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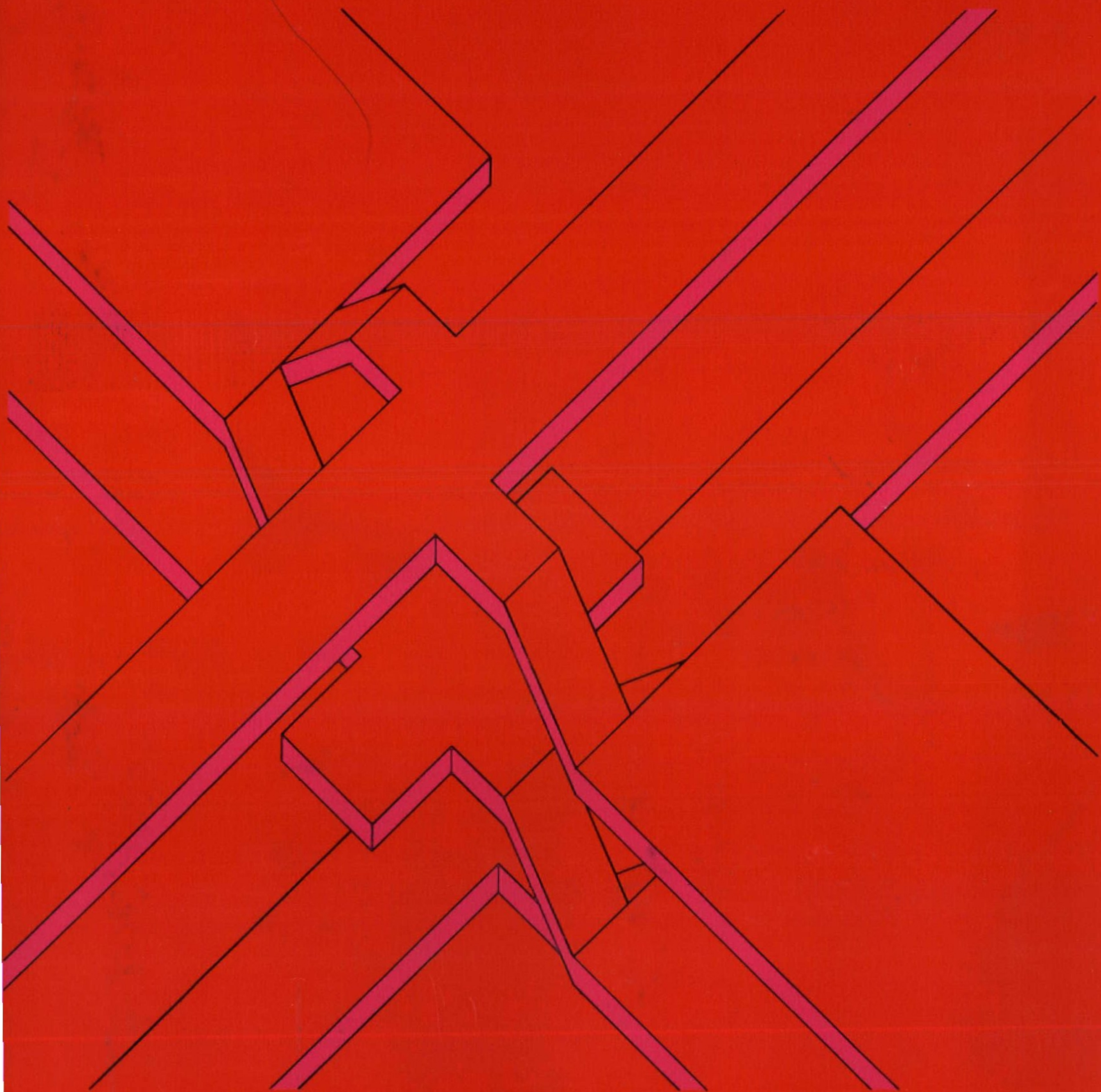

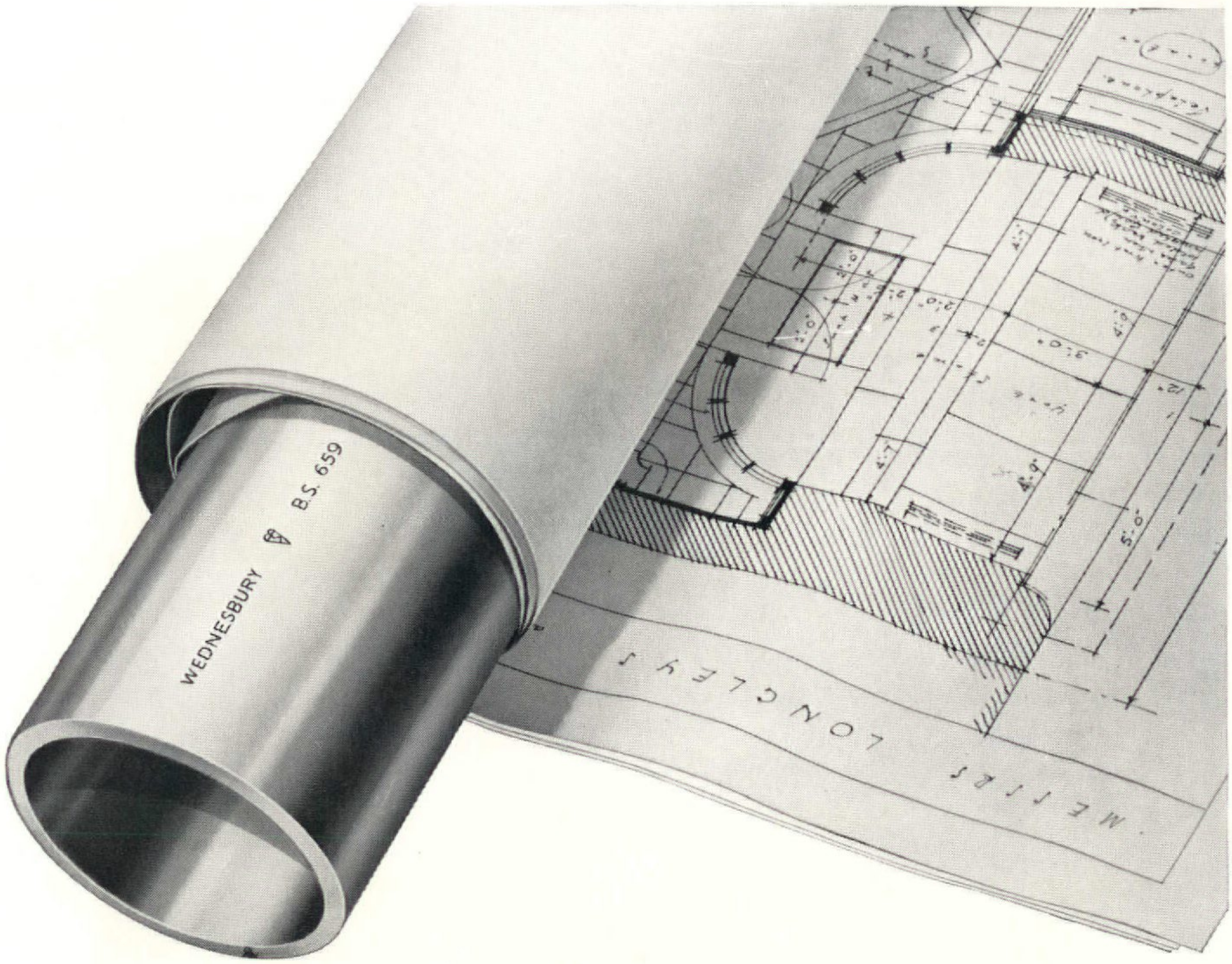
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Volume XXXIV
September 1964

9

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CONTENTS

Book notes

Structures for nuclear power

S. Gill. C.R. Books Ltd. 120s.

Structures for Nuclear Power is a textbook on the design of the structures which are necessary to shield and contain nuclear reactors. The information is all related to the first series of nuclear power stations built in this country which are based on the 'Calder Hall Magnox' type, burning natural uranium and cooled by gas.

Professor A. L. L. Baker asks in his preface: 'Is this a well disguised monster in civilized society or a "friend and servant"?' If the structures are not designed with extreme care, the technical requirements of containing the monster within will be expressed without and this is where the architect will play his part.

It is one of the greatest disappointments of this generation that nuclear power has not produced cheaper electricity and we are still faced with the fact that nuclear power stations cost about 20 per cent more than conventional ones. They occupy less room and do not have the same problems with bulk fuel. I do not get the impression from this book that a great deal of the extra cost is in the structures, massive as they are.

The volume explains in a clear and straightforward way the requirements of special high density concretes, the structural design of exceptional foundations to support reactor loadings and such things as the 'Biological Shield'. Wedged between high density concrete and reactor foundations is a chapter on the 'Layout and the Architect's Role', but this is probably not intended to reduce the importance of the contribution that the architect must make.

At six pounds it is expensive, but is an excellent reference book on how the first series of nuclear power stations were constructed. It will only interest those who are directly concerned with such projects.

R. J. Double

Modern houses of the world

Sherban Cantacuzino. Dutton Vista Pictureback. 8s. 6d.

It is good to meet a paperback that takes houses seriously. This one catches the eye with a cover just in the right mood—abstract yet evocative—and takes in its subject with the broad sweep it needs, from Frank Lloyd Wright's Robie House of 1909 to Philip Dowson's Long Wall, Long Melford, finished last year. The 40 houses, which include the lyrical Sky House, Tokio, Chermayeff's classic at Halland and Craig Ellwood's at Hillsborough, are illustrated by plans and interiors as well as exteriors, excellently laid out.

Only the title misleads. Mr. Cantacuzino cannot really think that Europe and America plus Tokio is the world. It is true he includes Guedes' house at Mozambique, but he does not suggest that this lovely oddity is other than European in culture. I do not grudge America its lead, but what about the fine body of modern work in Australia, and the many significant houses in India and Asia generally?

The other fault of the book, serious in a popular edition, is the confusion of fact and comment. The author, who is clearly well enough informed to know better, presents his story in a woozy narrative of subjective aesthetic theory and quotations snatched out of context. It may be all right for the more literary architects, but I should say everyone else would be mystified.

D. Rowntree

continued on page AD/7

Illustrated: AKBAR RD17

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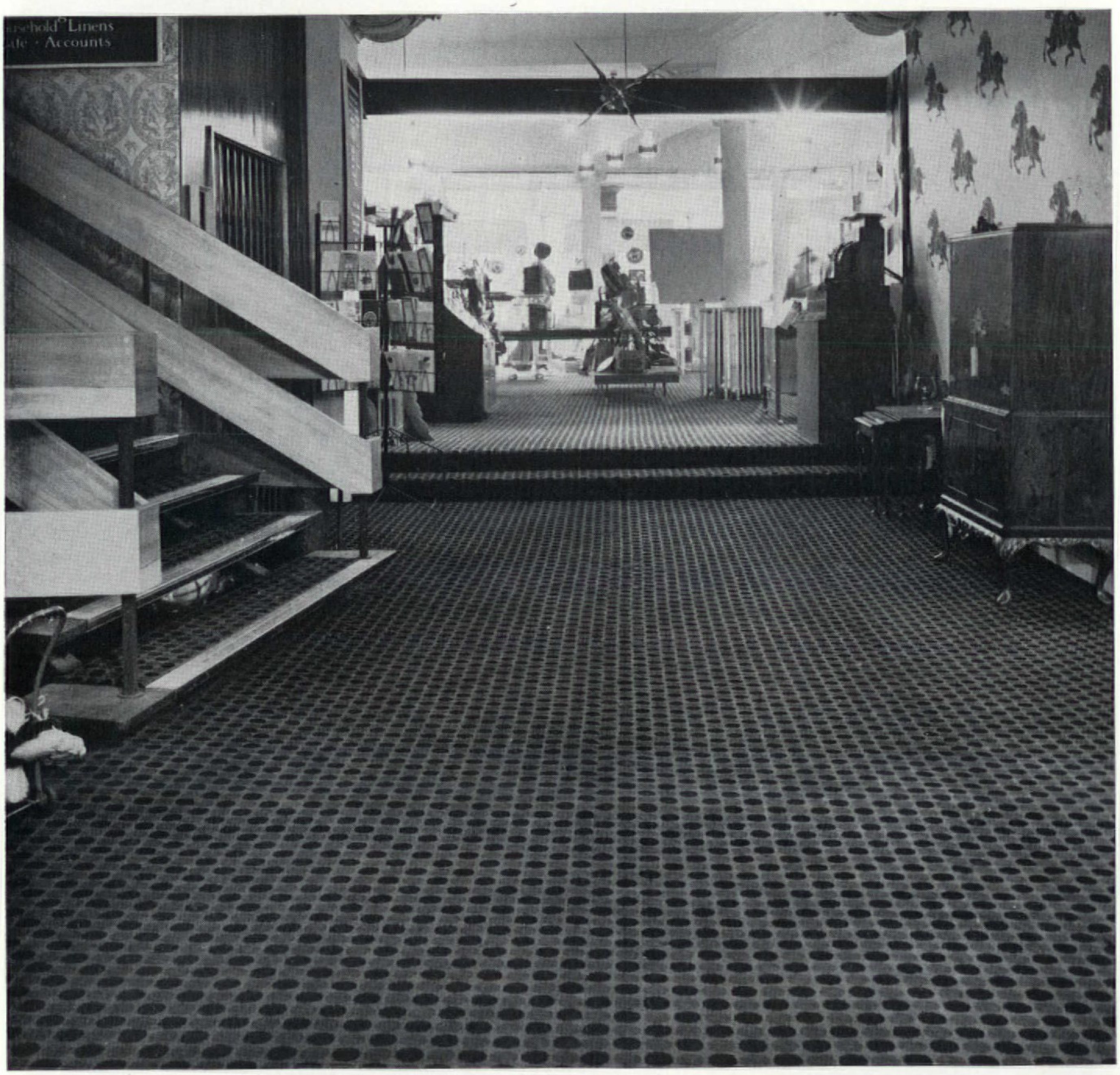


continued from page AD5

Light cladding of buildings

R. Michael Rostron. Architectural Press. £3 3s.

As far as I know this is the first extensive study of light cladding ever made. The author divides the study into four parts; the first part is an historical study of the development of light cladding from Paxton onwards, taking in as a prologue the 'light cladded' wooden mill structures of the eighteenth century (i.e. Halstead Mill and Coggeshall). Gropius's experimental house for the Weisenhofsiedlung 1927 is studied as a twentieth century pioneer structure using light cladding.

Part II is an extensive technical survey. At the end of Part I—entitled 'Light cladding—the evolution of a technique'—the author comes to something of a prophetic conclusion in his final paragraph. He writes: 'There is, indeed, the possibility that the future of light cladding does not lie in the use of diaphanous, planar, outer skin hung free of the structure. Large non-structural, complete factory-made units and system building components appear to offer much more both economically and constructionally. Looking further ahead, the growing complexity of the wall as a filter and its integration with environmental service installations suggest that it will gradually become thicker. Recent tendencies in America appear to confirm this view and indicate that the horizontal and grid panel walls hold more promise functionally then the planar sheath walls.'

There follow chapters, under Part II, which study light cladding from the aspects of fire resistance and sound control.

Part III is an exhaustive survey of materials and finishes, including carbon steel, stainless steel, aluminium, copper, copper alloy, glass, timber, asbestos, composites and plastics. At this point he goes on, contrary to the title of his book, to talk about *heavy cladding* panel material. This immediately raises the problem of terminology; as the author points out, glass, which is a very heavy material, commonly forms an essential part of light cladding systems. This makes the inclusion of stone not only possible under the terms of reference, but also necessary.

Part IV is headed 'Assembly', and covers jointing, sealing, fixing, erection process, maintenance and access for maintenance.

Apart from the service which it performs in providing a hitherto non-existent systematic study on light cladding, it adequately passes muster as a very clear and informative handbook on materials and their properties. It should be earnestly recommended to form part of any building designer's technical library.

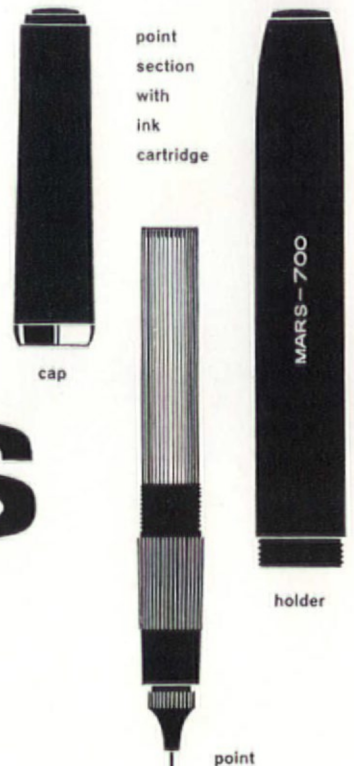
The Vatican buildings

Paul Letarouilly. Alec Tiranti. 65s.

First published in 1882 under the title of *Le Vatican*, this volume completes its republication, with the previous, *The Basilica of St. Peter.*

The book provides a superb guide to the plan and art works of the Vatican in the form of measured drawings. One is immediately struck by the fantastic work which Letarouilly must have put into the preparation of these drawings, which are very much of the 'old school' in their minute detail.

A brief introduction to the drawings by Sir Albert Richardson, in French and English, gives some account of the development of the Papal complex and the assemblage of artists called together over the centuries to construct and decorate it.



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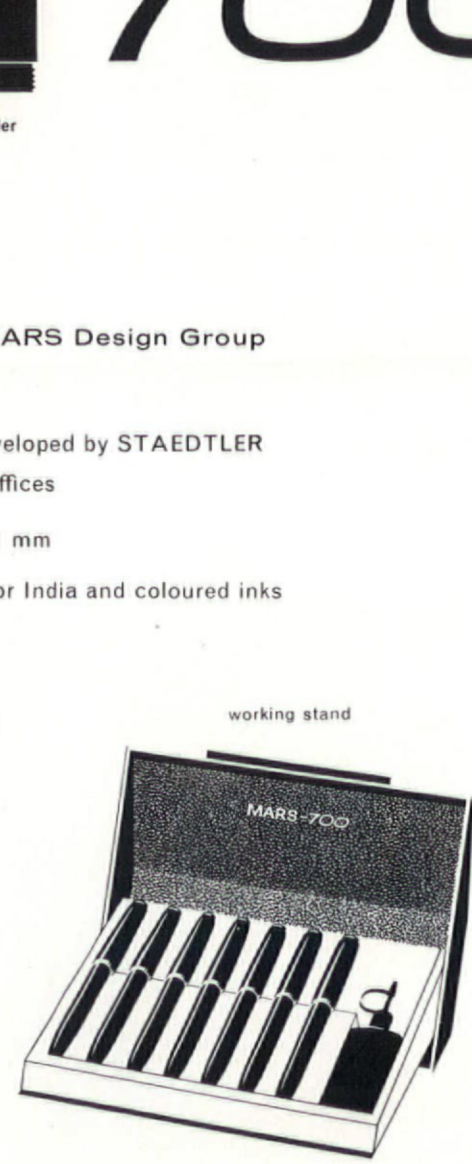

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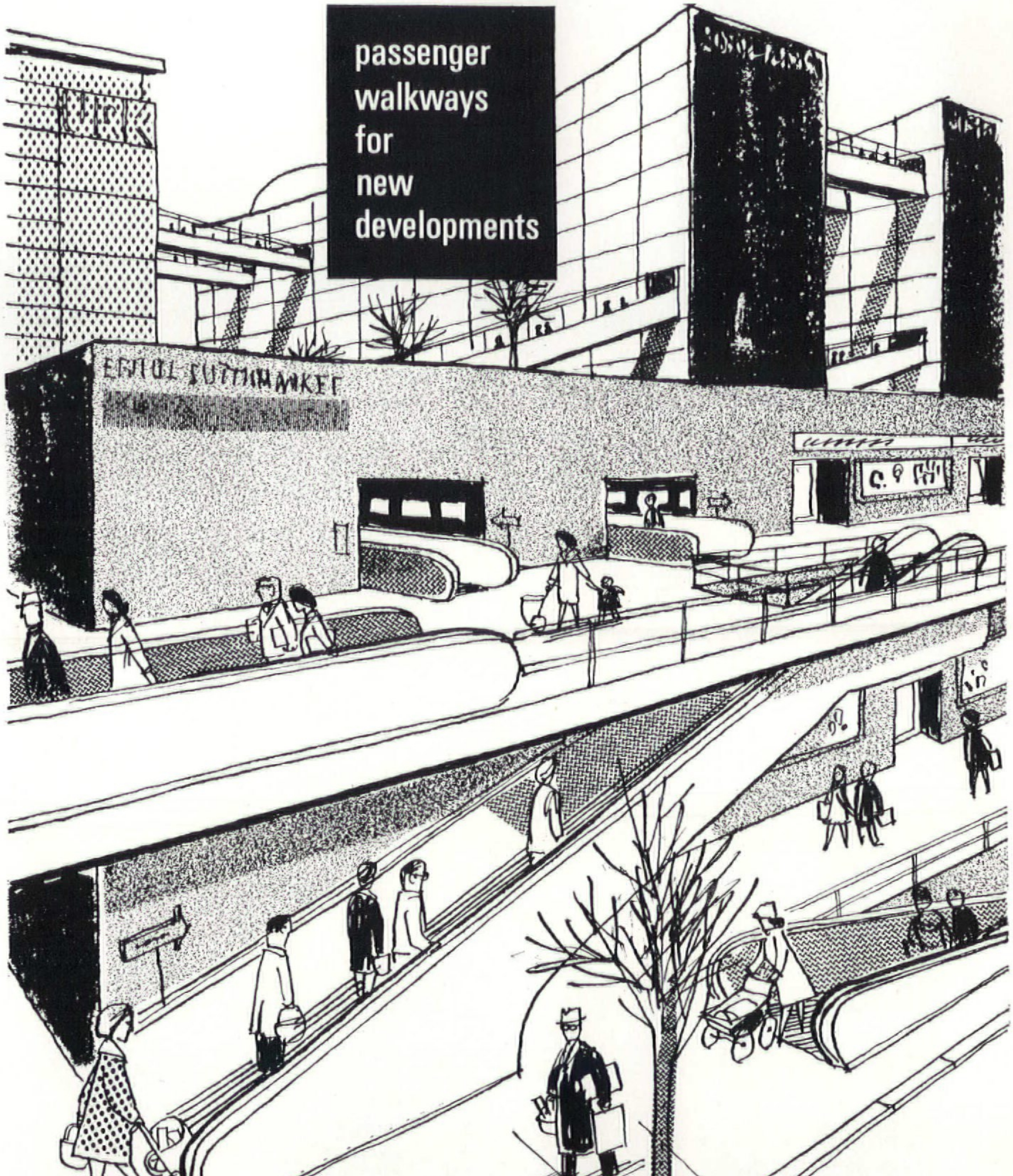

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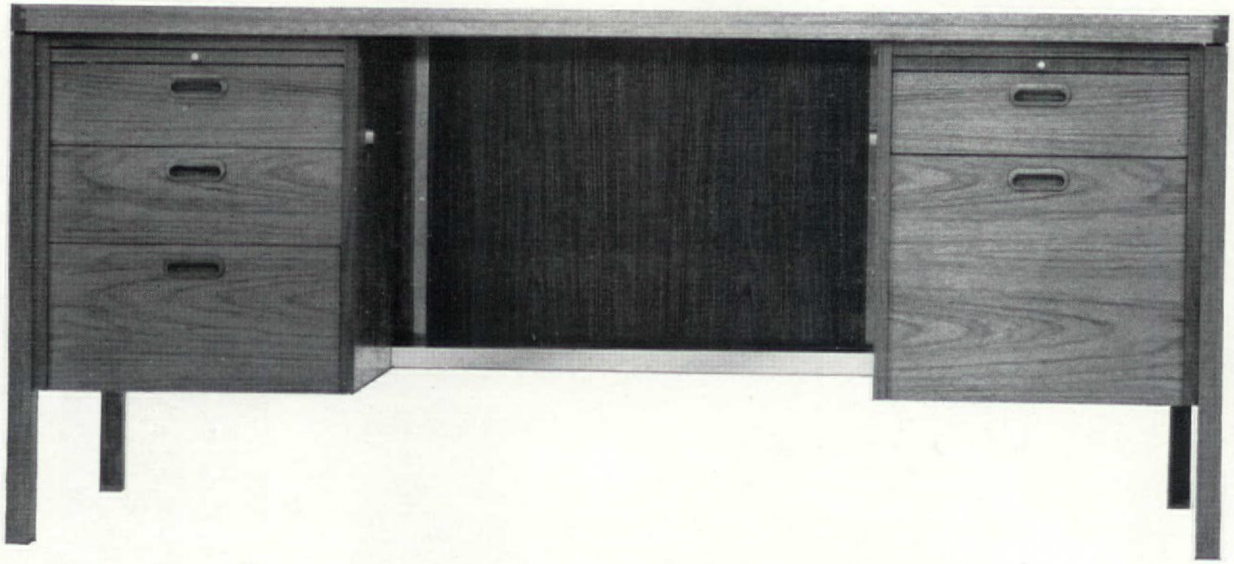

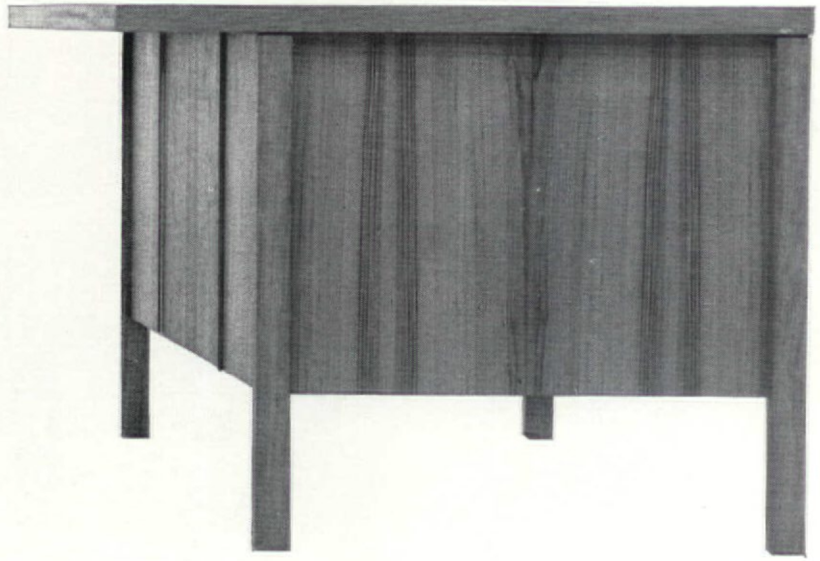

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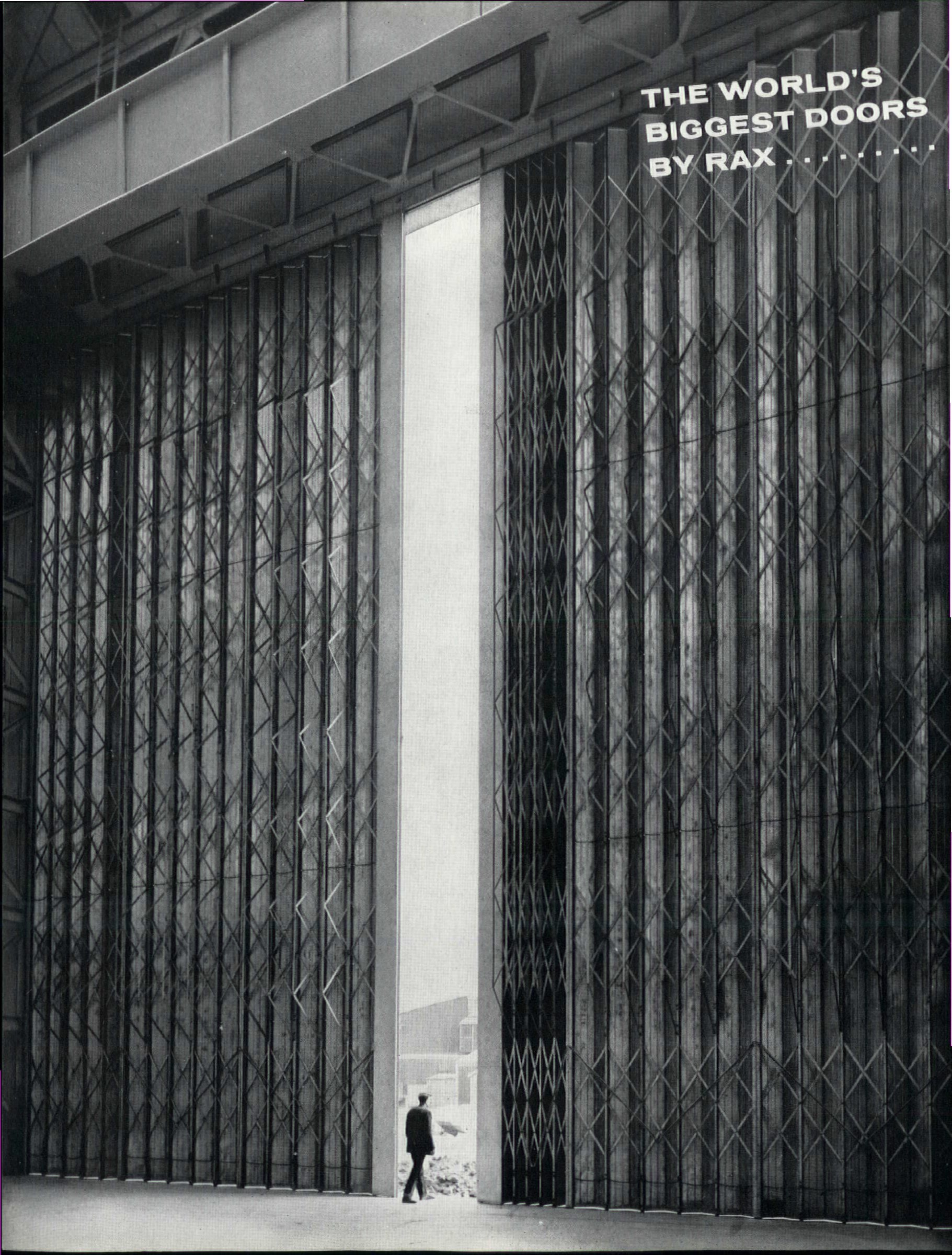
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ASPECTS OF GLAZING HIGH BUILDINGS (PART 2)

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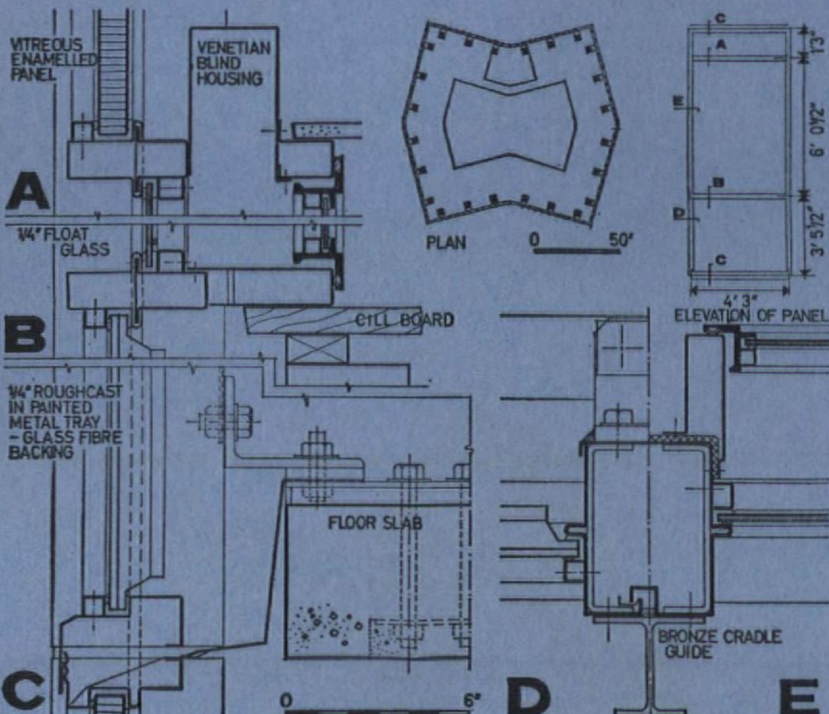
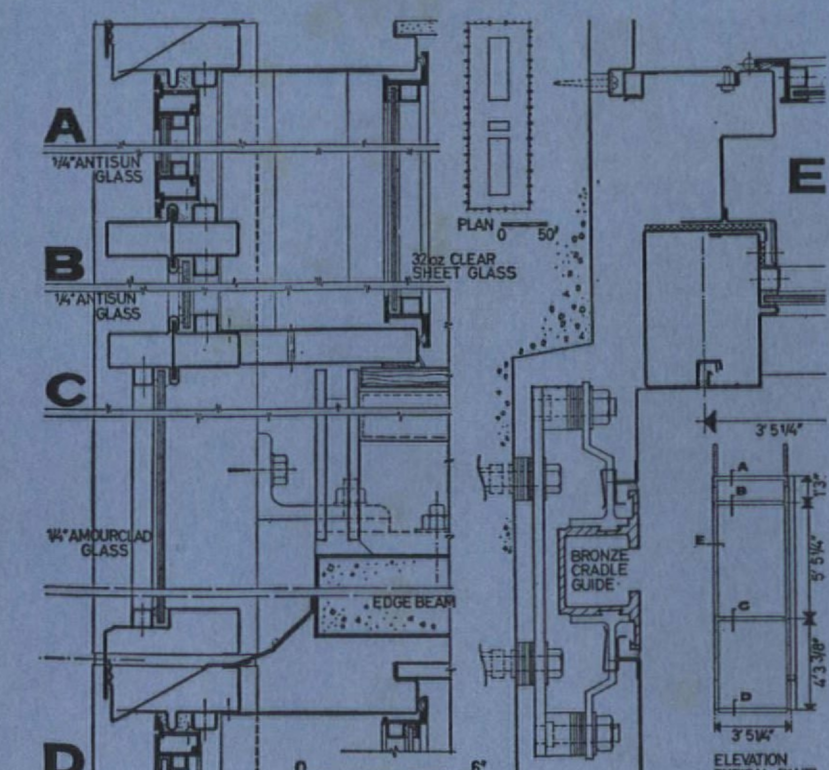




INTRODUCTION

This advertisement is the second of two surveys in which some of the problems of glazing in high buildings have been examined. It follows the first part which dealt with general principles that appeared in various magazines last month. In this report, we at Pilkingtons present four current UK examples of tall structures and attempt, in each case, to show how some of the problems that were posed in the theoretical outline have been dealt with by different designers. All four buildings are in London.

VICKERS BUILDING, MILLBANK, SW1

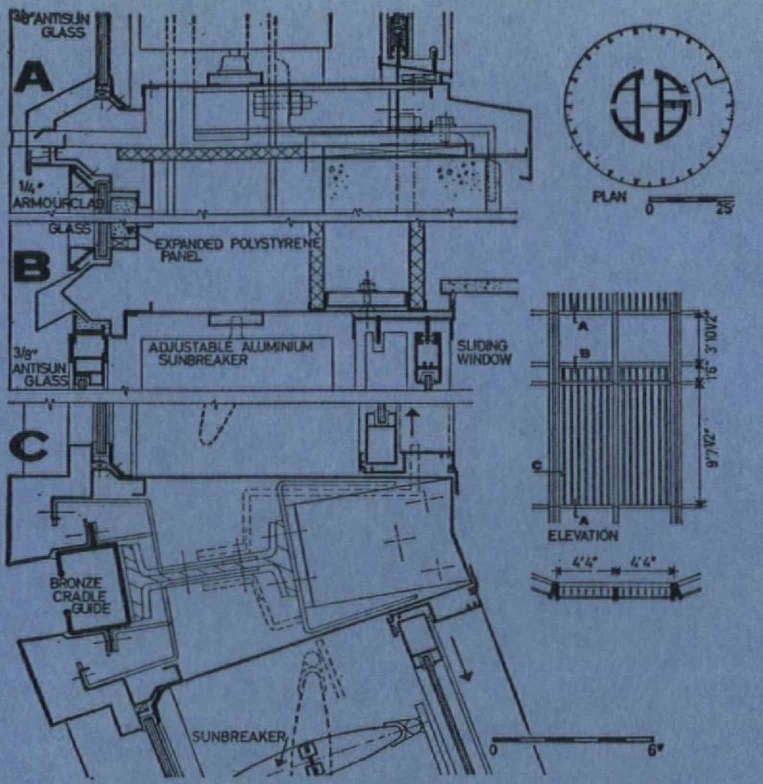
Architects: Ronald Ward & Partners
Consulting Engineer: G. W. Kirkland

A 34-floor office tower 387 ft high. The unit construction curtain wall is continuous from the 4th to the 32nd floors. Like the BP offices (below) its construction is based on the patented Holoform curtain wall made by The Morris Singer Company. Both examples were designed to withstand a wind pressure of 50 lb-sq ft which was assumed by the manufacturers to be equivalent to a wind of 100 mph. The floor-to-floor units in both cases are supported at each floor level by brackets. Vertical and horizontal joints allow for wind sway, thermal movement and site tolerances. To seal them against the rain the joints are interlocking or sleeved and bedded in Butyl topped with a final seal of Thiokol. The same technique applies to the window glass and infilling panels although the larger sheets of glass are held, in addition, by an internal screwed pressure bead. The units are factory made but glazing is on-site. While both buildings have adequate gutters at the base of the curtain wall, rainwater downward rush is reduced to the minimum by projecting all horizontal members to disperse the water back into the air as it hits them.
The Vickers block is glazed externally with Clear Plate Glass—$\frac{1}{4}$ in Float, the infilling panels are $\frac{1}{4}$ in Rough Cast backed up by a coloured metal tray. The outer facade is sealed, except for emergency ventilation, and is cleaned from a cradle. Inner opening casements are glazed with 32 oz clear sheet glass. Individually operated white venetian blinds are set between the two sheets of glass for solar heat and glare control. It is perhaps interesting to note that a temperature of 167°F was recorded on a clear July day (11 am) immediately behind the metal tray infilling panels which are insulated.

BP BUILDING, MOORFIELDS, EC

Architects: Joseph F. Milton Cashmore & Partners
Consulting Engineers: Ove Arup & Partners

A 32-floor office tower at present under construction. It will be 404 ft high. The curtain wall will be continuous from the 3rd to the 30th floor. As indicated above, the curtain walling is a patented system manufactured by The Morris Singer Company. The units are 11 ft high and 3 ft $5\frac{1}{4}$ in wide and will fit between 15 ft 6 in wide column bays divided in the middle by $12\frac{1}{2}$ in wide stainless steel clad service ducts. As in the previous example, the units have a galvanised and asphalt painted mild steel core which is sheathed with 22 gauge molybdenum based stainless steel. The outer window glass will be $\frac{1}{4}$ in green-tinted 'Antisun' Clear Plate glass and the inner opening window will be 32 oz clear sheet glass. The cavity between the two sheets will be vented to the outside air.
Also to be included is a felt cold-bridge insulation between the inner skin and the outer unit. An electrically operated cleaning cradle will run in bronze guides that will run up the outside reveals of the stainless steel faced concrete perimeter columns. To ensure rapid and easy fixing of the curtain walling, very fine tolerances have been specified in the construction of this building. The total vertical variation has been limited to 1 in from the bottom to the top with a maximum of $\frac{3}{8}$ in, to be lost elsewhere, between any floor.



G.P.O. TOWER W1

Architects & Engineers: Ministry of Public Building & Works

This tower for microwave telephony is 581½ ft high to the top of the lift motor rooms. Above that is a 40 ft lattice mast. The tower is 54 ft in diameter and for 240 ft of its height (15 floors) it is clad with curtain walling. These floors will be used for GPO apparatus. At the very top will be a revolving restaurant, a bar and other public spaces. The structure is designed to withstand winds with gusts of up to 90 mph for 3 seconds. The maximum deflection at the top is expected to be 10 in each way of centre—i.e. a total of 20 ins. Before the design was finalized, models of it were tested in the National Physical Laboratory, Teddington.

While ostensibly circular in plan, the apparatus floors are polygonal, to ease glazing problems and are thus divided into 18 faces. The main mullions of the stainless steel curtain walls (Henry Hope & Sons Ltd.) are at 8 ft 8 ins centres and each panel unit is 4 ft 4 ins wide and 15 ft high. The windows are double glazed, having a fixed panel of ⅜ in 'Antisun' Plate externally and 32 oz clear sheet glass in sliding casements internally. Between the glasses are manually operated silver-anodized aluminium sun-breakers, linked in batches of seven, to open or close together in each curtain wall panel. On the third of the tower not exposed to the sun, the sun-breakers have been omitted. Small emergency opening windows in the facade are glazed with ¼ in 'Antisun' Clear Plate. The spandrels between the windows are glazed with ¼ in 'Armourclad' Plate graphite coloured panels. Most of the glass panels throughout the building have been weather-proofed at the joints by snap-on Neoprene gaskets, covered by snap-on aluminium pressure beads.

In the last 18 months, the highest wind speed so far recorded at the top was 62 mph in November 1963. The average for the whole period has been 15—20 mph.

POINT BLOCKS, BARBICAN EC1

Architects: Chamberlain, Powell & Bon
Consulting Engineers: Ove Arup & Partners

Three 42-floor apartment towers, the first of which is now under construction. They will be 392 ft high. To obtain the maximum benefit of the view and to reduce the glare contrast between sky and window surrounds, 68% of the outside walls will be glazed. Running right around the building on each floor will be balconies with 3 ft 9 in overhangs that double as outdoor living spaces and fire escapes. The balcony balustrades and overhangs thus will provide a certain degree of protection from solar rays, wind and driving rain. Living room doors will slide so half the glass wall can be opened to the balcony. throughout the towers doors and windows will be double glazed. This factor combined with exceptional detailing and timber frame (Utile) construction is expected by the architects to achieve a thermal efficiency of 50% that of a brick cavity wall for the same area. All doors are lifting-sliding or lifting-hinged with Gerrard-Unitas locking gear to provide positive draught-proof closure at several points. With doors and windows shut the building will have, in effect, a sealed facade. Controlled natural ventilation in severe weather conditions is, therefore, provided by adjustable ventilators to each window. The architects have evolved a standard window and door detail, in which two basic mullion dimensions predominate, for economical and efficient mass-production. All units will be factory made (J. Gerrard & Sons Ltd) and, even though the largest is 13 ft by 8 ft, delivered on site ready glazed for fixing onto slotted wall angles *after* plastering and most other work has been finished. The frames, which will be glued in the shop with Aerolite KL, will be delivered factory finished with their four final coats of Polyurethane clear resin already applied. The expected life of this surface is 10 years.

The following wind criteria were given by the engineers for the tower design.

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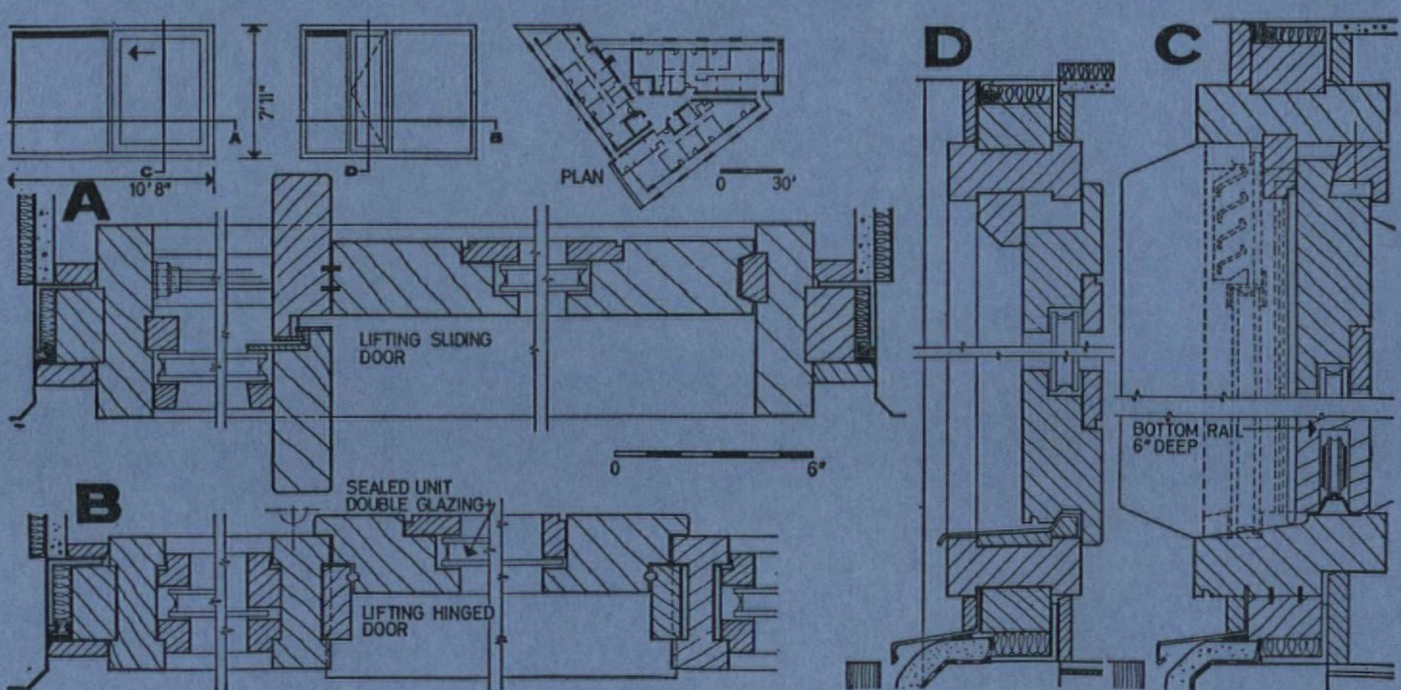
100 ft	82 mph	26 lb-sq ft
200	94	35
300	103	41
400	107	45



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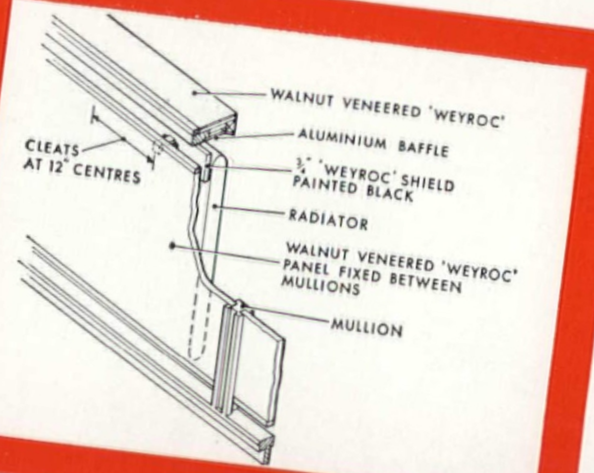

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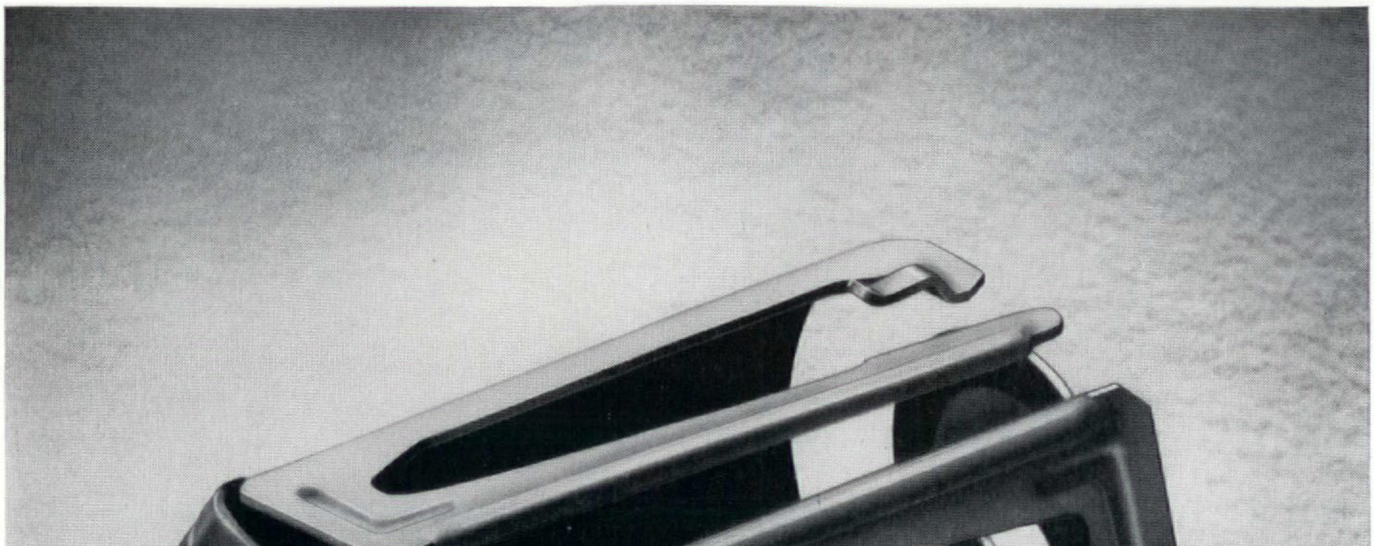

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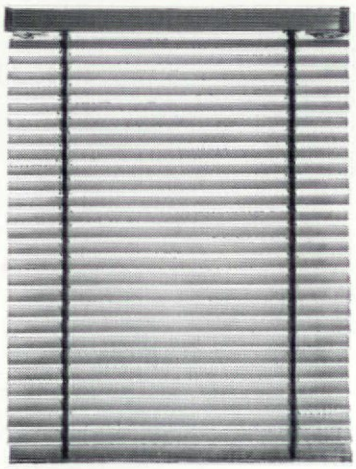

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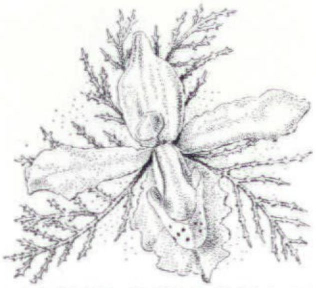

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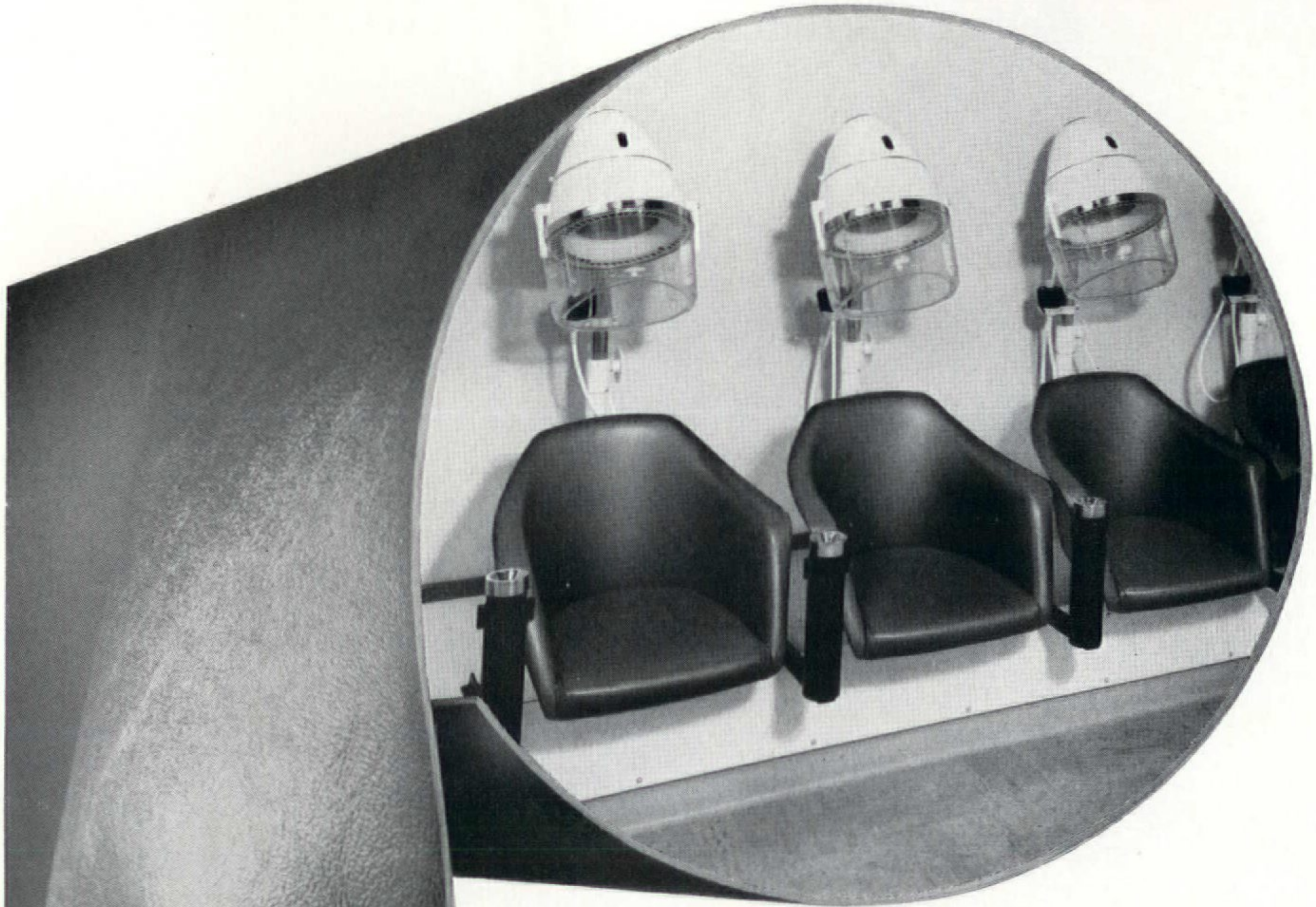

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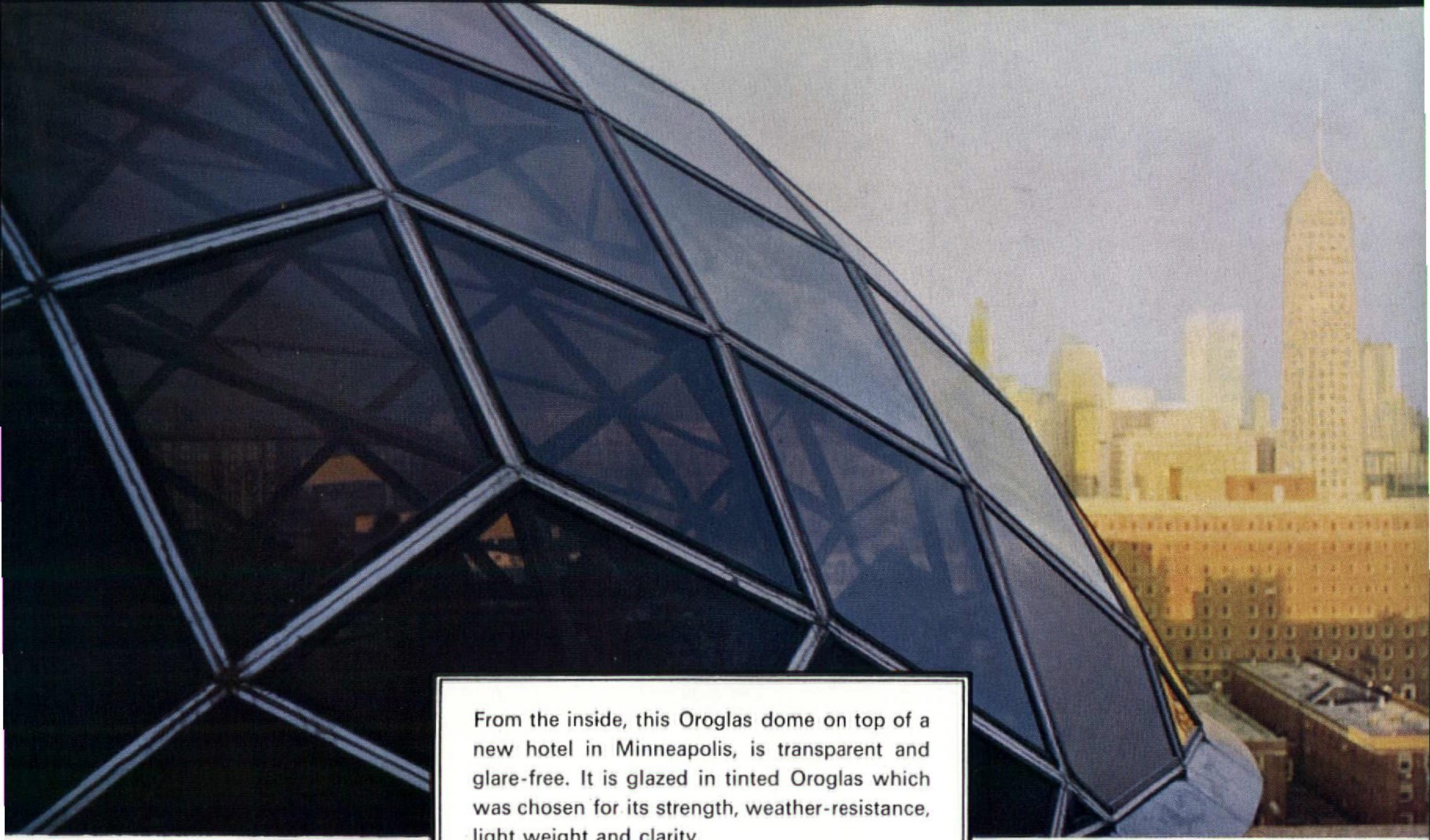

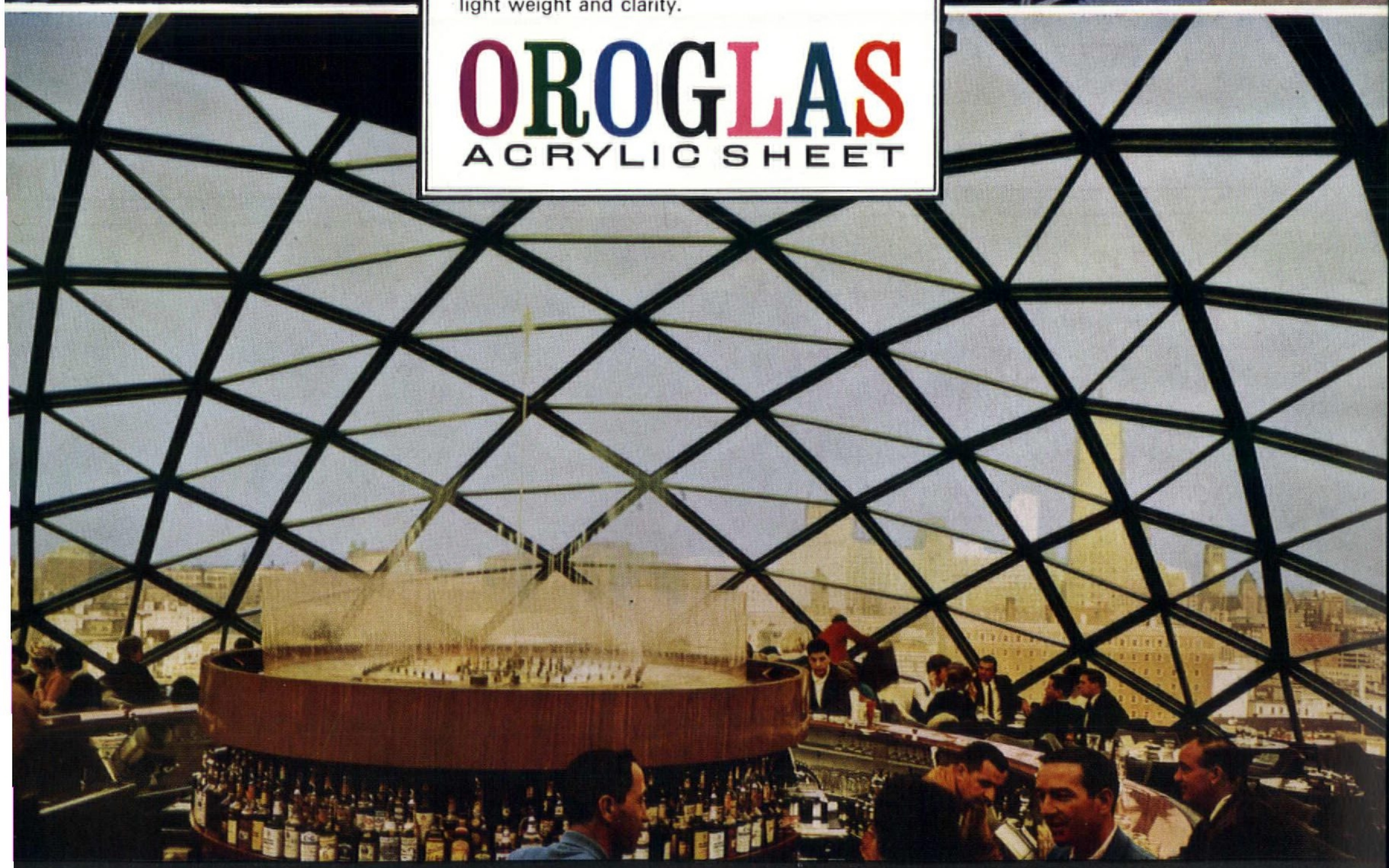

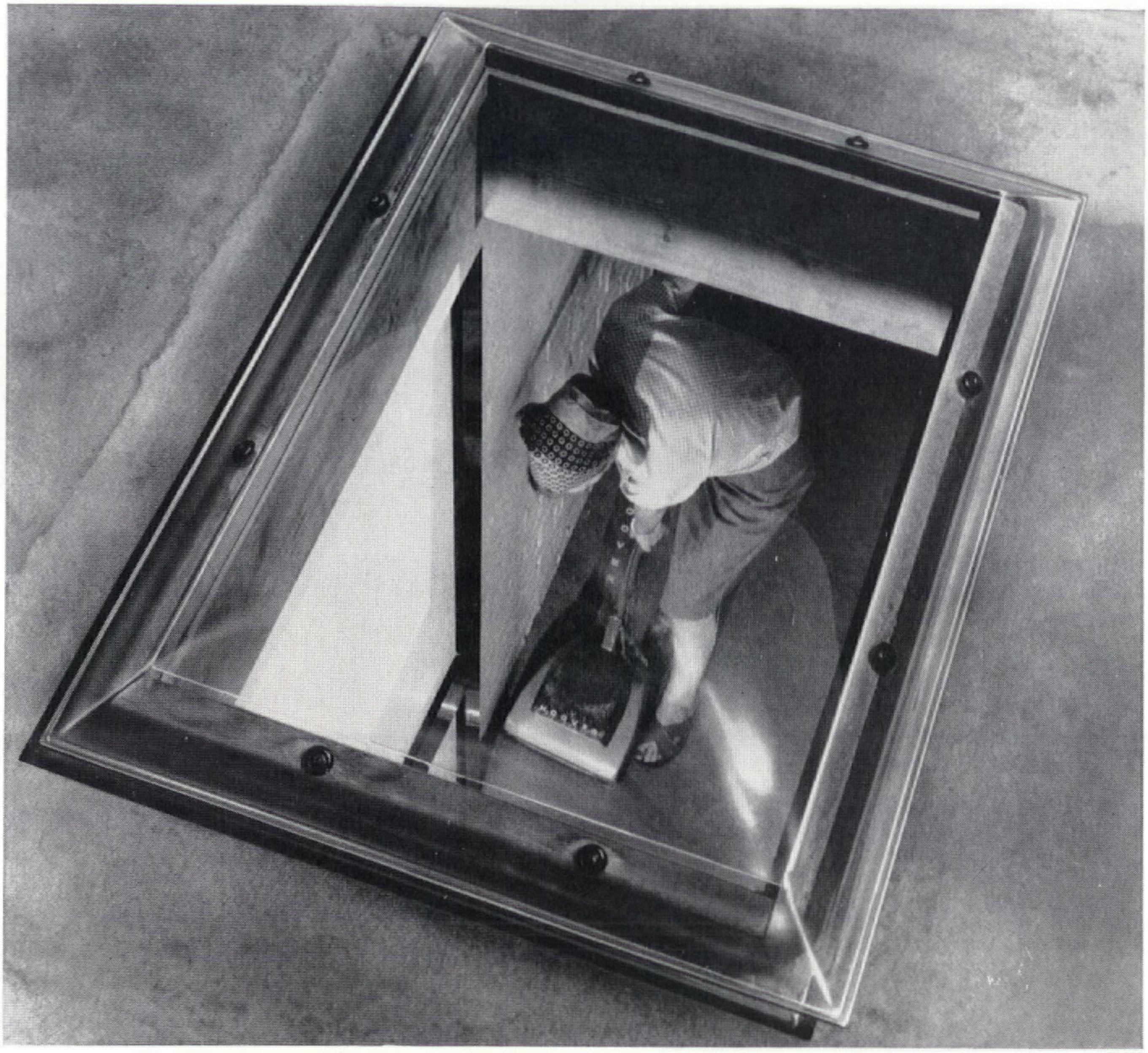

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Top: A pair of electrically operated Bolton Shutter Doors actuated by photo-cell. Note the heavy-duty pickets and lattice and the fabricated box section top track containing ball bearing pulleys.
Bottom: A run of Bolton Shutter Doors with shutter leaves, cover plates and shutter fronts of aluminium alloy.
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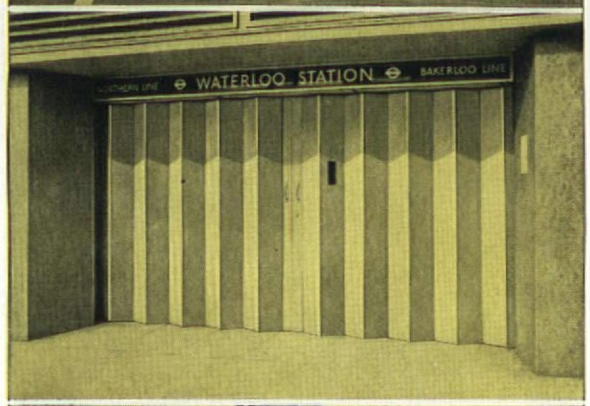

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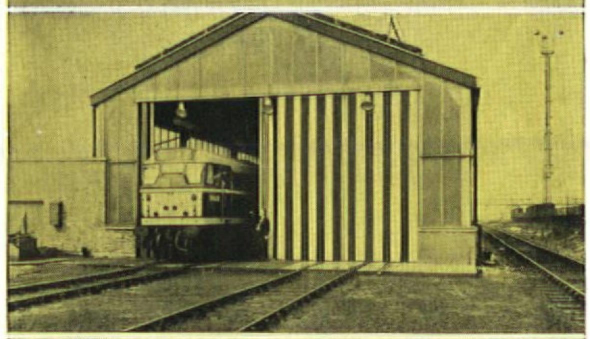

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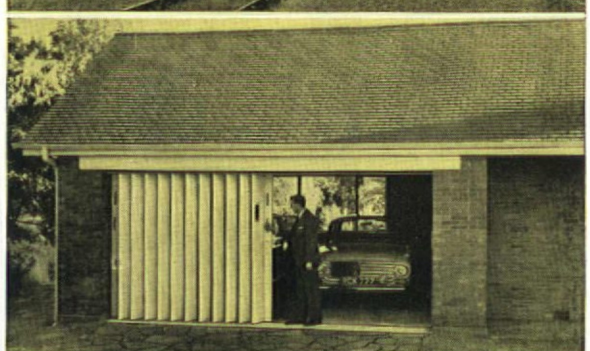

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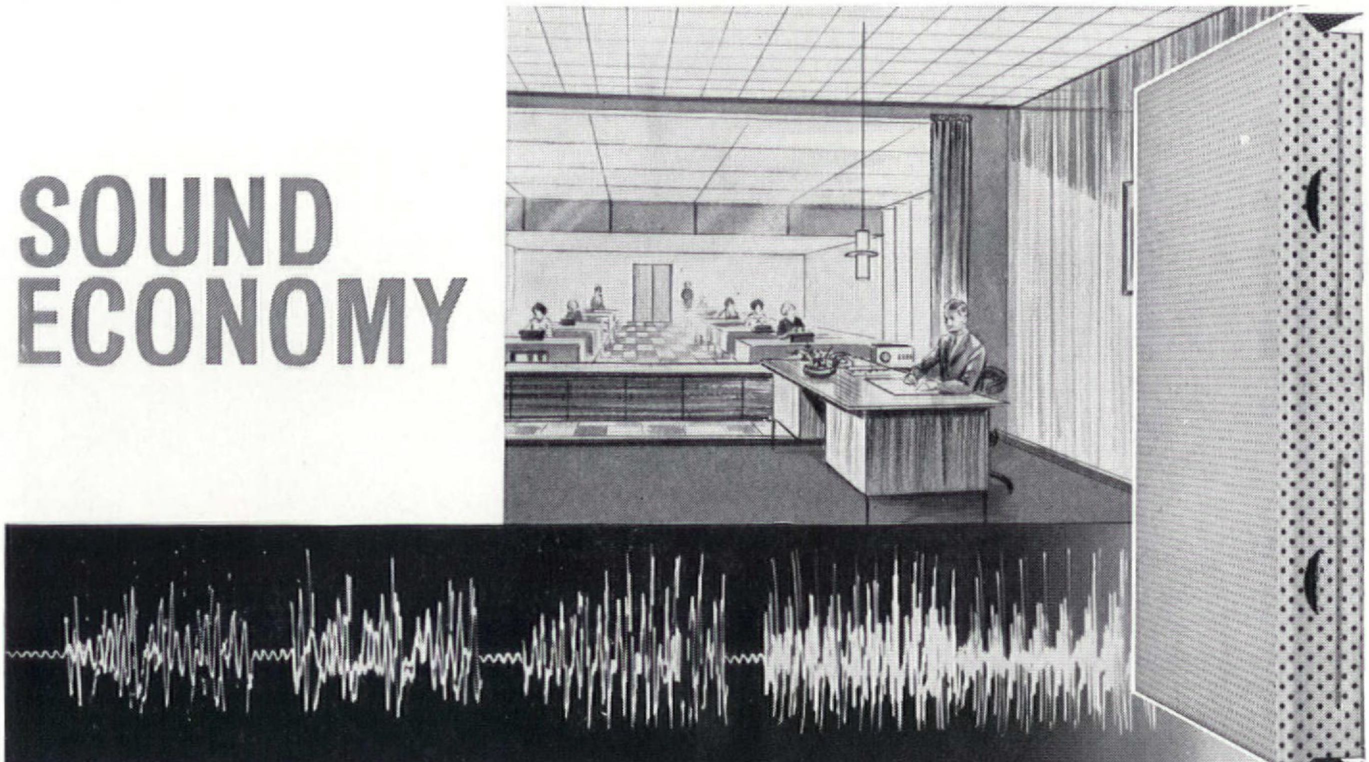

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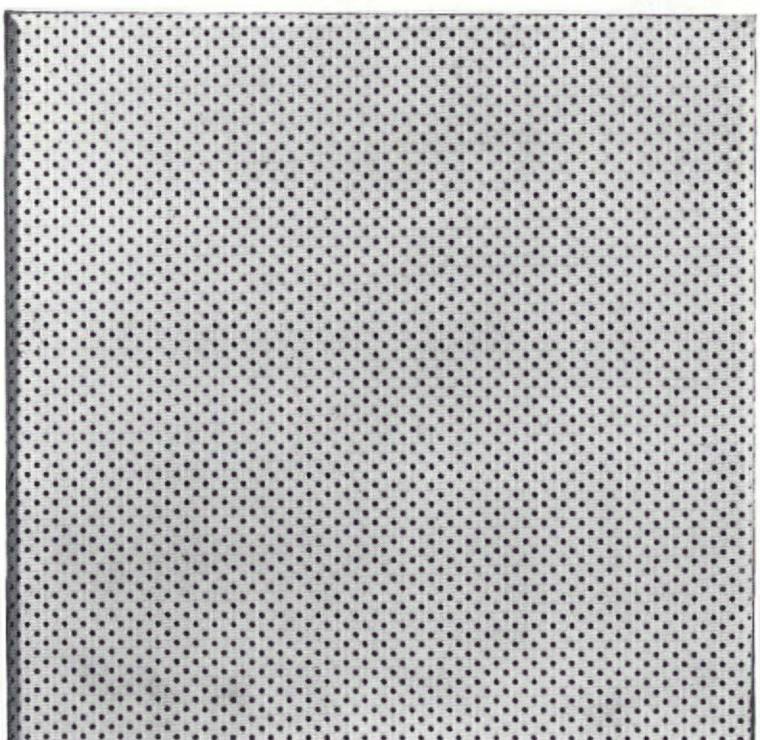

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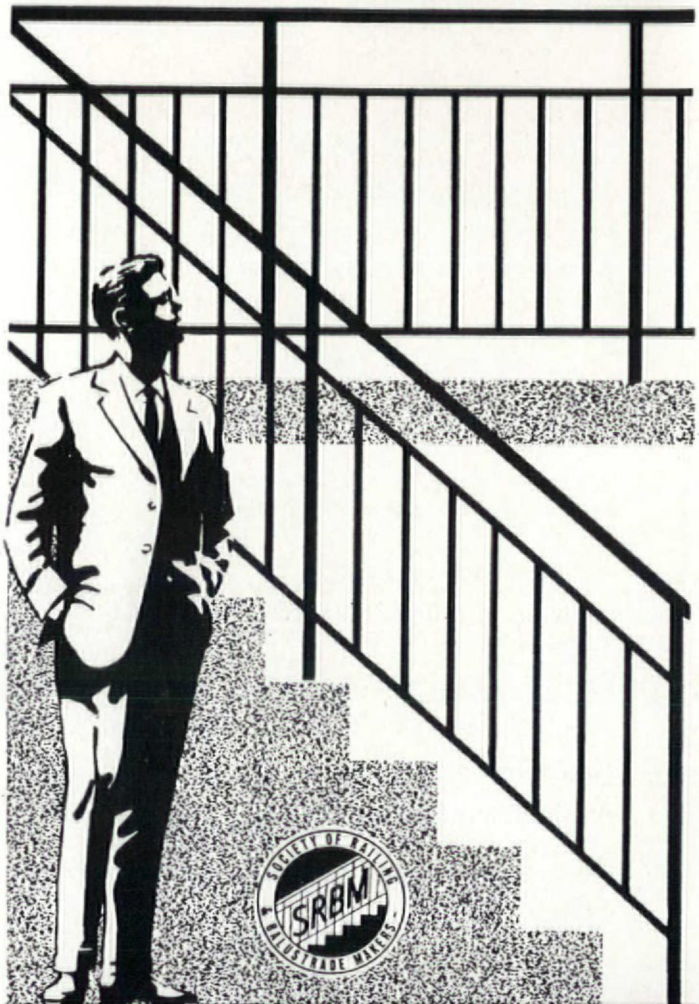

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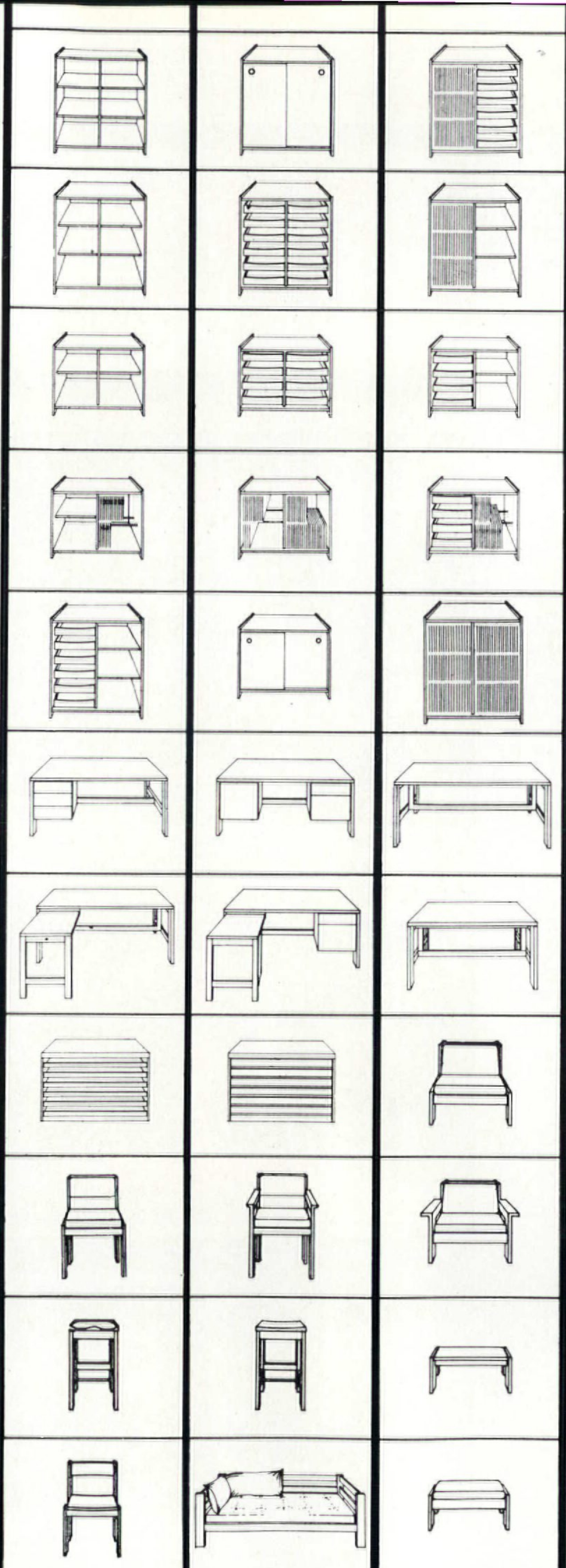

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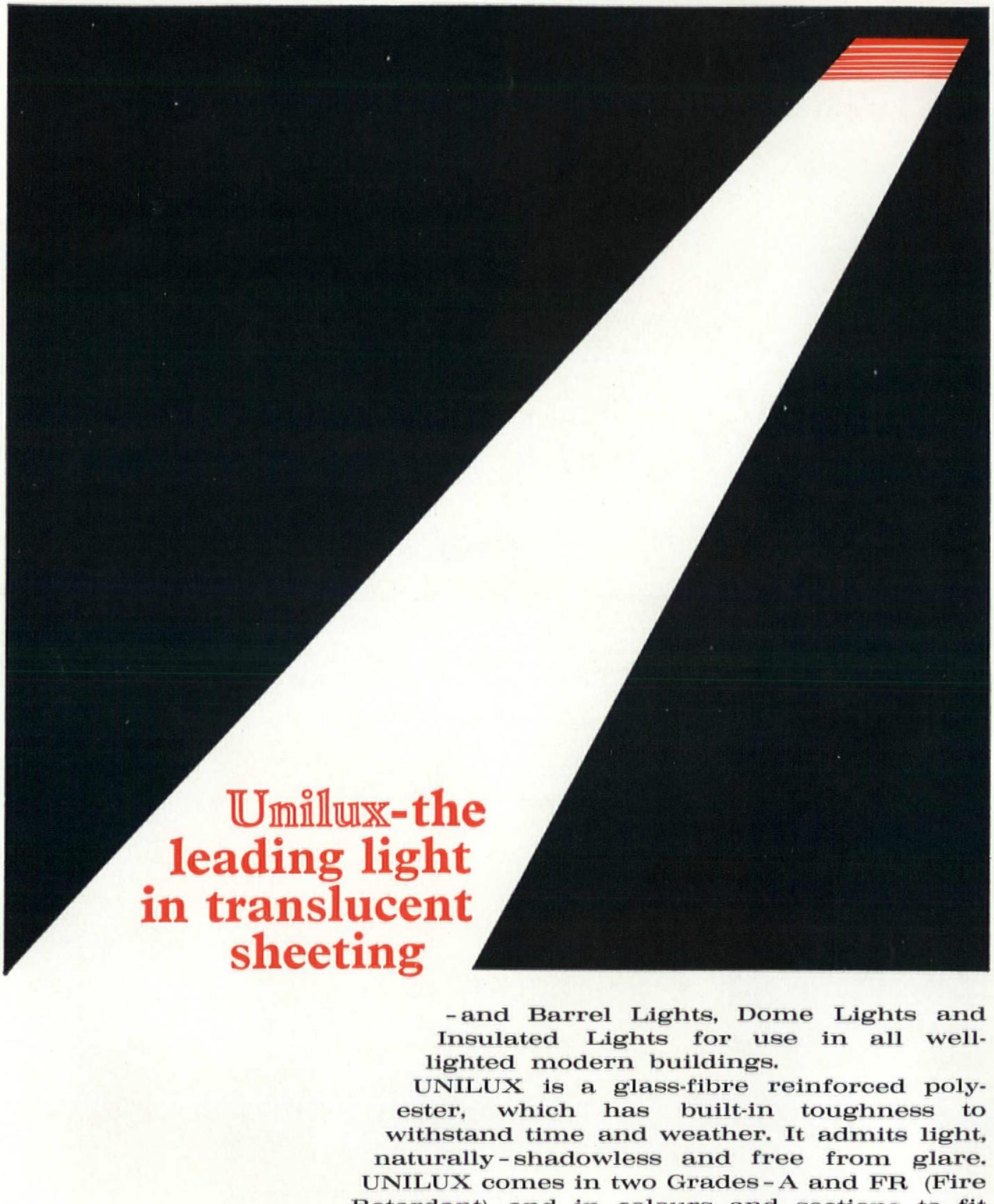

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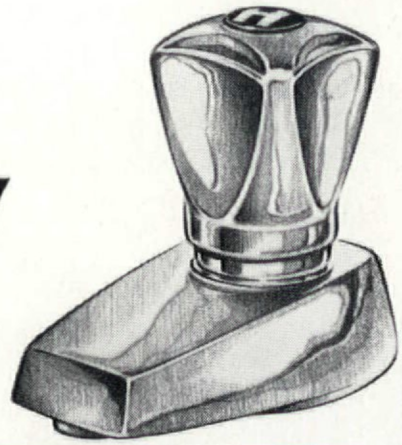

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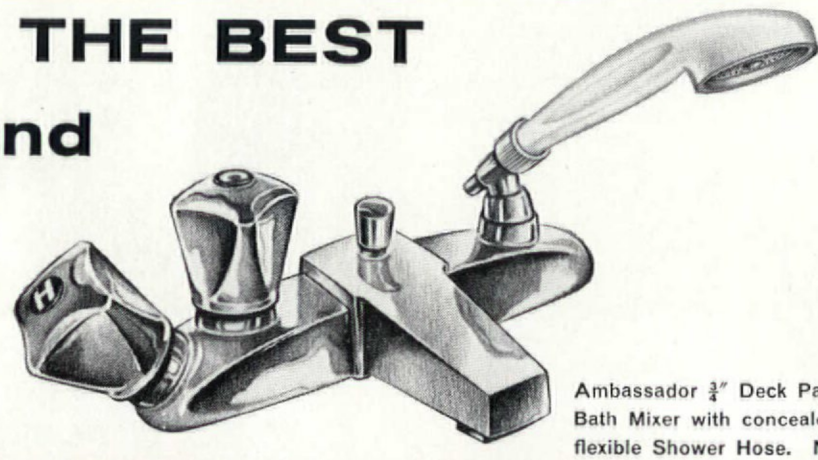

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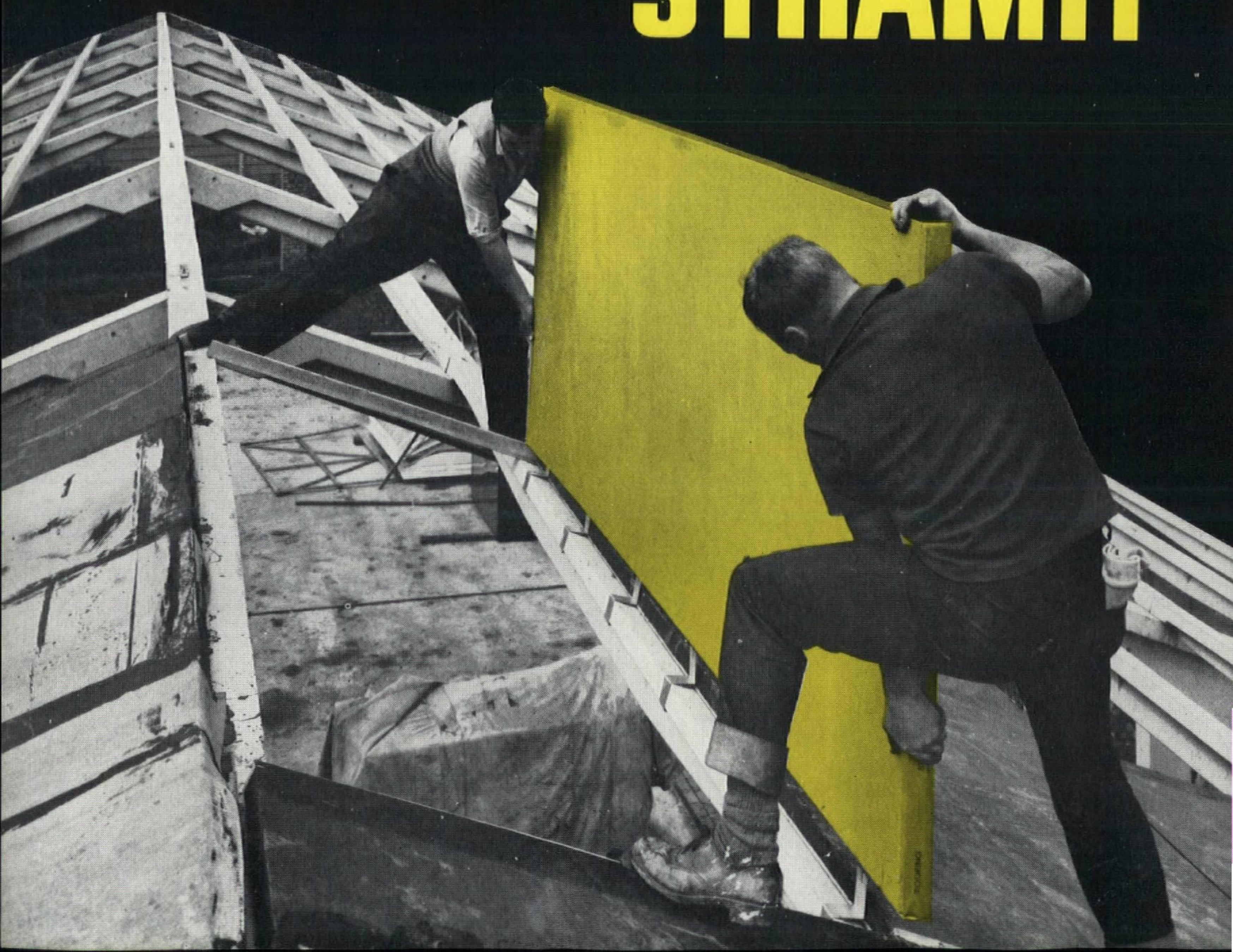
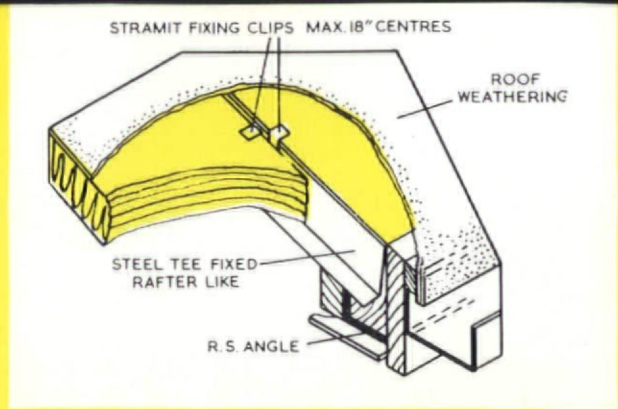


ROOF-DECKING IN STEEL TEES

Stramit roofing-grade slabs are laid in 16- or 18-gauge Stramit steel tees set at 2ft 0½in centres and finished off at eaves as shown. The Stramit slabs are secured in the tees by Stramit fixing-clips spaced at intervals of not more than 18in. The steel tees are supported by purlins. This method of construction is particularly suitable for pitched roofs.



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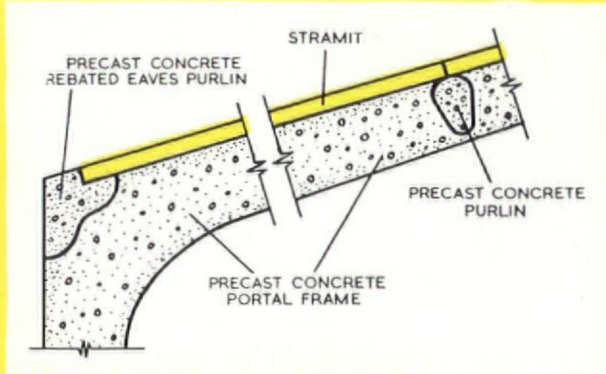

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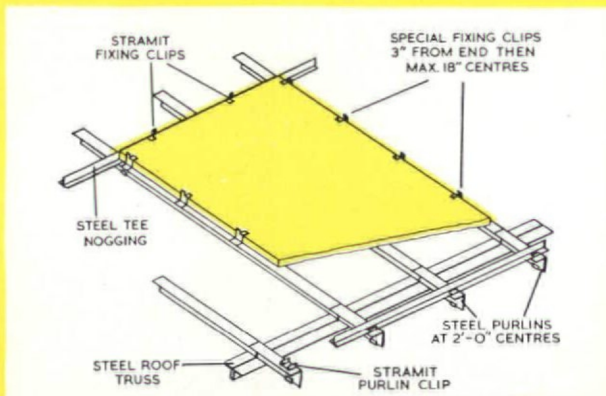
ROOF-DECKING ON STEEL PURLINS

In the drawing opposite, the purlins are secured at 2ft centres to steel trusses. 4ft wide Stramit roofing-grade slabs are laid so that the purlins support the slabs at their long edges and along their centres. Stramit steel tees act as nogging-pieces for the ends of the slabs. Stramit fixing-clips and special fixing-clips are used to secure the slabs to the tees and purlins.



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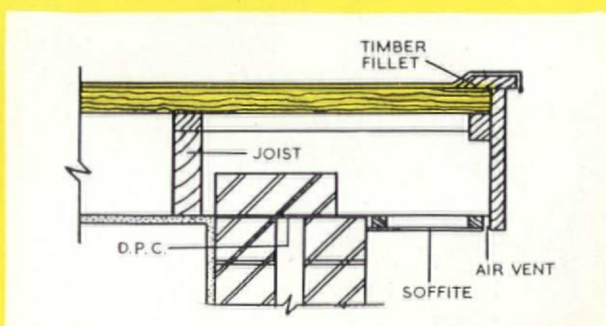

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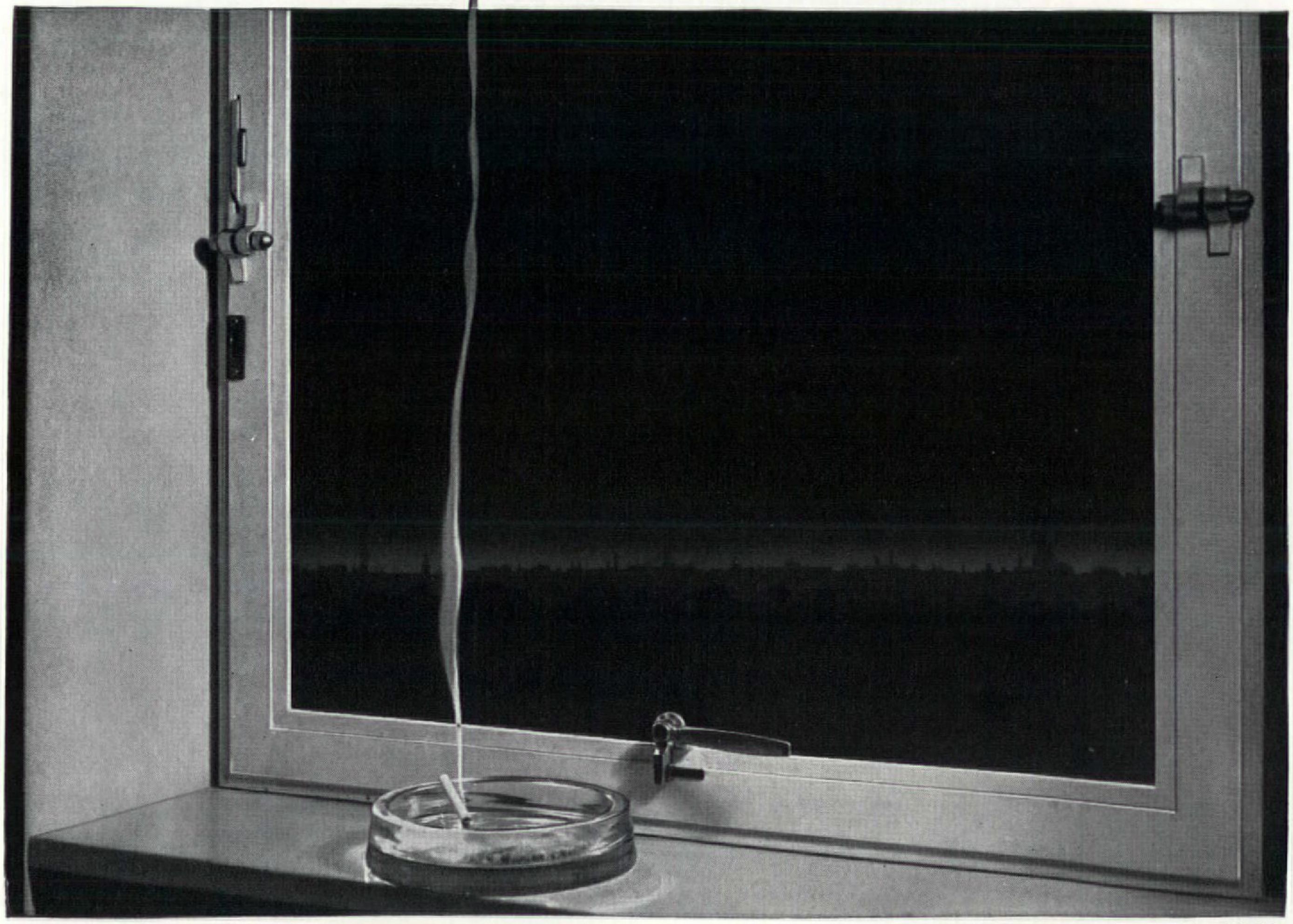

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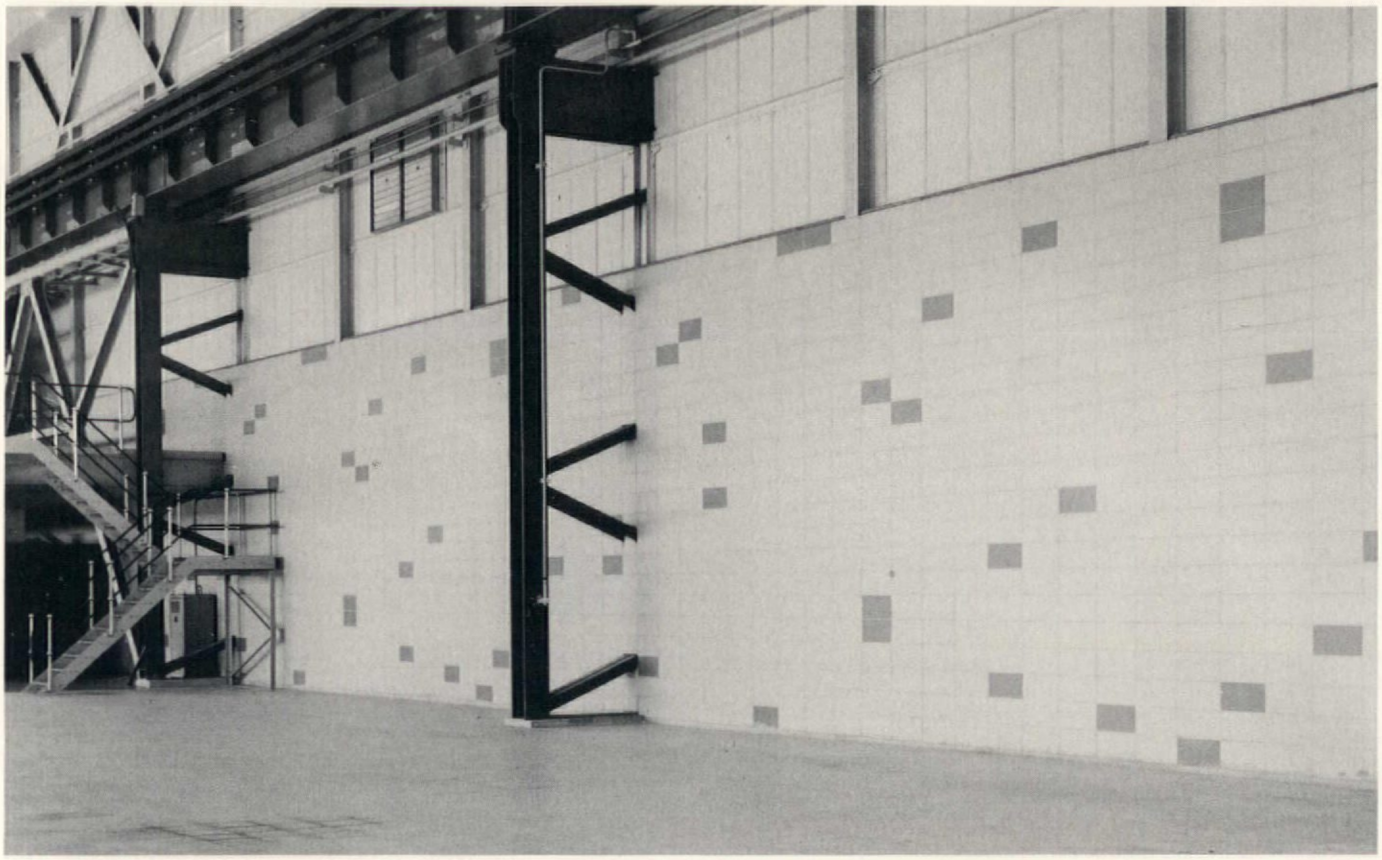

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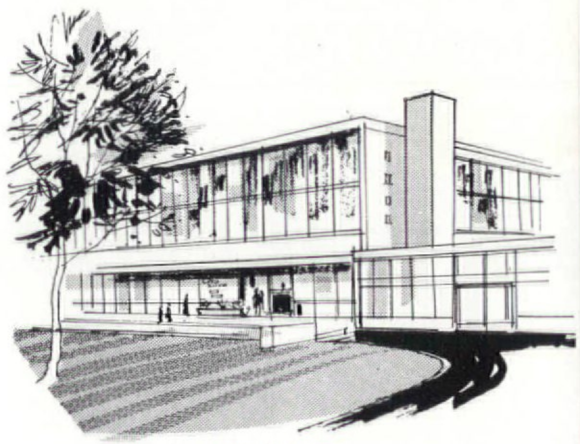

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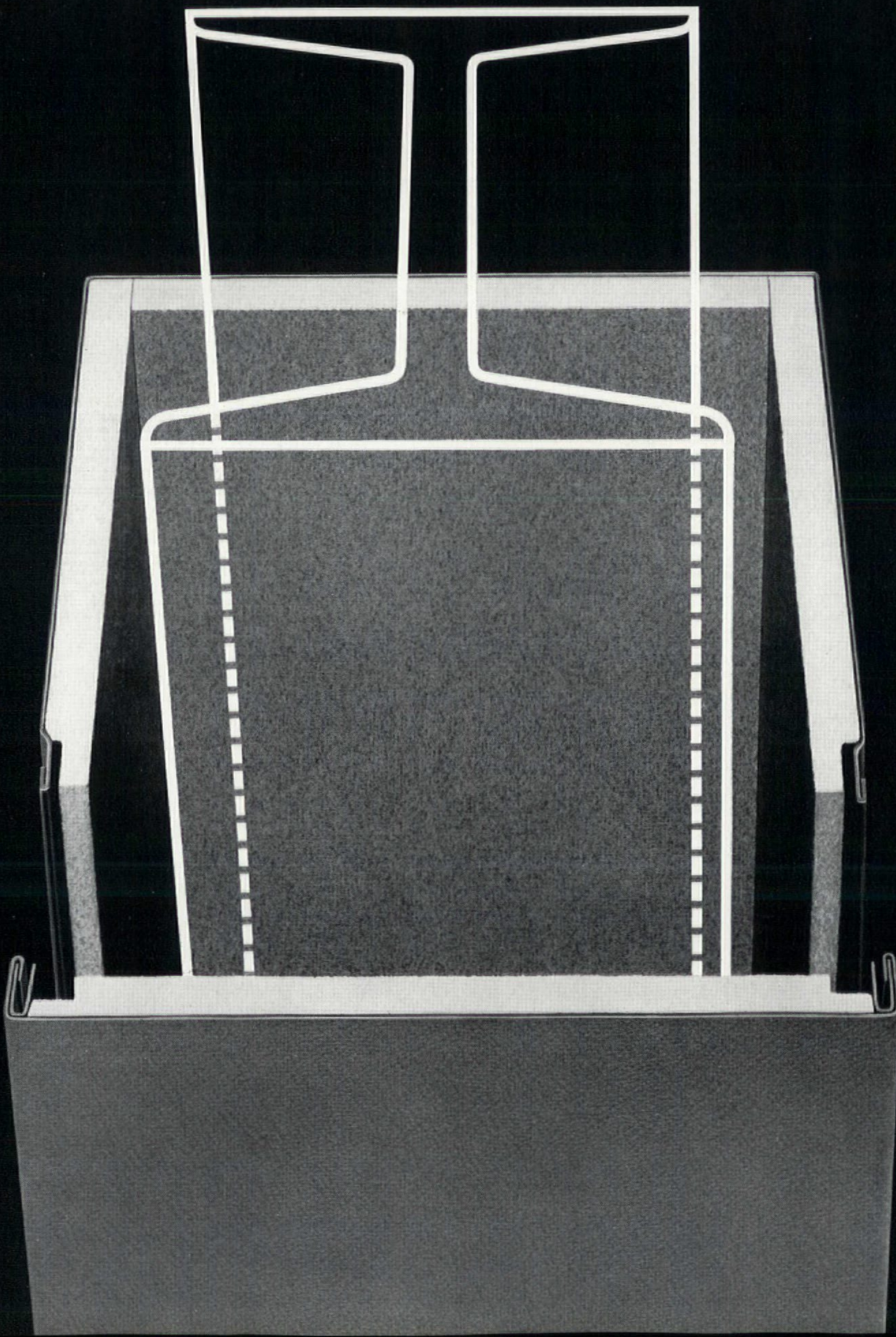

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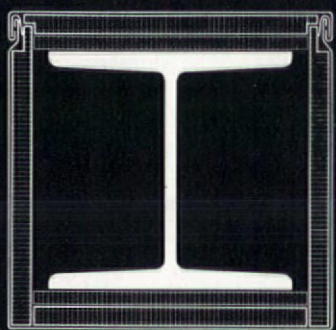

Fig 1 U shaped unit and closure used for free standing column

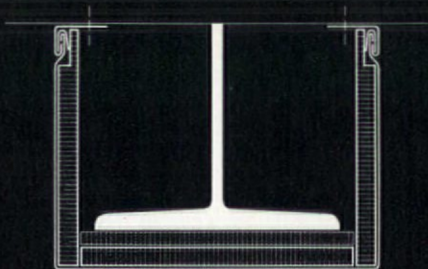

Fig 2 U shaped unit and wall fixing angles for attached column

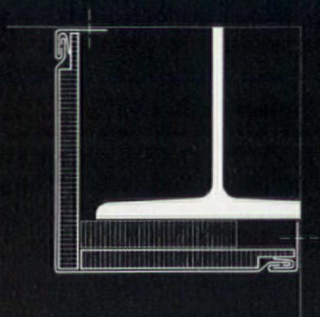

Fig 3 Special arrangement for column in internal angle

ScaleFive

Asbestolux ScaleFive is a selection of five solid and five perforated panels for normal and acoustic use. Uniformity of panel size and fixing method permits complete interchangeability and a wide range of scales and patterns can be achieved. ScaleFive enables the designer to select a ceiling to match the architectural scale and character of a room

N = Normal A = Acoustic

N1	A1	Plain
N2	A2	Textured
N3	A3	Strongly textured
N4	A4	Patterned-motif formed by each panel
N5	A5	Patterned-motif formed by groups of panels

Size 2ft 0in x 2ft 0in x 3/8in
Finish - Pre-decorated washable white paint

Fire protection - up to 1½ hours

Cape SecretSlot

Asbestolux ceiling panels can be secured to suspended metal sections by means of a patented spring clip. Eliminates face fixings and provides an economical method of fire protection with improved appearance. Component description: Spring steel clip plated for corrosion resistance (Brit Patent No. 28315/62). The clips are inserted to full extent into factory machined slots in the Asbestolux panels. 3/8in Asbestolux secretslot panels secured direct to steel 'T's with secretslot clips provide 1½ hour fire protection to structural steel floor beams supporting non-combustible floors

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Improved strengh of the higher density Asbestolux '60' extends the performance range of Asbestolux giving harder surface higher impact resistance and higher laminer strength, whilst retaining the properties of stability and fire integrity. Surface is a smooth finish of the highest quality. Suitable for all types of wall linings, fire breaks and fire curtains, lift and shaft linings etc. Manufactured in accordance with BS 3536/62. Nominal dry density 60lbs per cubic foot

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Colorbestos shingles are a new form of Asbestos wall cladding widely used throughout Scandinavia.
Colorbestos couples the permanence of Asbestos sheeting with an integrated decorative colour finish, produced by incorporating silica particles in the panel itself.
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Colorbestos can either be used for small areas such as under window panels or alternatively large wall surfaces. These shingles add texture and colour, they weather well and can be combined effectively with other materials

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Is a new. exposed Tee, ceiling suspension system. It features high quality, pre-decorated narrow width flange completely uninterrupted by an ingenious fusible link method. These 'built-in' links allow for expansion without distortion in a fire and ensure retention of the Asbestolux GridFill panels.
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International Call

From Finland, new additions to the Conran office seating range.

For executives (and architects) accustomed to the utmost in comfort, Conran now provide the ultimate in office seating.

There is a high back chair, upholstered in foam, with deep seat cushion. Base is in cast and polished aluminium, fitted as standard with height adjustment and free running swivel action, C111. An optional extra (for feet on the desk thinkers) is a neat torsion bar tilt mechanism, adjustable for firmness, to compensate for the weight of the sitter, C110.

To match, there is a conference chair — with the same seat shell, upholstered to the same standards of comfort — mounted on a chromed tube underframe, C112.

For occasional office use a sidechair is now available — foam upholstered on an expanded polystyrene shell, with chromed tube leg frame, C113.
C110 from 51.9.0 to 84.6.0 C111 — 44.1.6 to 73.18.0
C112 from 30.0.0 to 55.16.0 C113 — 14.6.6 to 24.7.0
Prices vary according to contract discount, quantity and specification.
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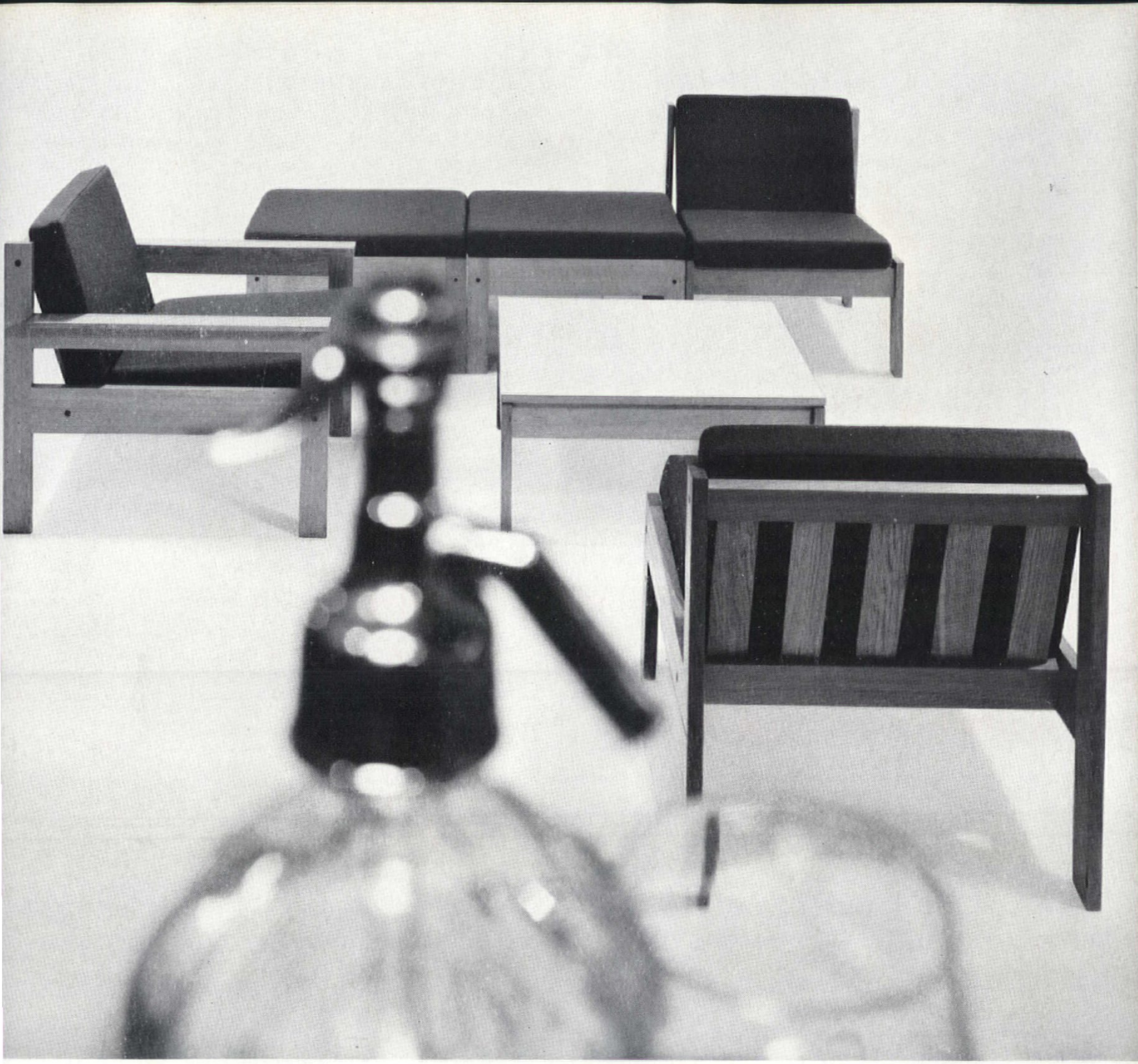

Chairs

for reception areas, hotels and universities from the new Conran Pythagoras range of related seating, desks and storage units.

Designed around an entirely new system of dry knock down joints, Pythagoras chairs withstand an immense amount of hard wear (tests show that each joint will take 30,000 severe jolts before showing any tendency to loosen).

Tables, arm and armless chairs and stools all butt together to form continuous runs and corner assemblies, with the tables making up corners in right angle seating arrangements.

Pythagoras chairs are framed in solid oak, seat cushions, in 3" foam are carried on Pirelli webbing.

Pythagoras tables are framed and lipped in solid oak with tops venereed either in oak or in white melamine.

Table (PU/T) from 7.3.3 to 10.14.0

Armchair (PU/A) from 16.1.0 to 24.11.6

Armless chair (PU/S) from 13.17.6 to 21.16.0

Stool (PU/B) from 10.11.0 to 14.18.0

Prices vary according to contract discount, quantity and specification.

More details from our showrooms where the complete Pythagoras range is on view. 5 Hanway Place London W 1 Langham 4233 and 3 Smithy Lane King Street West Manchester 3 Blackfriars 4558.

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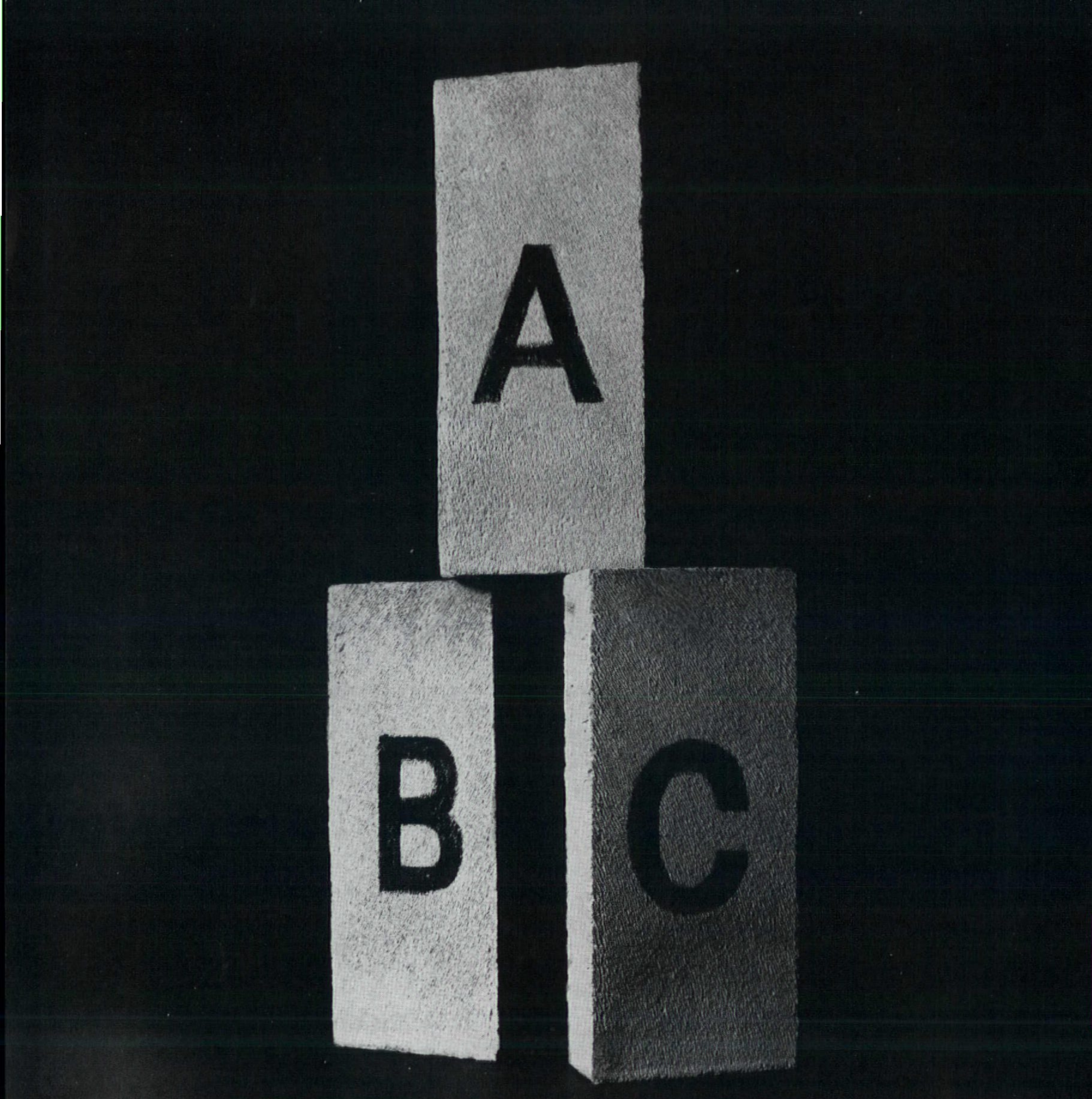
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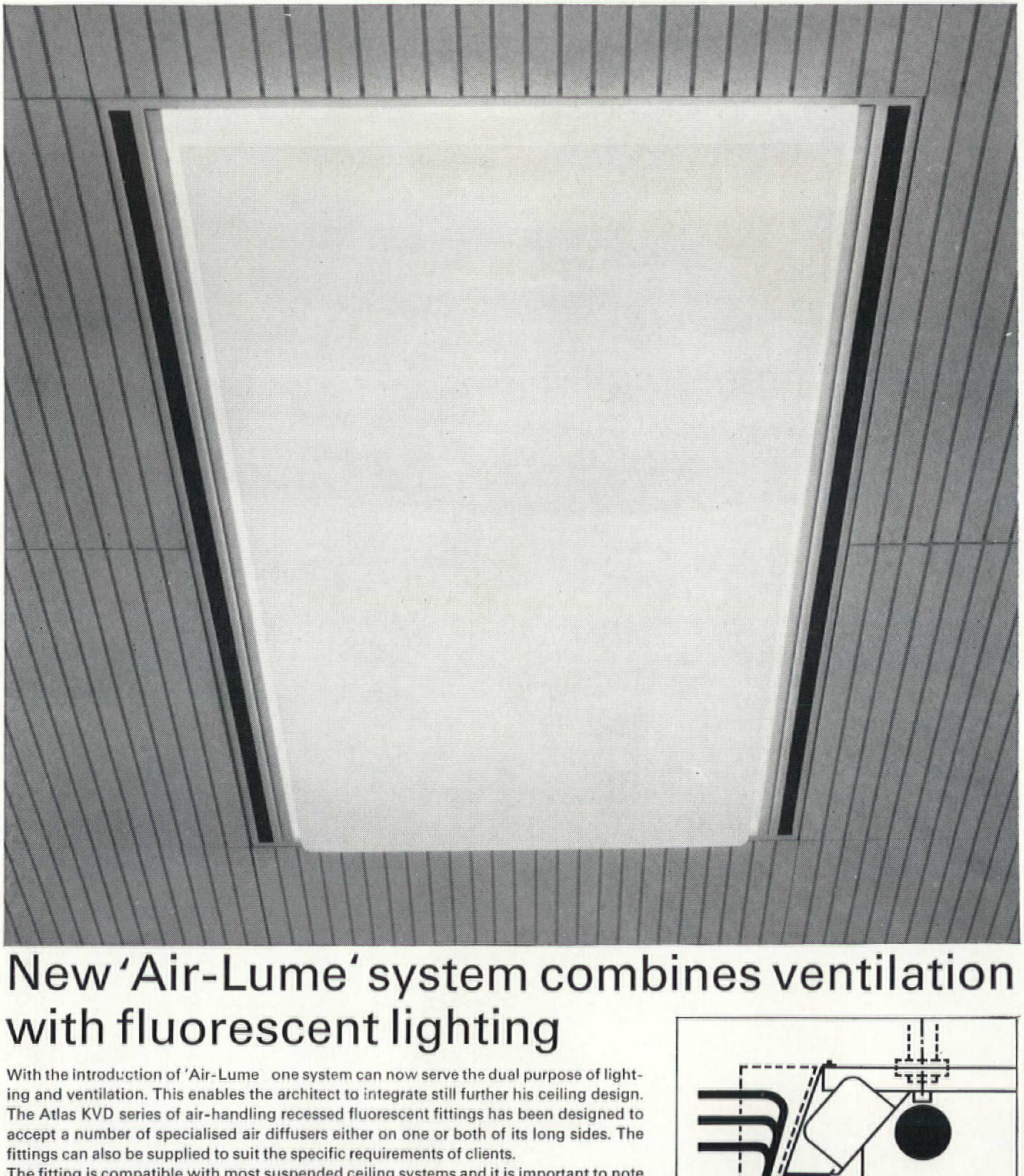
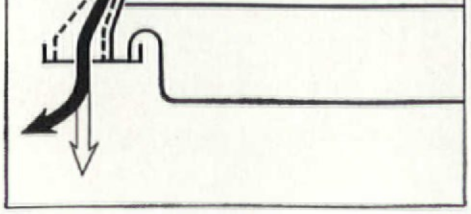


New 'Air-Lume' system combines ventilation with fluorescent lighting



With the introduction of 'Air-Lume one system can now serve the dual purpose of lighting and ventilation. This enables the architect to integrate still further his ceiling design. The Atlas KVD series of air-handling recessed fluorescent fittings has been designed to accept a number of specialised air diffusers either on one or both of its long sides. The fittings can also be supplied to suit the specific requirements of clients.

The fitting is compatible with most suspended ceiling systems and it is important to note that the sequence of installation can be varied to suit the two trades involved and the site conditions.

The Atlas KVD series of fittings are available in the same length and wattages as the standard Atlas Modulite range.

Companies which have installed, or are about to instal Atlas 'Air-Lume', include Messrs. Cadbury Brothers Limited and E. S. & A. Robinson Limited.

Full details may be obtained from:

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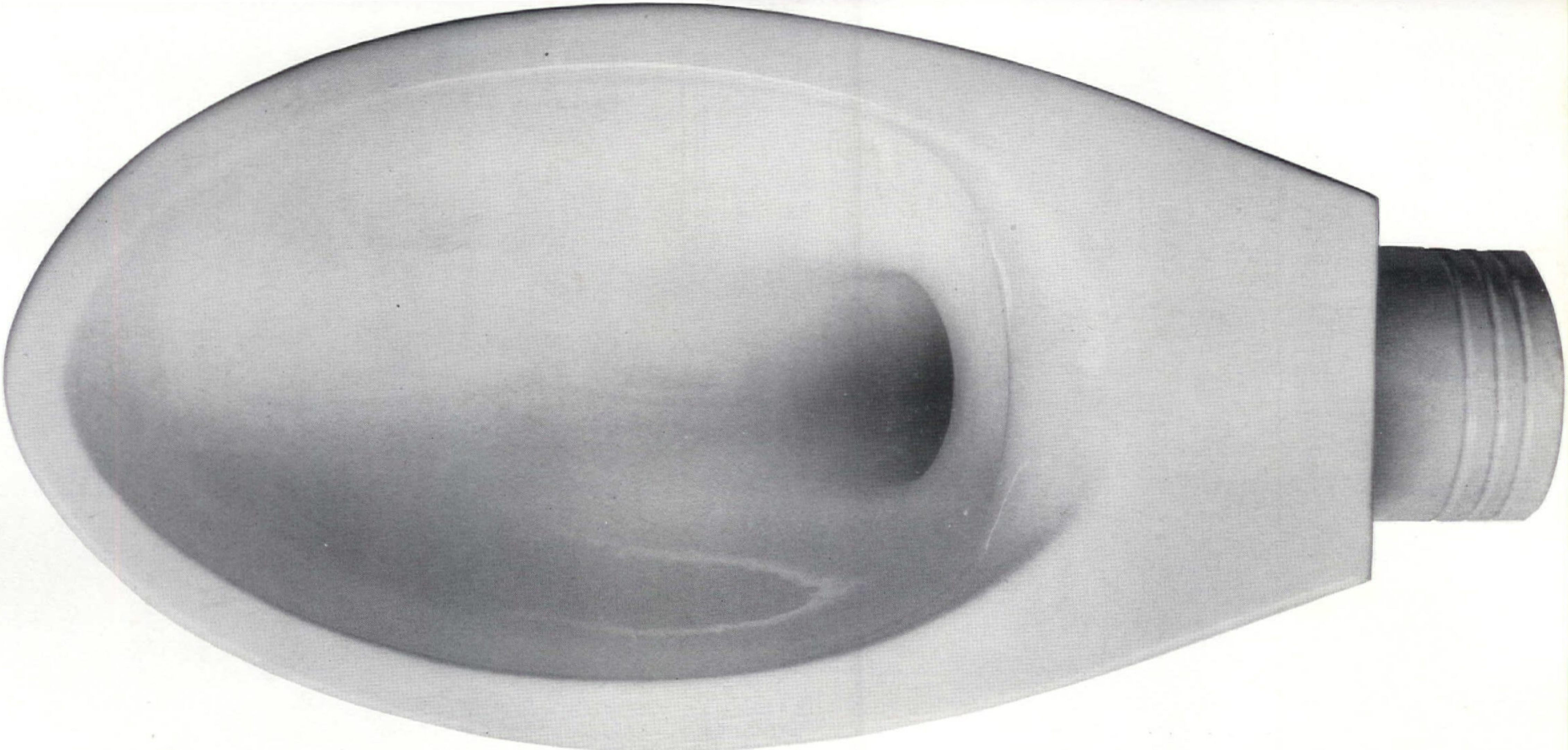
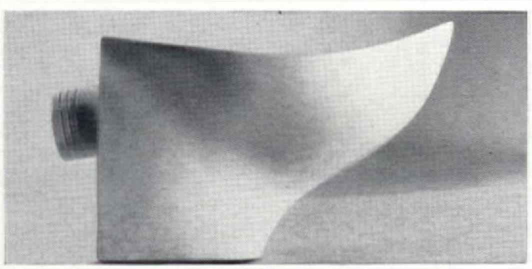


adamsez

now introduce the 'Bonne Femme'.
Specially designed for womens' lavatories by Mrs K. A. Ashcroft Dip. Arch. ARIBA in association with J. Clifford Barker FRIBA.



The result of much careful research this new vitreous glazed fireclay fitting retains the advantages of the traditional, but dormant 'urinette' while overcoming the inherent disadvantages of possible misuse by integrating it within the range of the 'Lotus' rimless-flush W.C.'s.

For more detailed information on this and other developments in the interests of better sanitation write or 'phone Adamsez Limited
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UK news

Diana Rowntree

Diana Rowntree is handing over the UK News section of *AD*, for the next six months, to Terence Bendixson, the planning correspondent of the *Guardian*.

This month's crop of decisions, designations, statements and appointments by the Ministry of Housing and Local Government commands respect even from habitual carpers. For the first time since the war the policy appears unified, coherent, positive, even creative. The Stationery Office publication *Selected Planning Appeals*, for instance, records (if the selection was at all fair) consistent encouragement of compact planning, comprehensive thinking, even of *modern design*! Visual clutter and unnecessary traffic hazards have been included as grounds for refusal, and the Minister has grasped the nettle of design control. He says,

'In general planning, control of design should be exercised with great restraint. But where a design is plainly shoddy or badly proportioned or out of place, the authority should not hesitate to ask for something better.'

The proposal to extend Thetford, Norfolk to accommodate another 10,000 Londoners is complemented by a refusal to allow even the Stock Exchange to enrich itself by adding to London's office capacity. In the opinion of the Standing Conference on London Regional Planning, however, nothing short of new legislation will prevent the effect of policies aimed at shifting offices out of London from being nullified by firms who move in to take their place. The move to expand Droitwich, Worcestershire, seems well in hand. So are plans for the new town of Washington, although this siting, between Durham, Gateshead and Sunderland may contain seeds of a north-eastern Megalopolis. A coherent policy need not however mean uniformity. By allowing the appeal for development of a new village at Dry Drayton, Cambridgeshire, the Minister is opposing the only County Planning Authority that has been successful in resisting industrial development when it wished to. To force Cambridgeshire to join the general trend towards expansion is to contradict the nice discriminatory sense the Ministry has shown in its dealings with built-up and rural neighbourhoods. If southern England is to go the way of Los Angeles, wouldn't it be a good plan to preserve Cambridgeshire as a kind of sociological national park, a museum piece of pre-industrial England?

The new Housing Corporation must be raising hopes in many sad hovels and bedsitters, and these are confirmed by the appointment of as rare a bird as Sir Caspar John as its Chairman.

Mr Anthony McGregor Grier is to be the General Manager of the Redditch New Town Development Corporation. It remains to be seen whether his long experience in Sierra Leone and North Borneo will come in useful in dealing with the natives of Worcestershire.

Lea Valley

Though there are people who find refreshment in the present forgotten air of Hackney marshes, the Civic Trust proposals for developing the twenty miles of the Lea Valley, from West Ham to Ware, as a series of parks and preserves for every sort of leisure pursuit, could be an effective way of taking the sting out of automation in advance. Real planning for leisure and fun could convert this threat to the promise it ought to be. Let's pretend the Lea Valley scheme is a bomb and pour Treasury money in to swell the modest resources of the 18 local authorities who supported the survey. The size of the project already makes previous comprehensive redevelopment areas look puny. And human beings will indeed have to expand their thinking if the human race is to survive. This is what they were saying at Delos (see page 425), and the International Federation of Landscape Architects has published a book *Shaping Tomorrow's Landscape* (Amsterdam: Djambatan), whose message is the same.

Edinburgh: an architectural guide

There is an example of unexpanded thinking in the otherwise excellent guide published by the Edinburgh Architectural Association, price 6s. If the modern buildings had been included with the others, instead of being given a section to themselves (and poorer photographs) we should not have been left with the impression that the present generation of architects were letting Edinburgh down. I doubt if this is the case, considering the excellent small houses by Morris and Steedman, Robert Matthew's Hume building and the Leith flats of Shaw, Stewart, Baikie and Perry. And in any case it would be a long job to check from the guide how much talent there had been in the city at any one moment in the past.

AA-ICST

The world membership of the AA has given the Council a mandate to proceed with arrangements for handing over the AA School to the Imperial College of Science & Technology, London University. The poor poll and the unimpressive margin however underline the architects' lack of enthusiasm for our present universities. (Delos again, page 425).

Banqueting House

In spite of some regret for the displacement of the warlike collection housed there at present, the restoration of the Banqueting House in Whitehall to its formal uses is to be welcomed. The renovation work has produced a bonus in the discovery of foundations to the Elizabethan Banqueting House of 1581 as well as the Jacobean one of 1607. Facts about these two buildings will be recorded in future volumes of *The History of the King's Works*, while the restored Inigo Jones building, complete with restored Rubens ceilings, will be on view to the public next year.

Tate Gallery

Llewelyn Davies, Weeks and Partners have been commissioned to study the feasibility of extending the Tate Gallery on its present site, to make a diagrammatic scheme, and to estimate the cost of carrying it out. Can you estimate costs from a diagrammatic scheme? If so, an awful lot of man hours are wasted in architects' offices. If not, what use will the estimate be except to give the press a field day later? Think of 10 Downing Street. Why can't the Tate commission its architects in a more relaxed way? This kind of check-point system will do the design no good. Larky estimating is usually the prerogative of the weapons programme. It will be a pity to introduce it into building where there are problems enough already.

London traffic survey

Some facts at last on London's traffic, but facts do not make a road plan. Indeed the evidence has been that plans do exist for London motorways in advance of the facts. It is of course impossible for the Ministry of Transport to publish its plans in the absence of any mechanism for preventing private speculation in land, but some assurance would be appreciated that such plans will be reviewed in the light of the traffic survey's findings. Another long-term job that could safely be embarked upon would be the education of the public in the implications of a planned traffic system. We shall only be in the mood to enjoy such planning if we are prepared, both for the scale of upheaval it will create and for restriction of access to certain areas.

RIBA

The RIBA has submitted to the Minister of Public Building & Works an admirable plan for cutting the tangle in regulations relating to building. It has also produced a second instalment of the *Management Handbook*, which is both painstaking and clear. It is surprising though to find the RIBA advising client organizations to set up committees to carry out the duties of a client, when it is a standard complaint of architects that committee decisions foil creative design.

The Redlands Awards, the first research moneys the Institute has accepted from Industry, go to Igal Yawetz and Peter Clapp of the Hammersmith College of Art and Building School of Architecture.

Corrections

In last month's *AD* the following errors occured on page 367. The architect of the printing plant is Ruusuvuori, not Ruusuvnori. Suomalainens' church is for Helsinki, not Tapiola. The Pietilä building referred to is a students' club.

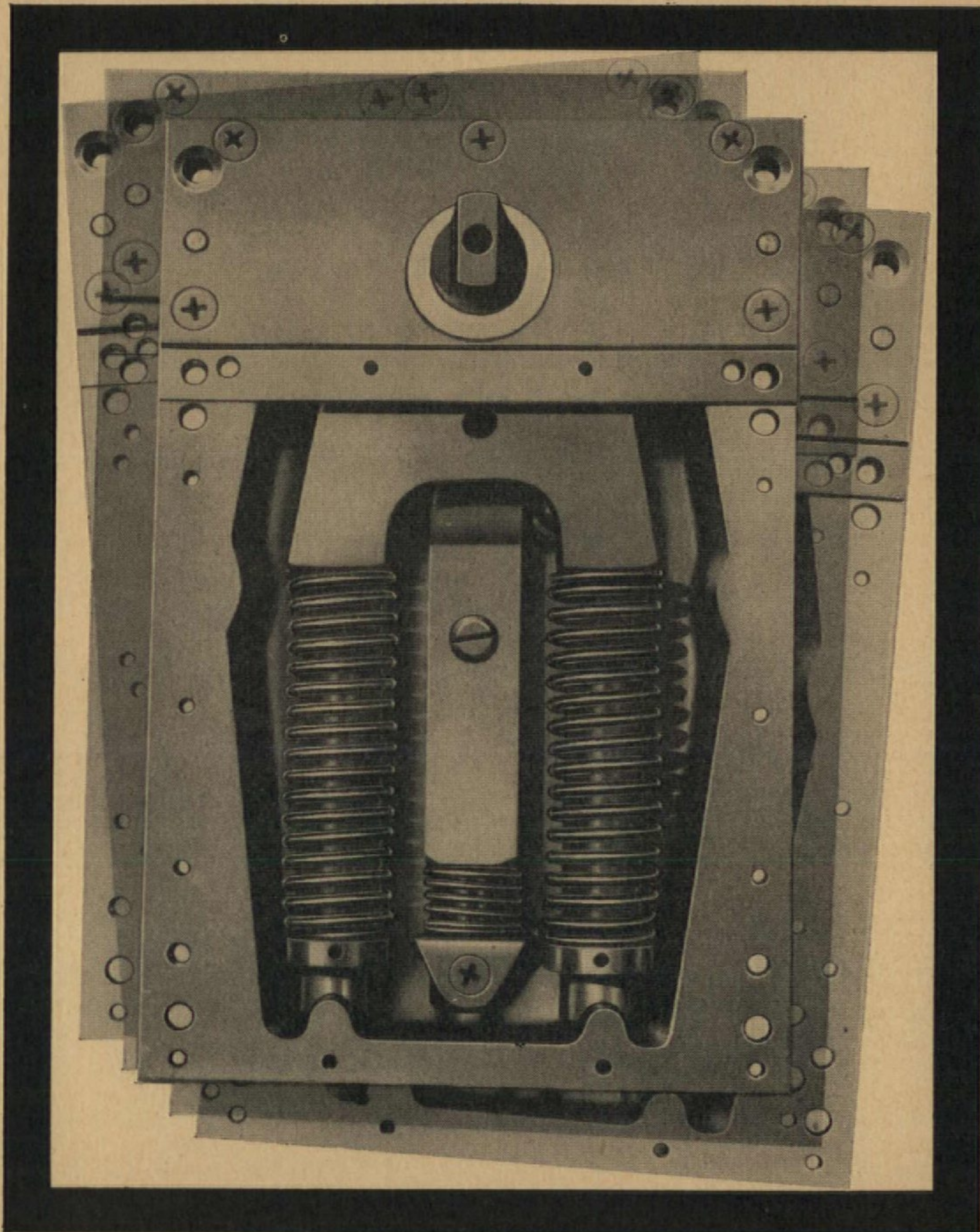
The review of the Alvar Aalto book (published by Girsberger) on page 416 incorrectly stated that the Wolfsburg Cultural Centre was omitted.

In the July issue, the drawings which appeared on pages 323/4 and 352/3/4 were published by courtesy of *The Canadian Architect*.

International competition

The IUA has approved the conditions for the competition for the design of a hotel at San Sebastian, Spain. Prizes range from £6000 to £600. The assessors are Secundino Zuazo y

MORE ADJUSTMENT



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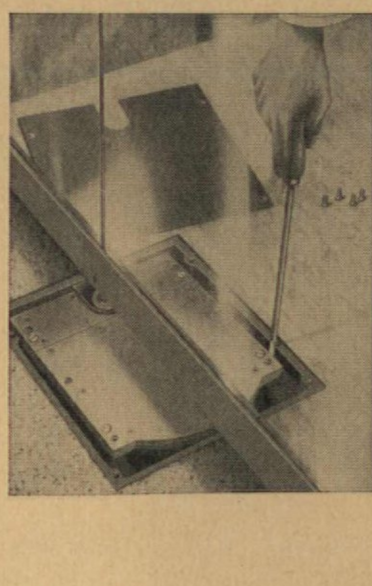

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Ugalde, Julio Cano Lasso, Rafael de la Hoz Arderius and Eduardo Chillida Juantegui of Spain, Ernesto Rogers of Italy, Heikko Siren of Finland and Pierro Vago General Secretary of the IUA. Enquiries to Miss K. Hall at the RIBA. To register write to Concurso Internacional de Anteproyectos, Sociedad Inmobiliaria y Gran Kursaal Maritimo, Avenida del Generalisimo 1, San Sebastian, Spain.

Midlands Housing Consortium 1

The Midlands Housing Consortium is carrying out a pilot scheme at Woodway Lane, Coventry, designed to rationalize the processes of traditional building. The aim is of course to minimize site labour and increase production. The design is by the development group of the Consortium, with help in sequencing and the management of the contract from Coventry Corporation. There are 132 dwellings at Woodway Lane, 102 of which are two-storey houses for five persons, 14 for four persons, and 16 are bungalows for two. All of them are designed for dual aspect and access to allow for adaptation to many sites by the various Consortium authorities. At a density of 80 persons to the acre it has been possible to give every two-storey house its own garage with block garages for the bungalows. The houses are wide-fronted and built to a 3ft module, with 9in brick crosswalls, timber floors, timber facing panels and the upper storeys hung with asbestos slates.

Flats at Torquay 5, 6

The Torquay block of flats by Michael Lyell Associates is another modification of traditional brick and timber building to modern needs. The design has succeeded in preserving a domestic scale and atmosphere in a sizeable development.

House at Calenick, Cornwall 7

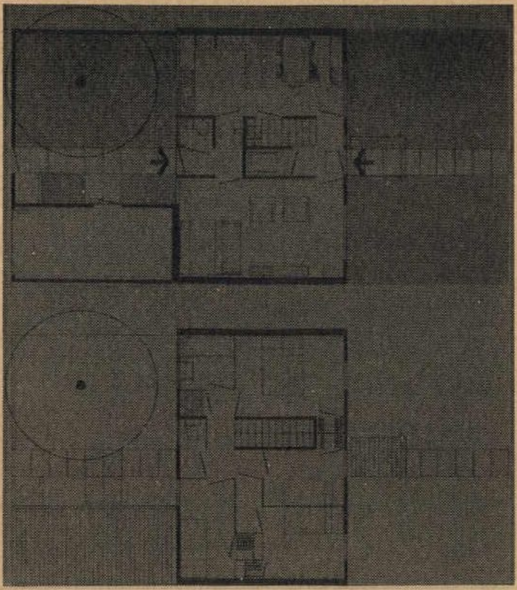
Giles Blomfield's own house is cunningly designed for family living on a site where the relation of contours to orientation presented a problem. The children's room opens onto the eastern slope, while the living room, on the main floor above, looks out onto its own secluded lawn. The scale is beautifully large.

Hexagonal

We are certainly in the hexagon period; but why? Last month there was the Moffetts' old peoples' home; this month a hotel, a brewery store and a nursery school.
The hexagonal ballroom is a feature of Clifford Smith and Newenham's Silver Springs Hotel, Limerick, Ireland, whose main building has a saw-tooth plan. This is a framed structure with brick infilling; the hexagon is neatly roofed in timber **3, 4**.

Coppack & Partners used a hollow centred hexagonal concrete shell as the means of giving architectural form to a storage building for Bent's Brewery on a restricted site in Chester **2**.

Leicestershire County Council designed the Oadby Launde infant school in the form of three pairs of hexagonal classrooms grouped round the larger hexagon of the assembly hall. The way these units are gummed together by all kinds of odd shapes undermines the logic of the idea. The beauty of hexagonal planning is surely the crystalline capacity to interlock. The Oadby design has been adapted for pre-fabrication by the experienced firm of Simms, Sons & Cooke **8**.



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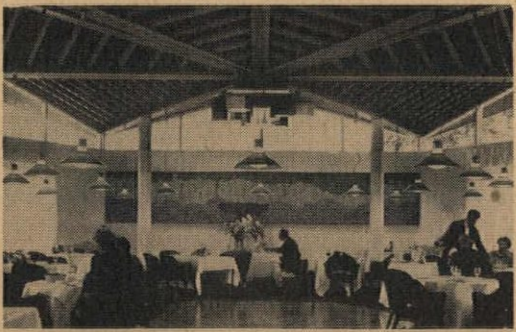

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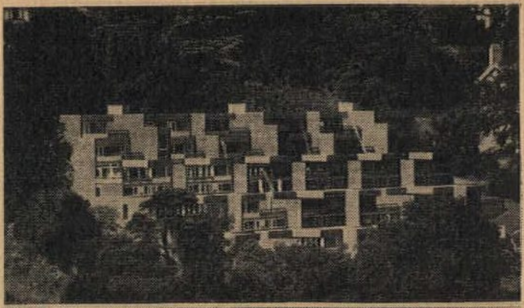

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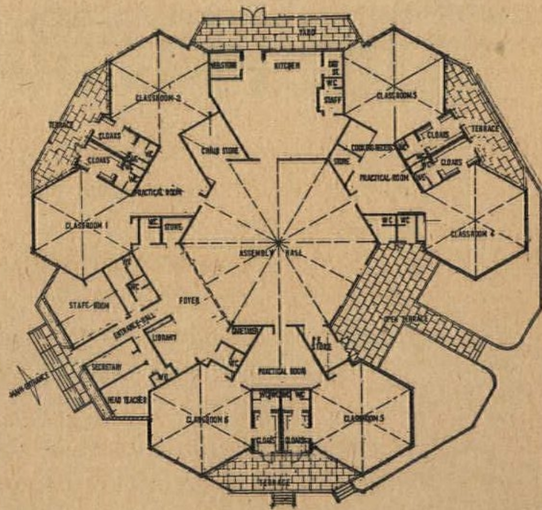

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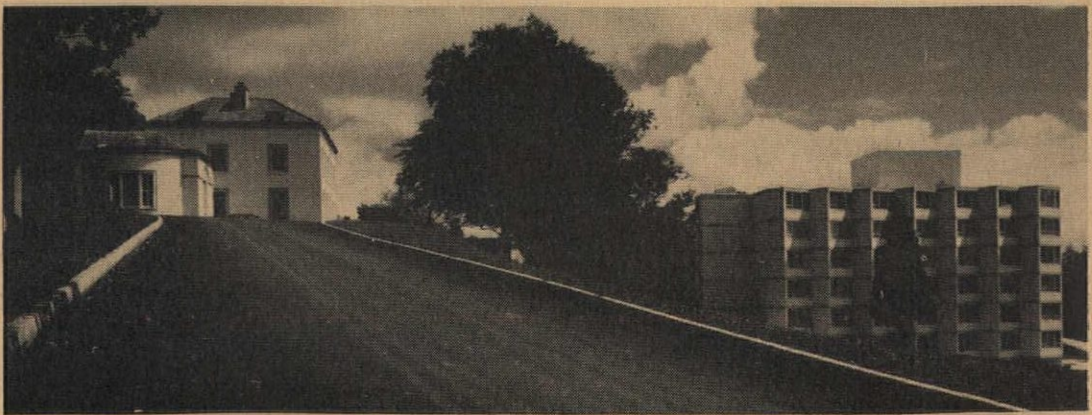

4

World news

Denmark

The work of Jørn Utzon 3–6

The June issue of the Danish *Arkitektur* published an article on Utzon's work by Eric Skriver entitled 'The Platform and the Element in Utzon's Work'. Utzon's sketches illustrate this essay and reveal at once an essential aspect of Utzon's thought which hitherto has passed relatively unnoticed. More than any other contemporary architect Utzon conceives his buildings for an ideal climate, either the Mediterranean or the South Seas or a fully climatized northern environment. Each of Utzon's most recent buildings embody the conception of an 'acropolis', a rock-like form which is then covered by a floating roof; see Utzon's sketches of cloud forms over a horizontal landscape **1** or of a Chinese temple roof over a horizontal foundation **2**, or of the floating roofs over the terraced plateau of his project for the development of the Elviria district **3, 5** on the Spanish Mediterranean coast. Both Utzon's winning project for the Zurich theatre **6** and his project for buildings at Copenhagen world's fair **4** are attempts to incorporate these ideas in buildings which are to be erected in fundamentally intemperate climates.

Bauen und Wohnen, July 1964
Arkitektur No. 3, 1964

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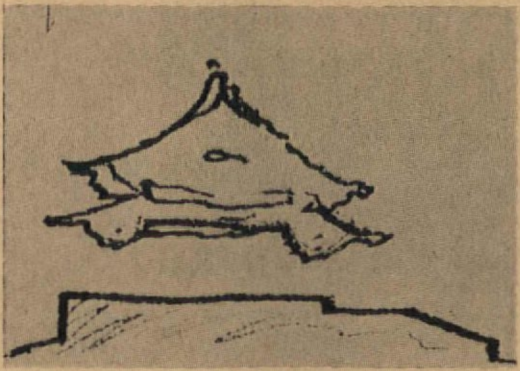

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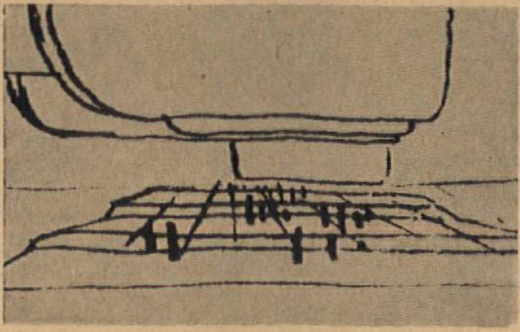

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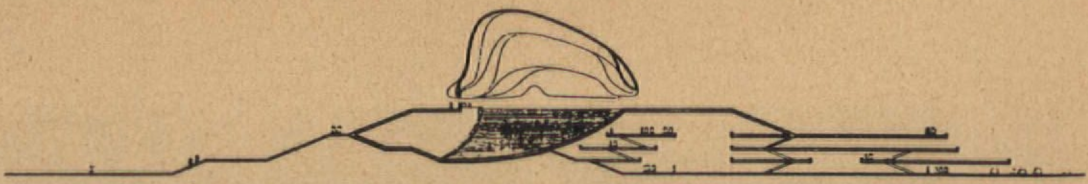

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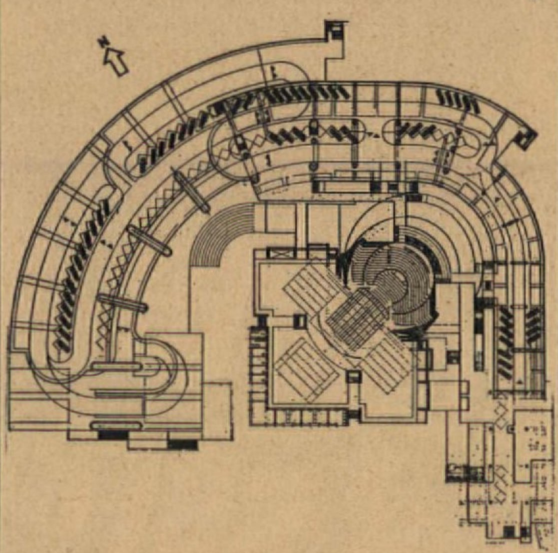

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Switzerland

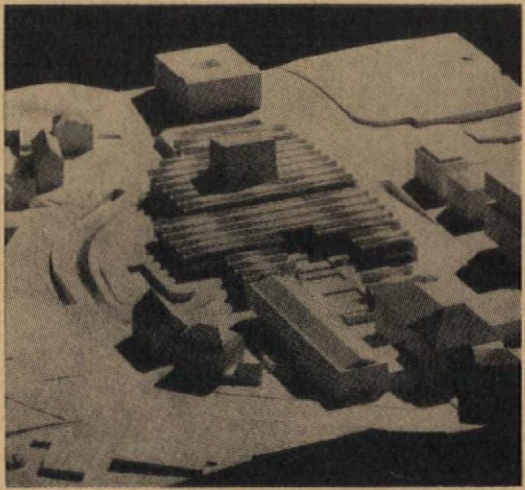
Zurich Theatre **7**

The Zurich Theatre competition produced many exciting solutions besides the winning scheme by Jørn Utzon. This scheme by Van den Broek and Bakema, respects as always the topology and the transport dynamics of the site. The architects have chosen to wrap the parking around the auditorium.

Bauen und Wohnen July 1964

Belgium

The Belgian bimonthly review *Architecture 64* has produced a monograph on the work of L. H. de Konnick, grand old man of the second phase of modern architecture in Belgium (i.e. the phase following upon Horta and Van de Velde). De Konnick sprang to fame in the early 'twenties for his simple studio house built in 1926 at Ave. Fond'Roy, Brussels **8**. This house has a very simple plan and was extremely simply developed. It is the classic demonstration of a taut façade with corner windows. De Konnick followed this work with an equally masterly house built in 1937 at Uccle **9**. De Konnick was a typical architect of the 'international style' period, producing works comparable to those of Kosma or Andre Lurçat.



6

He designed a few modest well-planned buildings with a great sensitivity and directness. Many of his uncompleted projects reveal what a masterly architect he would have become had he been given an opportunity to work on a larger scale.

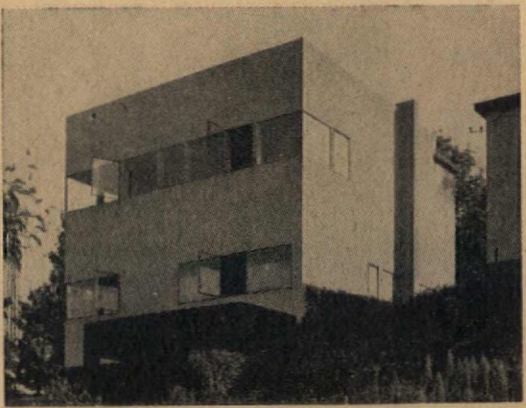
May/June 1964

Italy

Store at Venezia Mestre **10**

The building faces one side of Piazza 27th of October, Mestre. It covers an area of 2100m², and is on eight floors with a volume of 70,000m³. The river Osellino flows along one of the longest sides of this building. The two lower floors are under sea level and contain service installations. The upper floor structure is in steel.

The elevations are without openings except at



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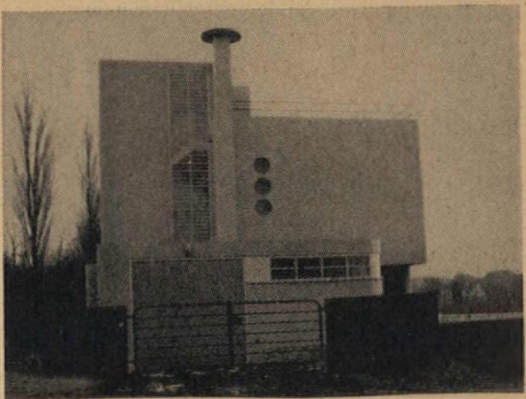

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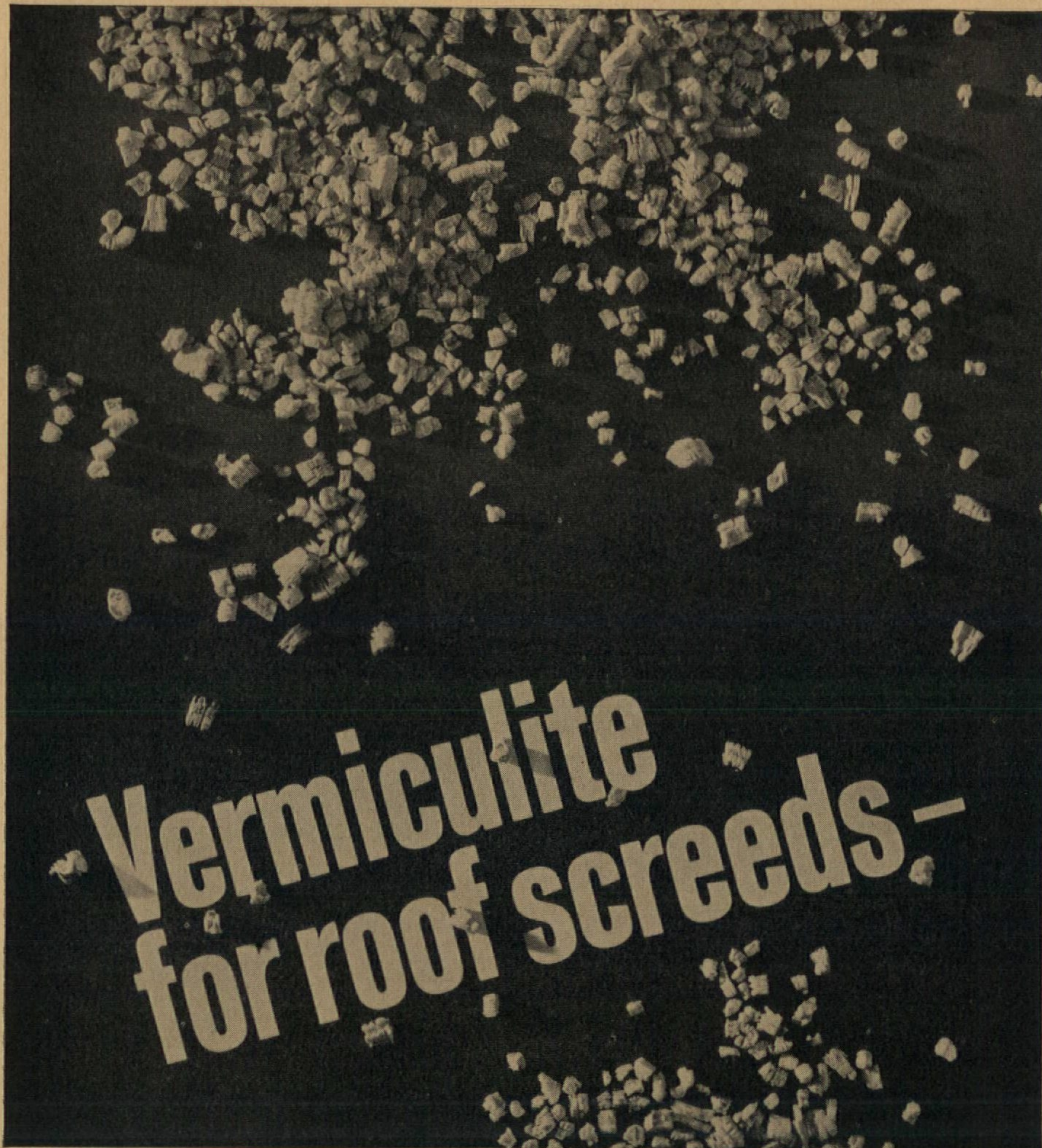


Vermiculite
for roof screeds –

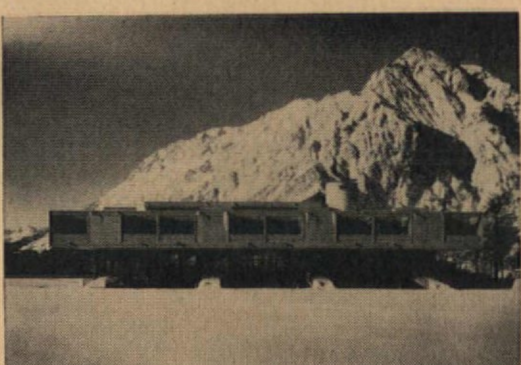
continued from page 419

the street level floor, and the roof accommodates a bar and self-service canteen. The architects are Piero Montini and Piero de Marzi.

10

School and resort centre **11**

The Italsider summer school and resort centre 'Montechiaro', designed by Renato Severino, is now complete (see *AD* News, September 1961.) In 1960 Severino won a competition held by a major Italian steel corporation for a mountain vacation house on the Alps. The programme called for an all-steel building capable of accommodating up to 250 children. The building follows in every detail the original design. The ground floor contains service rooms, administrative offices and the gymnasium; it is entirely glass-panelled and the ground around it is graded to let in light and air. The first floor houses rooms for community activities; the upper floor contains 16 bedrooms (each for 16 children) arranged around patios. The teachers' quarters are located on the top floor.



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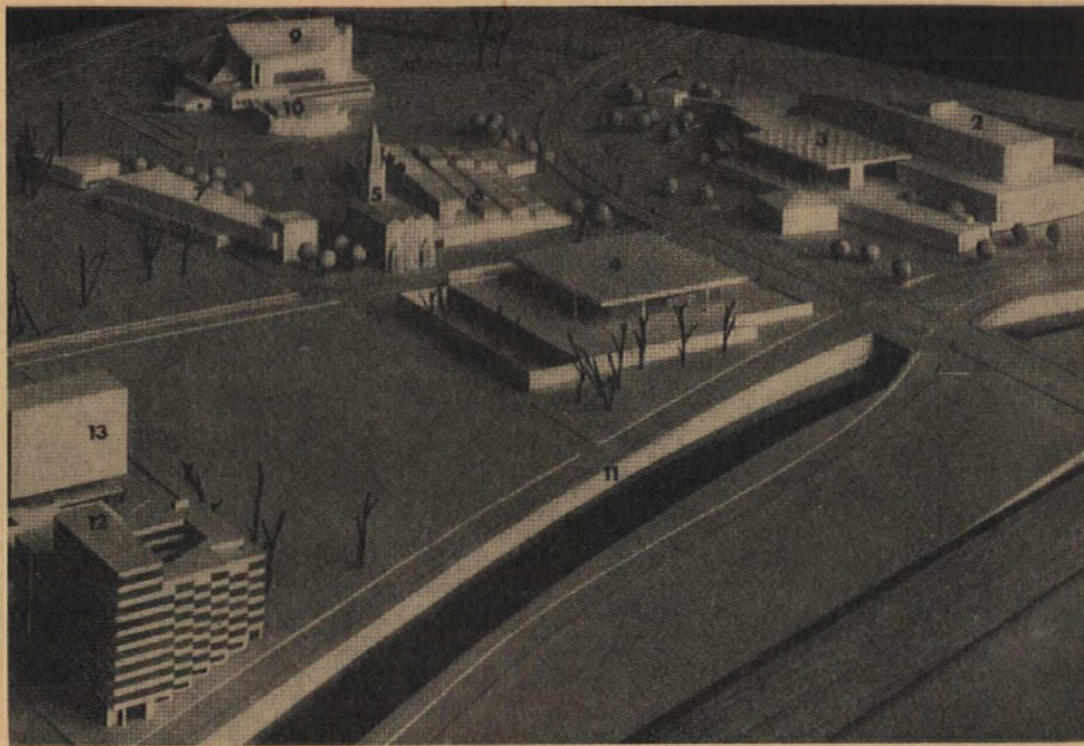

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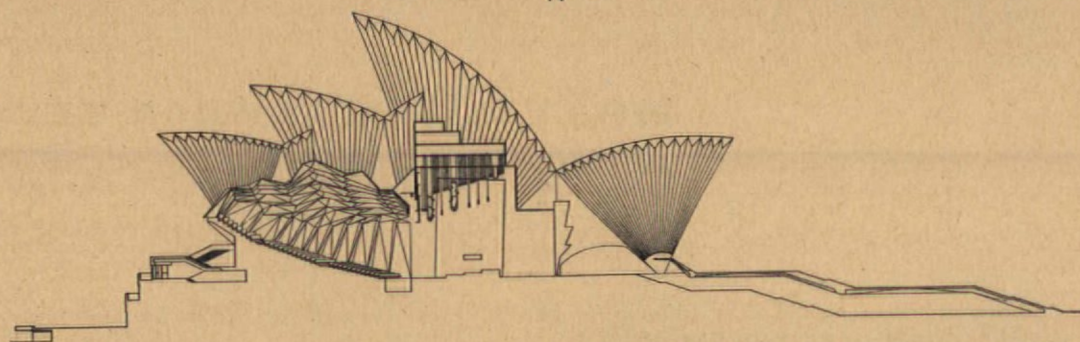


Germany

Staatsbibliothek, Berlin **13**

Professor Hans Scharoun has won first prize in a limited competition for the 'Staatsbibliothek' of West Berlin (No. 2 and 3 in photo). This building will now be erected almost adjacent to the Tiergarten site of the 'Philharmonie'—and opposite the Gallery of the 20th Century by Mies Van der Rohe (No. 4 in photo). Our illustration shows the layout of the whole area which will eventually constitute a new cultural area, centred on the old Matthaikirche (No. 5 in the photo).
Bauwelt No. 30, July 27th 1964

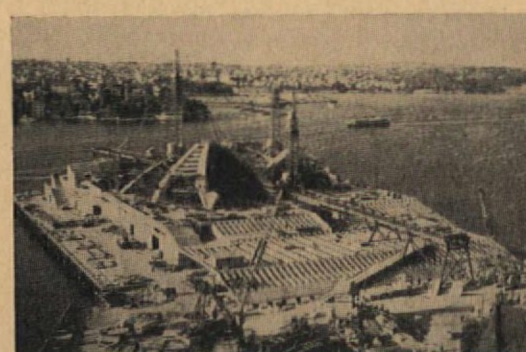
Police Headquarters, Hamburg **12**

This building designed by a team of young Hamburg architects is obviously highly influenced by Le Corbusier's Algiers office block of 1934. The architects are Hans Atmer, Jürgen Marlow, Hans Th. Holtney, Harvo Fresse and Egon Jux. *Bauwelt* No. 30 devotes considerable space to an article in which Harvo Fresse analyses the aesthetics of the building.

Australia

Sydney Opera House **14–17**

Something at last is beginning to appear on Bennelong Point, Sydney, of Sydney Opera House by Jørn Utzon. The roof shells are just beginning to appear. The building covers a $5\frac{1}{2}$ acre site overlooking Sydney Harbour and will eventually cost £A12,000,000. The engineers for the building are Ove Arup & Partners. The drawings **14** & **17** show the development of the shell forms since the initial project **16**.
The Builder May 1964
Arkitektur No 3 1964



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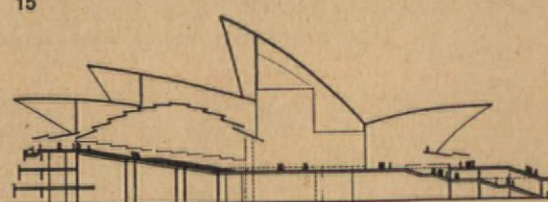

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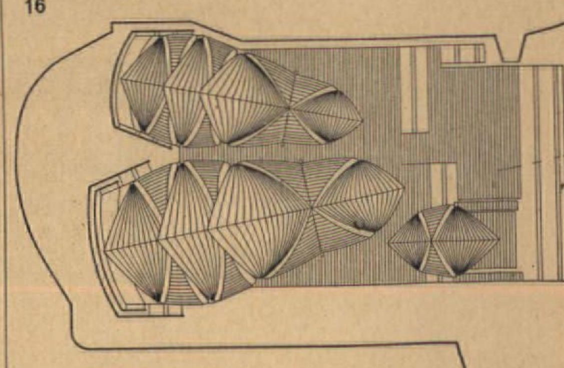

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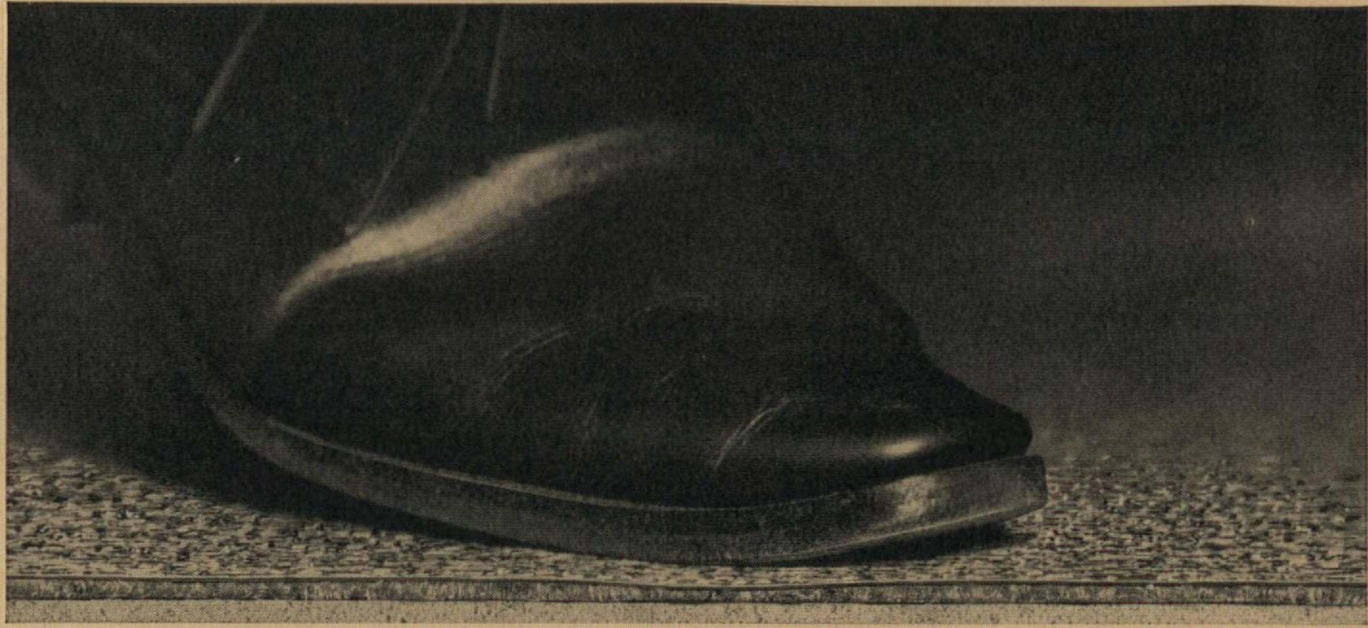

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Art

In the no-man's land between painting and sculpture

One awaited with apprehension the moment when on walking into a perfectly ordinary room, a scream of anguish from the host would prevent the visitor from sitting down on what might have appeared to be a perfectly ordinary chair. This has already happened in January 1964, and the chair was not a delicate antique with a pedigree hanging on a label, but a concoction of wood, cloth and stuffing created by Claes Oldenburg for an environmental exhibition in New York. Oldenburg, one of the American pop artists, made furniture objects; beds, dressing tables, chairs, etc., which were not meant to be used, but like works of art looked at and pondered on. Occasionally the transformation went a little further and by altering the scale of the object he would definitely cancel out any hope of its usability.

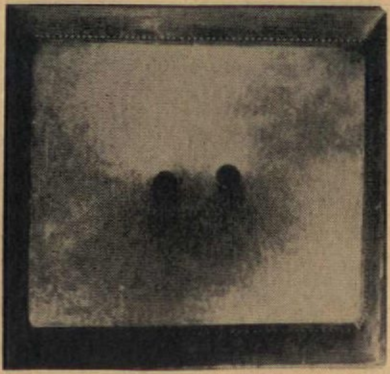
The creation of environments and objects—things that are neither sculpture, paintings, nor geometric relief-constructions, has been a preoccupation of some artists for a number of years. In this category comes also three-dimensional collage (now commonly referred to as assemblage), boxes, machines, cages, robots, furniture, etc. Somewhere in the development of art which has departed from the painting/sculpture concepts, fits in the exhibition of the seven artists at Grabowski Gallery (September 8th to October 3rd)—Cristina Bertoni, Laurence Burt, Michael Chilton, Tom Hudson, Victor Newsome, Michael Sandle and Terry Setch. Perhaps less devastating in effect than Oldenburg's bedroom ensemble, their work exists in this no-man's land where art is still uncharted.

Setch combines three-dimensional images, often stuffed leather mounted in plastic tubes, with a flat painted background. Not only does he create an object, he also places it against a suitable backcloth, and in this respect not only does the artist deal with environmental-type art, he is also using a theatrical convention. Many of his works include cheap plastic ready-mades, like cups and flowers, as if the artist wished to elevate into the realm of poetry the sort of objects that had hitherto been relegated to a suburban interior.

Cristina Bertoni makes imaginary furniture constructed with wood and incorporating dyed and woven string. Newsome's objects start out as formal compositions in wood and plastic and end up by conveying an ambiguous though persistent human image. Hudson makes satirical combinations of technologically produced forms. Chilton and Sandle work on reliefs in a variety of media, which in Chilton's case are often presented in pairs and are basically related to the forces of nature, while Sandle's embody the elaborate responses to the events of his life and apprehension about human fate. Burt, like Sandle, uses symbolic images, but his works are more sculptural in the sense that they are often free-standing.

This exhibition is probably the first to be devoted exclusively to three-dimensional works that could only be described as objects. These seven artists, who until recently taught at the Leicester College of Art and lived in an old vicarage nearby, belong to a new wave in the trends of British art. The exhibition points to the possibility that time draws near somehow, when one will not look for art on either the wall, mantelpiece or stand, but among furniture, in the bathroom, the kitchen and the garage, fulfilling a more active part in each chosen environment.

Jasia Reichardt



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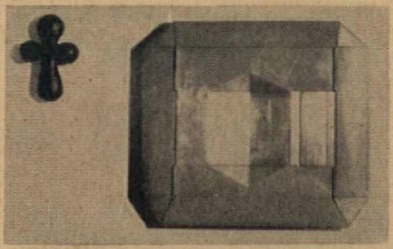

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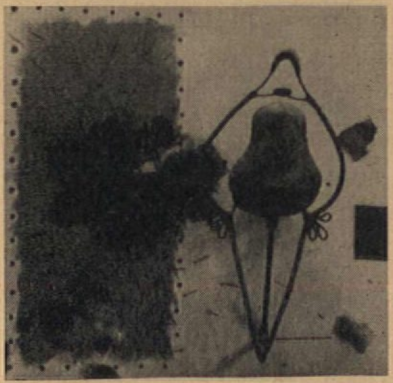

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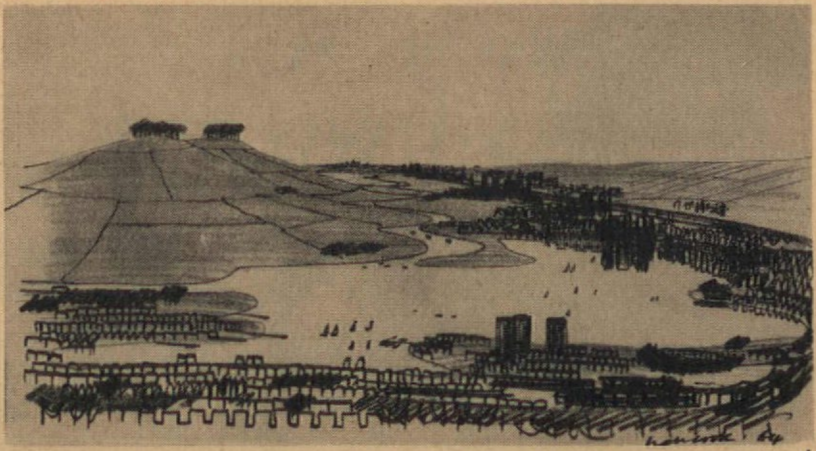
1
Victor Newsome:
Two Blind Holes

2
Michael Chilton:
The Sea and Sandy Shore

3
Terry Setch:
Playwith Heart (Valentine)



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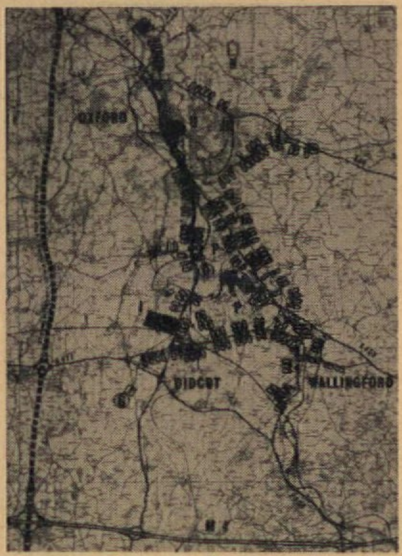
Town Planning

Linear city

Tom Hancock

1
Sketch of the Linear city

2
Map showing extent of housing in the Linear city



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The proposal conjoins the existing city of Oxford with the University, the old town of Wallingford enlarged and enriched to become a recreational node, and the re-built town of Didcot as a commercial and industrial centre. (In this the proposal follows the recent suggestions of Mr. Jack Whittle for a trinodal city based upon a university.)

The plan incorporates the proposals which were made in 1960 under the title of 'Oxford—the Future City' and the proposals made for the renewal of Wallingford in 1962, the same methodology was used in these plans, and these plans are still viable in this very much larger complex.

The population envisaged would be up to some 700,000 and the city could be built in 15 to 20 years at an approximate cost of £1,400,000,000.

The proposed methodology is based upon the linear city within a regional net. Facilities for leisure, recreation, production, government, and residence will be of the stature which such a size of city makes possible. The centre of the complex would be a magnificent park some $4 \times 4\frac{1}{2}$ miles, utilizing the existing landscape of that part of the Thames Valley with the present gravel pits extended to produce large central lakes (the gravel being used for the concrete in production of the new city). Through the complex flows the River Thames.

Although the central area of Oxford will be very considerably extended and the centres of Didcot and Wallingford would become main foci in the city, each residential area will have its own communal facilities such as shops, schools, pubs, etc., and varying numbers of residential neighbourhoods will combine to provide large facilities such as secondary schools.

These residential neighbourhoods are envisaged as being of reasonable density, although close to the ground in the main. (They would follow the pattern of the St. Ebbes Precinct proposed in 1960 and the Crowmarsh extension of Wallingford proposed in 1962, these are included in the drawings.) Densities of residential neighbourhoods would vary between 50 and 150 p.p.a. (Hook net density 58 p.p.a.) The sketch shows the relationship of these dense areas to the central park and the motorway/mono-rail systems.

The main centres are approximately:—

Oxford to Wallingford	12 miles
Wallingford to Didcot	8 miles
Didcot to Oxford	12 miles

This proposal for a major regional city, based upon Oxford, would:—

1. act as a real counterweight to London;
2. tie in with the rapid industrial growth of the Coventry/Birmingham region;
3. lie in the direct line of communication between the North, the Midlands and the conurbations of Southampton and Portsmouth;
4. be in close proximity to London Airport, Heath Row and in good relationship to the present likely national motorway system.

The Technical College – its many modern features include electric floor warming.

No cold feet at the new Falkirk Technical College!

THERE'S not one pair of cold feet among the 2,000 students at the new Falkirk Technical College—however close the exams! And all because of electric floor warming. The flooring of the College incorporates 1,150 kilowatts of electric under-floor warming running on off-peak electricity. This was chosen as the best method of heating the College by its designer, Mr. A. J. Smith, A.R.I.B.A., F.R.I.A.S., architect of the Stirling County Council. Mr. Smith chose electric floor warming for these good reasons:

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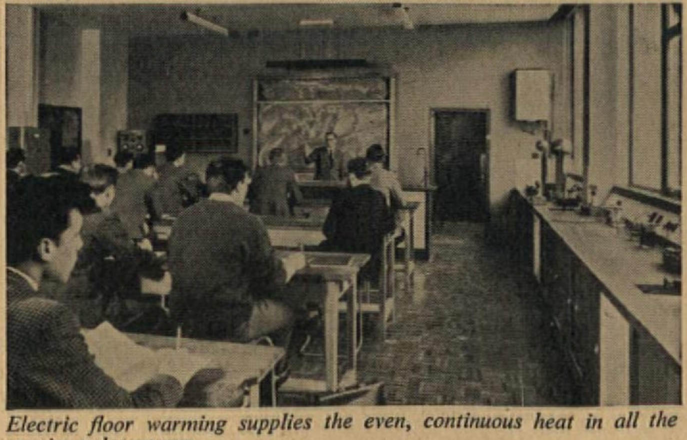
Good lighting and efficient tools are essential in this workshop. Electricity powers them both.



Electric floor warming supplies the even, continuous heat in all the spacious classrooms.

Dans ce numéro

Un examen des problèmes afférents aux hautes constructions dans la capitale moderne. A ce sujet, Walter Bor écrit: 'Si, dans certaine mesure, nous faisons preuve d'imagination et sommes en voie d'apporter des solutions réalisables au problème du haut bâtiment pris dans son aspect individuel, nous sommes actuellement loin de comprendre pleinement celui combien plus complexe du rôle des hautes constructions dans leur conception urbaine et plus encore de pouvoir dégager des solutions pratiques.' Le résultat d'une enquête conduite par Walter Bor est exposé en pages 433 et 434.

Ce nouveau collège universitaire a été conçu par l'architecte danois Arne Jacobsen. Il est situé à la limite du vieux centre, à un emplacement ou s'étendait auparavant une prairie. Le complexe est aménagé sur un axe Nord-Sud parallèle à la rivière Cherwell qui le borde sur un flanc. L'ensemble consiste en deux ailes résidentielles, direction Nord-Sud, disposées sur chaque côté d'un quadrilatère allongé qui comprend les principaux bâtiments communautaires, par exemple le réfectoire, la bibliothèque, la salle de lecture, etc. A l'extrémité nord, les salles communes des cadets et des anciens ferment le quadrilatère. Les façades sont en grande partie en brique et en surfaces d'aluminium.

Cet ensemble de 48 maisonnettes est une réalisation et un développement de la division L.C.C. Cette section est très semblable dans son idee à celle adoptée par Bakema dans une construction pour le Hansa Viertel à Berlin. Les maisonnettes s'emboîtent les unes aux autres et se succèdent dans une position alternativement haute et basse. Dans chaque cas, la salle de bain est intérieure et est sitée à mi-étage, à mi-niveau entre celui de la chambre à coucher et celui de la chambre de séjour. Chaque maisonnette a un double aspect—ainsi toutes les chambres à coucher donnent sur le côté est et tous les locaux de séjour sur la façade ouest.

Une petite maison édifiée éntièrement au moyen d'éléments métalliques types (aluminium), sectionnés et assemblés dans les dimensions requises. Elle représente pour son créateur la seule forme valable de la construction industrialisée.

Un bâtiment à revêtement de cuivre dans le veux quartier de Stockholm.

Un centre pour la recherche scientifique, construit en béton armé, dans un style dérivé de celui de 'Le Corbusier', par un jeune talentueux architecte italien.

Ce terrain pour les sports dispose d'une superficie libre longue de 112 mètres et d'un diamètre extérieur de 160 mètres. Les principes de structure accusent une ressemblance frappante avec ceux de l'oeuvre de 'Le Ricolais'. Le dôme a une toiture faite en fibre de verre.

Please see next page for further Classifieds.

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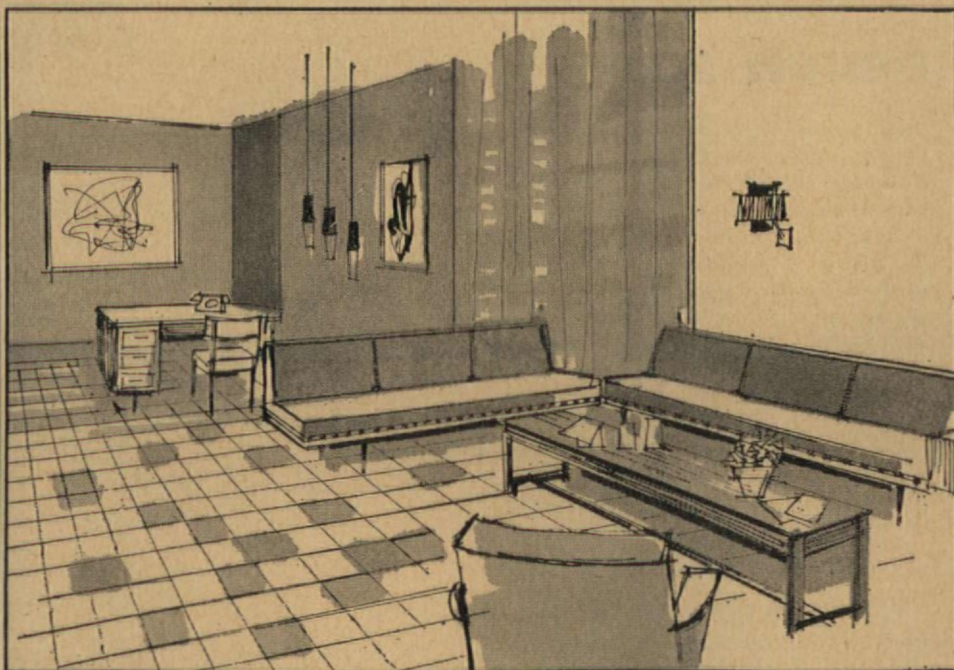

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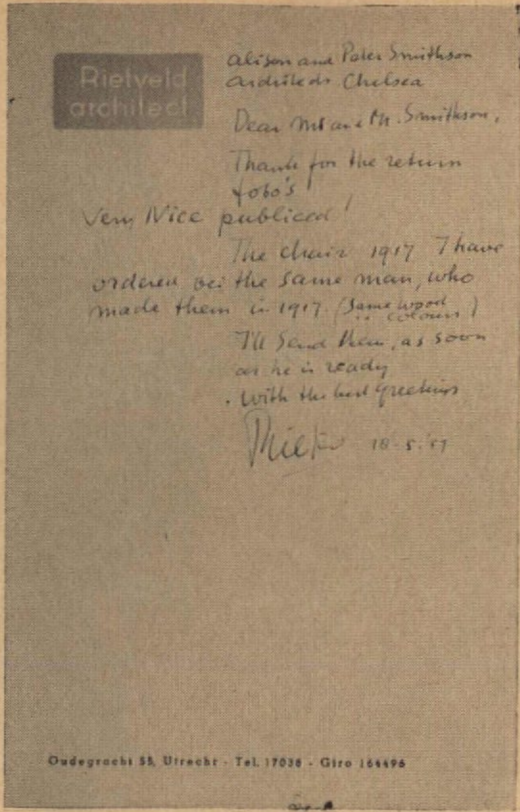

Rietveld architect

Alison and Peter Smithson architects Chelsea

Dear Mrs and Mr. Smithson,

Thanks for the return foto's!

Very Nice publication!

The chair 1917 I have ordered bei the same man, who made them in 1917. (Same wood " colours)

I'll send them, as soon as he is ready.

With the best greetings

Rietveld 18-5-57

Oudegracht 55, Utrecht · Tel. 17036 · Giro 164496

1

2

Gerrit Rietveld 1888-1964

Gerrit Rietveld died in June this year aged 76. He was born in Utrecht, Holland in 1888, and in this town he lived and worked all his life. His place in the development of the modern movement is assured. Peter Smithson writes below a short appreciation of the man and his work.

Rietveld was an architect of the rarest sort—an architect of manual intuition.
From his first great work—the red-blue chair in 1917, he made strike after strike of the purest genius.
And between them works of a banality that was itself pure and special.
Without him the spirit of de Stijl would have been stillborn as far as actual construction is concerned.

Everyone can make his own list of Rietveld master-works:

The red-blue chair, 1917 **3**

The 'incomparable house at Utrecht—the only truly canonical modern building in Northern Europe' (Rietveld Schröder house), 1923–34 **4.**

The glass radio cabinet that broke, 1925 **5.**

The chauffeur's house at Utrecht, the best panel-construction house yet, 1927–28 **6.**

The 'G' shop in Germany, 1929 **7.**

The row-houses opposite the Rietveld Schröder house—the purest emanation of the Sachliekiet spirit, 1930–31 **8.**

The Zig-zag chair, 1934 **9.**

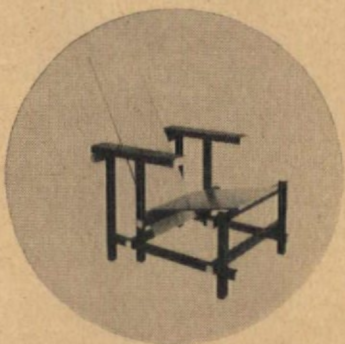
The bicycle shed at Utrecht, 1953 **10.**

The Sculpture Pavilion at Arnhem, 1954 **11.**

All these works had a profound influence on *all* other architects. He influenced their form direct without rationalization, even without their knowing it.

He was a kind man. We are all in his debt.

Peter Smithson



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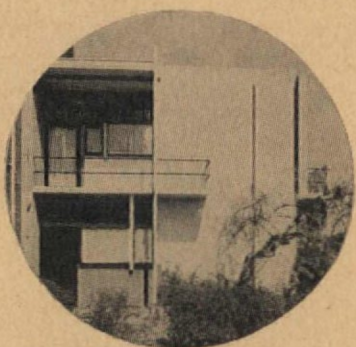

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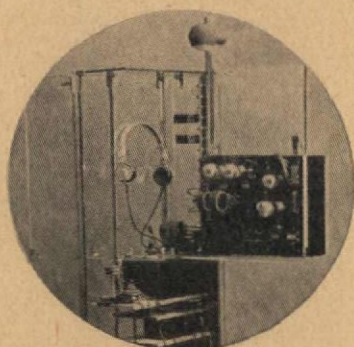

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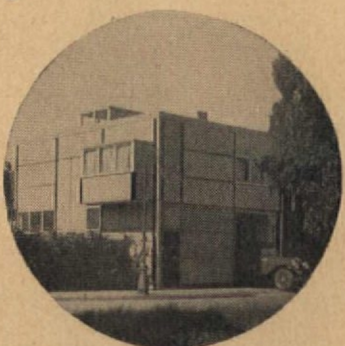

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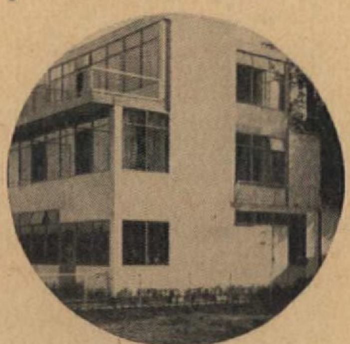

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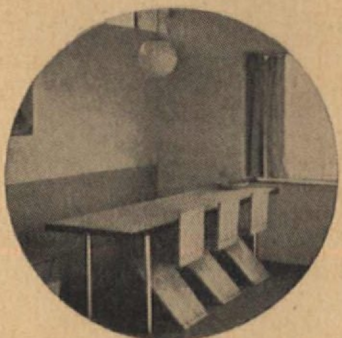

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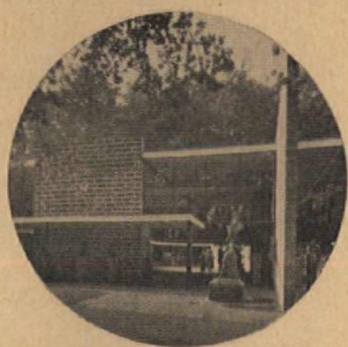

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1. Letter to Alison & Peter Smithson 1957
2. Photograph of Rietveld at Hoograven Housing, Utrecht, 1956.

Second Delos Symposion

Diana Rowntree

The ingredients of the second Delos Symposion* were much like the first. Thirteen professions were represented this time and thirteen nations, including Israel and Iraq, Poland, Nigeria, Brazil, USA and USSR. The core of last year's group included those basic originals Buckminster Fuller and Margaret Mead, with Allah Bukhsh Brohi, Charles Abrams, Juliusz Gorynski, Robert Matthew, Mohamet Makiya, C. H. Waddington, Eiichi Isomura and Barbara Ward, whose extra-territorial way of life exemplifies Fuller's contention that 'science of human *settlements*' is a misnomer in an increasingly dynamic world, a world where the influential people are the nomads. Newcomers included Dean Meyerson of the College of Environmental Design, Berkeley, Konstantin Ivanovitch Trapeznikov, Editor of *Architecture of the USSR*, Colin Clark, and Spanish economist J-R. Lasuen Sancho, who, as the youngest participant, was heard to remark 'you had better plan it right or I shall be left responsible'.

Constantinos Doxiadis, President of the Athens Technological Institute and promoter of the Symposion, led off. Ekistics, he emphasized, must include all settlements, of every kind and size—a principle endorsed by Margaret Mead who was concerned at the disproportionate attention paid to the urban side of the equation. The drift to the towns is also a drift away from the countryside, and the problem should be studied whole. Doxiadis analysed five elements in Ekistics: man, society, functions, nature, shell. The first two belong to the social, the last two to the physical sciences, while functions belong to both. Present-day planning tends to concentrate on the shell, but for success all five must be ideally related. While the diameter of a city was half an hour's walk the relationship remained in balance. Modern technology has multiplied man and his functions beyond the capacity of the shell to contain them, and of society to comprehend them. Ekistics must first assimilate the discoveries of the centuries, to discover how settlements have worked, and where they failed. Then it must define its intent, which is nothing less than human happiness.

Barbara Ward, introducing discussion on the political obstacles to the Ekistic approach, described the economy of developing and developed nations as different in kind. The former were concerned with problems of scarcity, the latter with the management of demand. However, the cost of adapting existing towns to motor-pedestrian segregation was so high as to reintroduce a scarcity situation, and land at the centre of some cities could be described as 'a scarce good'. In urbanization, not yet to have been developed was a stroke of good fortune. The combination of men and machines was made more lethal by the degree to which their movement was un-coordinated, and this situation was not self-correcting. Indeed public policy often seemed to increase the degree of centralization and peripheral sprawl. Two hopeful planning concepts that had emerged to deal with urbanization were the linear city and the idea of the 'magnetic field', where the special functions of each urban region could serve to draw development in different directions. Not only financial but administrative vested interests formed obstacles to creative planning. Administrative divisions needed rearrangement. The key to the problem of urbanization was mobilization of the political will. Planning would become too expensive altogether if we did not control land use.

Edmund Bacon described the failure of cities as an intellectual failure, the failure to see the city as a living whole and grasp specifically what it could become. An image that could capture the imagination of politicians, must be the result of an unbroken flow from the broadest analysis of social and economic forces to the most explicit planning of the physical solutions. Men, and groups of men had to be trained with the capacity to understand at this scale. Bacon's career and his achievement in Philadelphia, embodies an important idea that emerged during the Symposion; that planning to an Ekistic scale requires a professional corps of Ekisticians, comparable to the colonial administrators of the past. Today we fly in internationally respected experts for two weeks or two months to advise on the development of some area. What is really needed in developing and industrialized areas alike is long-term strategy and devotion on the lines of Bacon's life work at Philadelphia. A planning service of this kind could be one of the distant results of the Symposion's recommendations to the United Nations in its report 'Delos 2'.

Richard Llewelyn Davies stated the need in planning for men who are educated, rather than technicians who are trained. He believed that the tendency for the professional sectors of universities to rely on eminent practitioners must give way to training in fundamental subjects and research. If teaching the young had to depend on the practical wisdom of the old a profession was doomed to obsolescence. 'How,' interjected Margaret Mead, 'can the students keep up with what their teachers don't know?' The Matthew-Llewelyn Davies plan bases the education for Ekistics on a first degree in some such subject as architecture, engineering, mathematics, social science or geography, followed by a two years' post-graduate course in which the students are exposed to the other relevant disciplines, and practical training in an office or on a research project, which could ideally come between the two. Research projects commisioned by government or local authorities from a university department can play a vital part in linking specialist and applied research within the universities with the world of practice outside. The British professors thought that the bulk of the Ekistic team should be architects. This was for two reasons. First because all planning below the regional scale will mainly be carried out by physical planners. Secondly because of the creative nature of the architect's training. In theory engineering should be just as good a groundwork, but the practical training of the engineers is in practice analytical rather than creative. The designer has to face problems to which there is no one right, or one wrong, answer. Llewelyn Davies believed that training in this kind of thinking could usefully be introduced into other university courses. And indeed the Symposion proved the need for it.

For the Symposion tended to polarize around the physical planners on one hand, and the social scientists on the other. The latter contended that before designing any shell for living it was necessary to study society as existing, and then redesign its institutions in the way you wanted them. The logic of this position is undermined, in the view of the planners, by their awareness that any society you happen to study will have been largely influenced by its existing buildings, many of which will be obsolescent. Even more effectively the two sorts of discipline are divided by their training. The creative disciplines sacrifice a great deal in order to develop the will to action and a sense of responsibility for decision taking. In the academic world the bias is the other way, with intellectual precision and acuteness fostered at the expense of creative responsibility. The physical planners really fear that a too logical approach will paralyse action—and not without reason.

* The Delos Symposions have been held, respectively, in the summers of 1963 and 1964 at the invitation of Constantinos Doxiadis, and have brought together men and women from a wide variety of regions, disciplines and cultures.

Photo Kenchiku Bunka

High buildings: a blessing or a curse?

Walter Bor

Ever since the Chicago 'Loop architects' solved the technical problem in the 1880's of building high, high buildings have been on the march. They spread like wildfire from the Chicago loop to Manhatten, to the cities of North and South America, to Europe and to the rest of the world; by now every continent and most countries and major cities can sport at least a few high buildings. The flood of high buildings has been rising steadily since the last war and we have reached a situation when the high building has become the rule in many cities rather than the exception. No doubt this trend is likely to continue for some considerable time and it may be of interest to pause and reflect on where we have come from in the development of high buildings and where we are going.

Definition of a high building

Amongst a welter of definitions the simplest one which covers most situations may simply be this: 'A high building is a building whose most important dimension is that of height and which dominates its environment.' According to this definition a 60ft high parish church tower in a two-storey village is rightly a high building, while a 200ft high office block set amongst others of similar or greater height has lost its essential character as a high building in that it no longer dominates its environment. Apart from such objective measurements as actual height and dominance, subjective attitudes of mind enter into the discussion: one 12-storey hotel block in Basle can cause more public controversy than several 40-storey office blocks in Houston, Texas. These examples illustrate at once the difficulty of even defining clearly what is meant by a high building. However, assuming that, by and large, we can identify high buildings in a variety of circumstances, what basic considerations have been or are being given to solving the inherent technical, economic, social and aesthetic problems and particularly to their impact on the townscape?

Potted history of high buildings

'Man has always aimed at building high to the limits of his structural ingenuity.'

(Sir William Holford)

9000 years of architectural history are punctuated with endeavours to build high. The remains of the old tower of Jericho, the pyramids, the tower of Babel with its 300ft square plan, the 200ft high mound of Ur, the towerlike Japanese pagodas, are just a few of the earliest examples of high buildings. The minarets of Muslim architecture were the pencil-like forerunners of our slim television towers, while San Gimignano with its forest of competitive mediaeval towers rising to 320ft in the Torre Assinelli foreshadowed the cut-throat competition of Manhatten. Romanesque campaniles and Gothic spires signified the dominance of religious buildings up to the end of the middle ages when the Renaissance cupola took over. From the belfry in Bruges to the towers of the Houses of Parliament in London a succession of town hall towers added visual emphasis to the rising power of government and civic buildings. The symbolic columns are yet another form of high building, from Trajan's column AD 98 to Nelson's in Trafalgar Square 1843, and the Statue of Liberty towering 292ft high over the entrance to New York Harbour. Finally the exhibition tower made its appearance with the crowning achievement of the 964ft high Eiffel Tower.

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However, the first modern high buildings for occupation originated in Chicago as an ingenious technical answer to the desire for new prestige and for more intensive site exploitation. The Chicago skyscraper of the 1880's has its heritage in two technological facts—the steel cage and the elevator—and the talents of a few Chicago architects: Sullivan, Fennoy, Burnham, Root, Adler and Roche. Large areas of glass pioneered by Ellis in his Oriel Chambers in Liverpool, were further developed together with the 'Chicago Window' which in such early skyscrapers as the Rebuesse building with recessed columns resulted in the first curtain walls of glass.

Amongst the first architects to visualize high buildings in a conscious relationship to each other was Saint Elia, who in 1914 dreamed of a high-powered concentration of city towers complete with multi-level circulation. This theme may have inspired the film sets of Fritz Lang's *Metropolis* (UFA 1926). Le Corbusier envisaged in *Une ville Contemporaine* (1921-22) a city of 24 skyscrapers, 60 storeys high for 10,000–50,000 employees, 400 yards apart, with 95 per cent of the ground space left free. Not content with that, Corbusier wanted to free the space under the buildings as well and many of his projects in the 1920s and '30s (League of Nations, Centrosoyus and Palais des Soviets, Moscow), as well as executed buildings (Pavillion Suisse, Paris and the Ministry of Education in Rio) developed the idea of piloti. During the inter-war period the skyscraper remained with a few isolated exceptions, the symbol of the New World, but since World War II, capitalist and socialist states, overdeveloped and underdeveloped countries alike have adopted the skyscraper, with varying degrees of success. As tall buildings began to proliferate, their form and technique changed with breath-taking speed. The UNO slab, only a decade ago hailed as the final answer to the high office block, has been superseded by the Pirelli tower in Milan, the residential Marina Towers in Chicago, while the projected World Trade Centre twin towers with their 110 storeys are meant to beat the Empire State to it by six floors. Will Frank Lloyd Wright's mile-high tower dream yet be fulfilled?

Technical, social and aesthetic considerations

(1) Technical considerations

Right up to the end of World War II many experts considered that skyscrapers were all very well on the rock of New York's Manhatten, but were impracticable on London's clay. We know now that high buildings can be built on London's clay in profusion and the LCC's development in Erith will see tower blocks rising from marshes. Even the apparently most unsuitable soil conditions do not deter from the erection of high buildings: neither the sandy soil of Buenos Aires, nor the quicksand in Houston, nor the mud in Mexico City nor the danger of earthquakes in San Francisco proved insuperable, and high buildings have been built in large numbers in all these cities; modern methods of soil mechanics have solved the foundation problems, even if it meant building elaborate and costly rafts or very deep piling (e.g. 200ft in Boston).

The structural requirements of high buildings, i.e. to transmit loads to the ground and to resist wind pressure, were first met by the framed reinforced-concrete or steel structure. In recent years, however, this evolved into the concentration of the structure and services in an internal core, allowing for greater flexibility and diversification of use of the surrounding space (e.g. Pirelli building and Marina Towers).

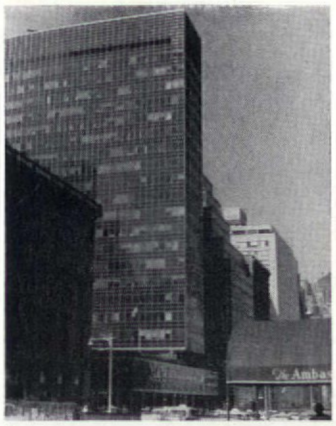
One of the great assets of high buildings, particularly in form of towers, is the better daylighting which can result to surrounding buildings as opposed to traditional perimeter development where the plot ratio is high. High buildings, if skilfully planned, can open up an area at lower level and result in more air and sun penetrating into it than if the area had been developed traditionally (Thorn House, London, Lever and Seagram, New York, office skyscraper in Market Way, San Francisco). It was, in fact, this consideration of achieving better daylighting, both to the high buildings and to the surrounding sites, that e.g. the Ministry of Housing and Local Government advocated open-planning resulting in some high building, in the booklet *Redevelopment of Central Areas* in 1949. With regard to internal daylighting, British practice still considers natural daylighting a limiting factor to the depth of high blocks which vary from 30ft (single-banked residential) to 50ft (double banked residential and offices), but recently deeper office blocks have been approved (e.g. the P. & O. in the City of London, 100ft × 120ft) on the lines of US practice which regards natural daylighting as secondary and mainly psychological in function with artificial lighting as a primary source. Hand-in-hand with artificial lighting goes artificial ventilation. While British practice still considers at least a degree of internal ventilation as essential, US practice has for some time accepted fully sealed and air-conditioned buildings. There can be little doubt that ideally all high buildings should be fully air conditioned. The incorporation of the necessary services in form of vertical circulation and fire-fighting provisions, water, heating and ventilation in tall buildings have had a decisive effect on their shape and appearance. For instance, US practice has shown the need for horizontal zoning in groups of approximately 10 floors often expressed elevationally for the purpose of distributing ventilation plant and reducing water pressures. A recent tendency has been to provide all plant rooms, including the boiler house on top of tall buildings, which provides new opportunities for interesting architectural handling.

(2) Social considerations

Housing in tall blocks has serious social implications. This truism has to be restated because insufficient consideration has yet been given to these social aspects. One would have thought it was obvious that if families with children are to be accommodated happily in high blocks of flats that the normal social provisions like play spaces for children, sitting out places for adults and certain other community provisions normally associated with housing of traditional height would be incorporated in vertical living and indeed that additional social facilities would be provided, such as supervised nursery classes, shops and recreational facilities on the roof to compensate for the loss of gardens and the remoteness from the ground level. Yet only in very few instances has the full range of social facilities been provided as an integral part of living in high blocks and there are innumerable examples both in this country and abroad where high residential blocks were built merely as density makers to provide the maximum amount of housing as quickly and cheaply as possible, with adverse social results. However, this misuse of the tall residential blocks should not detract from their real social advantages which could accrue at least to those households which consist of single people, childless couples, or couples with children over the age of 15, who may well be better served with this form of accommodation than with a house with a garden or blocks of flats of traditional height. In any case, in order to provide the maximum number of houses with gardens at a reasonable urban density, a concentration of the smaller dwellings into high blocks to free the ground space may indeed be socially desirable. Living in high blocks could have many advantages such as more sun, better air, freedom from street noise and fine views. It is essential, however, that high blocks of flats are well designed and properly equipped and that an enlightened letting policy ensures that they are occupied by the household which would benefit rather than suffer from living in them.

(3) Aesthetic considerations

Many of the above technical and social considerations have, of course, had a profound effect on the external appearance of high buildings. Economics too have influenced their shape. Thus a combination of forces are at work which mould high buildings as much, if not more than the architects responsible for them. For instance, the slender tower block, aesthetically superior to most other forms of high buildings is not economic for residential accommodation and even less so for offices. Thus high blocks often assume a massing which aesthetically is unfortunate, particularly when the resulting building is neither predominantly vertical or horizontal, but an unhappy compromise (e.g. the original design for the Monico site, Piccadilly Circus). This is yet another example of how the major design decisions are often taken out of the hands of architects and are made by developers and their accountants. Yet current experience in the City of London shows that high plot ratio and a firm policy by a Planning Authority can produce towers in spite of the economic disadvantage. The question whether high buildings should rise from a podium or directly from ground level may be dictated by functional requirements (need for layers of parking or uninterrupted floor space for storage or light industry which have to be combined with high buildings but cannot be housed in them). On the other hand it may be based on a deliberate urban design decision, e.g. to respect the street frontage (e.g. Thorn House, New Zealand House) with the podium. Again there are some definite aesthetic repercussions. With regard to the external skin, the curtain wall has for some time been the logical expression of these new structures. Indeed many successful such examples have been built (Lever, Lake Shore Drive, SAS, etc.) and it has proved a suitable common denominator for groups of high blocks where these were executed by different architects (Barbican office blocks, London and Hotorget in Stockholm). But technically the curtain wall with its multiplication of flexible joints has proved wanting and aesthetically it was found too negative and diagrammatic in expression to survive in the long run. Various alternative designs have been evolved in the past decade to put the bones outside the skin in order to achieve a more positive modelling, while at the same time overcoming some of the technical drawbacks of curtain walling. However, whether curtain walled or sculptured, high buildings by their very nature are so dominant and assertive as to draw attention to themselves. Their design and the quality of their materials and of the detailing must therefore also be outstanding and the shoddy and badly designed high buildings becomes a tragedy. The skyline in particular assumes major importance. This is recognized by the tendency to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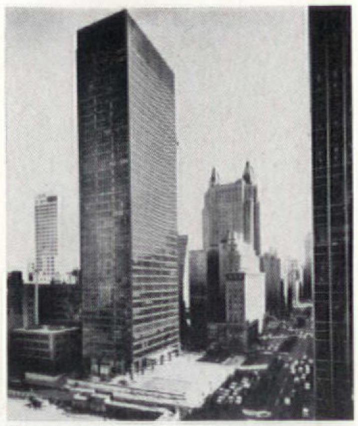
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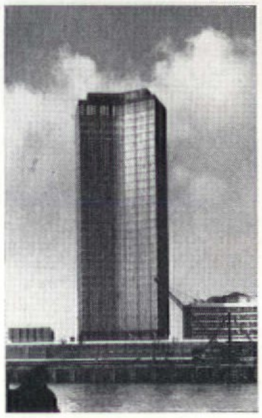
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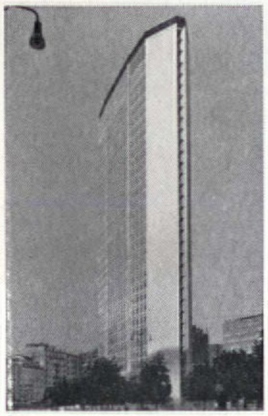
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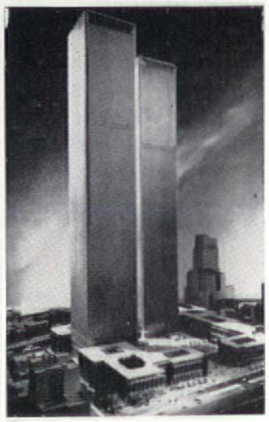
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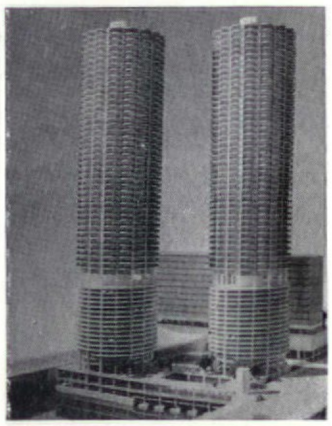
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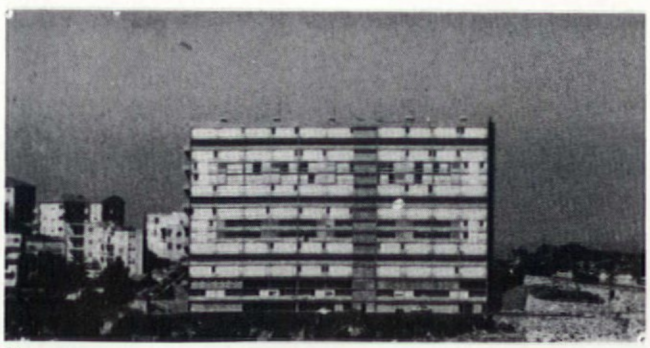
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supersede the flat-topped glass boxes with sculptured roof structures which could make a positive contribution to the overall skyline and character of the city (e.g. Golden Lane, tall block, lift overrun and tank structures).
In this connection the use of advertisements on high buildings are an important consideration. The best advertisement, of course, is the high architectural quality of a building, and Seagram, for instance, is so outstanding in a mass of other skyscrapers as not to require any additional advertisement to draw attention to itself. However, in a competitive society, adverts must be accepted as part of our lives as long as they are not allowed to dominate. It is also a question of scale: the further removed advertising and especially lettering is from the onlooker, the larger it must be and there is a real danger of advertisements dominating the structure if they are allowed to climb up a high building and even to crown it (e.g. Hotorget, Stockholm).

High rise, here, there and everywhere

'The high building is rapidly becoming a norm—a standard in our environment. It has moved from the orbit of poets and visionaries into the business world. The tall building is now symbolically devalued.' (John A. Prescott)
An admittedly small and incomplete sample survey of 29 cities, 15 of which are capitals, in 24 countries, which I undertook recently has, nevertheless, yielded some interesting results. Only two of these cities have no high buildings, in 17 cities there are no technical difficulties in building high, in at least 12 cities high buildings are the result of over-development, seven cities exercise no control whatever over high buildings, 12 cities have no 3-D plans whatever for the location of high buildings, and in only five cities the standard of design of high buildings is considered very high. (For details of questionnaire and answers see page 433.) In other words, high buildings which are undoubtedly amongst the most significant elements in the townscape, are receiving only casual attention, if any, in most cities of the world. With the exception of Moscow where seven questionably designed but well-sited skyscrapers are consciously located, Warsaw's civic centre group comprehensively redeveloped, Coventry and low density Canberra, no other city has managed to define positively the siting, quantity and form of high buildings in its central area, while two cities have been
continued on page 429

Pioneering post-war high buildings

1
Lever House, New York
2
Tower block in Milan
3
Seagram building, New York
4
Millbank House, London
5
Pirelli tower, Milan
6
Ministry of Education and Health, Rio de Janeiro
7
Model of World Trade Center, New York
8
International building, San Francisco
9
Government building, Oslo
10
Model of Marina City, Chicago
11
'Ramat Hadar' housing, Haifa, Israel
12
Radiation Ltd. offices, London
13
Drawing of Erith housing, LCC, London
14
Le Corbusier's Cité Radieuse, Marseilles

continued from previous page

exercising a complete ban on them in their centres. In most other cities high buildings are not the result of an imaginative urban design policy but of chance and the haphazard working of commercial pressures. It could be argued that there is some merit in a *laisser-faire* policy for high buildings which after all has resulted in the romantic and impressive skylines of Manhatten and Chicago. It has also resulted in such complete visual chaos as Sao Paulo and Houston. However, whatever the accidental merits may be visually of a free-for-all in high buildings, functionally and socially such policies have created more problems than they solved and have resulted in the almost complete loss of the very advantages and urban design contributions high buildings were intended for by their pioneers. Where have we gone wrong?

First principles

Such is the prevailing confusion and thoughtlessness *vis-à-vis* high buildings that it is necessary to re-state some of the time-honoured basic principles upon which their pioneers advocated their use and development. Apart from the poetic approach of such visionaries as Saint Elia and H. G. Wells for whom the soaring heights of city towers were an expression of the brave new world, the rational reasoning of Le Corbusier and of Gropius established with great force and conviction the case for building high. The first principle was that by concentrating building mass on a relatively small built-up area a large proportion of ground space could be freed for parkland and trees. From this simple idea flow several corollaries: as Le Corbusier put it in his concern for the retention of the human scales: 'the vast buildings which town planning of the future will bring about would crush us if there were no common measure between them and ourselves'. The space between the high blocks must have a definite relationship in scale and character with the high buildings: the trees, street furniture and other human-sized elements provide the essential 'second scale' at eye level above which rises the primary scale of the high blocks. At the same time high buildings should not be used for the purpose of over-exploitation of land and they should be consciously planned in relation to each other and the town. With these principles in mind, Gropius in 1935 condemned the skyscraper districts of New York and Chicago as unplanned chaos and suggested that the problem could only be solved by control of building density and relation to transport facilities and by curbing the evils of speculation in land values.

Can high buildings be avoided without loss of densities or floorspace?

There may be areas in cities where even tall residential structures may be inappropriate, there may also be economic and social objections to too many high residential blocks. At the same time it may be necessary to maintain relatively high residential densities of 100-140 p.p.a. to minimize overspill, journey to work, etc. For these reasons alternative 'high density—low rise' residential development, is of particular interest (e.g. LCC Angrave Street, Foundling Estate development, Bloomsbury) and further research into this problem is urgently required. The greater difficulties from a townscape point of view with high buildings have, however, been experienced with office blocks. Not only do they tend to rise in or near the vulnerable cores of cities since invariably these have tended to develop into business centres, but land values are at their highest, leading to over-exploitation of land and piecemeal redevelopment, since in most cases unification of land ownership is not practicable. Thus we often get an unplanned, haphazard concentration of high buildings of different shapes and sizes, architectural character and design, fighting with each other and cancelling each other out, adding to congestion and breaking into important views and silhouettes in a rude and uncouth manner with resulting serious damage to the townscape. The obvious answer appears to be in the reduction of the plot ratio which forces buildings up, at least to a point at which we have arrived in this country, that the existing plot ratio is taken as the starting point, and that a developer is not allowed to get more floor space by building high. But experience has shown that even that method results in plot ratios of 5 : 1 and over, which inevitably forces a high building solution, often in the most inappropriate places. There is much to be said for establishing a system suggested by Arthur Ling in his paper 'Skyscrapers and their siting in cities', whereby the developers who are allowed to increase their existing plot ratio, pay into a pool from which developers who may have to be restricted may be compensated. But even such an apparently equitable arrangement may not prove practical politics and may take years to evolve. It may therefore be necessary to look again at alternative methods of meeting high plot ratios without building high. For such situations the answer may well lie in developing buildings of moderate height with great depth, substituting internal daylighting and natural ventilation with artificial lighting and ventilation. (External daylighting between buildings would not be affected.) Many US office blocks have been developed on this principle and have proved successful. While such a development would not constitute a panacea, it may prove a suitable alternative in cases where high plot ratios must be met but where high buildings would be inappropriate. In other words, it is desirable that viable alternative forms of development are evolved both with housing and offices which would allow for high buildings to be a *matter of choice rather than necessity*.

High buildings in the townscape

'Unless we get large-scale effective town planning, high buildings will inevitably get out of hand and away ahead of planning, with possibly disastrous effects for the future.'

(Professor Sir Robert Matthew)

From a town-planning point of view, the crux of the matter is the correct location of high buildings. This in turn means an acceptance of the desirability and practicability of the conscious siting of high buildings as opposed to the *laisser-faire* policy of some American cities. Where the conscious siting of tall buildings is either impracticable or where it has been rejected as undesirable, high buildings have been left to chance to proliferate as a result of haphazard working of economic pressure and prestige demand. Such *laisser-faire* with tall buildings has had revealing results in terms of visual form and impacts leaving aside the congestion problem created by closely spaced skyscrapers and the robbing of each other's daylight, Manhatten and the Chicago loop are perhaps the best examples for the highly dramatic sculptural impact which can result from the bunching-up of skyscrapers of different form and architectural expression. These and other examples from North American sites, however, bring home forcefully that even in this apparently free-for-all in tall buildings, some strong unifying element is required as a common denominator to give these groups of skyscrapers some resemblance of order and cohesion—which in the case of the US cities is, of course, the rectilinear gridiron. Thus skyscrapers, which are almost invariably rectangular or square in plan, automatically relate to each other in parallel formation or at right angles. Where such a gridiron plan is not prevalent as in Sao Paulo or Mexico City, the free-for-all in skyscrapers has resulted in complete visual chaos, with slabs and towers crashing against each other at odd angles. Such could be the result in English cities which, with a few exceptions, have not been developed on gridiron plans, if high buildings were allowed anywhere. In a few cities like San Francisco, by virtue of commercial peaks coinciding with topographical peaks, groups of tall buildings have emerged, well separated from each other by low development and the result is visually exciting and satisfying. It appears that of all US cities only Philadelphia has so far developed a comprehensive 3-D plan for the whole of its central area, of which the conscious siting of tall buildings is an integral part.

The location of high buildings in European cities with their historic cores and largely irregular plan forms is, however, much more complex. Because the pressure is not as great yet as in US cities, high buildings near or in central areas have often developed singly, resulting in isolated tall buildings dominating a largely uniformly low townscape (e.g. Hamburg). Perhaps no other European city has been subjected to the impact of individual high buildings in recent years quite as much as London, while at the same time few cities have been so successful in achieving large-scale comprehensive redevelopment in which high buildings often play a prominent part. Thus we can see in London some of the best as well as worst examples for the location of tall buildings in relation to the townscape. If the carefully considered and imaginative high buildings policy of the LCC has not in some cases produced the right answers, the reasons are largely that the LCC is in these cases unable to enforce its own policy without the danger of incurring heavy compensation for loss of floor space.

The planned relationship of residential high blocks has been more successful than that of high office blocks, for a number of reasons: residential high buildings have been erected largely outside the most vulnerable core of cities where it has also been possible to build them as part of large-scale development on land in single ownership (e.g. Roehampton or Vällingby). Thus the grouping of residential towers or slabs and their design can be part of a unified conception, and if imaginatively designed and planned, these high buildings can make the positive contribution as originally envisaged. Living conditions in these high blocks set in parkland and fully equipped with social facilities can be at their optimum while the groups of residential towers add to the interest of the townscape.

It is hoped after all has been said about the visual impact of high buildings and their profound effect on our cities, that a case has been made for at least attempting to locate them according to certain ideas. This problem of location of high buildings is one of principles and their implementation. Looking at implementation first—for no principles are worth considering unless they have a chance of being implemented—the question of land ownership arises at once if high buildings are to be encouraged as well as discouraged. For, up to a point, local planning authorities can exercise some negative control by refusing permission


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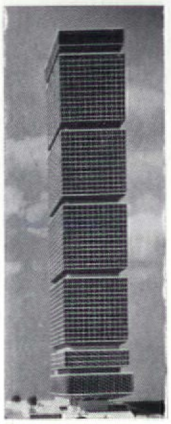
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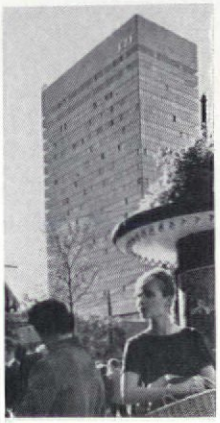
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Examples of individual high structures

(1–7 may be considered to have established a standard in this respect)

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Zur Palme offices, Zurich
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Ville Marie offices, Montreal
3
IBM offices, Berlin
4
Model of design for Peugeot offices, Buenos Aires
5
SAS hotel, Copenhagen
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New Zealand House, London
7
Castrol House, London
8
Albert Embankment offices, London
9
PanAm building, New York
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Stag House, London
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Ministry of Communications and Public Works, Mexico
12
Palace of Culture (in distance), Warsaw
13
Norwich Union House, Nairobi


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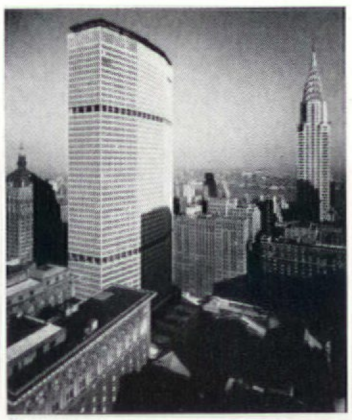
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for the erection of high buildings on unsuitable sites, although even this negative control is often frustrated if the existing bulk is so great that its redevelopment almost inevitably results in a high building; at other times the refusal by a local planning authority on grounds of urban design is overruled on other than town planning grounds (e.g. the application for the Hilton Hotel in Park Lane was called in and the principle of a high building was determined by the Minister mainly on grounds of its dollar-earning potential). But when it comes to deliberately encouraging high buildings on specific sites where they would make a positive contribution to the townscape, planning control is insufficient and only landlord control can 'will' high buildings in the right places. Nor is it just a matter of, for example, the planning authority owning a few sites on which high buildings could be erected with advantage. It is rather a question of large-scale unification of land-ownership for the purpose of comprehensive development or re-development which alone can provide the possibility of correctly locating groups of high buildings in relation to each other, to the adjoining development and to the city as a whole, or part of an overall 3-D conception.

Assuming that both positive and negative control can be exercised, what would be some of the principles upon which such a control of high buildings could be based? Here we must admit that relatively little work has been done, either in this country or abroad to formulate such policies for high buildings, possibly because in most cities it is doubtful whether any principles could be implemented even if they existed, while other cities simply rely on the blunt instruments of height zoning or complete prohibition.

Complete prohibition of high buildings is a restrictive policy which tends to run counter to existing trends and therefore requires convincing justification. Yet such a policy may well be the only possible and correct one in situations where a large part of a city or considerable areas within it are architecturally so perfect and complete, where the skyline is so sensitive that any new high building, however well designed, could only mar the townscape. The historic core of some of our cities, particularly Oxford and Cambridge, may well fall within this category; Oxford has already decided on a restrictive policy with regard to high buildings in or near the historic core, while Cambridge is considering a similar policy advocated for the city by Thomas Sharp in his *Dreaming Spires and Teaming Towers*.

Several capitals, like Amsterdam, Brussels, Paris, Prague, Rome and Washington, have never permitted any new high buildings within their historic cores, while Copenhagen and Vienna, who did allow isolated tall buildings in or near the centres, are unlikely to do so in future.

In most cities, however, it is likely that an imaginative combination of restriction of high buildings in vulnerable areas, particularly in certain parts in or near their historic cores coupled with an encouragement of tall buildings in other areas such as in or near sub-centres, near large open spaces, rivers, on high ground, and in association with major communication centres, may be the most appropriate principles for the location of high buildings. Clearly, each city can arrive at such conclusions only after very careful and detailed studies of its topography, important features and its existing and

continued overleaf

continued from previous page

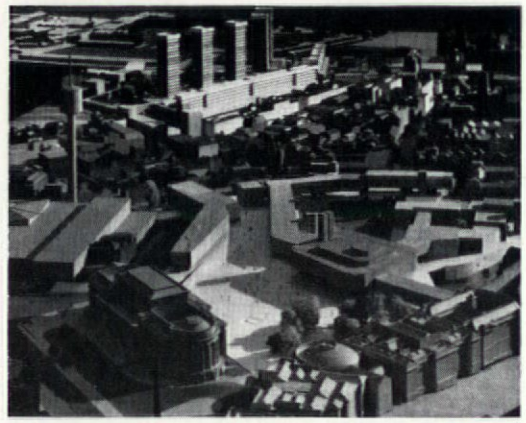
projected structure. What is needed therefore are such analytical studies of the existing urban form leading to clear conception of the desirable future shape of the city with particular emphasis on the siting of high buildings.

Conclusions

High buildings for occupation are one of the great achievements of modern technology. We have solved most—though by no means all—technical problems of building high. Although the bulk of high buildings in most cities takes the form of humdrum up-turned boxes and faceless filing cabinets, we have advanced a long way in the design of individual tall buildings, as some of the best high building projects show. Imaginatively designed, well detailed and finished, and wisely used, high buildings could be a wonderful asset to our cities, both visually and socially. Their very size could add vertical emphasis to significant parts of cities and dramatize the townscape.

If we are learning to evolve imaginative and workable answers to the problem of the individual tall building, we are yet a long way off in understanding fully the vastly more complex problem of the role of high buildings in overall town design and even further off in working out practicable solutions. Even a cursory look at cities throughout the world shows an alarming amount of misuse of tall buildings and a staggering lack of thought regarding their integration in the townscape. In many cities the fleeting opportunities of using tall buildings in a significant and constructive way have been irretrievably lost while others are seriously threatened with a similar fate.

Yet, constructive and imaginative policies for high buildings are possible and highly successful in some cities where tall buildings are regarded as vitally important urban design elements. Such policies range from complete prohibition of high buildings to carefully formulated principles for their restrictions as well as encouragement. Clearly a greater public acceptance of the need for such policies would be the first step in mastering high buildings in cities. Next we must somehow get to the position when high buildings become a matter of choice rather than necessity. In this respect some large-scale comprehensive redevelopment and the working out of alternative solutions of achieving reasonable intense development without recourse to high buildings is essential. Finally, much more urban design research is needed into the best and most effective methods for the location of high buildings in our cities as part of overall 3-D conceptions.



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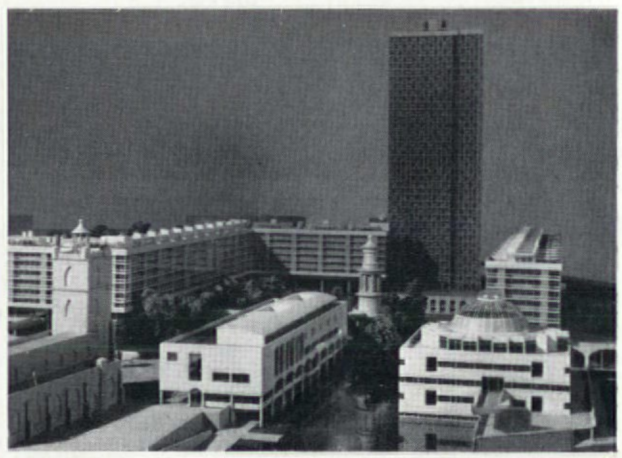

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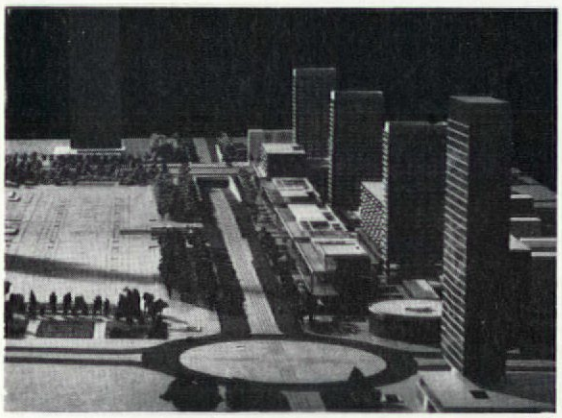

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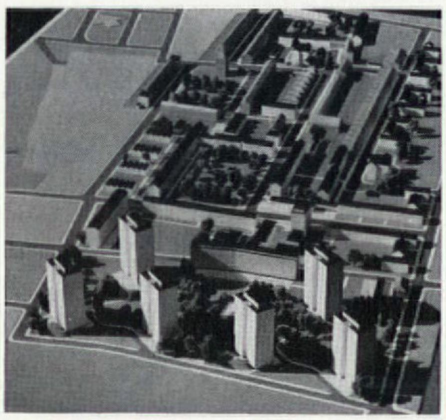

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Examples of high buildings as part of large-scale comprehensive redevelopment

1
Model of Liverpool central area development
2
Plan of Moscow
3
Barbican office blocks, London
4
Model of Knightsbridge Green development, London
5
Model of Barbican redevelopment, London
6
Warsaw city centre
7
LCC housing, London
8
Hötorgscity, Stockholm

Examples of the unifying element of grid-iron plan of US cities

9, 10
Houston, Texas

Examples of high buildings in the townscape

11
The Golden Triangle, Pittsburgh
12
The Olorieta Colón, Mexico
13
Hamburg
14
City centre development, Canberra
15
Stefanskirche, Vienna
16
Houston, Texas
17
Police headquarters, Hamburg

18
Nairobi

19
Tokyo; an example of a town with no high buildings

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An example of horizontal zoning in a New York office

See questionnaire on page 433


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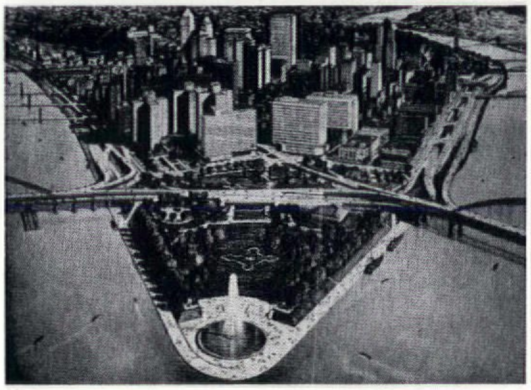
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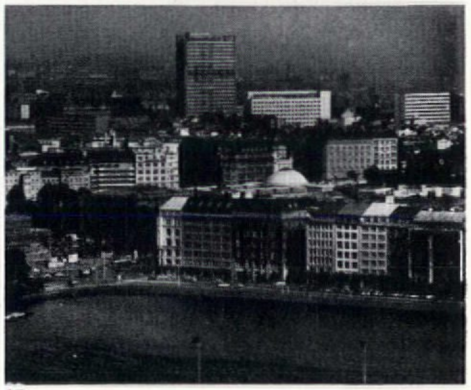
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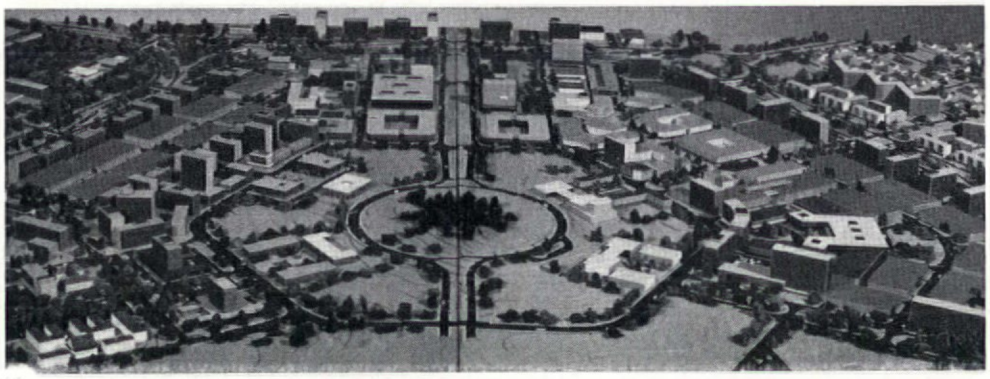
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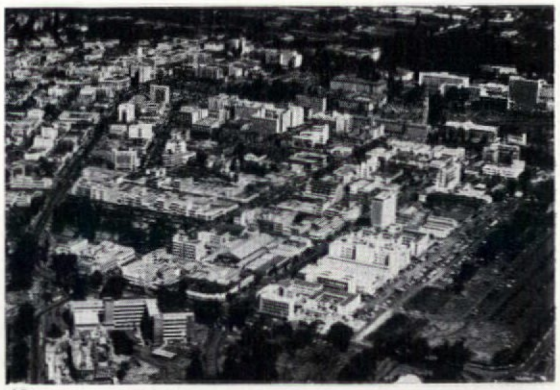
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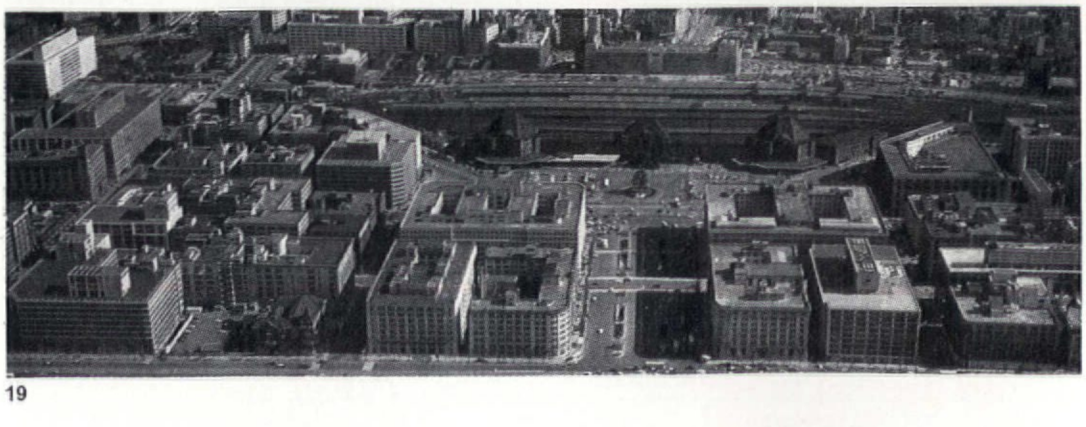
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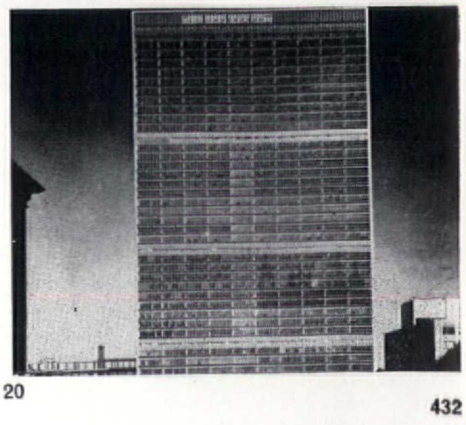
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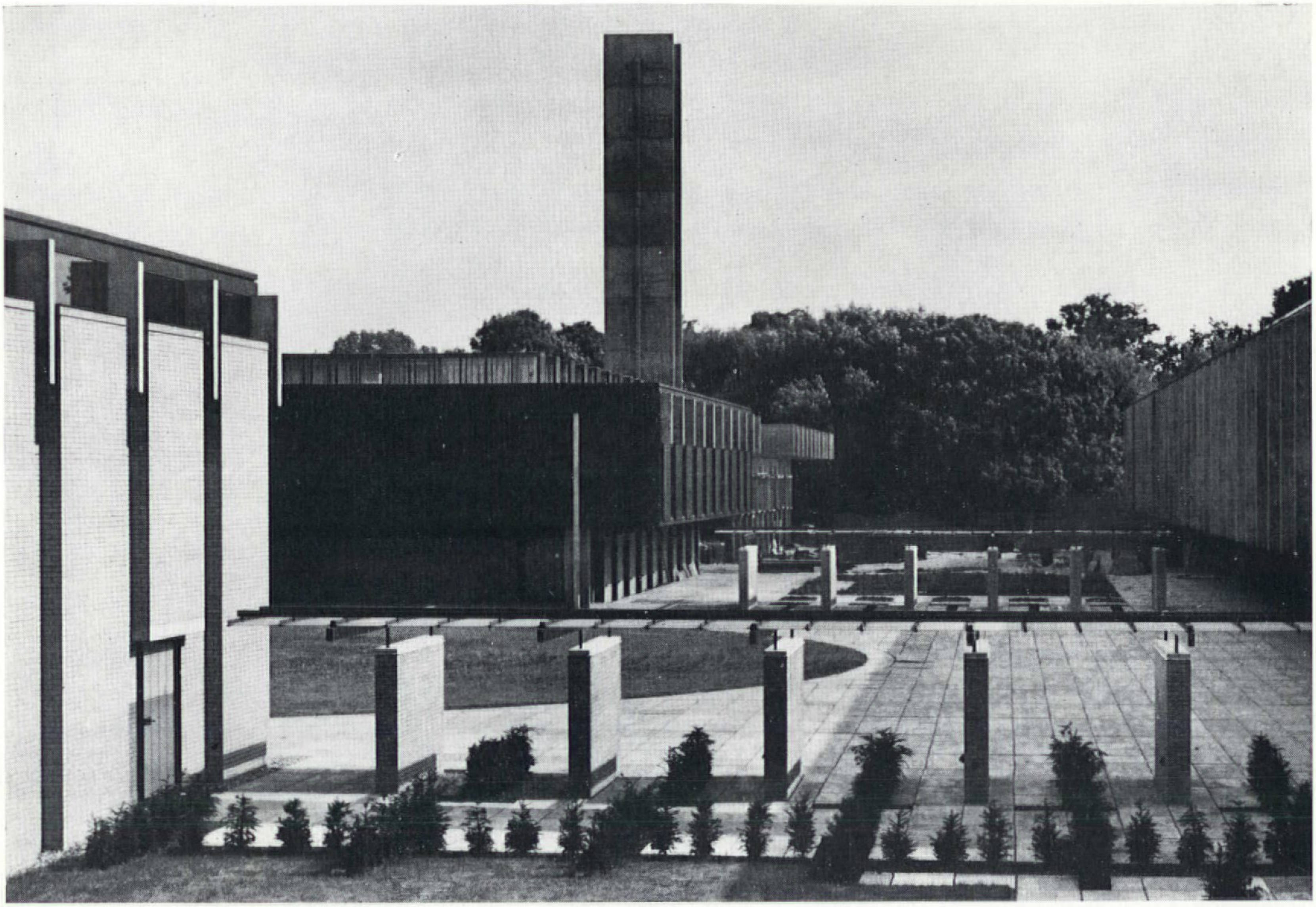
High buildings questionnaire

City	Any new high buildings?	Any technical difficulties with high buildings?	High buildings as a result of over-development	Negative and positive controls	3-D plan	Standard of design
Amsterdam Holland	Yes	No	No	High buildings permitted on merit only. Old city stringent restrictions, silhouette safeguarded	Only in redevelopment areas	No reply
Basle Switzerland	Yes, up to 21 storeys	Yes, parking difficulties	No, since building high does not give extra density	Height zoning; high buildings prohibited. Panorama controlled. HBs must not be used for adverts. HBs must contribute toward creation of OS	No 3-D plan	Government can choose architect. No masterpieces
Bombay India	Yes. Max. 200ft but small parcels of land do not permit many	Yes. Water pressure inadequate. No light-weight materials. No curtain walling	Yes, densities 300 p.p.a. average	No control	No 3-D plan. HBs scattered all over the place	Poor standard spec housing results in modern slums
Boston USA	Yes for 30 years. Tallest 52 storeys. (Prudential)	Yes, soil. Prudential piles to over 200ft	Yes. High land costs result in high rise—high rent—rich people only, but offices cheaper in HBs	Not yet, but there will be floor space controls	Only in urban renewal scheme	Very high standard. Pei, Sert. Gropius
Buenos Aires Argentine	Yes. Ten HBs 30–40 storeys	Yes, sandy soil restricts HBs	Yes. Maximum exploitation reason for HBs	No, by-law restrictions only, no planning control	No 3-D plan	No reply
Brussels Belgium	Yes, some	No	No	High buildings are discouraged to protect urban scene. HBs only encouraged in business quarters but zoning of areas for HBs confidential to avoid speculation	No 3-D plan	No reply
Canberra Australia	Few, maximum 13 storeys	Yes, irregularity of sub-soil and bed-rock foundations	No, they result from planning policy	Landlord control by Government	Yes, a flexible 3-D plan and model	Good. High buildings are an investment
Copenhagen Denmark	Yes. Until 10 years ago none. Mostly in residential blocks up to 19 storeys	No	No. Plot ratio control but high buildings are deemed to be cheaper	Yes. Areas defined where high buildings are or are not permitted	Only in redevelopment areas	Good. Particularly SAS
Coventry England	Yes	No	No	Yes. HBs only allowed where proposed by planning authority	Based on 3-D layout plans	All HBs designed by City Architect or in collaboration with him
Dublin Eire	Yes. None until 5 years ago	No	No	No. Awaiting new Town and Country Planning Act	No	No reply
Eindhoven Holland	Yes. Some	Yes. Near airport and parking problems	No	Yes. Floor space index	Yes. HBs located on plan	Very high, after all this is the architect's 'trade mark'
Haifa Israel	Yes, up to 14 storeys	No	Yes. HBs result of dense population	No	No	Higher than usual, especially of materials and detailing
Hamburg Germany	Yes, many	No	No. Max. res. plot ratio 1 : 1. Max. commerce ratio 2 : 1	Density, daylighting and layout	Yes. 1 : 500 scale model of city centre	Very good, many high buildings subject to competitions
Helsinki Finland	No	No	Not applicable	HBs not permitted	No known	Not applicable
Houston Texas, U.S.A.	Yes, up to 44 storeys	Yes. Quicksand foundation problems	Yes, of course	No. Just building orders	No. HBs at random	Good materials used because of building boom
Lima Peru	Yes, many up to 25 storeys	Yes, earthquakes and steel shortage	Don't know	Land use and building by-laws only	None at all	Varies, no control

City	Any new high buildings?	Any technical difficulties with high buildings?	High buildings as a result of over-development	Negative and positive controls	3-D plan	Standard of design
Liverpool England	Yes, mostly residential	No	Yes, in some cases due to excessive residential densities	Interim Policy in operation	In preparation for central area and other redevelopment areas	Average to poor
London England	Yes, a lot	No	Yes, in many cases except CDAs	5-point policy of principles against which high buildings are judged on merit	Only in CDAs	Varies
Mexico City Mexico	Yes, many; up to 42 storeys	Yes. Soil problem only. 4–7ft dry material then mud	Yes, definitely, as a result of land speculation	Zoning control. Maximum 75 per cent of area may be covered by buildings	No 3-D plan generally, but location of HBs on Government comprehensive plans	Standards vary
Moscow USSR	Yes, 8 sky-scrapers, the rest in outlying districts	No	Definitely not	Yes, location of all HBs defined by Master Plan for City Development Programme for 20 years	Yes	Standards are improving
Nairobi Kenya	Yes, two	No	Hardly	68° light angle to habitable rooms, plot ratio up to 5·7 : 1	No but HBs encouraged at certain points	Good
Oxford England	Yes, two	No	No	Restrictive HB policy since 1962	Not in detail but vulnerable areas defined	
Peking China	Yes, up to 14 storeys	No	Certainly not	Not known	Not known	Improving
Rome Italy	Yes, many; up to 25 storeys	Yes, earthquakes and steel shortage	Don't know	Land use and building by-laws only	None at all	Varies, no control
San Francisco USA	Yes. Up to 35 storeys	Yes. Earthquake proof foundations prescribed	Yes. Very often	Floor space and air rights, preservation of bay views	No	Some of latest HBs of very high standard
Stockholm Sweden	Yes	No	Yes, there is a tendency	More restrictive policy in centre. Policy to decrease plot ratio	Yes, for historic part and in new development areas	Good to very good
Tokyo Japan	No	Yes, frequent earthquakes	Not applicable	Not applicable	Not known	No reply
Vienna Austria	Yes	Yes—that of townscape and traffic	Yes, definitely	Height zoning to maximum height of 75ft. Protection of old town silhouette from further damage	No	Varies
Warsaw Poland	Yes, a few	No	No	Competitions for each part of the city with suggestions for HBs	Yes	Good architecture handicapped by economics

Summary

	Any new high buildings?	Any technical difficulties?	High buildings as a result of overdevelopment?	Negative and postive controls	3-D plan	Standard of design
29 cities in 24 countries 16 of which are capitals	27 Yes 2 No	17 No 4 Soil difficulties 3 Earthquakes 1 Parking 1 Inadequate water pressure 1 No light-weight materials 1 Airport vicinity 1 Townscape and traffic 1 Steel shortage	14 No 12 Yes 2 Not applicable 1 Don't know	17 Various controls 6 No control whatsoever 4 Height zoning 2 Not applicable	12 No 7 Yes 5 Only in re-development areas 3 Not know 2 In preparation 1 Safeguarding of views	11 Variable 8 Won't commit themselves or not applicable 5 Very high 4 Improving 1 Poor



St. Catherine's College, Oxford

Arne Jacobsen

K. Holscher Assistant Architect
Ove Arup & Partners, Engineers

Arne Jacobsen's brief included not only the design of the individual buildings, the layout, the choice of plants for the gardens, and the water garden, but also the choice of furniture, fabrics and fittings and in some instances the preparation of original designs for these items.

The main complex consists of the hall; the library, an auditorium and lecture rooms; two residential blocks; and a block containing common rooms, offices, kitchen, stores and boiler house.

The road system is designed to separate motor from pedestrian traffic and confine the former to the N and NW edges of the site. The road to the north is the service road; that to the west, beside the river, is to be used as the approach road to the main entrance.

The three-storey long residential blocks contain fellows' sets on the ground floor, undergraduates' rooms on the upper floors. The accommodation is planned in the traditional manner around a series of staircases, eight to each block, each staircase serving an average of two fellows and twenty undergraduates. The ground floor of both blocks is set back on the internal side facing the quadrangle in order to give covered walkways; these areas being connected to the hall and the library by glass covered ways.

The common room block with its related service areas is designed as a long broad unit one-storey high in keeping with its domestic character. The block is sited across the width of the northern end of the site so that the boiler room, stores and service areas on its northerly side obtain immediate access to the roadway while the common room areas to the south look out across the gardens to the rest of the main group of buildings. Along the west side of the main complex is a long water garden.

The riverside area is laid out as a sunken garden area and is terminated at its southernmost end by the hexagonal music house.

The meadowland site had to be piled throughout with in-situ bored friction piles in a reinforced cage. The structure of the single-storey common room block is of precast prestressed concrete beams at 8ft centres bearing on padstones which rest on load-bearing brickwork. The residential blocks are of precast reinforced concrete frames at 10ft 6in centres with in-situ reinforced concrete slab floors.

The hall, library and auditorium blocks share a common basic structural system of precast reinforced concrete cruciform columns at 10ft 6in centres carrying 5ft deep, 6in wide precast, prestressed main beams, 79ft long with a free span of 56ft supporting secondary beams at 8ft centres. The hall is entirely contained as a single volume within brick walls. The library has a gallery slab of 5in thick in-situ concrete at first

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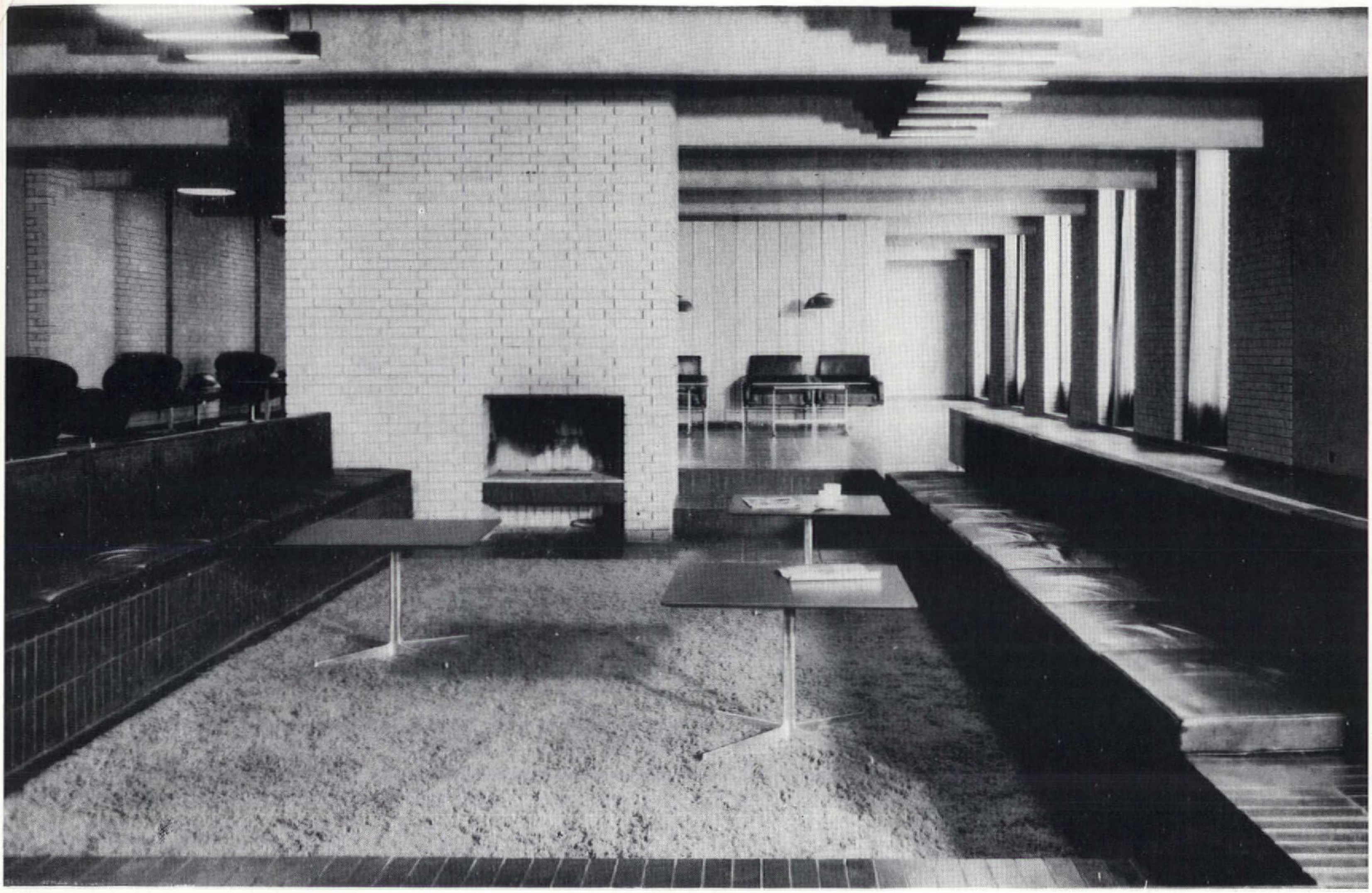
Opposite: plan



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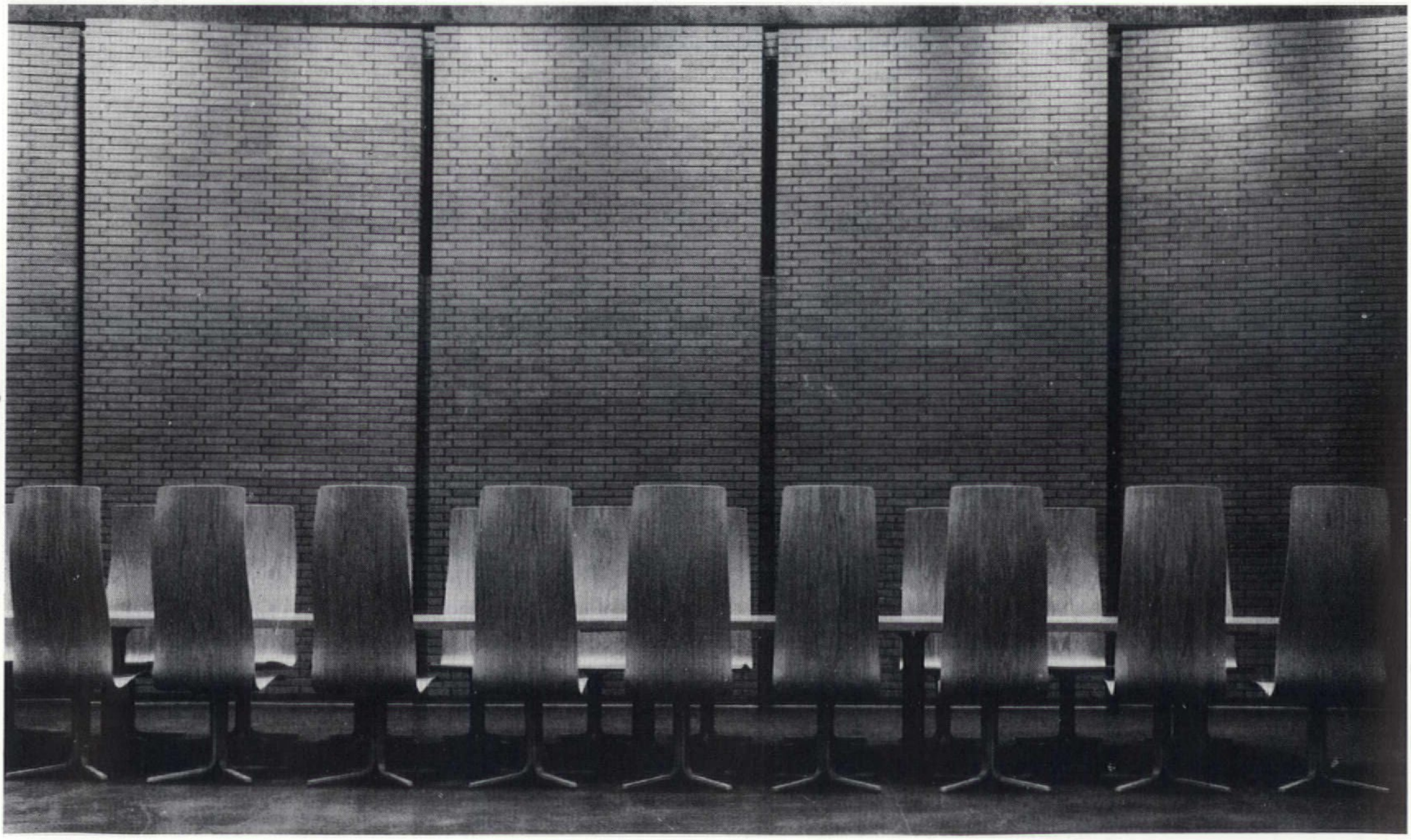

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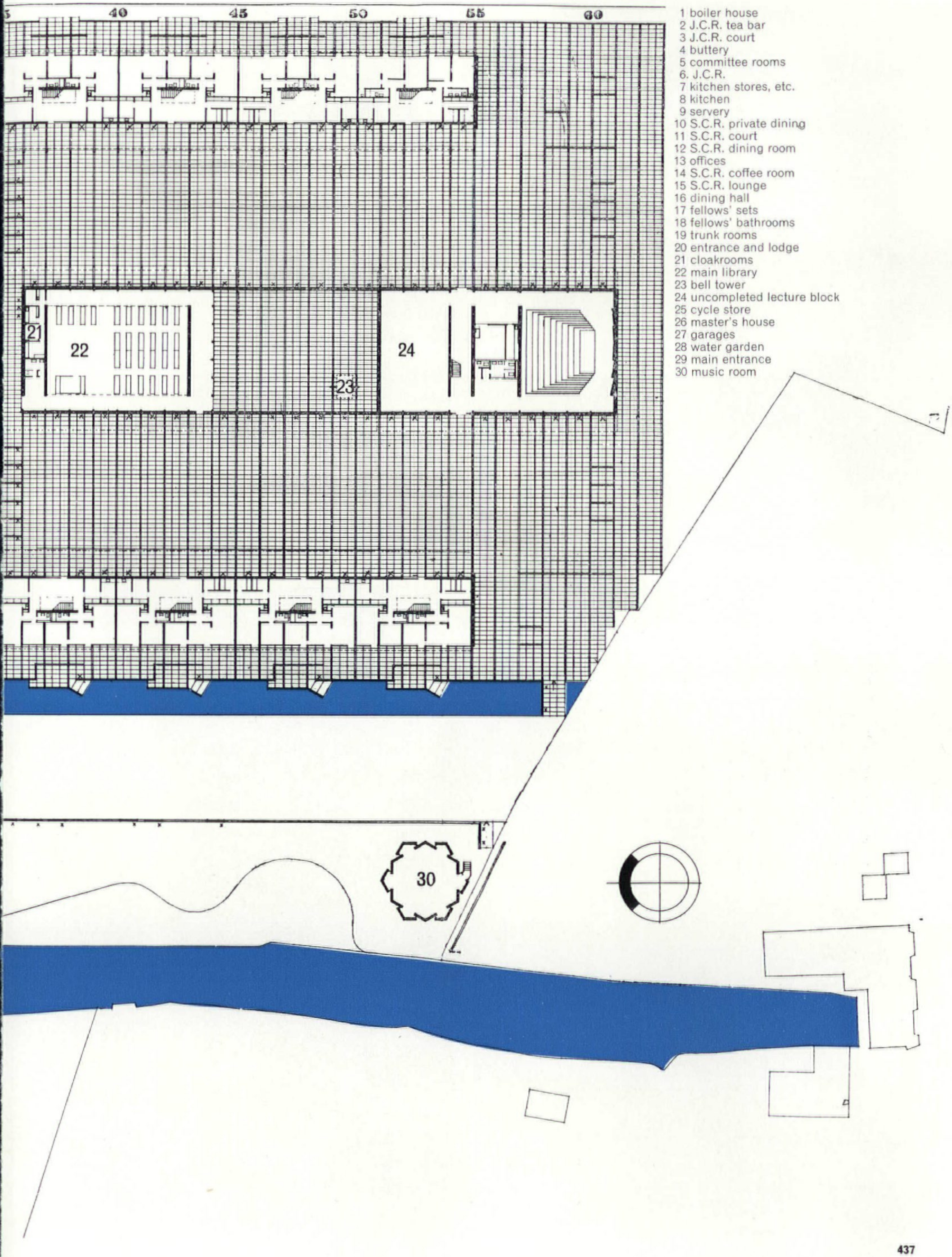
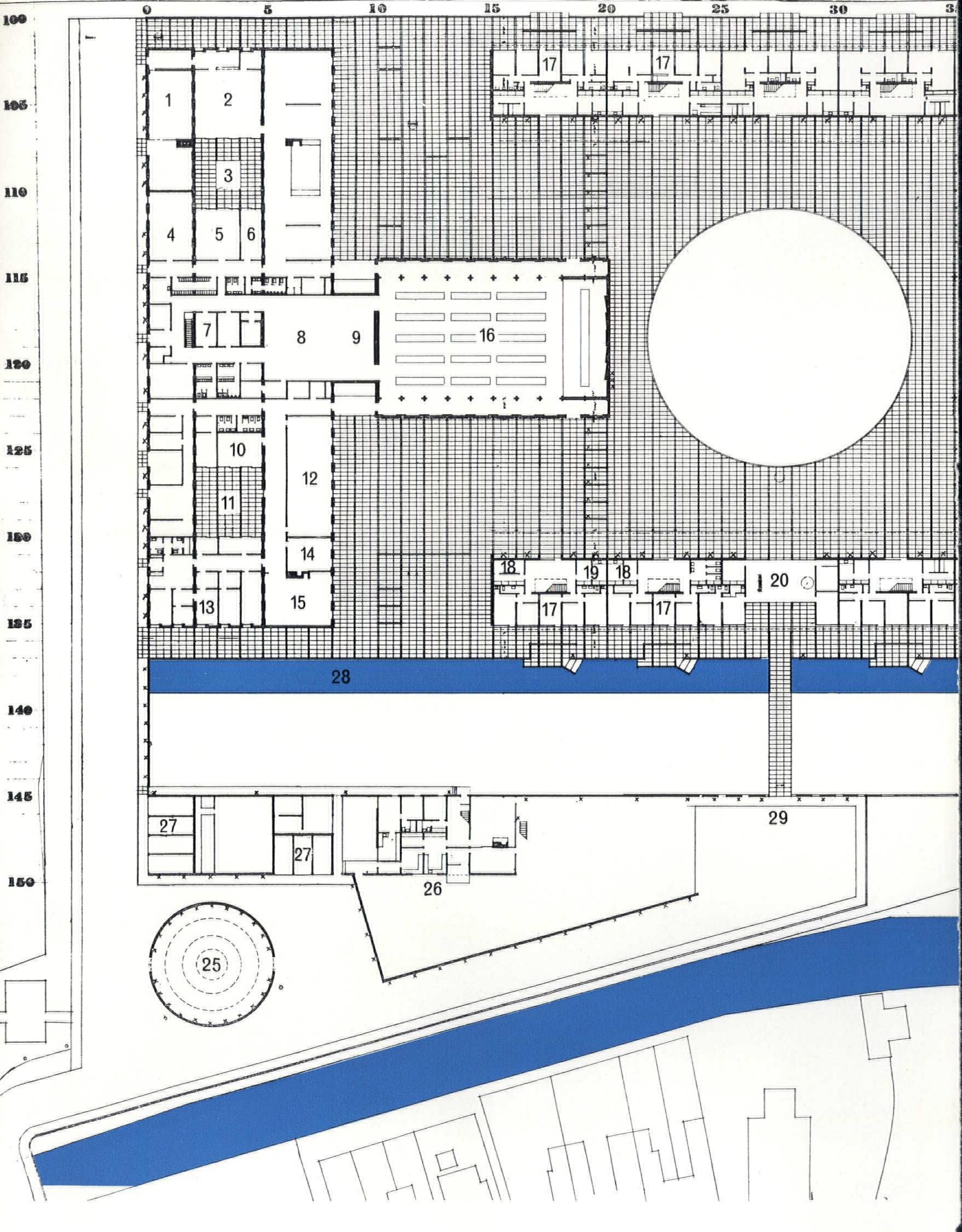


1 boiler house
2 J.C.R. tea bar
3 J.C.R. court
4 buttery
5 committee rooms
6. J.C.R.
7 kitchen stores, etc.
8 kitchen
9 servery
10 S.C.R. private dining
11 S.C.R. court
12 S.C.R. dining room
13 offices
14 S.C.R. coffee room
15 S.C.R. lounge
16 dining hall
17 fellows' sets
18 fellows' bathrooms
19 trunk rooms
20 entrance and lodge
21 cloakrooms
22 main library
23 bell tower
24 uncompleted lecture block
25 cycle store
26 master's house
27 garages
28 water garden
29 main entrance
30 music room



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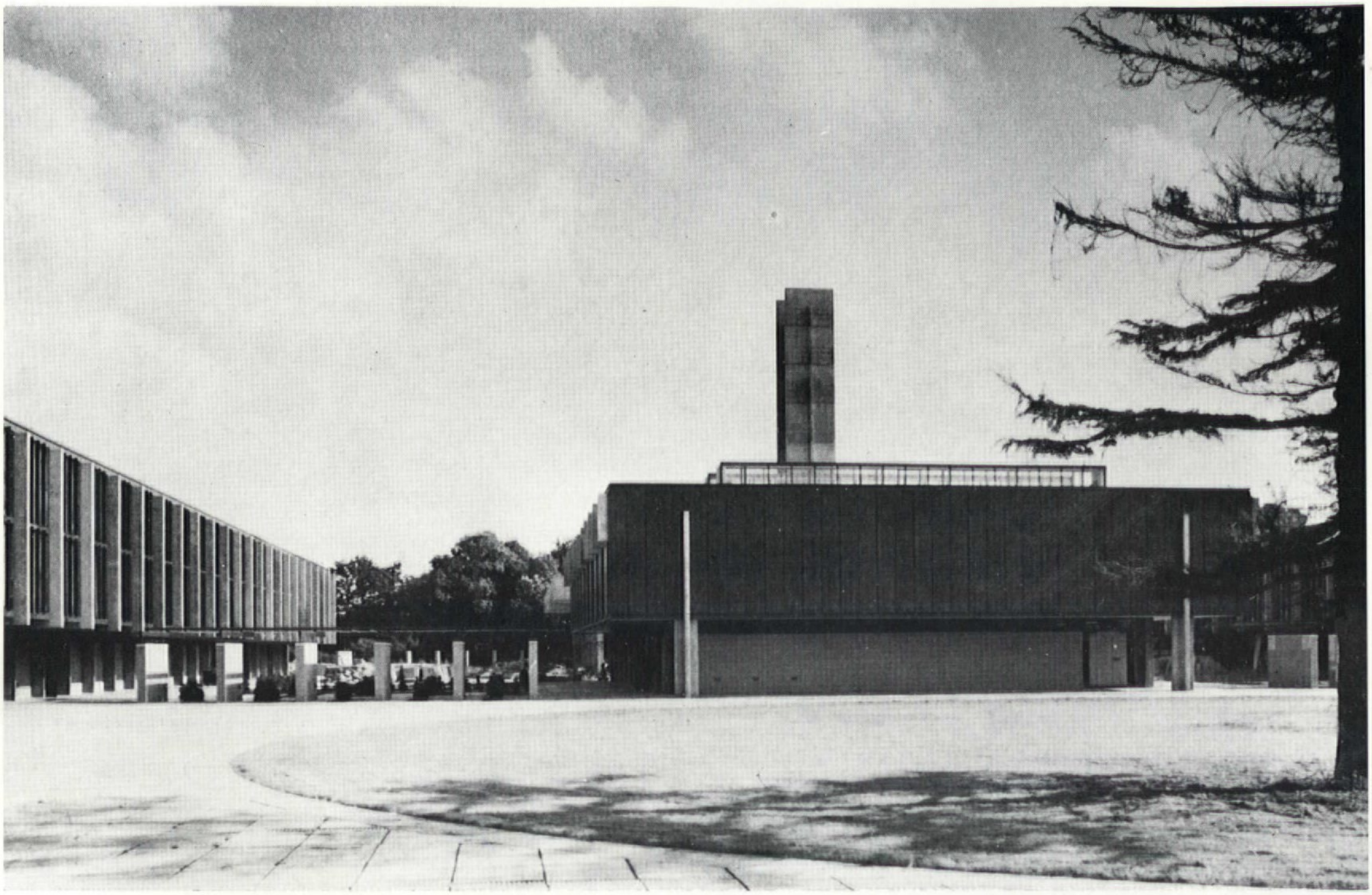

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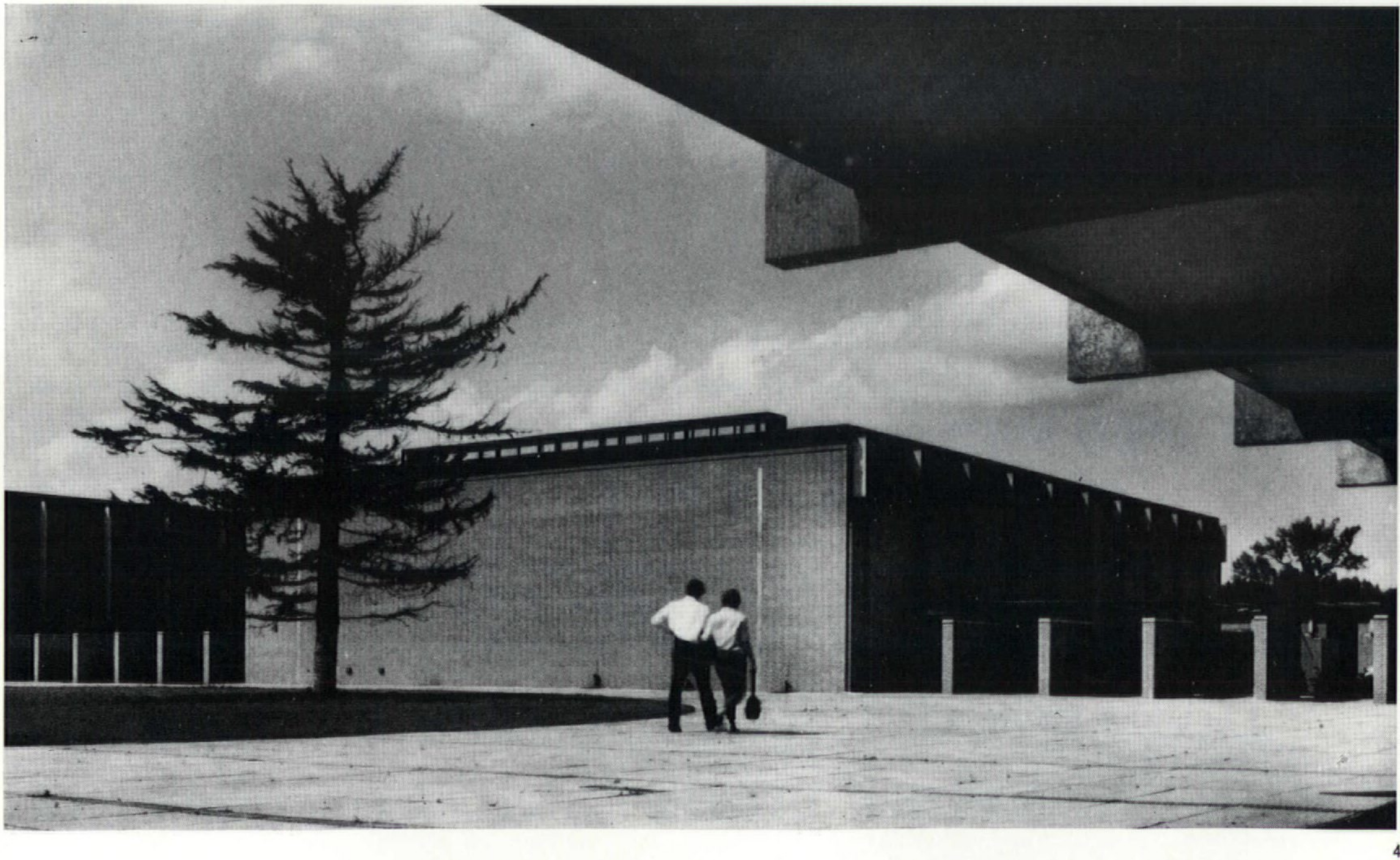

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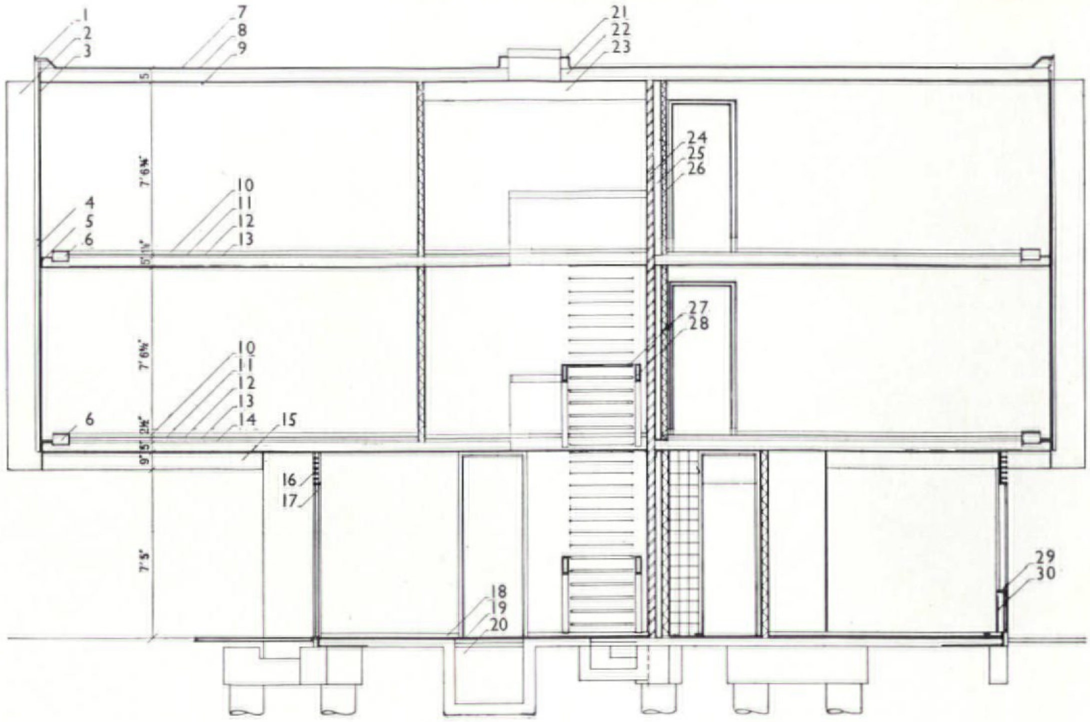
1
Interior of junior common room, showing sunken seating space
2
View of the library block from the main court
3
The high table in the hall. Furniture by Arne Jacobsen
4
View looking SE from under the covered way of residential wing
5
Structural section through residential block

1 eaves detail
2 precast concrete fins
3 sliding aluminium sash windows
4 alloy curtain walling
5 ¼in setback to slab edge
6 convector unit
7 mineral finish
8 bituminous roof felting
9 paint finish to ceiling
10 wood skirting
11 sisal matting
12 felt underlay
13 1½in nominal screed
14 1in insulation
15 6in precast concrete beam
16 alloy louvres
17 plate glass in alloy frame
18 vinyl skirting
19 linoleum
20 services duct
21 metal skylight unit
22 Siporex roof units
23 Concrete tie beam 9¾in deep
24 4½in facing brick
25 3½in cavity
26 3in Siporex
27 pressed steel tread filled with asphalt and linoleum
28 7in × 3in steel string
29 hardwood cill
30 convector unit under cill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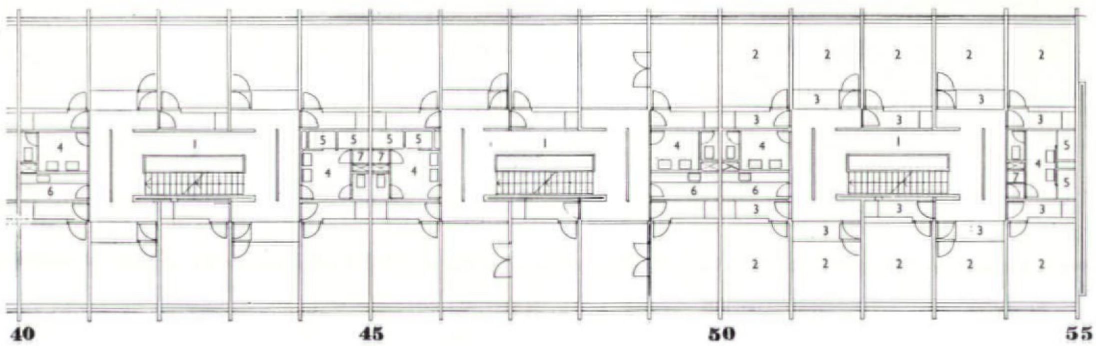

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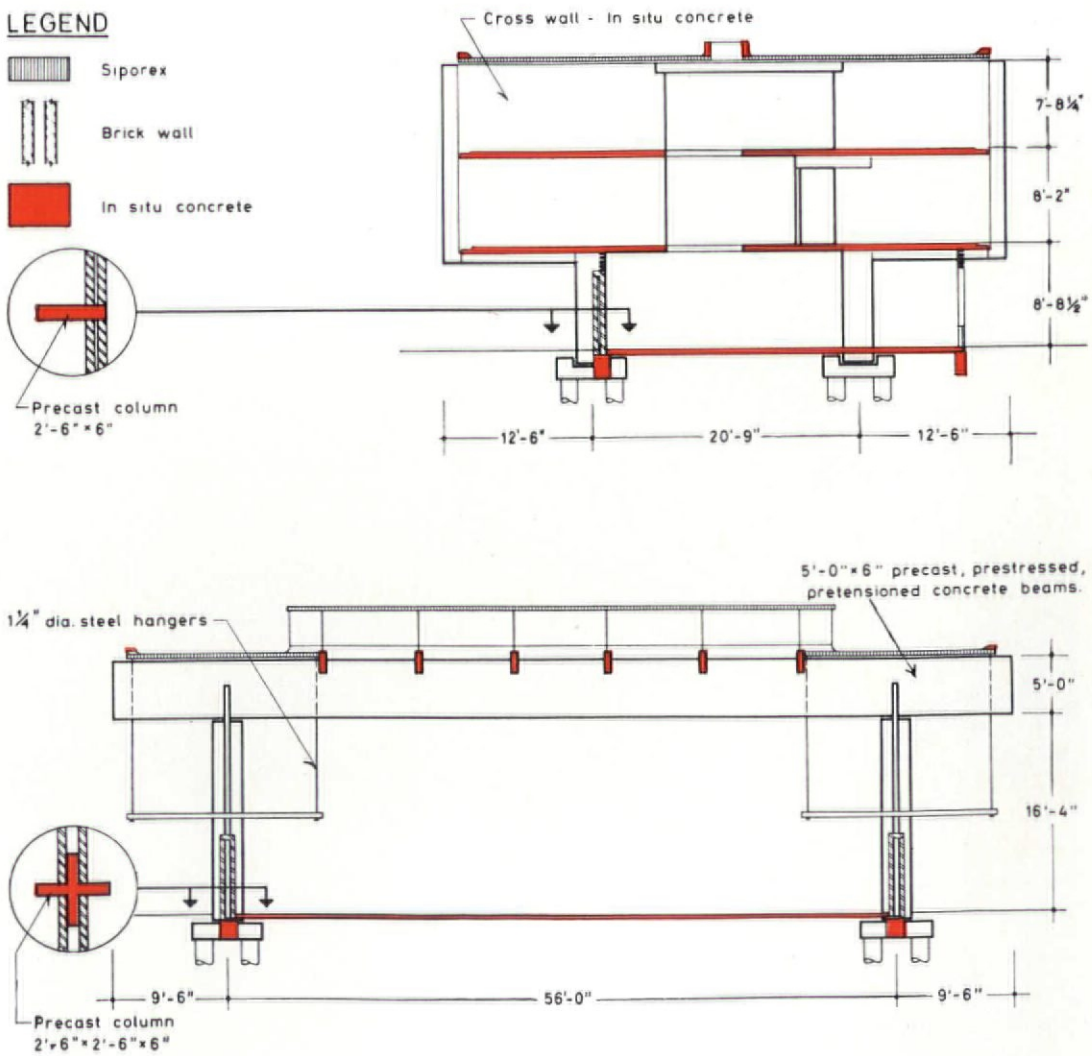
6
Part typical first floor plan residential block

1 corridor access
2 students' rooms
3 individual dressing space
4 communal bath rooms
5 showers
6 kitchens
7 drying cabinets



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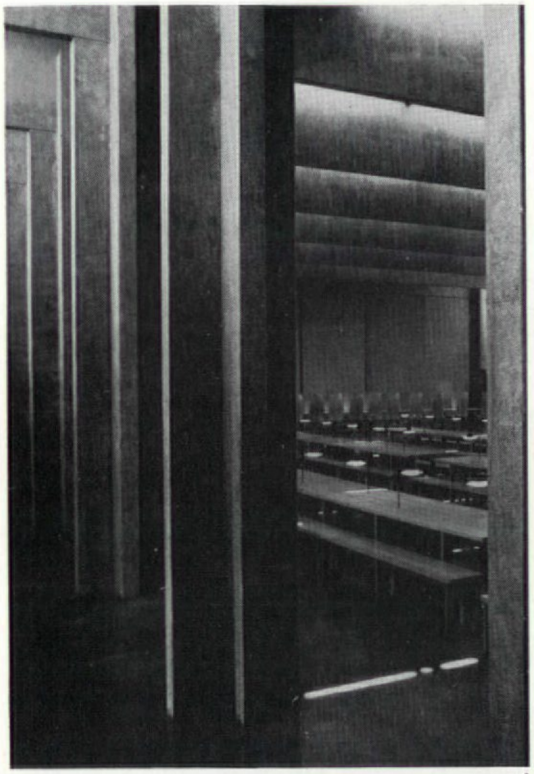
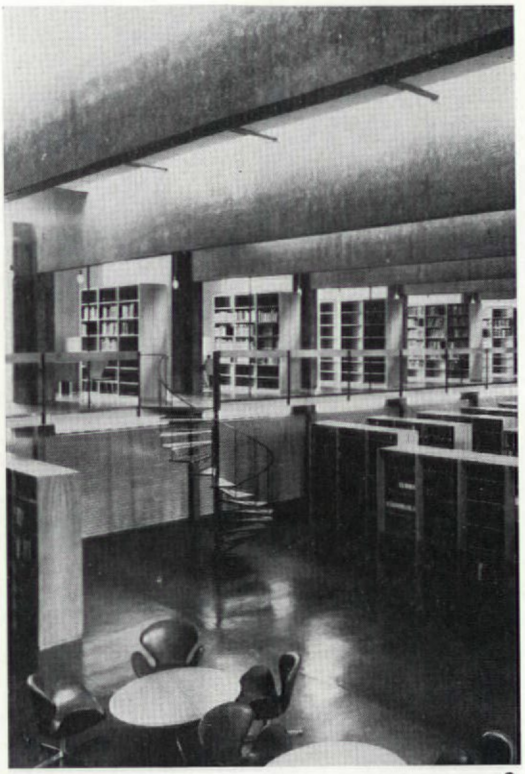
Diagrams showing the structural principles employed in the residential and library blocks





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floor level symmetrically superimposed on the main columns and suspended by means of steel hangers from the precast main beams.
The auditorium block, yet to be completed, has an in-situ slab 5in thick supported on in-situ beams and columns over half of its plan area, thus providing single height spaces at ground and first floor levels for lecture rooms, seminar rooms, graduate common room, and entrance hall. The remainder of the block is occupied by the double height space of the large auditorium. The ramped seating arrangement of the auditorium is constructed by extending the in-situ slab of the first floor down to ground level.
All buildings in the main group have roofs of patent lightweight precast reinforced concrete slabs. The residential blocks have daylights above each staircase. The hall, library and auditorium have steel-framed rooflights above each main beam.
The Master's house has a first floor slab of in-situ reinforced concrete bearing on load-bearing walls internally with stiffening reinforced concrete beams and columns at the gable ends. Roof construction is of patent plywood beams bearing on brick partitions and precast concrete slab perimeter walls.
Special 2in yellow bricks have been used throughout. The beams and columns generally are of smooth precast reinforced concrete. Windows, external doors and fascias to common rooms, residential blocks, Master's house, squash courts and music house are painted aluminium. Windows and fascias to the hall, library and auditorium are in bronze as are the external panels to the library and the sun screens to the auditorium. The doors to these blocks are made of oak. The upper floor of the Master's house and the garages are faced with painted plywood panels.
Internal finishes to walls are generally either fair-faced brick or painted hessian on block work, with panelling in the entrance halls, common rooms, and in the library and auditorium. Tiling is used in the kitchen, lavatory and bathroom areas. The hall floor is slate, elsewhere the floors are generally linoleum, with quarry tiles in the kitchen and terrazzo in the toilets and bathrooms. The ceilings in the common rooms and entrance hall are of patent metal acoustic panels; and in the hall, library and auditorium of grooved insulation board; otherwise they are of painted plaster.
Heating and hot water are provided from a central boiler situated in block F containing three oil-fired automatically operated boilers with a total output of 9,000,000 B.Th.U.
Under-floor heating is provided generally in the common room block, library ground floor, auditorium block and the Master's house. In the large assembly areas where induced air circulation is necessary such as the dining rooms, junior common rooms, the hall and the main auditorium warm air heating is also provided. Residential blocks, library gallery and parts of the Master's house have convector heating.
The total cost of the whole complex, including external works, amounts to £1,293,000. This excludes the cost of furniture and fittings other than built-in furniture. The cost of the residential blocks, on UGC varied from £6 6s. to £6 8s. per sq. ft. The main hall cost £11 4s. per sq. ft. The external works amounted to £57,600. The main contract started in 1961.

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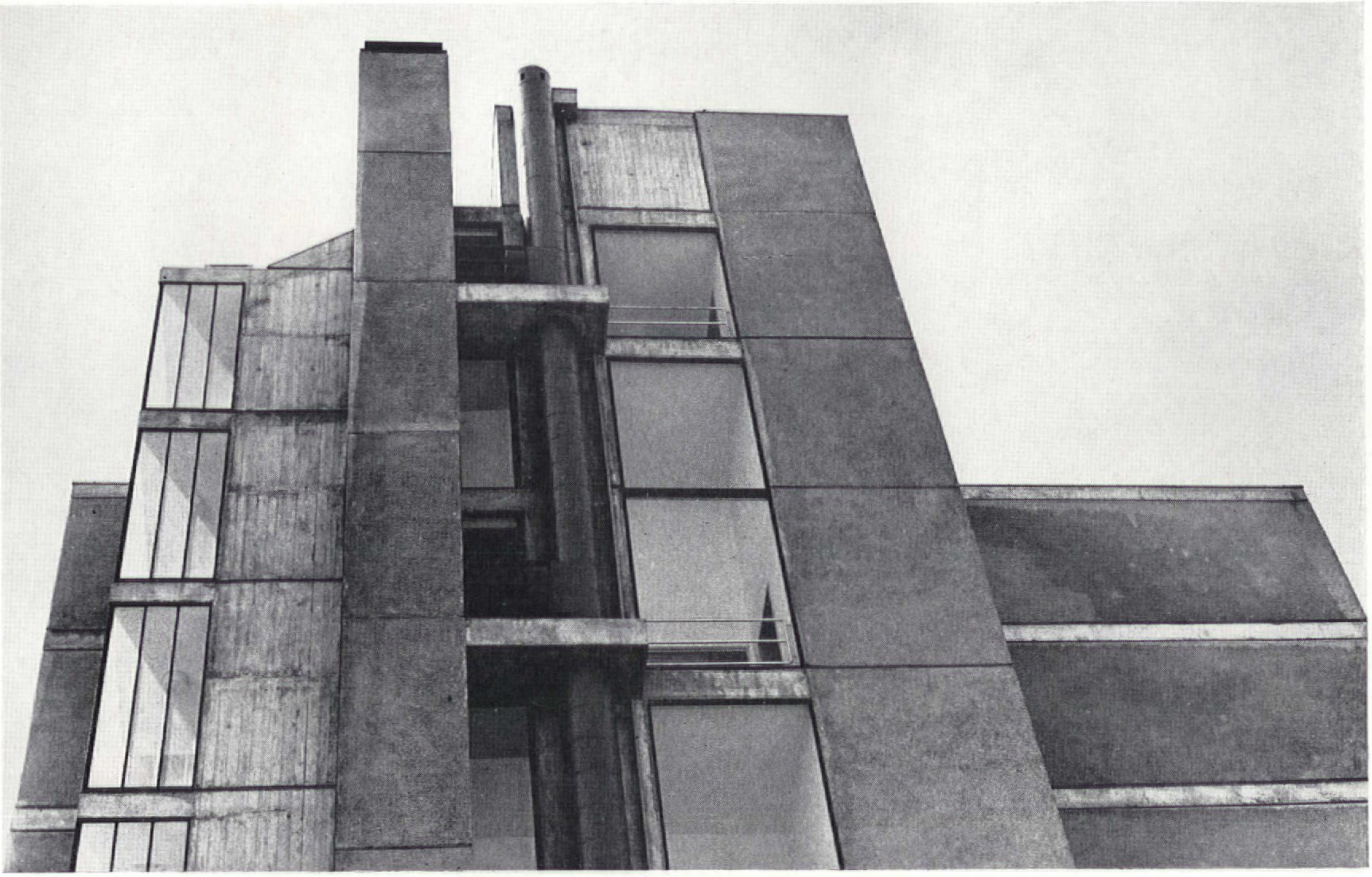
Interior of dining hall
2
Interior of library block
3
Residential units with Jacobsen furniture



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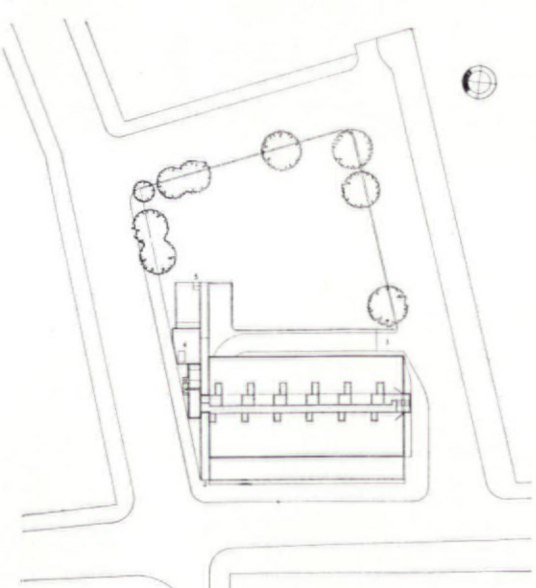

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1
The north elevation of the maisonette block. From left to right the vertical elements on the access tower are main staircase, boiler flue, cylindrical refuse chute with access balconies, lift landings and the lift shaft itself

2
Site plan. The building is erected on a typical London square and replaces a nineteenth century one of similar mass

1 recess forecourt (grass moat)
2 pedestrian entry ramp
3 vehicular entry ramp
4 porter
5 pedestrian ramp to garden

Maisonettes in Bayswater, London

Douglas Stephen & Partners

Kenneth Frampton, associate architect
R. J. Crocker & Associates, engineers

This building comprises 30 three-room and 18 two-room maisonettes. Each of the maisonettes is planned on three main levels, the maisonettes being served by either up-going or down-going staircases according to their situation. The scheme is based on the LCC scissors section.

The maisonettes are planned so that all the main daytime functions take place on one level, situated a short half flight of steps (up or down) from the entrance lobby. This living level comprises kitchen, dining, and living space, and in addition, a central heating unit and various cupboards for coats, linen, and cleaning equipment. All the living spaces are situated on the western side above each other, and thus they receive sun from noon onwards all the year round. In addition they are all situated on the noisy street side of the building. Conversely all the bedrooms are situated on the eastern quiet side facing over the garden away from the street.

The sequence of circulation within the maisonettes is as follows. Alternate maisonettes are up-going and down-going. In the up-going unit one arrives at the living floor via a half-flight stair from the entrance lobby. A further half-flight stair leads first up from the living floor to the bathroom and then up from the bathroom floor to the bedroom level. By this arrangement all the bathrooms and w.c.'s are situated at half a level difference, between the sleeping and living floors. The circulation in a down-going unit is of course the converse of that for the up-going.

The main bedrooms throughout the block are provided with either a balcony or a terrace facing over the garden, and all bedrooms, both double and single, are provided with fitted wardrobes. The bathrooms are fitted with mirror-faced wall cabinets and chromium-plated heated towel rails, provision being made for an electric shaver outlet.

The kitchens throughout the block are fully equipped and are provided with stainless steel sinks; all working surfaces being finished in white Warerite. Cooking smells within the kitchen are removed by the installation of a ductless hood which is situated immediately over the cooking position. This hood is fan operated and eliminates odours, pulling the exhaust air through a combined grease and activated charcoal filter.

The building is heated by hot air from a central heater cabinet which also contains linen and coat cupboard. This cabinet has louvres on both the hall and the living room side and hence it is in a position to heat both the living room and the remainder of the maisonette. The heater is thermostatically controlled and is designed to give a temperature of 68°F in the living room of each maisonette.

Each maisonette is fully equipped with a separate store in the basement of the block. Provision is made within the basement for parking 24 cars.

The block is porter-serviced and refuse is removed by the porter and deposited in the chute from a special cabinet situated adjacent to each maisonette entrance.

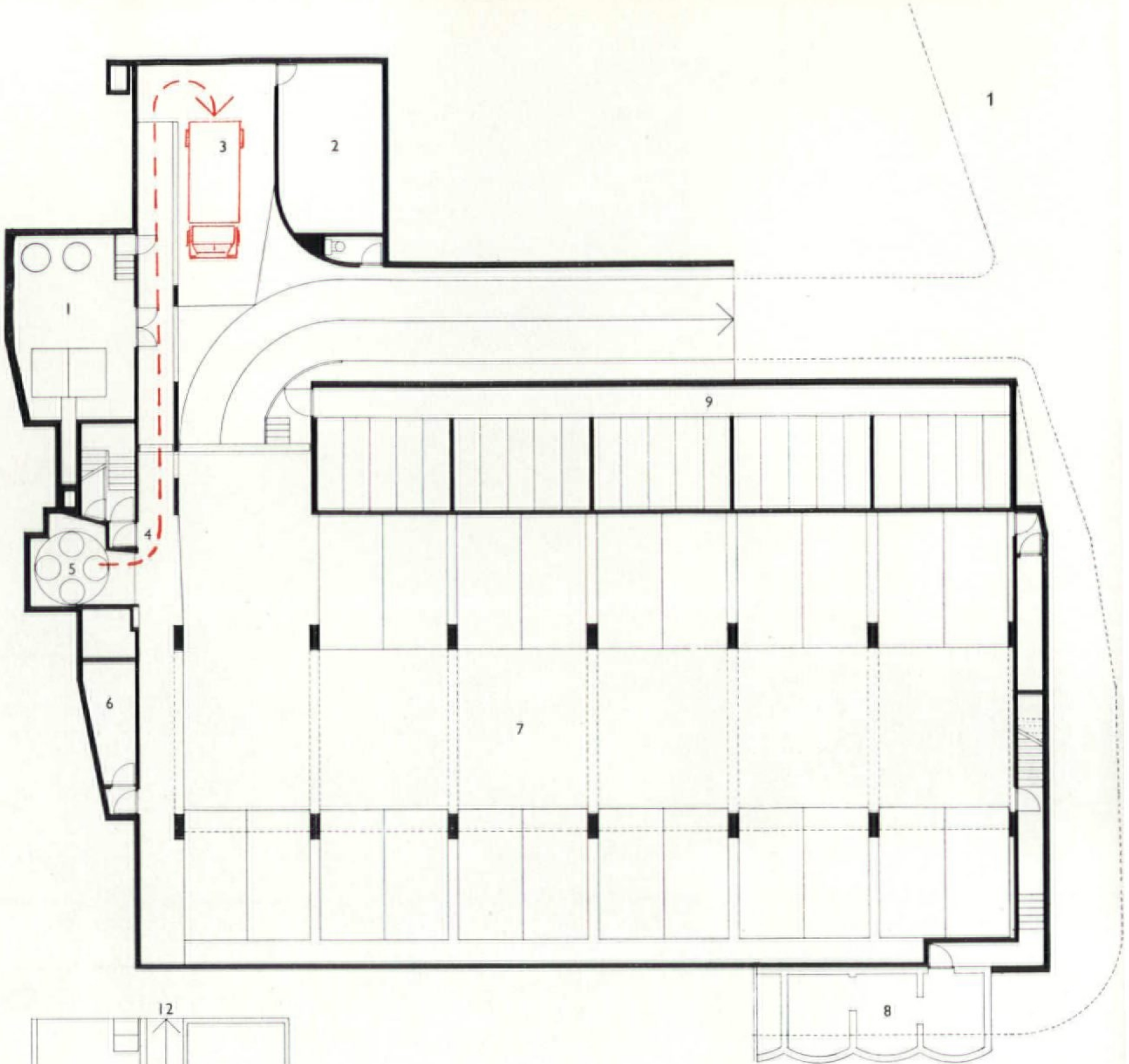
Technical details

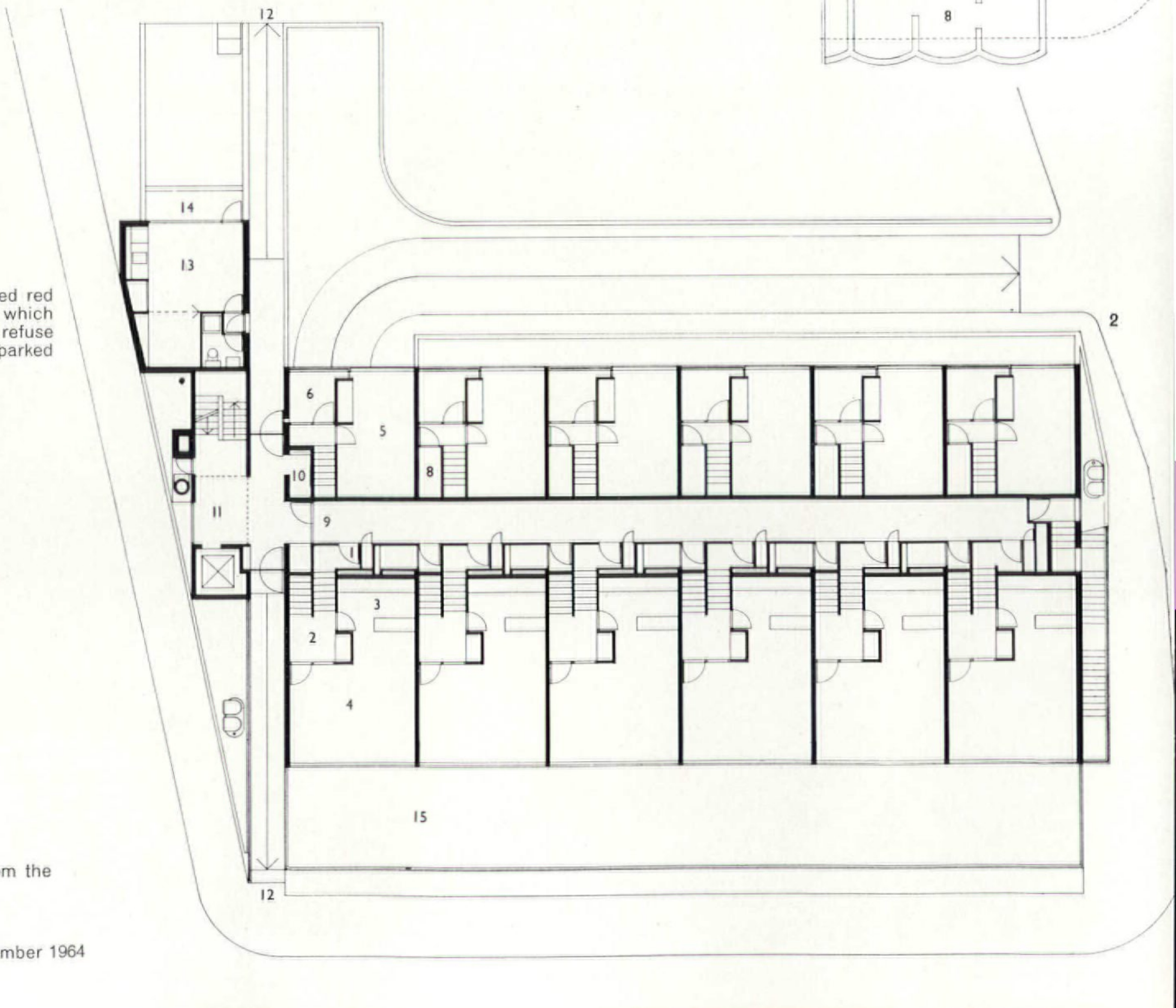
Circulation space: a considerable amount of space within each maisonette is given up to circulation. The scissors solution was primarily adopted to give a large number of through units with dual aspect, within the strict physical limitations imposed in respect of site shape, building lines, height limit, permitted density, access, etc. The following total superficial areas are produced with percentage of circulation by the 2 and 3 room units respectively; 2 room unit, 784 sq. ft., 29%. 3 room unit, 860 sq. ft., 26%. These areas include balconies.

Lift: one 1200lb 8-person lift was installed at 200ft per second with down collective control.

Ventilation: duplicate centrifugal fans were provided on the roof for the w.c. extract. One separate centrifugal fan was provided for the bathroom extract. One 24in aerofoil fan deals with extraction of air from the garage at the rate of 2750 c.f.m., providing 2½ air changes per hour.

Heating: the hot air heater units in the living space are activated by individual fan units and raise the temperature to 68°F in 15 minutes, when the outside temperature is 30°F. This same unit will provide for a bedroom temperature of 55°F in the up-going units. The bedrooms in the down-going units are heated by electric radiators. There are two oil-fired boilers in the basement and two cylinders, one for hot water and one for heatings.



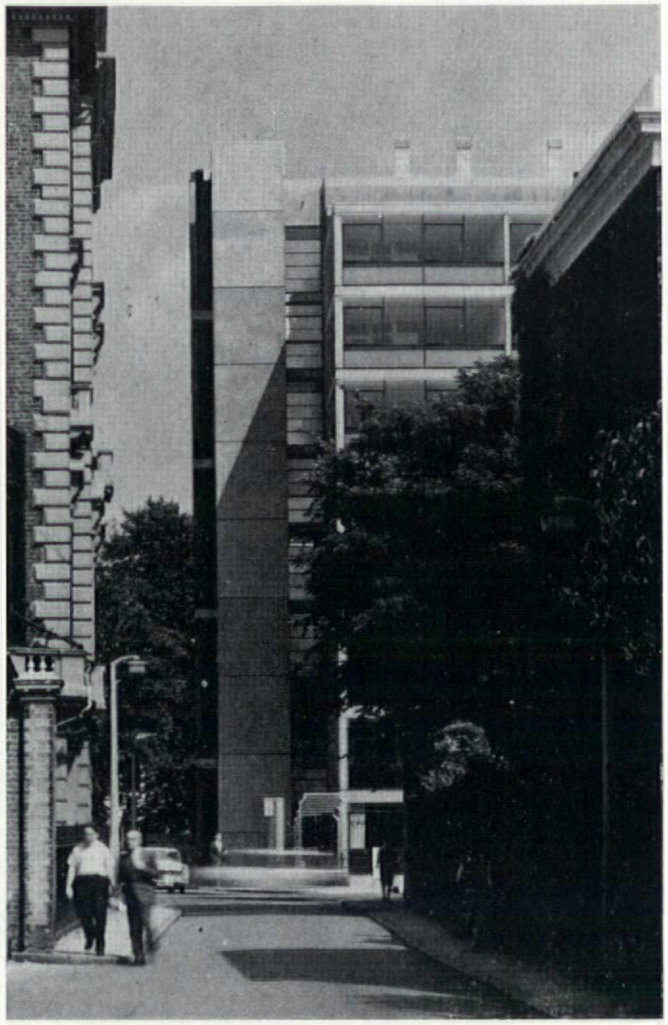


1
Plan at basement level. The dotted red line indicates the route along which refuse drums are taken from the refuse chamber to the disposal vehicle parked at the foot of the ramp
1 boiler house
2 oil storage chamber
3 hard standing
4 entry from garage
5 refuse 'roundabout' unit
6 lift machine room
7 garage
8 existing LEB transformer
9 tenants' stores

2
Plan at ground level
1 entry
2 lobby
3 kitchen
4 living/dining
5 bedroom
6 terrace
7 garage extract
8 store
9 carridor
10 porter's cubicle
11 foyer
12 entry ramps (down to foyer)
13 porter's unit
14 terrace
15 grass moat

On the facing page is a view from the north-east
Photo: Sam Lambert


1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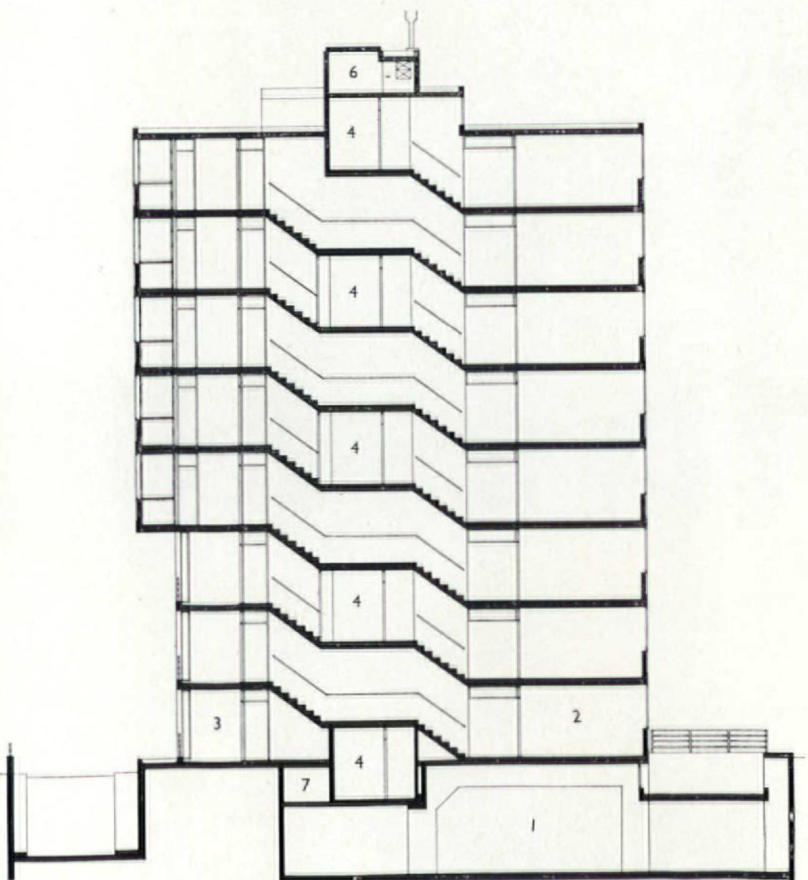

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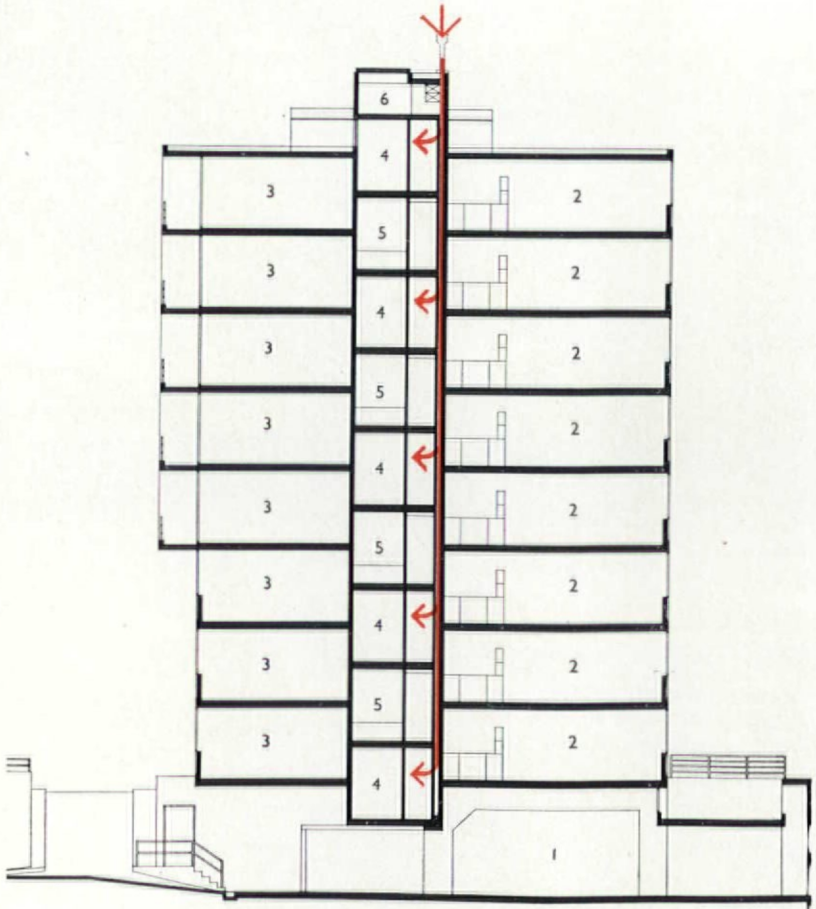

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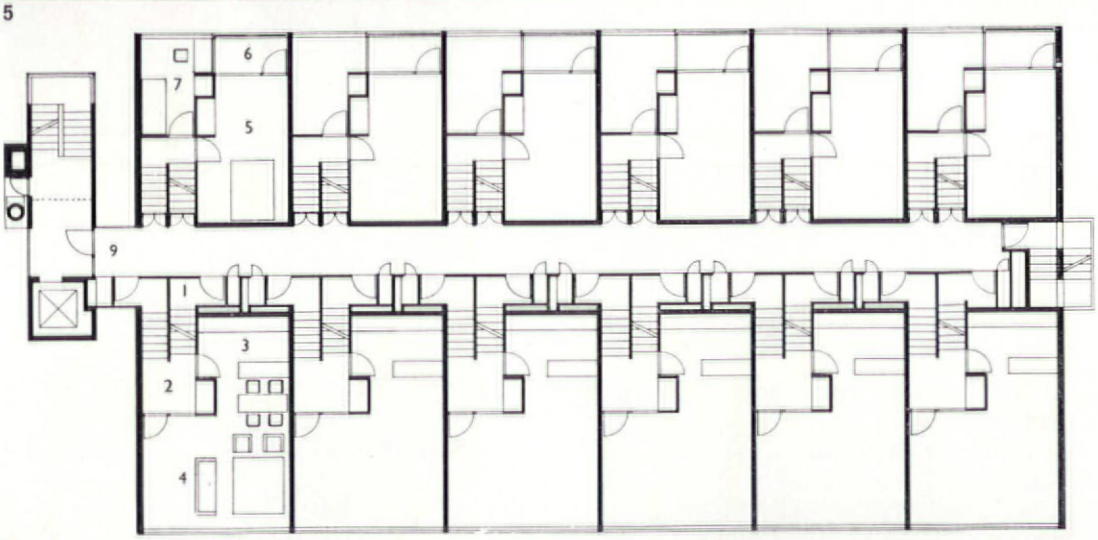

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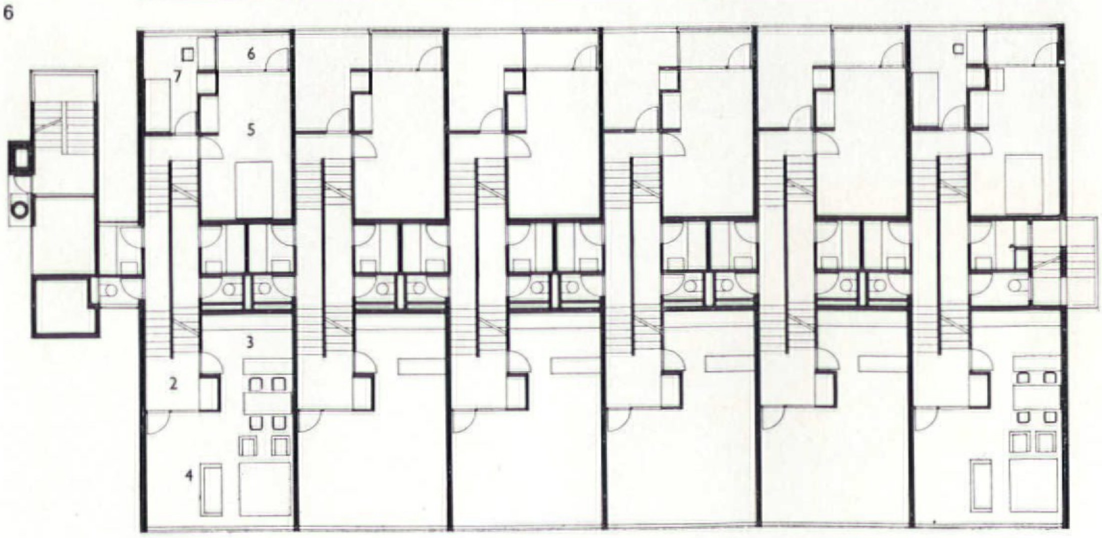


1
A general view of the block from the north-west. The pedestrian entry ramp is covered with a glazed canopy up to the pavement edge. The under window panels are of unfinished plate metal glass with mirror backing. The end façades are rendered light grey as is also the lift and chimney shafts. All other solid surfaces exposed in-situ concrete.
Photo: Sam Lambert

2
A view of the entrance to the building from the west
Photo: Richard Einzig

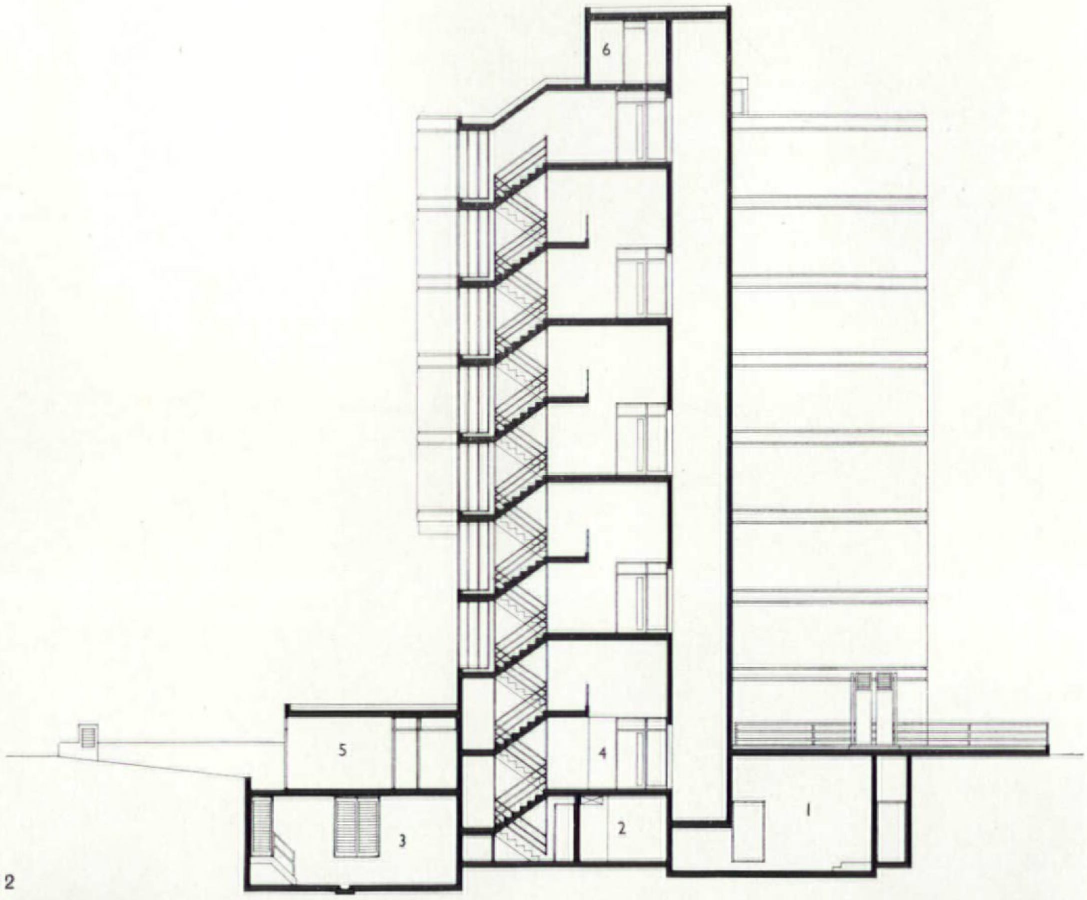
3
A cross section taken at the plane of the scissor staircases that run through from front to back

4
A cross section taken at the plane of the bathrooms. Red line indicates route of induced fresh air intake. The key to both cross sections is set out below
1 garage
2 living/dining/kitchen level
3 bedrooms
4 access corridors
5 bathroom/w.c. units
6 tank housing and extract ducting
7 garage extract duct

5
Interior of garage under the block. The reinforced concrete cross frames are at 16ft 10in centres and support the main cross wall structure above. All the service pipes are grouped together and carried on triangular steel brackets, hung from the concrete
Photo: Richard Einzig

6 & 7
Plans at a typical access corridor level and at a typical bathroom floor level
1 maisonette entry
2 staircase lobby
3 kitchen
4 living/dining
5 main bedroom
6 balcony
7 small bedroom
9 access corridor

1



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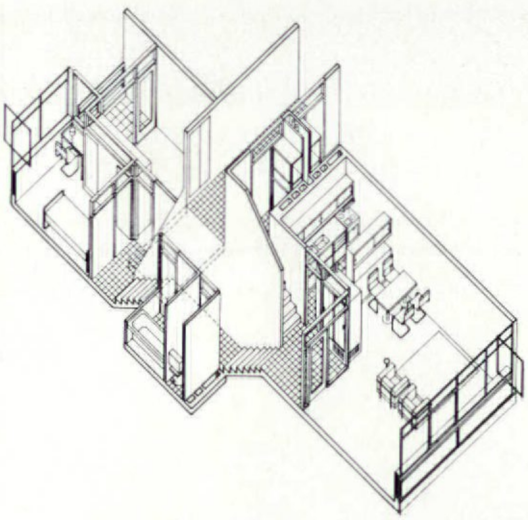

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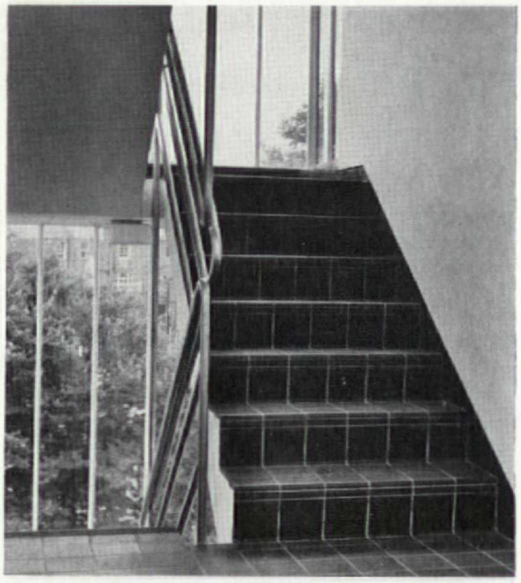

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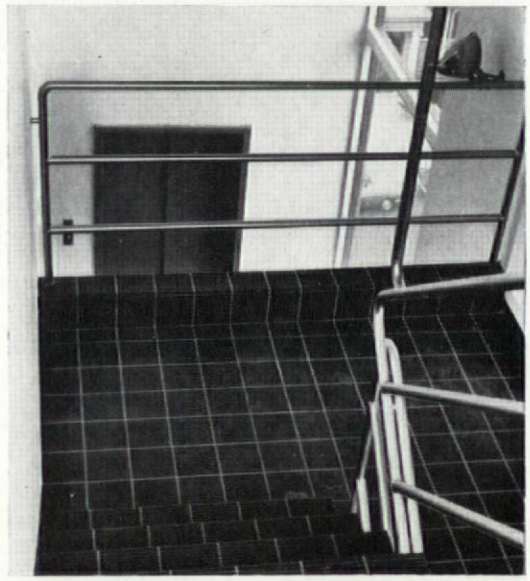

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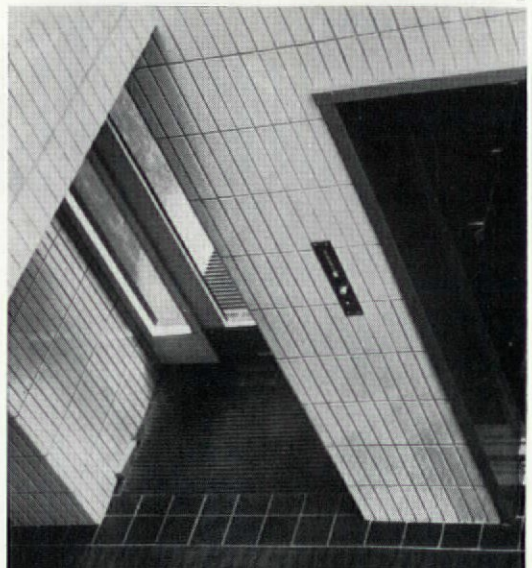

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1
View from main entrance looking up entry ramp. Twin vents from lift motor room are on the right

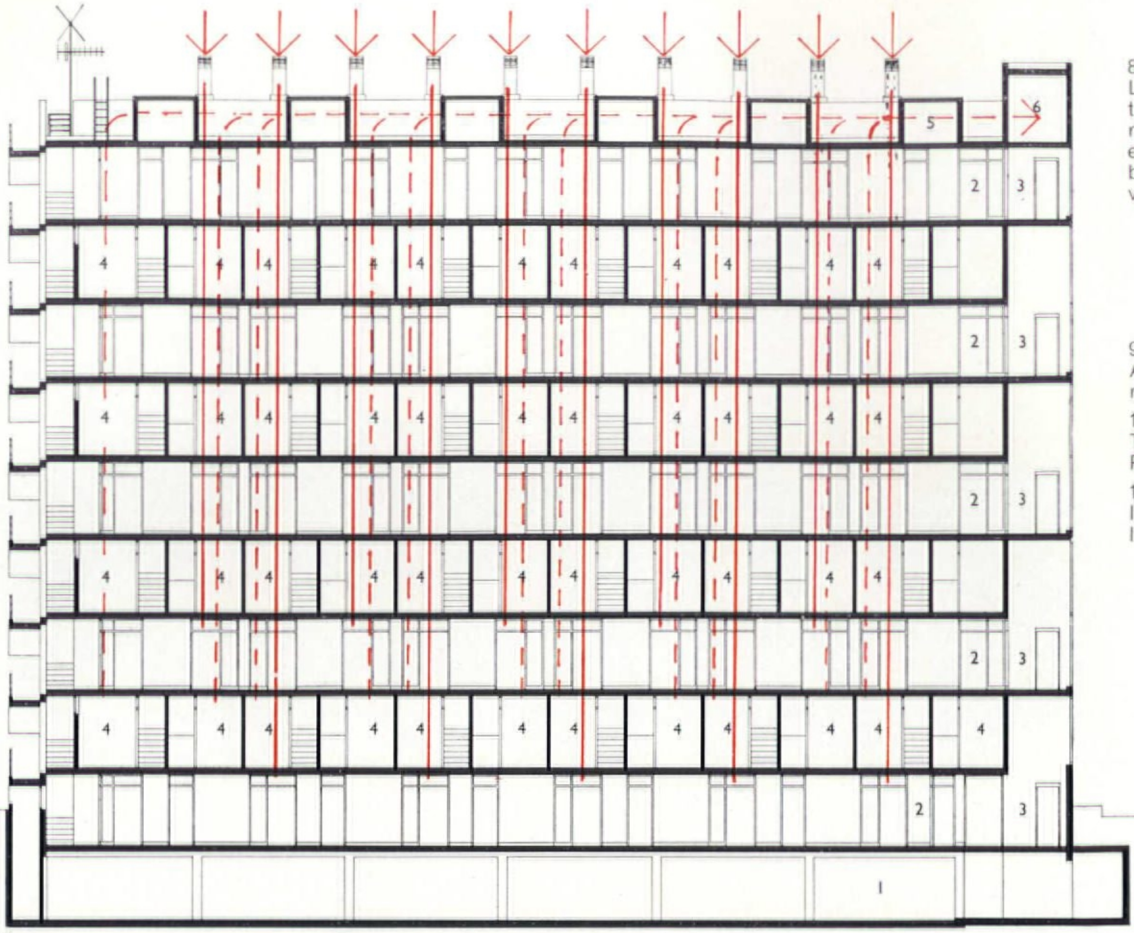
2
Cross section through access tower and boiler room
1 lift machine room
2 refuse chamber
3 boiler room
4 main entry foyer
5 porter's unit
6 fan room

3
Diagrammatic axonometric showing disposition of spaces in a down-going unit

4 & 5
Details of the main staircase. The welded steel tube balustrades are painted silver. The tiles are chocolate brown

6
Top access corridor and lift landing

7
Detail of the main entrance. The walls are faced in white tiles



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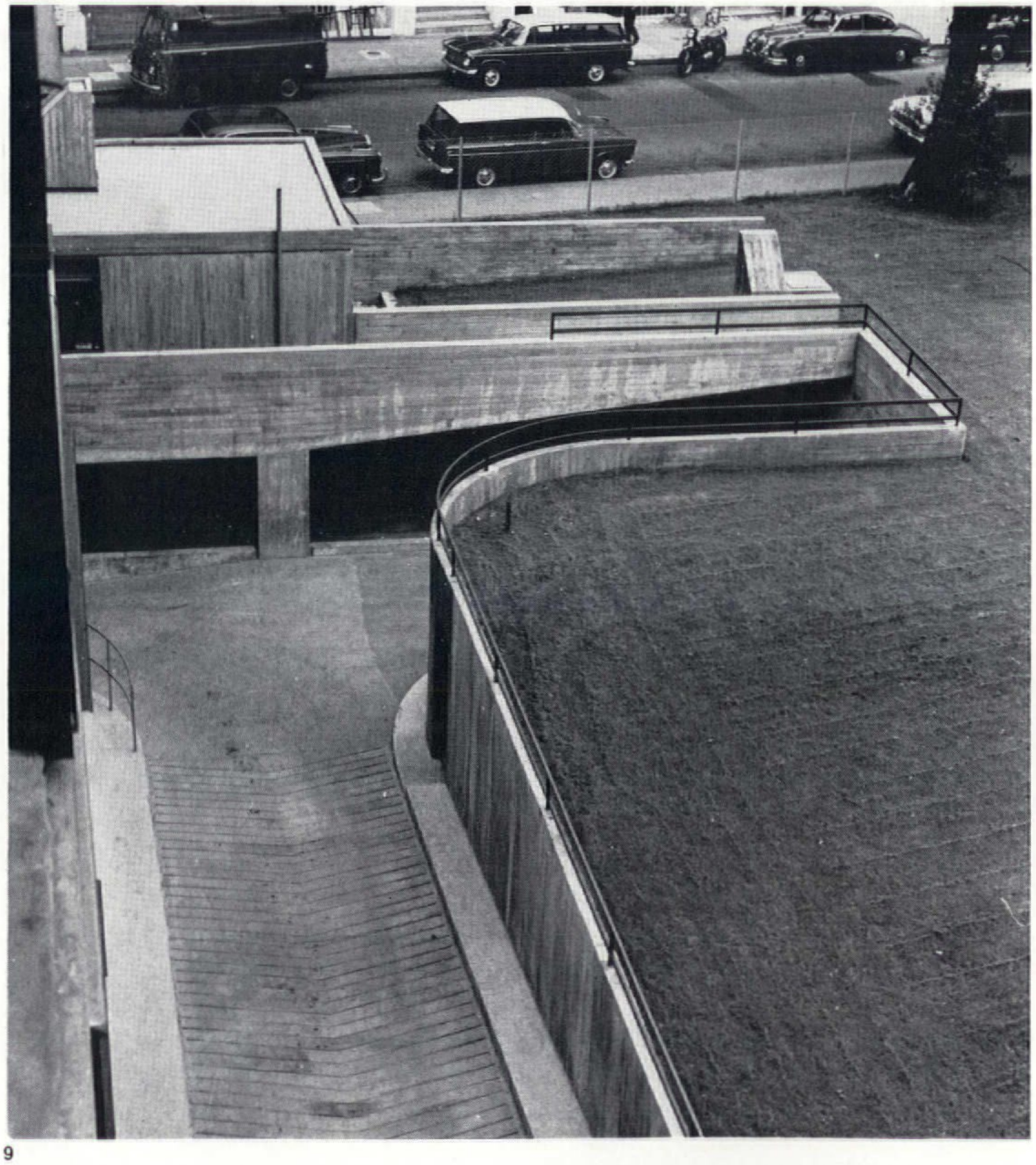

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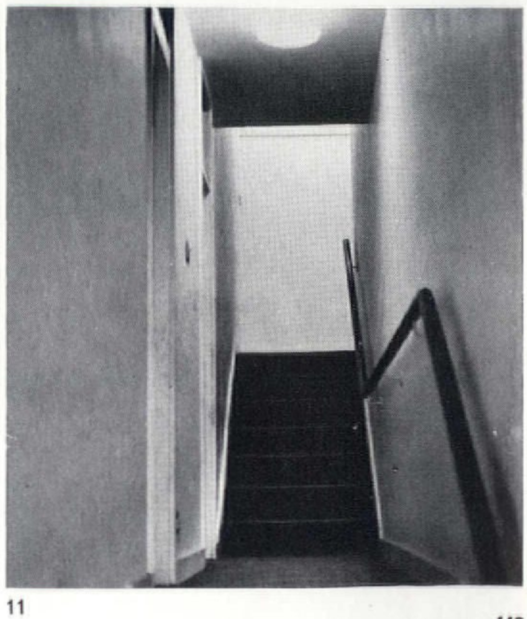

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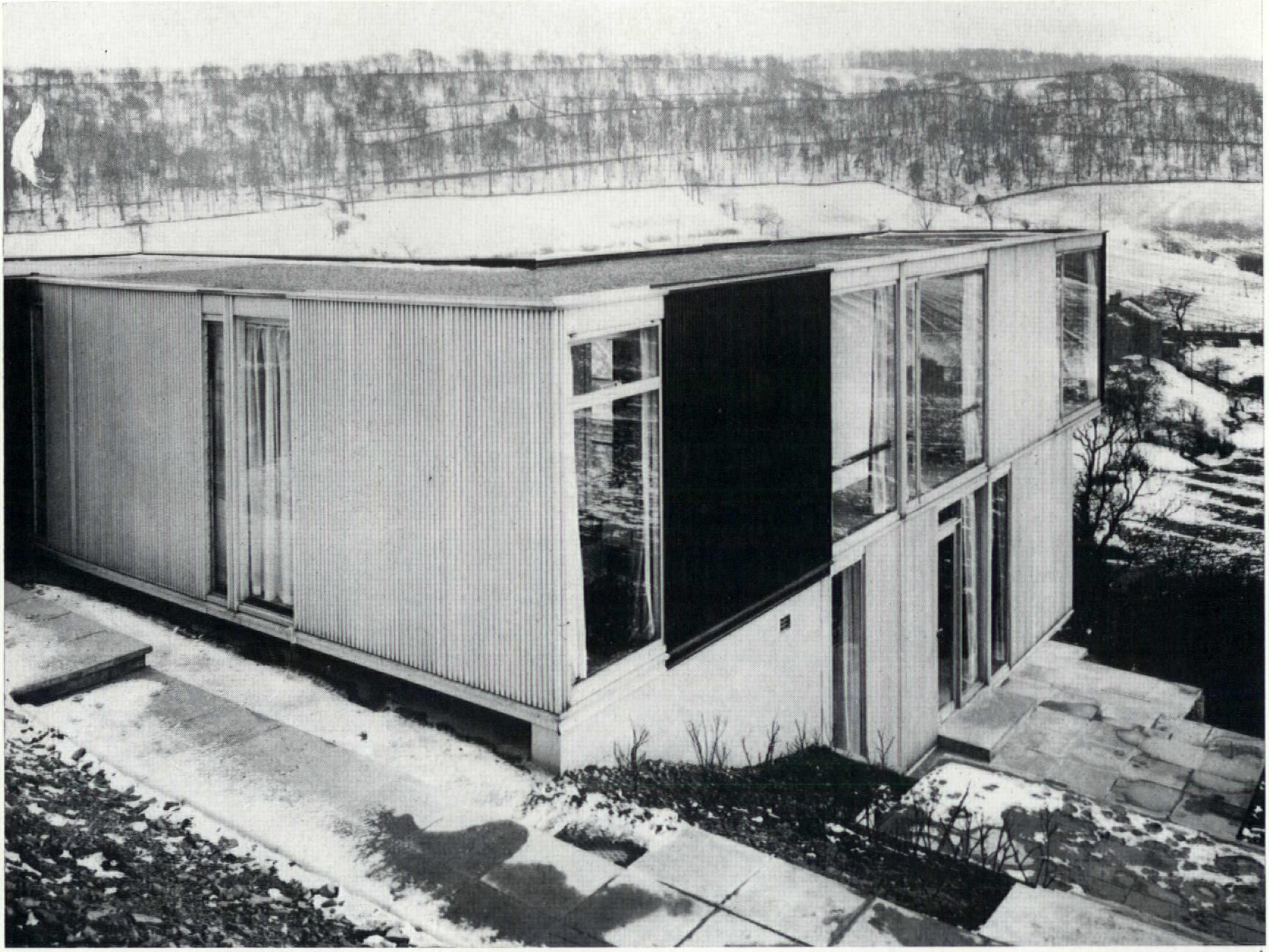
8
Long section. The solid red line and arrows indicates the route of the fresh air intake through cowls on the roof. The dotted red line indicates the routes taken by extracted air. Four bathroom/w.c. units at either end of block, a total of 8 units, have the benefit of natural ventilation
1 garage space
2 access corridors
3 main entrance and lift landings
4 bathrooms
5 tanks
6 fan room

9
A detail showing the hard standing at the foot of the ramp

10
Typical living/dining kitchen interior
Photo: Sam Lambert

11
Internal staircase rising from bathroom to bedroom level


1

House at Almondbury, Yorkshire

Peter Stead and David Lewis

1
The house is on a narrow sloping site overlooking a magnificent view. The garage is at the upper (bedroom) level on the left

2
Upperstairs internal view; courtyard is below right

3 & 4
Upper and lower level plans and section
1 hall
2 cloaks
3 living
4 dining
5 kitchen
6 utility
7 bedrooms
8 garage

5
Isometric showing structural system
1 concrete retaining wall
2 concrete podium and cantilever
3 6in × 3in m/s perimeter channel
4 3in × 3in m/s box column
5 4in RSJ
6 6in × 3in m/s channel
7 m/s tension bars

All photos: Atkinson

This house was designed some years before its construction. Drawings and models were made in 1957–58 but building did not begin until late in 1962. The delay of nearly five years has meant that the building no longer reflects the designers' most recent thinking in relation to the sequence of ideas of which it forms a part.

The house was designed as the second unit in a progression of experimental buildings. The first of these steel/aluminium/laminated plastics/glass houses was designed in 1957, and built at Almondbury in the summer of 1958 on a site only 100ft from the present house (see *AD*, July 1959).

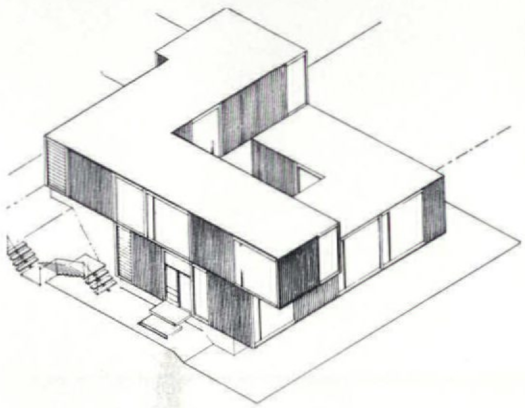
Taken together the houses form a limited progression of two, insofar as the basic structure, module and materials are similar, but not the same. The plan of the second house however, based on L and U forms, begins to show the possibility of developing its implicit structure and spaces away from the closed box, and into a concept of urban continuity and urban evolution involving dialogues of interlocking private and public environments.

The essential thing about both buildings is their materials. They are both component buildings; and the components are exclusively industrially mass-produced, both in raw materials and in fabrication. However, there is nothing 'special' or one-off, about the components. For the most part they are to be found in the usual catalogues and they arrive on the site as readymades.

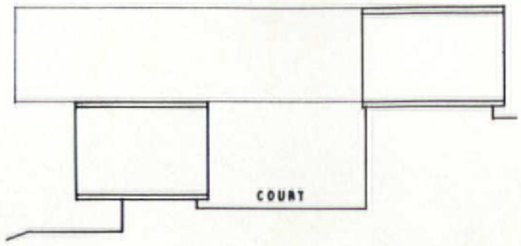
Much work has been done recently on prefabricated housing in several European countries, aimed at the problem of obsolescence and the mass relocation of urban populations. The method is to design a dwelling-type, or a related series of dwelling-types, which can then be resolved into components and mass-produced for multiple housing.

Essentially this approach does not differ from the repetitive building of the past, i.e. the working class terraces of the nineteenth century. The designers of these buildings do not explore the ramifications of the new methods of production, unaware that a whole new field of unlimited possibility has opened up. Indeed they usually strain to 'belong' to traditional forms—as though the industrialized source of their buildings is an unmentionable illegitimate sin.

The notion of the wholly man-made anonymous component as the basis of a creative and constructive idea is not new in twentieth-century thought. Van Doesburg for example was full of it. 'By bending, pressing, wringing, rolling and flattening his material, by using mechanical methods of production, man overcomes the natural character of the material. Modern technique remoulds the subject, denaturalizes it. The style of our age is based increasingly on this de- or rather transnaturalization.' Malevich and Lissitsky brought together anonymous geometric forms and colours and gave them intense emotional life by their interrelation. Schwitters often did similar and

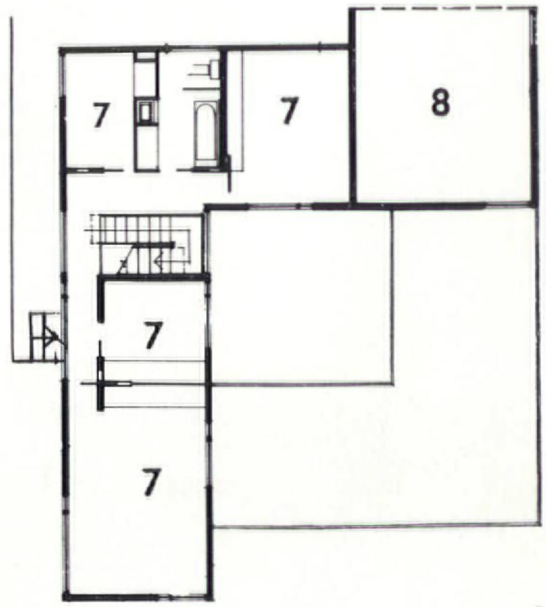


magical things with discarded readymades; bus tickets and bits of newspaper. Mondrian created the dynamic of expanding rectilinear space. Expanding open-volumetric spatial continuities were achieved by Naum Gabo using translucent sheet and linear plastics and by his brother Antoine Pevsner who welded together innumerable standard metal rods radially to form continuous curved planes. The Rietveld Utrecht house of 1924 theoretically consists of prefabricated readymades brought together as elements (cf. Rietveld's Utrecht chair), and expressed as such in line, plane and colour. Mies' Barcelona Pavilion expressed the identity of each linear and planar element in a total open-volumetric composition as completely and as without distortion as a Malevich, a Lissitsky or certain work of Schwitters.



Increasingly we live in a world of component/appliance assembly. The old trades are either dying or no longer occupying relevant positions in the mainstream—in buildings and in their concommitant services, no less than in clothes, carriages and kitchens. At the same time, the designer who accepts assembly line techniques enters a new world of creative possibility. In construction he commands from the drawing-board exact machine detailing and precise tolerances—smooth and logical arrival and operational sequences—components designed for light handling and joints designed for multi-context—rapid erecting and fixing by the smallest possible work teams (who do not need to be specially trained) using standard and repetitive kit.

Architecturally the design question is the effect of readymades on our concepts of scale and space. This is an architecture of assembly: the components of its construction reach us as elements complete in themselves: they are industrial and mass-produced—to accept these things fully means ultimately a total break with past traditions. Gradually the designer assumes a wholly different order of freedom and disci-



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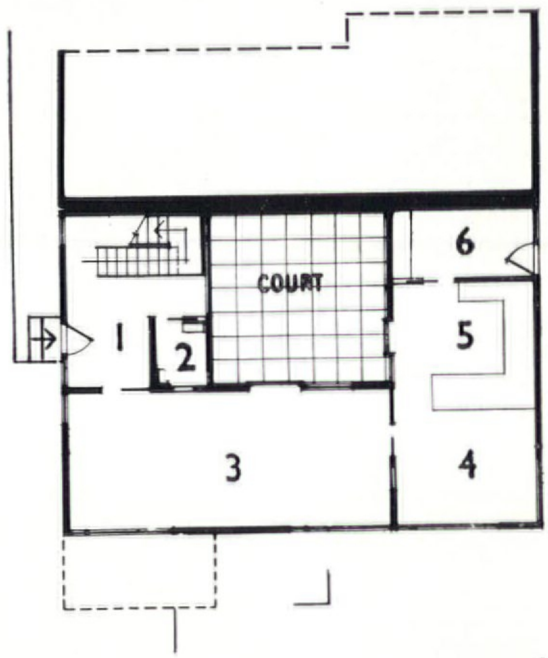

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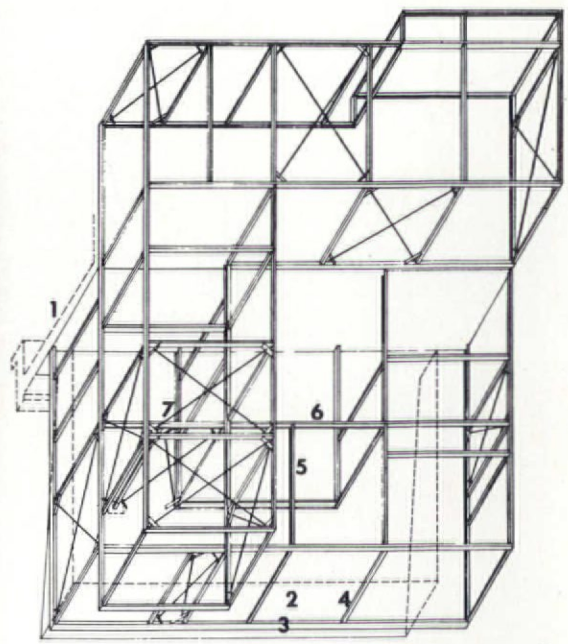

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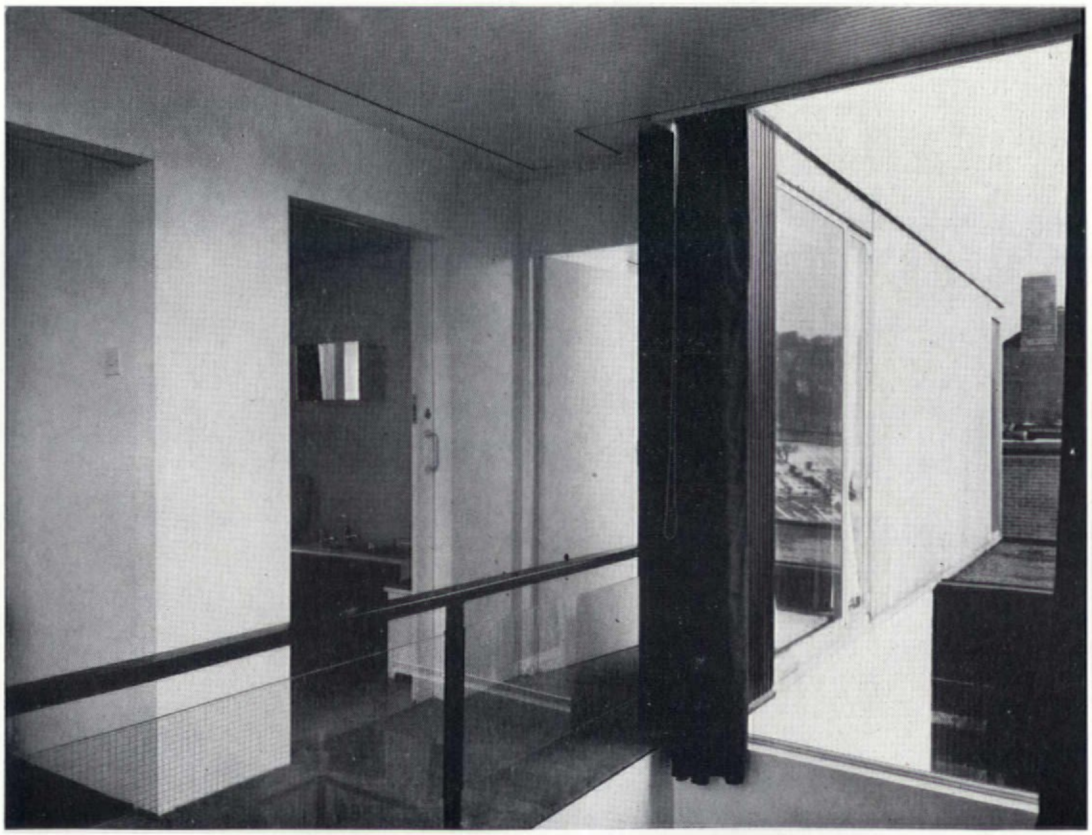

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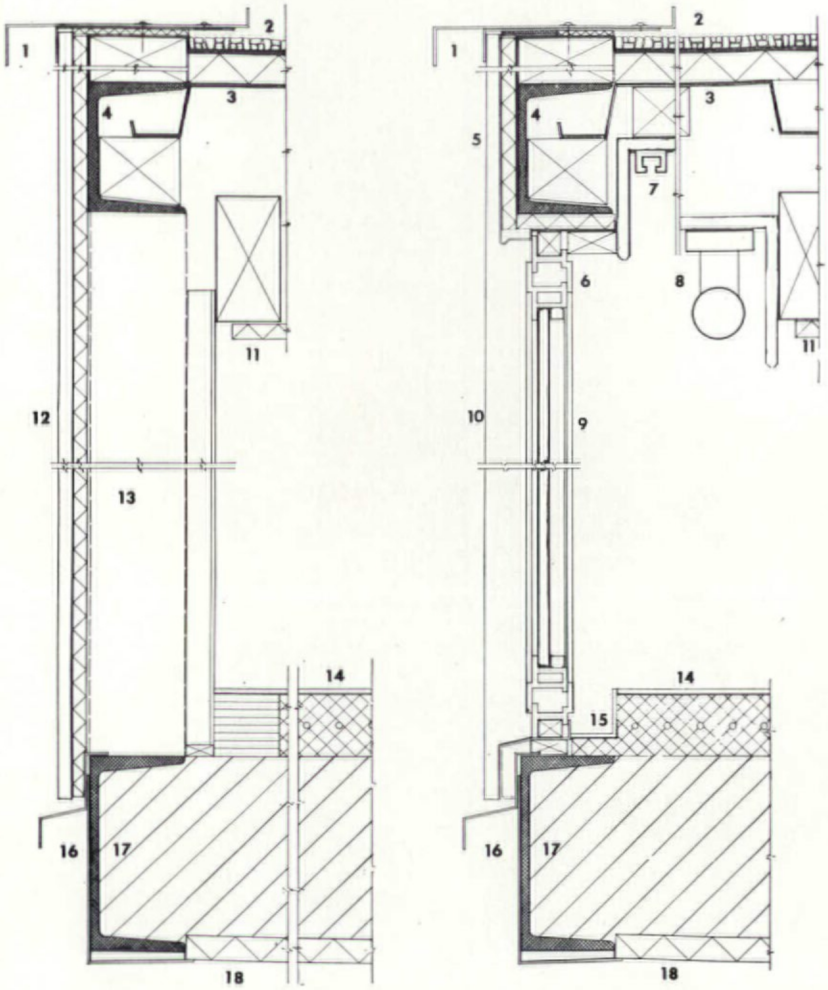
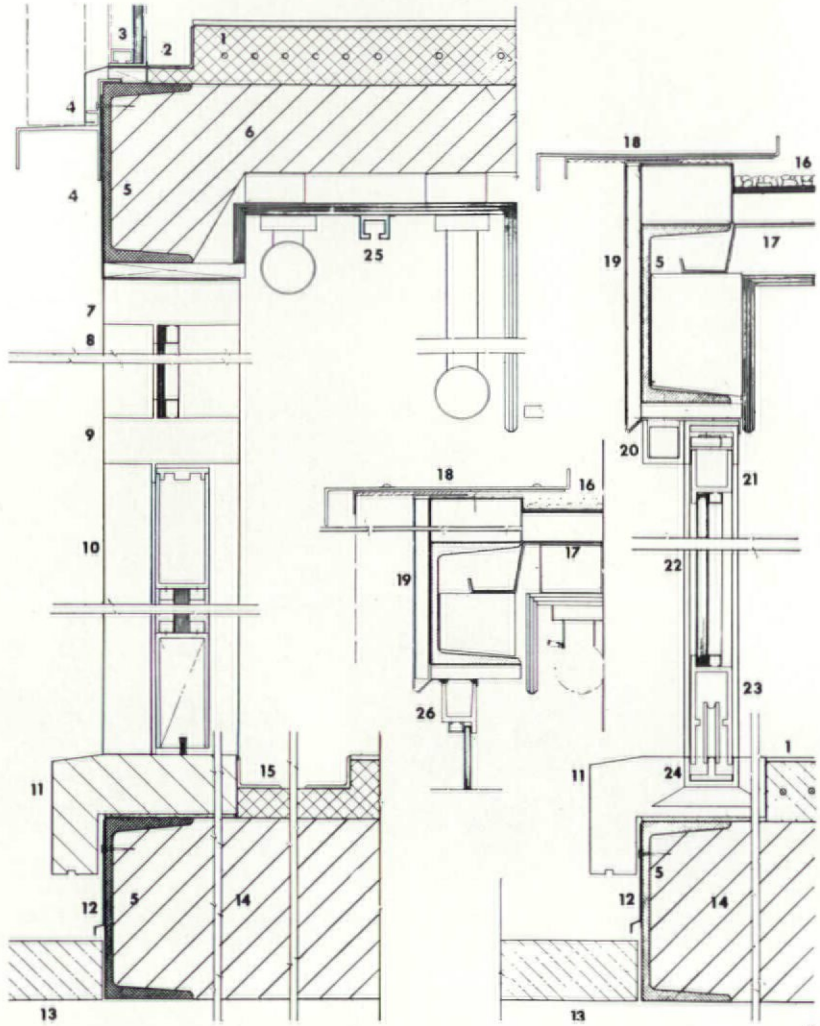




1

Sections external wall and opening light

1 pressed aluminium eaves cover and strip
2 built-up roofing 1in fibreboard, 3-ply felt
3 Robertsons Q deck
4 4in steel channel
5 pressed aluminium head polystyrene insulation
6 silver aluminium window frame
7 Silent Gliss aluminium curtain track
8 strip lighting
9 ¼in polished plate
10 pressed aluminium column cover piece
11 fibreboard acoustic ceiling
12 secret fix extruded aluminium facing system
13 3in × 3in rolled steel box column
14 2in concrete screed thermoplastic tiles
15 aluminium channel
16 pressed aluminium cill pieces
17 6in steel channel concrete subfloor
18 ¾in polystyrene applied plastic finish

2

Sections through external doors

1 2in concrete screed electric floor heating cables
2 aluminium channel
3 aluminium fixed frame and bead; ¼in polished plate
4 aluminium cill and head piece
5 6in steel channel
6 interfloor poured slab
7 aluminium box door frame
8 fixed fanlight
9 aluminium box transom
10 aluminium door head; ¾in polished plate
11 precast threshold
12 aluminium cill flash
13 precast slab steps
14 cantilevered subfloor slab
15 aluminium channel matwell
16 built-up roofing: white limestone chips on asphalt
17 Robertsons Q deck
18 pressed aluminium eave cover and strip
19 aluminium pressed head flash
20 aluminium fixed frame and channel for sliding door
21 head of aluminium slider
22 ¾in polished plate
23 aluminium bottom rail and roller for sliding door
24 aluminium channel and track precast in threshold
25 Silent Gliss aluminium curtain track and strip light
26 silver aluminium fixed frame; ¼in polished plate

plines. He starts with characteristics which deserve in themselves his precise control: control of scale, control of texture and density, control of colour. Working towards an architecture from a series of models these characteristics of colour and scale, texture and density, transparency and opacity, linearity and plane, mass and surface are as capable of precise order and development of space as any environment of any time, but in new terms. His aesthetic must develop from his consciousness of his new power to define and activate space through acts of positioning rather than fashioning.

An assembled component architecture presupposes an aesthetic which expresses the readymade, the component, and the act of assembly. The planar construction of columns is open-ended. Spatial flow of volume to volume, private space to public environment, man to community is continuous. The light component with multi-context jointing forecasts demountable and/or extendable space, the addition or subtraction of volumes, the evermore rapidly changing, flexible, evolving communal form.

The designers of the present house regard it as an early step in this evolution. The open-volumetric spaces inside and outside the building are determined by the interaction of vertical, and horizontal, planes of colour—thus determining the continuous flow of space and scale from volume to volume: and since the materials throughout the building are industrial, these colours are not applied but integral, and predetermined from the design models to create a continuity of chromoplastic interrelationships which are clear-cut, yet tranquil. Like the earlier house the present project is a single unit only. Although it was designed as such, it suffers from the absence of further units to confirm the continuity of open volumes and of a colour/space/time intercommunity through to a total (and easily changeable) urban environmental complex.

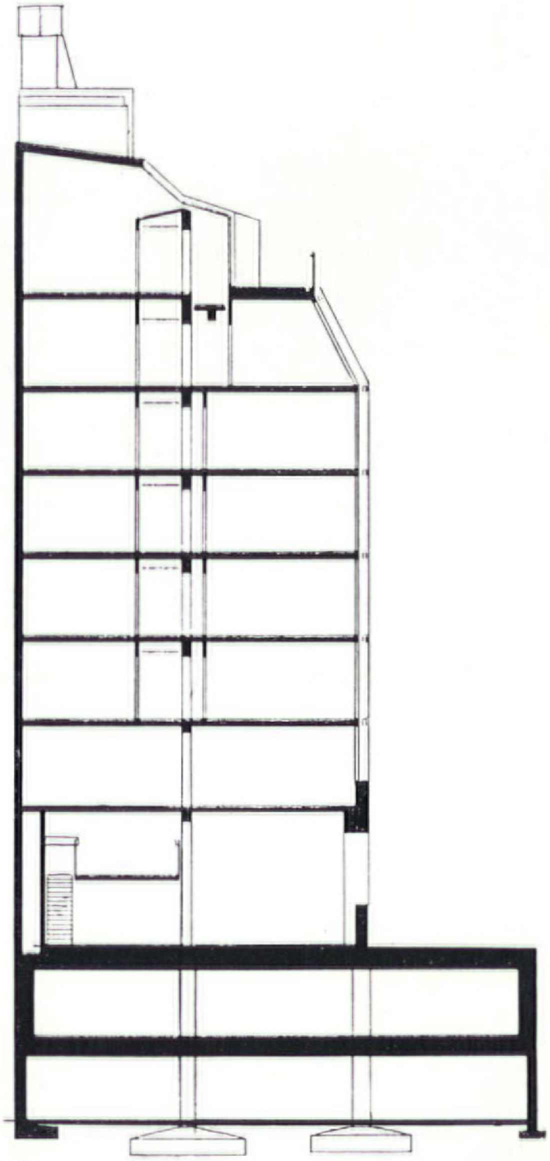
Apart from specialized fixtures and appliances, the house was built last spring and summer by four men who, in two teams of two, were able to handle all the component sections without difficulty, following codified drawings for sequential operations. The lightweight steel structure was shop-welded and brought to the site in sections where it was erected on a 9ft bay system on reinforced concrete podia and retaining walls. The cladding is a secret-fix aluminium section on a small module specially developed by the manufacturers for this house and now available on the general market. A cork lining, an aluminium reflector panel and 2in foamed polystyrene insulation form the core between the cladding and the factory-laminated plastic-faced internal panels, brought to the site in pre-cut sections. The house is heated by thermostatically controlled electric coils in the floor; the window frames are aluminium throughout and fixed floor-to-ceiling lights carry ¼in polished plate; the roof is a built-up metal-deck system finished with the usual layered bituminous felt and granite and limestone chippings.

The house was not designed for its ultimate client. It was bought by him when the structural frame was up, and certain modifications of plan were then made to suit his needs. He is a young businessman with a wife and small family and he was attracted by this building because he wanted a progressive architecture economic in design and construction and affirming new technologies.

Sparbankernas Bank office building, Stockholm

Magnus Ahlgren, Torbjörn Olsson and Sven Silow

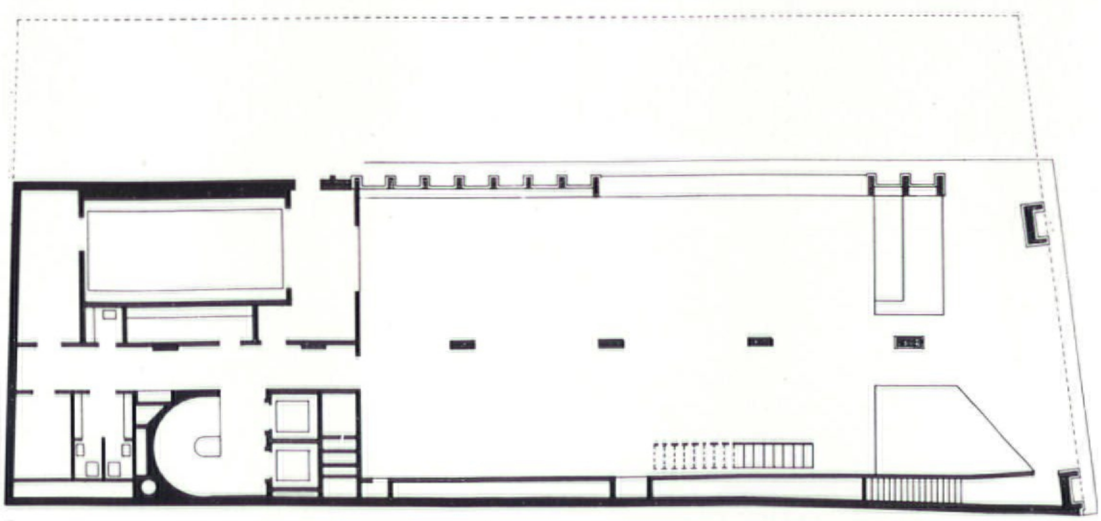
1



3

1
A general view of the building
All photos: Sundahl

2 & 3
Ground floor plan and section



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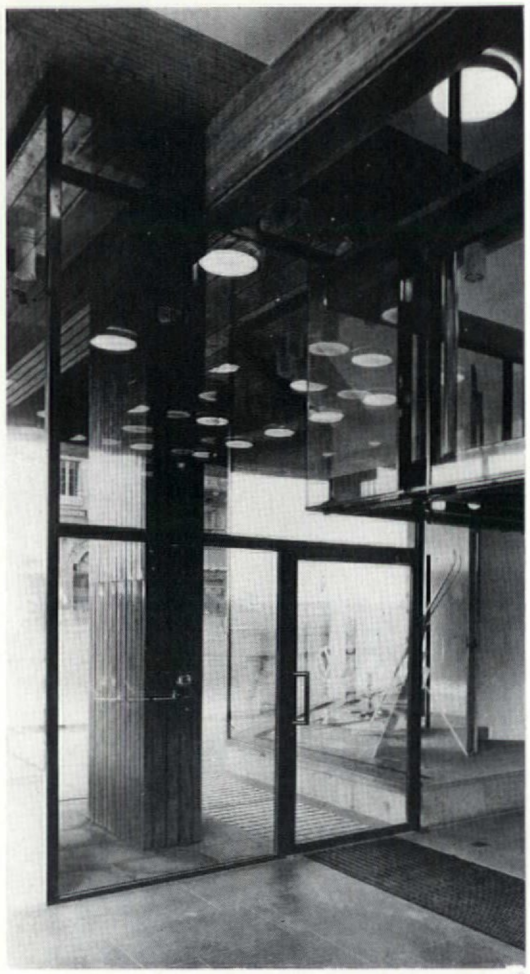
The site is centrally located in Stockholm, near the Slussen, which is an important traffic junction. The urban scene is caught magnificently from the top of the building, the contour of which reflects the vivid topography of Södermalm old quarter of central Stockholm. The adjacent building in Hornsgatan, designed half a century ago by Ivar Tengbom, is of considerable size and architectural value. It is built in dark red brick and granite.

The authorities demanded that the new building should be set back from the existing one and the height restricted to one floor below eaves. We felt however that a much stronger and valid entity would be achieved by continuing on the same building line and by increasing the height to the eaves. As the Tengbom building materials are dark and heavy we decided to continue in the same weight so we clad the bank in copper which will darken with the years.

1



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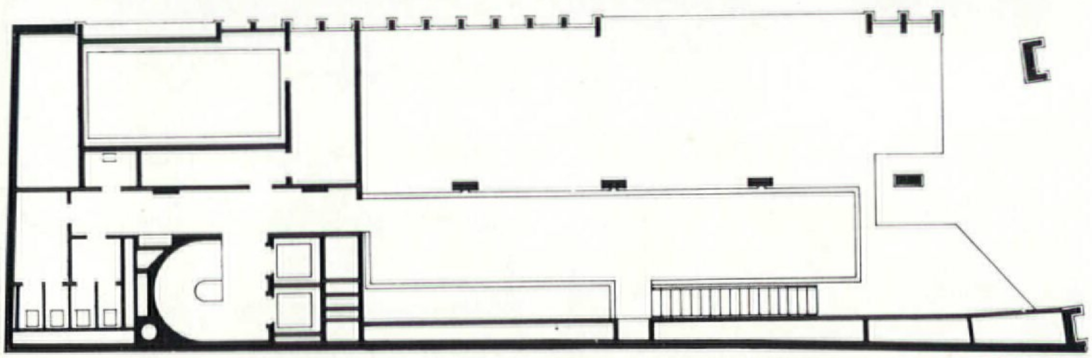

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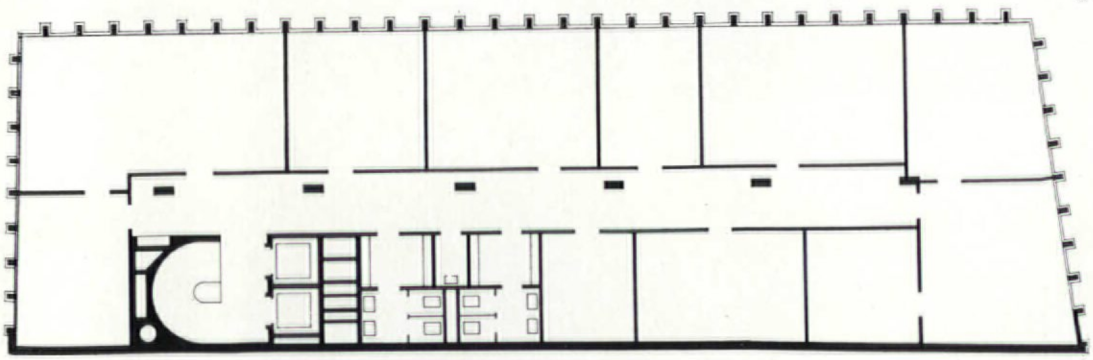

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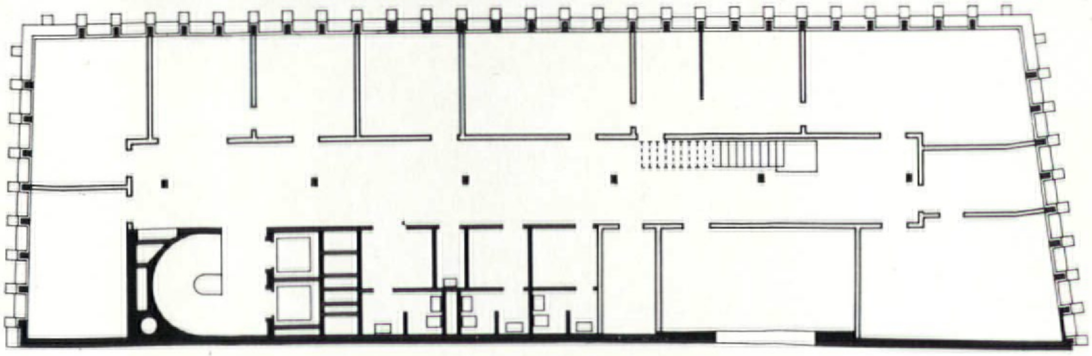


5

The number of internal materials are few: columns and beams and parts of the ceilings are left in bare concrete; walls are plastered and generally painted white, most of the woodwork is oak. The entire structure of the building is of in-situ concrete.

Included in the building are offices, bank administration rooms, committee rooms, canteen etc. The building has 11 floors, 2 of which are underground. Total floor area is approximately 4000 square meters, the building has an approximate volume of 15,800 cubic metres.

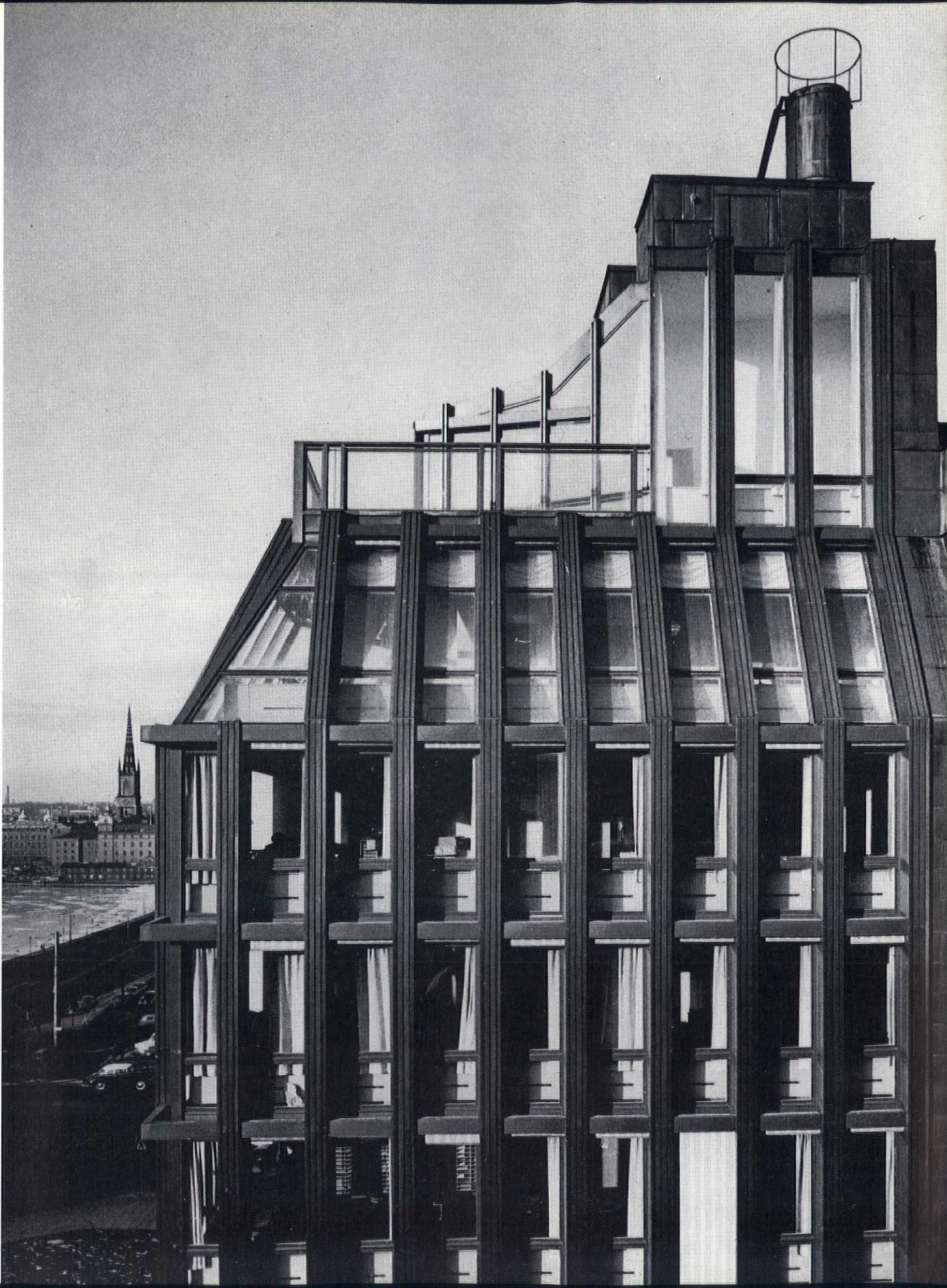
M.A., T.O., S.S.

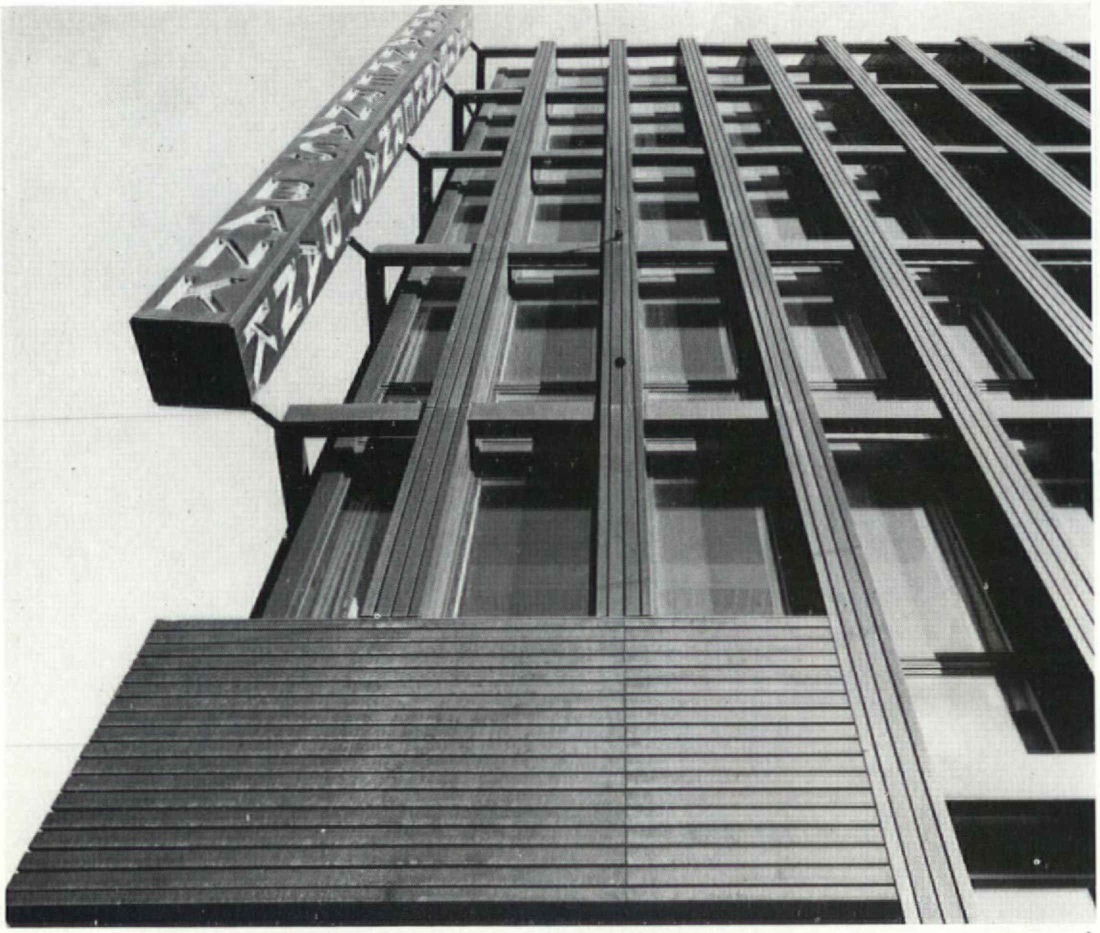
1
A view of the staff dining room on the top floor of the bank

2
Main entrance into the building and banking hall, shop unit is situated on the right of the entrance

3, 4 & 5
Mezzanine floor, typical office floor, and sixth floor respectively. The sixth floor accommodates executive staff. Straight flight stair leads up to roof level, where the staff canteen is located. See cross section on previous page

Opposite page: view across the building to the old quarter of Stockholm, Södermalm

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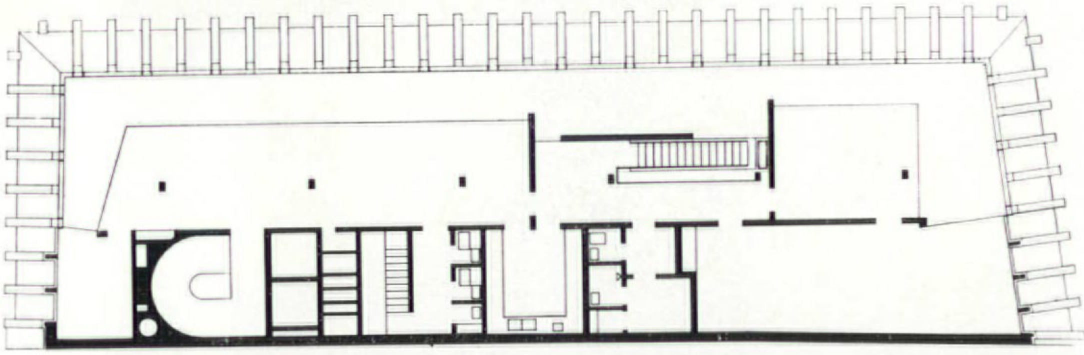
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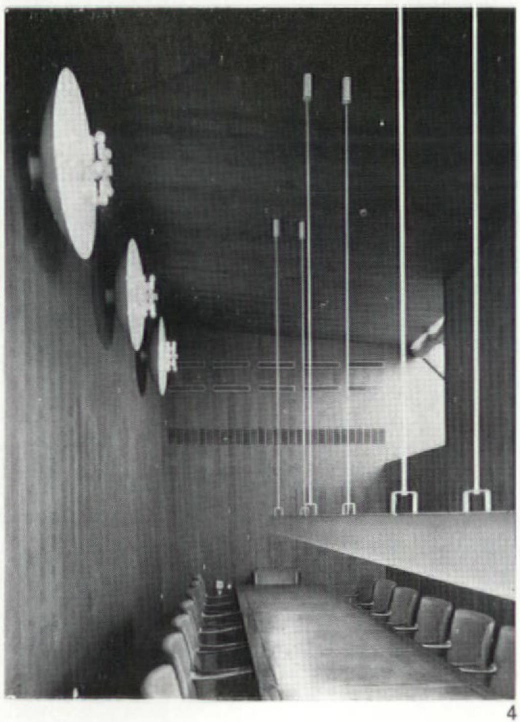
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1
A detail view of the façade, showing the copper-clad mullions and fascia

2
Roof plan, accommodated staff canteen etc. Straight flight stair leads down to sixth floor

3
Roof level. View through stair well connecting the sixth floor, the executive floor, to the roof level

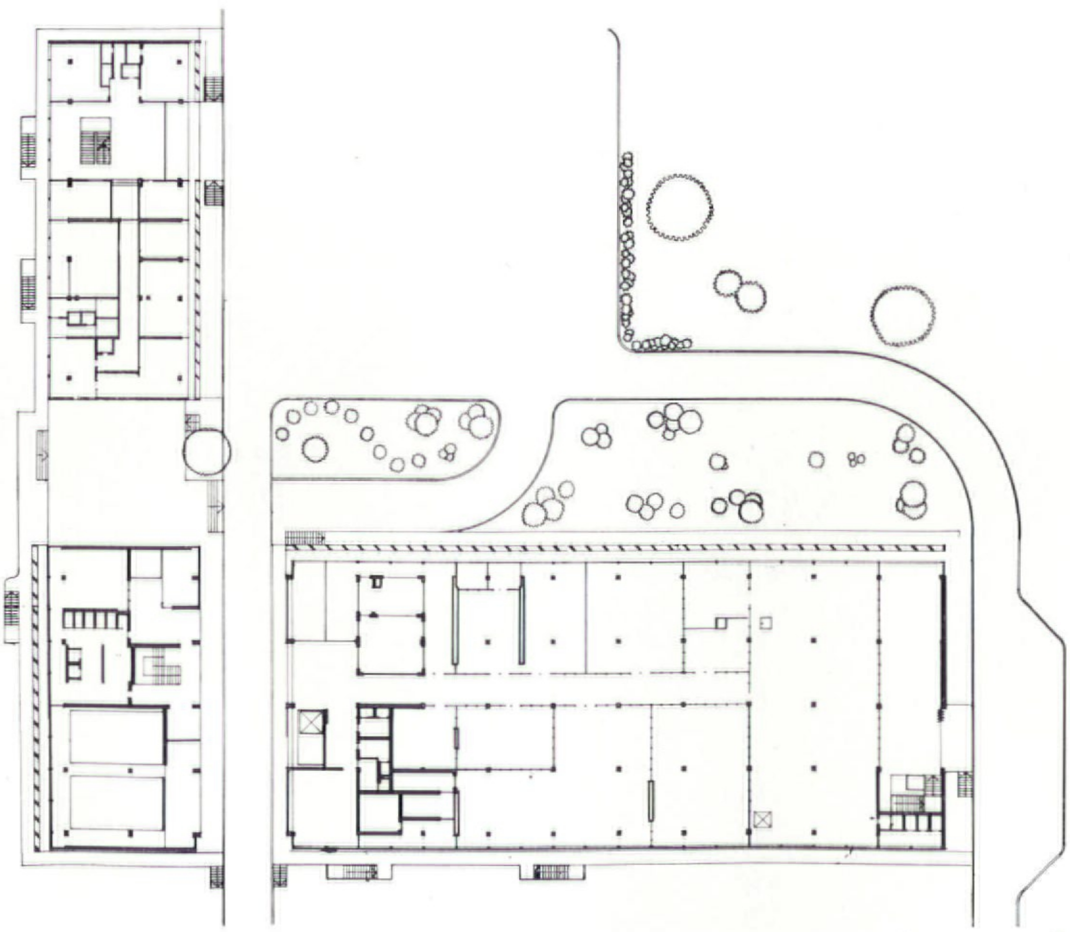
4
Interior of bank boardroom

1

1
A general view of the whole laboratory complex
Photo: Salo Dino
2
Plan

Biological research institute, Ivrea, Italy

Alberto Galardi



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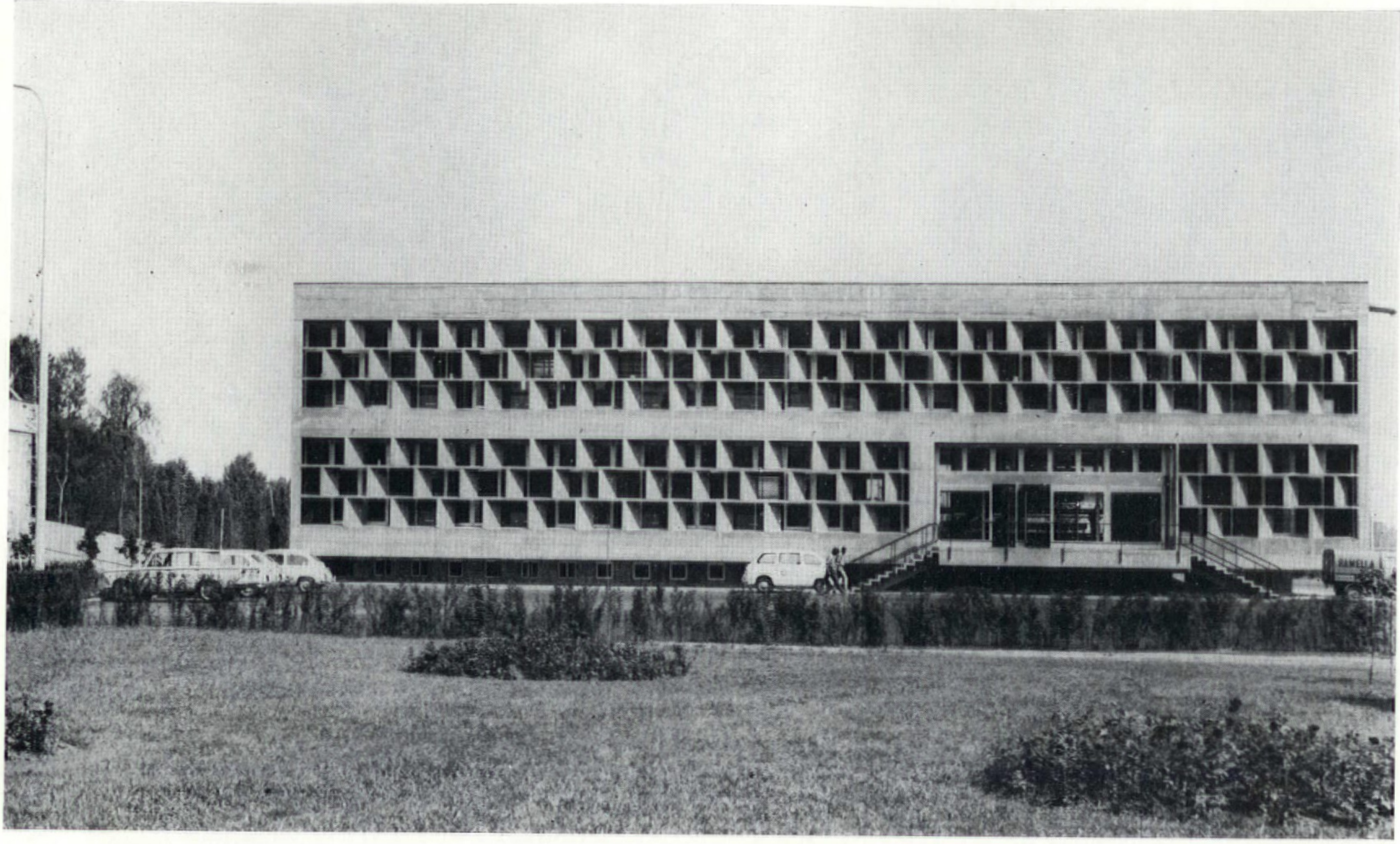
This biological research institute for the Marxer organization in Ivrea (Turin), consists of four new buildings, with a total area of 10,000m². All the buildings are connected to each other by a system of tunnels running underground. Because of the geological structure of the ground the buildings stand on concrete rafts. The structure is entirely of reinforced concrete throughout. The exteriors are of exposed concrete. This finish has been obtained from specially fabricated wooden shuttering.

The laboratories are top lit by a series of perspex domes mounted on reinforced concrete upstands which have been cast as integral elements with the roof slab. These domes are so designed as to exclude sunlight. The concrete gargoyles, fountains, and other sculptural elements have been cast from moulds made out of plaster. The whole complex is sited in a garden/park of some 70,000m² in area.



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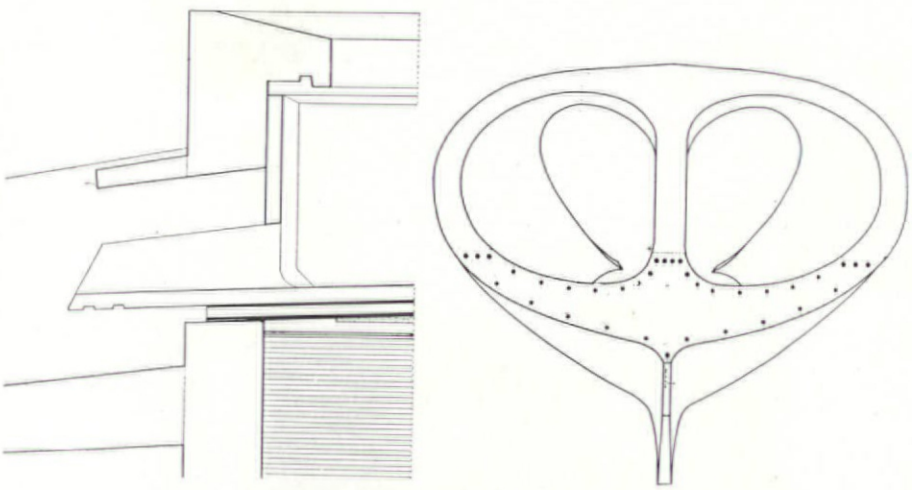

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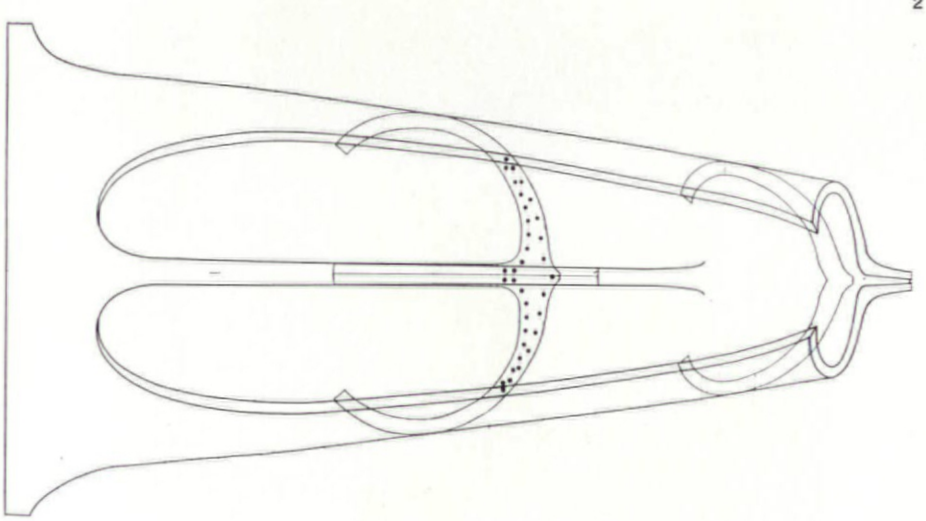

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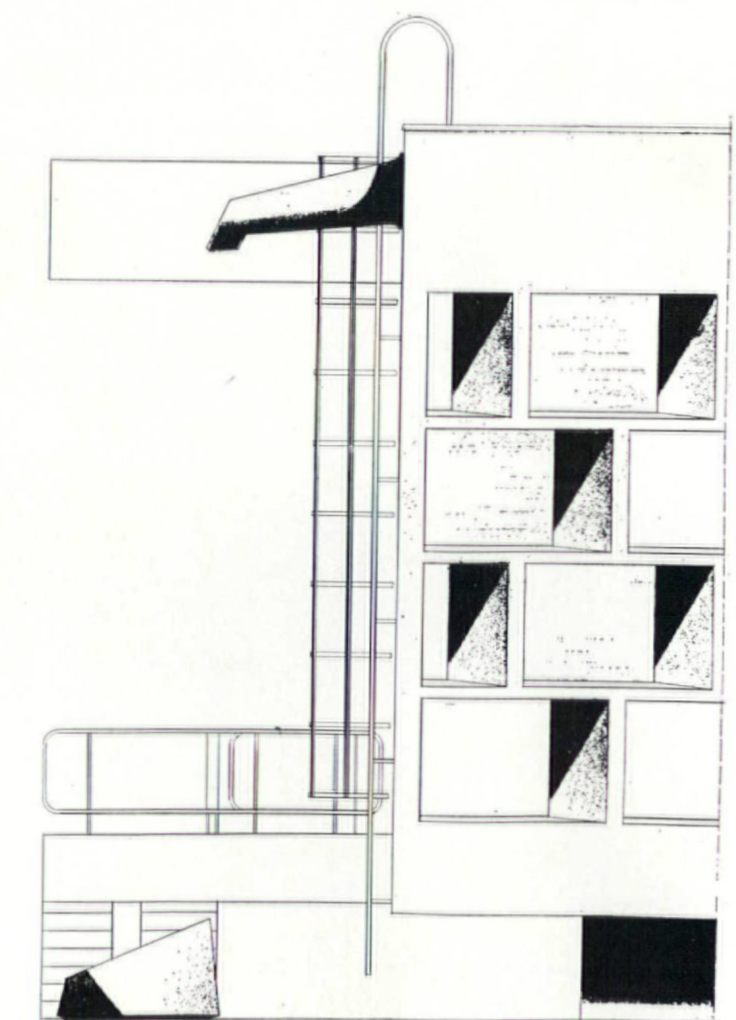

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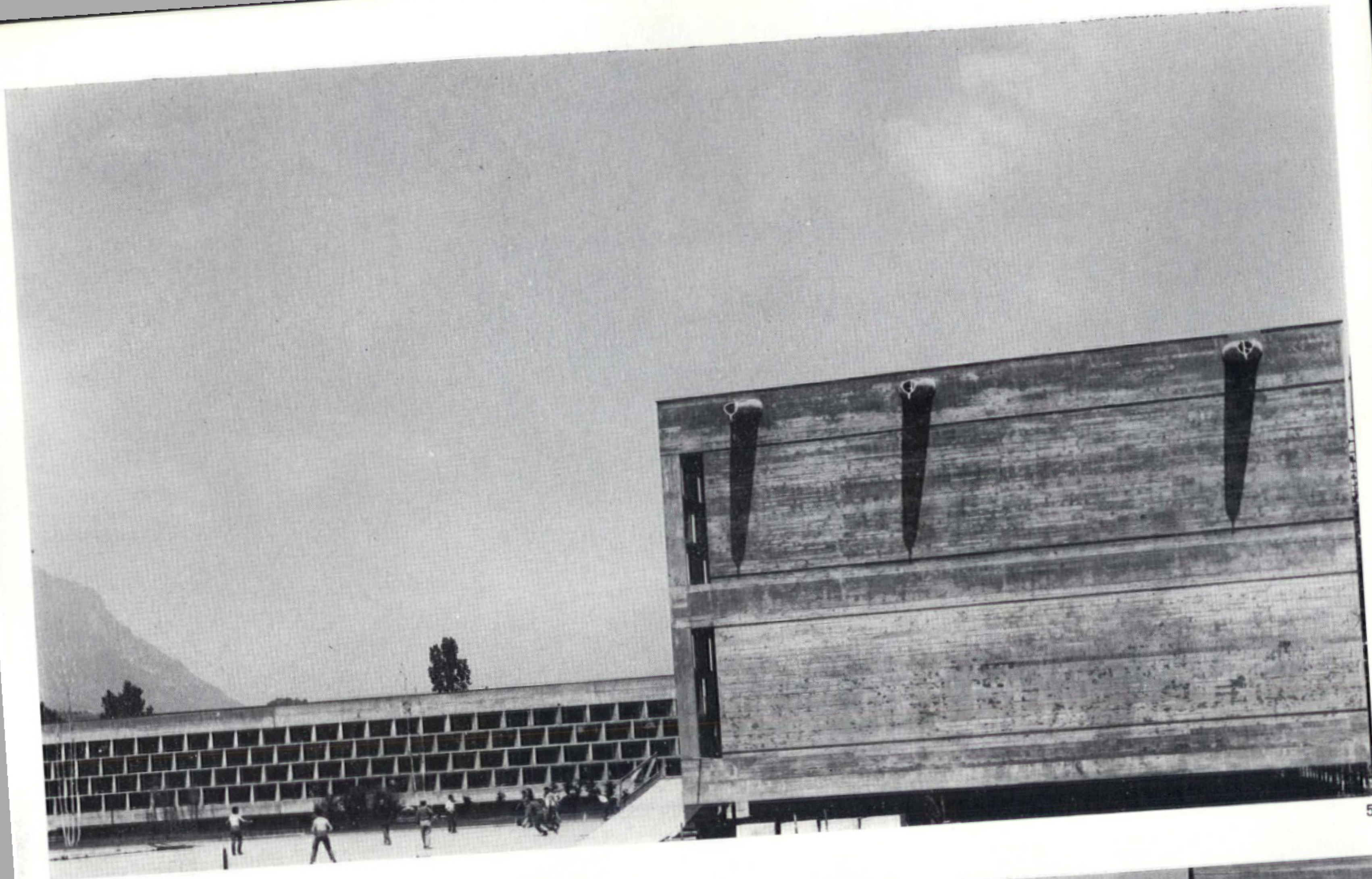

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6

7

1
A view of the administration building
Photo: Perruea

2
Section through guttering and concrete water spout

3
Plan of concrete water spout. The spout is formed from a gypsum plaster shutter

4
Part elevation of administration wing

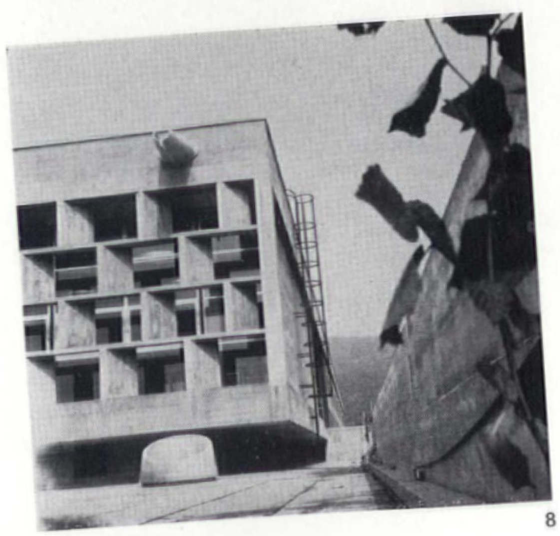
5
A view of the whole complex
Photo: Salo Dino

6
Detail view of water spouts and basins

7
Detail of water spouts
Photo: Salo Dino

8
Detail view of a laboratory wing

9
View of laboratories from the administration building



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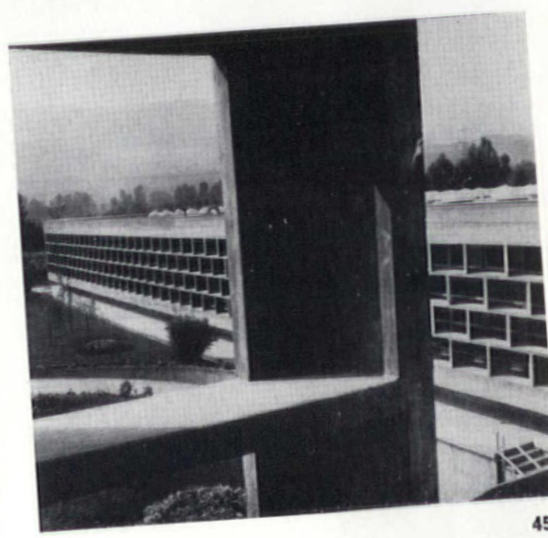

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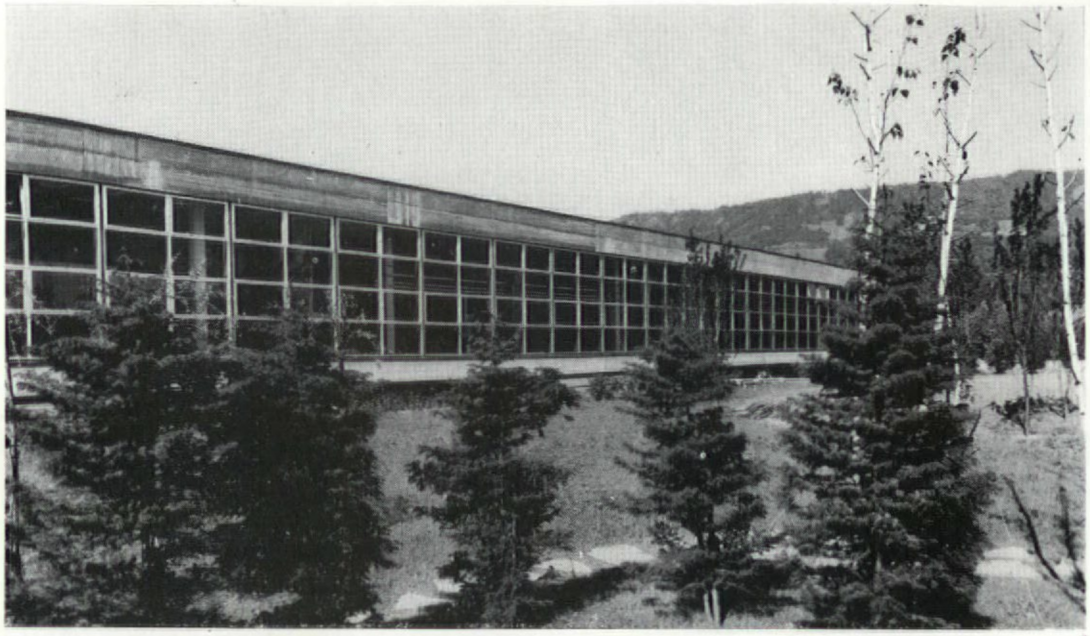
1
General view of laboratory block
2
Interior of laboratory
3
Detail of service bay at end of long laboratory block
4
Detail of base of concrete boiler flue
5
Combined sectional elevation and plan of basin
6
Cross-section through two-storey laboratory block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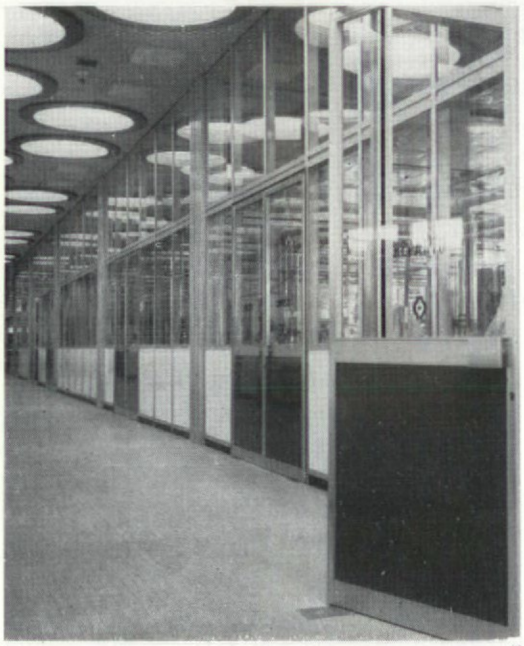
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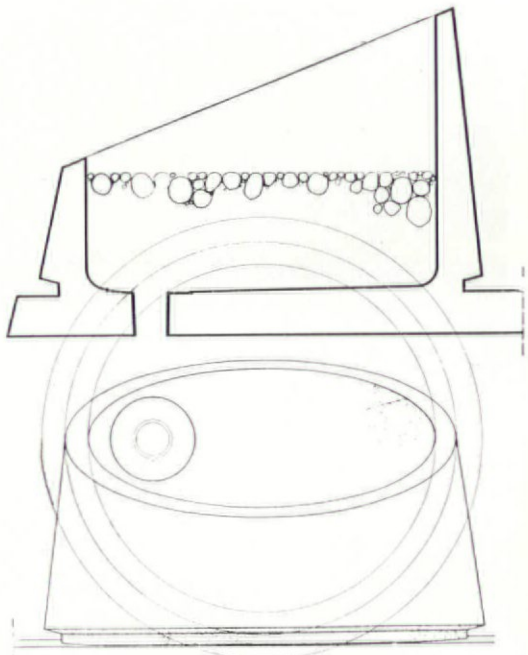
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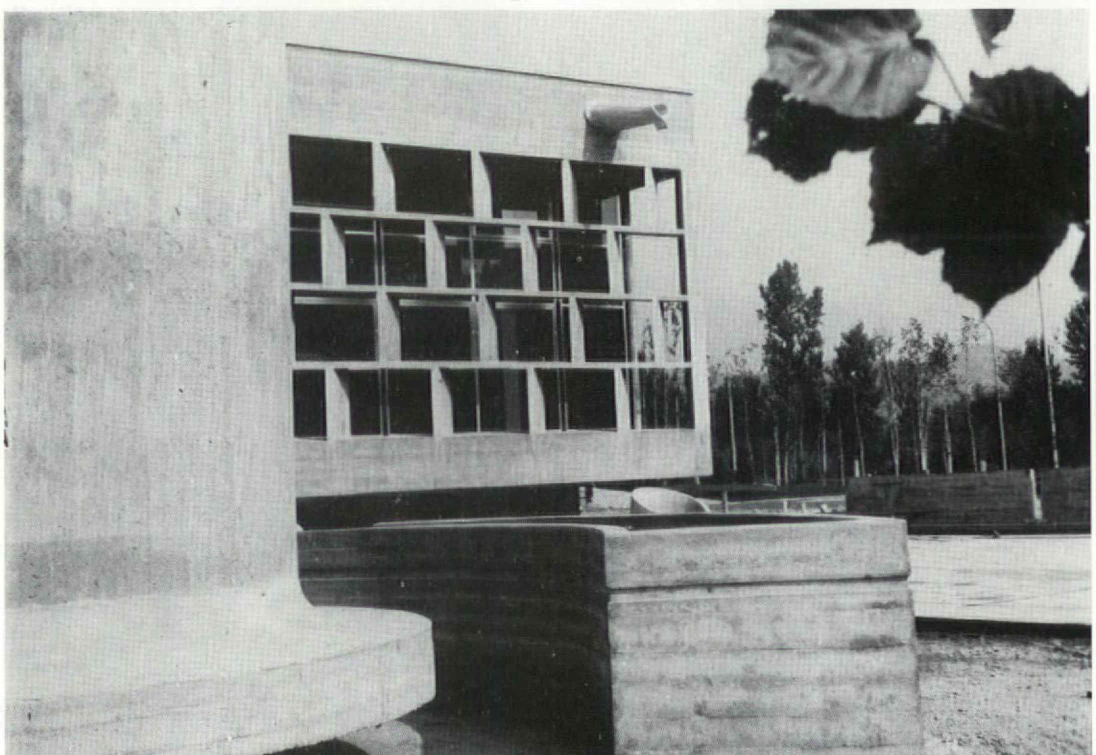
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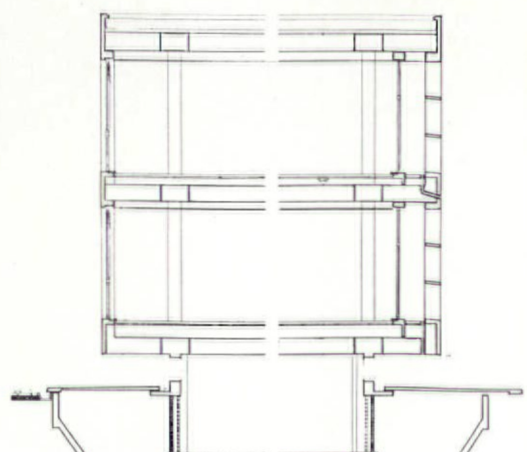
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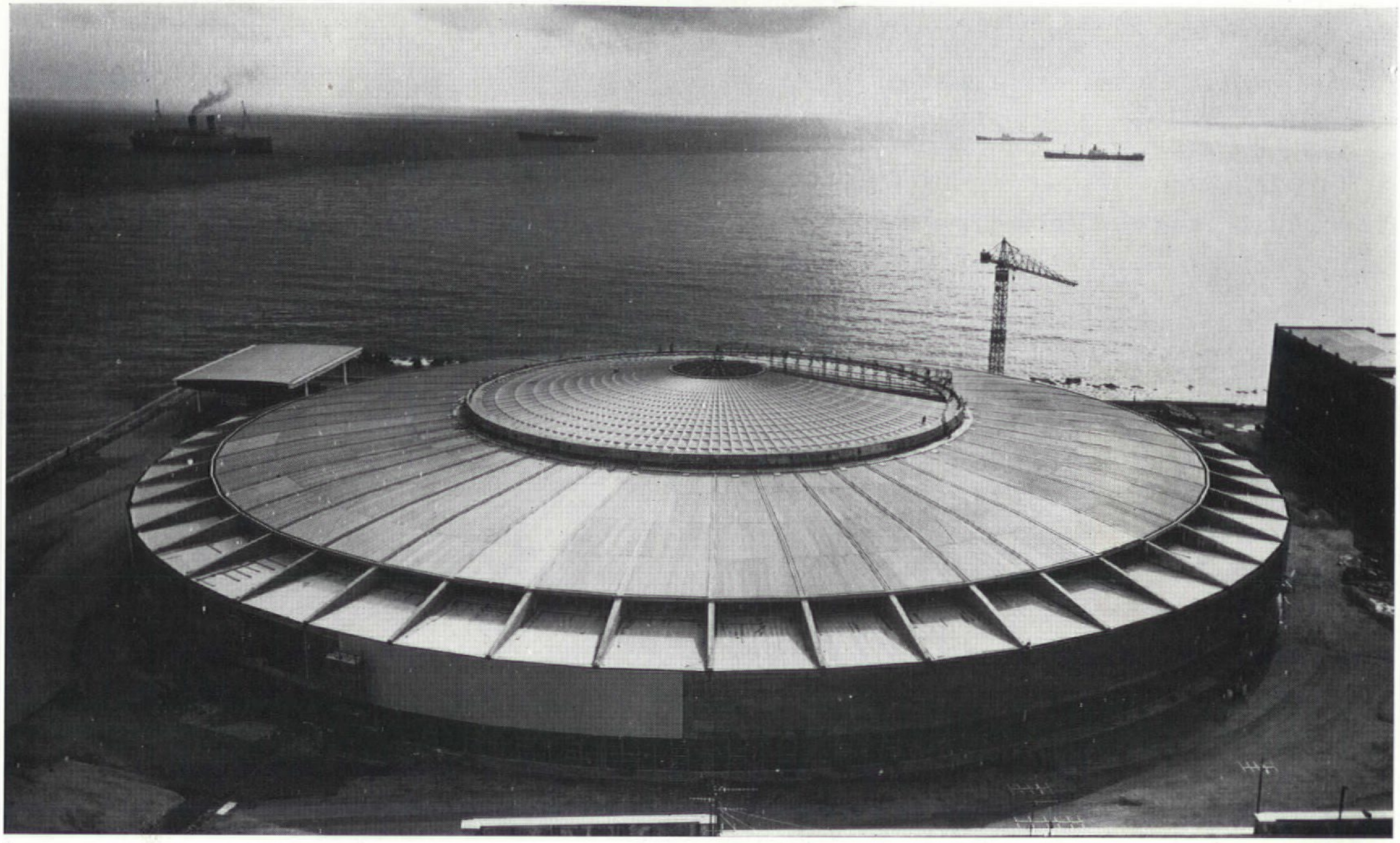

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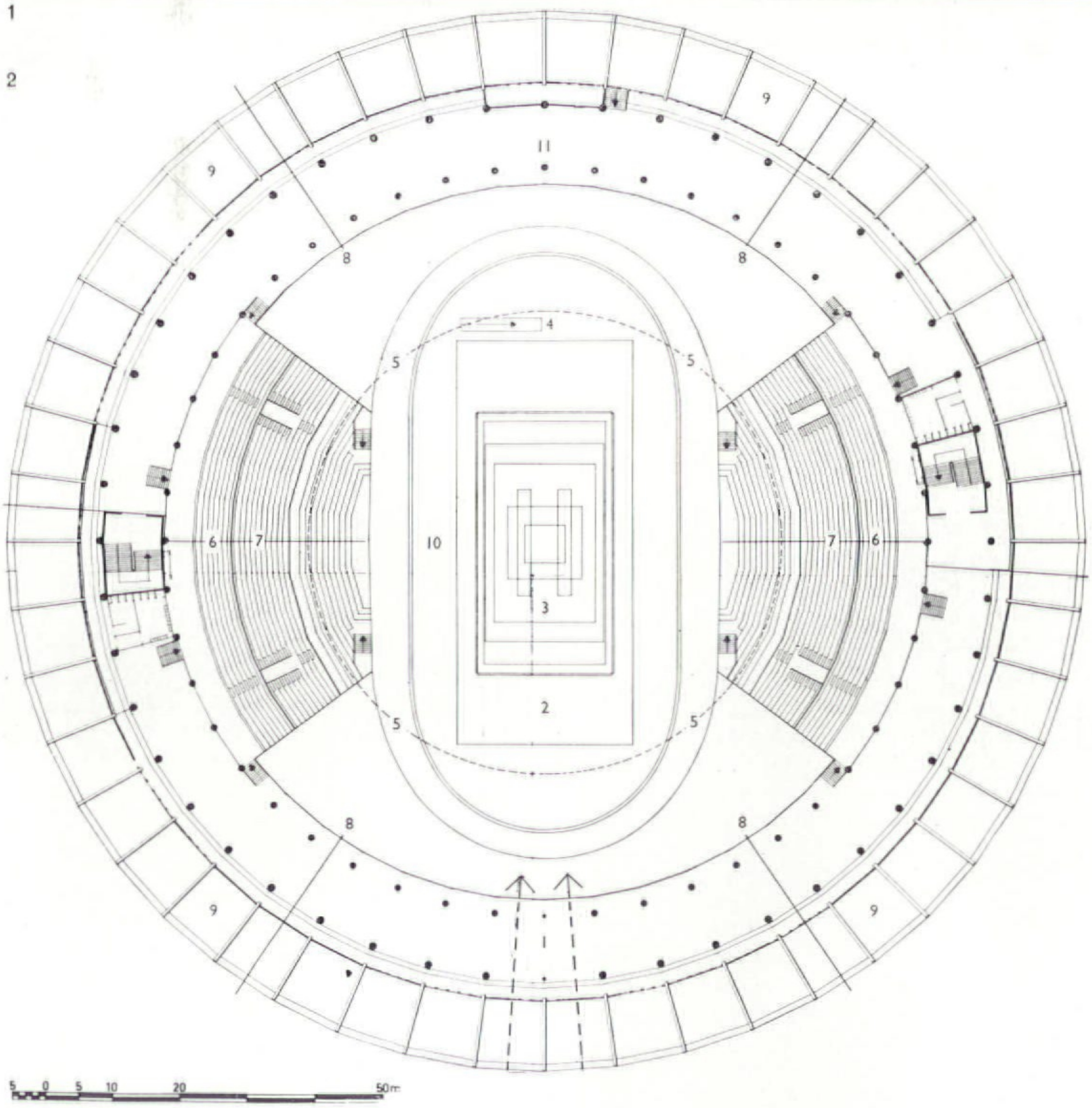

Sports and exhibition palace at Genoa

Design group: Franco Sironi (coordination), Lorenzo Martinoia (architect), Leo Finzi and Remo Pagani (structural engineers)

1
A general view of the sports palace looking out towards the sea. The IRI pavilion illustrated in the news section of *AD* July this year is on the left of the palace

2
Plan of sports place
1 entrance
2 ice rink
3 other sports
4 athletics' entrance
5 tensioned structure over
6 popular seating
7 distinguished spectators
8 expansion joints
9 transparent roof covering
10 cycle track

Now, in one revolutionary range designed by Bernadotte & Bjørn of Scandinavia, there's a Harvey desk to meet the needs of every office user from managing director to messenger boy – 297 in all! And these, with their striking good looks, are only part of a tremendously flexible new family of Harvey desks and companion units . . . each functionally perfect, all in perfect harmony.

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Abundant choice. Every inch . . . every detail is meticulously planned and engineered to let you pick desks that are tailor-made to your office needs (whether that involves one desk or a thousand). There's a choice of five different pedestals, three different surface materials . . . seven different surface colours, and with this choice come many radical departures from conventional desk design practice.

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POSITION____________________

BUSINESS ADDRESS____________________

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HARVEY

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The project was entered in an open national competition organized by the Ente Fiera of Genoa. It was awarded joint first prize with the project designed by the architects Daneri, Pier Luigi Nervi, and Antonio Nervi, but was eventually selected for building.

The building, which is sited by the sea at the mouth of the Bisagno, can be used either as a sports centre or as an exhibition hall.

Its physical statistics are as follows: External diameter, 160 metres. Distance between internal columns, 112 metres. Diameter of central light well, 68 metres. Maximum height at centre, 27 metres. Height at perimeter, 11 metres. Approximate volume, 356,000 cubic metres. Seating for spectators at boxing matches, 10,000. Seating for spectators at bicycle races, 7000.

The sports racing track is 222·22 metres long, and contains a rectangular central space which measures 70 metres by 40 metres and can contain practically all indoor sports except football.

As regards exhibitions, the building will probably be used for aeronautic exhibitions. The area of usable exhibition space is 30,000 square metres, not including bars, lounges, conference room, athletes' changing room, gymnasium and storage space.

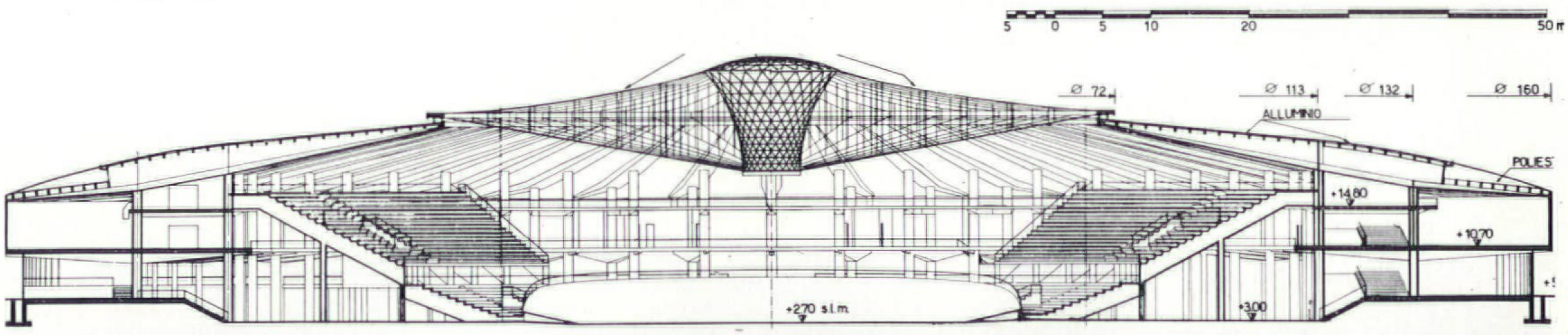
The form of the building resulted from the planning requirements and from the fact that the sports zone could not be otherwise placed than at the centre with the exhibition space around it; and that a race track needed a large, open, column-free space.

Given all this, it was decided to use the exhibition zone as a structural counterweight to the huge reinforced concrete cantilevers that would be needed to support the main roof.

These decisions obviously required group discussion between the architects and the structural specialists. The aesthetic effect of

continued on page 462

1



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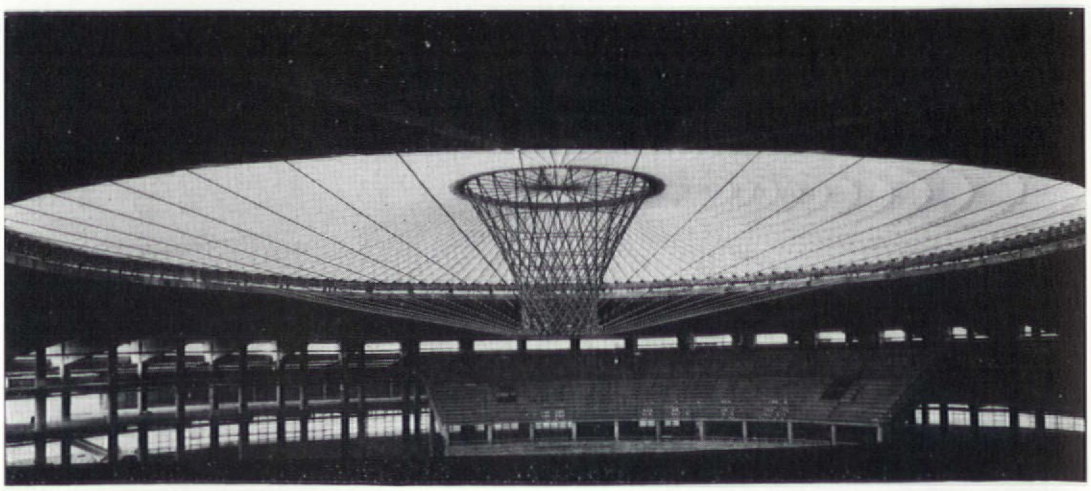

3

1
A part view of the side of the sports palace
Photo: RM Fotografia
2
Section through the sports palace
3
Interior of the sports palace
Photo: Facchini


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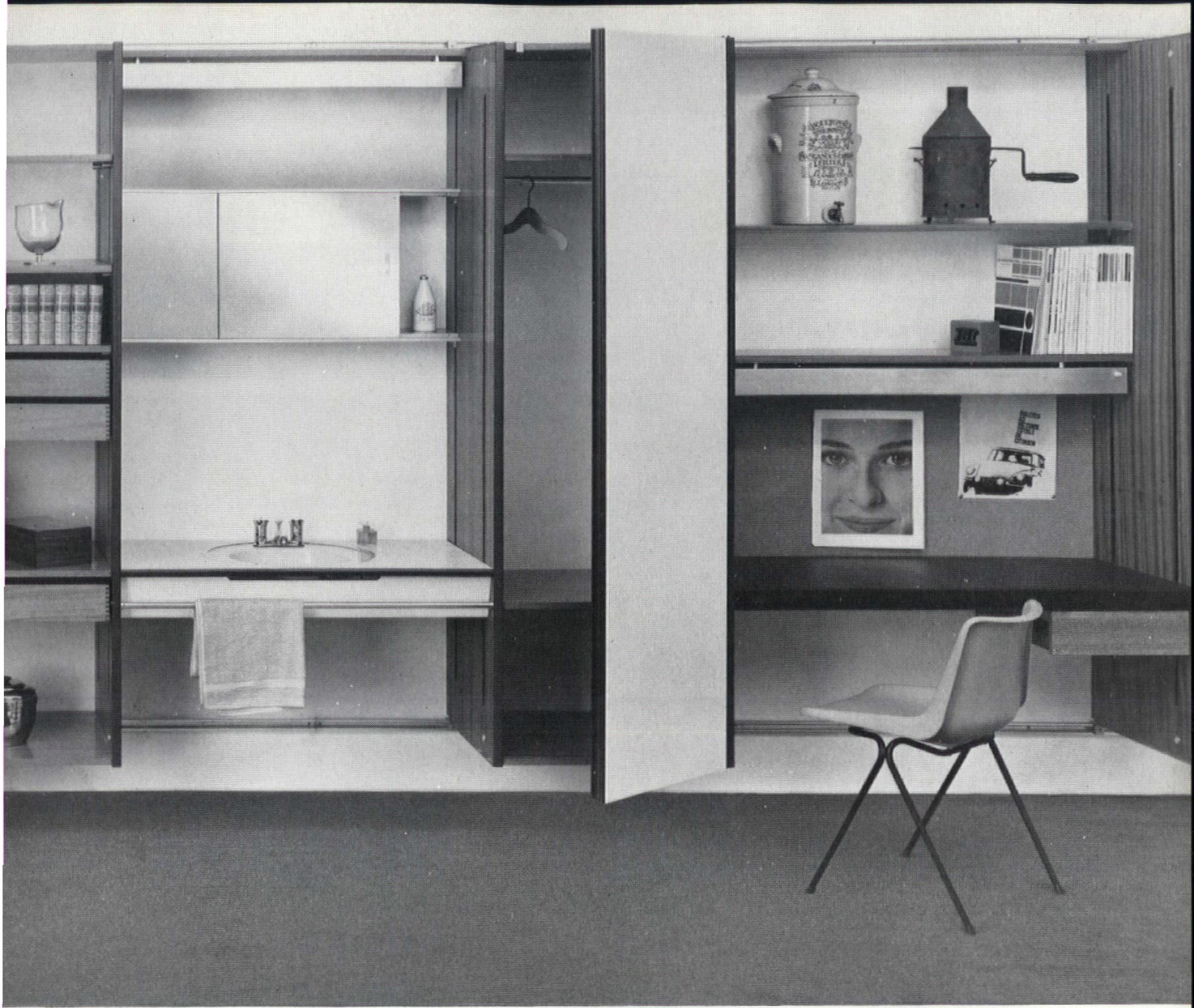
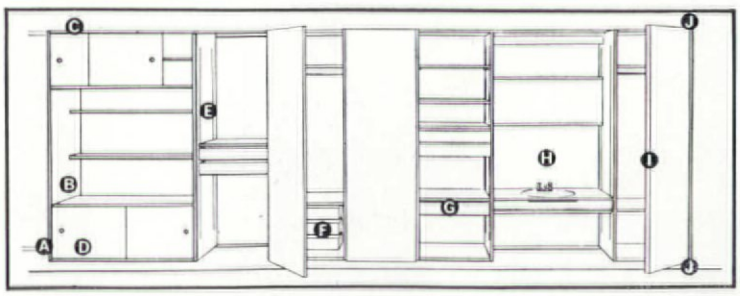
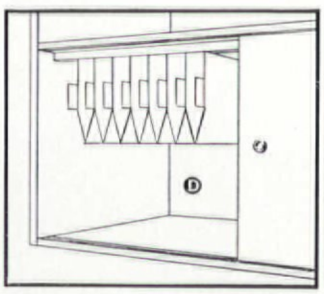






(**A**) Level and parallel "U" section steel channels are first wall-mounted 6' 6" apart. (**B**) Vertical panels are then secured by simple brackets: the whole assembly requires only semi-skilled labour. (**C**) Tops and bottoms next slide and are bolted into place to make the cupboard rigid: note that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

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

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

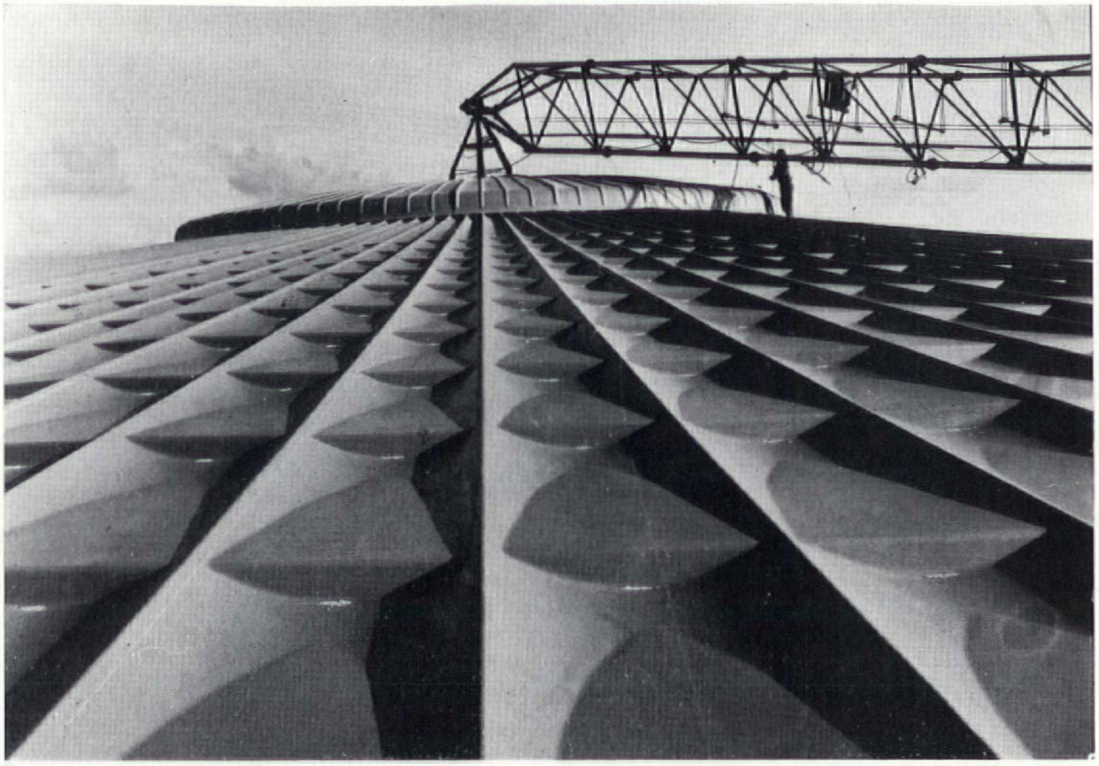
continued from page 461

the finished building is the result of this collective work, in which the form of every element was discussed with regard to static characteristics, and ease of construction.

Structurally, it was necessary to start with extreme lightness at the centre, so that the cantilevers could be easily counter-weighted at the perimeter. This was achieved by designing the central light well structure in tensioned wires and struts, the upper layer being covered with a skin of transparent plastic. Radially around the perimeter are 48 prestressed reinforced concrete cantilevers each supported on two columns, placed off centre. Structurally the design of this roof has much in common with the theoretical structures designed by Le Ricolais.

The circular form provides a perimeter ring for the forces of the wire cupola which would otherwise have required restraining at many points.

The disc form of the building (that is, the proportion between height and diameter) resulted from a maximum height limit imposed as a competition condition by the Superintendent of Monuments for Liguria.



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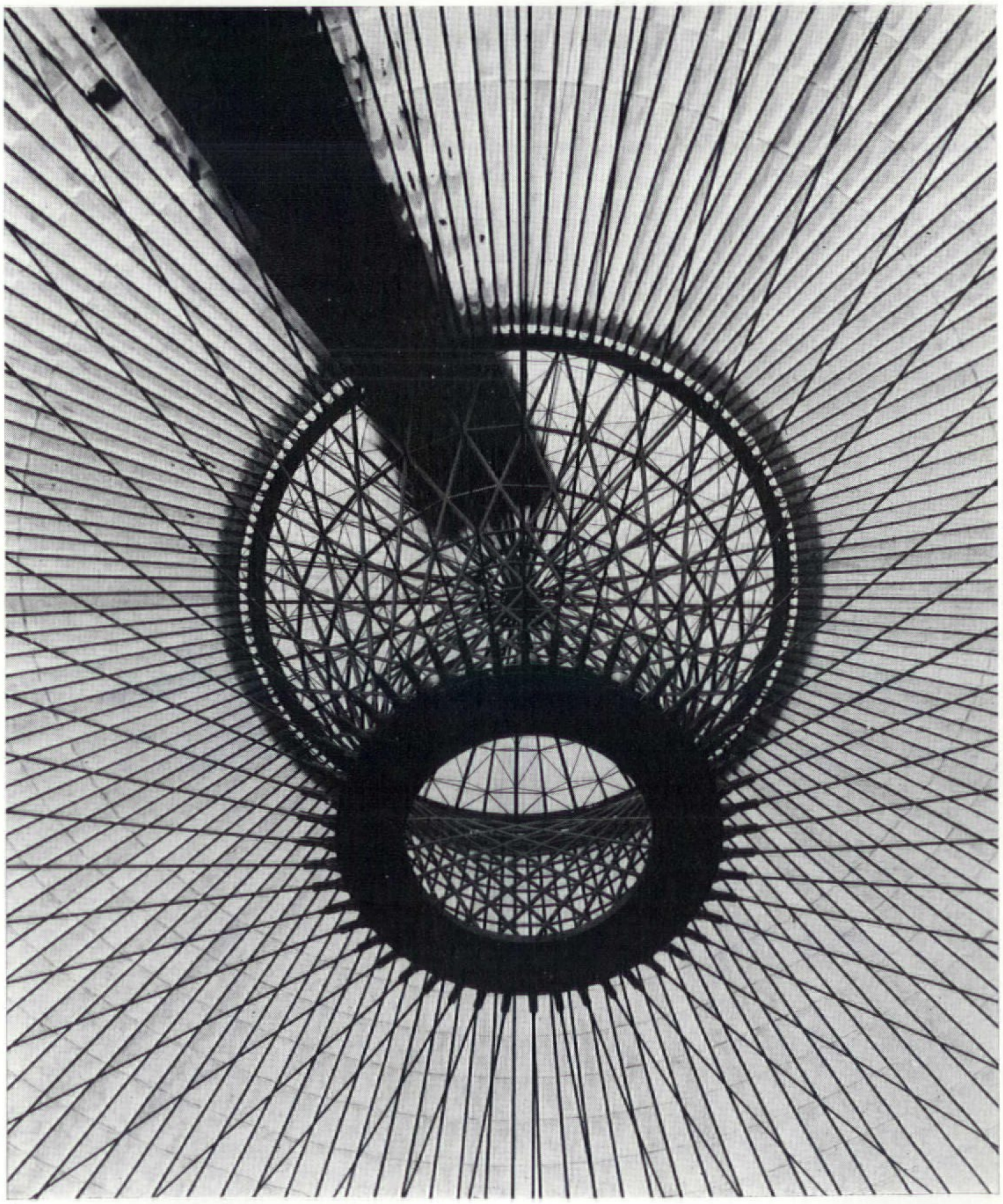
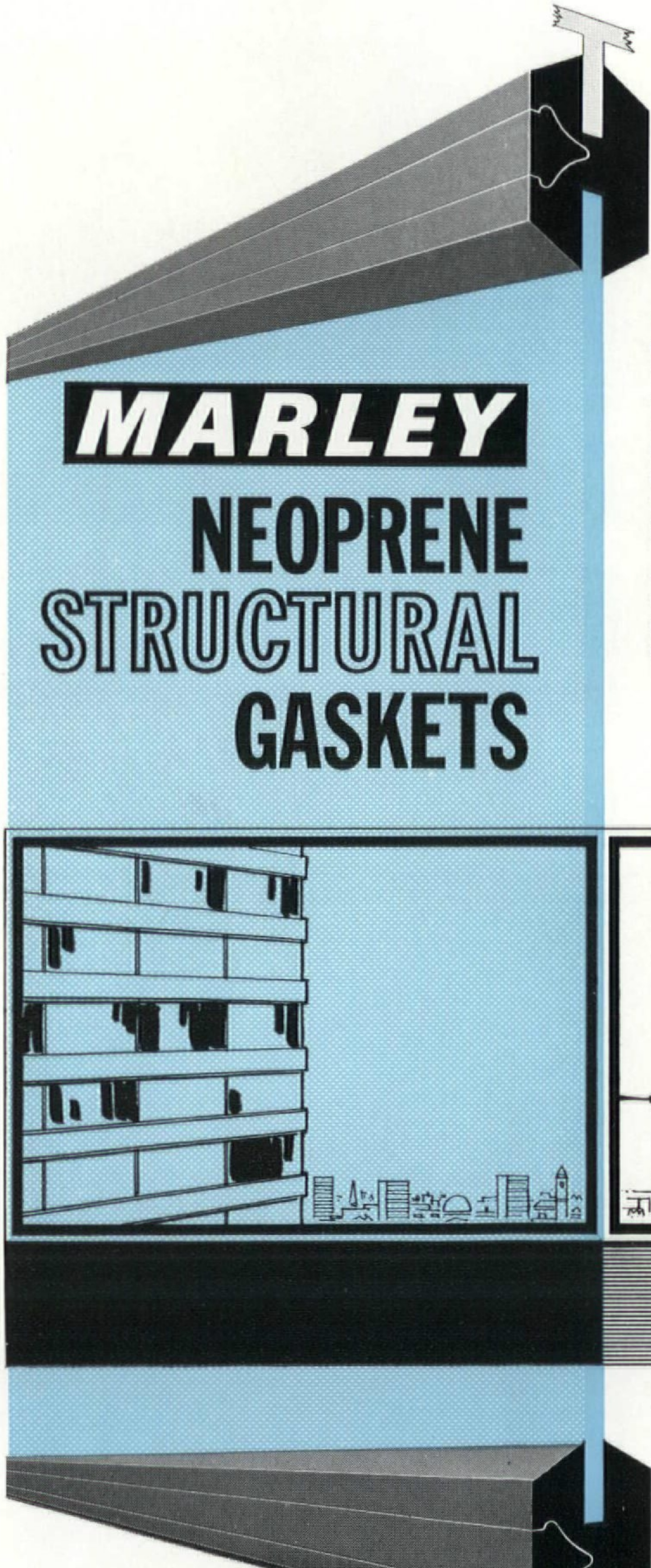


2

1
Fibre glass roof of sports palace dome with cleaning gantry

Photos: RM Fotografia

2
Interior: core ring of sports palace roof looking up

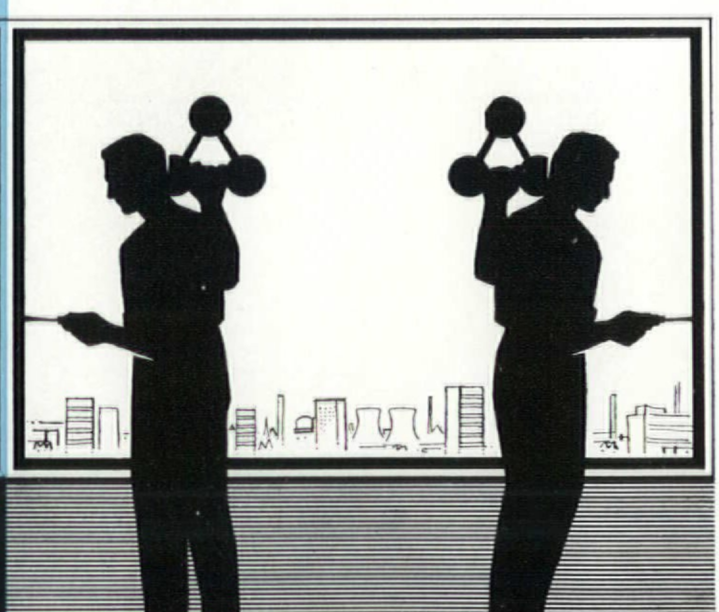


MARLEY NEOPRENE STRUCTURAL GASKETS

Marley Neoprene Structural Gaskets introduce improved, dry-joint glazing and sealing methods which give quicker installation under all weather conditions, increased efficiency, and a maintenance-free future. The gaskets give a permanent waterproof seal, but the resilience of the material allows thermal movement of the frame and of the glass or panel and provides an excellent cushion against hurricane force winds, shock and vibration. They are supplied as a complete frame, with all corners injection-moulded for strength.

Marley Gaskets are made of Du Pont long life neoprene from virgin materials and conform to A.S.T.M. Standards. There is experience of almost 30 years continuous exposure of this material, without deterioration.

Current standard sections: $\frac{1}{8}''$ (flange) to $\frac{1}{8}''$ (glass); $\frac{1}{8}''$ to 5/32"; $\frac{1}{8}''$ to $\frac{1}{4}''$; $\frac{1}{4}''$ to $\frac{1}{4}''$; $\frac{1}{4}''$ to $\frac{3}{8}''$, $\frac{5}{16}''$ to $\frac{1}{4}''$; $\frac{3}{8}''$ to $\frac{3}{8}''$; $\frac{1}{2}''$ to $\frac{1}{2}''$
Other sections to order.



Full information, fixing instructions and a consultant service on all aspects of gasket application are freely available to architects, engineers, builders and glaziers.

MARLEY

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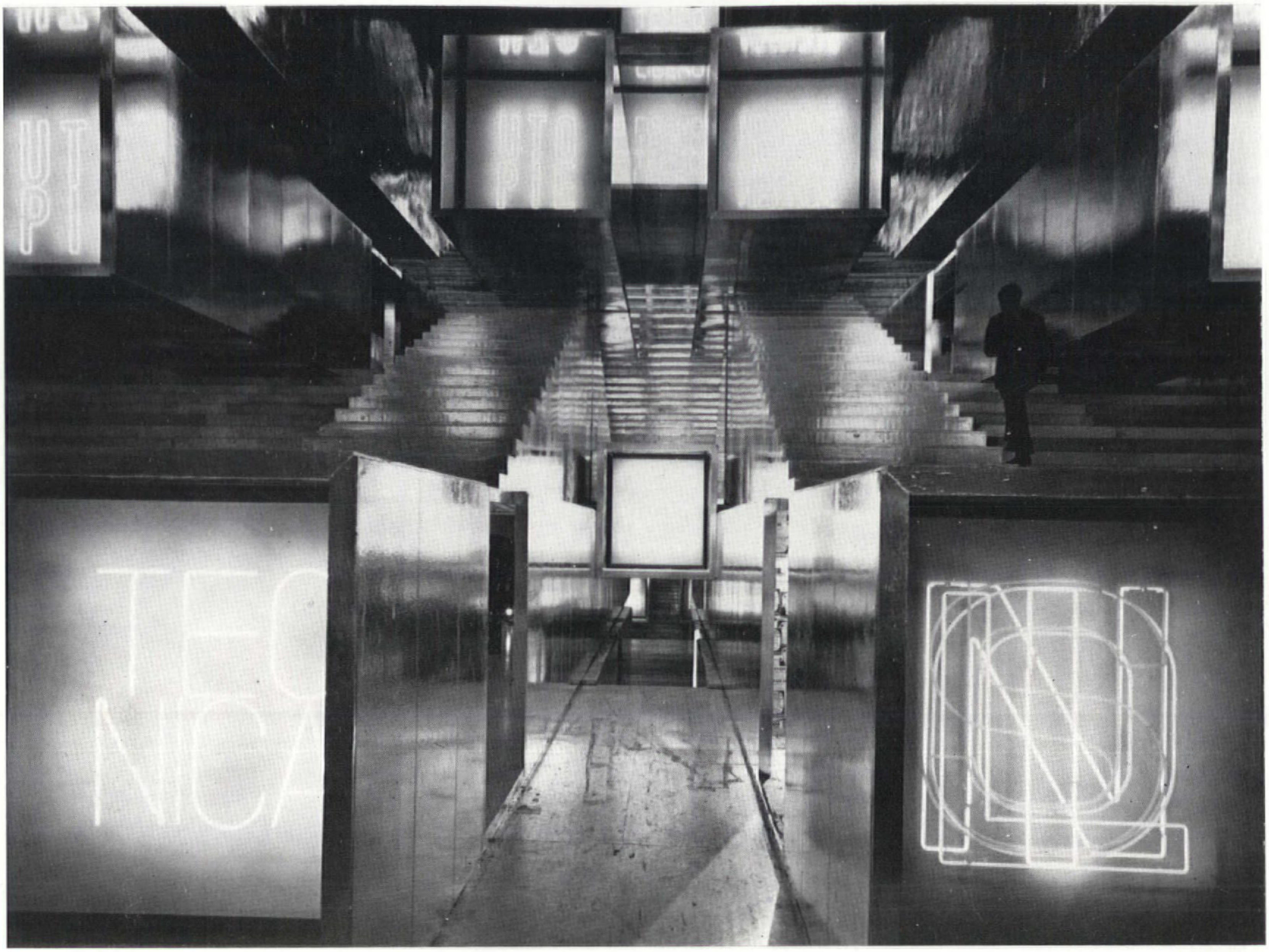
MARLEY the first name in British neoprene gaskets



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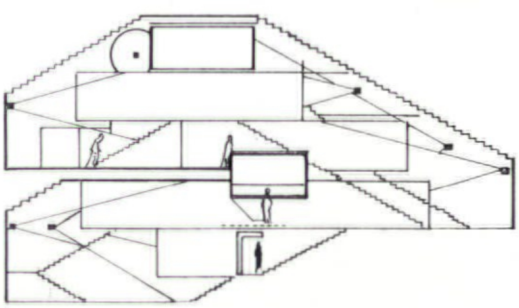

2

1 & 2
Entrance hall to 13th Milan Triennale. Designed by V. Gregotti with U. Eco, P. Brivio, L. Meneghetti, G. Stoppino, M. Vignelli, L. Castiglioni and L. Damiani

All photos by Publifoto/Milano, except photograph number 11 on page 465, which is by Richard Einzig

The 13th Milan Triennale

Panos Koulermos

The 13th Milan Triennale, contrary to previous 'expos' which for 40 years have primarily aimed simply at the promotion of art, industrial design and architecture, has chosen for its theme this year 'free time' or *tempo libero*, an intrinsically diffuse subject ultimately dependent upon social and economic planning. This subject was chosen three years ago by the 'Centro Studi'. The choice was made when Italy was at the height of its (now badly shaken) 'miracolo economico', when the very thought of a co-ordinated national planning policy was an anathema to many, as indeed it still must be to those remaining adherents of *laissez-faire* in Italy. The consequence has been that now both the Centro Studi and the international triennial institution it administers are now both the subject of much polemical discussion, which severely questions their real value.

It is against such a stormy background, subsequently fed by recent economic and social crises, that this exhibition attempts to examine the recreational needs of man in an industrialized age; in so doing it scrutinizes the present state of urban man, as he now finds himself, largely surrounded by an uncoordinated physical and visual environment. To this end it seeks to stimulate and provoke the individual visitor, with a deliberately disturbing synthesis of image and slogan. At times it appears as a garish and alarming compound, part documentary, part sophisticated luna park, part polemical platform, part a highly polished display of both wares and views.

The countries participating in this exhibition are: Italy, France, the United States, Mexico, Belgium, Finland, Brazil, Yugoslavia **11**, Germany, Austria, Great Britain, Holland, Switzerland, and Canada.

The exhibition itself is divided physically into two main sections: first an indoor section arranged in the Palazzo dell'Arte given over to the varied display of the exhibiting countries, and second an outdoor exhibition in the grounds of the park assembled under the broad title 'rest and holidays'. The outdoor section mainly exhibits prefabricated timber houses, shelters, tents, plastic domes and garden furniture. The two sections are connected by an elegant tubular steel bridge designed by Silvano Zorzi of Progeco, which is unfortunately supported at one end on what appears to be a small-scale neo-fascist building executed in mass concrete.

The international introductory sector **1, 2,** 'the gate' (so called) to the indoor section—aims, with the aid of illuminated slogans, coloured photo murals, graphics, electronic music, and *manifesti* to show the visitor what

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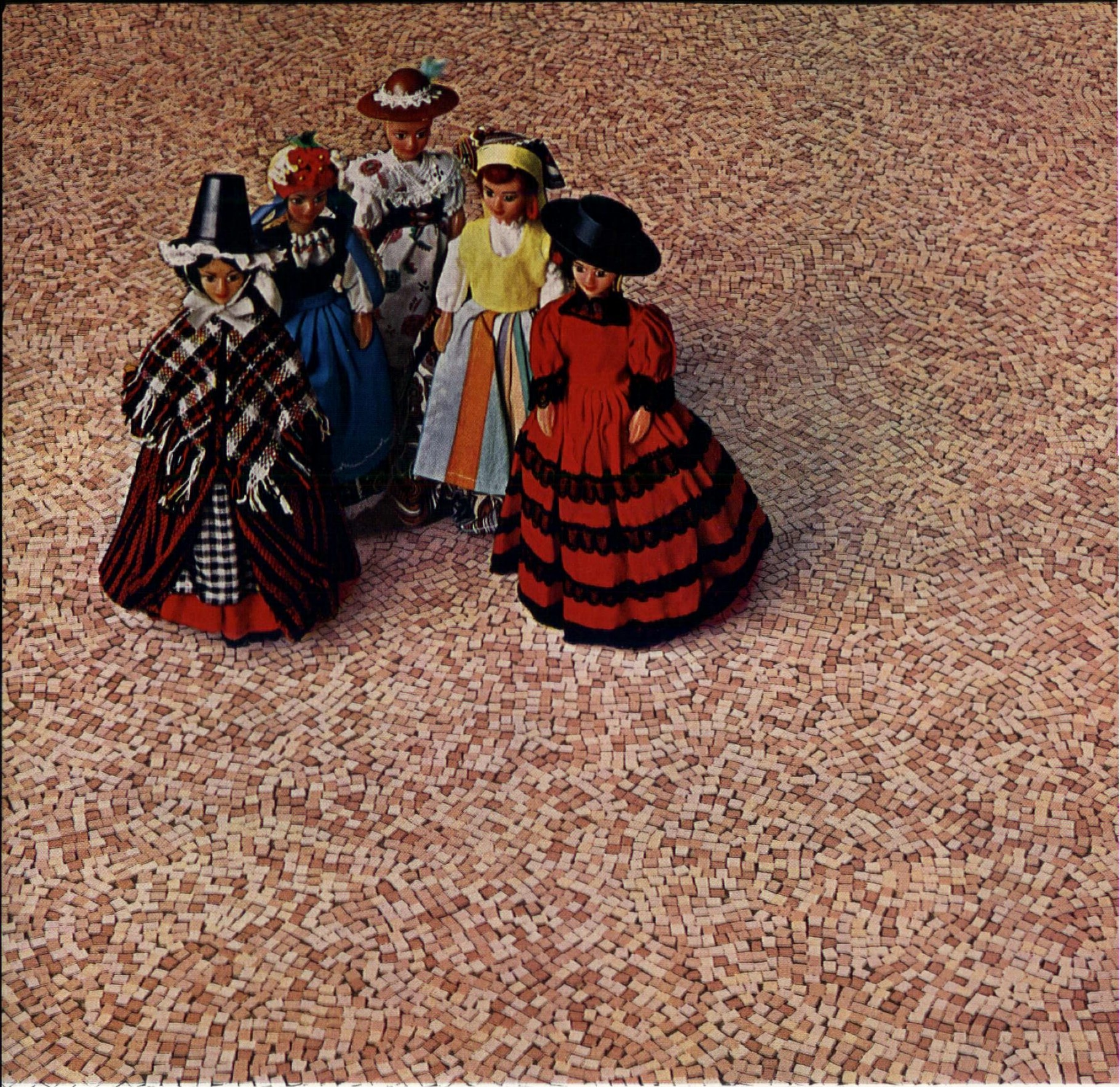

DECORABILITY Colours and designs as intriguing as National costumes make up an Armstrong TESSERA floor. Tiny coloured cube-like chips set in a bed of translucent vinyl give a rich, random, three dimensional effect. TESSERA Vinyl Corlon is a heavy gauge vinyl sheet flooring—grease and alkali resistant and with a nubbly surface which conceals indentations and stiletto heel marks. Ideal for residential, institutional and commercial interiors. May be laid on direct-to-earth concrete subfloors without a dampcourse. May we send you full details?

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Barbour Index No. 306

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continued from page 463

tempo libero is not, or should not be. It seeks to make manifest, through montage in a sequence of disturbing spaces, steep stairs, projecting boxes, narrow slots and vast mirrored halls **5,** the split that exists between our use of free time and the high point of our technological progress. This spectacular and highly contrived introduction to an exhibition so dedicated to a serious social issue is in itself a paradox, for one cannot help questioning if all these plastic histrionics are necessary, and one is forced to ask if such sophisticated allusions can ever hope to be comprehended by the visiting layman **5, 6**.

A number of spaces which follow the introductory sector have been arranged by Italian designers, artists, architects and planners and are so situated between the national displays as to provide a continuity of theme. They deal with subjects such as green areas within the city, sport and spectacle (intelligently studied by Enzo Mari, through photographs mounted on canvas tangentially revolving towards each other), cultural institutes, dancing, hobbies, transport and production. This latter section comprises possibly the most effective display of well designed products, including elegant pottery by Fantoni and Gambone and a delightful plastic stacking chair for nursery schools by Kartel **8**. A further section is also devoted to the display of information and research data, diagrams and charts of Italy's social and economic problems in relation to free time, being projected on to screens.

The participating foreign countries have interpreted the theme in a variety of ways. Some have accentuated cultural life as the primary concern of man's free time, others have elegantly displayed their commercial interests neatly camouflaged under the generosity of the theme. France deals with culture not as a monument but as something alive. Her display encourages the visitor to sit and look at her latest books and publications, to listen to records, and through the provision of a small projecting room to witness scientific and technical films and to participate vicariously in conferences and concerts. The German and Belgian sections deal with the theatre but under two different aspects, the first through an elegant display of equipment related to its needs and the second through a consideration of the theatre as a collective creative activity. In a space appropriately arranged in order to create a theatrical atmosphere the Belgians have exhibited a true-to-scale wooden demountable stage, with well designed plywood seats easily stacked and erected—in fact a package theatre which ably demonstrates their thesis. An interesting series of 'decoplan' demountable furniture provides the second interest in their section. Finland's simple and effective display **7** relaxes one's spirit after the violent emotions of the introductory section. It is designed by Antti and Vuokko Nurmesniemi and shows how the Finnish spend their time actively. A series of objects such as boats, guns, aeroplanes and javelins are plastically suspended or placed against concaved photographs of an appropriate environment. Austria **10** provides a most effective display of immaculately designed industrial products and a display of artisan products related to music and theatre. Austria is also the only country that has managed to interpret the subject so as to embrace a display of jewellery. The Mexican section treats free time as a most vital element in their social evolution, and they display mainly photographs of Mexican art, modern recreational building models, and scenes from sport and cultural life.

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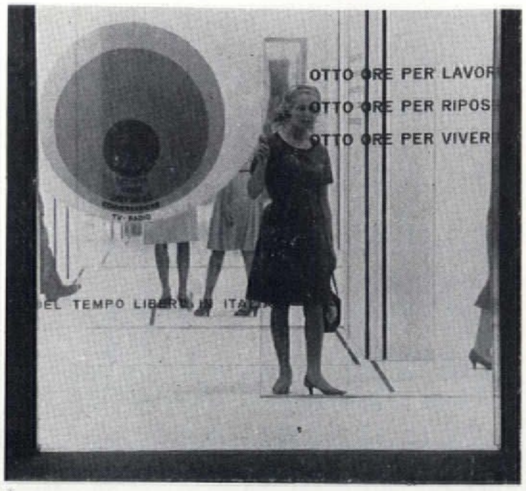

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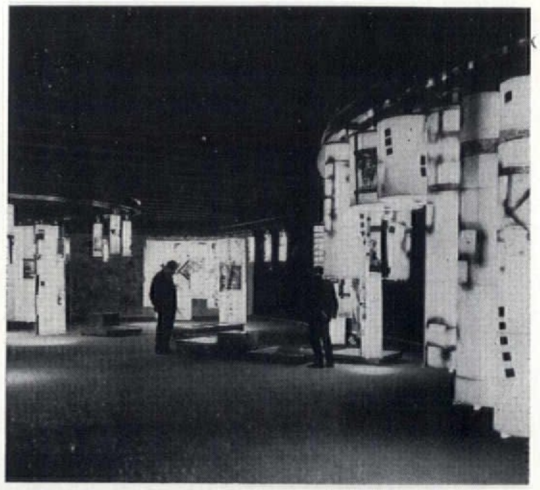
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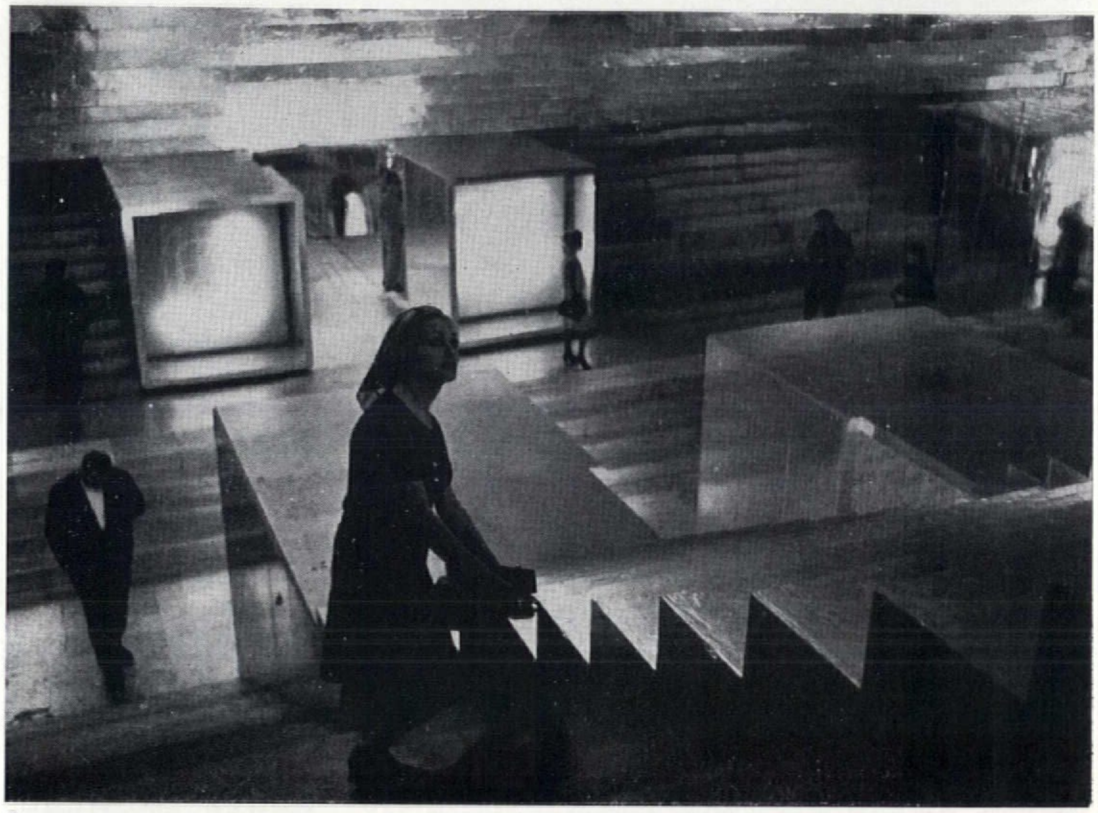
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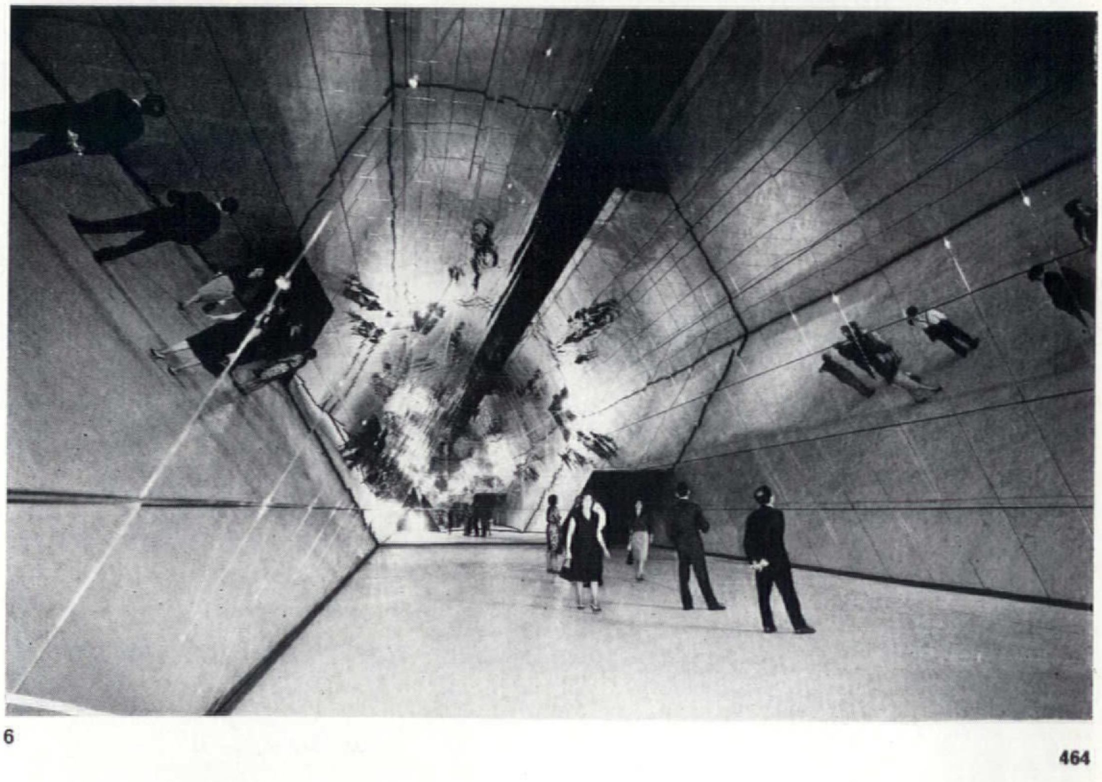
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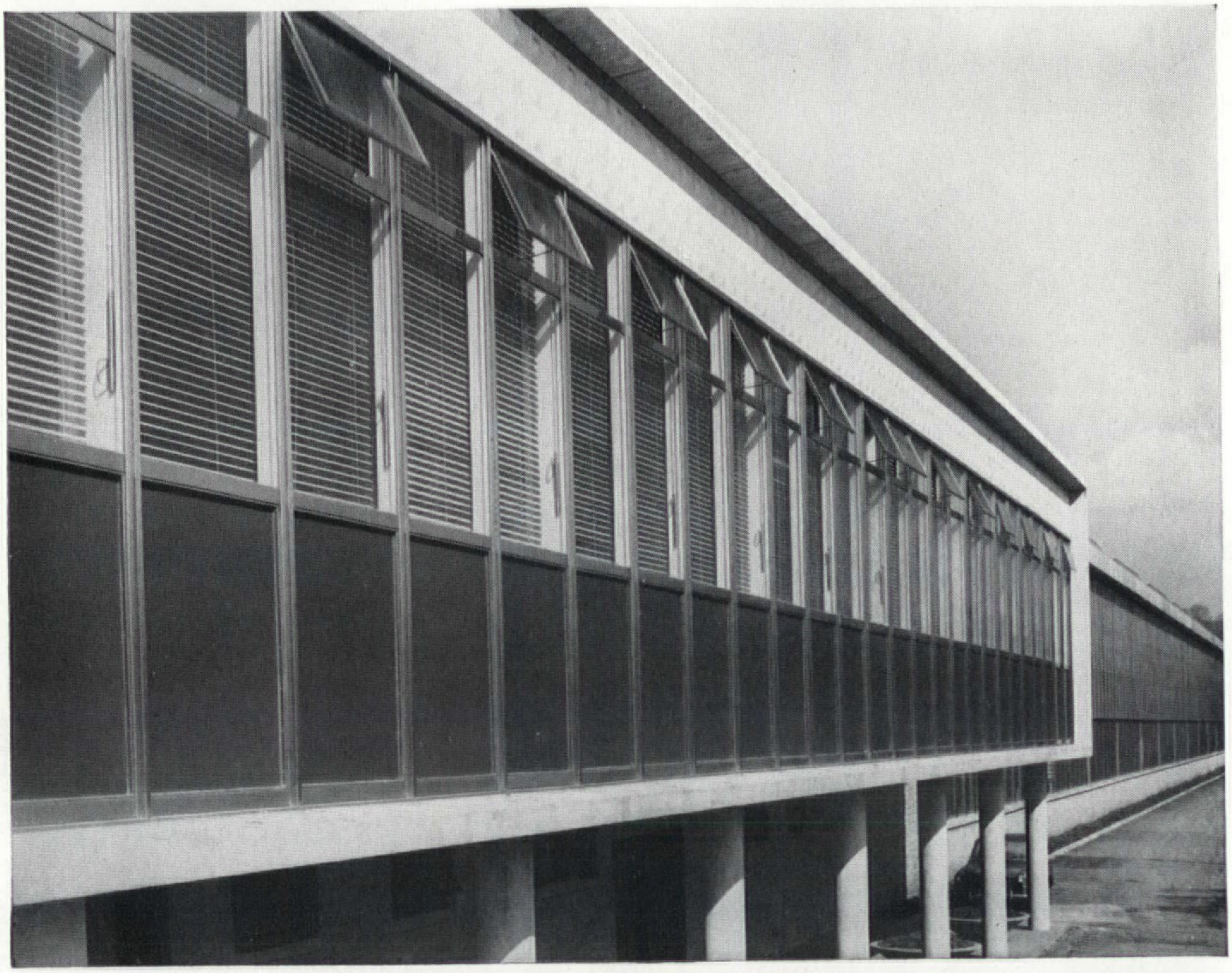

SPEEDY ERECTION OF STAINLESS STEEL WINDOW WALLING

Morris Singer Holoform Mark II window wall system has been applied to the Wire Department of Samuel Fox & Company Limited. The system consists of pressed "Galvatite" sections clad externally with stainless steel. The transoms are secured to mullions by a device which compresses a butyl rubber gasket between the two members. To speed erection, mullion and transom assemblies were delivered to the site in ladder form. Glazing is secured by means of internal "Galvatite" glazing beads. The top-hung open-out ventilators are in stainless steel and are operated by Arens Controls.

"Escol" infill panels, secured by means of external stainless steel glazing beads, have been used in this instance to provide a colour contrast, but polished stainless steel could have been an effective substitute.

Write for a copy of "Stainless Steel in Architectural Design" (60 pages).

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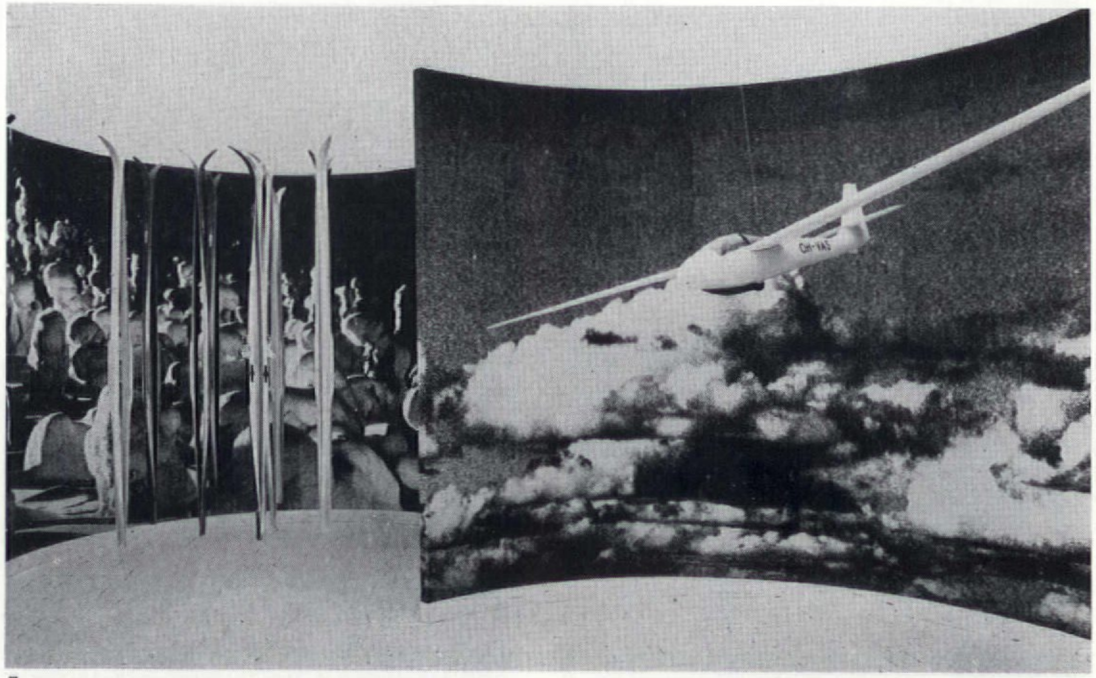
F.520

continued from page 464

The central space of the British display, designed by Theo Crosby, is conceived as a packing case to underline Britain's traditional export trade (see pages 399, 400 *AD*, August). The display possibly inspired by one of London's largest stores, consists of a close juxtaposition of objects either on a sloping platform lined with pseudo-grass or within glazed wall recesses. The irregular faceted walls decorated with graphic motifs of packing case imagery by Joe Tilson. Coloured slides depicting leisure activity are projected onto high level screens, to background music specially composed by Johnny Scott, and are very effective and inviting. Other subjects dealt with are the integration of arts the influence and effect of the machine in art and design in daily life. The exit is via a series of well arranged photo murals demonstrating public provision for free-time; i.e. the national parks, the National Trust, nature conservancy, youth clubs, etc. The Italian part (the exit of the indoor exhibition) is divided into six sections referring to the relation between work and free time. It is grouped in three parts. First 'the balance of the few', second the 'lost balance', and third 'the balance to be refound'. The total of six sections are axially arranged. The first deals with the harmonic relationship that existed primarily in nature. A circular space with a white gypsum plaster dome symbolizes such harmony through its spacial static gravity. At eye level it is furnished with an all-round glass screen where are displayed photos of ancient buildings. The second section deals with holidays and accessibility to holiday resorts. The visitor finds himself in a space occupied by luxurious cars mounted on tubular scaffolding at different heights. These completely dominate the space, and suggest rockets ready to take off. This is the symbolic twentieth century idol, our popular transport medium whose abusive use has already wrought disorder. The third section deals with the mass exodus to the seaside, with its walls lined with mirrors. The fourth section looks like a bad display of a basement store, entitled 'the offer of consumer goods related to free time—sea'. The fifth section in an imposing display of photos shows the building atrocities all over Italy, the desecration of her cultural heritage and landscape. The sixth section is an analogous volume to the first, the only difference being the dome itself which is comprised of concentric aluminium slats, to symbolize the need for new legislation to establish a new 'equilibrium', neatly incorporating a plan for turning 8000km of Italian coast into a European playground.

'Travel' the epilogue of the indoor exhibition is one of the most successful displays. It examines travel in its own right—roads, highways, railways, waterways, airways, etc., and the future methods of transport. The exhibits are displayed in low rectangular showcases with glass tops. These are supplemented by rotating polyetherine cylinders **4** colourfully decorated and illuminated, which slide on ceiling tracks providing both data and fantasy at the same time.

The outdoor exhibition provides a series of interesting timber prefabricated houses, mainly of Italian origin. The most attractive exhibit is the mobile shelter done by the students of Hornsey School of Art under the guidance of Clive Latimer (see pages 411, 412 *AD*, August). This mobile shelter was conceived as an advanced project bringing together practising designers, technical staff, students and industry. The Trento Region has presented a charming alpine hut remodelled by Giovanazzi in collaboration with Albini and Helg.



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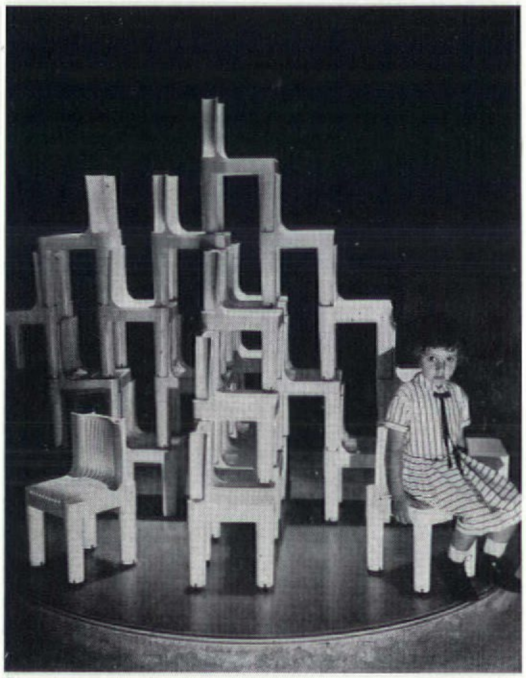

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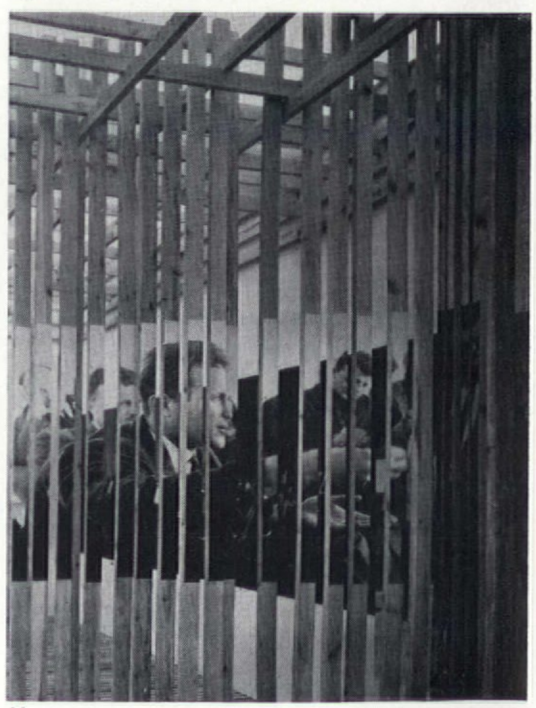

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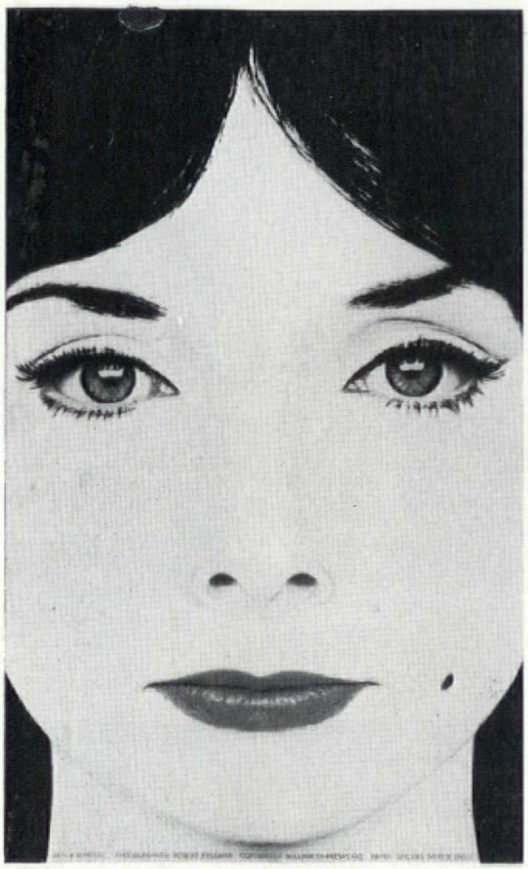

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2

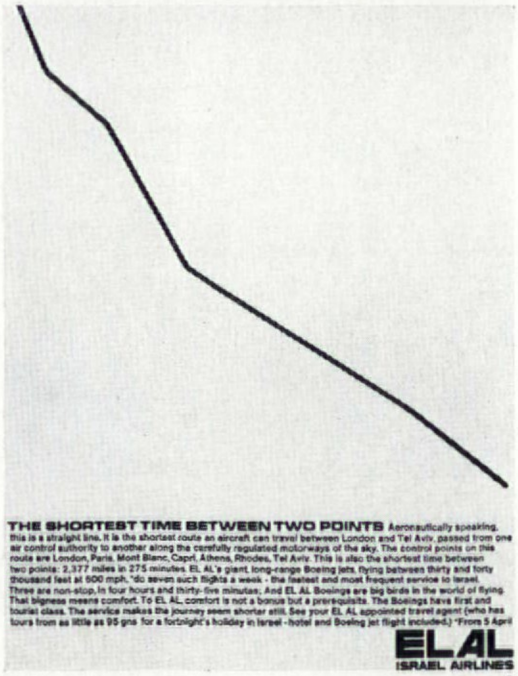
Design and Art Direction '64

In the summer of last year, the Designers and Art Directors Association, London, staged an exhibition entitled 'Design and Art Direction 63'. This was intended to be the first of an annual series of exhibitions which would be devoted to presenting the best graphic design and advertising art current in Britain.

This year the second exhibition was held in Reed House, Piccadilly. D & DA Awards were given this year to a high level of visualization and imagery rather than to just good graphic work. Robert Brownjohn of McCann-Erikson received an award for his brilliant series of silk stocking advertisements for the Taylor-Lifelon Company. The most discreet and elegant work to carry an award was possibly the almost classic advertisement for Spicers: designer Derek Birdsall, photographer Robert Freeman, copy writer William Shakespeare. The advertisement consisted simply of a colour photograph of a girls' head bearing at the top a text from Shakespeare's *A Winter's Tale.* **1**

Other awards were deservedly given to two excellent cinema commercials: one for a dry cleaning group by Charles Jenkins, Richard Williams, Tony Cattaneo and Ron Wyatt, and the other for Shell Petroleum by Erik Dibbern, Nicholas Spargo, and Geoffrey Jones.

The D & DA jury appears to have placed emphasis upon good art direction as opposed to good graphic design. Straightforward graphic work of high standard, although well represented in the show, seems to have stood very little



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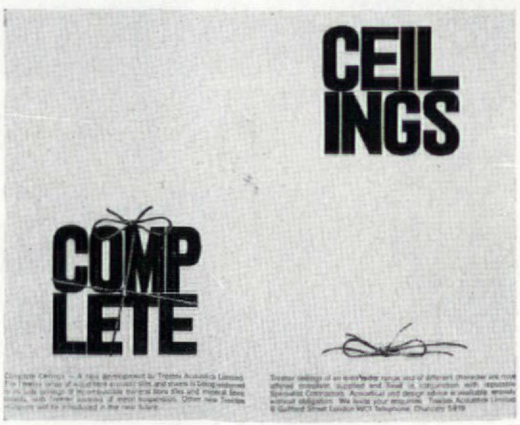

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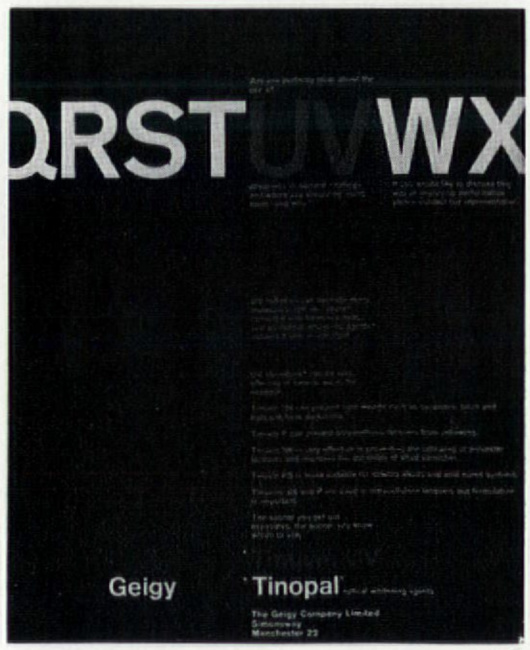

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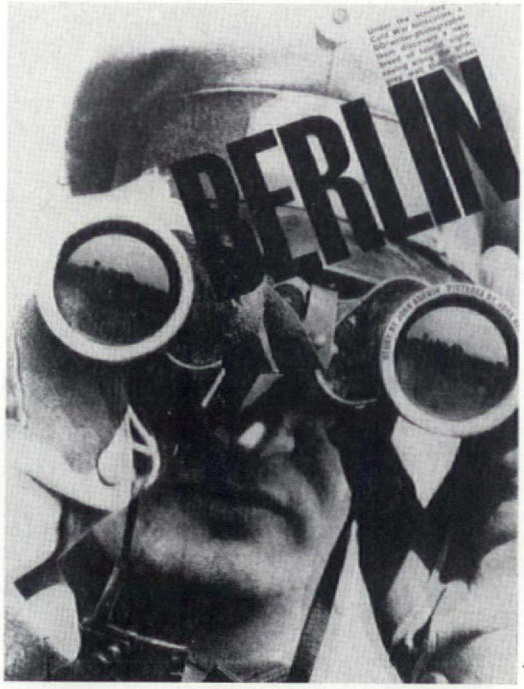
chance of receiving an award. Highly prized are the apotheosis of graphic/verbal wit; the economic pun; a straight or ambiguous text coupled to a powerful, simple, photographic image. Current taste as exemplified by the D & DA seems to have a literary emphasis. Formal graphic design possessing both graphic and visual organization is included but passes unrewarded. Hence good public signposting for the Ministry of Transport by Jock Kinneir and signs for the BEA West London Air Terminal by Christopher Timings of DRU are, as it were, both 'in' and 'out' at the same time. Perhaps next year, the D & DA jury would do well to consider more carefully the range of work over which its awards are given. After all, this is a profession giving public recognition to its own standards, and hence it is probably necessary to attempt to avoid crediting work of a certain bias as opposed to the activity of the profession as a whole.

Kenneth Frampton.



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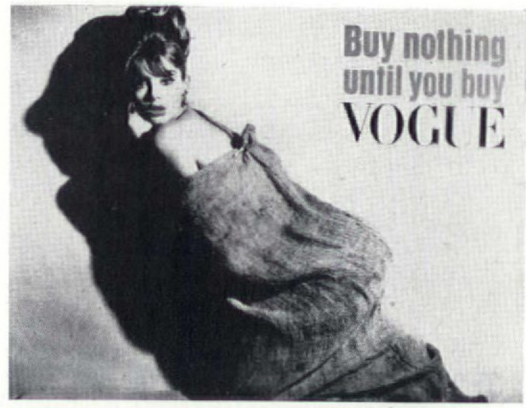

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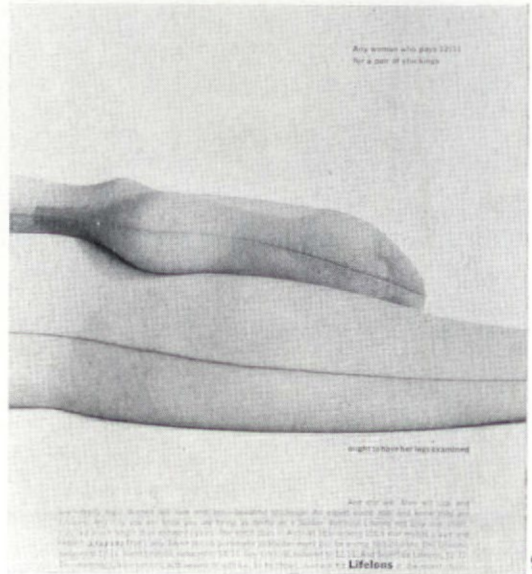
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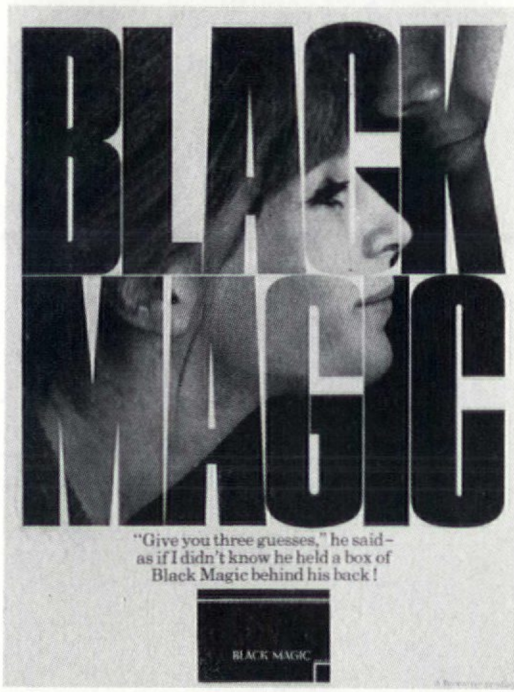

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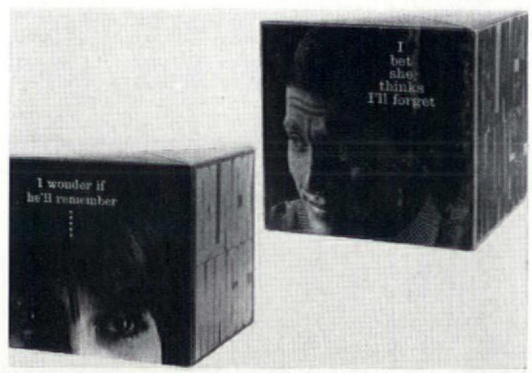
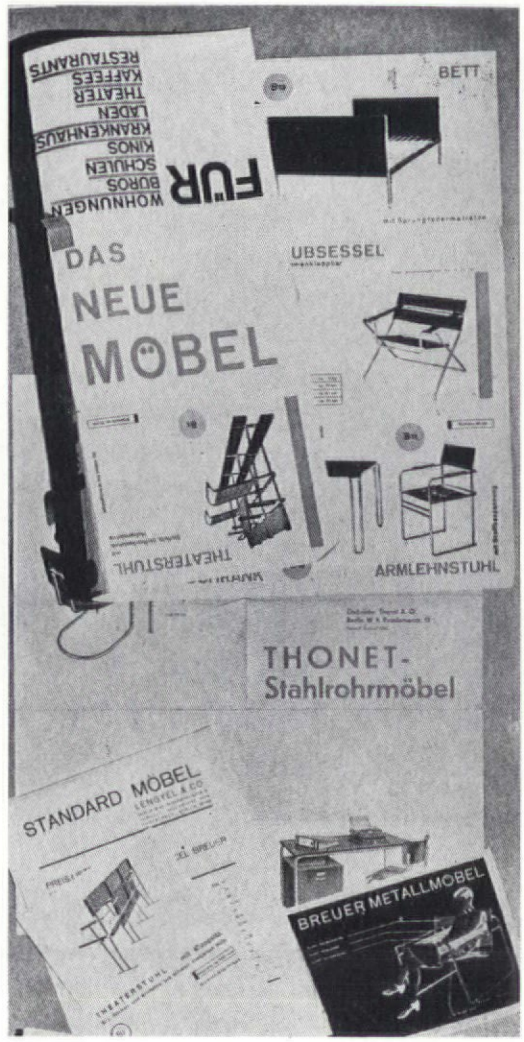


11

12

1
Derek Birdsall for Spicers
2
A general view of the exhibition
3
Fletcher/Forbes/Gill for El Al
4
Tony Guy/Martin Stringer for ABC Television Press Office
5
Peter Butler/David Jesson for Treetex Acoustics
6
Norman Wilson for Geigy
7
Angus Hamilton for *'Go!'*
8
Colin Millward/Arthur Parsons for Vogue
9
Robert Brownjohn/Ross Cramer for Taylor Woods
10 & 11
Hans Feurer for Rowntree
12
Fletcher/Forbes/Gill for Cape Building Products

1



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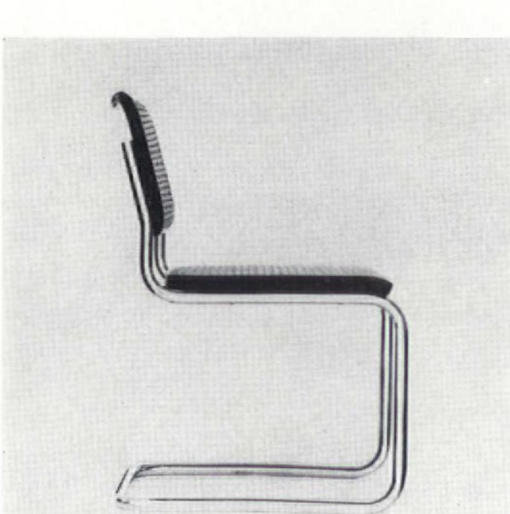
1
Wassily chair originally designed by Marcel Breuer 1924–25. Now made by Gavina, Italy and marketed in this country by Aram Designs Ltd., 57 King's Road, S.W.3. This is ostensibly the design as it was produced in 1931

2
Furniture catalogues 1928. The Breuer collapsible tube armchair is to right of the lettering "Das Neue Möbel". It was known as a 'director's chair'

3
Original design of the Breuer Wassily chair 1924

4 & 5
Casca and Casca B chairs. Design credited to Breuer for the year 1928. Now being made by Gavina and marketed here by Aram Designs Ltd.

3



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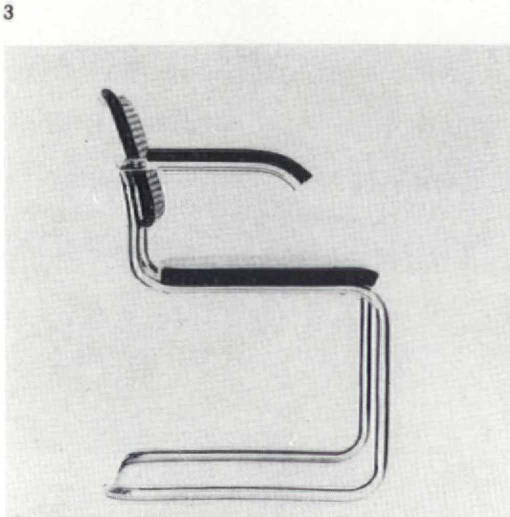

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40 years of Breuer 1924–64

Kenneth Frampton

The *avant garde* production pieces of the '20s and '30s have come to be regarded as the unobtainable classics of Dr. Banham's 'first machine age'. As we have innocently crossed the threshold into that epoch which we should now no doubt enthusiastically regard as the 'second machine age', these pristine pieces have once again become available. 'Second' or 'first machine age' notwithstanding, their appeal remains. They have in a sense become classics, and the standard of order that they embody appears hard to equal. They were largely conceived and built in the first flush of pioneer excitement, when new concepts of spatial order and new industrialized techniques made radical and liberating designs for furniture both a conceivable and a realizable possibility.

The argument as to who designed and had bent the first tubular steel chair will probably never be settled. It is no doubt an academic argument and an honour for which there will always be many potential candidates. In spite of the favourable dating now being published it still remains contestable whether Breuer was the first to design a tubular steel chair. Certainly he was the first to put a whole range of tubular steel chairs into production and he continued to work extensively in their idiom for many years. According to Banham, Mark Stam conceived the first bent tube upright chair in 1924, but was not able to realize it in continuous bent tube until

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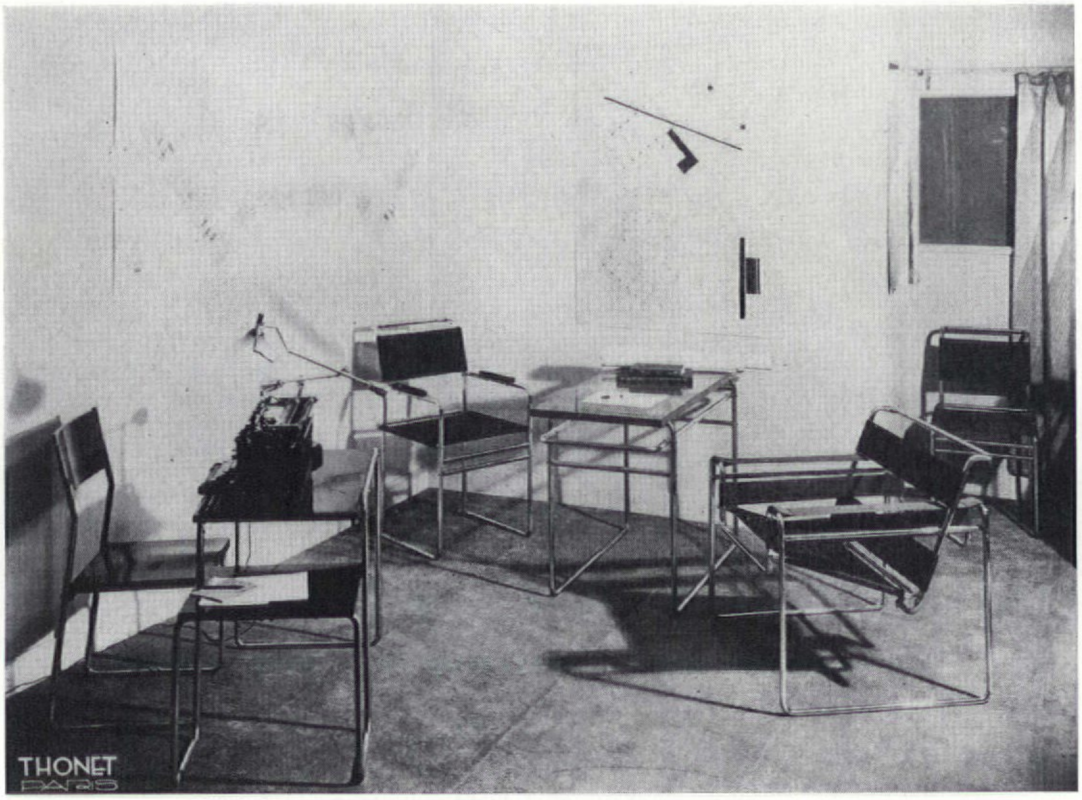

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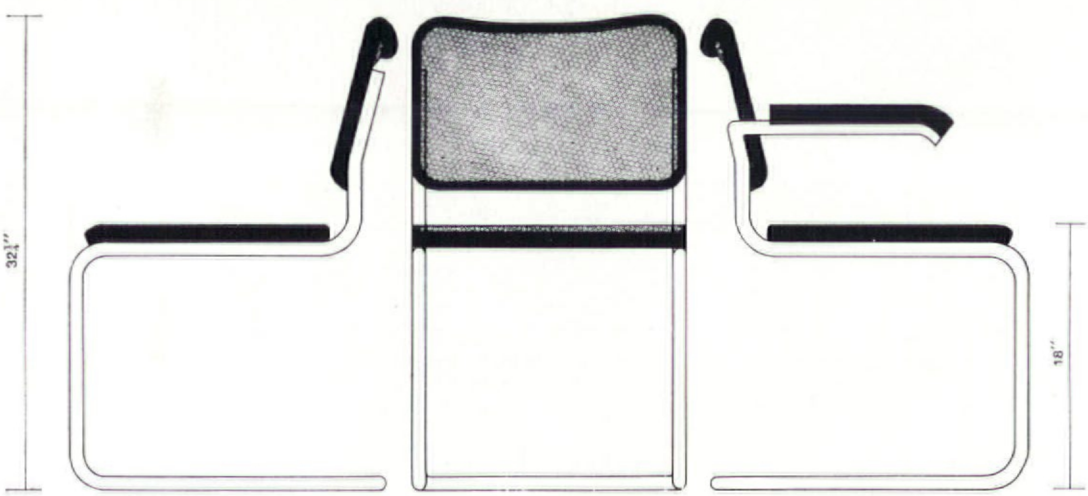

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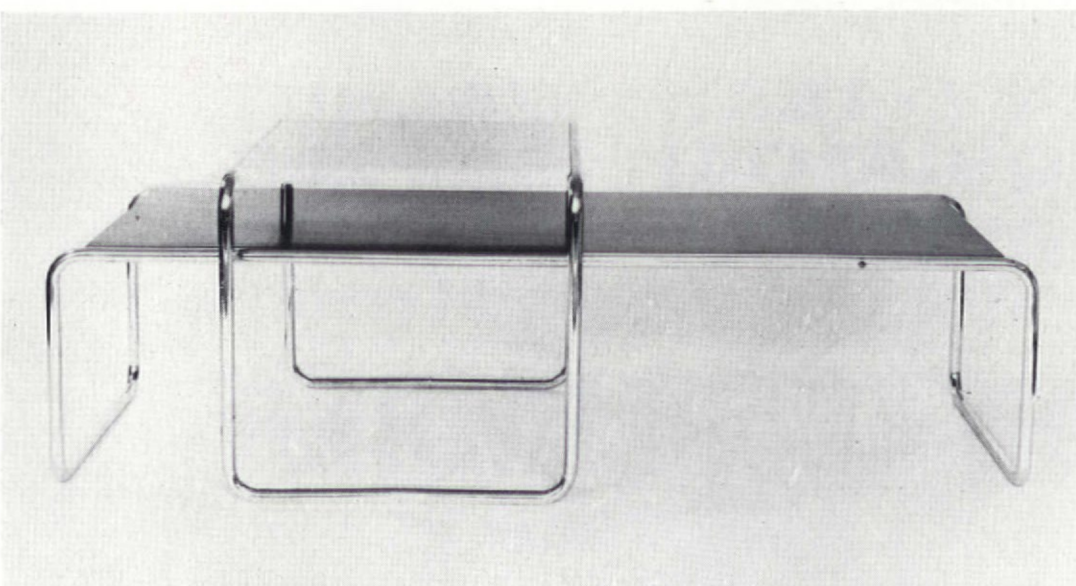
6
An exhibition of Breuer furniture in the Thonet Showrooms, Paris 1931

7
Elevations of chairs Casca and Casca B

8
Occasional tables by Breuer 1924. Now made by Gavina, and marketed under the name Laceia by *Aram Designs Ltd.*



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his contact with Mies Van de Rohe in 1926. Curiously enough the chairs now being marketed under the name Casca and Casca B appear to be directly credited to Mart Stam in Wingler's study of the Bauhaus. (Hans M. Wingler, Das Bauhaus 1962.) Wingler credits a totally different tube chair utilizing closed tubes to Breuer's hand. Breuer's first tube chairs, as shown in this collection of 'Twenties' catalogues **2**, included amongst their number the earliest version of his famous Wassily chair, dating according to Aram from 1924.

The latest version of the Wassily chair **1** is now being marketed by Aram Designs Ltd., of 57 King's Road, S.W.3, at £49 15*s*. It is available in tan, dark brown and black leather, mounted on a chrome-plated tube frame. It is $30\frac{3}{4}$in wide, $28\frac{3}{4}$in high, and $27\frac{1}{2}$in deep. By 1931 Breuer had developed the design of this chair into a form that closely resembles the version in which it is now being made by Gavina in Italy today. In 1931 all his chromium-plated tubular furniture was being produced by Thonet of Paris, who were also then manufacturing metal furniture by Mies and Le Corbusier **6**. Apart from the height of the tubular frame that supports the back straps, no further refinements appear to have been made to the Wassily chair in thirty years. In the earliest version the chair back consisted of continuous bent tube in the form of a simple 'U' with its ends terminating at the top, a device which perhaps in the last analysis creates a purer spatial conception **3**.

Breuer's earliest furniture designs were essentially elementarist conceptions showing a marked De Stijl influence, but as Giedion has already pointed out, even in his earliest works Breuer began to experiment with suspended and cantilevered elements such as canvas seats and arms as in his earliest Weimar furniture. (See Giedion *Mechanisation Takes Command*.) In the design of the Wassily chair Breuer realized an elementarist spatial conception in tubular steel and canvas, in which it was all too easily embodied. In this connection it is of some interest to note that all the three *masters*, i.e. Le Corbusier, Mies and Breuer based their classic chair upon a nomadic furniture tradition, that is upon the light weight folding chair. *Le petit fauteuil basculant*, the *Barcelona Chair* and the *Wassily Chair*, are each individually derived from a folding chair type, in spite of their rigid frames. Indeed only Breuer actually designed and built a folding steel tube and canvas chair, known as the director's chair, that was closely related to the Wassily chair **2**.

Aram Designs are also marketing Breuer's occasional tables, called Laccio, of 1924 **7, 8** in chrome tube with wood tops, satin lacquered white or black, at £9 5*s*. for the small table, and £16 10*s*. for the large one. Aram's Breuer range is completed by Breuer's tubular steel upright chair of 1928 **4, 5** and **7** with or without arms, and Breuer's *Isokon* chaise longue of 1935 **11**. The 1928 chair, named in its two versions Casca and Casca B, sells without arms at £18 5*s*., and with arms (Casca B) at £24 17*s*. It consists of a chromium plated flexible steel tube frame, with a caned bentwood seat and back.

The *Isokon* chaise longue was first designed by Breuer in 1935 soon after his arrival in England. It was based on a duralumin chair **10** that he designed two years previously in Europe. This chair was marketed by Wöhnbedarf of Zurich before the war—and is now apparently unavailable. It had a duralumin slatted seat which was bolted on to a self-braced duralumin

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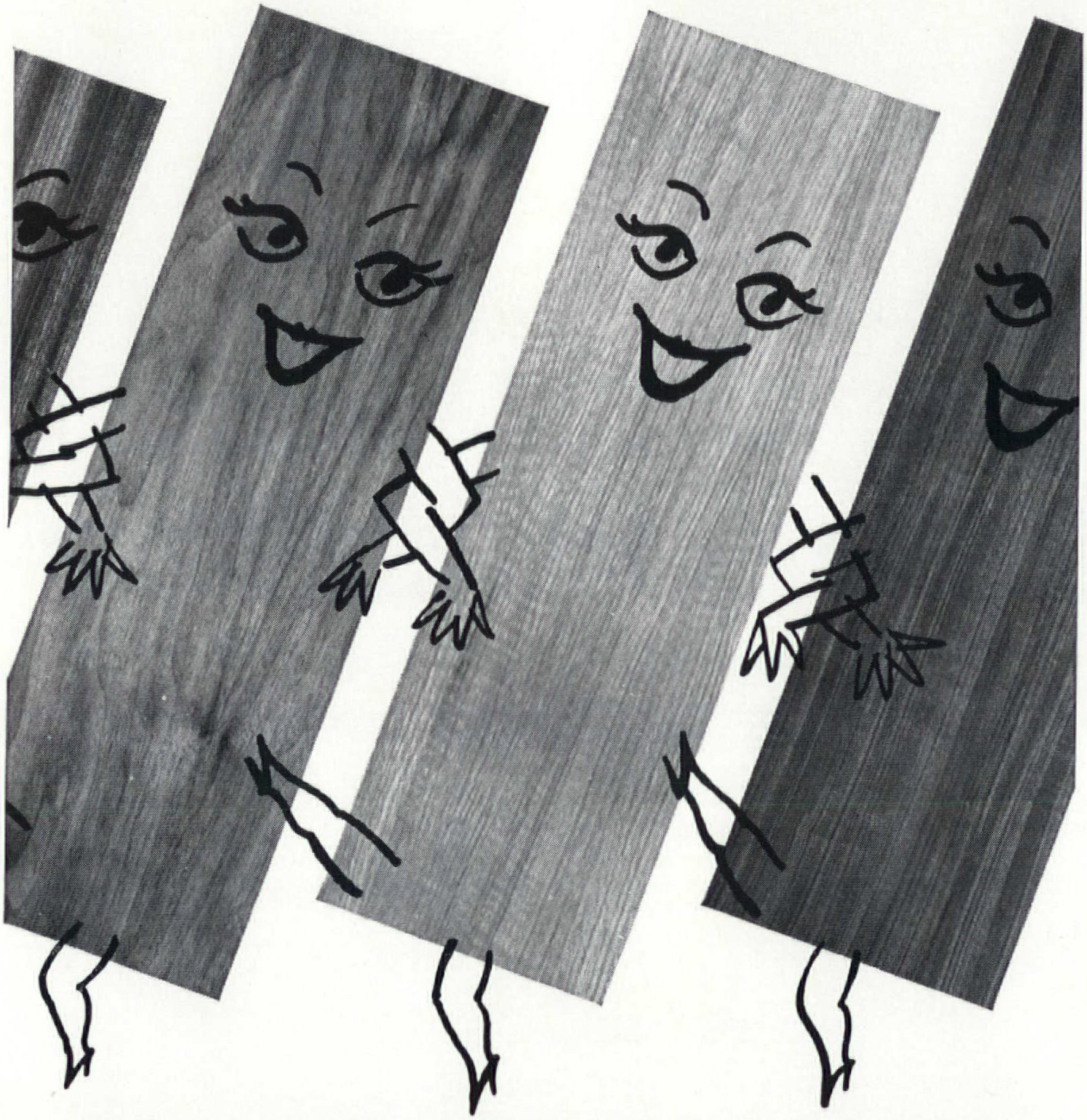

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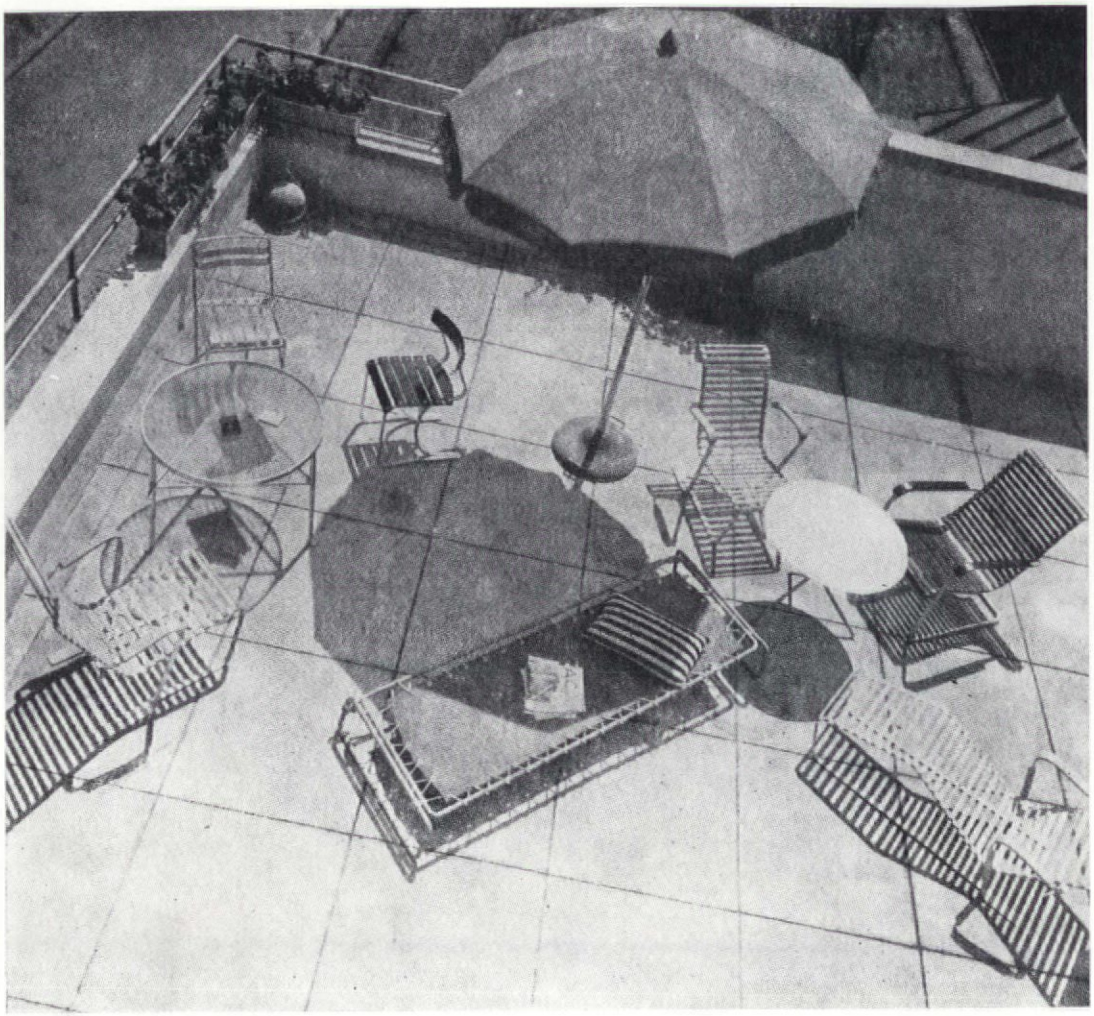

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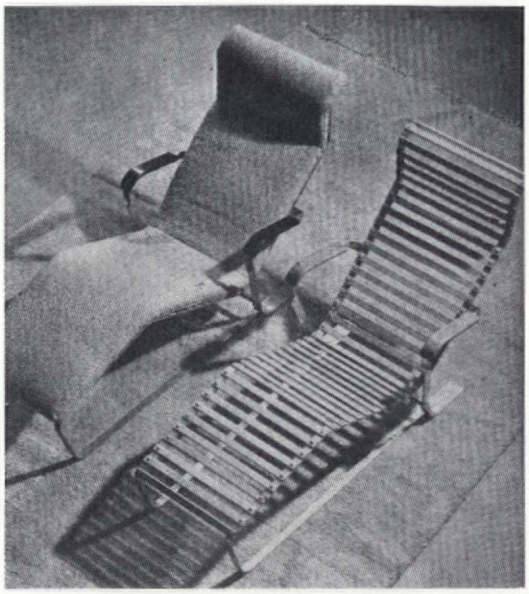

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11

9
Breuer terrace furniture made out of duralumin, designed for an international aluminium furniture competition, Paris, 1933

10
Duralumin chaise longue by Breuer. This chair was the precursor of the bent plywood and laminated wood *Isokon* chaise longue designed by Breuer in 1936

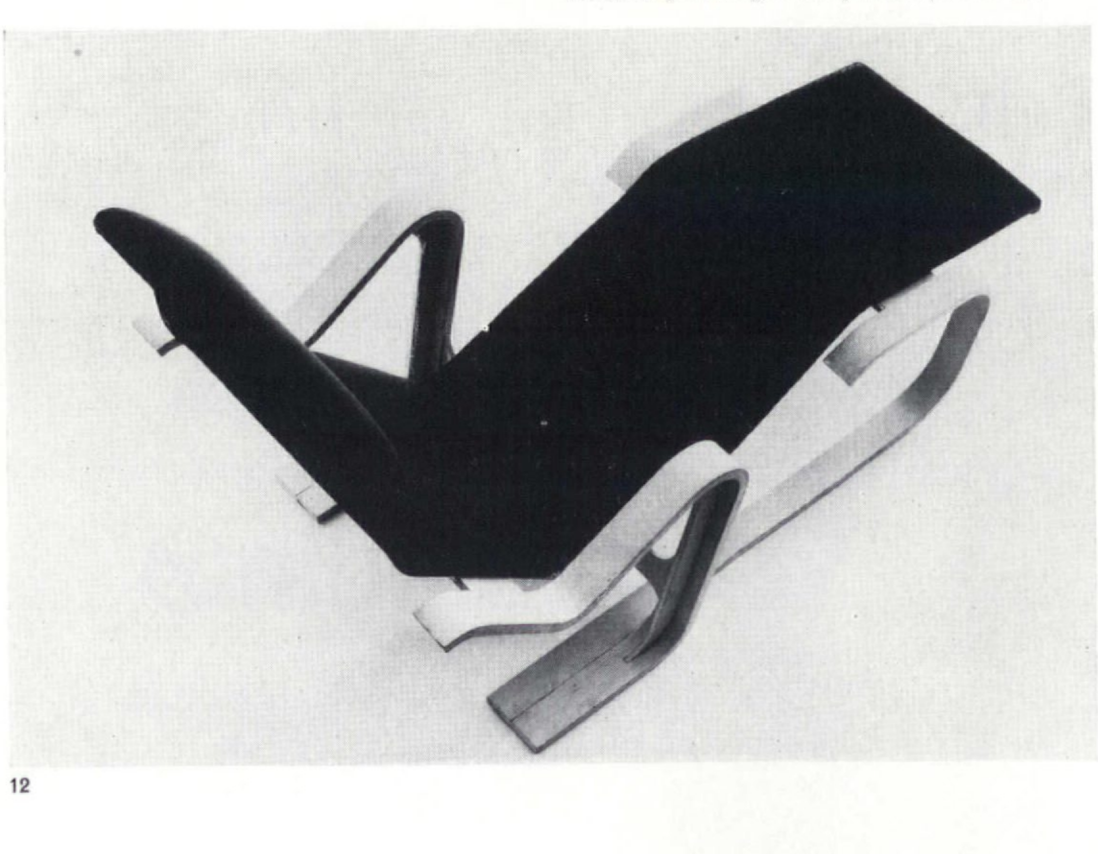
11
Isokon chaise longue by Breuer 1936

12
Isokon long chair again being made by Isokon Ltd.

frame, upon which the upholstery, in the form of a loose padded cushion, rested. This cushion could be easily removed for cleaning, or on any occasion when the chair was required for outdoor use.

The firm *Isokon* was set up in 1935 by Jack Pritchard initially to make wooden furniture (Breuer, Gropius and Wells Coates), and now after a long pause of over 20 years, *Isokon* is again producing the major piece from the pre-war Breuer Isokon furniture **11**. It now sells at £42 10s. It was initially designed to be executed in birch but is now being made in beech and is covered in a plain woollen material in various shades over synthetic rubber upholstery. Unfortunately the upholstery no longer takes the form of a removable loose cushion, a design idea that was taken over direct from the duralumin chair. Most of the other changes that have been made by Breuer since the initial design are of a technical and economic nature. The bent plywood seat is now no longer cut out to form lugs that house directly into the side frames. The seat simply rests on cross bearers that are housed into the laminated wood side frames. The fixed upholstery serves to cover this junction. Other minor changes have been made to the composition of the upholstery, which was initially rubberized hair and afterwards Dunlopillo. The upholstery now used is entirely synthetic foam of varying density.

Breuer once again has his place in the real world of furniture production alongside other European masters, such as Mies Van de Rohe and Le Corbusier, whose classic pieces were produced by Thonet before the war and are now being made and are variously available both here at Interiors International and in Zurich at Wöhnbedarf and Gallerie Hede Weber.



12

As
quiet
as
a
contented
cat.

Biddle Forceflo Convector Heating

BIDDLE RESEARCH AND DESIGN ENGINEERS have developed a new range of Forceflo Fan Heaters. These units' advanced design results in the highest possible heat output per square foot of fin surface. But the only evidence of that is the comfortable temperature they create.

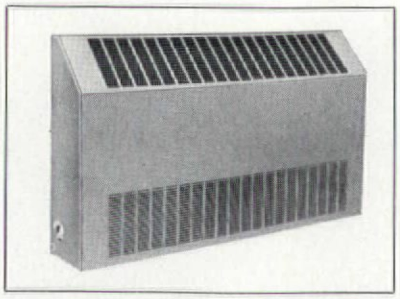
Why is this?

Firstly, Forceflo fans are so quiet you can scarcely hear them. What's more, we'll be specific as to just how quietly an installation will operate. Every unit has been tested through all audible frequencies and comes with a guaranteed noise criteria rating.

Secondly, the range of sizes provides outputs from 16,000 to 62,000 Btu/h. Even if the heating demand is exceptionally high, a low noise level can still be assured by selectively planning the unit capacities.

And thirdly, Forceflos take precious little space. The freestanding models are only 28 inches high by 9 inches deep and by using recessed, remote or ceiling mounted models even less valuable space is occupied.

Is it any wonder that Forceflo users are well contented too!



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Trade & technical notes

Gontran Goulden

A new development in oil-fired central heating

Shell-Mex and BP Ltd. say that at the end of 1963 there were 210,000 oil-fired central heating systems in this country out of a total of just over one million. With gas and electrical systems it is normal to meter the fuel so that one pays for what one uses only. Not so with oil, which must be ordered in bulk and is cheaper in large quantities. The twin problems of bulk storage and big fuel outlay are at least partially solved if a system of central storage can be installed. Shell-Mex and BP have devised such a system which is claimed to be suitable for all housing estates and for many blocks of flats. Oil is piped from a large centralized storage tank to each dwelling where it is metered into individual heating systems. The advantages of this are:

(*a*) There can be a saving in space.
(*b*) The installation costs less.
(*c*) The householder pays only for the amount of fuel used.
(*d*) The responsibility for keeping the installation adequately stocked rests with the supplier who owns the system.

On the other hand householders will be restricted to one supplier and will not be able to change. This should not, however, be a serious worry, since only one brand of water, gas, and electricity is normally available.
Shell-Mex and BP Ltd., Shell-Mex House, Strand, London, W.C.2

London's tallest glazing problem 1

Everyone in the building industry knows something about the initial glazing problems of the United Nations Building in New York. New techniques have, however, progressed a good deal since that particular building was completed, and the architects of London's tallest building, the GPO tower off Tottenham Court Road, hope that they have solved the rain penetration problem by using gaskets of Neoprene synthetic rubber. The tower, designed by the Chief Architect's Department of the MoPBW, will be used for television and radio communications and will be surmounted at 25th floor level by a revolving restaurant.

The Neoprene gaskets, which have a simple U-shaped cross-section, were snapped over the perimeter of each pane as it was installed on the site. Secured in position with a metal covering strip, they make a watertight compression seal. The gasket also provides a cushion for the panes against thermal or mechanical movement. The resilience of the Neoprene uniformly transmits sealing pressure without causing high stress points on the glass. Should a pane have to be replaced the same gasket can be reused. It is expected that the gaskets will stand up to weather and atmospheric pollution for the life of the building. Neoprene is also used as a barrier strip between the bronze cleaning cradle guides and the skinless steel members on the outside of the tower. Joints between stainless steel and galvanized sheet are insulated with Neoprene against electrolytic action. James Clark and Eaton, the glaziers responsible for the installation, report that they had no trouble with the gaskets.
Du Pont Company (UK) Ltd., 76 Jermyn Street, London, S.W.1.

1

Sixth Italian furniture competition 1965

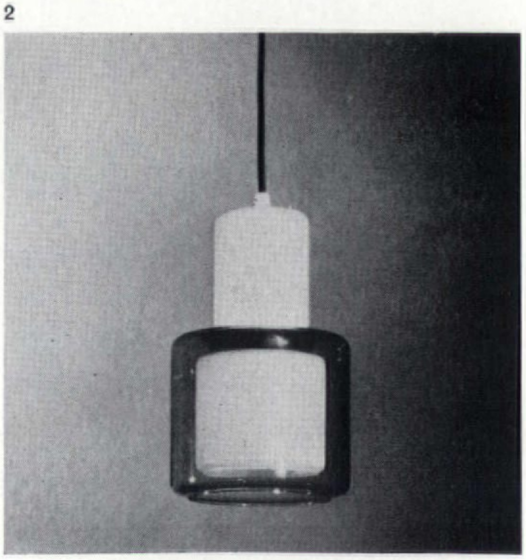
The organizers of the bi-annual Ente Mostra Selettiva e Concorso Internationale del Mobile announce that a sixth competition will be held in 1965. This furnishing competition will be divided into six categories, namely furniture for: (i) a hall; (ii) a dining room; (iii) a living room; (iv) a double bedroom; (v) a single bedroom; and (vi) a professional office. Designs must be submitted by the end of February 1965. The international jury will meet in March 1965. Prize-winning entries will then be manufactured. This work must be completed by the end of August 1965. The exhibition of completed work will be opened in Cantù in the middle of September 1965.
The full regulations for the competition will shortly be available from the organizers, Piazza Pellegrini, Cantù, Italy.

Good trade literature

A leaflet describing Permafoil, a new metal-lined vapour barrier.
Permanite Ltd., 455 Old Ford Road, London, E.3.

Constellation Lighting Fittings, List No. P2845/A. From Falks Ltd., 91 Farringdon Road, London, E.C.1. These fittings have been designed by J. M. Barnicot, MSIA, and are made for easy breakdown packing in boxes. Fittings can be used singly or in clusters. 2

2



IBSAC postscript—Literature

Gontran Goulden

WIL-MAC system building

Wilson's (Builders, Northampton) and Dow-Mac Ltd. A system using concrete slabs for two-storey houses. Cavity slabs for external walls, 3in solid for partitions. Aluminium windows. Seven basic boxes. Structure can be erected in a day. Finished terraces have a pleasant stepped appearance.
Dow-Mac (Products) Ltd., Tallington, Stamford, Lincs.

The Cubitt Magazine, summer 1964

A number of interesting articles on industrialized building including a description of the Balency system which Cubitts are using here under licence. This is a heavy panel system for multi-storey flats.
1 Queen Anne's Gate, London S.W.1.

Lowton-Cubitt housing

A folder of information sheets and drawings for a system for two-storey housing using composite steel and timber members for the structural frame with a wide choice of infilling panels. All crane work can be completed in a day and the roof is weathertight by that time. Upper floor in stressed skin timber panels.
H. C. Janes Ltd., Jansel House, Stopsley Green, Luton, Beds.

Jansel

Two-storey housing. Concrete columns, lattice steel beams. Concrete panel ends, timber infill. Chipboard and joist floors in panels. Timber roof.
2A High Street, Stourport-on-Severn.

Rigid frame construction

Can be used up to four storeys and is a frame-only of built-up steel posts and beams. Any form of cladding can be used.
35–41 Lower Marsh, London S.E.1.

Truscon

A system for flats and maisonettes, ten concrete units to the maisonette. Great flexibility claimed. Stramit internal partitions. Also good literature on Truscon products.
Grosvenor Gardens House, London S.W.1.

Sundh

A full description of this Swedish system of concrete panel construction. At present there are seven licensees in this country.
Uxbridge, Middlesex.

Cape Building Products

A special leaflet produced for the exhibition giving a list of the products shown on the company's stand. This is a record of ingenuity and cooperation with other firms in the production of materials and components with many uses in industrialized building.
263 Putney Bridge Road, London S.W.15.

Murtile

Prefabricated tiling and mosaic systems. Unbelievably rapid method of tiling.
Blue Bridge Lane, York.

Spacemaker system of building

The Shepherd Group of York on the ball again with a system for everyone, well presented in a folder.

Merchant Adventurers

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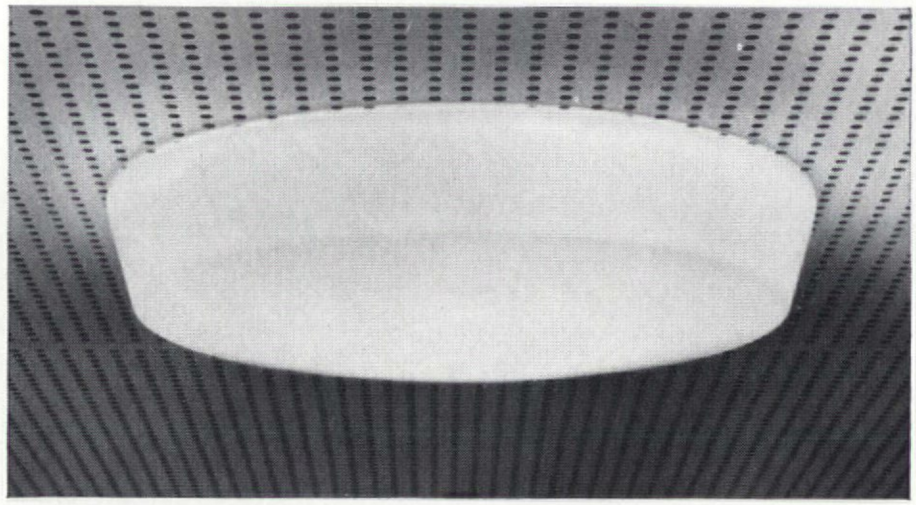

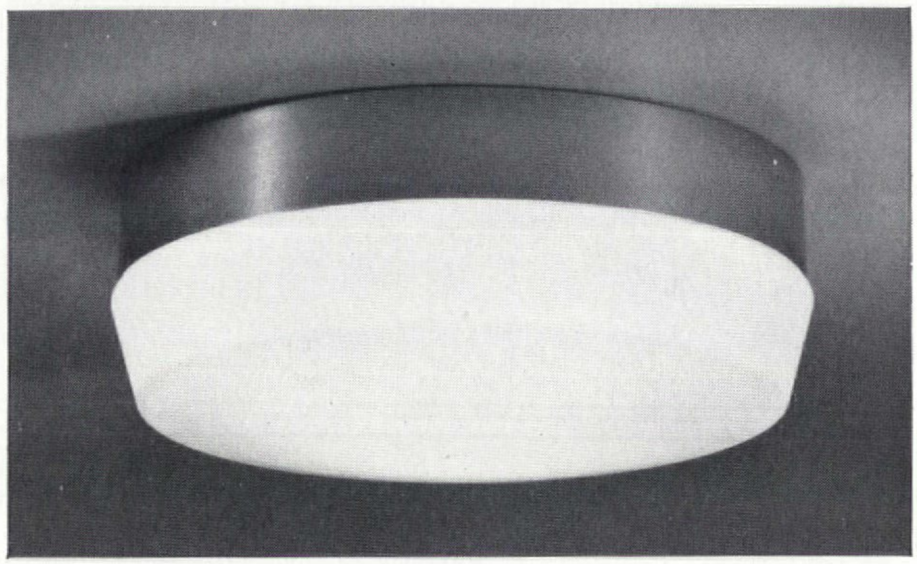

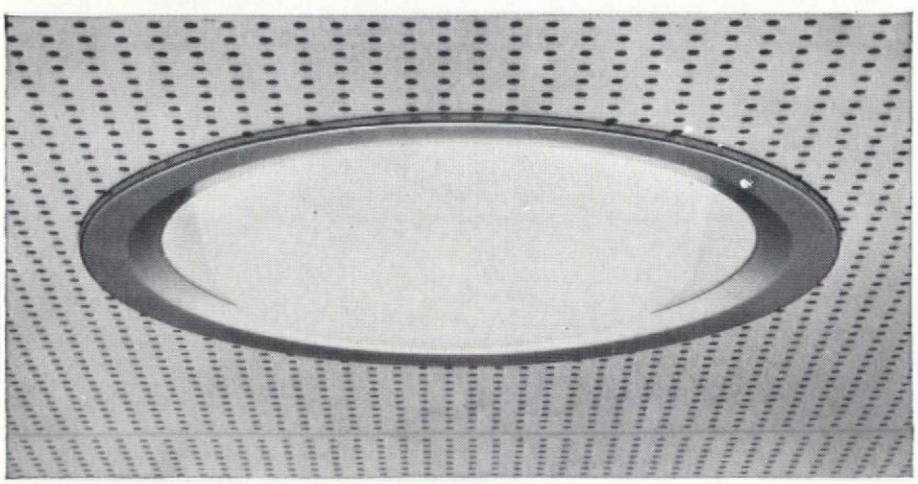

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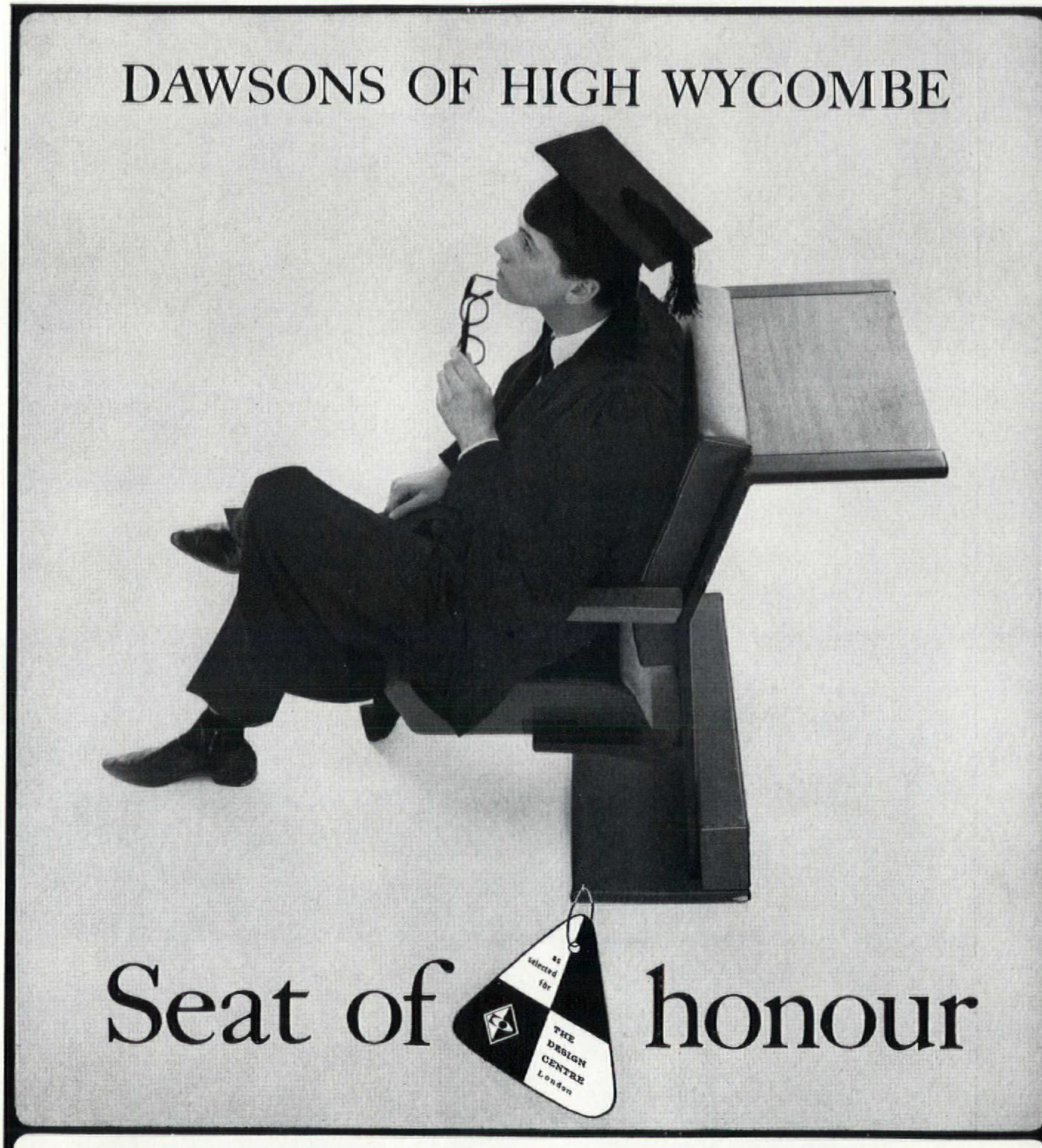

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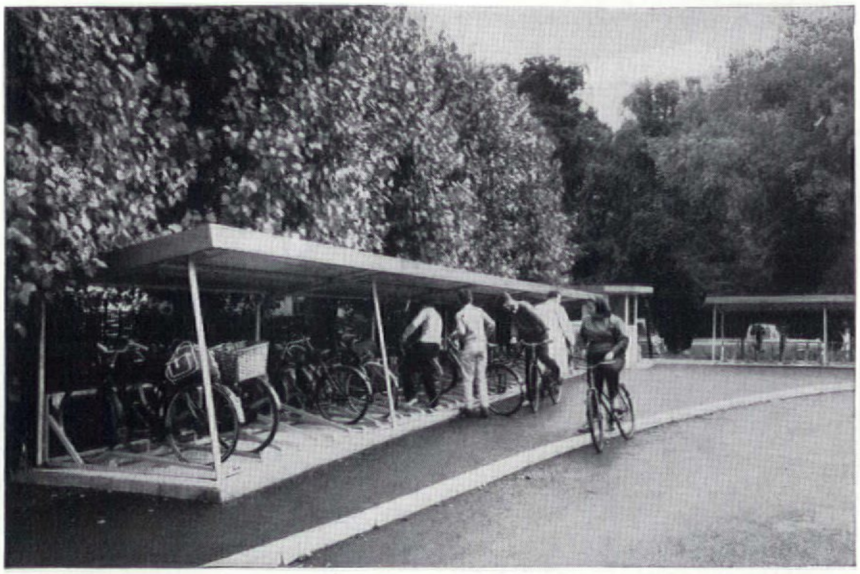

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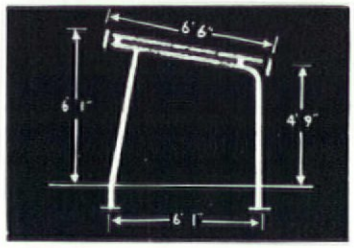

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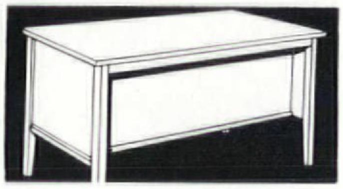

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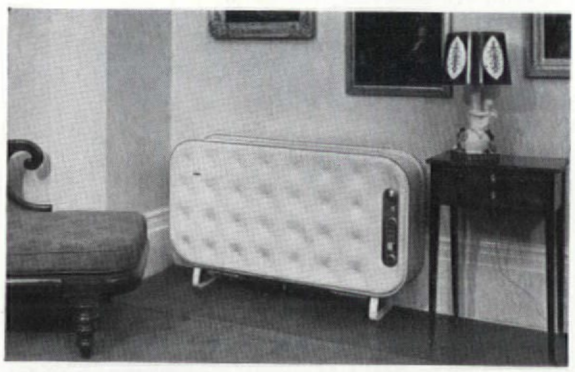

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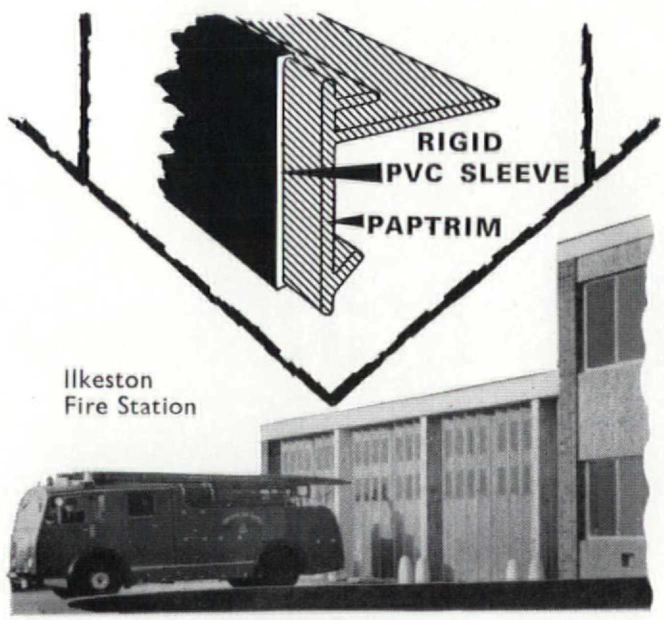

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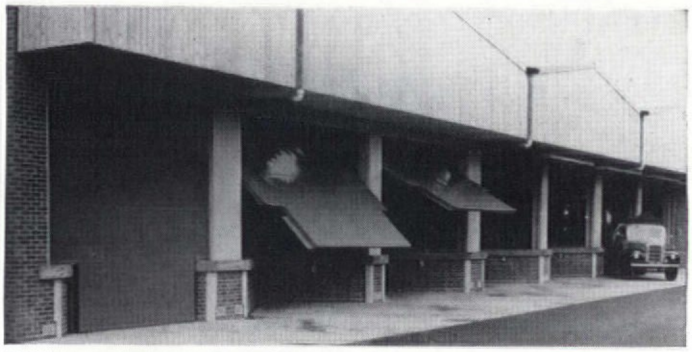

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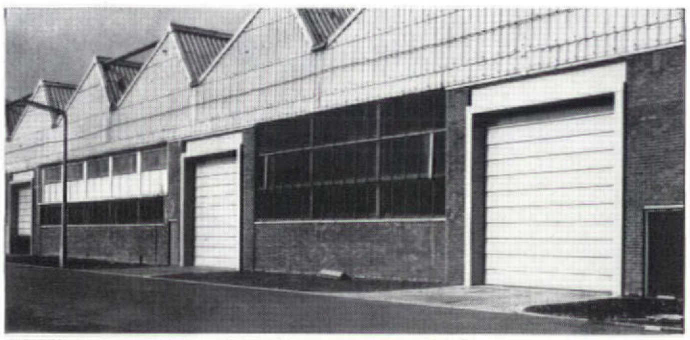

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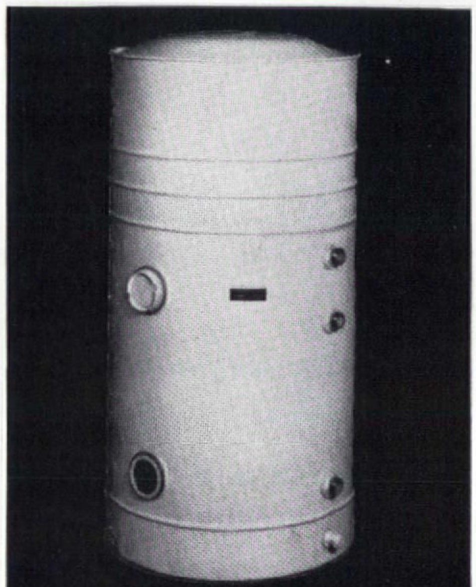

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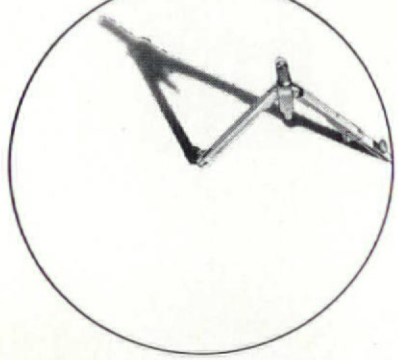

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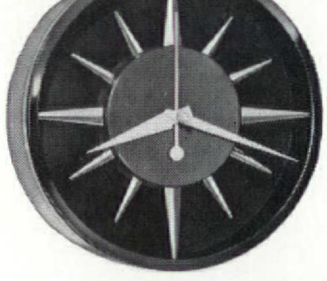

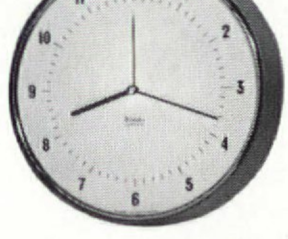

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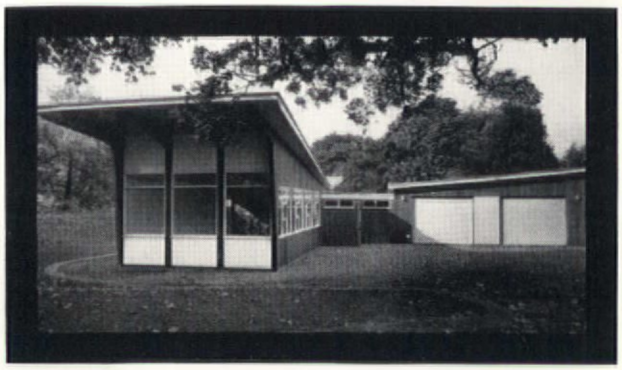

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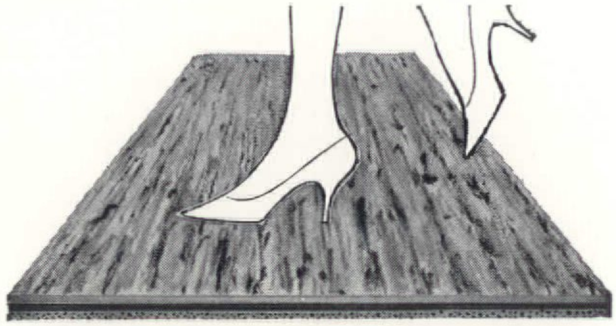

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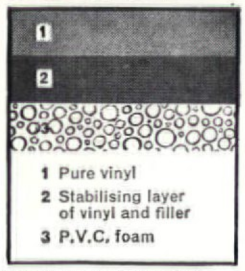

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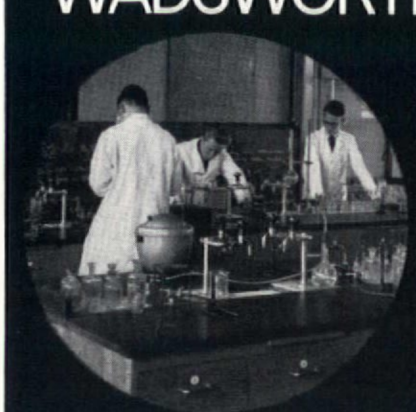

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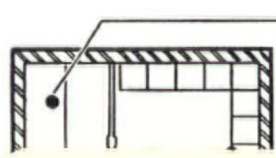

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