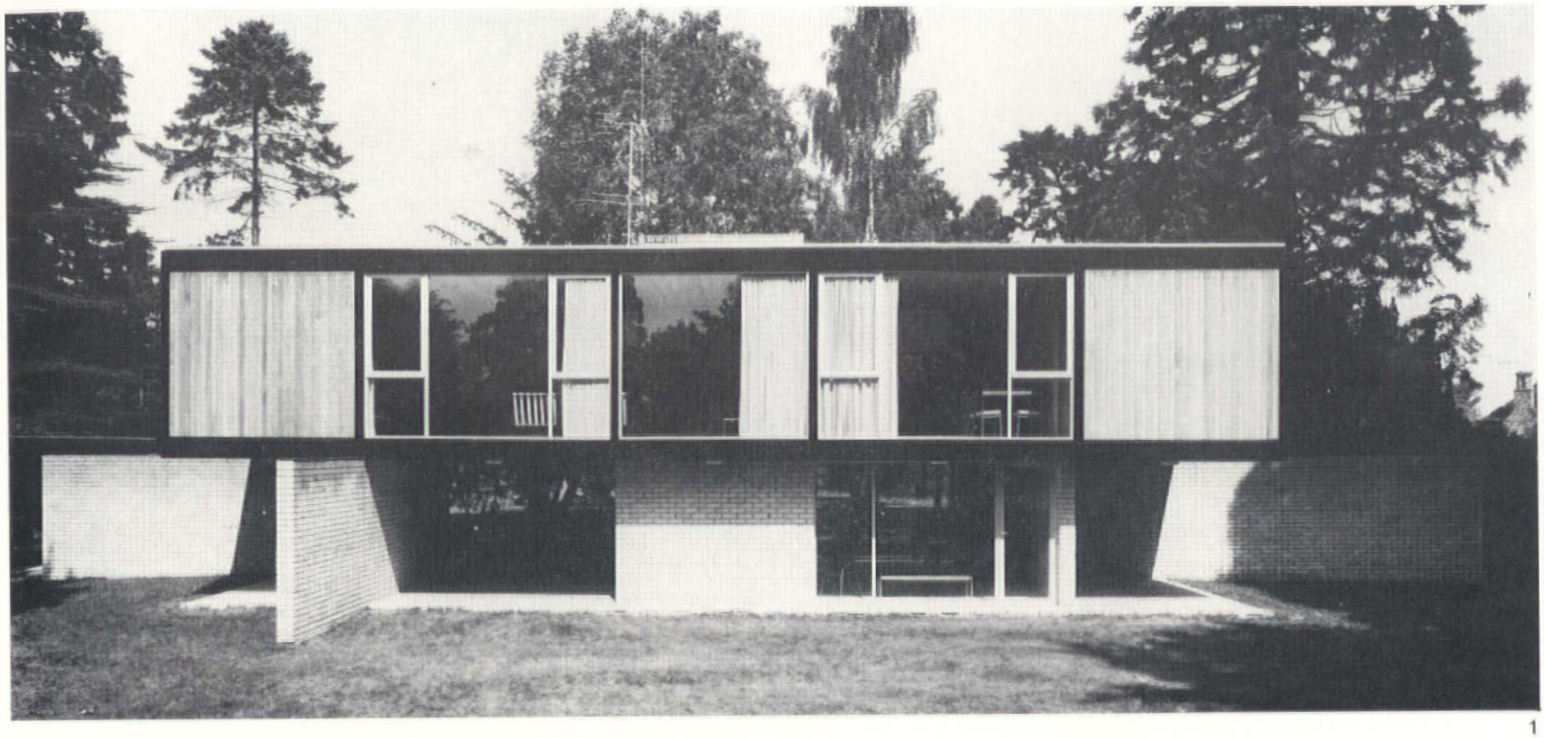


1

Architect's own house at Harpenden, Herts.

J. S. Bonnington

The site is half an acre of flat land, on the edge of an extensive common.

The main living accommodation at first floor level allows the maximum area of garden, and the possibility of future extension below.

The load-bearing brick walls are in buff yellow semi-engineering brick built off ground beams carried on short bored piles. Freely supported and counterbalanced on the ground walls is the rectalinear steel frame containing the principal accommodation of the house. Other than the brick spine wall which projects into the volume along the axis of the plan, room divisions occur as timber screens. All doors are teak faced, full height, and slide.

The plan is devised on a precise system of divisions, based on a module of 9in. The main structural intervals occur at 3ft, 6ft, 9ft or 12ft and internal fittings and furniture are also designed on this module.

The welded steel frame is exposed externally and detailed to present a continuous steel surface. To achieve this end, the steel was grit-blasted and all the welds ground smooth. Infilling the structural frame, the external walls occur as either solid or fully glazed panels.

The solid panels are of sandwich construction faced externally with western red cedar and internally with sitka spruce. Between these skins is a moisture barrier, an expanded polystyrene insulation, and a vapour barrier.

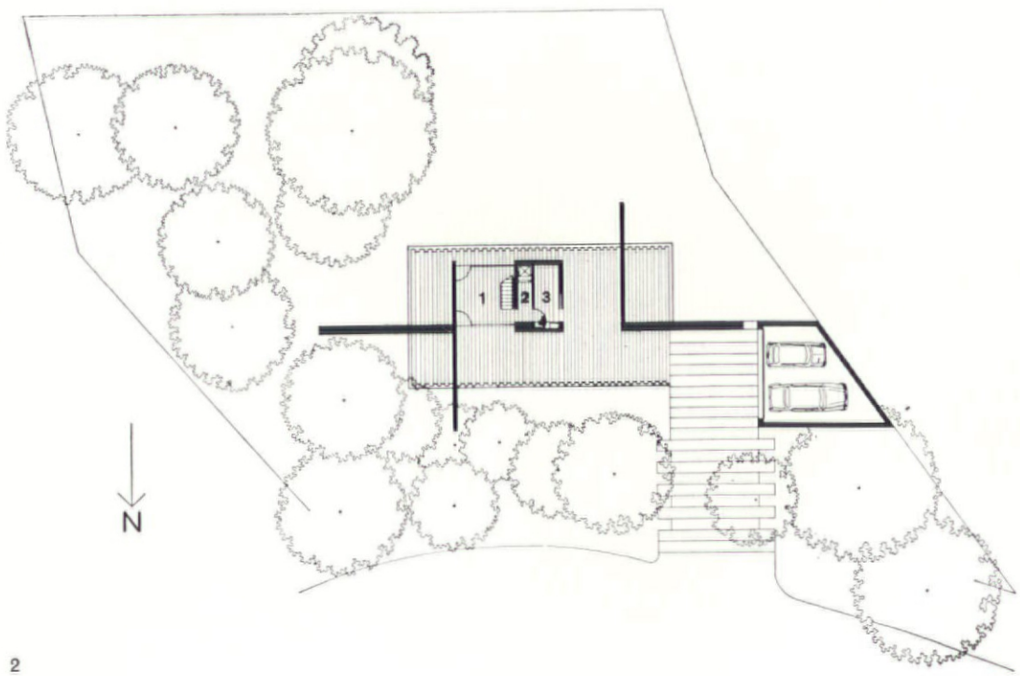
The fully glazed panels consist of double glazing units set into natural anodized aluminium frames.

The white plane of the Portland stone terrace is repeated at first floor level where the floor is white glass mosaic throughout. Similarly the British Columbia pine soffit to the undercroft is repeated in the spruce ceiling at first floor level.

Both the floor and roof of the frame contain expanded polystyrene insulation to minimize heat losses.

Maintenance of all the materials both internally and externally is reduced to the black painted external face of the steel frame.

A thermostatically controlled warm air form of central heating is generated by an oil-fired furnace. Bulk oil storage is built into the garage to provide capacity for six months' running.



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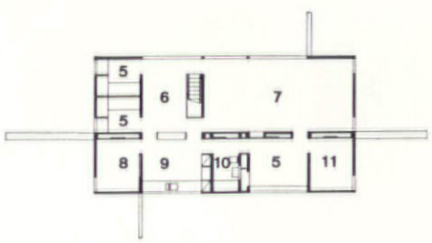


3

1
South elevation
Photo: Henk Snoek

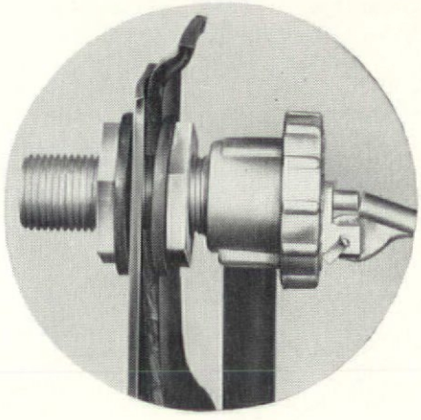
2
Ground floor plan
1 entrance hall
2 toilet
3 cloakroom
4 services

3
First floor plan
5 bedroom
6 dining area
7 living area
8 utility room
9 kitchen
10 bathroom
11 study

Weigh-up all the advantages. You'll come round to Harcostar







Made from tough polyethylene, new Harcostar water cisterns *can't* rust, *won't* rot, *will* last indefinitely. Harcostar mean major economies for every house-builder, owner and local authority.

Save and save again Made in a full range of sizes, the cost of Harcostar cisterns is surprisingly low. Further savings follow from ease of handling and quick, simple fitting which requires no special tools or fitments. The 50 gals. (actual) Harcostar weighs only 18 lbs. and, although rigid when full, can be 'flexed' through a space as small as 2 ft. square. Once installed, the cistern is quiet in operation and requires no maintenance.

Better all round Polyethylene cisterns are suitable for all U.K. water supplies and accepted by leading authorities. On every count, the Harcostar range is now the logical first choice for water cisterns. Write for detailed specification to:

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ENTERPRISE

EASIER TO FIT
CAN'T RUST
COSTS LESS

polyethylene
water cisterns by

harcostar

CRC A2

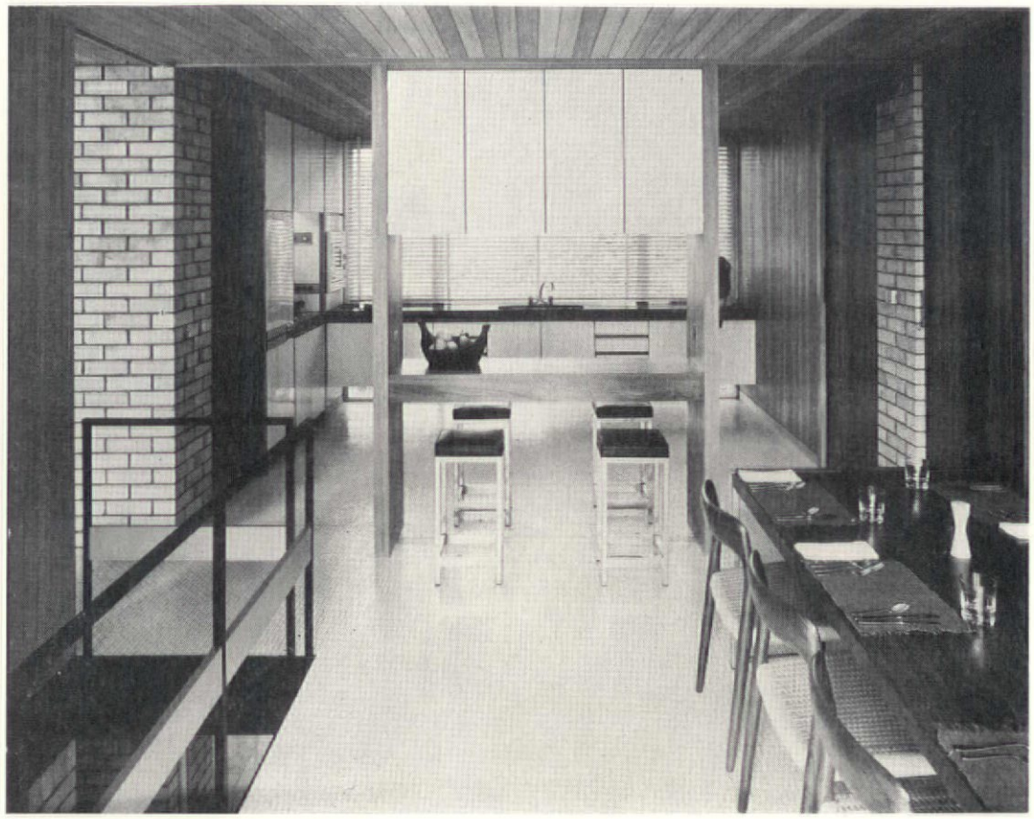
Tungsten lighting is provided to illuminate the terrace. At first floor level the principal lighting is from concealed fluorescent tubes.

The cavity of the spine wall provides full height shelving down the length of the house for use according to the space it adjoins, concealed behind sliding doors that appear as a series of teak panels.

All metalware such as the specially designed light switches and door pull handles, radio grilles and plant holders, shelving brackets and warm air grilles, are either in brushed stainless steel or satin chromed mild steel to produce a consistent metallic appearance.



1



2

1
South elevation by night

2
View from dining area towards kitchen

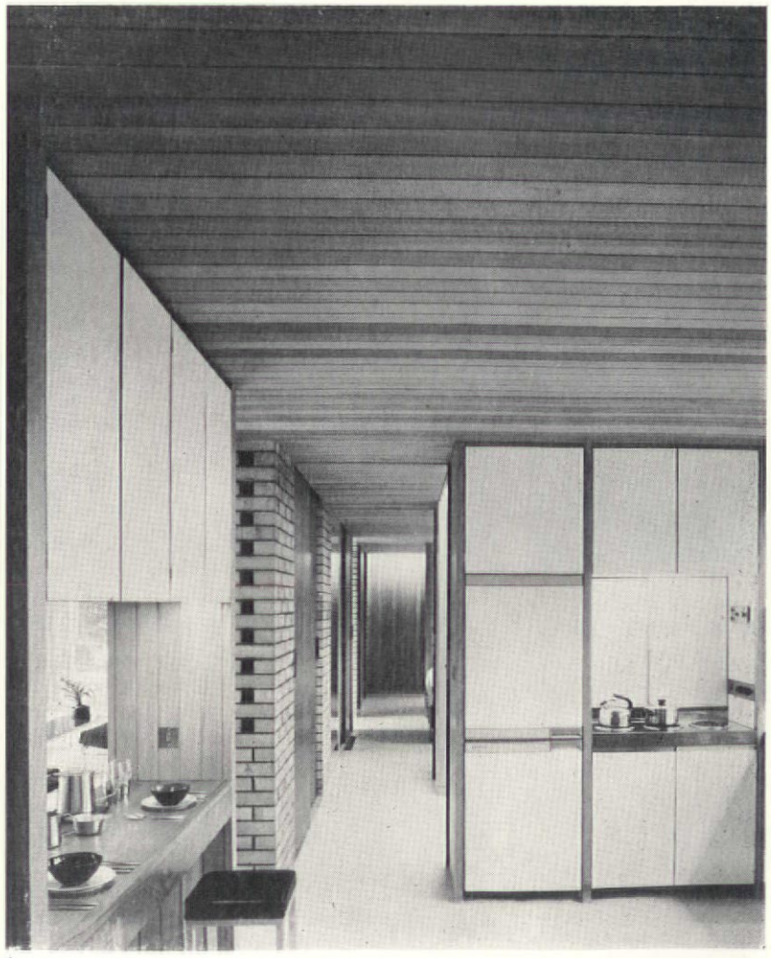
3
View along the spine wall from the dining area to the living area, with the eating counter on the right

4
View along the spine wall, from the kitchen to the bedroom corridor. The eating counter is on the left

Photos: Henk Snoek



3



4



We can't get it all in

It is simply impossible in one advertisement to do justice to the polypropylene chair programme. This complete, multi-purpose range of tough, attractive, low cost chairs has been described in the Architects' Journal as '. . . the most significant development in British mass produced chair design since the war', a judgement reinforced by the immediate success of the whole range. Unfortunately, in this limited space, we can't detail a programme which includes stacking chairs (two types), benches, armchairs, stools, pedestal-based chairs, upholstered versions—but please send for the brochure, it shows them all and explains everything.



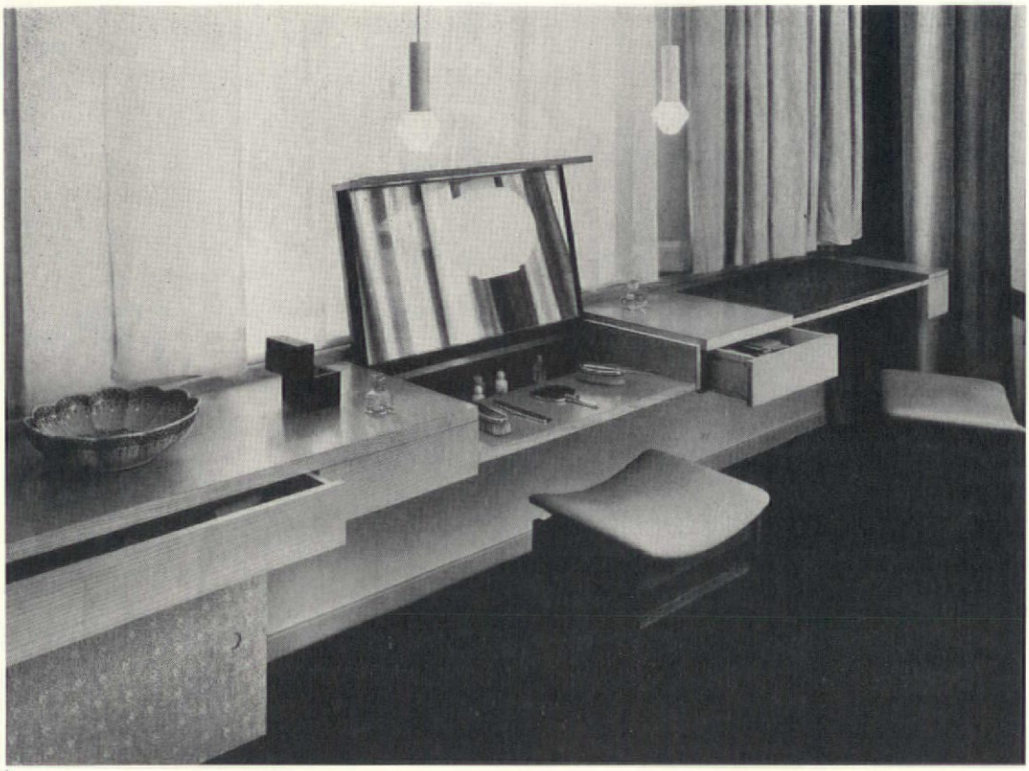
to: Hille of London Limited, 41 Albemarle Street, London W1.
send me the polypropylene chair programme brochure.

Name _____

Address _____

_____

hille



1

Bedrooms at Sanhurst, Eynsford, Kent

Two separate first floor rooms in the existing home of Mr and Mrs J. H. Pedersen (of Georg Jensen Silver) have been converted by Trevor Dannatt to form a united bedroom suite.

Each bedroom has a separate entrance from the stair landing but are connected by a wide opening which can be closed by a pivoted door—a narrow strip of glass ensures visual continuity between the rooms. The general carpeting is the seaweed green in both rooms, and the long curtains are of broad stripes of pale blue and tobacco brown fabric, while the short curtains are brown over the desk in the man's room and pale blue over the dressing table **1.** There are also Terylene net curtains.

The man's room **2,** has a doorway recessed in the cupboard wall which is fitted with sliding doors (veneered in white beech) and contains hanging space, draw-out shelves, etc. A red fascia panel over the various doors helps to unify this wall. The bed wall is covered with pale woven matting divided into two by a wooden rail which carries the bedside light, etc. The bed was specially designed in beech and teak.

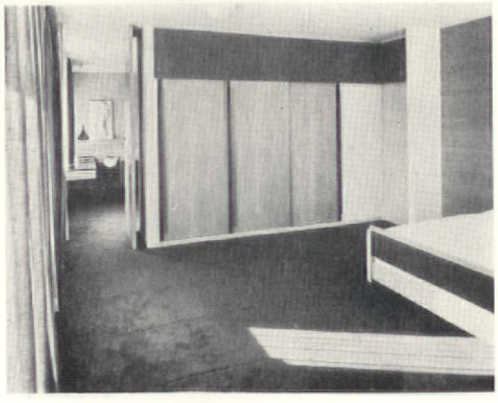
The wall separating the two rooms forms a large cupboard to the main room **3,** again fitted out with hanging space, sliding shelves, etc. Doors are also beech veneer and the fascia over the cupboards is painted a matt purply blue colour. The specially designed dressing table fitment which extends the full width of the opposite wall is finished in ash wood, veneered and solid. The bed is a standard steel frame with set back castors and special ends framed in ash with panels covered in dark and light blue fabric. The wall behind the bed is covered with 'silver' Japanese grass paper.

Loose furniture is of Danish manufacture, mostly Finn Juhl designs.

2



3



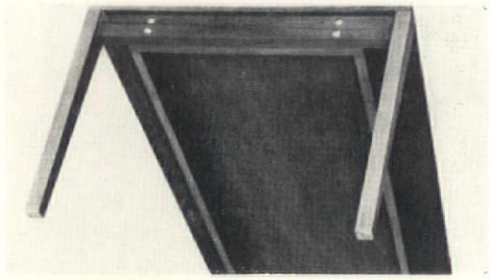
Design notes

Tables from Thailand

Pietro Borretti*, the furniture designer who runs his own factory in Thailand, sends us photos of two of his latest knock-down teak tables, one rectangular, one circular. The pictures are self-explanatory **4–8.**

*See also *AD* September 1962, page 455

4



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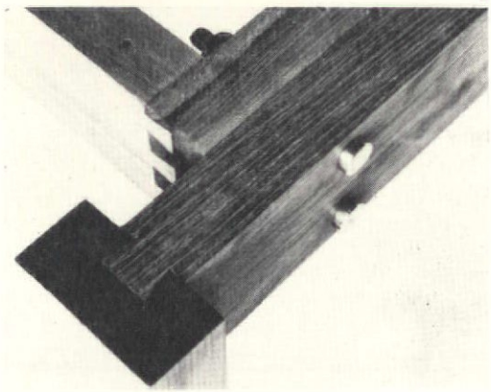

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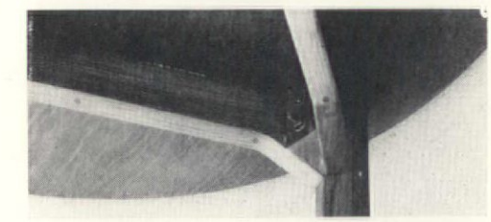

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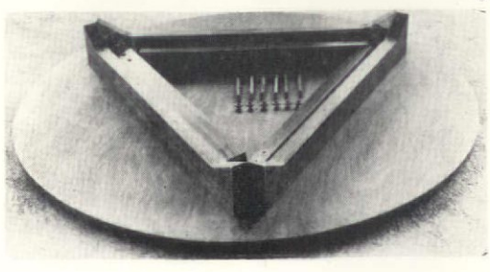
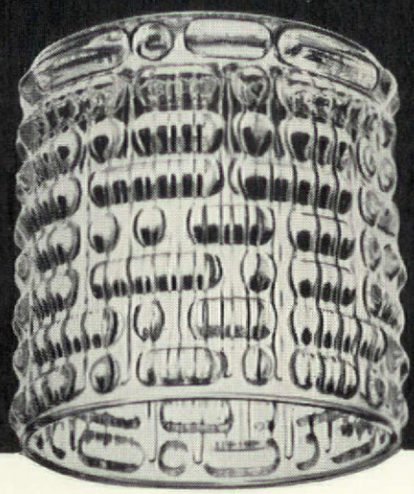
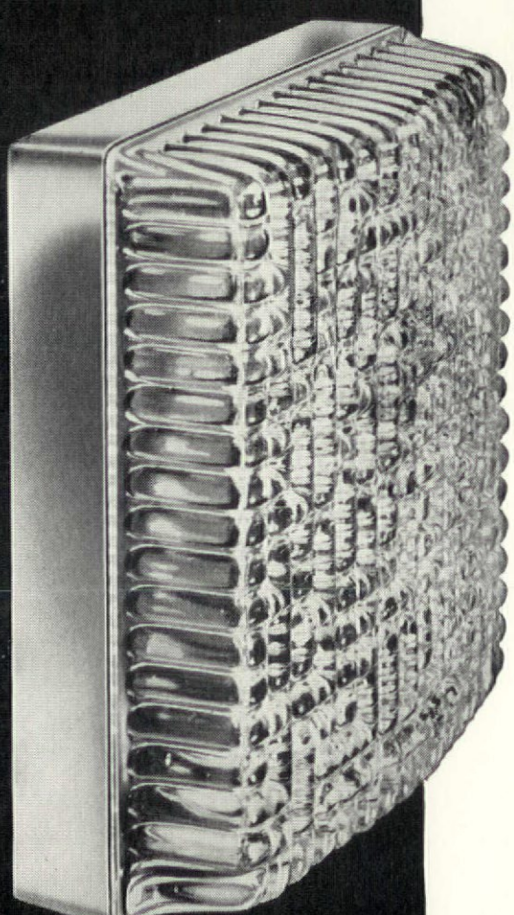


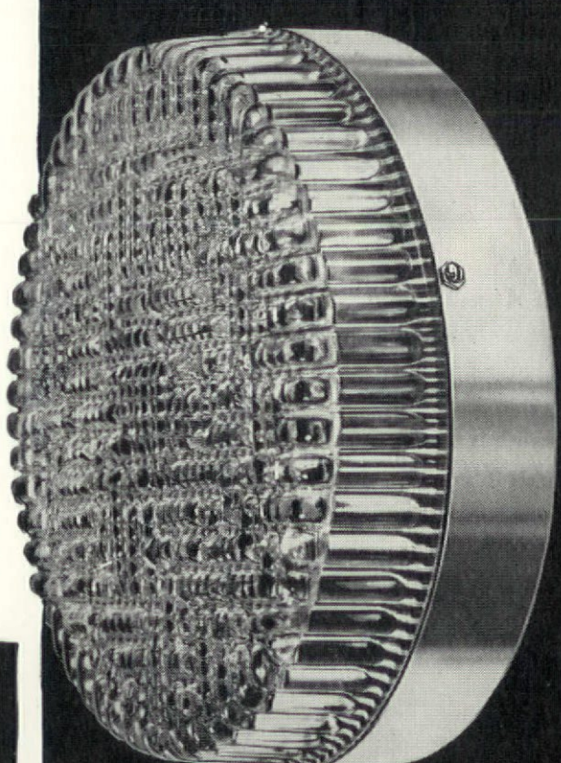
SfB (63)
and BARBOUR INDEX







MODERN BRILLIANCE IN CRYSTAL GLASS



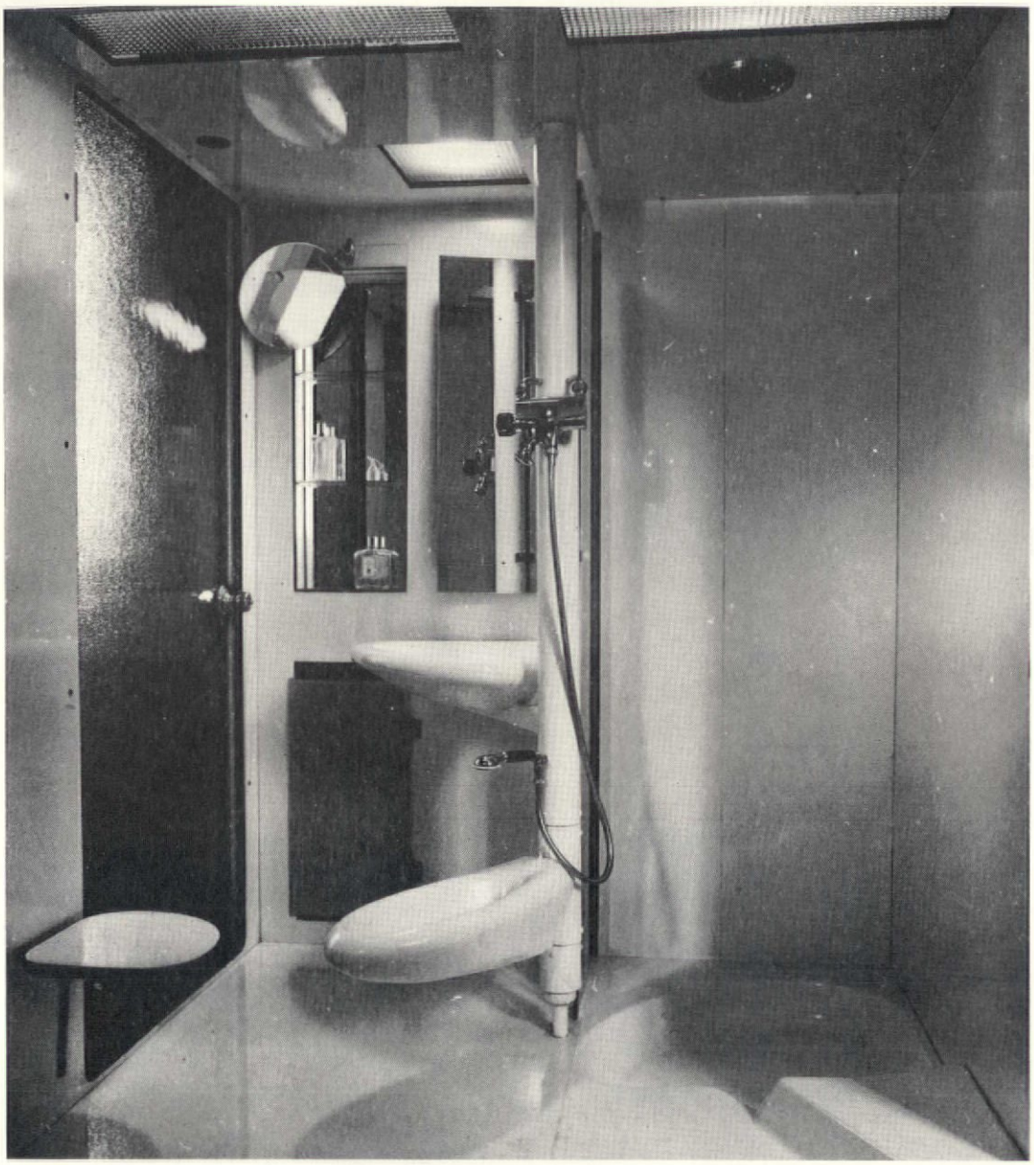
TROUGHTON & YOUNG

TROUGHTON & YOUNG (Lighting) LIMITED
Wansdown Place, Fulham Road,
London, S.W.6 *Telephone:* FULham 9581

SHOWROOMS
The Lighting Centre,
Liscartan House, 127 Sloane St., S.W.1

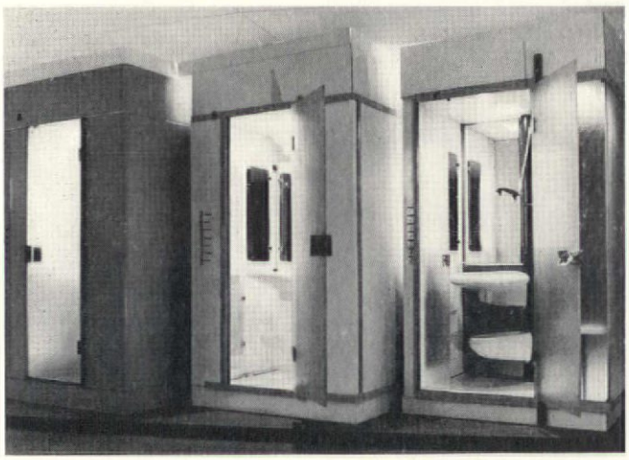
Prefabricated bathroom

Architects have for long been preoccupied with mass-producing the bathroom unit by simplification, rationalization and industrialization.
The French architects G. H. Pingusson and Epron designed the unit shown here for the Saint Gobain and the Société Générale de Fonderie, and a full-size mock-up was presented last year at the Salon Equip'Hotel 64, Paris.
The unit is to go into production and will have a waterproof fibre-reinforced one-piece polyester base, walls of stove-enamelled mirror and Durlux glass, and a polyester ceiling. The unit will be delivered completely equipped (with plumbing, sanitary fittings, lighting, ventilating, and toilet accessories) and in pre-assembled sections, so that site assembly will be reduced to a minimum (plumbing, ventilating and electrical connections, and outlets). It is anticipated that the cost of the complete unit will be less than that of the equivalent traditional bathroom. The floor area of the unit is 170cm × 140cm, and the height 250cm.
Water supply is through a free-standing central plumbing stack, to which is attached a mixer-tap on a flexible tube which can be moved to five different positions. Water is to be heated electrically, and thermostatically controlled. There is only one outlet to serve all the fitments.



1

Mock-up of the unit with footbath



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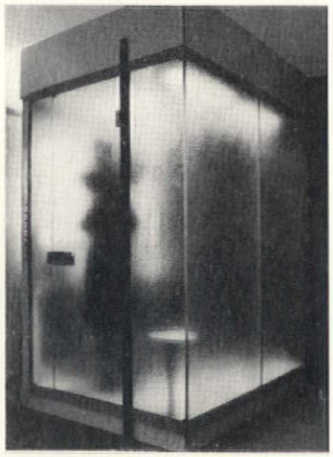

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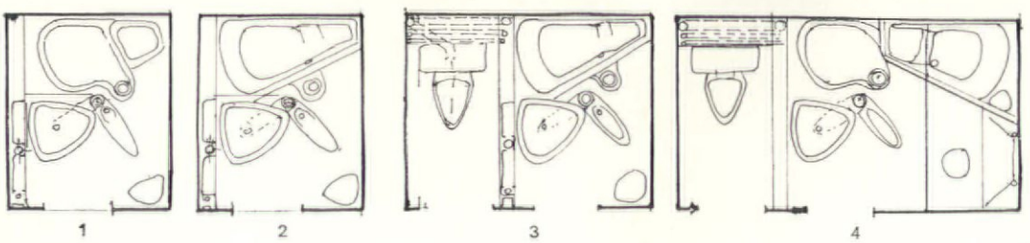
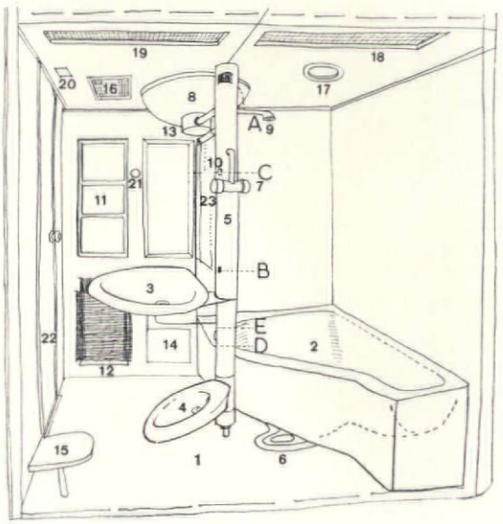
Experiments were made with alternative materials for the walls: opaque or translucent 'Securit' glass, laminated materials, and polyester. Mock-ups of each were shown in Paris



4

Additive type plans, all based on central plumbing stack
1 shower, basin, bidet
2 bath, shower, basin, bidet
3 bath, shower, basin, bidet, w.c.
4 de luxe variant



5

Sketch of unit with bath

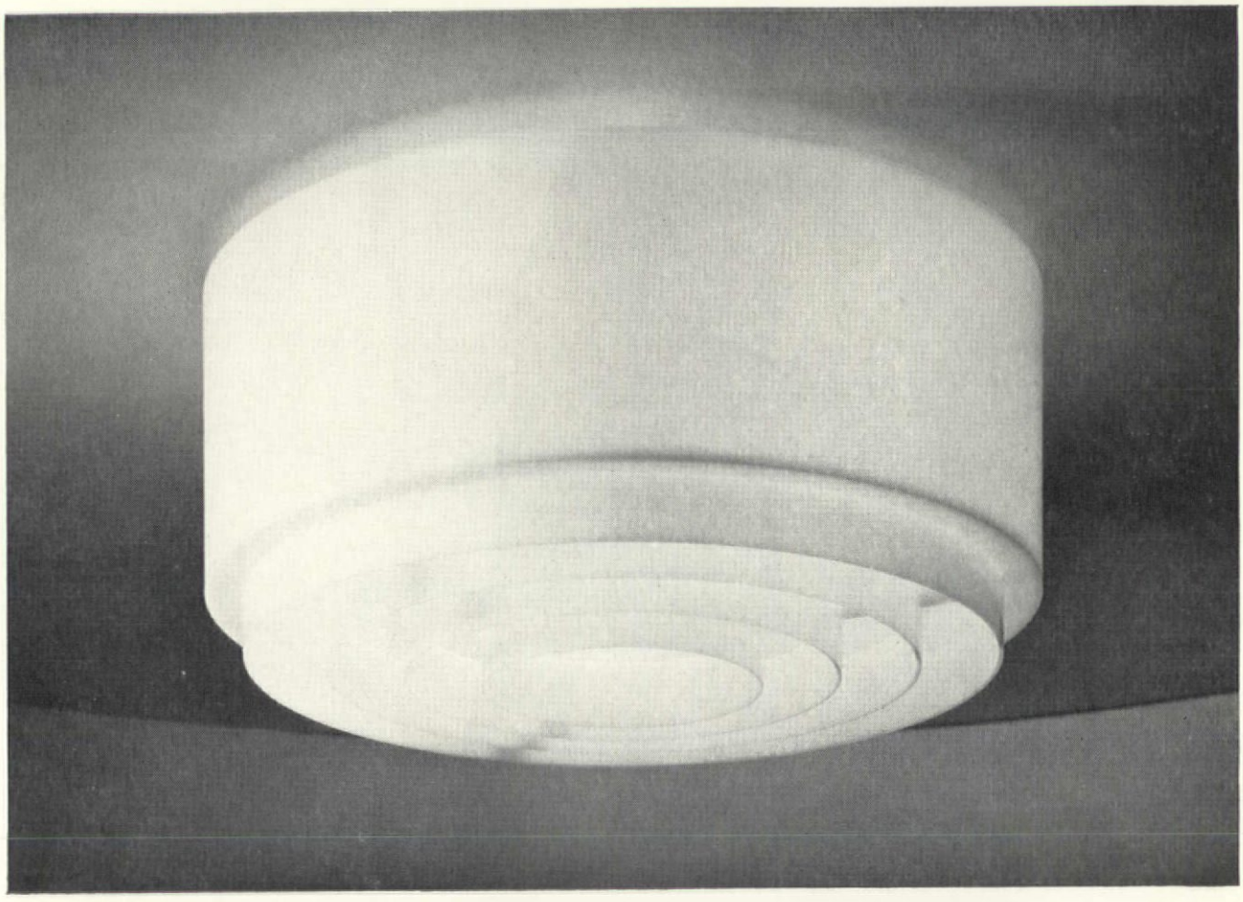
1 base
2 bath or shower
3 basin
4 bidet
5 central plumbing stack
6 central outlet
7 thermostatic mixer
8 hot water tank
9 mixer tap as shower
10 jack mixer tap
a. shower position
b. basin position
c. shampoo position
d. bidet position
e. bath or footbath position
11 built-in shelves
12 towel drying
13 clothes drying
14 inspection panel
15 seat
16 lighting
17 air intake
18 infra-red lamp
19 ultra-violet lamp
20 ozone
21 hot air intake
22 Durlux door
23 double-sided mirror

←Code 59

from designs by Noël Villeneuve

ALLOM HEFFER

AND COMPANY LIMITED

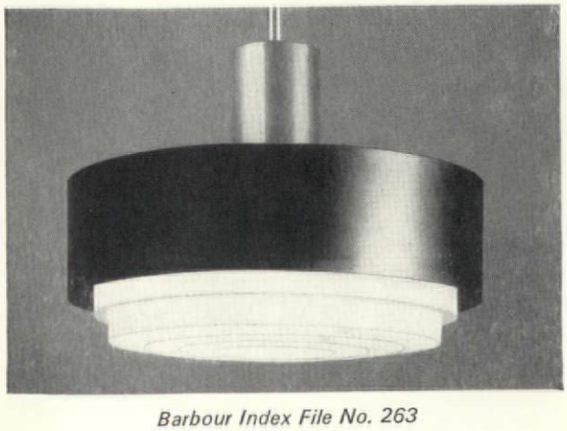


NV 1 SERIES

U.K. Design Registration 906619

A 12″ diameter plastic fitting for 150W or 200W lamp.
An adaptor for 100W lamp is available.
Semi-recessed, surface mounted or suspended.

Prices in this range **from 27/6.**



Barbour Index File No. 263

17 MONTPELIER STREET · KNIGHTSBRIDGE · LONDON · SW7 · TELEPHONE KNIGHTSBRIDGE 6897-8-9

Trade notes

Alexander Pike

To obtain additional imformation about any of the items described below, circle their code numbers (A1, A2....etc.) on the Readers' Service Card inserted elsewhere in this magazine.

A1 Translucent building panels

Williams & Williams Ltd., Reliance Works, Chester

Kalwall panels consist of twin sheets of glass-fibre-reinforced polyester supported on aluminium extrusions. Nominal width 4ft, thickness $2\frac{3}{4}$in; heights vary from 6ft 8in to 16ft 8in.

A2 Aluminium doors and shopfronts

Kawneer Co. (UK) Ltd., Aylsebury Road, Aston Clinton, Bucks

A new catalogue on shopfronts gives design data and details of fittings. A range of heavy duty residential sliding doors, 6ft 10in high, covers openings from 5ft to 20 ft wide. Prices from under £30 to £62.

A3 Scissor lifts 2

G. Hunter (London) Ltd., Gumley Road, Grays, Essex

Available in capacities from 5 cwt to 40 tons, hand-hydraulic or electric powered. Mobile versions can be supplied.

A4 Electricity meter enclosure

E.B. (Staffs.) Ltd., New Street, Biddulph Moor, Staffs

Fits into the thickness of a wall, providing external access to two meters, a cut-out and timeswitch. The case is in polyester resin, 21in × $13\frac{1}{2}$in × $6\frac{3}{4}$in deep, fully weatherstripped. Price £3 19s, less discount.

A5 Domestic burglar alarm

Photain Controls Ltd., Randalls Road, Leatherhead, Surrey

The Photain B-A Burglar Alarm Unit is claimed to provide all the necessary equipment to protect an average size house. Basic price, £8 19*s* 6*d*.

A6 Acrylic facing panels

Williaam J. Cox (Sales) Ltd., London Road, Tring, Herts

Coxpan panels in moulded acrylic sheet can be illuminated internally. Concealed fixings are available for panels up to 4ft × 6ft.

A7 Commercial wall clock

Westclox Ltd., Strathleven, Dumbarton, Scotland

Flush fitting, with black numbers on a white dial $13\frac{1}{8}$in diameter, Manager 12 is sold in self-starting electric or battery movement versions at £7 and £9 10*s*.

A8 Street furniture

Council of Industrial Design, 28 Haymarket, London S.W.1

A new edition of the illustrated list of products included in Design Index, 85 pages, 10*s* 6*d*.

A9 Admantines

The Stone Firms Ltd., Horton Road, Colnbrook, Slough, Bucks

A handbook on marble, granite, slate and quartzite gives properties of these stones, approximate prices, fixing details and other useful information.

A10 Electro-osmotic damp proofing

Rentokil Laboratories Ltd., 16 Dover Street, London W.1

Principles briefly—but clearly—explained in a new leaflet.

A11 Guide to architectural anodizing

Acorn Anodizing Company Ltd., Cambridge Yard, Hanwell, London W.7

Advice on design, specification and maintenance in a well-produced and informative booklet.

A12 Circuit breakers

Square D Limited, Cheney Manor, Swindon, Wilts

A new range of circuit breakers for domestic, commercial and industrial applications in current ratings from 5 to 60 amps.

A13 Aluminium double hung sash window

John Williams of Cardiff Ltd., East Moors Road, Cardiff

Purpose made, factory or site glazed, and fully weatherstripped with neoprene extrusions at head and cill and with wool pile elsewhere.

A14 Plastic sanitary equipment 3

Sovereign Building Components Ltd., Piccadilly Mansions, 17 Shaftesbury Avenue, London W.1

The first item in a new range of sanitary equipment, a urinal in glass-fibre reinforced polyester incorporates an integral splash guard.

A15 Flooring

East Central Fabricated Floors Ltd., 16 Clerkenwell Green, London E.C.1

Consisting of resin-surfaced reconstituted timber in the form of interlocking tiles. Claimed to be revolutionary and to have excellent wearing qualities. Sizes from 12in × 12in to 4ft × 4ft.

A16 Integrated lighting and ventilation

Atlas Lighting Ltd., Thorn House, St Martin's Lane, London W.C.2

Designed to meet the conflicting requirements of lighting and ventilation, the Air-Lume fluorescent fitting will accept an air diffuser on either or both sides of the unit. In 2, 3 or 4 lamp versions for 20W to 125W tubes.

A17 Non-slip ceramic floor tiles

Dennis M. Williams Ltd., 43 Thames Street, Kingston-on-Thames, Surrey

Vicano tiles provide a non-slip surface by projecting an unglazed pattern in relief above the general level of the glaze. In six patterns with nine standard and seven special colours, 6in × 3in × $\frac{3}{8}$in thick.

A18 Display lighting 1

Lumitron Ltd., 180 Shaftesbury Avenue, London W.C.2

A new catalogue includes high intensity spotlights and a range of spherical reflectors.

A19, 20 Variable output heaters

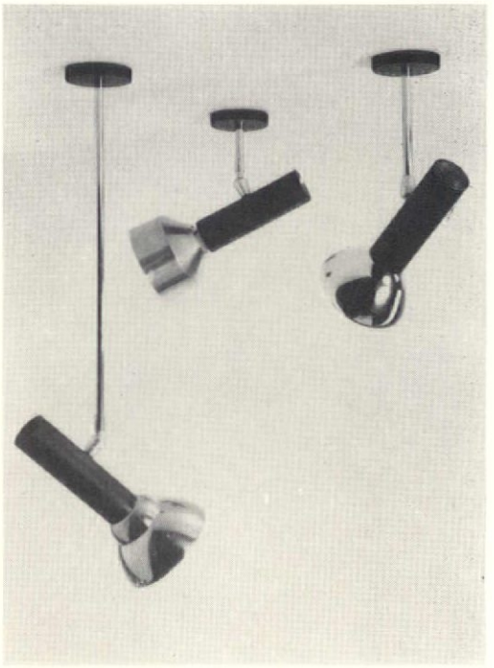
Two new heaters for use with accelerated hot water systems employ thermostatically controlled fans to provide variable output for rapid heat-up:

Advance Engineering Ltd., Advance House, Whytecliffe Road, Purley, Surrey

The Fanarad, with outputs between 4,000 and 14,000 B.Th.U., has two tangential fans and is available in two sizes, $17\frac{3}{8}$in × 52in and 39in × 34in, both $4\frac{3}{4}$in deep. Prices, £37 15*s* and £39 16*s*.

Harton Heating Appliances Ltd., 2 Harton Street, London S.E.8

Two centrifugal fans give the Fantast outputs up to 15,000 B.Th.U., and a duct from an optional outlet at the back of the unit, for heating a second room, is available as an extra. Size 23in × 22in × $6\frac{1}{2}$in deep. Price £38.



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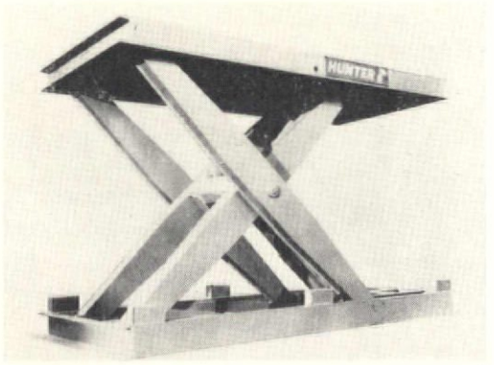

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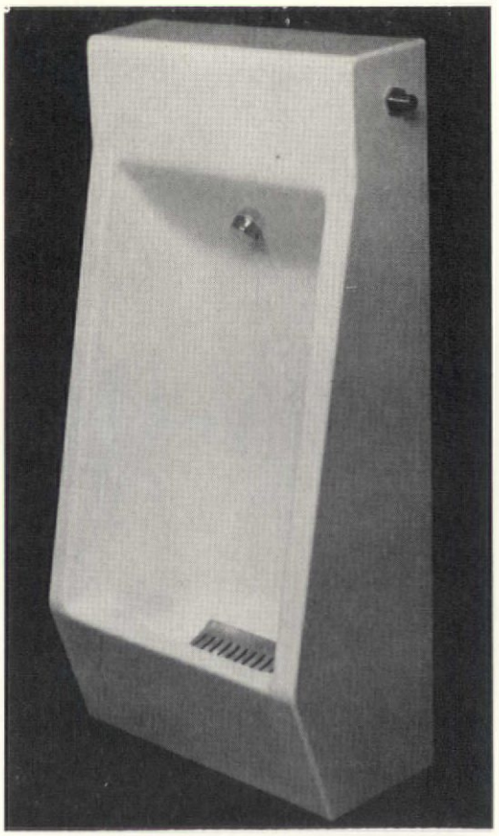


PROBLEM

How to decorate and protect these Multi-Storey Flats

SOLUTION

Cementone Number Seven was used for the balconies and staircases on these attractive flats at Huddersfield. The Borough Architect and Planning Officer is J. Blackburn, F.R.I.B.A., Dip. T.P., M.T.P.I. **Cementone Number Seven** was chosen because it saves time, money and complications. It's made to meet the demands of wear and weather. We've been helping buildings look their best since 1776. We'd like to help you with yours.



file this handbook under 'insurance'

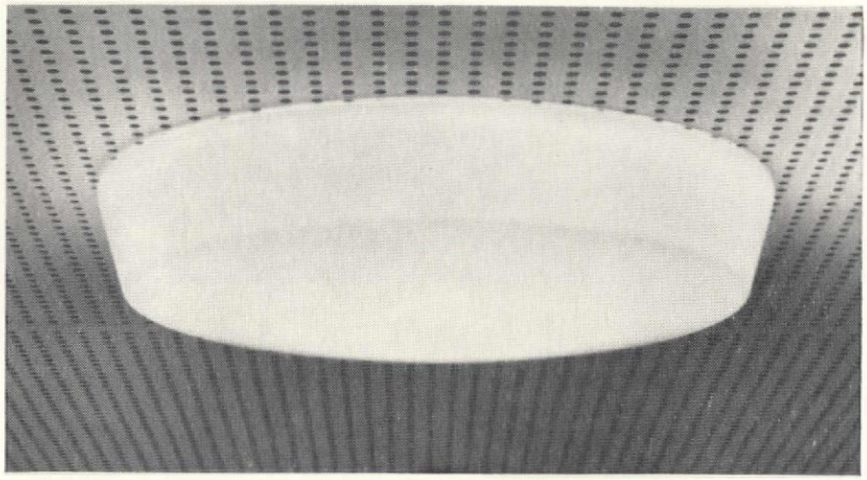


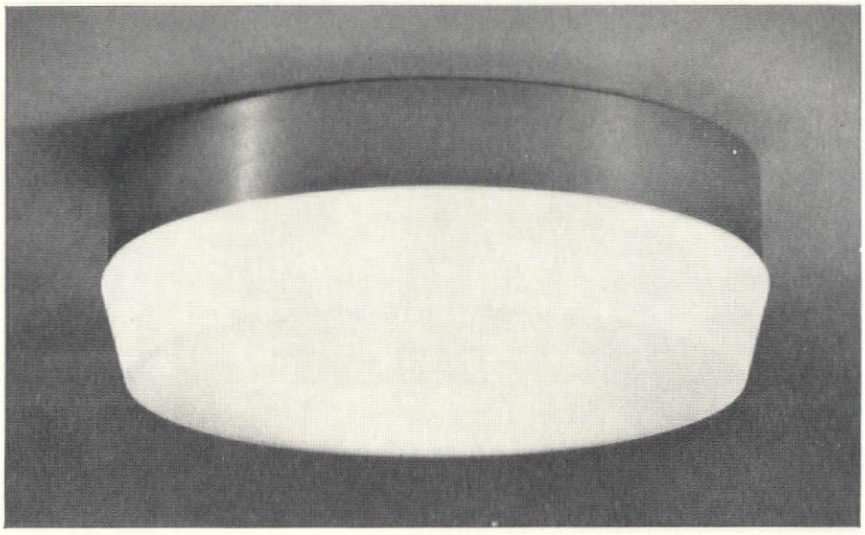
The Cementone handbook contains over 10,000 words about the correct use of Cementone products. It deals with prevention of damp and dusting, concrete hardening, elimination of fungus, concrete colouring and surface tinting, surface decorations and waterproofing and many other building applications. The latest edition will be sent to you free on request.

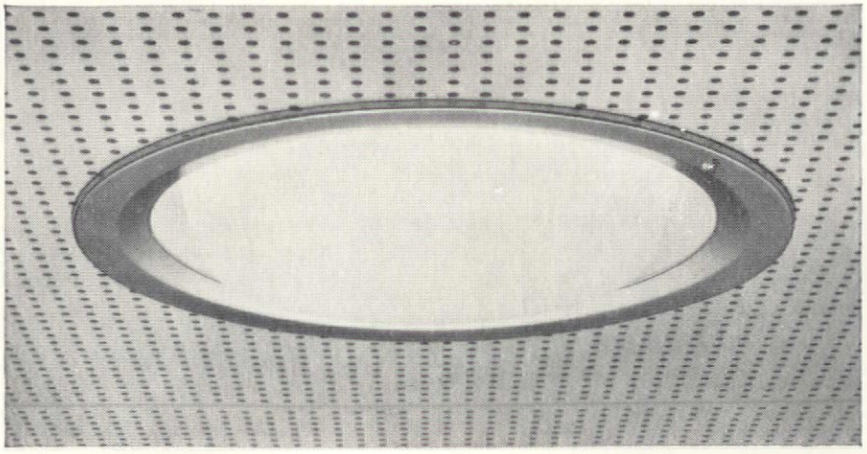
Joseph Freeman Sons & Co. Ltd.
Cementone Works, Wandsworth,
London, S.W.18 Tel: VANdyke 2432
Information in Barbour Index.

Merchant Adventurers

of London Limited







Opalight 1490 series

A range of 36 shallow semi recessed, fully recessed and surface mounted opal glass units for interior or exterior use.

Full information is given in publication 1490/5 from Merchant Adventurers, Feltham, Middlesex. Telephone FEL 3686

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Electrically operated FLYOVER doors. For single or Two-Car garages —manual or automatic operation.

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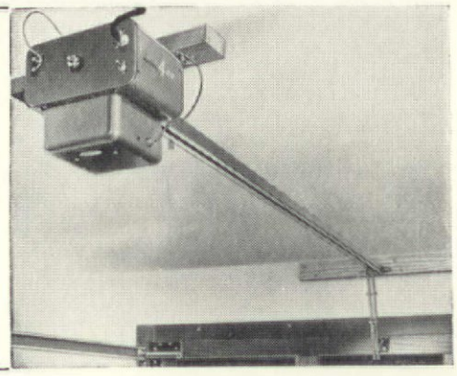
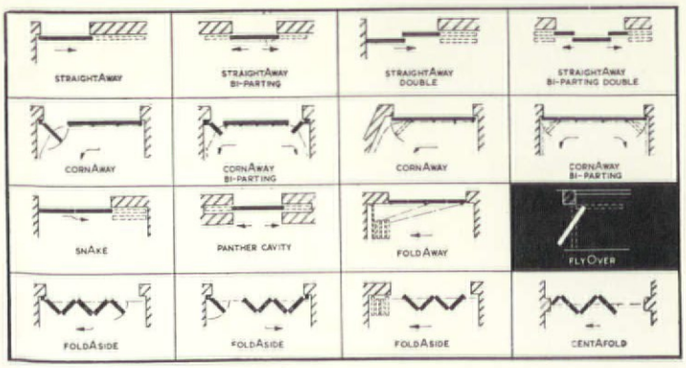
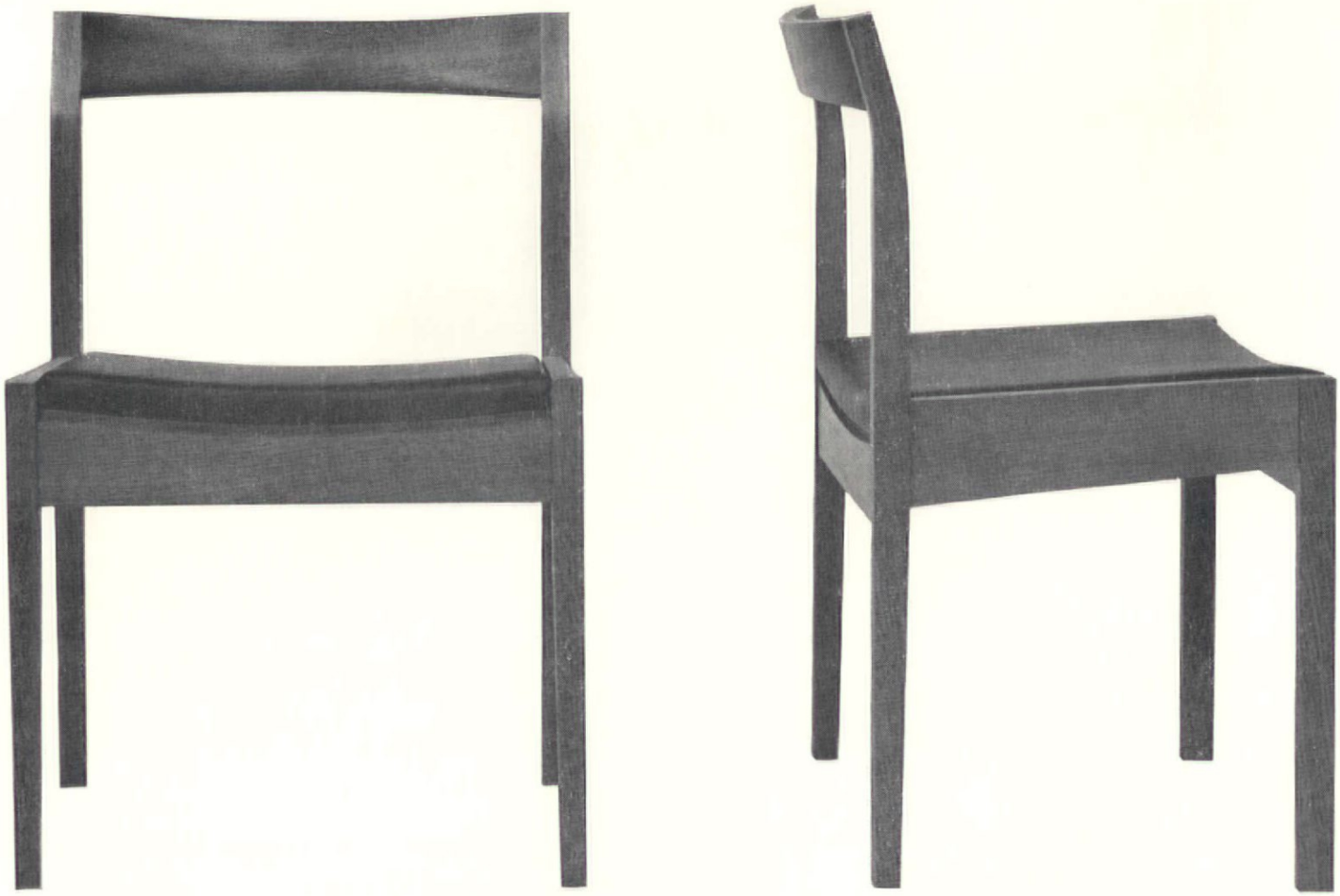
Tel: LOWer Hook 6222 (6 lines)
Grams: Aldamillo, Surbiton

(Barbour Index ref: 320)

Electric Sliding Door Operator—controlled remotely or by push buttons

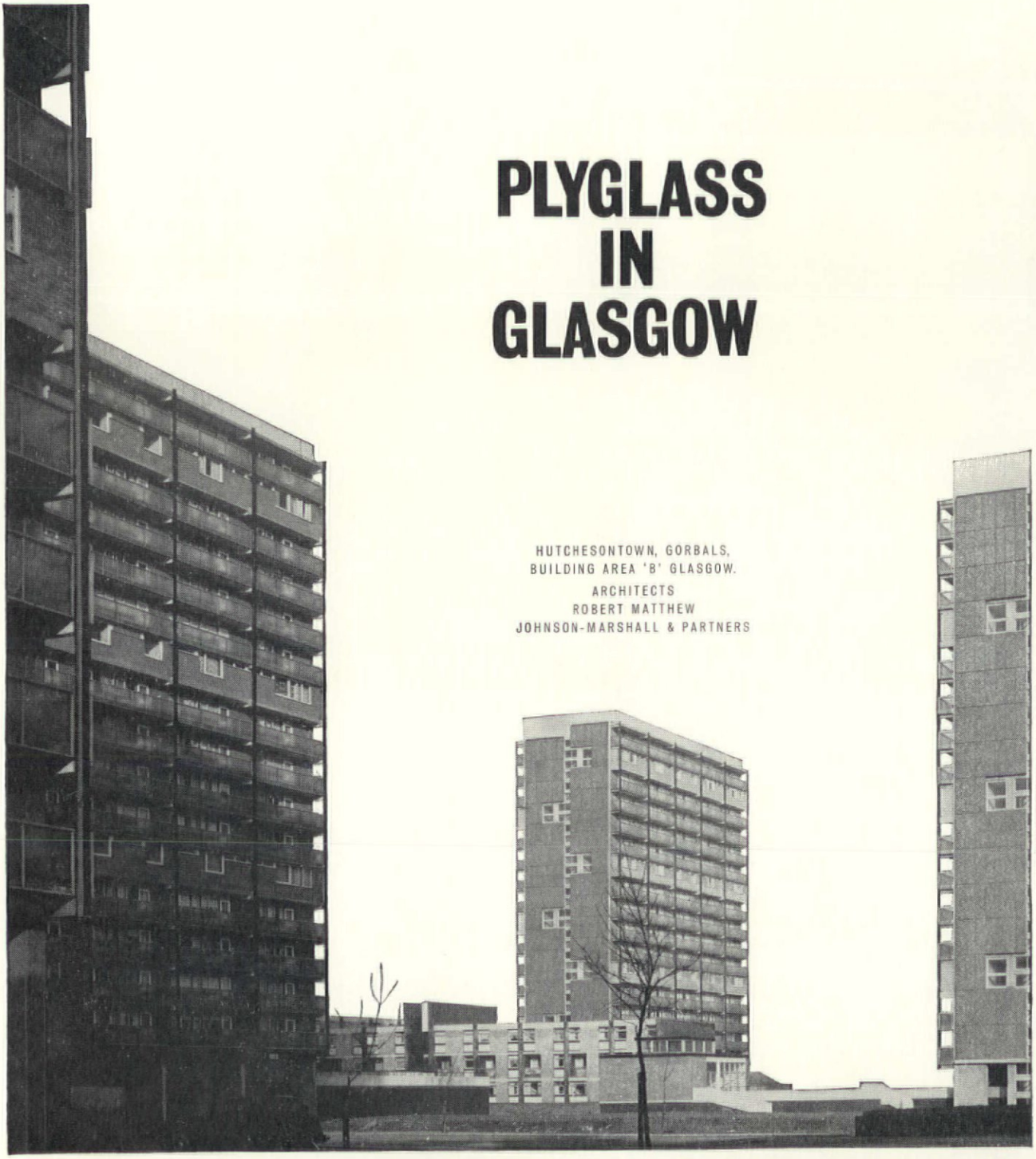






LUCAS FURNITURE Sturdy and good looking, the CC chair is ideally suited to contract use. Designed by Herbert Berry FSIA and Christopher Cattle MSIA, it is also available with arms, Model CCA. The frame is made in mahogany or ash, and is available in teak finish. The seat is of 1in foam covered in black pvc and supported on a formed ply base. £9 4s including tax, or £11 19s 6d with arms. Lucas provide furniture for all contract needs. On show at The Design Centre and in our showrooms. Write for details. Lucas Furniture, Old Ford, London E 3, Advance 3232. Barbour Index File Number 410

PLYGLASS IN GLASGOW



HUTCHESONTOWN, GORBALS,
BUILDING AREA '8' GLASGOW.
ARCHITECTS
ROBERT MATTHEW
JOHNSON-MARSHALL & PARTNERS

Wherever important buildings are erected you will find 'PLYGLASS' sealed double glazing units, creating an invisible barrier against the elements, reducing heat loss and adding considerably to the comfort of the occupants. In these four multi-storey blocks of flats all the windows to the kitchens, living rooms and corridors are glazed with 'PLYGLASS'

PLYGLASS

PLYGLASS LTD., Edinburgh Place, Temple Fields, Harlow, Essex

CLEAR AND DIFFUSING DOUBLE GLAZING UNITS — COLOURED GLASS INFILL PANELS

How to build a model kitchen without dropping bricks

Planning a kitchen for catering on a large scale calls for a considerable background of specialised experience. As manufacturers of heavy duty cooking equipment we are in close and constant contact with the problems in this field. Our planning and installation engineers are ready to give you information and advice on the right equipment—capacity, type of fuel—gas, electricity or steam—functional layout of plant and premises, ventilation, installation, first cost, running cost, maintenance, and so on. We invite you to make use of our technical services—without obligation — when you next have a commercial kitchen to design and equip, and we shall be happy to post you detailed literature or arrange for a representative to discuss any large scale catering equipment that interests you.



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RADIATION CATERING EQUIPMENT LTD

(FOR GAS, ELECTRICITY, STEAM AND BOTTLED GAS)

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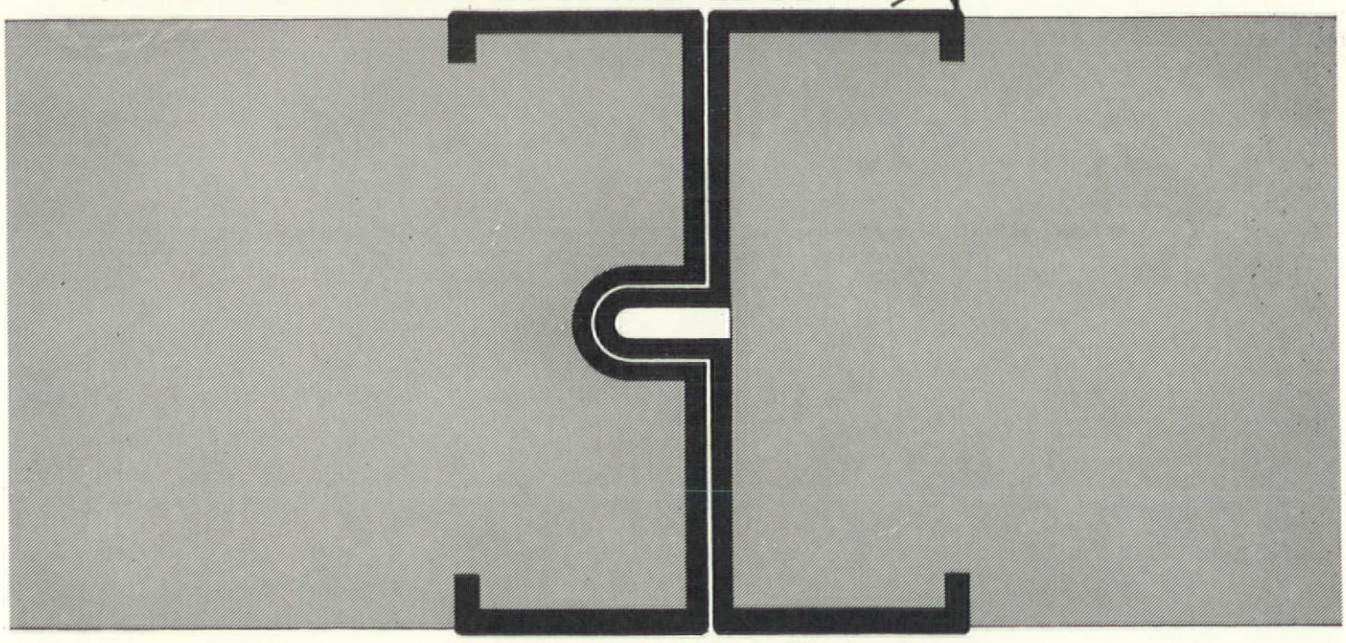
A BOND MORE BINDING THAN 007

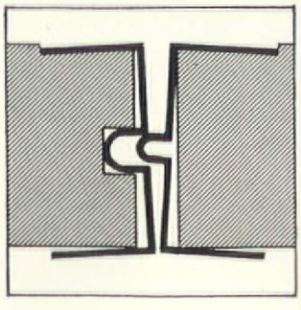
BEWARE OF IMITATIONS THAT DO NOT PROVIDE THIS IMPORTANT LOCKING EDGE

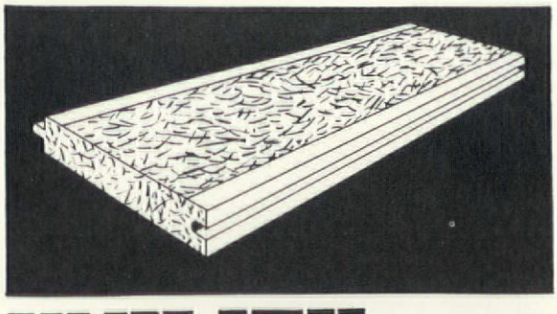


British Patent No. 715/770

Imitations of Unilith I.S.E.R.S. can suffer unfortunate results.
Steel edges can come adrift in transit (see illustration) or at a site resulting in damaged slabs.
Steel can ride off sufficiently to prevent thorough interlocking of adjacent slabs resulting in unequal load carrying value of the slabs.
If you specify Unilith I.S.E.R.S. or **equal make sure they <u>are</u> equal.**
Some contractors will buy an inferior imitation to save a few pence at your expense.

Full documentation of specifications, detail of applications, test reports and prices will be sent on request.





UNILITH (ISERS)*

Interlocking Steel Edge re-inforced cement bound wood wool roof slabs.

UNITON LTD.,

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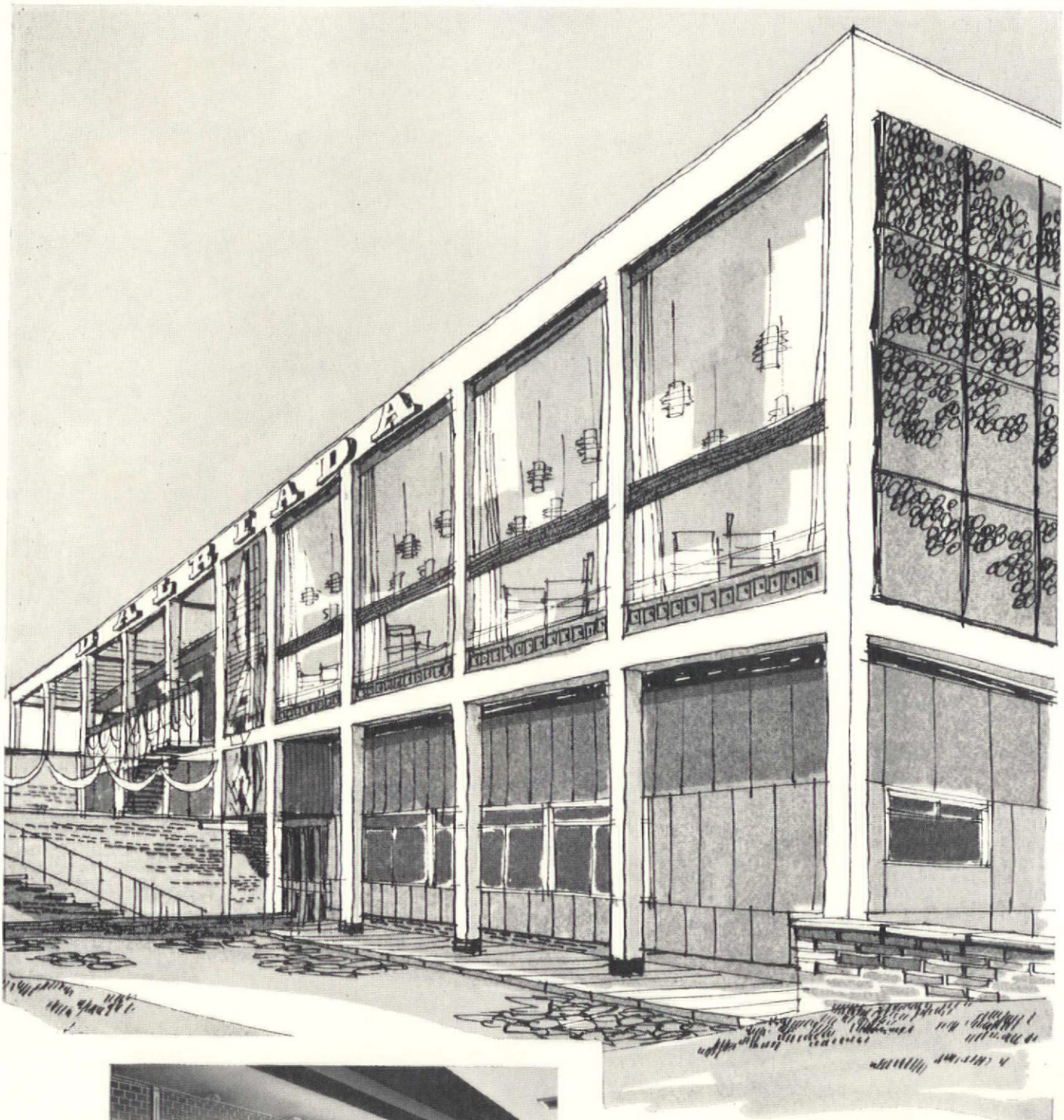
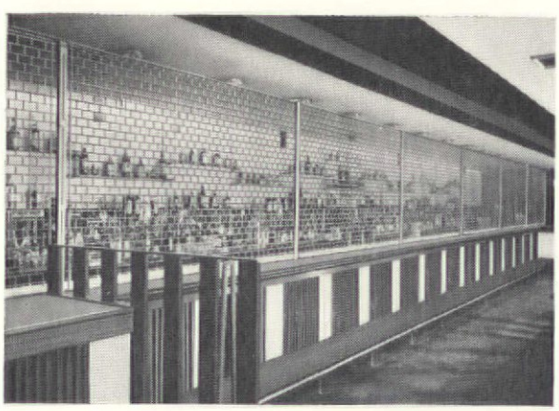


ARCHITECT: T. M. MILLER, D.A. (Glas). A.R.I.B.A.



Inside story . . .

. . . of the Dalriada. The people of Glasgow can have many a "wee dram" at the very long bar of the Dalriada. We are proud that we Sassenachs were asked to provide grilles to protect this bar. A good choice, for R-B grilles blend with any decor, and give full protection while allowing the display to be seen.

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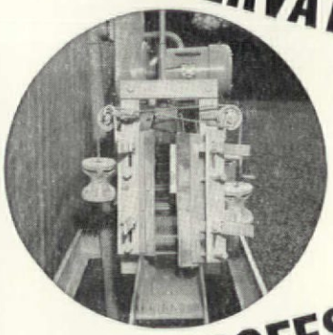
R/B

Protim is a registered trade mark.



WOOD PRESERVATIVES



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- Protim is an organic solvent Wood Preservative.
- It is lethal to all forms of dry rot and wet rot and all known woodworms and wood boring insects.
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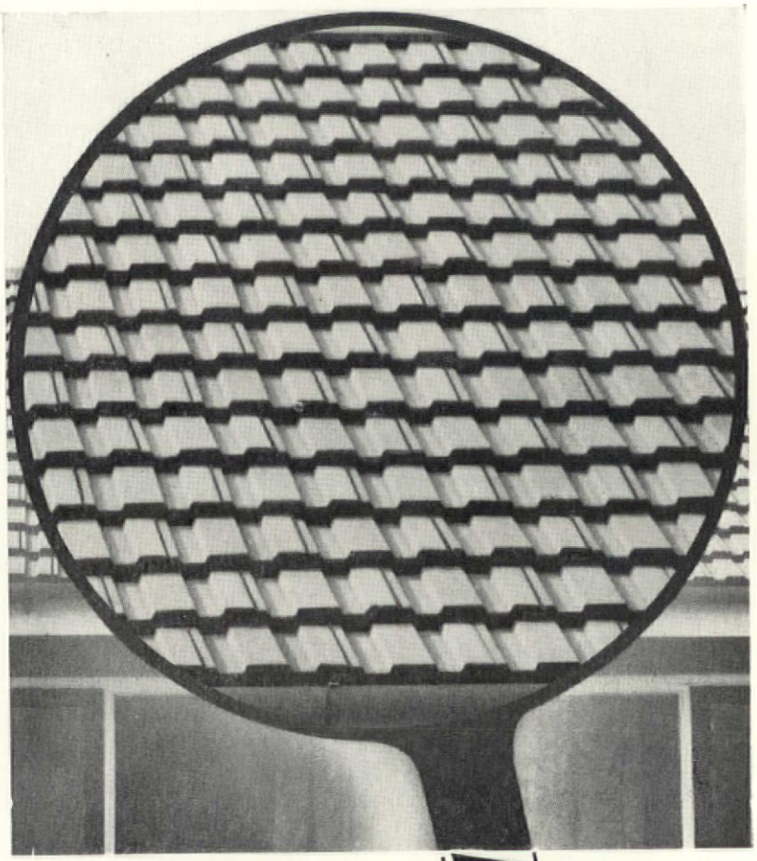

ANCHOR VANGUARD

Take a CLOSER look at
The ANCHOR VANGUARD
a 15″ × 9″ concrete roofing tile to B.S.S. 550:1958

A simple-to-lay interlocking tile with a full range of accessories, specially designed for laying without nailing. Fixing recommendations comply with B.S.C.P. 142:1958 (add. 1st July 1961)

Roof pitches may be as low as 17½°

Roof truss details are available for clear spans from 18′ to 36′

Guaranteed for 50 years against lamination and decay

Colours
Available in Slate Blue, Red, Green or Brown. All colours extend throughout the Tile

Technical Service
Sample tile sent by post. Additional details are available on request as well as roof truss designs

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Vent-Axia wall model — from the wide range of window, wall and roof units for all ventilation problems.

The three overwhelming advantages of *Vent-Axia* units are reliability, quality, and choice of models and fitments. There are window, wall and roof units for every ventilation task. Specify the unique control switch for three speeds (including boost) and reversibility. Specify automatic or iris shutter . . . all taken down, cleaned and replaced with the greatest ease.

Choose Vent-Axia units for keypoint* ventilation in your business, in your home, and be assured of trouble-free, controlled ventilation for as long ahead as you care to look.

* **KEY POINTS** Wherever people gather together in confined spaces. Wherever fug and fumes, steam, smoke, smells or dust prevail.

ARCHITECTS DATA SHEET AVAILABLE FROM YOUR NEAREST BRANCH

Vent-Axia is the registered trade mark of Vent-Axia Limited.

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Birmingham 1. Lee Bank House, Holloway Head, (Midland 4595)
Bristol 1. Brunel House, St. George's Road, (Bristol 27567)
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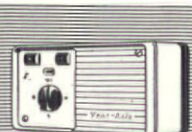
Vent-Axia LIMITED

A member of the Hall-Thermotank Group



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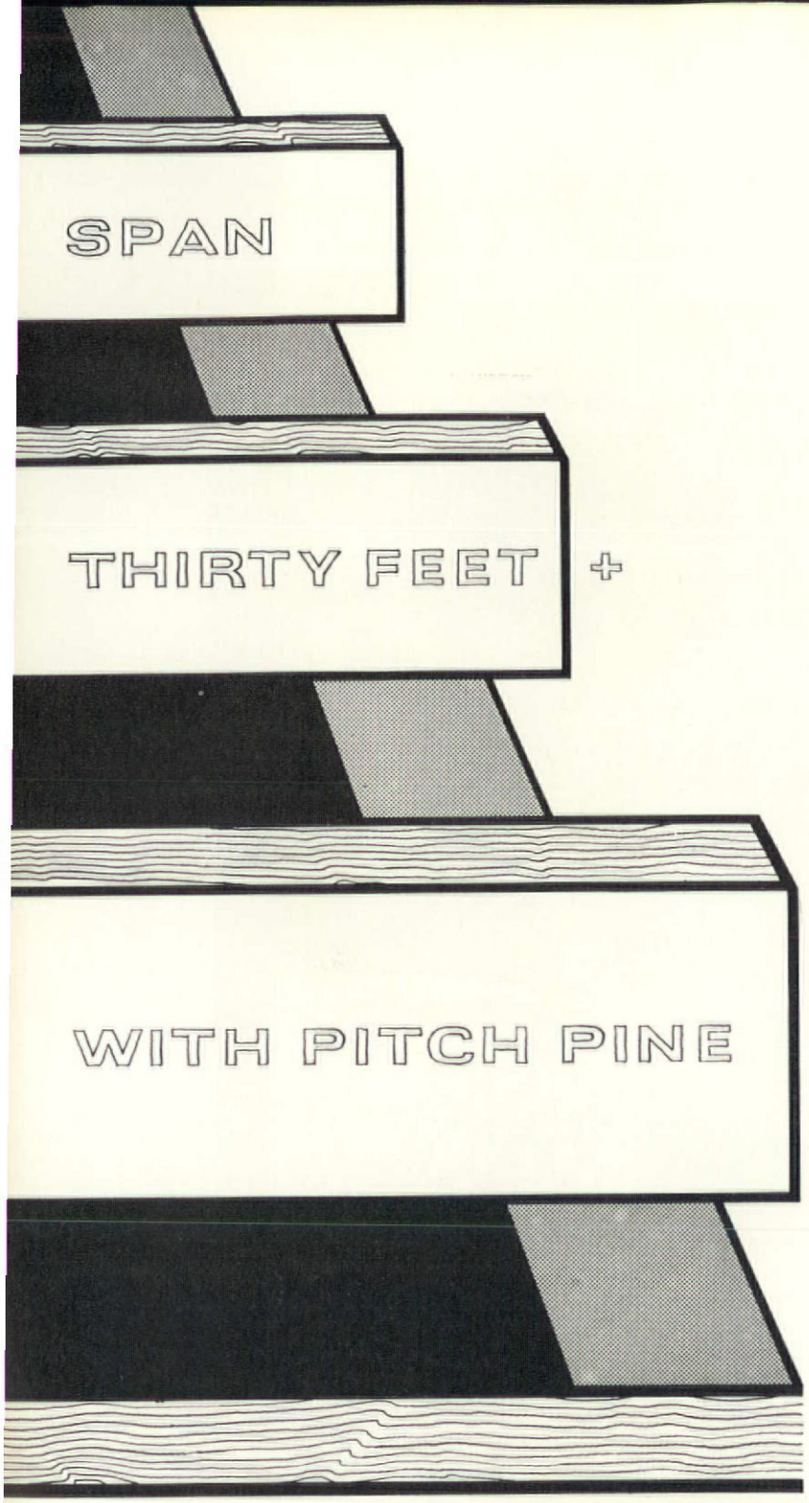

Structural PITCH PINE joists in solid form avoid lamination and halve the cost when spanning in excess of 18 feet.

Structural PITCH PINE is graded to CP.112. requirements and is especially economical for use when spanning up to 30 feet plus.

It is purpose sawn to NETT sizes for delivery anywhere in the BRITISH ISLES.

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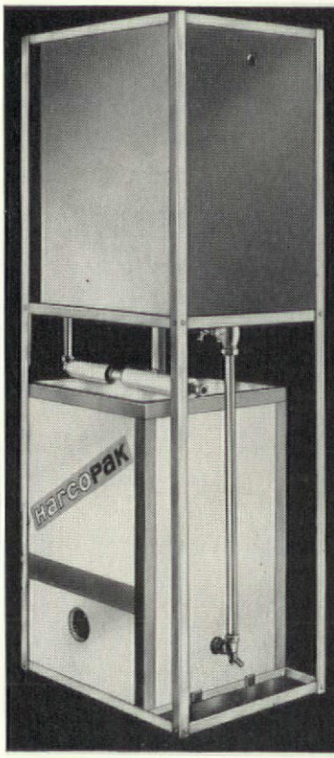

Upstairs... downstairs or in a corner on the landing

Regd. Design No. 913199

This factory-built unit, fully plumbed and ready to install, provides hot and cold water for bath, basin, kitchen sink and w.c. It consists of a 50 gallon (actual) storage tank and a 25 gallon (actual) copper cylinder with all connecting pipework and outlets for services. The whole assembly is built into a metal framework and can easily be boxed in on site. Occupying little more than 4 sq. ft. of floor space, the Harcopak will supply hot water at approx. ¼d. per gallon, with gas, solid fuel or electrical heating. **Direct and Indirect Cylinder models available.** Models can be adapted to specific requirements. Please send for full details in List 1269.



HarcoPak

PACKAGED PLUMBING

Registered design of Harvey Fabrication Limited LF/37

Features: Complete units delivered to site. Easily handled up stairs and through doorways. Compact framework quickly and neatly boxed in. Connections provided for alternative forms of heating. Suitable for use in most soft and hard water areas. Quickly connected to mains supply and services.

Based on a design developed by the Research and Development Group of the Ministry of Housing and Local Government. Tested and accepted by the Gas Council, Electrical Development Association and British Waterworks Association. Accepted by the Metropolitan Water Board and complies with Sect. 38 of the Model Water Byelaws 1963.

Manufactured and Distributed by

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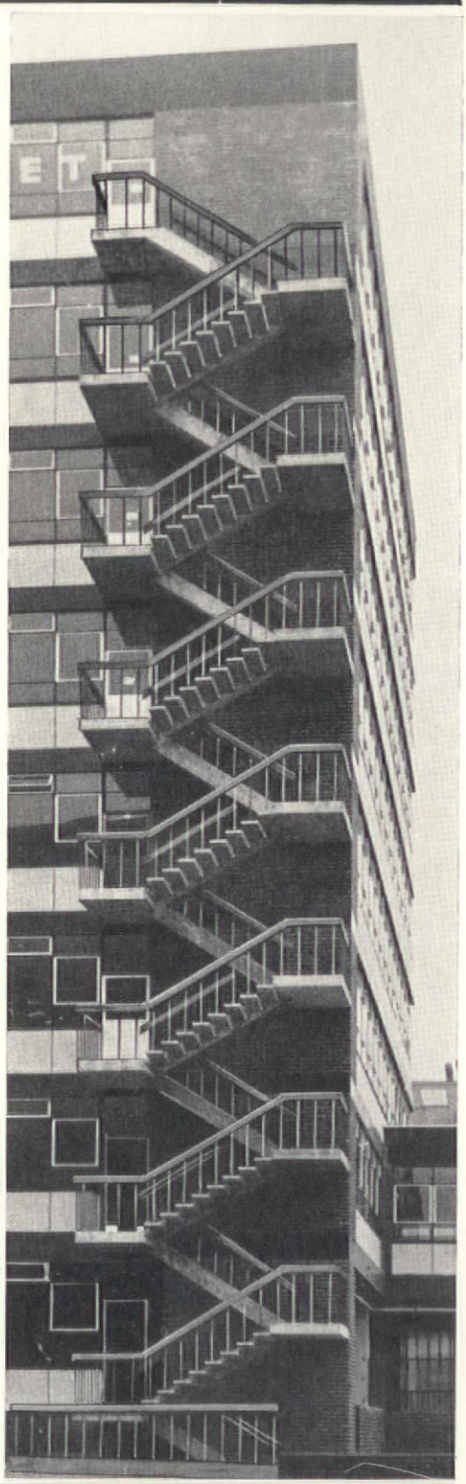

Architect: CARL FISHER & ASSOCIATES



Write for A4 size catalogues Specifile SfB 15/34

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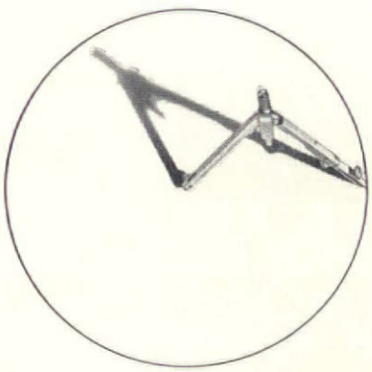
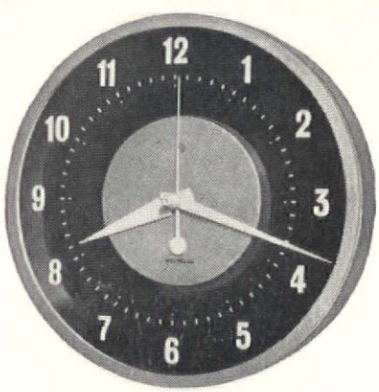
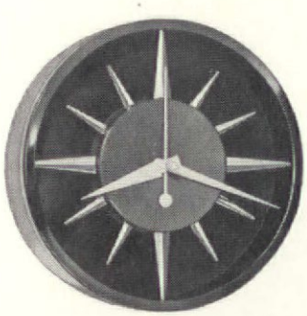


Architect-designed for **Westclox**



EXECUTIVE 10

A 10" electric wall clock. Accepted for Design Index. Black plastic case fits flush to the wall, recessed at the back to take cord and plug. The movement is self-starting, 210-250 volt A.C. 50 cycle. Two models: one with black hands, and black numerals on glass over a white face, the other with black and white reversed. Price £6.10.0.



GROSVENOR

A 10" electric wall clock. Black case with red centre and gold coloured hour radials. White hands with a reset knob at the centre of the dial. 210-250 volt 50 cycle A.C. Height 10½". Price £7.



ASTORIA

An electric or transistorised battery wall clock in red, blue or white. Black hands and numerals, red second-hand on electric. Accepted for Design Index. Height 7½". Electric £2.9.6. Battery, without second-hand £4.19.6.

Westclox always have these in common: good design and accurate time-keeping. Take the architect-designed Westclox Executive 10 and Astoria models: both accepted by the Council of Industrial Design for the Design Index. Other Westclox commercial clocks maintain the same high standard - all are reliable, well designed, clear faced, pleasant to look at.

BARBOUR INDEX REFERENCE No. 392

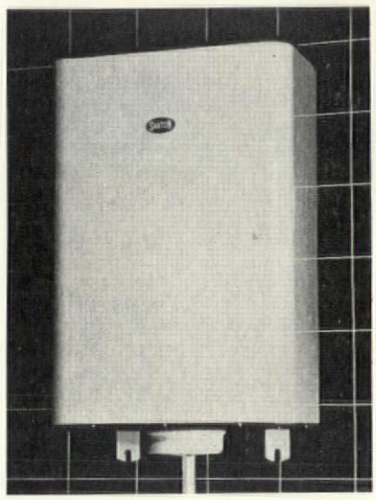
WESTCLOX LIMITED · STRATHLEVEN · DUMBARTON · SCOTLAND

santon

Automatic Electric Water Heaters

are designed to solve all known problems

Water Heating of course!



The heater illustrated is a cistern type, wall mounted, rectangular. Just one from the large SANTON range of types and capacities.

Types include free outlet, pressure and cistern, while capacities range from 2¼ gallons.

All SANTON heaters are contemporary in style, embodying the highest quality materials and first class workmanship. By specifying SANTON you ensure satisfaction.

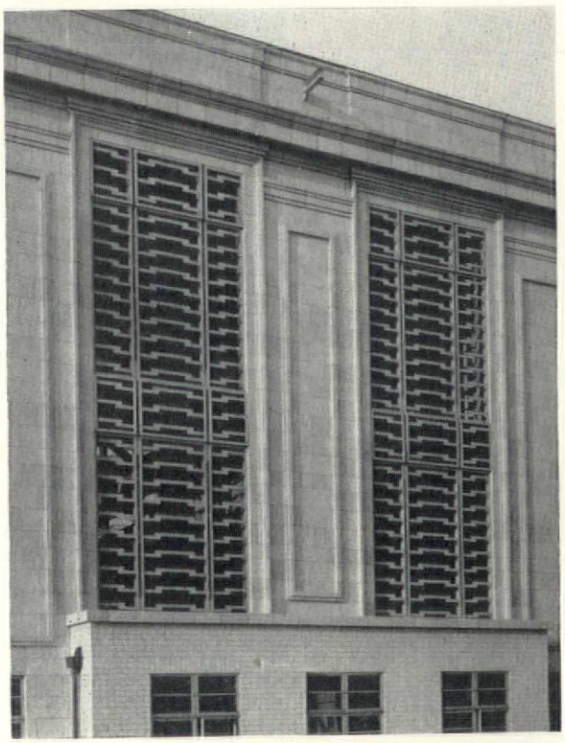
BARBOUR INDEX 204.

For full details of the range of heaters please write to:—

SANTON LTD. Somerton Works, Newport, Mon.

Telephone : Newport, 71711

Code 76



IRON WINDOW GRILLES
REGENT PALACE HOTEL, LONDON

Architects: F. J. Willis & Sons

ARCHITECTURAL METAL CRAFTSMEN'S ASSOCIATION

NATIONAL ASSOCIATION OF SHOPFITTERS

ARCHITECTURAL METAL CRAFTSMEN

ESTABLISHED 1878

J. R. PEARSON (Birmingham) Ltd

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See how your clients get greater temperature control, lower fuel bills, when you plan with Milium Insulated Curtain Linings

What is a Milium lining?

A Milium lining has been insulated by a process of metallisation. A lacquer of minutely-fine aluminium particles suspended in a resin is coated on to the back of a standard furnishing fabric. This gives it highly efficient built-in insulation.

How does a Milium lining reduce fuel bills?

A Milium lining reflects 300% more radiant heat than the same fabric uncoated. In this way it reduces room temperature loss in cold weather by approximately 50%. Thus far less warmth is wasted through windows, and fuel consumption is lower.

How does the cost of Milium lining compare with other methods of insulation?

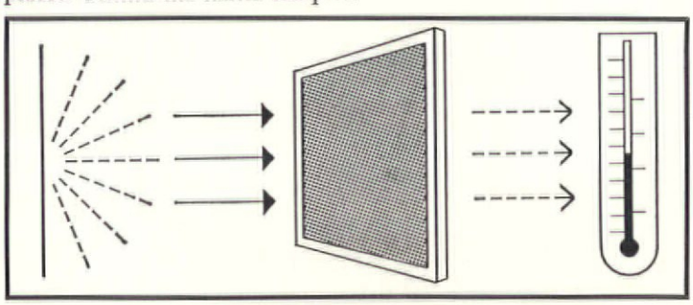
On average a Milium lining costs between 3s. and 4s. a yard more than the same quality fabric uncoated. For large contracts this difference can be reduced to as little as 2s. Obviously this compares extremely favourably with other forms of window insulation.

Is Milium Fabric Decorative?

A variety of furnishing fabrics can be processed as Milium fabrics. The standard Milium furnishing fabric is a high quality cotton sateen curtain lining, 48″ wide, available in a stock range of contemporary colours. For sizeable contracts, it can be produced in any shade specified in advance. The insulating process does not affect the soft handle of the lining but does add "body" which makes curtains hang better. All Milium fabrics should be dry cleaned: washing is not recommended.

How is the quality of Milium fabrics controlled?

No Milium fabric is released for sale without first going through a stringent Quality Control Programme. A special test compares the measurement of resistance to the passage of radiant heat through the fabric, before and after the metallising process.
Uncoated and coated fabric samples of uniform size are placed in a fabric holder at a uniform distance from a specified heat source and the transmissivity of those fabrics is measured on a gauge placed behind the fabric samples.



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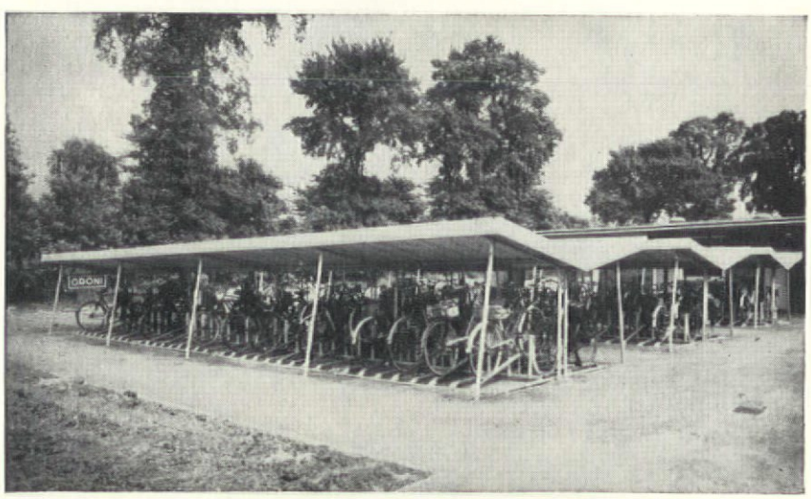

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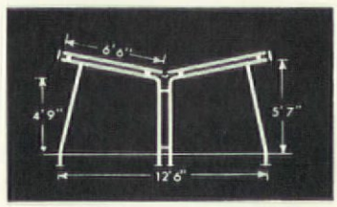

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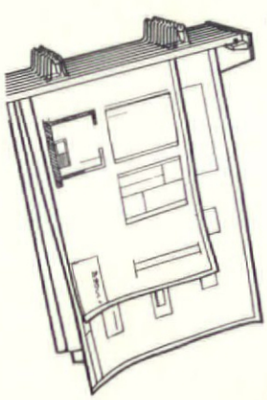

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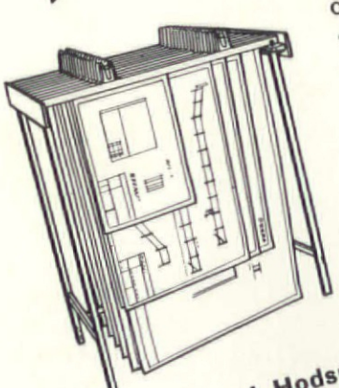

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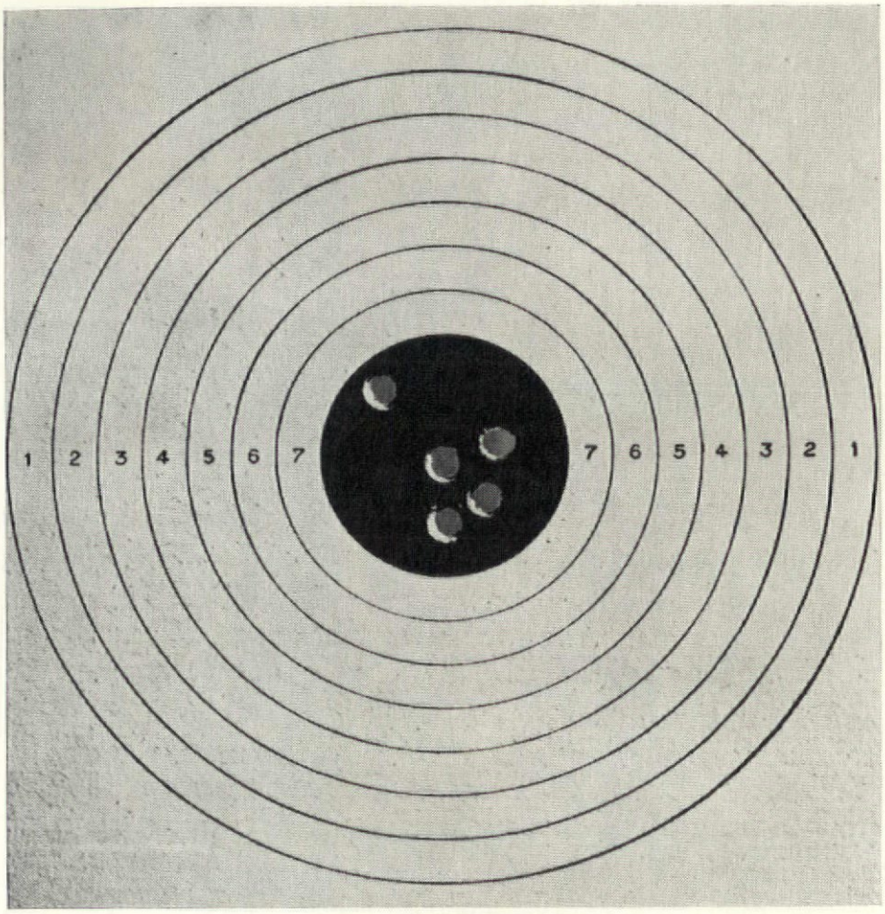

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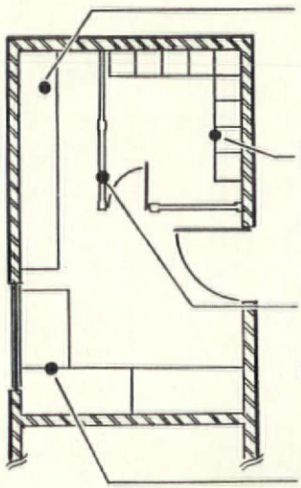

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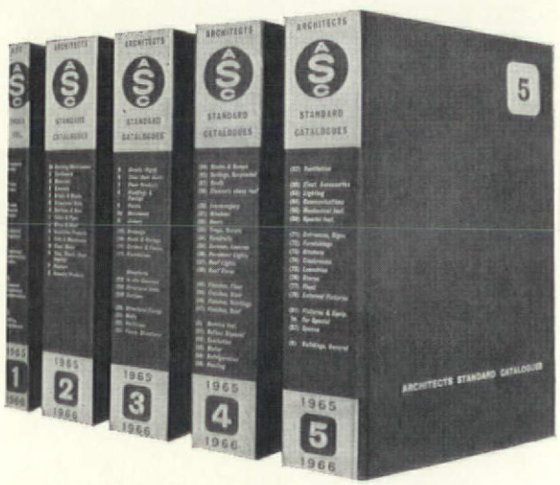

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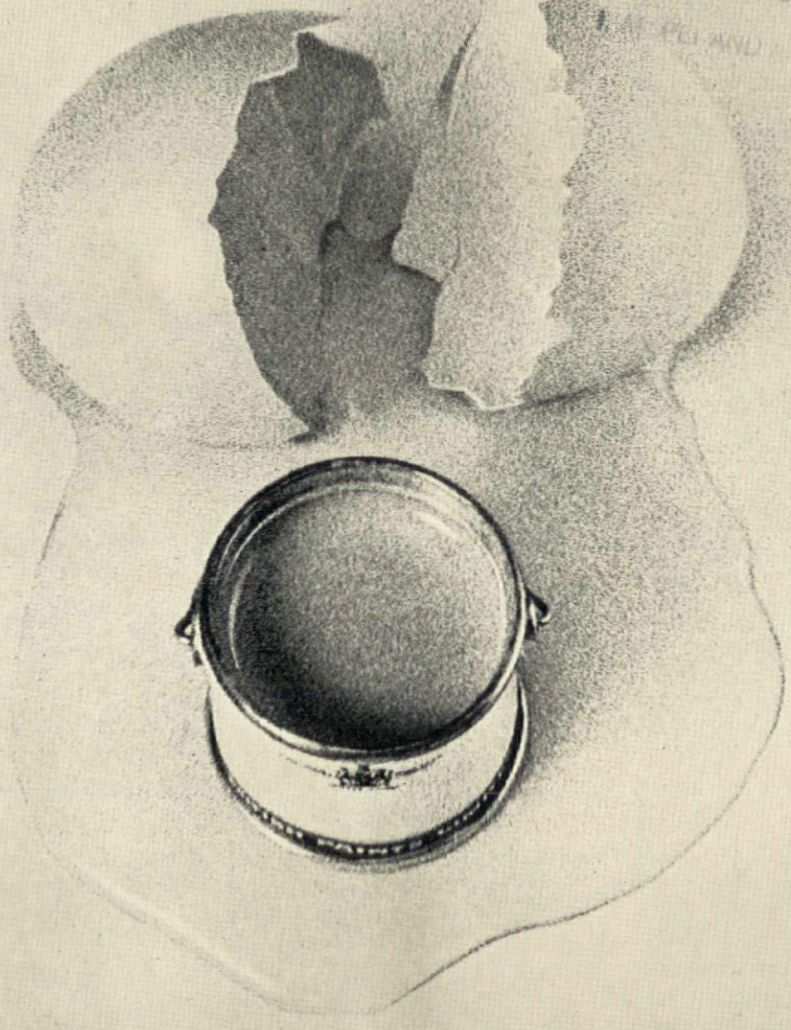

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