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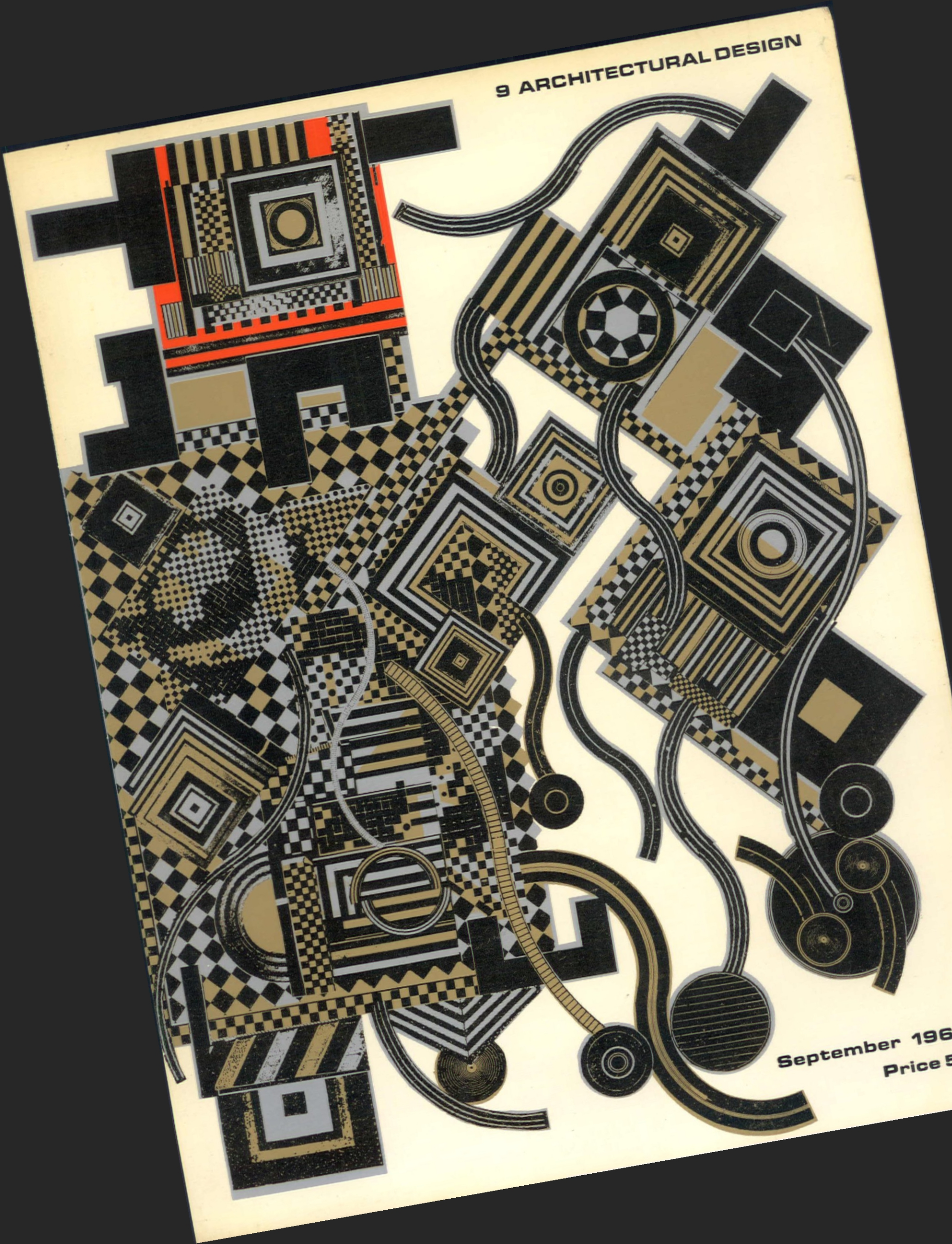

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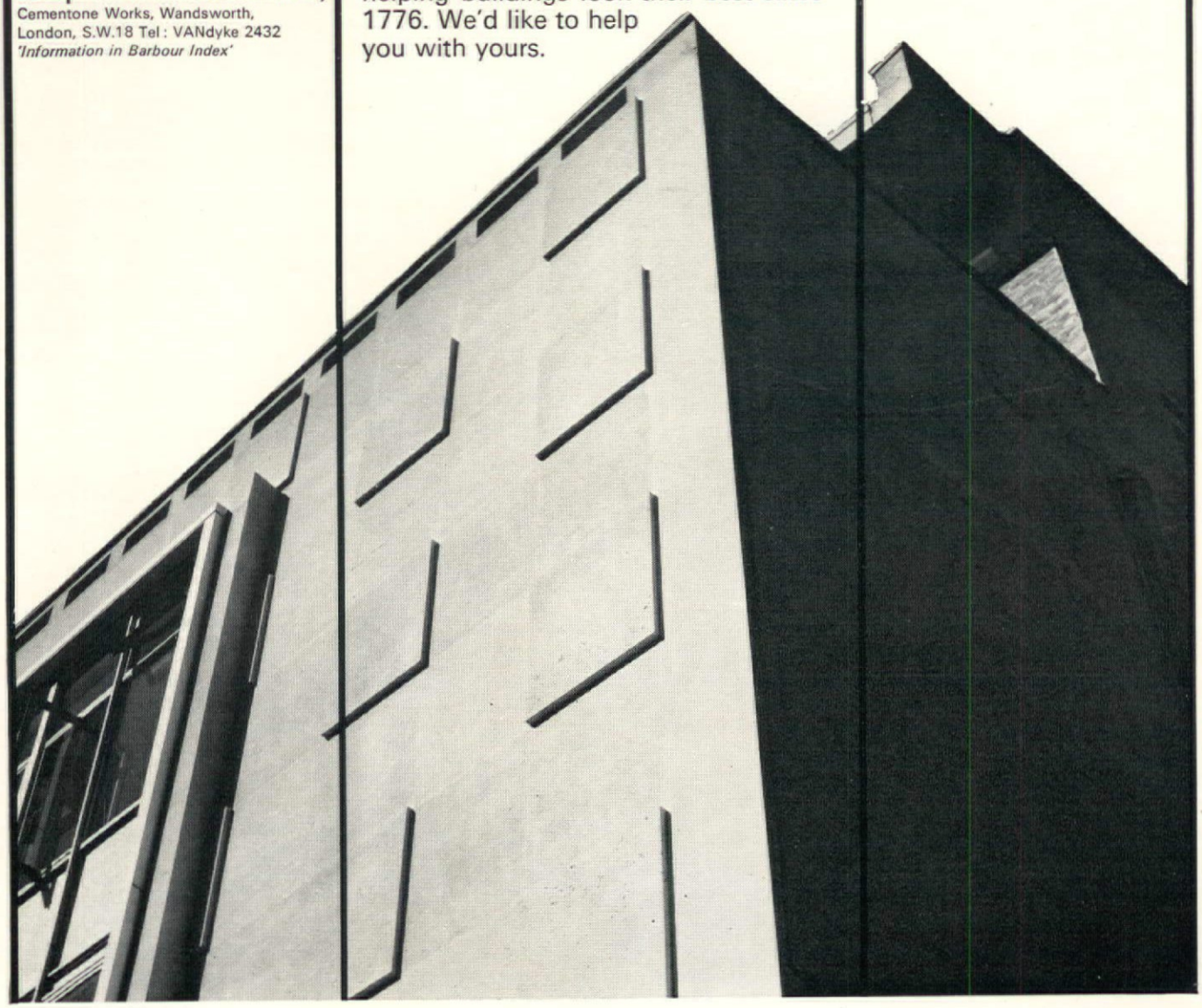

Volume XXXV
September 1965

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CONTENTS

Cover Two-fifths full size reproduction of 'Tortured Life', a screen print by Eduardo Paolozzi, the second of 12 entitled 'As is When' based on the life and writings of Ludwig Wittgenstein (see page 468).

AD5 **GPO radio tower**
AD9 **Books**
421 **Cosmorama**
430 **Sir Leslie Martin: selected works**
Sir Leslie Martin 440 **Library group, Oxford**
J. Stirling and J. Gowan 449 **Children's homes, Frogmore, Surrey**
Lord Snowdon, C. Price and F. Newby 451 **Northern aviary, London Zoo**
Douglas Stevens & Partners 461 **Offices, Watford**
Jasia Reichardt 468 **Printmaking now**
471 **Design**
Alex Pike 473 **Trade Notes**

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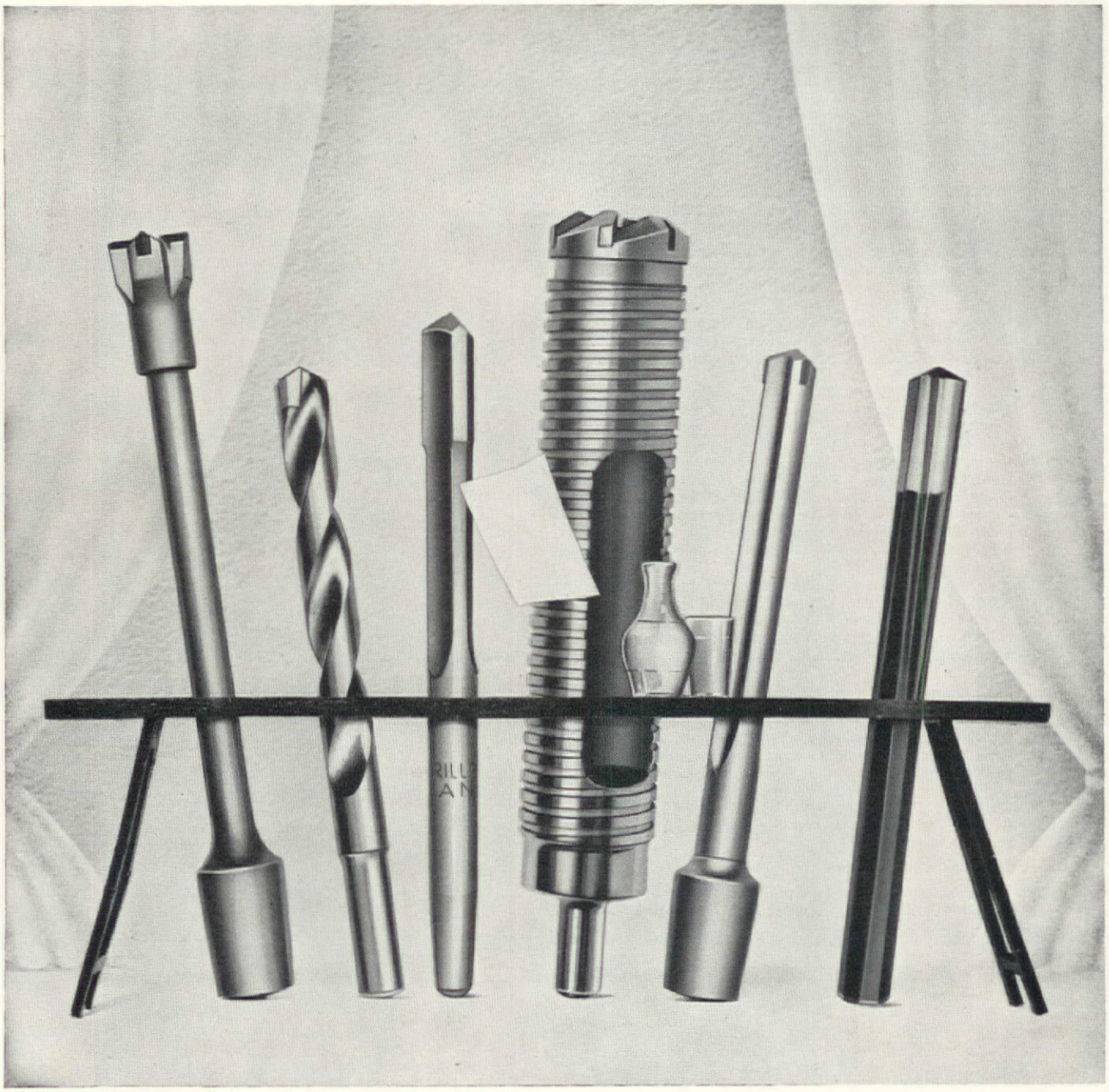

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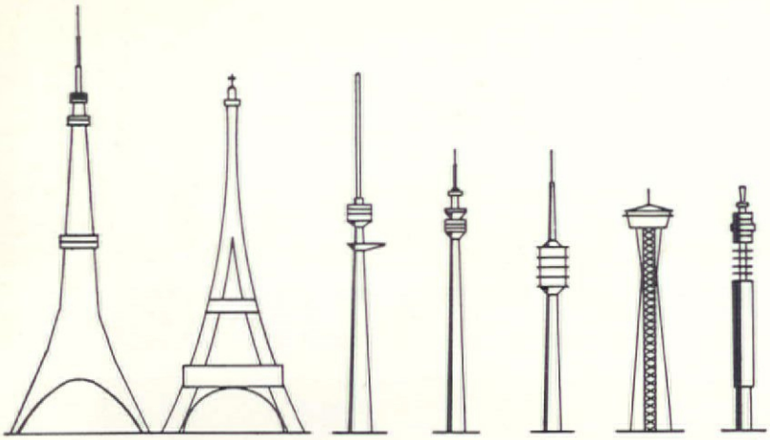


1

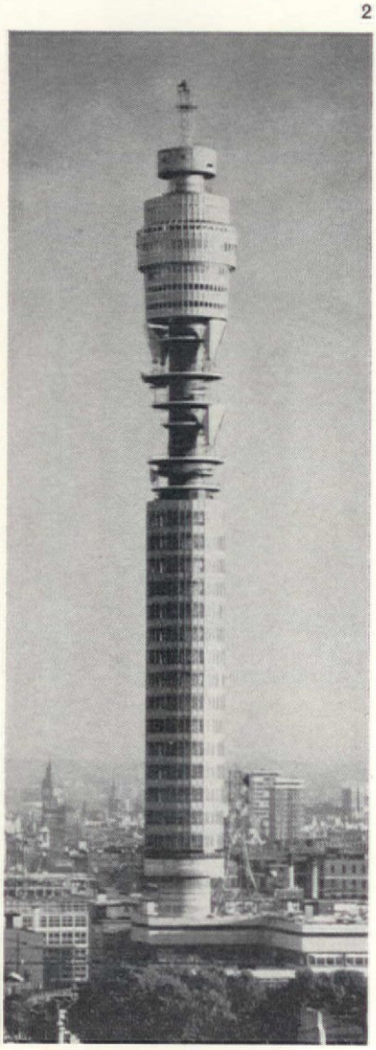
GPO radio tower, London

London's new landmark, the Museum Radio Tower, now reaching completion was designed in the Ministry of Public Building and Works for the GPO, for radio, television and telephone purposes.

The structure is essentially a reinforced concrete cylinder 20ft in internal diameter from which reinforced concrete floors with diameters up to 64ft are cantilevered. The tower was designed to resist gusts of wind of 94 miles per hour for a duration of 15 seconds at a height of 600ft. Because of the glazing and the protection afforded by the aerials it is not expected that solar heat will cause any deflection of the structure.

The tower exterior starts from ground level with 130ft 0in of concrete with sawn board finish broken by the bridge joining the tower to the telephone exchange. This is followed by 225ft 0in of curtain walling which encloses fifteen floors, containing instruments requiring a constant temperature and protection from solar rays. This is achieved by a triple skin curtain wall. The basic structure consists of heavy RSJs running vertically from floor

2



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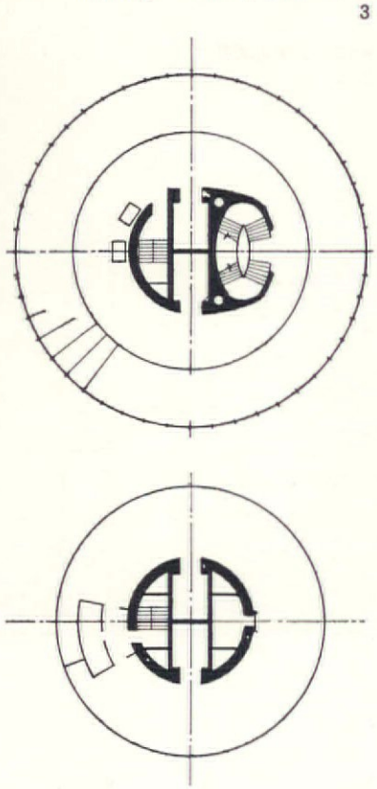

1
A range of international towers: Tokyo, Paris, Vienna, Dortmund, Berlin, Seattle, London

2
View of the GPO tower from the north

3
Plans of the restaurant floor, showing the revolving outer circle, and a typical apparatus floor of the GPO tower

The versatile and individual hand of Tibor Reich embraces fabrics for tightly budgeted schemes as well as specially designed and constructed cloths for important projects which call for a fresh approach to furnishings.
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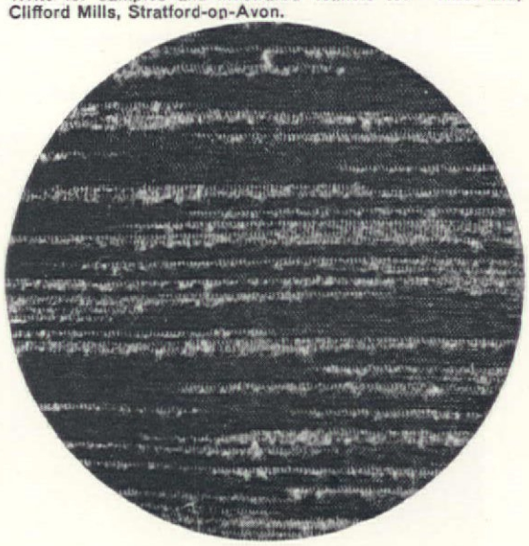

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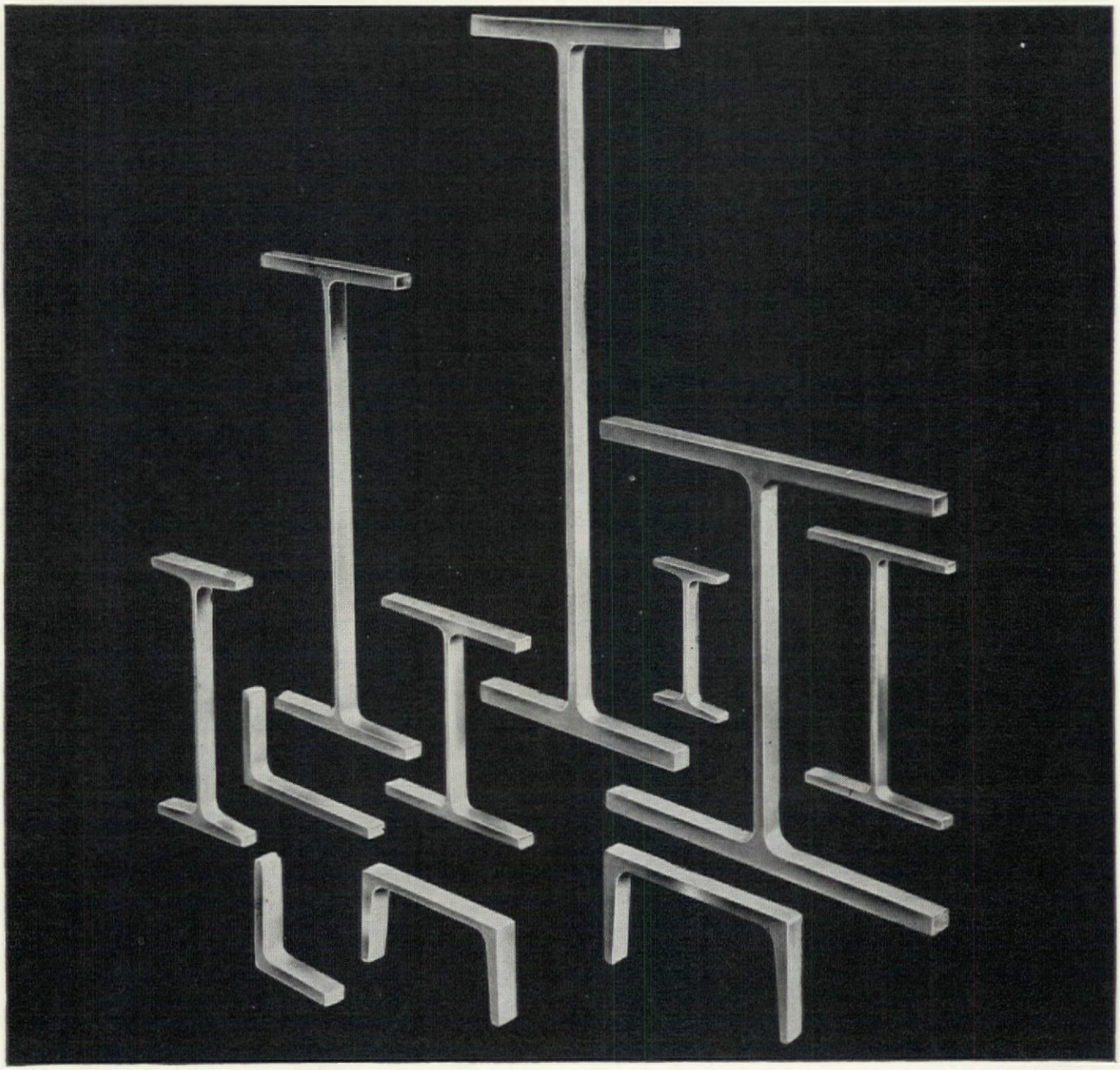

The structural steel sections shown here are just a few of the many rolled by Appleby-Frodingham Steel Company, who also roll a large proportion of the steel plates made in Britain. Appleby-Frodingham are experts in the production of steels for boilers, pressure vessels and highly-stressed structural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

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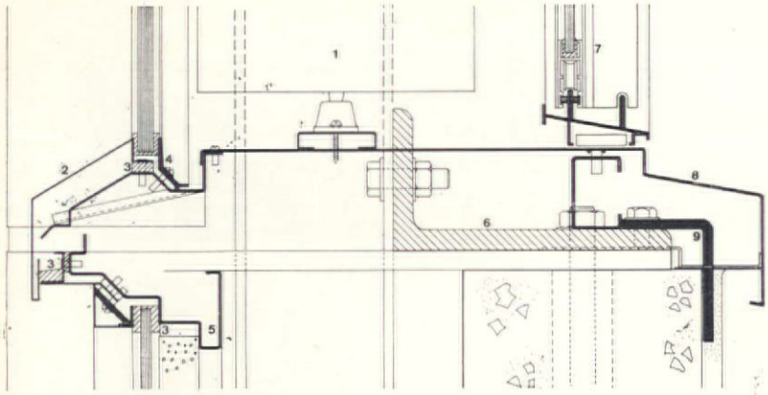

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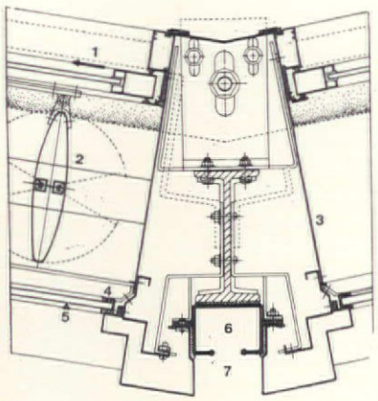


2

1
Section through window sill
1 sunbreaker
2 s.s. outer frame
3 neoprene
4 aluminium bead
5 g.s. inner frame
6 floor fixing bracket
7 slide window
8 anodized aluminium
9 g.s. bracket

2
Section through a corner mullion
1 horizontal sliding sash
2 aluminium sunbreaker
3 aluminium
4 neoprene gasket
5 anti-sun glass
6 bronze guide for cleaning cradle
7 neoprene gaskets

3
Section through the restaurant showing the 10ft wide revolving outer circle and window wall

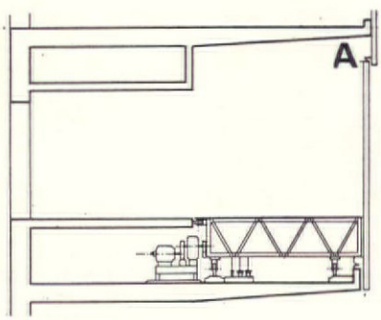
4
Detail A of the revolving wall and restaurant ceiling
10 aluminium flashing
11 B.R. sealant
12 sleeve and fixing plate
13 triple glazed unit
14 1½in panel
15 sill flashing

to floor which support a series of pressed steel subframes; these sub-frames in turn form the inner core on which are mounted the three skins. The external skin consists of stainless steel frames glazed with ⅜in anti-sun glass with a number of top hinged ventilators.

The various metals of which the curtain wall is formed—hot-dip galvanized steel, stainless steel, aluminium and bronze—are insulated from each other by neoprene strips to obviate galvanic or electrolitic action.

Above this curtain walling is about 120ft 0in of open concrete galleries on which aerials are located, and above these galleries are the glazed public floors including a revolving restaurant. The lift motor room is at the top of the tower and the whole structure is finally topped by a 40ft 0in lattice steel mast, which will accommodate future aerials and radar scanner.

The contractors are Peter Lind & Co. Ltd. The window wall is by Messrs Hope & Sons.



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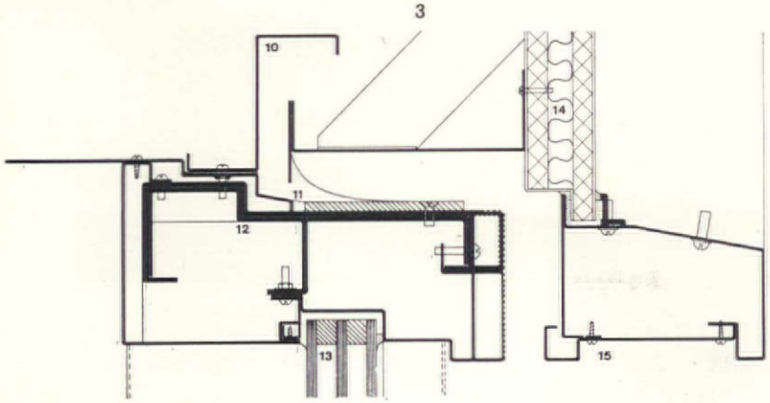

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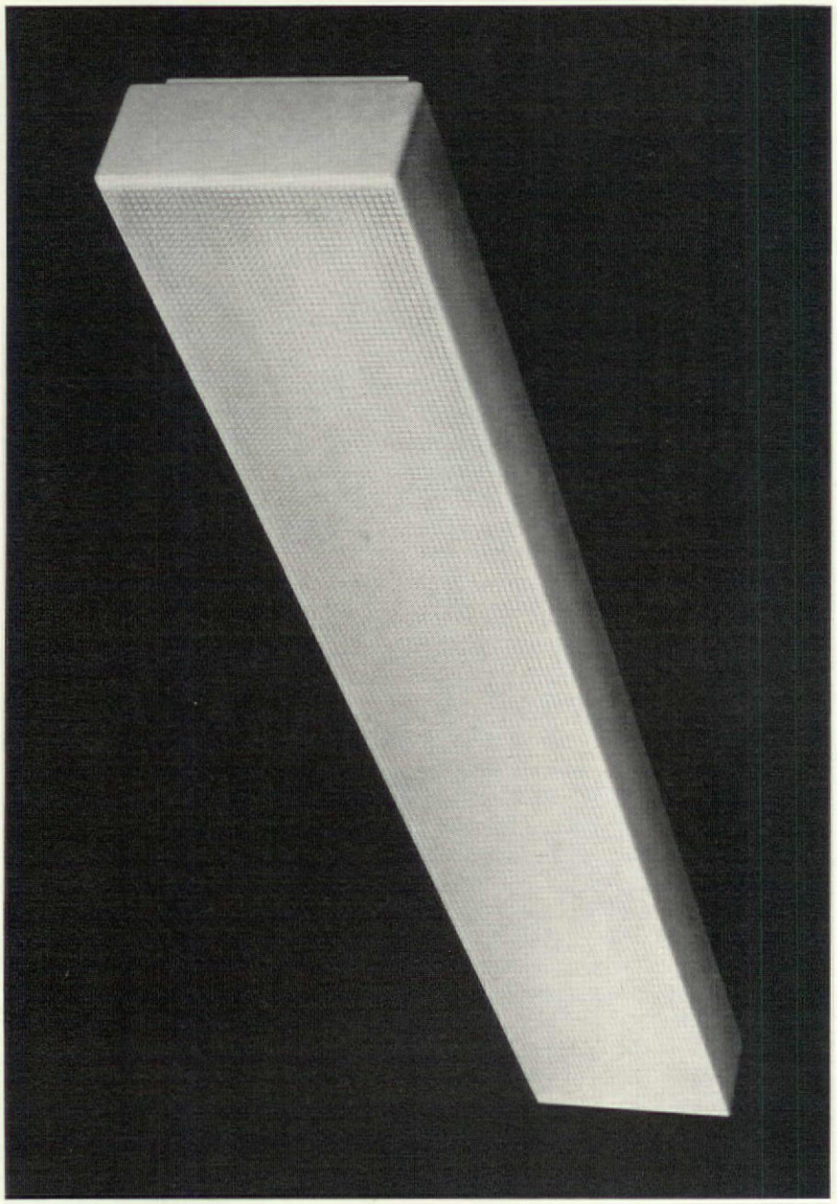

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Books

The elements of structure

W. Morgan. Pitman 40s.

This book on building structures has been written by an engineer with the intention of providing a simple non-mathematical approach to structural engineering. It is addressed principally to first-year students of architectural and building technology and provides a general introduction to the whole range covered by this branch of engineering in a way never achieved by theoretical text-books, and fills a gap.

The scope of the book is wide, commencing with general chapters on structural materials, continuing with elementary statics, reinforced and prestressed concrete and lattice frameworks. It concludes with chapters of a more general and descriptive nature on building frames and foundations, folded slabs, shells, domes and grid floors, and finally some notes on retaining walls and bridges.

The section of the book dealing with statics is profusely illustrated. However, much is too detailed if mathematics are to be avoided. Its curtailment would lead to clarity and readability.

The initial chapters of the book provide a most interesting insight to the properties of building materials, while the later chapters, describing structures as a whole in a straightforward manner, achieve in an eminently successful way the author's intentions for the book. They should whet the young reader's appetite without boring him with theoretical notions beyond his standard and manage to explain how quite advanced structures act. The chapter dealing with connections between members is useful, although surprisingly omitting any reference to connections in precast concrete construction. The many historical notes contained within the text help to put the subject into perspective, although more could perhaps have been made of this angle.

Peter R. Paul

Design of concrete structures

George Winter and Arthur H. Nilson
McGraw-Hill 81s. 6d.

The seventh edition of this comprehensive reference work on the design of concrete structures is probably the most up to date and, in spite of its high cost, one of the 'best buys' currently available on this subject. Although based exclusively on the ACI Code of Practice, the experienced engineer will find no difficulty in adapting it to the requirements of CP 114, In introducing the ultimate strength approach to all its design concepts, it is ahead of its competitors in the field of concrete text-books, and it has much useful work on elastic/plastic effects, crack patterns and behaviour of steel and concrete under stress.

In its treatment of prestressed concrete it falls short of specialized books, As an introduction to the subject, it is nevertheless well written and handled. The sections dealing with folded plates, shells and other specialized applications should also be looked merely on as introductions. Every chapter carries its own list of references. Unfortunately these lists cannot be said to be comprehensive, and their extension and elaboration would do much to improve the reference value of the book.

A comprehensive notation should be introduced, and indeed why not add the ACI Code in full?

Peter R. Paul

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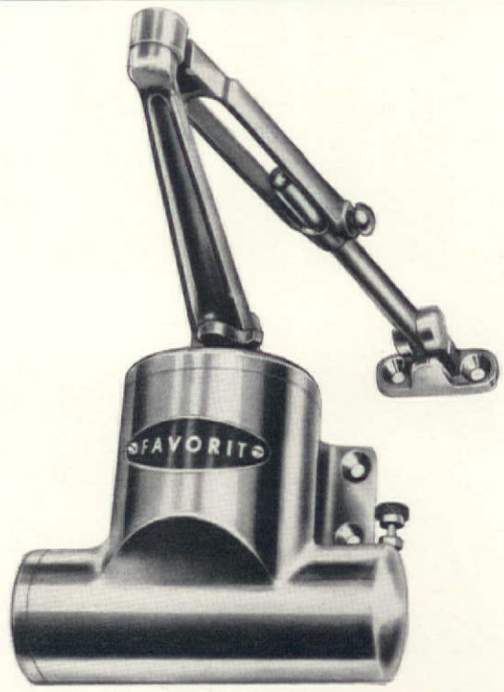

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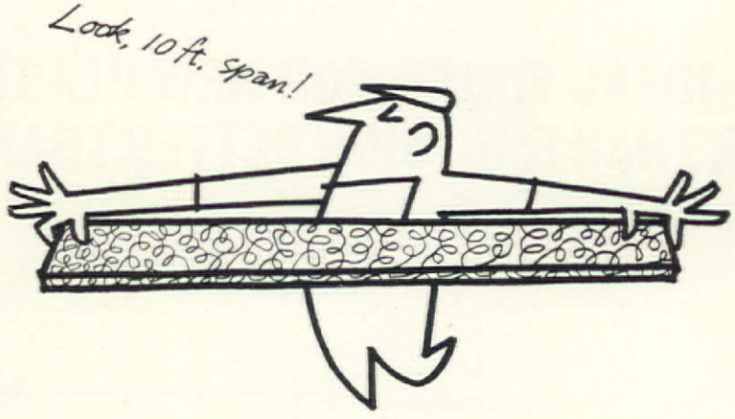

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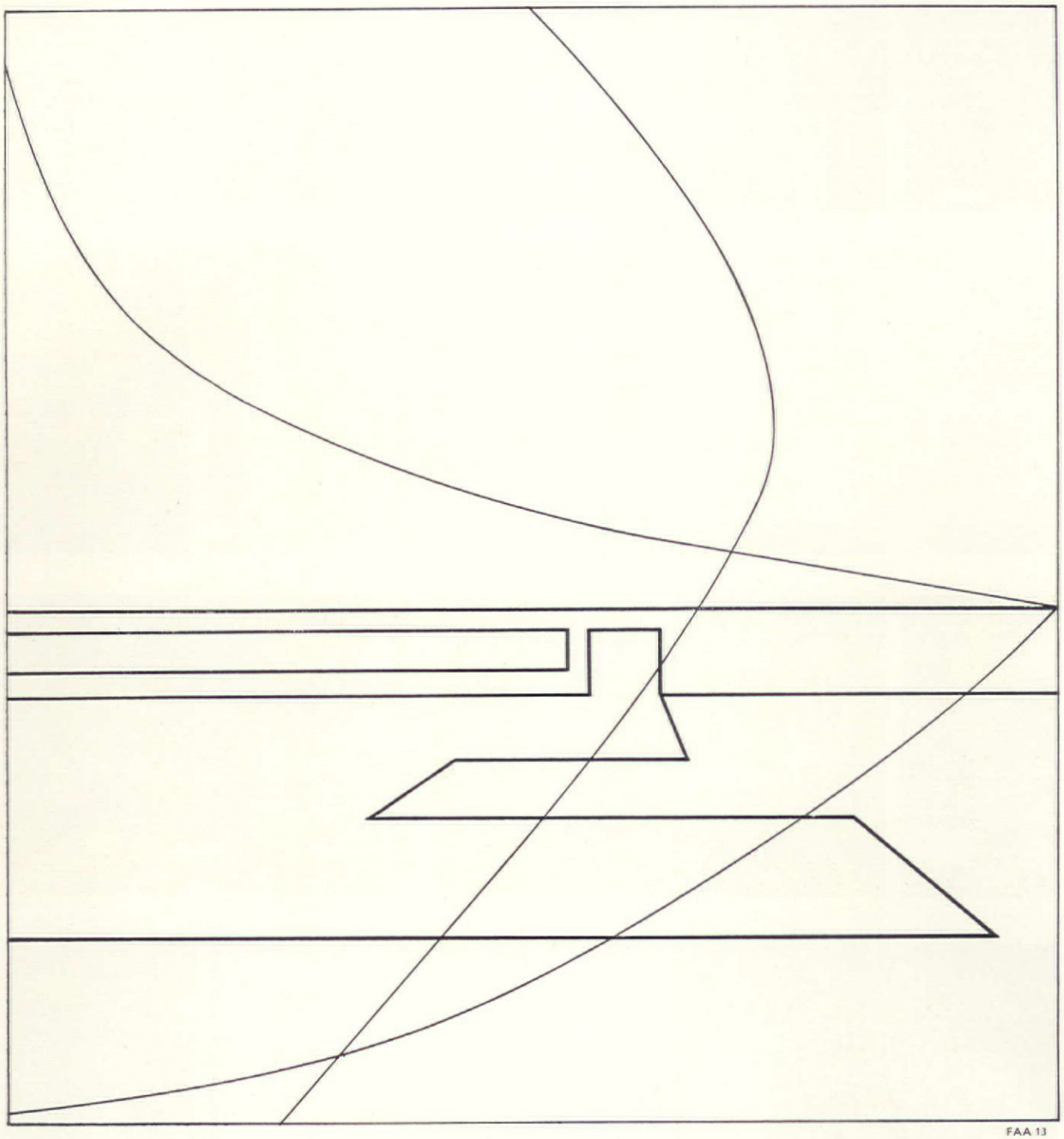

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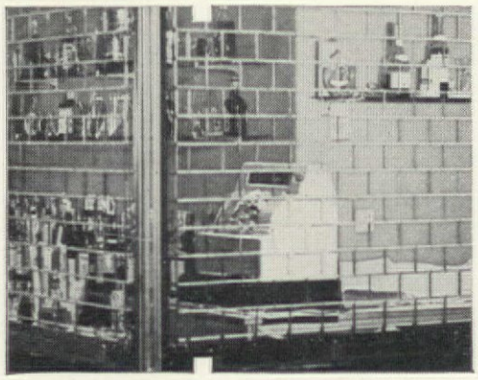

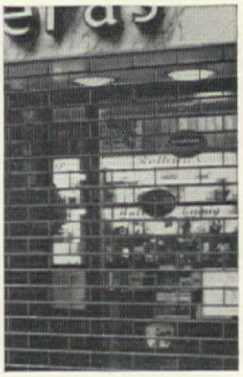

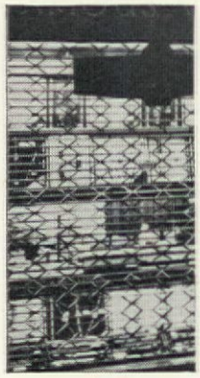

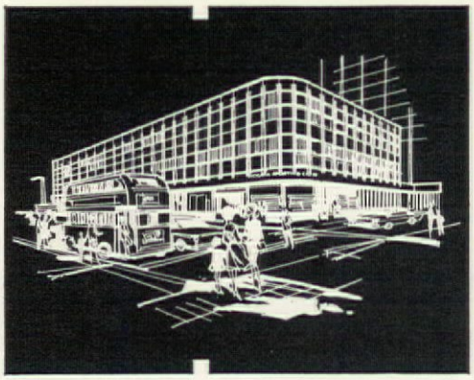

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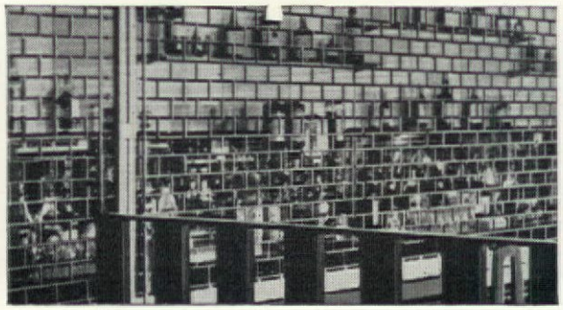

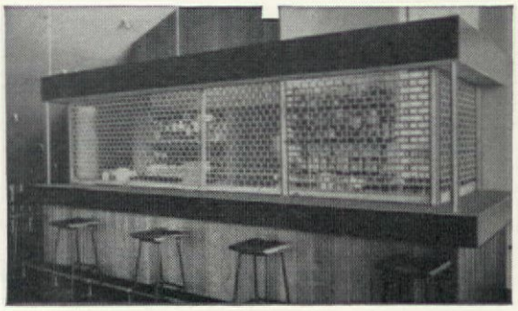

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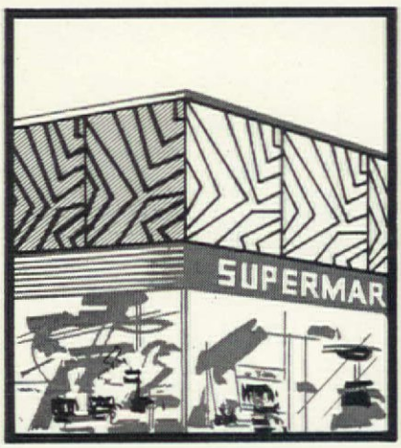
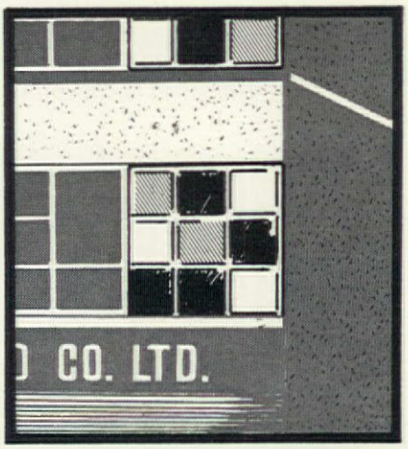
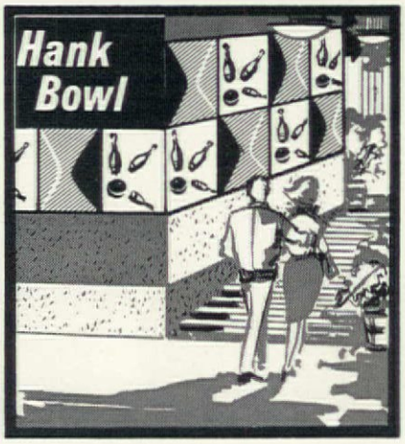
'COXPAN' ACRYLIC ARCHITECTURAL PANELS

A COMPLETELY NEW APPROACH TO EXTERIOR WALL PANELLING FROM WILLIAAM J. COX, MANUFACTURERS OF 'COXDOME' ROOFLIGHTS.

Architects wishing to introduce colour and form to the exterior of a building can now specify 'COXPAN' Architectural Panels. The colours, being integral with the material are 100% permanent and fade-proof, whilst the designs can be in sculptured form or shallow relief as required. Virtually any design—abstract—Company emblem—trade symbol, or club badge can be produced in large or small quantities (tooling costs are relatively inexpensive). With their exceptionally light weight, no maintenance, easy fixing *and* low price compared with conventional steel, aluminium or concrete facings, 'COXPAN' panelling offers to Architects an entirely new approach to exterior wall panelling. Even internal illumination can be incorporated if required. The new 'COXPAN' colour brochure is now available (in A4 size)—send for your copy today.







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See the 'COXPAN' exhibit at The Building Centre.

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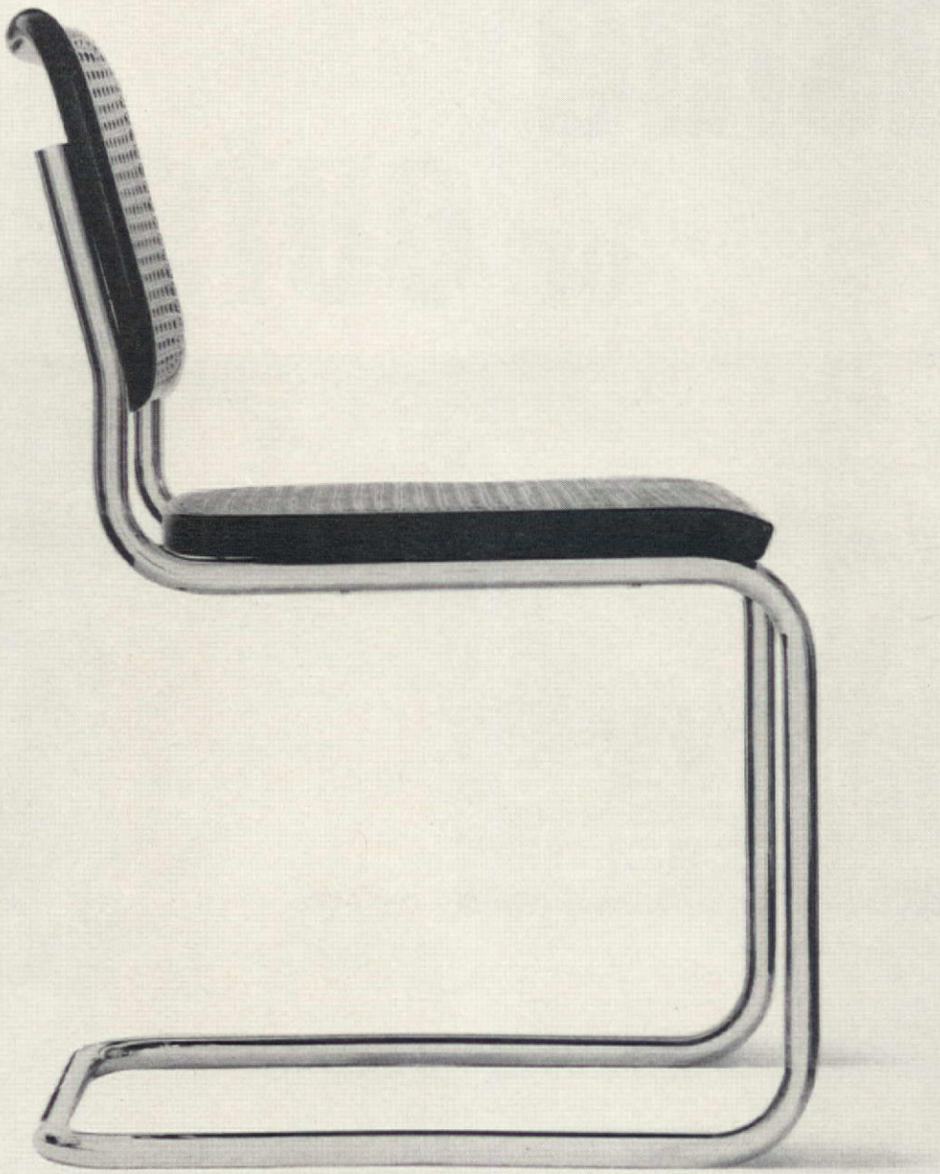
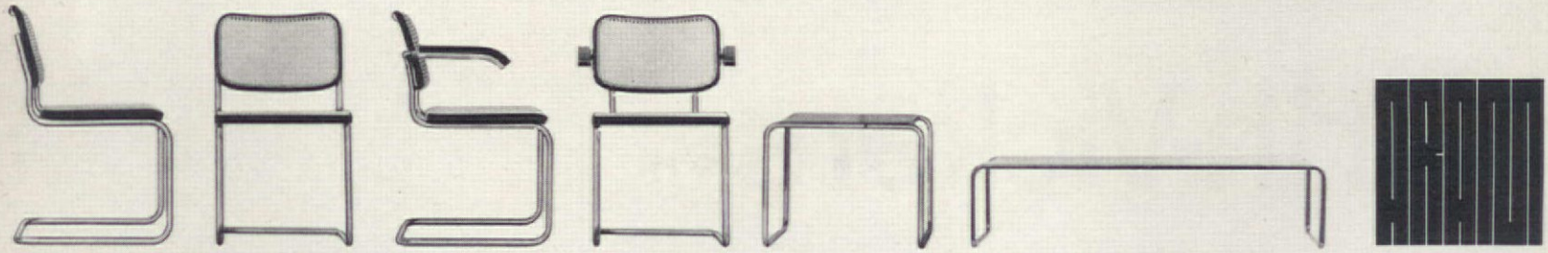


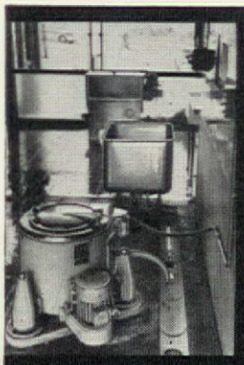
Huten Sie sich vor Ersatz!

Ever since Marcel Breuer designed the first tubular steel furniture in Germany forty years ago, there have been many attempts to emulate his creative excellence in this material. Aram Designs exclusively present the original Breuer tubular range imported from Gavina Furniture who have the sole manufacturing rights and produce these designs with the full co-operation of Breuer himself. The range comprises the Cesca B armchair, the Cesca side chair and the Lacio small and large occasional tables. The arms, seat and back frames are finished pallisandre or stained black and polished.

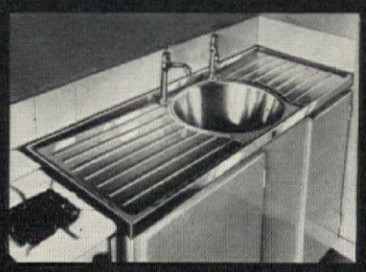


Aram Designs Limited, 57 Kings Road, Chelsea London SW3 telephone Slo 2451, exclusive importers of Gavina furniture.

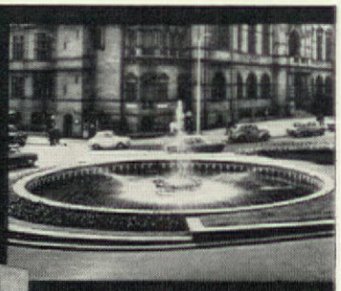
inside or outside

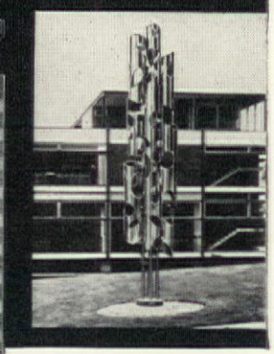


The Park Hill Development Scheme, Sheffield.



The Goodwin Fountain, Sheffield.





Stainless Steel Sculpture, Sheffield University.

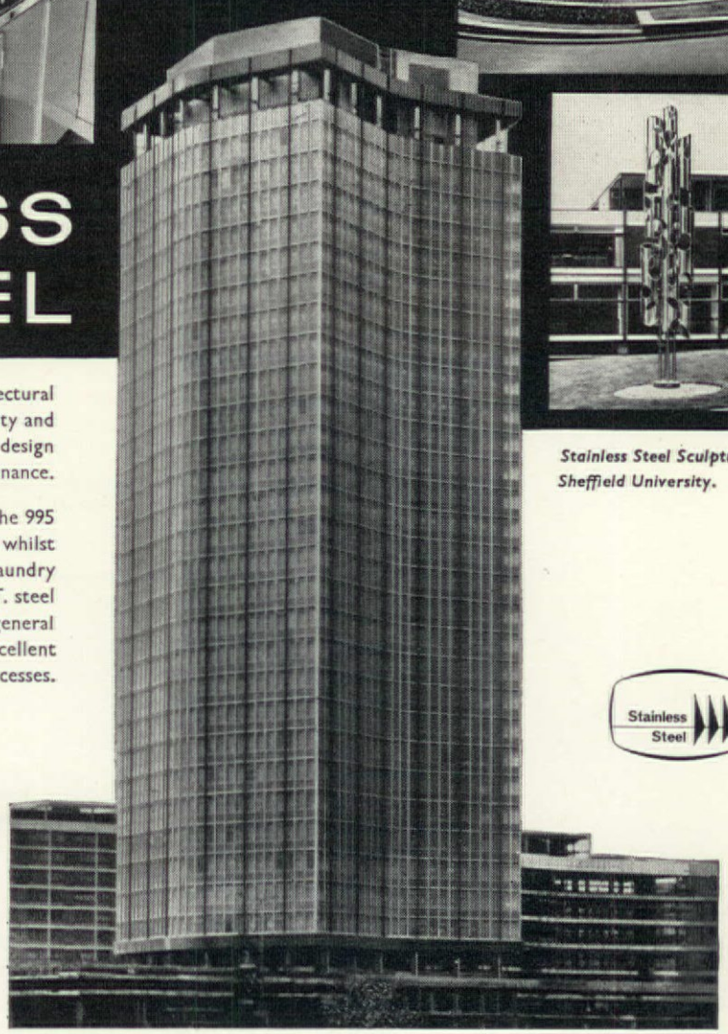
STAINLESS STEEL

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

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

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

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



Stainless Steel

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

Further information on the use of stainless steels for architecture is obtainable on request.

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The bricks: Ibstock Old English sandfaced rustics
The building: Warden's House, George Gibson Almhouses, Exning, Newmarket

Architects: Fitzroy Robinson & Partners, 3 Gray's Inn Square, W.C.1
Supplied through: Finnis Ruault & Nicholls Ltd.
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CLADEC beautifies an entrance hall

Architect: T. P. Bennett & Son, 43 Bloomsbury Square, London.

Cladec lends an air of distinction to the lobby of the recently constructed Millbank House at Surbiton for South Bank Estates Ltd. Lining walls and pillars, this decorative panelling consists of a Weyroc core, faced with an unjointed, mis-matched elm veneer and compensated on the reverse. Cladec offers architects, builders, contractors and decorators many practical and cost-cutting advantages, including easy handling of 8′ x 3″ to 9″ strips, speedy erection on simple groundwork, hidden fixing methods, economical replacement of damaged panels and a wide choice of veneers to suit any decorative scheme. Investigate the possibilities of Cladec before planning your next project. Write for full details.

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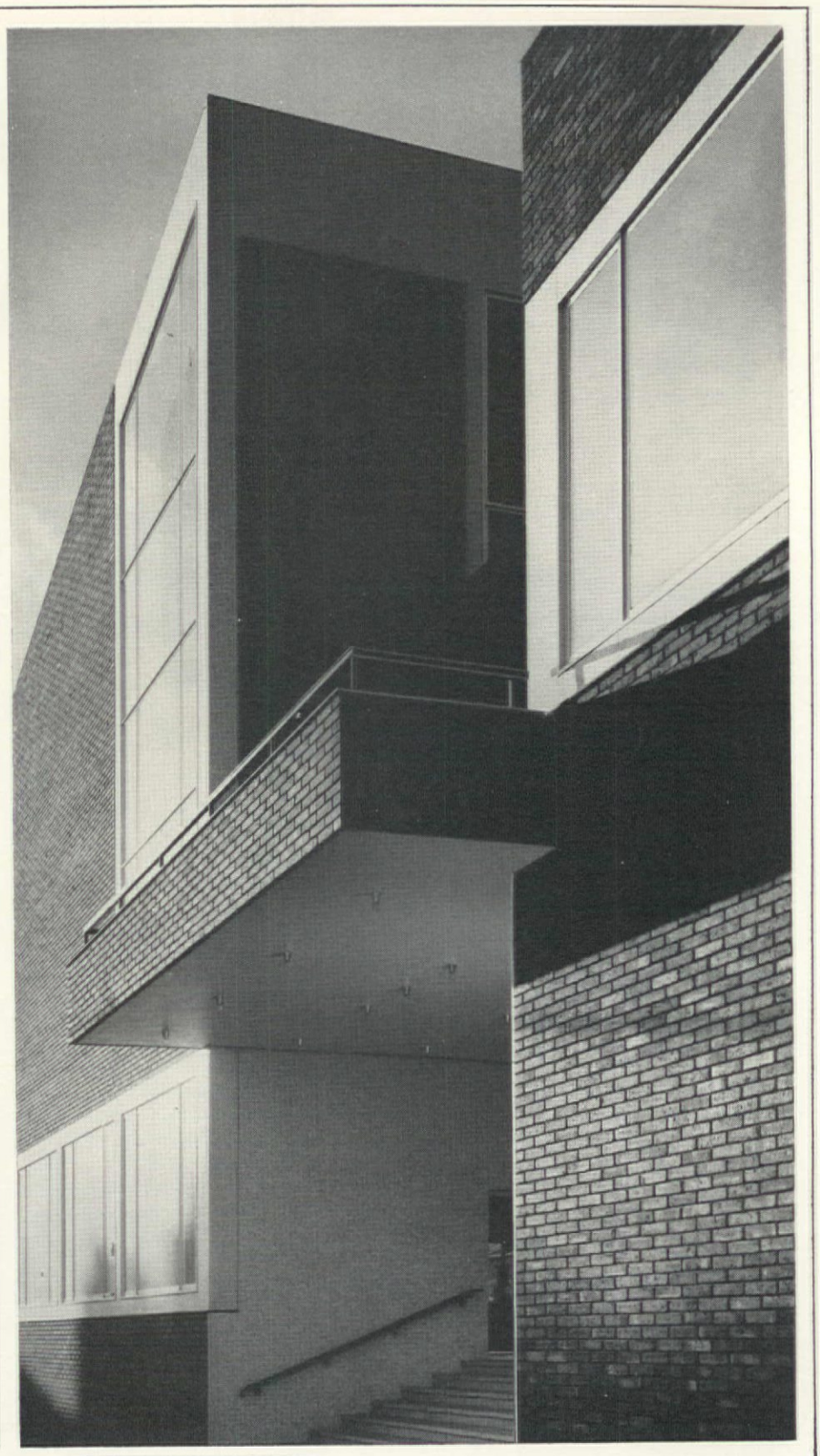
AP277

CROWBOROUGH MEDIUM STOCKS AT LIVERPOOL



The architects for the Liverpool University Students Union building specified Sussex & Dorking Crowborough Medium Stocks. Full use has been made of the textural interest provided by these well known Sussex stocks. Surface texture is further enhanced by raking the joints.

Architects: Bridgwater, Shepheard and Epstein

Please write for publication No: FB.85/AD.

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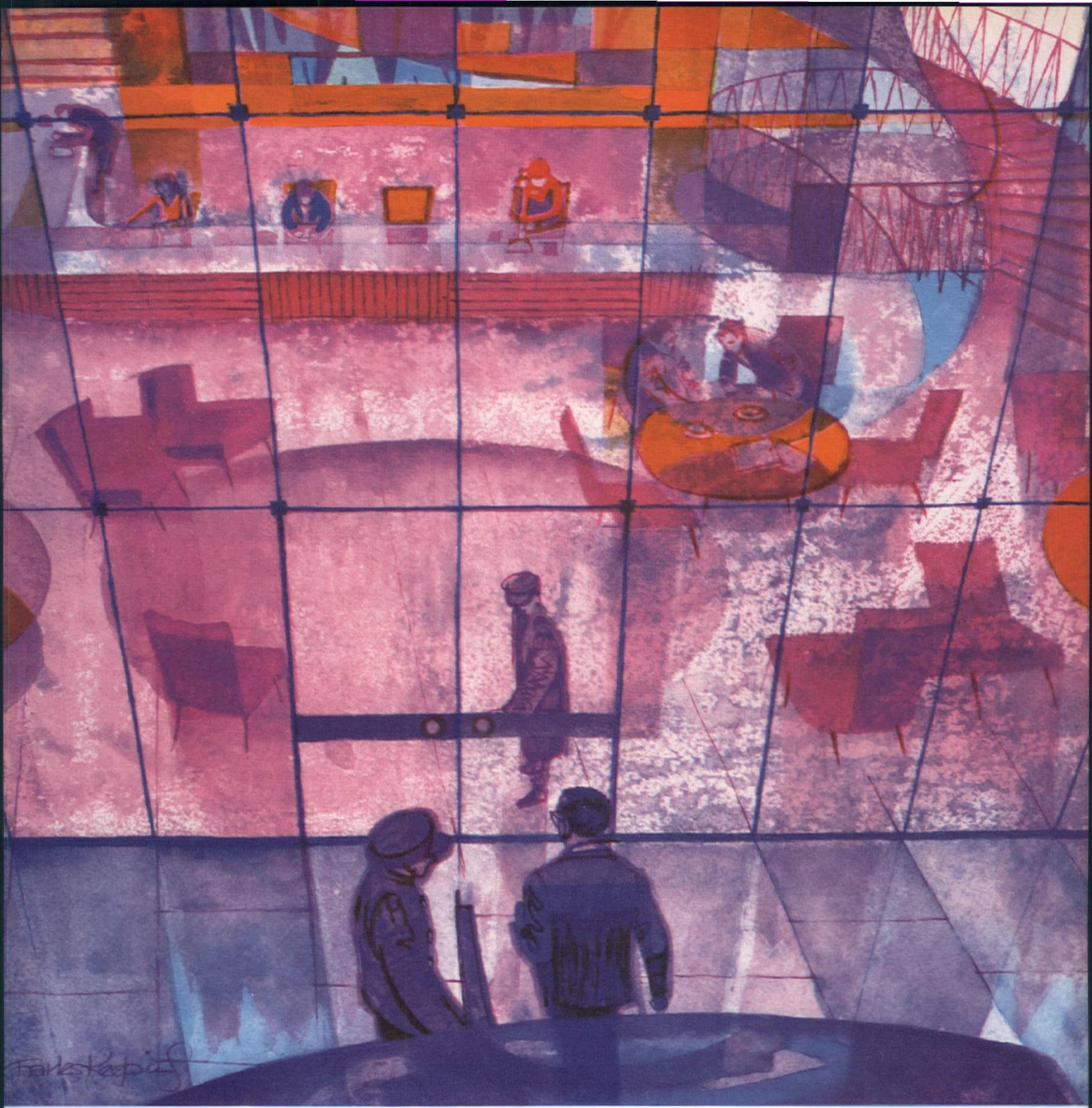

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The TENONFLEX system can interpret many design requirements either aesthetic or purely functional. The door shown here is detailed with stock parts to house return air louvre, finger plate and vision panel. This type of versatility makes TENONFLEX one of the most frequently specified partitioning systems today. Particulars of construction can be obtained from the makers:

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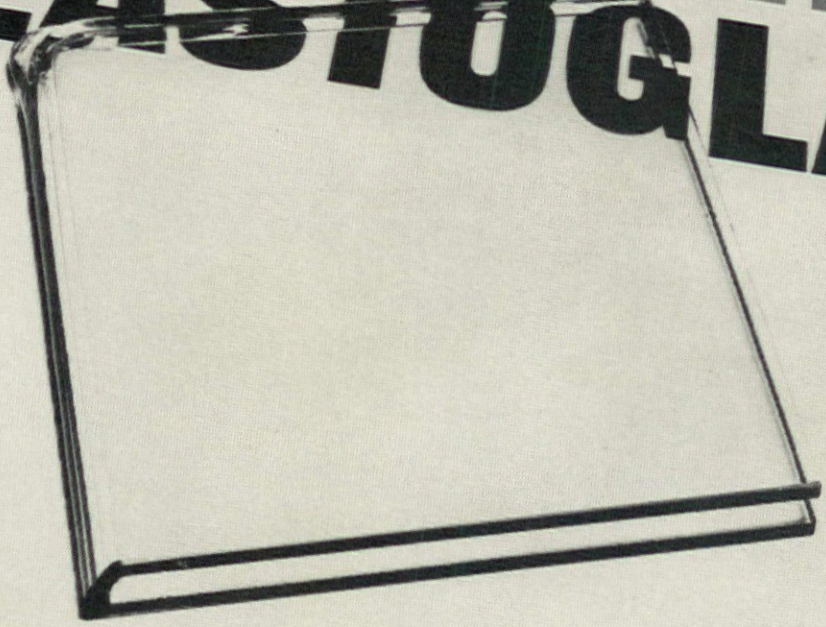
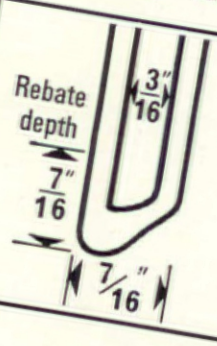
The only all-glass Double Glazing units available in over 130 sizes from stock

PILKINGTONS' "INSULIGHT" GLASTOGLAS



Over 130 sizes now being delivered. This is the all-glass sealed unit which has made double glazing installations as easy as fitting any standard building component: Pilkingtons' "Insulight" Glastoglas unit which is available ex-stock in a wide range of sizes covering the more usual frames and including the new Module 4. The range is being added to constantly.



THE "INSULIGHT" GLASTOGLAS UNIT

Construction: Two panes of clear sheet glass are spaced at 3/16 in. and the edges are fused together to give permanent seal.
Sizes: A wide range of stock sizes within the limits 10 in × 16 in to 32 in × 38 in and 18 in × 39 in to 50 in × 70 in. There is *no minimum quantity* for orders to stock sizes. Units to customers own sizes (within the above limits) can be supplied subject to minimum orders of 200 units.
Overall unit thickness: 7/16 ± 1/32 in **Weight per sq. ft. of unit:** 3 lb approx.
Nominal U value: 0.62 Btu (single glass = 1.0 Btu) **Rebate requirements:** Will fit rebates 7/16 in deep.
For full details of the "Insulight" Glastoglas unit and up-to-date list of stock sizes currently available please contact your nearest Pilkington office or depot. Ask too, for details of the "Insulight" Mk VI metal-edge unit. This is purpose-made and can be supplied in larger sizes; and in many types of glass including Float, with its outstanding clarity and brilliance.

PILKINGTONS' "INSULIGHT" DOUBLE GLAZING

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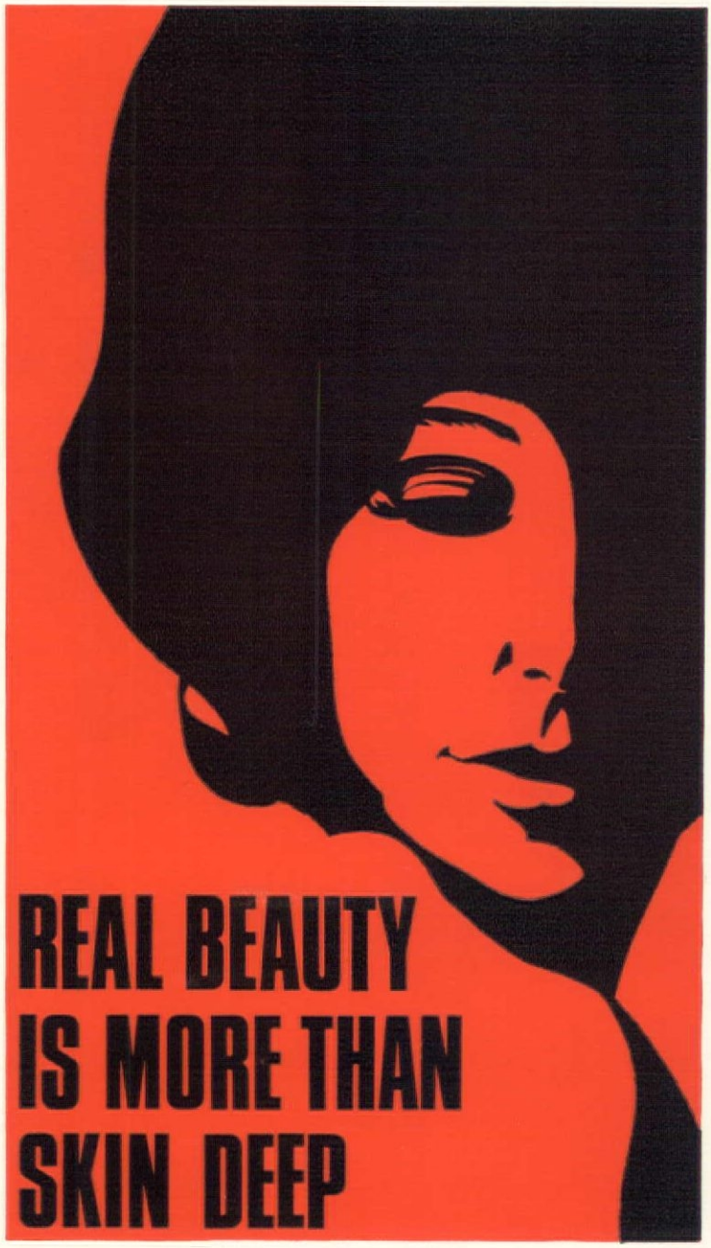

So it is with doors. Even if you use the best paints in the world, they will not give satisfactory results on an inferior base. Therefore, always be sure that you use the best foundation available—a Gliksten "Silkstone" Door. It has a perfect surface to bring out the full beauty of paint, and the edges are completely knot-free. The "Silkstone's" flush, unbroken surface ensures a perfect finish. The "Silkstone" is supplied in a special off-white primer which prevents the absorption of moisture on the site, and provides excellent adhesion for final painting. The "Silkstone" only requires the usual two finishing coats.

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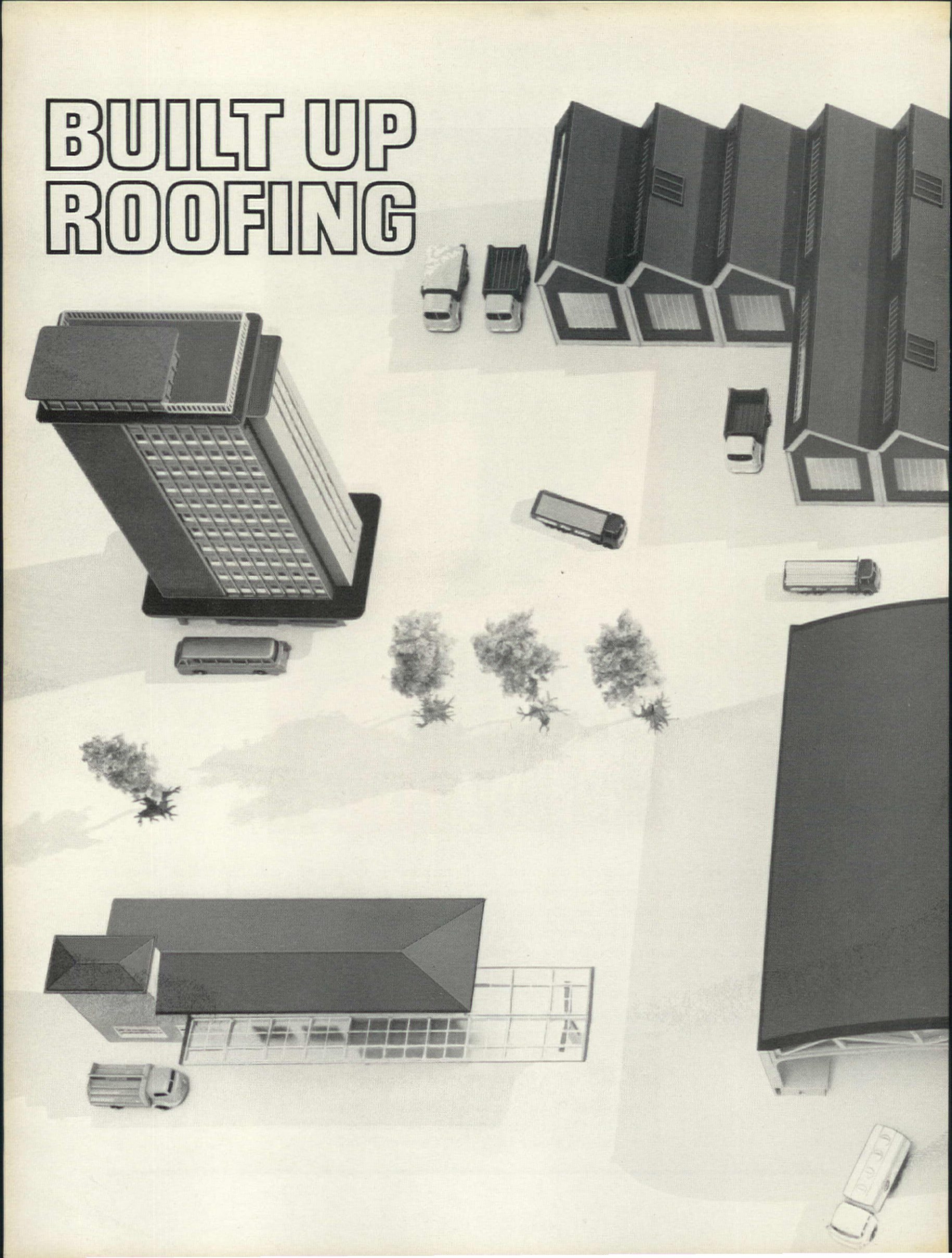
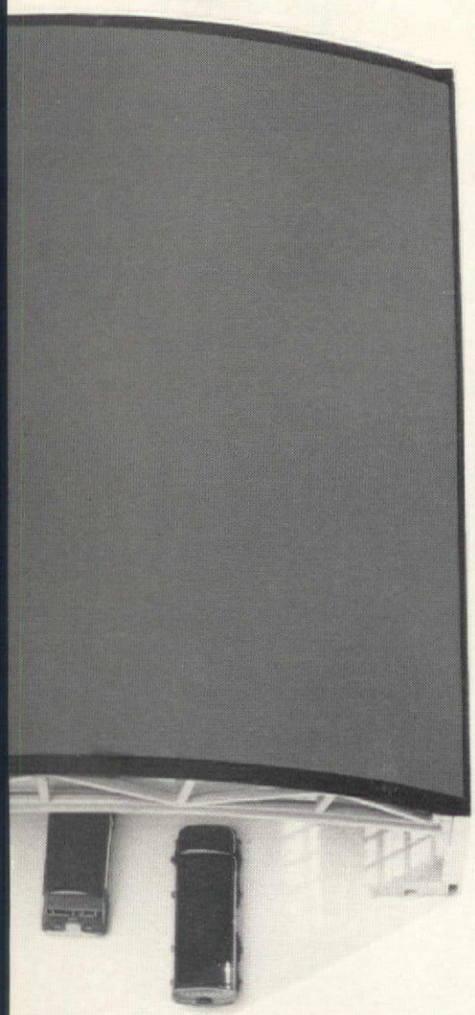
BUILT UP ROOFING





SURVEY OF ROOF SUBSTRUCTURES

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

TIMBER BOARDED SUBSTRUCTURES

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

PREFABRICATED SLABS AND PANELS

There are many varieties of materials in this group, which have different physical properties. One characteristic is common to all—the panels abut one another; consequently, they may be subject to differential deflection under load and lateral movement caused by thermal changes and moisture content. Movement arising from any of these causes sets up severe local stress in the weatherproofing. The designer should reduce the effects of such movement by reference to manufacturers' data and fixing instructions, and by appropriate specifications of roofing materials and techniques to prevent failure of the weatherproofing due to fractures.

IN-SITU CONCRETES AND SCREEDS

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

As a result of an extended programme of research into the physical and chemical properties of roofing materials and their relationship with the substructure, Ruberoid can assist the designer in producing a more efficient, more economical roof. To quote but one example, the Rubervent system neutralizes the effects of minor movement and also of vapour pressure underneath the weatherproofing. Consultation at an early stage in the design will enable you to benefit from our research. The Ruberoid service is nationwide and readily available. The reference manual for your file is No. 1812—"Ruberoid Built-up Roofing"

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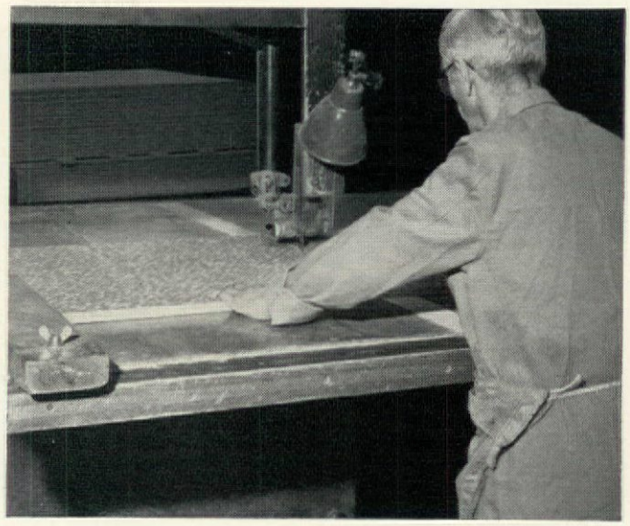

1. More production—The new plant at Hexham produces four times the total Weydec and Hardec output. This means that future orders will be met more speedily.

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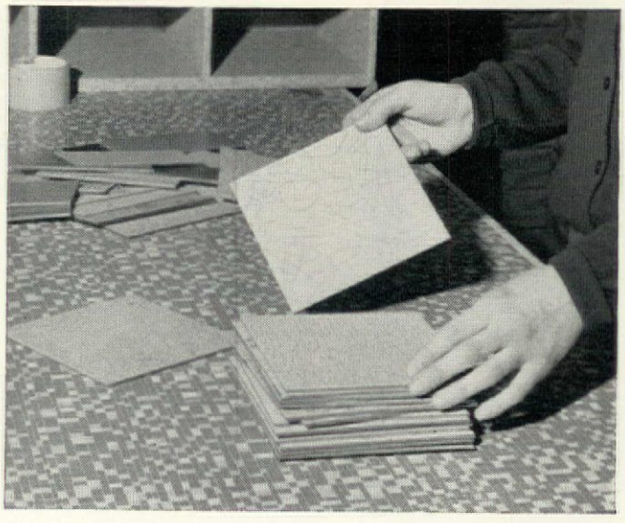

3. More sizes—Weydec and Hardec, previously produced in only one board size, 8ft x 4ft, are now obtainable in two additional sizes—9ft x 4ft ex stock and 10ft x 4ft to order—thus extending planning and constructional scope.

4. More colours—8 new finishes have now been added to the existing range of 38—giving designers and decorators a wider choice.

weydec and hardec

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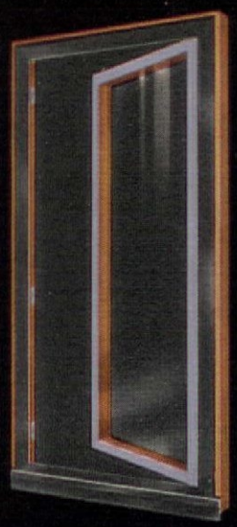
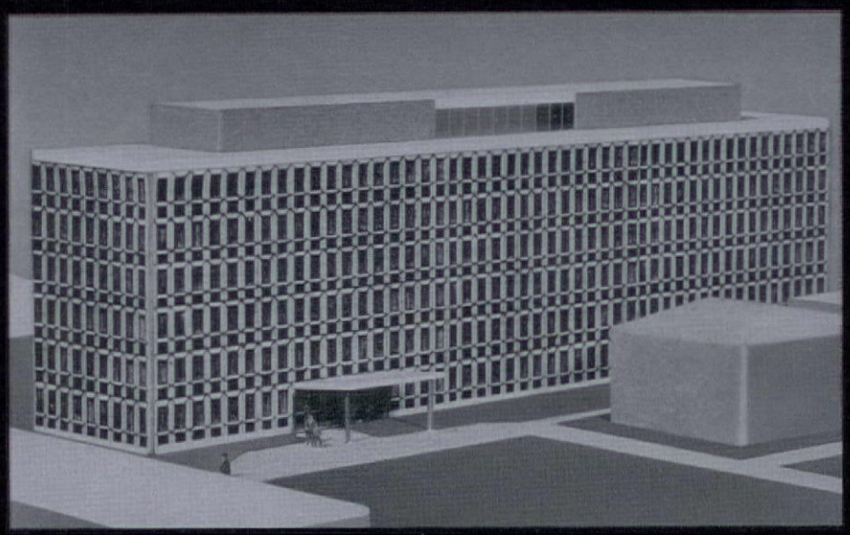
the best of both...



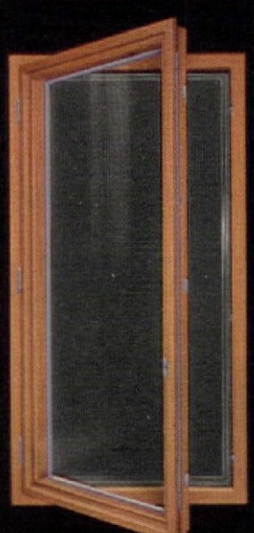
Interior and exterior views of the Aluh windows used for the North Western Gas Board Offices at Altrincham, Cheshire. Timber frames are of Douglas Fir, natural polished.



OFFICES AT ALTRINCHAM, CHESHIRE (The North Western Gas Board)
662 ALUH Windows. Dimensions:—616, 6′ 3″ high × 3′ 4″ wide—48, 3′ 3″ high × 3′ 4″ wide. Side hung, opening inwards, patent locking device incorporated. Double glazed with remotely controlled venetian blinds between panes. Aluminium sash frame etched and anodised natural, outer frame and sill trim etched and anodised black.

Architect: P. Tilherley Esq., A.R.I.B.A., A.M.T.P.I., (Building Design Partnership)

ALUH



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THE TIMES

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Consultant Architects: Llewellyn-Davies Weeks & Partners

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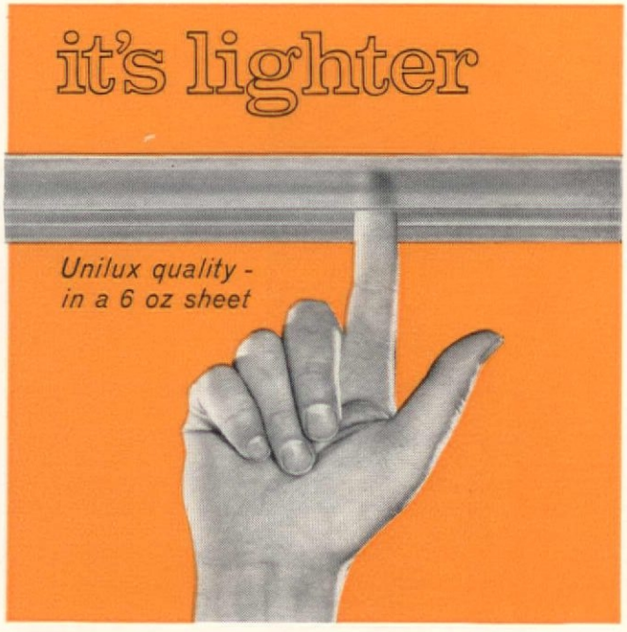

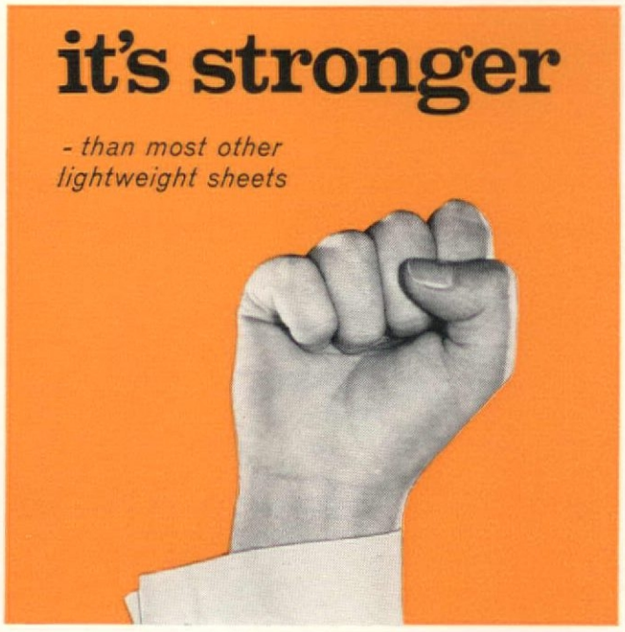

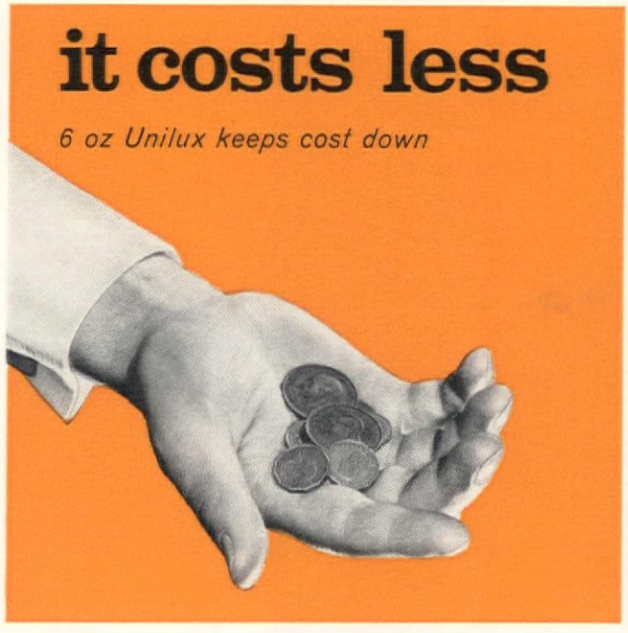

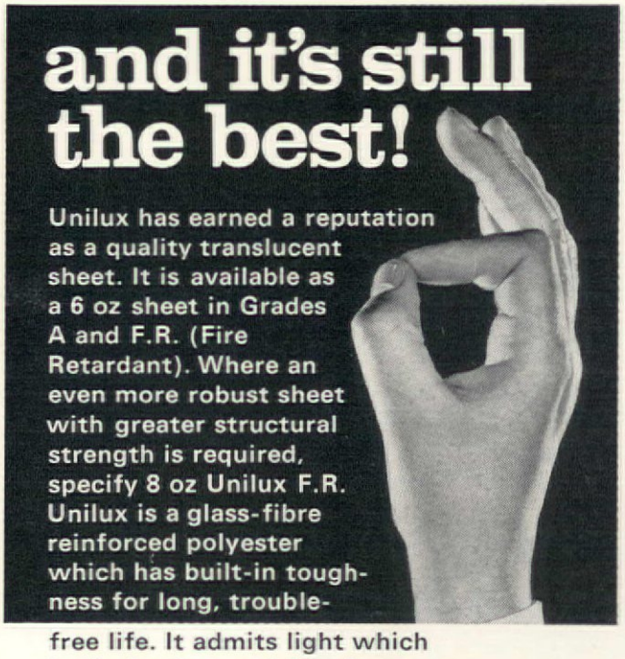

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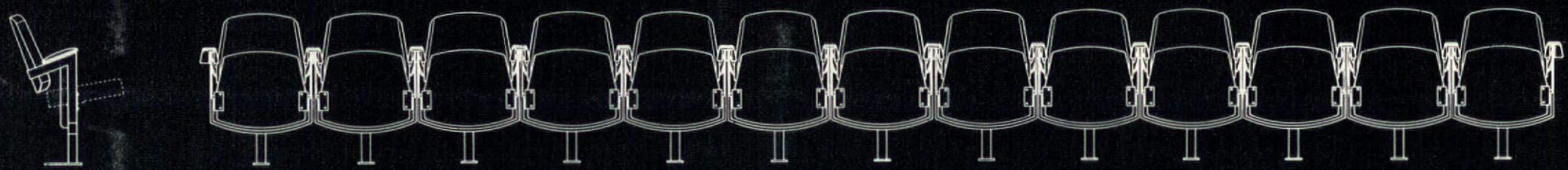

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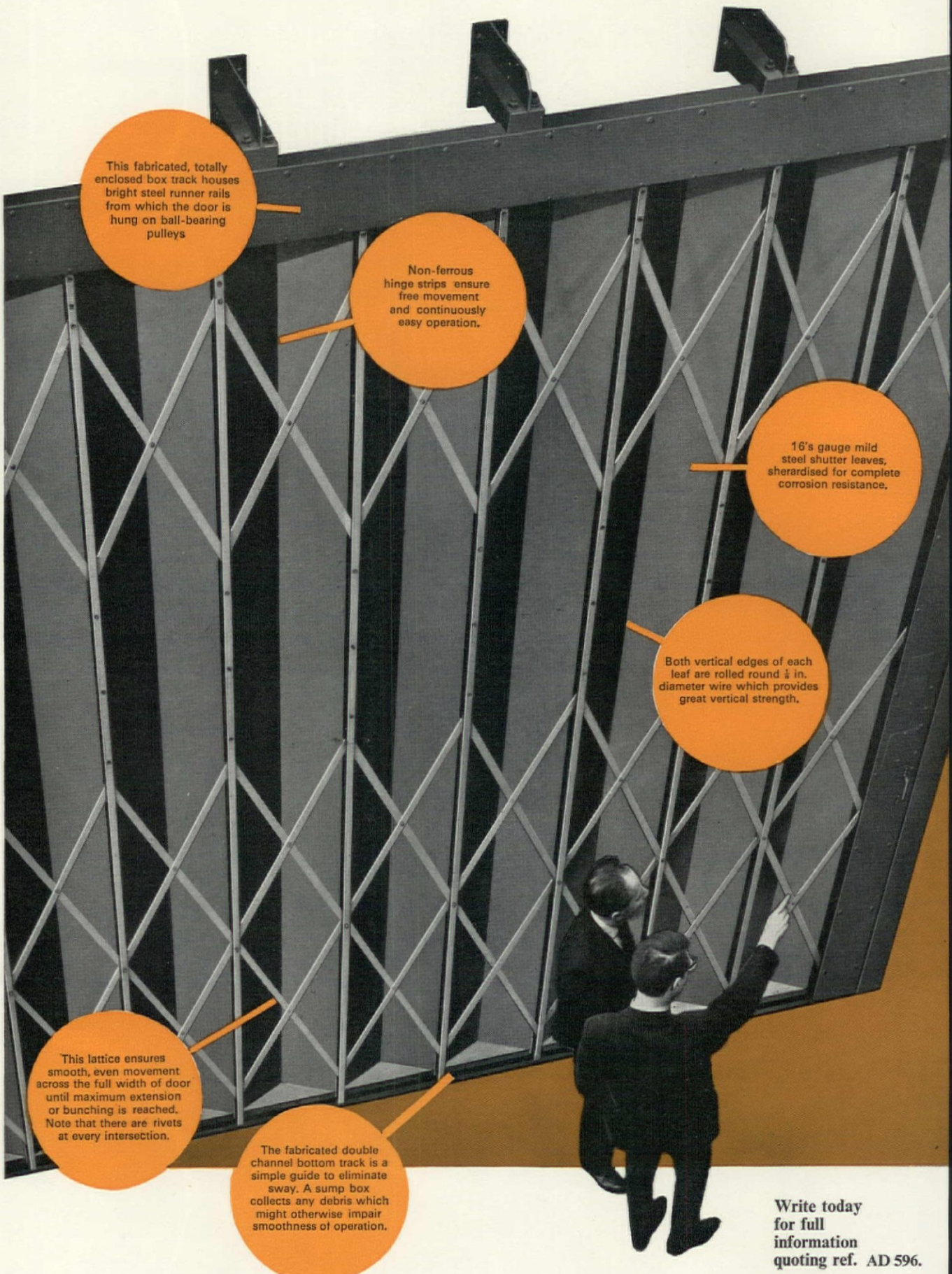

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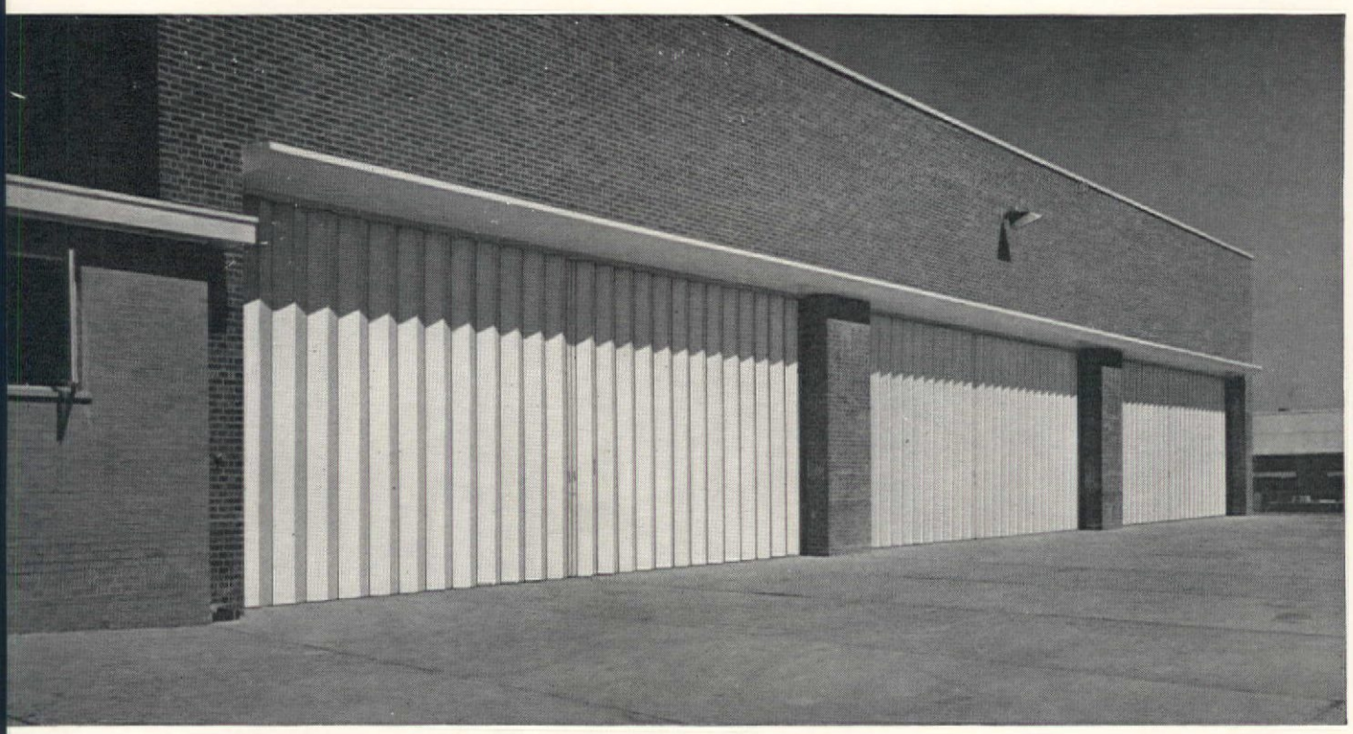

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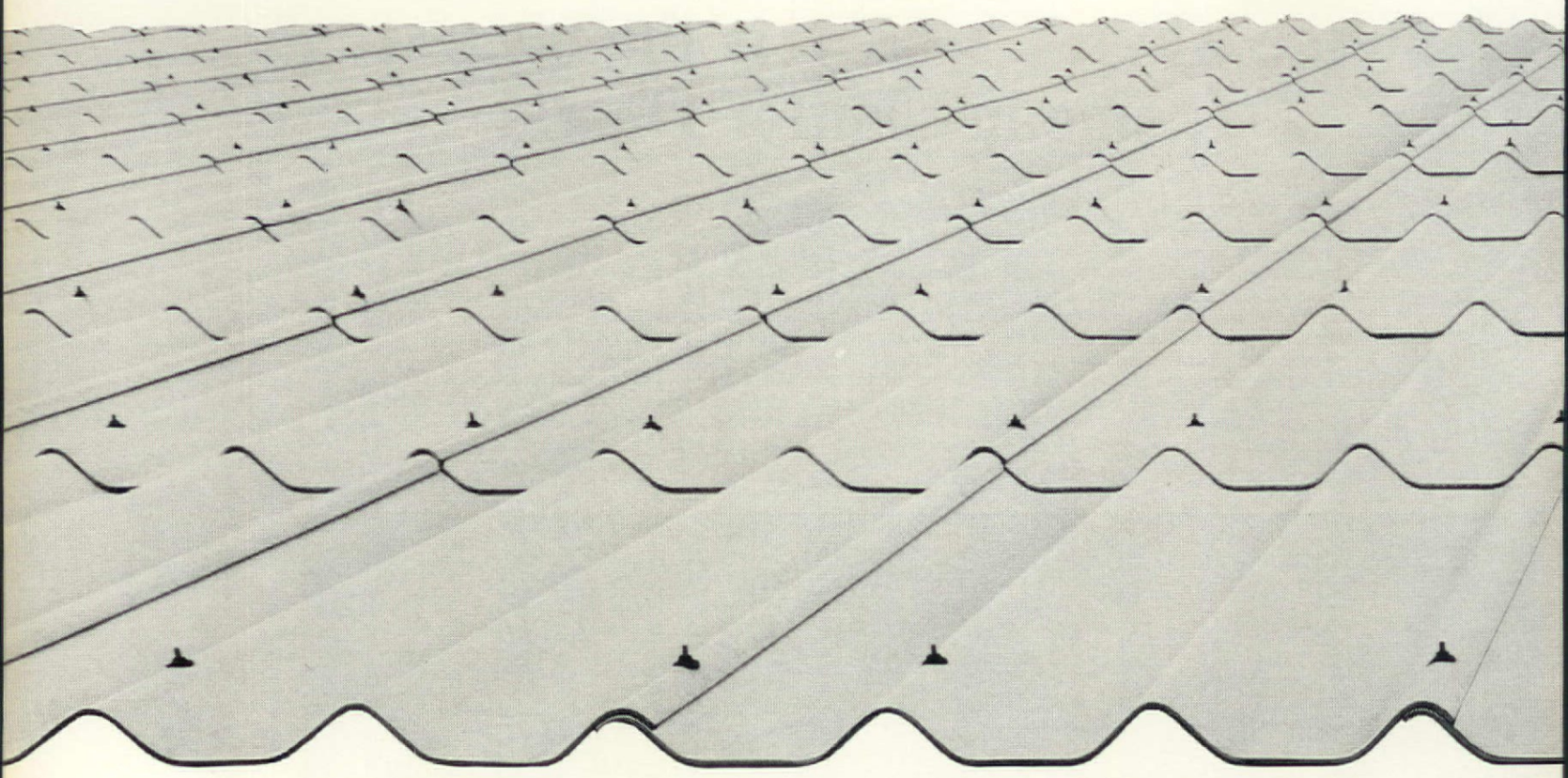

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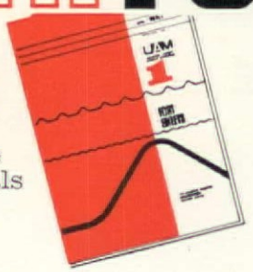

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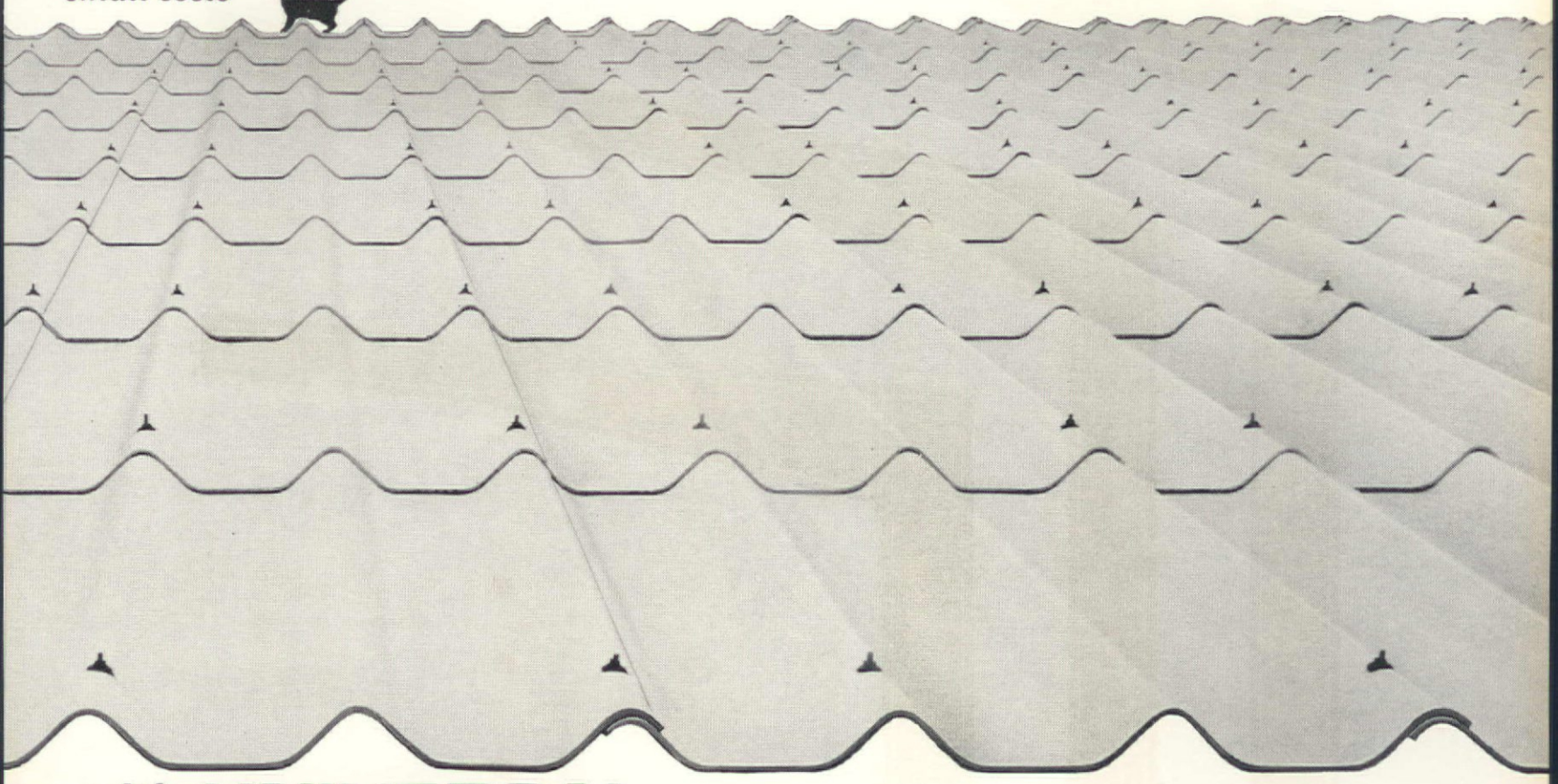

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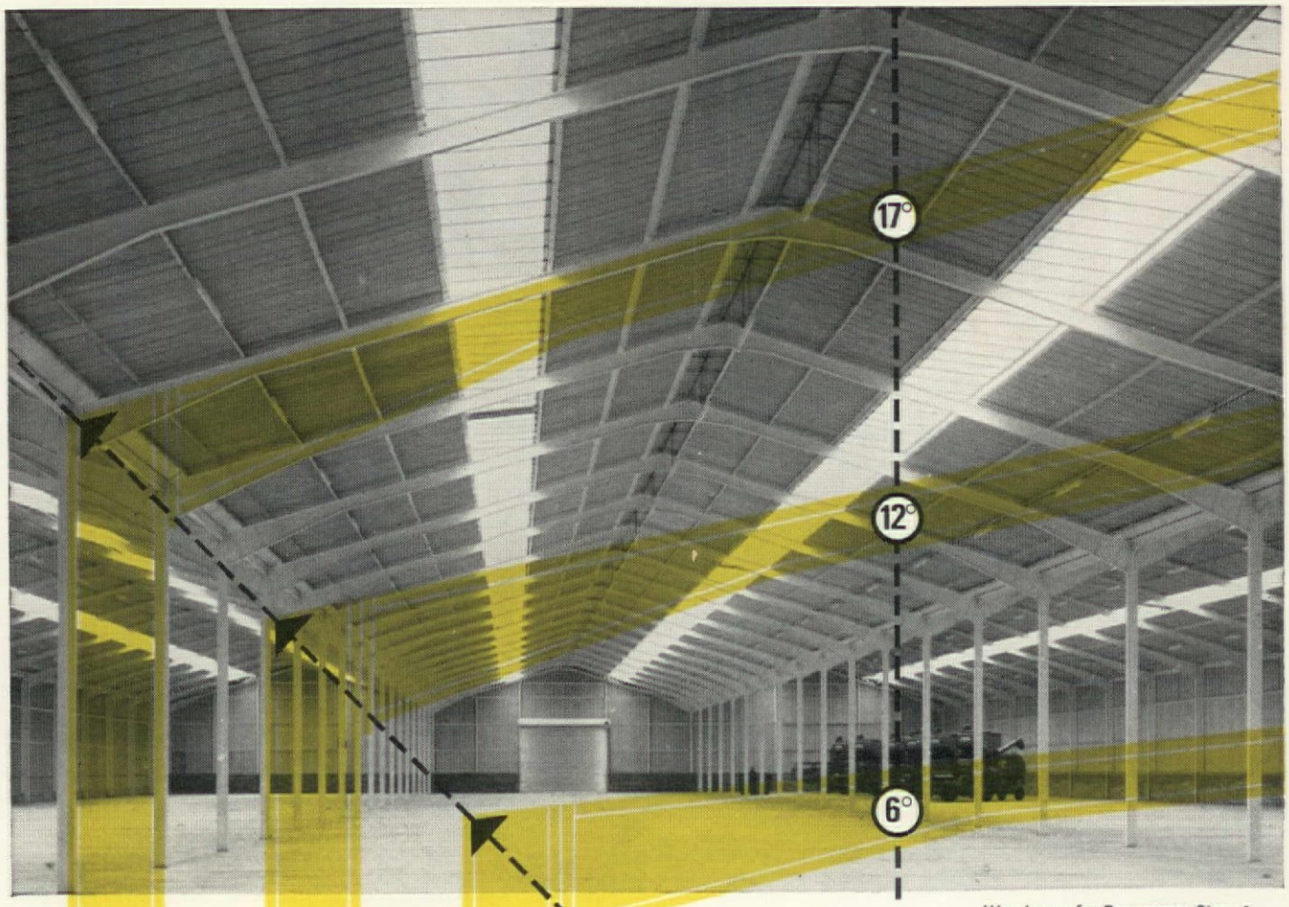

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P1 AD

Cosmorama

The month in Britain

Michael Manser

Polished proletarian Ted Heath swept to the leadership of Britain's patrician political party in an aura of culture and confidence and, as if to celebrate the fact, Westminster Abbey was hung with new crystal chandeliers to mark its 900th birthday. Posing a problem of purity for moderns and traditionalists alike they replace those left upside down by the BBC after the last coronation. In tune with the election of arch-Europeanist Heath, a proposal for a joint Anglo-French computer project to meet the demands of the 1970's was launched by English Electric-Leo-Marconi and ICT in England and CITEC in France. The London Chamber of Commerce sponsored a 'British Building and Construction Week' to be held in Prague next November, 8th to 12th, and the Prime Minister announced a 'Queen's Award to Industry' to be awarded for high export and technological achievement. In the field of planning and sociology, London's Professor Lord Llewelyn Davies became the first president of the World Society of Ekistics.

With the chilling prospect of a population jump from 49 millions to 70 millions during the next 40 years and a working week reduced from 42 to 30 hours, York Institute of Advanced Architectural Studies announced a course on Recreation and Leisure to be held from October 4th to 8th next. From this end of the 40 years it seems there is going to be too much leisure for too little space in which to recreate and probably too few people intellectually equipped to cope with so much spare time without recourse to the kicks of general anarchy.

The AA accepted the resignation of its Principal, William Allen. (See *AA see-saw*.)

The Minister of Housing and Local Government rejected a proposal for an out-of-town shopping centre at Haydock Park in Lancashire, but approved proposals for the redevelopment of Bracknell Town Centre, the further extension of Basildon and the designation of more land for industry at Peterlee. Thus dealing with the New Towns, he then approved Sunderland's Green Belt, published statistics showing that 82 per cent of last year's planning applications were approved, decided to call in for his own decision the application for a yacht marina at Brighton, and then went on holiday.

At the Ministry of Public Building and Works, Charles Pannell was just as busy and said about the change to metric measurement, 'I am looking to the British Standards Institution to act as the focal point for the change'. He added that they would be ready to consult the industry and professions early next year. He also proposed to set up a committee to study building maintenance (which accounts for one-third of the industry's labour force and £900 millions each year) and accepted a recommendation to set up an independent body to assess new building products in the way Agrément does in France. He finally announced amid stop-go gloom a Bill to control the start of works in the private sector.

The British Road Federation stated that Britain has more vehicles per road mile than any other country in the world and so it seems appropriate that the International Road Federation is holding its fifth world meeting in London in September 1966.

At Portsmouth a latter-day Venice was proposed for Langstone Harbour by Sir John Burnet, Tait and Partners. It is a brilliantly bold idea that could knit the existing tatty suburbs into a coherent connurbation. Further inland, Chichester Festival Theatre set the atmosphere for its production of *Miss Julie* by spraying the auditorium with lilac toilet water before each performance, and in London British Rail made a contribution to better hygiene by opening 'the most modern toilet facilities ever installed on a railway station' in the country.

This being the holiday season we come to an end on a quote from Admiral Chapman, who said, 'Rather than risk losing holidaymakers Devon is keeping quiet about its dangerous beaches'.

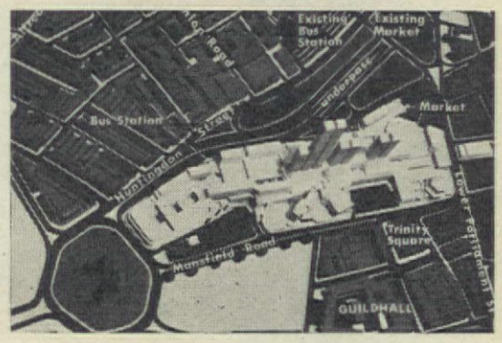
Bits and pieces

World Design Science Decade publications. All four volumes (see *AD*, August 1965, page 371) are now available from James Meller, 14 Upper Berkeley Street, London W.1. Prices (including postage): single volumes £1 10s.; set of 4 volumes £5.

Black Arrow competition for design of secretaries' furniture. First prize £1000. Closing date, January 7th, 1965. Particulars, Black Arrow Leasing Ltd., Axtell House, 23 Warwick Street, London, W.1.

Second international carpet design competition. Closing date, October 30th, 1965. Three 1st prizes £400; three 2nds, £100; three 3rds, £50. Particulars from Designs, Carpet Trades Ltd., P.O. Box No. 5, Kidderminster, England.

The Bank of London and South America tells us that their Buenos Aires branch is, in fact, building fast, and should be completed by March 1966. So our pessimistic book reviewer was partly wrong. (*AD*, July, page AD5.)



Nottingham's Victoria Station redevelopment

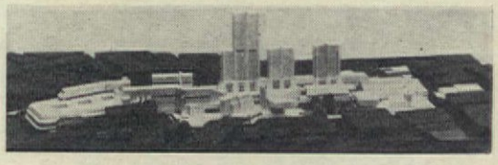
Robert Cullen

With architects Arthur Swift & Partners and developers Capital & Counties Property Co. Ltd., the redevelopment of the 17-acre site at a cost of £15,000,000 has obtained detailed planning approval after negotiations lasting since July 1964.

The accommodation includes 380,000ft² of shopping, hotel, swimming baths, open space, 500 to 600 local authority flats, offices, workshops, warehouses, bus station and car park for 3000 cars—a big scheme—outside the inner ring road and away from the central shopping area. Concentration of shopping is essential if segregation is to be achieved in the process of urban renewal.

'Tens of thousands of people', says the press handout, will use the new centre, and there is no doubt that the intensive land use will acutely stress the already over-burdened communications and create a rival centre.

'On clear days, it will be possible to see Lincoln Cathedral from the windows of the 350ft high flats.' The whole character and skyline of Nottingham will be changed and seeing Lincoln Cathedral is doubtful even on a clear day. On unclear days (and Nottingham is the foggiest city in the country) the city has once again put its big foot right in the biggest puddle yet, and the ripples will wash away what is left of old Nottingham and prejudice future development.

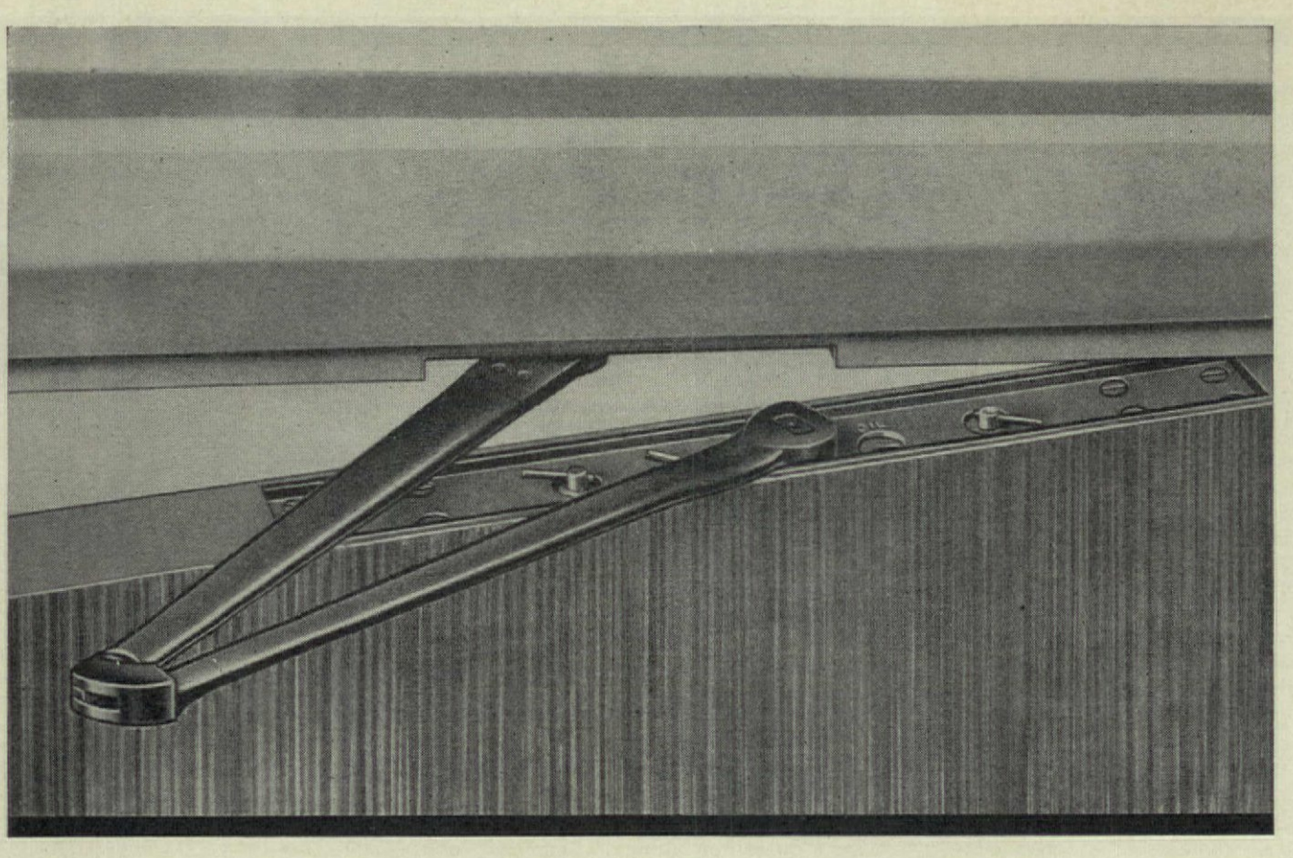


AA see-saw

When the Architectural Association students return from their summer holiday in October they will find that in their absence the Establishment has been involved in a desperate balancing act, endeavouring to maintain a calm façade on the one hand so as to remain eminently appealing to the University Grants Committee and the Imperial College of Science and Technology, while, on the other hand, they have given way to the combined pressure of students and staff by accepting the resignation of the Principal, thus at last facing the fact that the AA School is at its lowest ebb.

The spectacle of the President and the two Vice-Presidents firing senior staff in mid-July, leaving themselves open to lawsuits, desperately looking about for dynamic personalities to prop up the existing situation, presiding at timetable and curricula meetings, etc., in order to make sure that the School opens in September, might be considered an amusing farce were not the fate of the AA School, in the British scheme of things, with its tradition of academic liberty and radical approach to architecture, at stake.

One cannot help thinking that if a new beginning is required it should manifest itself in terms of architectural theory and pedagogical technique rather than in superficial adjustments until a tired generation hands over its responsibility to London University.



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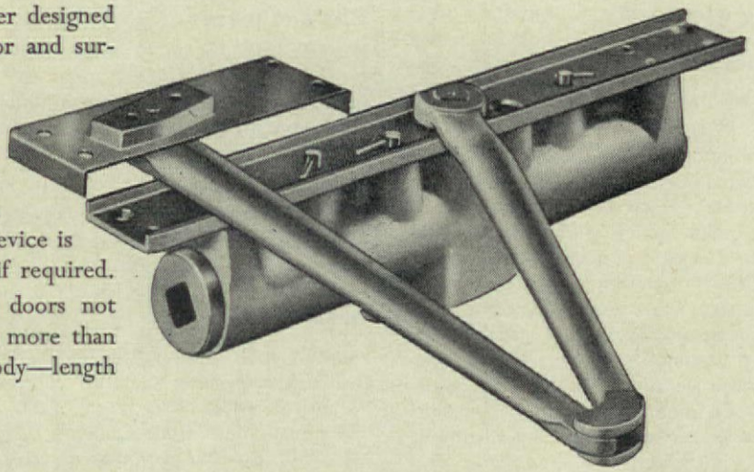

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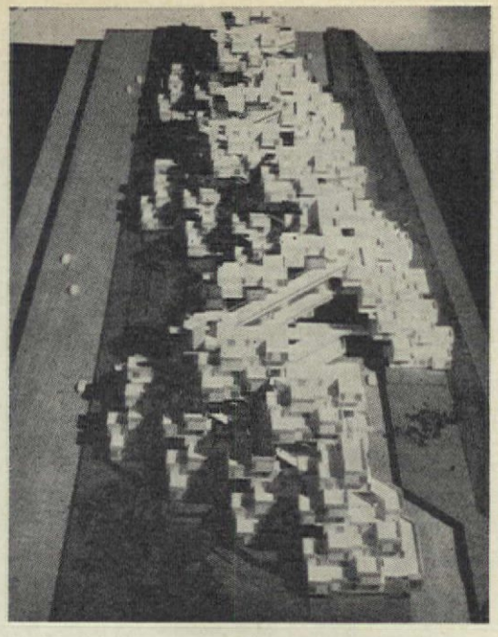
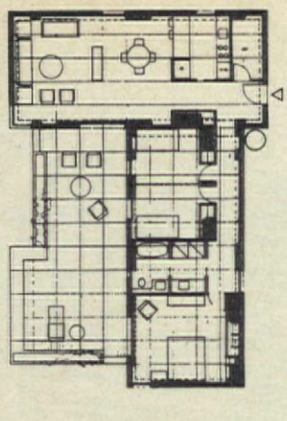
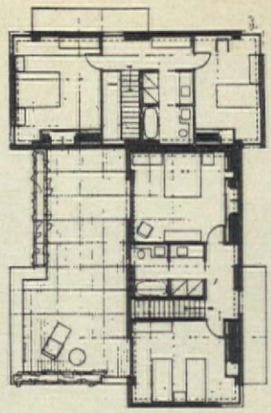
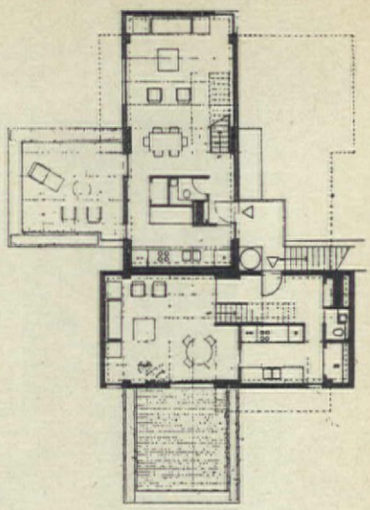
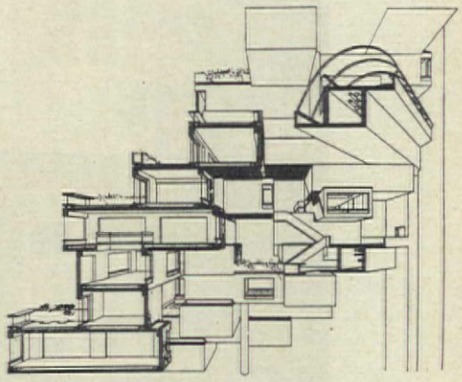










Habitat '67

The definitive design for Habitat '67 by Moshe Safdie and Associates has now been drawn and priced. Phase I of the development is to consist of the smaller block that appeared as a tailpiece to the grandiose composition of cliff dwellings that so singularly stirred architects when the project was first published (*AD*, December 1964).

The whittling down of the scheme has been primarily a question of cost (*AD*, May 1965), yet even so the first phase will not be small (176 housing units), nor will it be cheap ($60,000 per unit). The initial outlay will cover the cost of a special crane and development costs of structural and handling techniques, so that Phase II will appear to be a less extravagant undertaking.

The initial cluster is to be made up of pre-cast load-bearing units into which all components, fittings and finishes will be installed while they are grounded. The units, weighing from seventy to ninety tons, will then be hoisted by the giant crane and stacked in their appropriate position. House types will be made up of one, two or three of these pre-cast units. All will have at least one terrace, though most will have two or three. Access will be from inclined elevators leading to glass-vaulted upper level 'streets' in which all mechanical services run. The streets will, unfortunately, not contain the variety of shops and social rooms as first envisaged, but these community facilities which were originally regarded as the *raison d'être* of the concept will, we hope, be built when Phase II is undertaken.

RAIC Journal, June 1965,
L'Architecture d'Au'jourd'hui, April–May 1965.

The new regional planning

Peter Hall

If a stranger were to come back to Britain after a few years' absence, he might well imagine that we had all been overtaken by regional planning madness. For, remember, five years ago the subject was moribund and the very art —or science—was almost lost. The great wartime and early wartime plans for the big city regions—Abercrombie for Greater London, *Conurbation* for the West Midlands, the Clyde Valley plan for the Glasgow region—gathered dust on the library shelves. Even Hailsham had not yet donned his cloth cap and sallied forth into the North-east, to produce the first very tentative exercise in regional planning for the sixties. It seems ages ago now, but actually the Hailsham report appeared a mere two years ago. Now the contrast is startling. Hailsham and the parallel report on central Scotland have been followed by the Belfast region report, the South-east Study (and even by the revision of the South-east Study), the West Midlands report * and the North-west report†. These have brought home to everyone the new scale of planning made necessary by the rapid growth of population—quite unforeseen in the plans of twenty years ago—and the revolution brought about by the motor car.

As a result they have been followed by an unprecedented burst of activity on the part of Government—of whatever political complection, for planning is no longer anywhere a dirty word.

*HMSO. 12s. 6d. †HMSO. 18s.

We tend to think of the bright post-war days when eight new towns were created around London and a handful more up and down the country. In the last half-decade, plans for a *score* of new towns have been announced. They range from relatively modest county council enterprises just outside the conurbations, like North Killingworth in Northumberland, to giant new cities like the one being planned by Hugh Wilson in North Bucks. And on top of all this, we now have a complete system of regional economic planning through nine regional planning boards and councils for England and Wales, with a separate set-up for Scotland.

The activity is so frenetic and so all-embracing that the returning stranger could be forgiven for confusion. What exactly is going on? How do the economic planning boards relate to the regional planning reports? How do either relate to the work of all the consultants who are trying to create the master plans and feasibility studies for the new towns and cities? The answer of course is that they do not relate all the way or all the time yet.

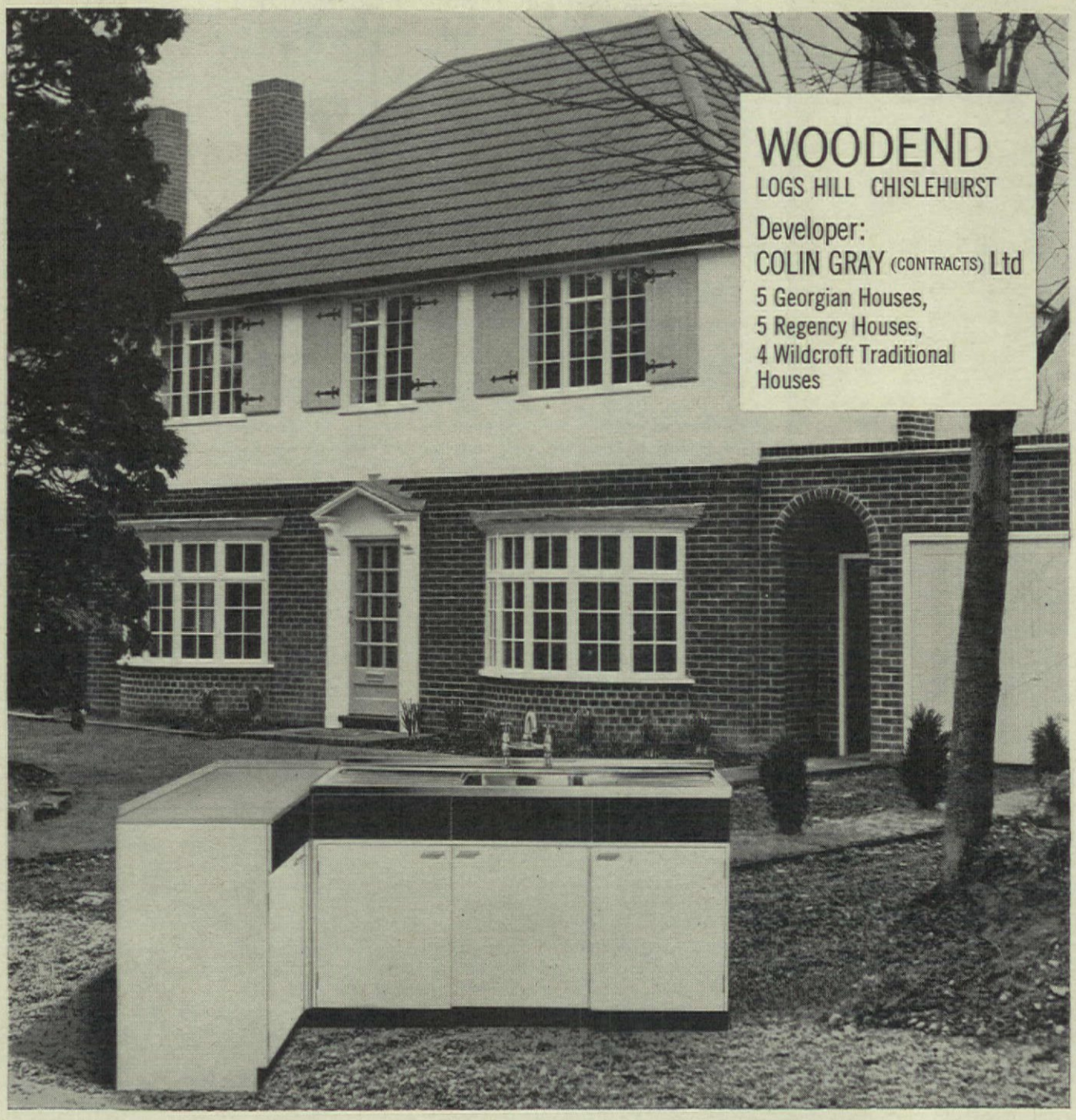
Basically the difficulty is that regional planning has come to Britain in a series of rather jerky steps. The whole process started when the Government realized, round about 1962, that lack of planning was producing some nasty bulges in the economic geography of Britain, and some awkward pinches in other places. While the South-east boomed and swelled, the North-east recessed. The result was the emergency action that produced Hailsham and the Central Scottish reports. Both were produced in a hurry, but the Scottish document was embarrassingly more competent because the Scots had had the good sense to bring their planning departments together, a year before, into a single Scottish Development Department. We are only now getting something like this system for England, with the creation of the regional boards of civil servants in the major provincial capitals.

At the same time the Ministry of Housing and Local Government, which never quite gave up the idea of planning and has always proudly boasted a chief planner, persuaded the Government to commission studies of the three urban regions of England with the biggest problems of physical planning: the South-east with its massive congestion and explosive growth, the Midlands with their continued industrial expansion and their shocking legacy of unplanned sprawl and derelict land, and the North-west with its hideous backlog of Victorian slumdom.

In the last fifteen months these have all borne fruit with the publication of the *South-east Study* in March 1964, and the twin reports on the *West Midlands* * and *North-west* † in July this year.

But between the first of these and the other two, another abrupt shift occurred. October 1964 saw the arrival of a Labour government committed to the creation of a Department of Economic Affairs and a comprehensive system of economic regional planning under it. As a result the West Midlands and North-west studies came under the wing of the new DEA at an advanced stage in their preparation. And even more paradoxically, the new economic planning boards and councils for the West Midlands and North-west find themselves presented with

▷Page 423



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◁Page 422

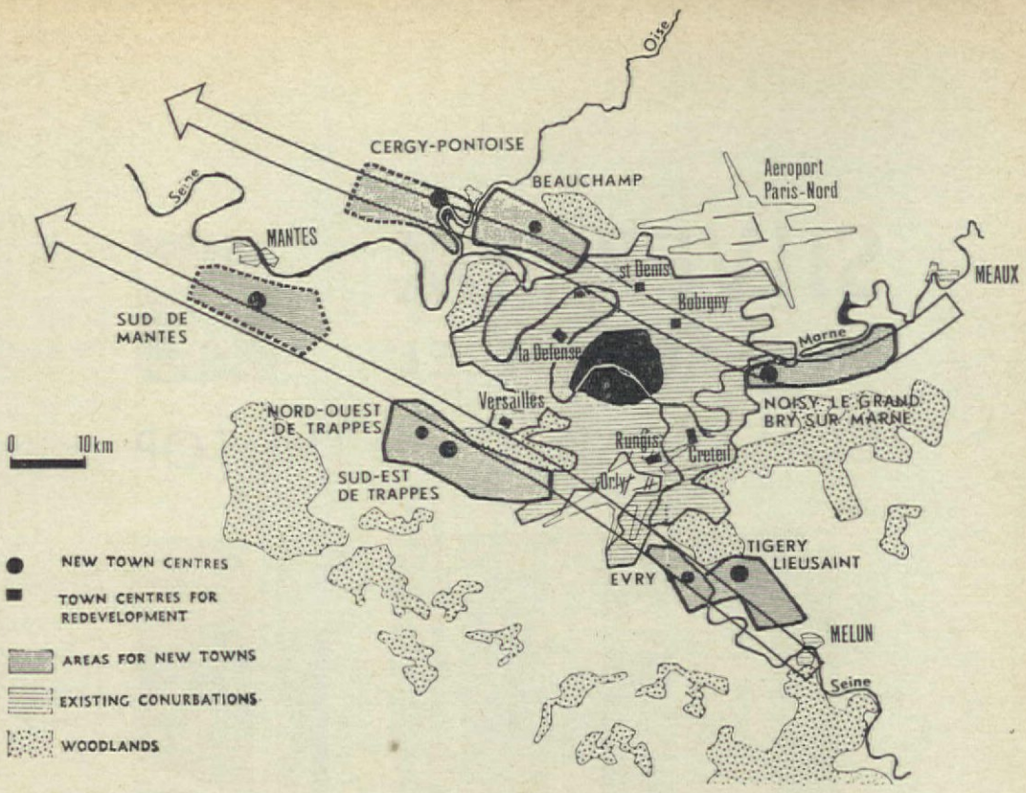
ready-made regional plans in whose preparation they had no hand.

This is not necessarily a bad thing, for at least two of the new planning machines now have something to bite on. And the DEA have been at pains to say that the studies represent 'proposals' for comment by the regional machines. Nevertheless the plans are essentially physical planning comments rather than economic planning ones. They deal with population growth and the problems of housing rather than with the raising of regional productivity and the achievement of structural changes in the regional economy—though the West Midlands study has some very intelligent things to say on these scores. And because of the pressure of the problem, Richard Crossman at the Ministry of Housing is forced to take quick action on the proposals—even without waiting for the comments of the wise men in the regions. Only two weeks after the West Midlands report appeared, for instance, he had already accepted one of its major proposals: for the development of Wellington and Oakengates as part of an integrated plan together with the building of the new town at Dawley. This may well be a right decision, but it certainly does not leave the regional council with much to do but nod.

One trouble here is that there is still a big question mark about the responsibility at the top. Since last October the Ministry of Housing has lost some of its powers to the new Ministry of Land but many more powers to the DEA—yet the precise boundary line, where regional economic planning ends and regional physical planning starts, is still unclear. And anyone reading the West Midlands report would be still more unclear. What is clear is that the major physical expressions of the plan—the new towns and even the new city regions, like that proposed around Shrewsbury in a later phase of the West Midlands plan—are still Crossman's decision, and no one can doubt that he intends to keep it that way.

In fact it could hardly be any other way. The planning of a new town or a new city complex demands a complex combination of skills which means the cooperation of a team—economists, geographers, engineers, architects. Finally, though, the plan is a matter of land use. And though overall questions of land use are now a matter for the Ministry of Land, on particular decisions it must be a physical planning Minister who says yea or nay. This means that the Minister must make the decision to go ahead or not with a particular proposal, to appoint consultants, to create finally the development corporation or (for the big city expansions) perhaps a new sort of authority that can harness the good will of the existing city council.

The regional planning machines, on the other hand, will be the creators of the broad regional strategy within which the Housing Minister works. And when this machinery gets in motion, the Housing Minister himself is going to depend increasingly on the wisdom of his own man in the regional office. Not the least refreshing feature of the new organization is that, perhaps for the first time, some of the really powerful brains of the British civil service are going to sit in provincial seats. This should allow them to see local planning problems in a much more real and sharply focused way. And by bringing them in touch with regional opinion at the grass roots, it may make them more effective political beings. As a highly political animal Mr Crossman could hardly wish for more.



Paris structure plan

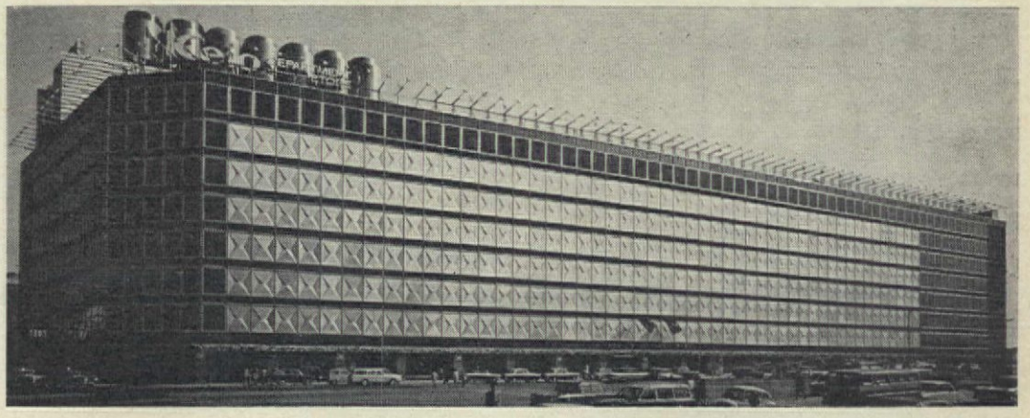
Terence Bendixson

Paris is one of the most geographically centralized cities in the world and most of its anti-social qualities stem from lack of space. The recently published sketch structure for Paris in the year 2000 is a strategy for counteracting this centralization while at the same time providing room for the city to grow from its present population of 8·5 million to 14 million. The basis of the strategy is a switch from concentric to linear development. The path chosen for expansion is mainly down the Seine valley to Rouen and Le Havre where there is scope for further development beyond 2000 A.D. Some expansion eastwards up the diverging valleys of the Marne and Seine is also projected. The logic of placing two tangents of development parallel to the Seine is that the river is still a great highway. Eight new cities are planned along the new axes, each one with a minimum population of 300,000 and two possibly as large as a million. It is emphasized that these settlements must challenge the social, commercial, employment and educational life of old Paris for the proposed re-structuring to be successful. Five 'Croydons' are also planned in the existing suburbs. All these changes will double the size of Paris and will be held together by 160 miles of super-Metro and 550 miles of new regional motorways. Within this 'space-transport' system existing forests will be safeguarded as parks and the banks of the Seine largely devoted to recreation. The plan was produced by the Délégation Général du District de la Région de Paris in conjunction with l'Institut d'Aménagement et d'Urbanisme de la Région Parisienne.

Keio department store

T. G. Stevens

In a country subject to severe seismic hazard you have to build stoutly to withstand the worst conceivable earthquake without toppling. The Japanese earthquake code is largely responsible for the immense size of columns and beams in Japanese modern architecture. When in addition, a large department store has to be constructed over a privately owned commuter rail-head which has to be kept going, the problems are tricky indeed. Such was the case with this store. Unlike so many handsome buildings by Maekawa, Sakakura and Tange, this building is not a critical re-evaluation of Japanese traditional and European modern architecture, but the sort of building one might expect to find in any international capital. Its formal qualities in no way pronounce it Japanese. It is executed with the great competence and aplomb one expects of the Japanese, and with that formal naïvety which all internationalists practise. The architects were M. Yendo Associates.



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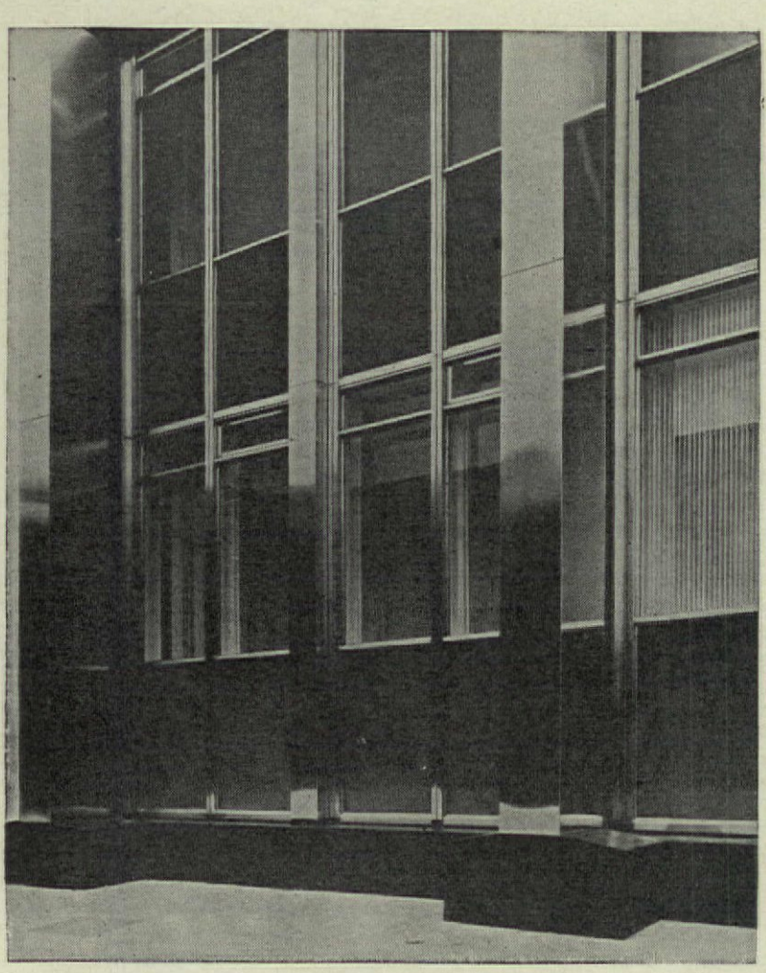

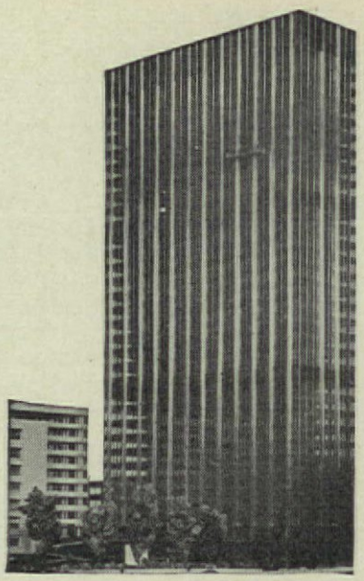

The British Petroleum Company's new headquarters building

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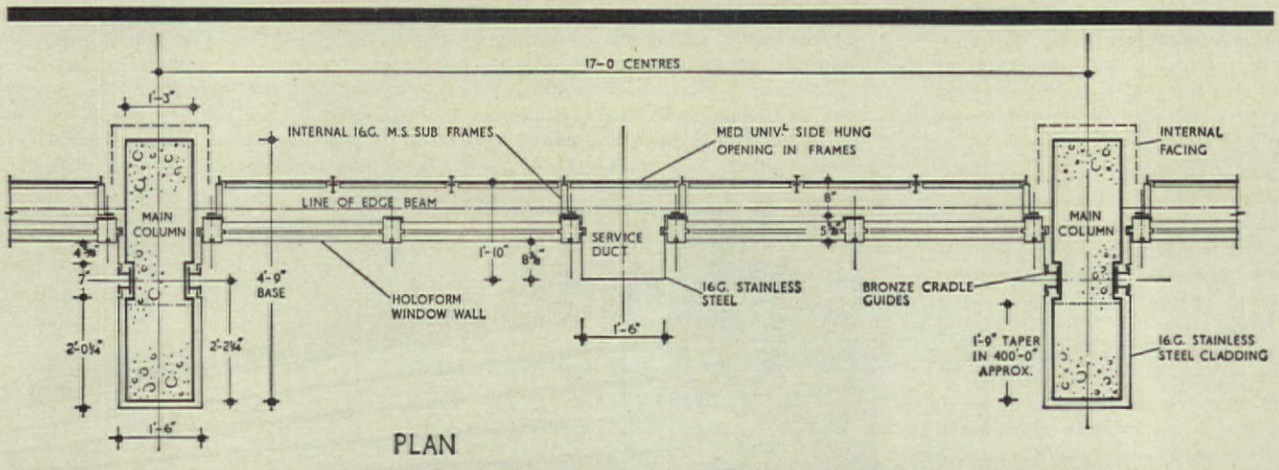


F540

Heavy catalogue architecture

Raymond Wilson

Two 19-storey point blocks for the Preston Housing Authority **1** and eight 12-storey ones for the Cumbernauld Development Corporation **2** are constructed with the Bison Wall Frame System.

Are 'closed' heavy systems desirable? This one at least is British, it is bold and sensible in its scale of components, and it claims to be cheaper, better in quality and quicker (Cumbernauld erected in nine months) than its traditional counterpart.

It is, however, unlikely to be loved by architects. The designer is left with little real freedom, he must accept the considerable disciplines and built-in decisions; he is left with little more to do than choose the system (sometimes), site the buildings, and select the finishes. In Cumbernauld this function was performed by the Corporation Architects Department, headed by D. Leake; at Preston the architect N. Keith Scott was appointed by the contractors.

This system boasts 120 buildings in the pipeline; 120 times any doubtful assumptions built-in for the 25,000 or so users.

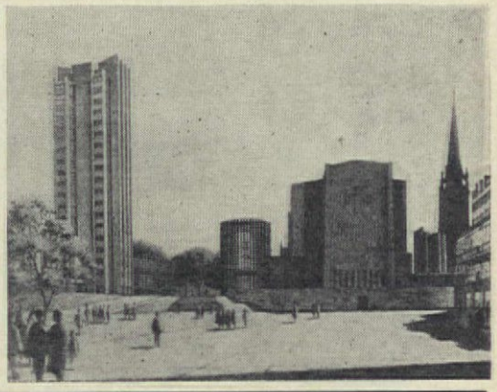
1

2

And at Coventry

One of the '120 buildings in the Bison pipeline' will be Lanchester College's 20-storey hall of residence **3** alongside Coventry Cathedral, designed in the office of the City Architect (Terence Gregory in succession to Professor Arthur Ling).

3

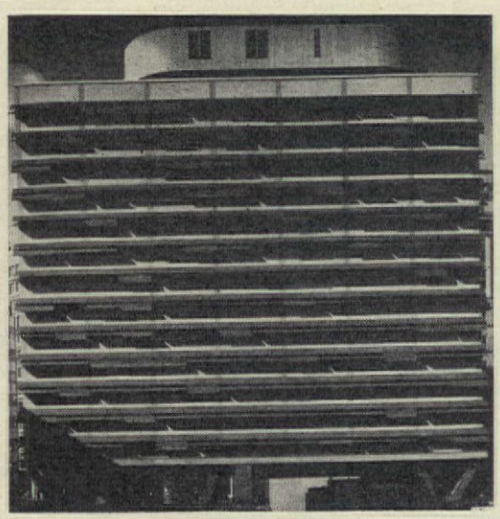


Birmingham Bull Ring

The ruthless demolition, the bulldozing, the years of planning and wrangling, have resulted in Birmingham in that ungainly cluster of buildings and roadways known as the Bull Ring. All sense of rational control, discipline and care for good living appear to have been sacrificed to expediency and gain. Humanism, it would seem, is a lost cause in Birmingham. The buildings are monuments to self-centred speculative enterprise. The latest addition, the 'Rotunda', designed by J. A. Roberts for Property and General Investments Ltd, stands isolated and withdrawn from the rest of the centre. Yet, 280ft high, it dominates not only the Bull Ring, but much of the central city area, a symbol of the *je m'en foutisme* that has characterized the whole development.

Australasia triumphant

In Sydney another planned development is taking form around Australia Square. On this occasion one architect, Harry Seidler, has been given control. The Plaza Building, **5** is already complete. The buildings are intended to give evidence of the architect's conviction that city centres should be opened up and that 'the well-known congestion' of Sydney should be loosened. Signally, they will fail in this respect. There is indeed a pedestrian area enriched with trees, a fountain and sculpture, but the 13-storey Plaza Building and the tower of 43 storeys together with the shopping centre and parking space for 400 cars below should effectively counteract any sense of decongestion that the area of exposed paving might seem to provide.



SCSD project, USA

By an unfortunate oversight we omitted to include the following credits in our publication last July of the School Construction Systems Development:

Consultants to Inland Steel Products

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Architect: Robertson Ward, Jr. Associates: William L. Cureton, Jr., Robert Kamys, Roger Whitmer.

Consulting engineers (structure): The Engineers Collaborative, Chicago.

All other component systems designed and developed by manufacturer's own staff.

National buildings regulations

Alexander Pike

In a recent debate on technology Mr Ernest Marples laid the blame for the high cost of building in this country squarely on the architect. One of the themes of his argument was the fact that the cost of building in New York is almost identical with that in the UK, in spite of labour costs being four times greater. Those irritated by this indictment will be quick to note that although the Americans, like ourselves, do not benefit from a set of national building regulations and find the requirements of local authorities varying throughout the country, they do at least enjoy the advantage of a rational interpretation of those regulations.

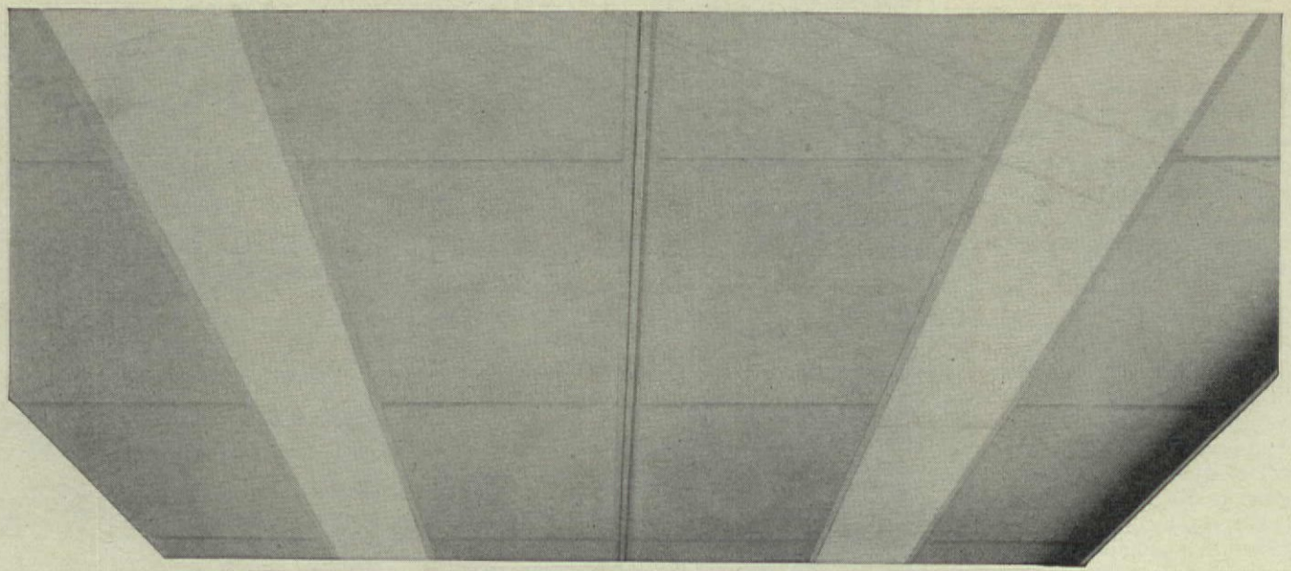
Few architects will fail to welcome the news that the first set of National Building Regulations, made under the Public Health Act 1961 and applying throughout England and Wales except the Inner London Boroughs, will come into operation on February 1st, 1966. They will replace the provisions of local building byelaws and local acts dealing with related matters, and will embody two important changes from those provisions: the first enables the Minister to delegate to local authorities the power to dispense with or relax building regulations; the second provides for the right of appeal to the Minister against an authority's refusal to relax. Those regulations which differ substantially from the byelaws are summarized in a new publication by the Ministry of Public Buildings and Works, *Guide to the Building Regulations 1965*. HMSO 1s. 6d.

The tiger in the tank

Warren Chalk

Contrary to the belief that pioneer architecture is over and that 'the revolution finished twenty years ago', there is evidence of an increasing interest in that diverse congregation of revolutionaries whose drive springs from a desire to transcend the cultivated academic doctrines and disciplines of the Modern Movement and operate in an area at once chaotic and ingenious, irrational and inspired. From time to time they have found their names optimistically lumped together and their work classified under the label of *Fantastic Architecture* (Fantastic Architecture Exhibition organized by the Museum of Modern Art, New York; 'Architectures Fantastiques', *L'Architecture D'Aujoud'hui*, June and July 1962; *Fantastic Architecture*, by Conrads and Sperlich, 1963, and Archigram 4). Can the recent Keynote Luncheon Lecture, *L'Architecture Fantastique*, by André Bloc, in Montreal in June, be seen as yet another attempt to grasp the tiger by the throat—or tail?

RAIC Journal, May 1965.



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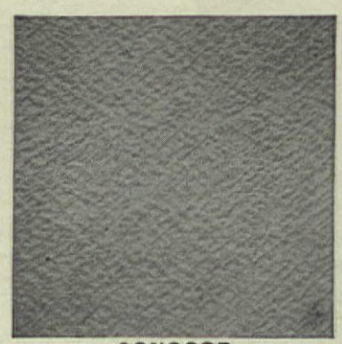

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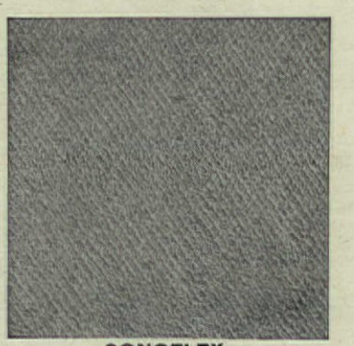

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Terminal: Cologne–Bonn Airport

Architect Prof. Paul Schneider-Esleben's Cologne–Bonn airport at Wahn will have one of the most modern runway systems in Europe as soon as the new 3800m runway is completed, with both the approach and take-off corridors avoiding built-up areas for a distance of 12km.

The existing temporary terminal was designed for 300,000 passengers a year. Present traffic already exceeds this figure, so that new terminal facilities are urgently required. The new design is based on having to handle 4 million passengers a year.

The early designs help to understand how the final design was arrived at.

Design I is based on the usual central passenger-terminal, though the boarding terminals are planned to allow partial decentralized passenger handling later. Parking in front of the terminal building meant very long distances from car to plane.

Design II retains a central administration building but brings passengers as close as possible to terminals, with decentralized passenger handling facilities. The ring road thus created encloses parking areas and the central building containing administration, restaurants and other services. The four passenger terminals are connected by closed walkways to the central building, through which the passenger reaches other terminals when changing planes.

The final design (III), now to be built, has the main administration building enclosing central parking facilities, making the connection to the passenger terminals as short as the turning circles of planes allow.

Each passenger terminal can be reached by road. Departing and in-coming passengers are handled on different levels, while the level still further below is reserved for services and plant. The central parking area is on three levels for maximum parking space.

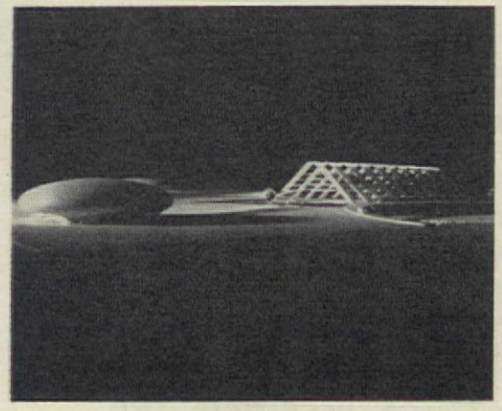
All passenger and luggage formalities are handled separately in the four passenger terminals, passengers carrying their own luggage 100 metres from car to luggage counter.

1
Design I, based on traditional central passenger-terminal arrangement

2
Design II, with decentralized passenger handling areas and a central administration block

3
Design III, as being built with main administration building encircling the parking area and adjacent passenger handling areas

1



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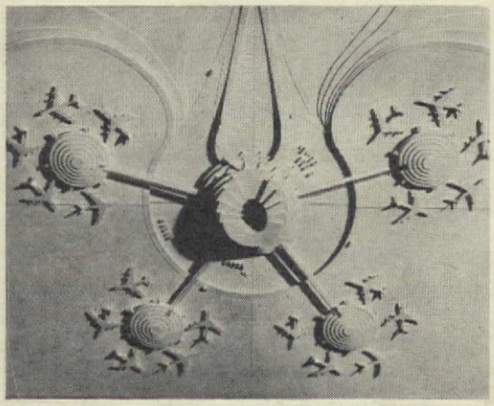

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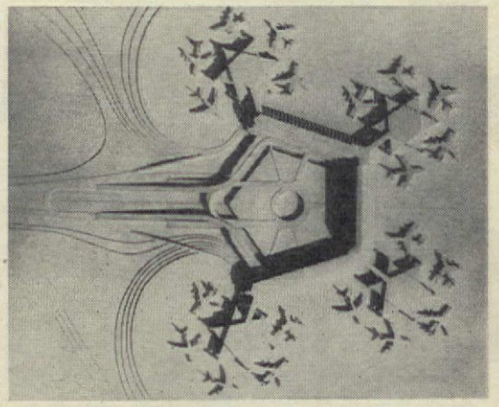


Giacometti: Palace at 4 am

Jasia Reichardt

Today Giacometti's name conjures up a forest of stretched, textured and elongated figures of which the essence is connected with their disproportionate thinness. It is these standing and walking figures, in miniature or larger than life size, that have been discussed in relation to the artist's recent retrospective at the Tate. But to me the greatest contribution of Giacometti's entire œuvre are the works of the late 20s and 30s, when his subject matter, form, and use of material were far more varied than they have been since, and were firmly rooted in the cubist and surrealist idioms. Perhaps the most wonderful work of that period is his *Palace at 4 am,* one of two works related to architecture or environmental-type structure. The other work was his *Project for a Piazza* made in wood in 1930/31. Neither of these two sculptures were shown at the Tate. Whereas the Piazza is an abstract, rather formal work imbued with an aura of optimism and freedom, the Palace is a claustrophobic mysterious structure despite its open framework. How it came into being was once described by Giacometti:

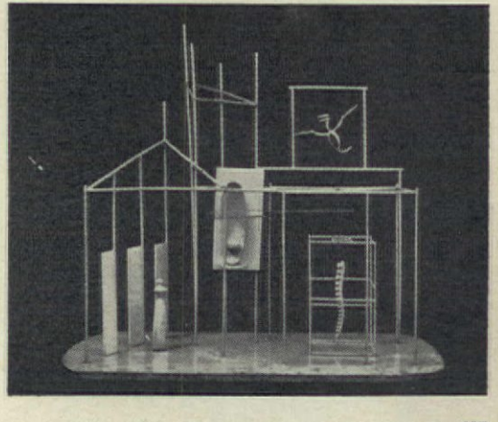
'This object was made little by little at the end of the summer of 1932. It revealed itself to me slowly, the various parts assuming their precise forms and their exact place within the whole. When autumn came it possessed such a reality of its own that the time for its execution took only one day.

'It relates without doubt to a period of my life which had ended a year earlier—a period of six months spent with a woman of extraordinary vitality, who at every moment brought me to a pitch of increasing wonder and admiration. At night we built a fantastic palace (night and day had the same colour—as if everything were happening in the time just before dawn; I didn't see the sun during the whole of that time) —a very fragile palace of matches. At the slightest wrong move, a part of the tiny construction would collapse—we always started it again. I don't know why it is occupied by a spine in a cage—the spine which this woman sold me on one of the very first nights that I met her in the street—and one of the bird skeletons she saw on the very night preceding the morning that our life together collapsed. The skeletons of birds fluttering high above the basin of clear green water in which swim the delicate white skeletons of fishes, in the great room discovered amid exclamations of astonishment at four o'clock in the morning.'

The scaffolding in the centre, Giacometti thought of as an unfinished tower. In the woman on the left he recognized an early memory of his mother. The object in the centre supported by a red board, about which he wished to remain silent, Giacometti identified with himself.

The Palace is a unique and direct result of a particular experience and relationship, and as such it embodies more than what we often mean when we say 'sculpture' or 'imaginary architecture'. As an effigy, it is spell-binding, and in terms of human creation it seems nothing less than sheer poetry.

4
The Palace at 4 *a.m.* 1932/Wood and glass/25in high



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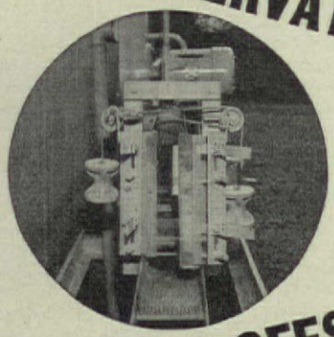

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Dans ce numéro

Quelques œuvres de Sir Leslie Martin

Page 430

Les premières pages de ce numéro sont consacrées à un choix d'édifices construits par Sir Leslie Martin, en particulier les principaux types de bâtiment auxquels il a travaillé durant les dernières années, résidences universitaires, bibliothèques, bâtiments des sciences, plans de complexes universitaires et d'ensembles résidentiels. Nous publions également un extrait du rapport concernant le redéveloppement du quartier de Whitehall à Londres qu'il a publié récemment ainsi qu'un article détaillé de l'ensemble bibliothécaire à Oxford, tous deux illustrant sa manière actuelle de penser.

Cet ensemble bibliothécaire comprend la bibliothèque juridique de Badley, la bibliothèque de la Faculté d'Anglais et un bâtiment comprenant une bibliothèque pour l'Institut de Stastistique. Le principe gouvernant l'organisation de cet ensemble a déjà été décrit. La salle de lecture à éclairage zénithal constitue dans chaque bibliothèque l'élément central autour duquel s'articulent les composantes du plan. Les trois bibliothèques, de dimensions différentes mais d'organisation similaire, se composent en masses qui s'emboîtent et se groupent autour des locaux communs: les vestiaires et les auditoires. Les formes des salles de lecture à éclairage zénithal identifiables de l'extérieur, le groupement des éléments autour d'un important escalier extérieur ainsi que les entrées situées à différents niveaux résultent directement de cette composition d'éléments qui s'emboîtent.

Dans chaque bibliothèque, la salle de lecture est un grand espace pourvu d'une galerie dont les ouvertures du plafond dispensent uniformément un éclairage naturel. La lumière est réfléchie des hauts sommiers qui s'entrecroisent ainsi que de la poutraison secondaire de la toiture. La hauteur et les finitions sont les mêmes dans chaque salle de lecture qui sont carrées mais de dimensions variées: un carré de trois travées pour les Statistiques, de quatre travées pour l'Anglais et de sept travées pour le Droit. Ceci permet de varier considérablement l'effet volumétrique de chaque bibliothèque qui est souligné en outre par un traitement, un language commun. Cette discipline est encore accentuée par la structure où les dimensions des poteaux et des sommiers sont identiques à travers tout l'édifice et forment ainsi une trame structurelle basée sur l'encombrement des rayonnages et des tables de travail. Il y a donc un rapport étroit entre l'organisation des espaces, la structure, l'ameublement et l'éclairage; dans la zone des rayonnages, les panneaux du plafond entre les sommiers sont utilisés comme réflecteurs pour les lampes fluorescentes dessinées tout exprès et permettent d'assurer un niveau d'éclairement suffisant au niveau du rayonnage le plus bas.

Maison d'enfants, Frogmore, Putney

Page 449

Afin d'assurer l'isolement et l'intimité, les deux édifices ont été disposés perpendiculairement l'un à l'autre dans un jardin bordé d'un mur. Un accès de service avec un trottoir permettent d'atteindre l'édifice situé en retrait où l'on a réservé un espace de parking protégé pour deux voitures. Une clôture sépare les deux propriétés. Les locaux de service (garage, vertiaires, etc.), ont été disposés côté entrée, les locaux de jour, salles de jeux, préau couvert côté jardin. L'étage des chambres de chaque maison comprend quatre petits groupes de chambre, chacun avec deux grandes pièces (13m²) et une chambrette (8,5m²) ainsi que les équipements sanitaires nécessaires.

La volière du nord, Jardin Zoologique de Londres

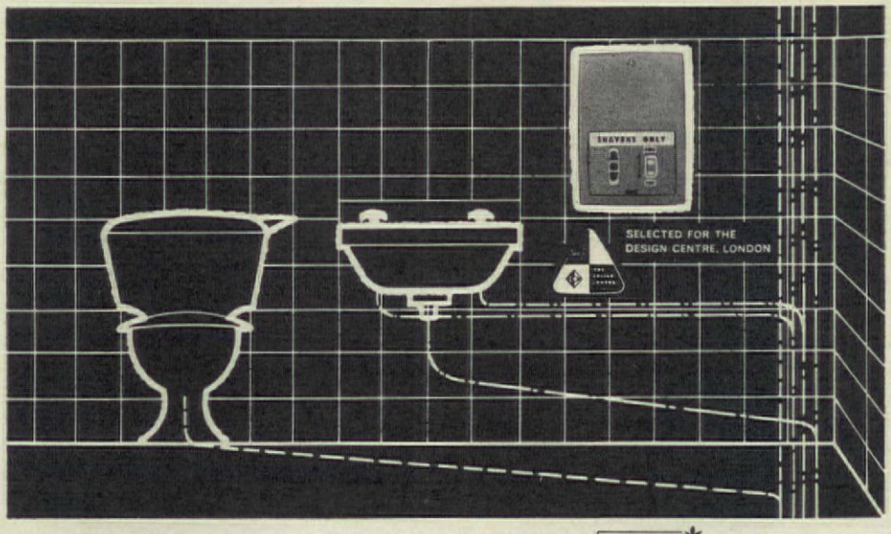
Page 451

En novembre 1960, la Société Zoologique mandatait Lord Snowdon pour l'étude d'une grande volière accessible au public entre le Regent's Canal et la rue du Prince Albert. En accord avec la Société Zoologique, Lord Snowdon invita Mr Cedric Price à participer à l'étude et, en 1961, ils proposèrent à Mr Frank Newby d'être leur ingénieur-conseil. A cette époque il était décidé que la structure exprimerait deux pavillons élevés avec une série de perchoirs situés aux extrémités, reliés soit par un filet tendu soit par un filet supporté par des câbles tendus soit par une coque en treillis. Le sommet des pavillons des deux extrémités devait être de même hauteur et constituer les points les plus élevés du périmètre.

On convint d'une structure à câbles tendus, supportés par de hautes constructions aux deux bouts s'avérant économique pour une portée d'environ 50 mètres. La solution du filet tendu impliquait trop de problèmes techniques à résoudre dans le temps imparti. La forme d'une structure tendue est principalement dictée par le souci d'assurer une certaine rigidité s'opposant aux oscillations. Comme la pression du vent est infiniment plus faible sur un treillis que sur une surface solide, on pouvait considérer des structures tendues en forme de cristaux comprenant un minimum de joints avec les câbles anti-oscillatoires.

Afin de recevoir les câbles de tension, la structure de support est placée en porte à faux dès le sol. Elle peut prendre une variété infinie de formes, chacune de ces formes influençant et subissant l'influence du réseau de câbles. Il est bon de préciser que l'intérêt porté aux structures tensègres conduisit les projeteurs à envisager divers formes où les éléments en compression étaient suspendus dans l'espace bien que fonctionnant comme porte à faux verticaux. On parvint à la solution finale à l'aide de maquettes. Certaines décisions furent prises à cette époque basées sur l'hypothèse que les vibrations dues au vent seraient satisfaisantes et que des calculs détaillés permettraient de vérifier la direction des charges dans les membrures soumises aux multiples variations des conditions climatiques.

Designers remember details



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ARCHITECTS

Applications are invited for men or women for three pensionable posts in Edinburgh.
Duties include interesting and varied work on hospitals, schools, colleges, housing and public buildings and development and research work.
Candidates must be Registered Architects (or be eligible for registration). Professional experience in at least one of the types of work referred to above will be an advantage.
Salary £1662–£2227 (under review). Starting salary may be above minimum. Promotion prospects.
Write Establishment Officer, Scottish Development Department, Room 27, St Andrew's House, Edinburgh, 1.
The closing date has been extended to September 24th, 1965. Candidates who have already applied need not do so again.

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For full particulars write quoting S/6216/65 to Civil Service Commission, Savile Row, London, W.1. Closing date September 21st, 1965.

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The duties will entail some travelling.
Salary (Inner London: Interim) Senior Grade, £2460–£2817; Main Grade £1747–£2312. Starting pay may be above the minimum. Promotion prospects.
Write (preferably by postcard) to Civil Service Commission, Savile Row, London, W.1, for application form, quoting S/6114/65. Closing date extended to September 1965. Candidates who have already applied need not do so again.

ANNOUNCEMENT

OWEN LUDER Chartered Architects (Owen Luder, Dennis Drawbridge and Rodney Gordon), announce that as from June 1st 1965, Laurie Howard and Peter Abbott have joined Norman Willson as Associates of the Office. Mrs Sheila Cooper has been appointed Office Secretary.
The name of the office has been changed to the 'OWEN LUDER PARTNERSHIP', but will continue to practice from 'The White House', 140 Tachbrook Street, London, S.W.1 (VIC 2171/2/3 and VIC 4692/3), and in association with the Northern Office, Owen Luder & R. J. Worthington A/ARIBA, Raglan House, Raglan Street, Harrogate, Yorks. (Harrogate 67948).

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In dieser Nummer

Sir Leslie Martin, Ausgewählte Arbeiten.

Seite 430

Die einleitenden Seiten dieser Nummer sind einer Auswahl von Bauten von Sir Leslie Martin gewidmet, und im besonderen den Grund-Bautypen, an denen er in den letzten paar Jahren gearbeitet hat, Universitäts-Wohnblocks, Büchereien, Gebäude für wissenschaftliche Zwecke, Universitätsplanungen und Wohngebäude. Außerdem finden Sie einen Auszug aus seinem kürzlich veröffentlichten Bericht über die Neuplanung des Whitehall-Bezirks in London und einen umfassenden Bericht über die Büchereigruppe in Oxford, die seine augenblickliche Einstellung aufzeigt.

Die Büchereigruppe umfaßt die Bodleian Law Library, die English Faculty Library und ein Gebäude, das eine Bücherei für das Institute of Statistics enthält. Das wirkende Prinzip, das die Planung dieser Gruppe von Büchereien bestimmt, ist schon früher beschrieben worden. In jeder Bücherei bildet der Oberlicht-Leseraum den Kern, um den sich der Plan entwickelt. Die drei Büchereien, zwar von berschiedener Größe aber gleichem Muster, sind dann miteinander verknüpft unter Einbeziehung der gemeinsamen Nebengebäude, wie Garderobe und Raum für Vorlesungen. Die äußerlichen, kennzeichnenden Formen der Oberlicht-Leseräume, die Planung um eine außenliegende Haupttreppe und die Lage der Eingänge auf verschiedenen Ebenen sind ein direktes Ergebnis dieser Verknüpfungsidee.

Der Leseraum jeder Bücherei ist ein hoher Galerieraum, durch gleichmäßig verteiltes natürliches Licht von oben beleuchtet. Das Licht wird reflektiert an den dicken Querträgern und den Nebenträgern des Daches. Die Höhe jedes Leseraumes und die grundsätzliche Behandlung ist bei allen gleich. Jeder ist quadratisch, wobei die Größen verschieden sind; Statistics drei Joche im Quadrat, die English Faculty vier Joche, die Bodleian Law sieben. Dies ergibt beträchtliche Unterschiede in den Raumwirkungen der verschiedenen Büchereien. Trotzdem aber liegt eine bestimmende Einheitlichkeit zu Grunde. Dies wird betont durch die Art, wie Säulen und Träger in ihren Größen durch das ganze Gebäude beibehalten sind, und durch ein Strukturgitter, das auf der Verteilung der Bücherregale und Lesetische beruht. Es besteht daher eine feste Beziehung zwischen Plan, Struktur, Einrichtung und Beleuchtung: in eigentlichen Raum der Bücherregale sind die Deckenflächen zwischen den Trägern als Reflektoren für die besonders entworfene Leuchtröhrenanlage gestaltet, um auch für die unteren Teile der Regale genügend Beleuchtung zu gewähren.

Kinderheime, Frogmore, Putney, James Stirling und James Gowan

Seite 449

Um eine gewisse Abgeschlossenheit zu geben, stehen die beiden Häuser rechtwinklig zueinander in einem ummauerten Garten. Ein Fahrweg und ein Fußsteig bilden den Zugang zu dem hinteren Haus, dort ist ebenfalls ein Parkplatz für zwei Wagen. Ein Staketenzaun teilt die beiden Grundstücke.

Die Wirtschaftsräume im Erdgeschloß (Garage, Garderobe usw.) liegen auf der Zufahrtsseite des Hauses, der Tagesraum, das Aufenthaltszimmer der Kinder und der überdachte Spielplatz auf der Gartenseite.

Der Schlafzimmerflur jedes Hauses ist in vier kleine Unterbringungsgruppen eingeteilt, jede mit zwei größeren Räumen (etwa 14 m²) und einem kleinen Raum (etwa 9 m²) sowie den zugehörigen sanitären Anlagen.

Nördliches Vogelhaus, Zoo London, Lord Snowdon, Cedric Price, Frank Newby

Seite 451

Im November 1960 beauftragte die Zoologische Gesellschaft Lord Snowdon damit, einen Entwurf vorzubereiten für ein großes Promenaden-Vogelhaus zwischen dem Regent's Canal und der Prince Albert Road.

Mit Zustimmung der Gesellschaft forderte Lord Snowdon Mr Cedric Price auf, mit ihm zusammen zu arbeiten, und im Januar 1961 baten sie Mr Frank Newby als ihren beratenden Ingenieur dazu.

Es war zu der Zeit beschlossen, daß der Bau zwei sehr helle Endpavillons aufweisen sollte, verbunden durch ein Spann-Netz oder ein Netz über Spannseilen oder ein Gitterwerk, von ausreichender Höhe mit Aufsitzmöglichkeiten an beiden Enden.

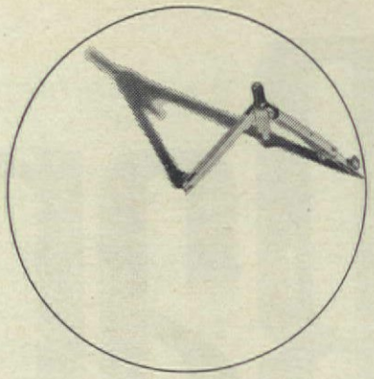
Man kam überein, daß eine Spannseilanlage die beste Lösung sein würde, da sie hohe Endpunkte erfordert und für eine Spannweite von etwa 50 m wirtschaftlich genug ist. Ein Strecknetz gab mehr technische Probleme zu lösen, als in der verfügbaren Zeit möglich gewesen wäre.

Die Form der Spannstruktur wird hauptsächlich beeinflußt von der Methode, die zur Flatterfestigkeit angewandt wird. Da der Winddruck auf einem Netz viel kleiner ist als auf einer durchgehenden Fläche, war es möglich, Kristallnetzformen zu wählen, mit einer möglichst geringen Zahl von flatterfesten Kabelzwischenstücken.

Das Tragewerk hat grundsätzlich als Ausleger vom Boden aus zu wirken, um die Spannseile zu tragen. Es kann unzählig viele verschiedene Formen annehmen, je nach Wirkung und Gegenwirkung des Kabelnetzwerks.

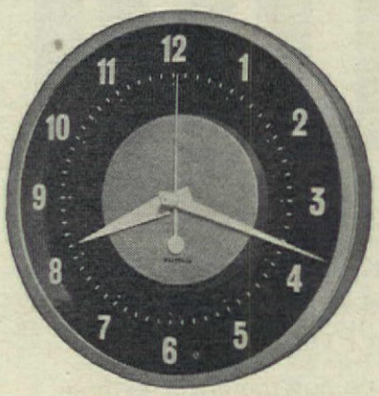
Das Interesse an Spannungskräften führte auch dazu, verschiedene Formen zu überlegen, bei denen Kompressionsglieder, freihängend, als vertikale Ausleger wirkten.

Die endgültige Lösung wurde mit Hilfe von Modellen gefunden. Die Entscheidungen zu jener Zeit beruhten auf der Annahme, daß die Windvibrationen befriedigend sein würden, und daß Einzelberechnungen die Richtigkeit der Druckkräfte in den einzelnen Gliedern unter allen klimatischen Bedingungen bestätigen würden.



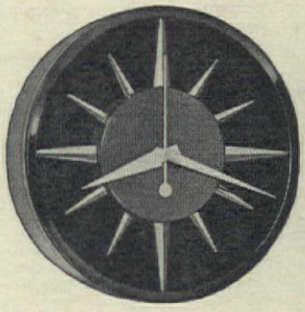
Architect-designed for

Westclox



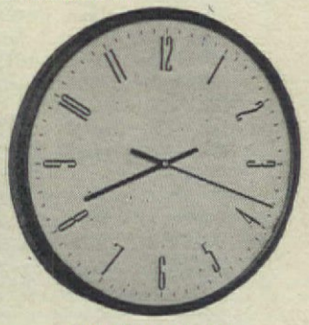
EXECUTIVE 10

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



GROSVENOR

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



MANAGER 12

Flush-fitting commercial wall clock with white dial and raised clear numerals. Both numerals and hands are black. Available with 200/250 volt A.C. 50 cycles self-starting electric movement. Or cordless electric battery movement. Height 13⅛". Price: Electric £7.0.0. Battery £9.10.0.

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

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Bank INTERIOR DESIGN COMPETITION

PRIZES
1st Prize £500
2nd Prize £250
3rd Prize £100

In addition there will be three special merit prizes of £50

Panel of Judges

Mr. John Reid, ARIBA, FSIA, FICS
President of the Society of Industrial Artists and Designers.
Mr. Leslie Gooday, FRIBA, FSIA
Nominated by the Society of Industrial Artists and Designers.
Mr. Neville Ward, B.ARCH, ARIBA, FSIA
Nominated by the Society of Industrial Artists and Designers.
Mr. J. D. Clayton
Local Director, Pall Mall District, Barclays Bank.
Mr. A. W. Warnock, D.S.C.
Assistant General Manager, Barclays Bank.
Mr. J. L. Corkill, AVI, FRSH
Premises Manager, Barclays Bank.
Mr. G. B. Drury, FRIBA
Staff Architect, Barclays Bank.

(An expert from Barry Staines will be in attendance to assist the judges panel on technical points connected with specifications of linoleum and Doricon. This expert will have no voting powers).

Here is an unusual and challenging design competition sponsored by Barry Staines (Sales) Ltd., in conjunction with Barclays Bank Ltd., to design the interior of the important Brompton Road Branch bank. The competition is under the auspices of the Society of Industrial Artists and Designers. This is no academic exercise, for the winning design will be installed in the bank. The Designer will be commissioned by Barclays to carry the job through to completion and will be paid in accordance with the scale of fees recommended by the Society of Industrial Artists and Designers.

Conditions

Submitted designs must employ Barry Staines linoleum and/or Doricon. In awarding the prizes consideration will be given to the imaginative and practical exploitation of these materials on all suitable surfaces — floors, walls, counter tops, table tops, etc.

Entrants

Intending entrants should write to or complete the coupon and return it to : The Competition Director, Barry Staines (Sales) Ltd., Staines, Middlesex. They will then be sent full details and terms of the Competition. together with plans of the bank and samples and other details of Barry Staines materials that can be used.

Dates

The competition is now open and will close on Nov. 30, 1965.

BLOCK CAPITALS

To the Competition Director, Barry Staines (Sales) Ltd., Staines, Middlesex.
Please send me all details of the Bank Interior Design Competition

Name _____

Address _____

_____

AD

Barry Staines (Sales) Limited *Staines Middlesex*

The LCC was our Uncle

I. Chippendale

No other authority in the world surely was so organized and so polite about it. 'I do hope you will be able to come. If you cannot do so, however, please be good enough to let me know . . .' This for your child moving out of infant ('they give us books to write in, and milk') and junior school into the commutjng jungle.

The LCC* was a home from home: for foreign architects and planners it coped with work permits, bizarre qualifications, language barriers, metric minds; for the first job of the provincial in London it gave short hours, no real burden, leaving time for floodlit evenings, theatre queues, competitions; for odd people—what a problem the well qualified man out of Auschwitz—as one employer said, 'I've got several borderline cases, just normal ones, one problem like that even in the building would tip them over.' But the LCC was big, 1600 'designers' alone. It could be, and was, everyone's Uncle.

In our day there was anybody from gentlemen architects hit by the slump, chaps still wearing ARP suits carrying something in old sector wardens canvas mask covers, a be-bop messenger who thumped down corridors with his roll —a lovely booming thud he gave it—a lady who boiled down tracing linen found unclassified in an old store, a colour-of-death lift-man to whom, for years, they never gave a uniform so sure were they he would expire, and a thriving Communist Party holding meetings and practically producing a magazine in the building. Feelings ran high: these people were against Roehampton, their entries for Golden Lane were three-storey Wrenifer Crust. Now the Party line has changed, Stalin style is out, and all we have to show for that era is the spotting of office towers about London meant to simulate the Moscow skyline.

Indeed the LCC was big enough to get away with almost everything in—even Roehampton, although it seemed touch and go at the time and foully rumoured in the wash rooms Martin never once visited it whilst it was on the drawing boards. Yet now it is the first example of new housing laymen and architects alike think of. One of its fiercest opponents has since been seen showing a bus load of Russians the 'Marseilles pups'.

Also, back in the 50s, the tram connecting north to south London still went past the end of North block; if it went too fast quite a number of fellow workers missed the signing-in books.

For the public, every autumn the LCC published their impressive *Floodlight.* In it you read you could take evening classes in:
Archive repair
Boiler house practice
Chairmanship (I suppose of the GLC if you aspire)
Clear thinking
Egyptology
Eiderdown making
Fish, coarse, angling
Postiche dressing
French for hairdressers.

This autumn one assumes there will be crowded classes on export practice.

No doubt the LCC did not provide the all-in service it did for day schools.

One suspects you brought your own gear in:
Diamond mounting
Furriery
Horsemanship
and the pork trade.

At some evening institutes they charged a fee and taught bird-watching.

They seriously taught things you never heard of, like:
High frequency welding for leather goods and footwear
Korfball
Rheology 1 (not 2)
Semi-conductors (which half of the Albert Hall does one use when trained?)
Trichology
Wave guide physics and yoruba.

Think of it, every winter evening there were people all over the London area doing:
Chinese (mandarin)
Serbo-Croat
Vibration physics
and trampoline.

Main drainage sounds fine. Just as I always intend to visit the Paris sewers, entrance Place S.Sulpice the second Tuesday in every month, so I missed the centenary visit to the Southern Outfall Works. But the model in the glass box in their exhibition ranks in the memory with wet Scottish holidays in Chamber Street Museum.

The LCC school meals service conditioned children to a point where they are able to refuse to eat most English hotel and restaurant food. This creative achievement can be measured by an old LCC school folk song which sang of mouldy beans, sloppy semolina. I took a census —no child now knows for sure what semolina is, tapioca drew a complete blank, nor do they have the right beans on their screens.

LCC departments filled thirteen columns of the telephone directory:
Nature study scheme
Remedial education—that's for me
Parks—with those 24 picks to the inch Yorkshire suitings.
Large homes, as distinct from every other kind including
Sheltered work-houses
Nine supplies depots, with a night service!

You could go on the LCC Woolwich Ferry, or run shouting through the Greenwich pedestrian tunnel.

You could get dog and gun licences.

You could eat at the LCC Catering School if your nerves were strong enough to shoulder an aspic tremmelo.

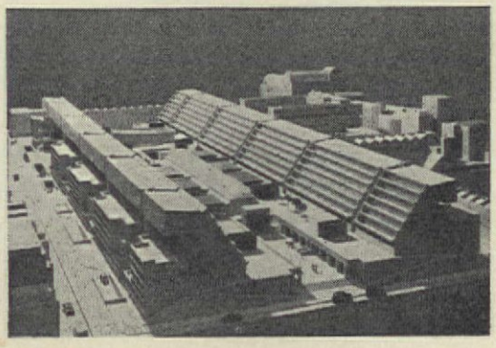
As architects, we perhaps all received a service more meretitious than our talent as London architects deserved—a pleasant and comprehensive service that bore all such office jokes as 'visiting firemen'. The ugliness of our buildings must make many sincere officers very sad. Even developer's architects should at last feel shame if they now have to pause to compare their standard with what the LCC achieved in their own schemes; and such men must face that LCC Committees were no less bullies on political occasions, than developers as clients.

Too bad we did not lose the architects *not* employed by the LCC when it ceased to exist on March 31st.

For the Architect's Ball on April 2nd, the new GLC saints came marching in, Hubert Bennett smiled benevolently from the balcony. But the old saints who made possible their private veneration out of a public success story seemed conspicuously absent, maybe they were feeling shame in not resigning (if necessary) over the Shell Building.

*The London County Council which in April this year ceased to be, its place having been taken by the Greater London Council.

Foundling Estate development



Negotiations are in hand whereby the London Borough of Camden would acquire the residential part of the Foundling Estate development proposed by Marchmont Properties Ltd. This will comprise six to seven hundred flats, the total depending on the proportion of 3-room and 2-room flats to be included.

To make this possible, the developers would build a platform over the shopping centre which is to be one of the main features of the scheme. The borough council would acquire this platform on a lease of at least 99 years and build flats on it in accordance with planning permission. A basement car park for nine hundred cars is to reserved almost entirely for tenants.

Included in the residential accommodation will be small blocks of chambers for doctors and other practising professional tenants.

The preliminary scheme for the layout was a joint scheme by Sir Leslie Martin and Patrick Hodgkinson (see page 438). Sir Leslie Martin remains the coordinating architect for the area, but Mr Hodgkinson is the architect for the main site and has been responsible for its detailed design.

Sir Leslie was commissioned by the Ministry of Works to draw up a report on Whitehall redevelopment, which is shortly to be published.

At the press conference, besides council members and officers of the Borough of Camden will be representatives of C. Harman Hunt and Co., consultant surveyors for the scheme, and Douglas Kershaw and Co., managing agents and joint letting agents.

The third force in English architecture

The work of Sir Leslie Martin

Thomas Stevens

If I think of the activity of Sir Leslie Martin since pre-war days in this country, a number of aspects of it come to mind, according to their prominence at various times. There was the Soane Scholar who collaborated with those forward-looking artists, architects, scientists and writers to produce *Circle*, an international review of constructivism, which was published by Faber & Faber in 1938; there was the successful direction of the Hull School of Architecture, and the writing with his wife Sadie Speight of *The Flat Book*; there was the building or the conversion of a number of houses in the north of England for members of the Nicholson and Carlisle families, several of which figure in later editions of F. R. S. Yorke's *The Modern House in England*. There was his period of activity towards the end of the war with LMS, later the Midland Region of British Railways. There was his period as deputy, later chief architect to the London County Council; and finally there is his Cambridge professorship and the practice at Shelford Mill, with all that that has meant for the continuing patronage of young architects and the promotion of good architecture in the right places, as formerly with the LCC.

It will be obvious from my title that I presuppose the existence of two other, somewhat polarized, forces at work in English architecture; but I do not wish it to be imagined for one moment that Sir Leslie represents some sort of a no-man's-land between them: he represents something wholly different from either, and something much more positive in its own right. The two other forces whose existence I am presupposing in the field of English architecture are the beliefs at one time or another paramount among us, and still very prevalent, that a work of architecture can be reduced to the sum total of the social or the technical decisions which go to compose it. If this were true, it would represent a logical short circuiting of that hiatus between 'is', i.e. statements of empirical fact, and 'ought to be', i.e. statements about the content of logically possible systems, which David Hume in the eighteenth century pointed to as the danger point in all attempts to create purely naturalistic, i.e. empirically based, systems of ethics, esthetics, religion, or what have you.

The matter did not, however, rest there; and the unjust accusations of pessimistic scepticism which were made against Hume by his opponents were in my opinion mostly ill-conceived, and also missed the point. The scientists who had overthrown the scholastics had also usurped their mantle of unwarranted dogmatism. Since logical deduction from accidental axioms does not yield one the truth about the world, it was assumed that a purely inductive empiricism, without the intervention of any act of imaginative originality whatsoever, would do so, so that the less intervention, the more truth. This theory about the world vastly influenced the English especially, as Sir Peter Medawar has made clear in a recent 'Encounter' article. It has also very much influenced the outlook of various European and English architects since the anti-academic revolution, who because they realized that inherited *partis-pris* in planning could not cope with innovations in both function and construction, supposed instead that architecture might be arrived at as the sum total of empirically derived social and technical solutions.

To this attitude Sir Leslie is outspokenly and vehemently opposed. For him, architecture, if it is to have consistency, must originate from architectural ideas consistently thought out. Testing these ideas both technically and socially for their viability in any given circumstances is an essential part of this process,* for an idea, however laudable or consistent as architecture, remains no more than an idle pipe dream, unless it can be built and also satisfies the group of functions required of it. From this it will be obvious, to those who are acquainted with such studies, that if one takes, say a concatenation of architectural spaces with their boundaries, dimensions, apertures, and profiles considered as an abstract 'group'; and if one takes in turn the 'groups' implied by the constructional system involved and also by the concatenation of physical functions the spaces imply, then these three 'groups' will possess a degree of partial isomorphism which will vary from building to building. The global 'group' embodying the isomorphisms will then represent such abstract unitary structure as the building possesses. If this isomorphism is of high degree, as it is in the Capra Rotunda, the whole equation abstract structure ⇋ concrete function and construction can be turned right about face, so that the building appears as the roots of an equation of higher order; but, of course, such moments in architectural history are necessarily very rare—they depend alike upon a mature, if limited, society and technology and an equally mature, if limited, exercise of the imagination. They also depend upon two related notions, to which Sir Leslie, Le Corbusier and the academic classicists are alike addicted: the notion, that in any milieu the feasible buildings incorporate a number of finitely conceivable types; and the notion, not very prominent in English-speaking circles, that a theory of architecture is possible, which functions at once as a critique of practice, and is itself reciprocally modified by that practice, in terms of these typical solutions.

It should not therefore be thought that Sir Leslie is teaching that kind of architecture which survives solely by its embodiment of a few platonic absolutes. It is indeed very unlikely under the tyranny of time that any works of architecture will survive the disappearance of their utility. But they certainly will not do so, unless they are considered as entities in which the buildings as answering to certain social demands, the buildings as the results of certain ways of constructing them, and the buildings as embodiments of purely logical configurations, are as near identical as may be. The truth of the matter would seem to be that as the abstract configurations embodied in certain building types awake very deep echoes in human beings, such as those gigantic petrified geometrical breast-wombs the ancient Egyptians immured their pickled God-kings in, so we preserve them as emblems, long after the vanishing of the social milieu and the climate of opinion which gave rise to them, quite apart from their possibly physical indestructibility!

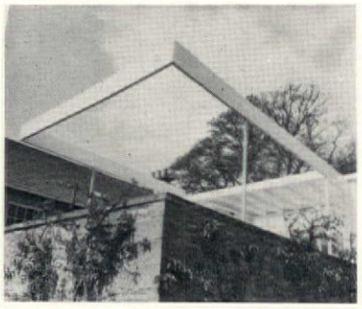
Sir Leslie points out that just as in architecture there are no separate subjects, so in towns there are no 'separate' buildings; every building is a potential brick from which a town may be built up. This has far-reaching consequences for his theory of architectural education.

If the attitude towards architecture adumbrated above, indicates broadly the direction in which Sir Leslie thinks architecture, rather than applied mechanics or applied sociology, is likely to be found, this in no way entails a view of architecture as pure originality. To underline this point we may consider the example of an imaginary group of "architects of originality" let loose on the replanning of a public space, it may be a campus or a square; and the result would be environmental chaos, certainly at the formal, probably at the practical level. This is another result of aur well-known Anglo-Saxon bias towards situations polarized on the literary level, where in romantic-symbolist theory, 'pure' and 'applied' were diametrically opposed notions. So much is the discipline of architectural teaching still geared to the production of potentially 'original' geniuses, that the necessity for collaboration, between men and women of the most diverse talents and attainments, in the mastering of our built environment is quite forgotten. But we have to remember that the indisputable architectural colloquies bequeathed us by other milieus and epochs, are at once the measure of how far we fall short today, in achieving any such public architectural conversation: think of Oxford Street, or think, indeed, of the rebuilding of any great city; and also an emblem of just those very commonly understood terms and themes of discourse, which make architectural urbanity possible. There is no more reason why architecture, a public art, should lie under the intolerable necessity of being an arid dispute between contestants all talking at once, in mutual abuse and invective, than that conversation should become a diatribe. And the architecture of the public realm however original its authors, should nonetheless be conducted at such a level that mutually enhancing discourse, rather than mutually annihilating diatribe, results. In proportion as we clear away the past, we remove the sole exemplars of this kind of activity; but a society which has done nothing to deserve its part as an emblem of good and humane discourse, has done nothing to meet its future, however unbridled.

Hence our present impasse.

*It is of some importance to the argument to note that the Cambridge School of Architecture pioneered the development and use of the large scale artificial sky for the scientific study of high density housing.

Sir Leslie Martin: selected works*



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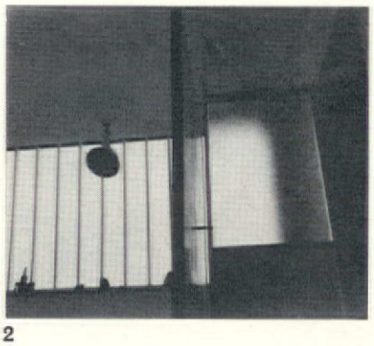

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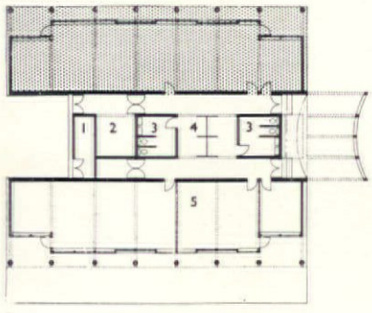

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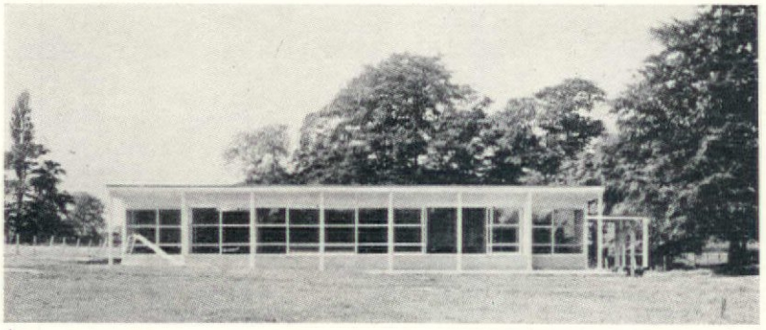

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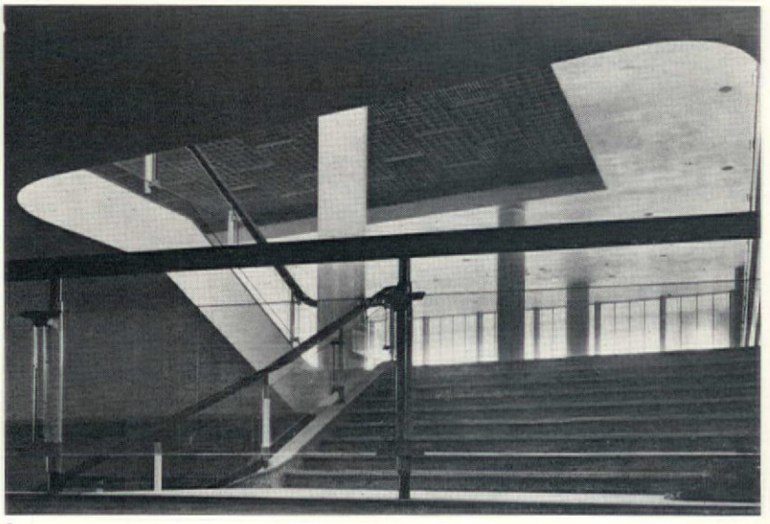


6

1
Extension to a house at Brampton, Cumberland, to provide a new suite of rooms and a terrace

2
Studio in the Morton House, Brampton

3
Plan of kindergarten near Northwich, Cheshire, of timber frame construction. The shaded area was not built, but indicates how the building could be extended
1 heating
2 kitchen
3 w.c.s
4 cloaks
5 classrooms

4
South front of the kindergarten near Northwich

5
Unit furniture

6
Foyer in the Royal Festival Hall
Photo: M. F. Harker

*Where other people are associated with particular schemes their names are given in the text.

1935–37
Edited *Circle* (an international survey of constructive art—published 1937) with Ben Nicholson and Naum Gabo
'This volume on which work started in 1935 was originally intended as an annual. It stressed the notion of cultural unity and the international connections between the development of forward looking trends in all fields. *Circle* was conceived as a platform for the exchange of ideas relating to such diverse subjects as painting, sculpture, architecture, typography, choreography, engineering, art education and biotechnics. In art the tendency was towards purism and complete abstraction.'
Art in Britain 1930–40, p. 11.

'The balancing and controlling—counterpart to contemporary technique is an equally contemporary aesthetic.'
Martin, from an essay in *Circle*.

1937–39
Extensions Brampton House, Morton House, Brampton, Cumberland. Robinson House, Ferriby, Yorks. Sutherland House, Dockray, Cumberland. Prefabricated Holiday Houses

1937–38
Nursery School, Northwich, Cheshire, (with Sadie Speight)
Four classrooms were required and a larger floor area for eurythmics and play which was formed by removing the folding partitions which divided three of the rooms. Lavatories, cloaks and kitchen were planned in line with these classrooms. A lower roof over these servicing areas allows cross ventilation to classrooms. The plan was capable of expansion by a series of mirror images (one of which is indicated), the service area becoming a spine between two rows of classrooms.
The constructional frame was timber lined with standard asbestos sheets. Sliding wooden window frames carry standard metal windows.

1938
Unit furniture
A series of timber bookshelves, cupboards, sideboard, wardrobe fittings, etc., based on a standard module.

1939
Edited the *Flat Book*—a handbook of contemporary furniture, in collaboration with Sadie Speight.

1939
***Architecture and the Painter*: with special reference to the work of Ben Nicholson.**

1946–48
Working on L.M.S. standard canteen buildings, prefabricated rail bars, unit station buildings, etc.

1947
A Note on Science and Art
The Architects Year Book
'Thanks to science we may know the facts with some degree of intellectual certainty—how best to plan for sunlight and air, how to control the problem of noise, how to provide buildings with reasonable performance and with speed. I do not wish in any way to detract from these practical contributions. On the contrary they can immensely increase the reasonable comforts and conveniences of human beings and from this point of view alone the architect must welcome and employ them. But the sum total of these facts can never tell us how they shall be used—for that is not a question of fact at all but a feeling—in short it is the province of art.'

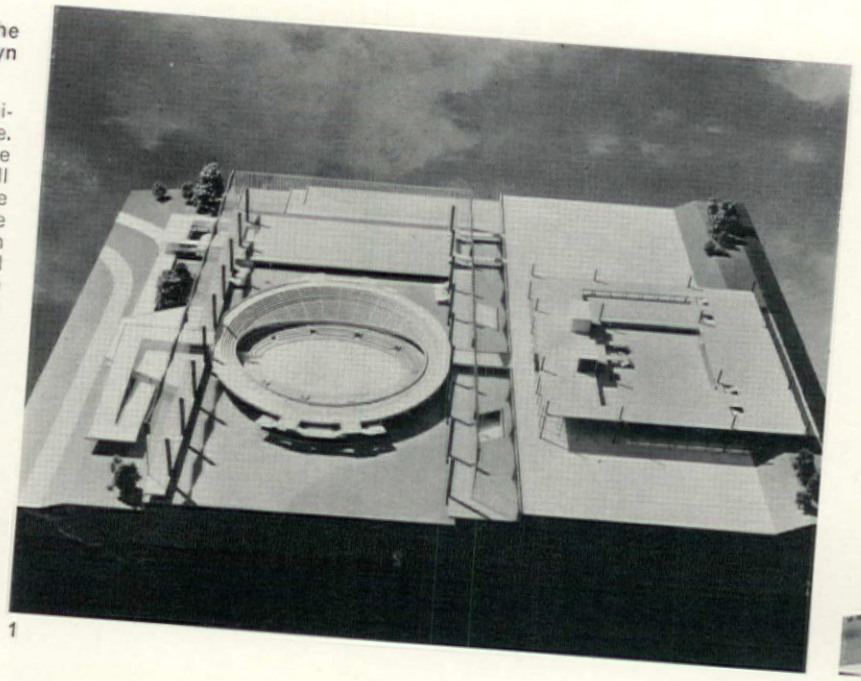
1949–56
Deputy Architect and Architect to the LCC. Royal Festival Hall. Robert Matthew and Leslie Martin

1954–56

Proposed LCC development for the site; with Norman Engleback, Bryn Jones and John Attenborough

'The scheme is for a permanent exhibition centre on an international scale. . . . The proposed (main) buildings are divided into two major units, a small hall (12,255ft²) to the north and, along the ridge of the site where the old Palace used to stand, the great exhibition space, 80ft high and spanning 400ft and 1000ft long, which also contains an arena and amphitheatre. Outside the hall are terraces that could house outdoor exhibits, temporary pavilions, etc. Numerous restaurants and bars are incorporated and the whole layout has been integrated to provide a comprehensive recreation area. The car racing track is to be lengthened to 2·4 miles and besides the reconstructed boating pools there will be an outdoor theatre, riding school and, of course, the National Youth Centre.' (The latter has now been built.)

Architectural Design, February 1956.



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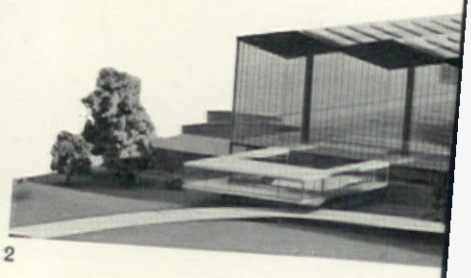


2

1956

Own house and studios, Shelford—a converted mill

An external staircase leads to the house entrance at first floor level. The studios at ground floor level have a separate entrance below this. The house has three floors of accommodation. These are connected by single flight open staircases placed one above the other. One internal wall dividing the floor area contains all the plumbing; another brick structure forms a core which runs through all floors and contains the heating. These walls are placed so that they relate to and support existing beams. One end of the floor bay at second floor level has been removed so that the first floor has a double height at this end and the living area at second floor level becomes a gallery overlooking this double height. The first and second floors are therefore part of the same architectural space and are open in plan. The bedroom floor is arranged to give a maximum sense of enclosure. Each room has two interconnecting but screened areas: its total shape is never obvious. (See *AD*, July 1960.)

4

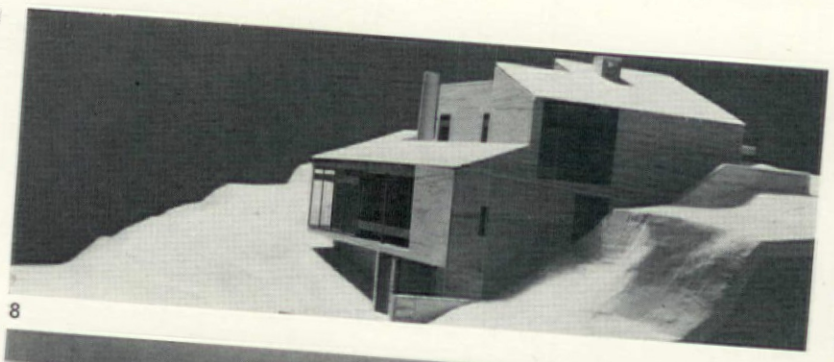
5

1961 and 1964

Houses abroad on a steeply sloping site

Both houses are on steep sites. Both make use of upper level terraces. The first house designed in 1961 is arranged along the contours of the site at three levels, a staircase cutting across the plan provides an internal connection between these levels and links the main living room, dining, kitchen and spare room level to the upper suite of rooms, studio, bedrooms, study, etc. Externally the house appears as a cluster of single storey buildings arranged at different levels around a terrace. Its total form is broken down to the scale of other buildings in the vicinity.

The second house designed three years later is planned across the contours to provide two separate terraces linked to the main rooms of the plan. Basically the plan consists of three separate areas: the main living area at the central and entrance level, a main bedroom above and behind this, and guest bedrooms below and in front. The house is designed so that it can be built simply and with minimum drawings.



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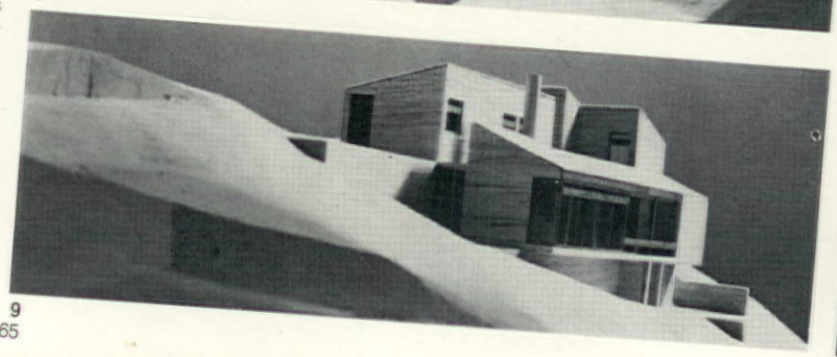

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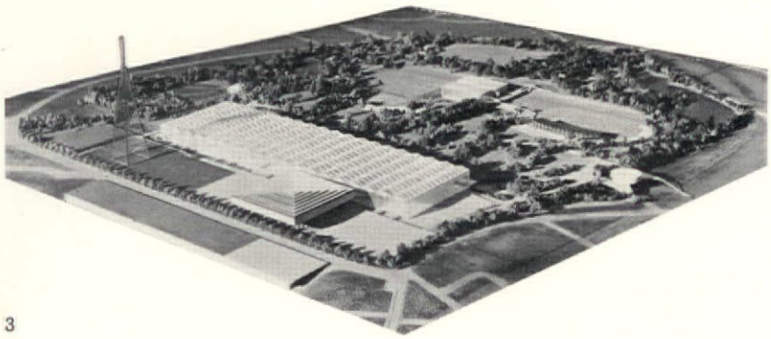

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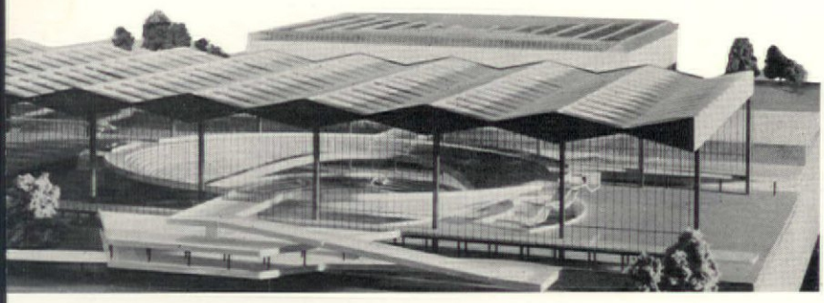

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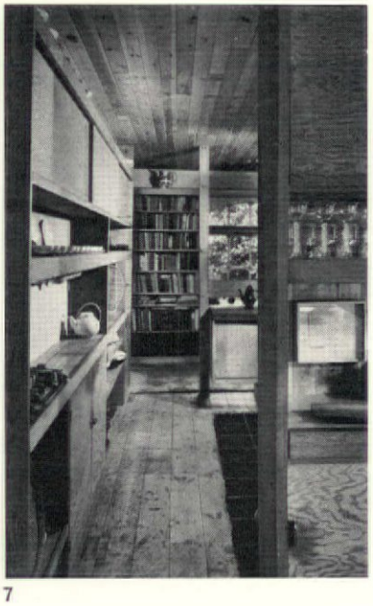


7

An overall view of the architect's training (an address to BASA)

I assume at the outset that training can mean education. I assume that the process of architectural education should entail a stretching of the mind and an enlargement of experience through the exercise of intelligence and judgment in the solution of problems. I shall assume throughout that architectural training has this generalized aim of all educative processes and that it is not just a matter of acquiring certain professional habits.

Having said that, it is nevertheless necessary to ask the narrower question, 'what is the ultimate objective of training?' We might try to answer this by looking at what has been and is being built around us. If we do this we are struck by a contrast. There is on the one hand the pioneering work of a few individual architects. We know it well. It is widely illustrated and is the subject matter of books. It is analysed and discussed in the schools.

But in contrast to this and in magnitude completely obscuring and overwhelming these few isolated buildings there are the stark evidences of deterioration is every aspect of our environment. Cities which once worked no longer do so. They are destroyed by a redevelopment and expansion which adds up to nothing more than operational and visual anarchy. The technical standards by which this is achieved are in themselves completely unbalanced and, on the whole, cannot be compared with the standards which are common in many forms of mechanical equipment. In the name of one human need—for instance, mobility—we unquestionably accept the destruction of half a dozen others.

I have made a contrast between a few isolated works of genius and the vast architectural problems that remain unsolved. By and large our educational systems have tended to arrange themselves around the first of these, as if our intentions were to produce an abstraction—the architect. But this means different things to different people. If we were to list all the virtues which different people expect an architect to possess, we would have described some kind of paragon who just cannot exist. This is too vague an objective to provide any realism in an architectural course.

There are several reasons why this approach should be questioned. First, the definition of the end product, and therefore the whole intention of the course is too vague. Second, although this system of education has been widely developed in Europe and the USA it is doubtful whether the number of architects of genius has appreciably increased. Let us say at once that real genius will look after itself.

What the system has produced is a remarkably strong tendency for everyone to want to be different from the next man, for forms to be changed without relation to real changes in things and situations, in fact, just for the sake of change. This at its worst results in a frantic search for new forms which even some otherwise capable architects find it hard to resist.

This is no way to tackle the most pressing architectural problems of our time. As a society we have lost the power to control the form of our environment. The task ahead of the architect is not that of being different; it is to see how that power can be regained. This is a matter of seeing clearly the job of work that we have to tackle *together as architects.* The first need is a clear statement of the problems to be solved. *It is necessary to define what needs to be done before we can say what form training should take.* The purpose of training is to develop the diversified talents which are necessary to solve known problems—and in the process of doing this to give the student the ability to act.

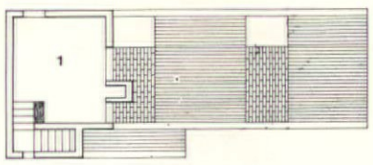
What I am suggesting is that education should be directed towards a more concrete end. That end should not be an abstraction—such as the ideal concept of 'the architect'—but the common solution of that problem in which all architects should feel themselves vitally involved. The student must feel himself equally involved if his education is to have any purpose and meaning.

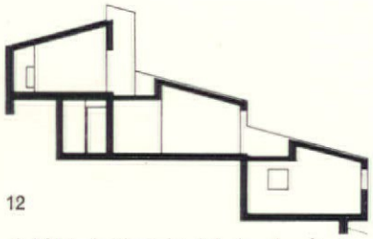
In architectural education there are no separate subjects.

There are no separate buildings. Every building makes a town.

The value of any building is its contribution to the next of its kind.

A work of architecture is an act of will. There should be no accidents. A building conditioned by an accident of layout makes that accident permanent.





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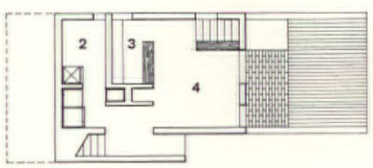

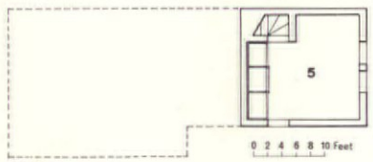

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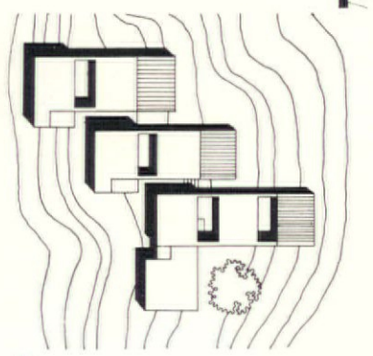

13

1
Crystal Palace project, model of the main hall and circulation building without their roofs

2
Model of the main hall proposed for the Crystal Palace

3
Model of the general layout of the Crystal Palace

4, 5, 6 & 7
Views of the interior of Sir Leslie Martin's own house at Shelford, Cambridgeshire

8 & 9
Views of a model of a hillside house designed for the Alps in 1961

10
Model of a hillside house designed in 1964 for a site in Portugal

11
Plans on three levels of the hillside house for Portugal
1 main bedroom
2 bathroom
3 kitchen
4 living room
5 spare room

12
Section

13
Diagram showing how such houses could be built in series

Photos: 4, 5, 6 & 7 Sam Lambert; 8 & 9 Mann Bros.; 10 Ed. Leigh

1956–65

Building types

'It seems a suitable moment to remark, first that appropriate technical processes or constructional systems are rooted in and are inseparable from the needs of particular building types: second, that every building type (housing, offices, laboratories), can be developed to the point at which its own organization and therefore its own characteristic forms emerge. These carry with them their own appropriate constructional systems.

'The characteristics of the building "type" are seldom studied except at the level of room relationship within a given envelope. Thus housing, for instance, the office block or the laboratory are repeatedly contained within a similar envelope—the slab. To apply industrialized techniques to these slabs is to mass-produce buildings which may be already obsolete as forms of housing, offices or laboratories. The characteristics of the type have first of all to be discovered and the development of the appropriate constructional system is essentially a part of this process.'

Architectural Design, 1964

University residential accommodation

Is represented by three examples which are illustrations of the general thesis that a form is the result of a pattern of organization (see *Architectural Review*, July 1959): in this case the organization of communities and their sub-division into clusters of accommodation to form groups.

1956–59

In this case **College Hall, Leicester (with Trevor Dannatt)** 170 women students are housed around two related courts associated with a central block of buildings which contains common rooms, dining hall and recreation facilities. A third court, again of different size forms a possible future extension. Courts in this case are built up around a central nucleus: three sides of each court form interconnecting groups of rooms which create a peripheral wall of residential accommodation. This is subdivided again internally by simple staircase and corridor access. South facing rooms are single banked and open on to terraces.

1959–61

Gonville and Caius College (Harvey Court) (with Colin St John Wilson and Patrick Hodgkinson). The new residential accommodation is based essentially on the idea of the court and the traditional method of staircase access to small groups of rooms and sets—a system which enables the whole community to be subdivided into smaller groups identified by their particular staircases, but united by the centralized plan of the court itself.

But this building makes a number of developments of the traditional form. In the first case, its court is raised to first floor level so that the entire ground floor forms a plinth containing all communal rooms and the main storage and servicing accommodation. Secondly, the rooms surrounding the court face inwards to the south-west and east are stepped outwards at each storey, each step providing broad terraces to the upper rooms which can be thought of as extensions at higher levels to the floor of the court itself. The resultant open spatial effect is enhanced by the outward facing southern block which is placed so that it does not completely enclose the southern flank, but leaves space for a broad flight of steps leading to the lawn in an opening which provides views across the garden from the court and surrounding terraces.

The third 'innovation' is the position of the staircases themselves and their relation to the stepped section of the building. By turning the staircases (from their normal position at right angles to the court) so that they climb along the outward stepping perimeter walls, it was possible to cut the number of staircase flights by half, to provide each room with direct access to the terraces and to make possible some larger sets in which rooms are taken right through the block and have two aspects. By this plan arrangement all the staircases, baths, gyp rooms, etc., can be naturally lit; at the same time, rooms and their attendant gyp rooms, etc., are grouped around semi-private landings so that they sub-divide the community into groups as in the traditional staircase plan. The saving in space on staircases has been put back into the horizontal circulation, particularly the main gallery at court level, which is generously broad and affords possibilities for informal meeting.

As a result of these conceptions the general form of the building ceases to be a simple court or flat area of land surrounded by four buildings. It is rather a single building, unified by its mesh of load-bearing brick cross walls, in which the plane of the court acts as a generating form. It is also as a result of these innovations that the building exhibits highly modelled external forms. It nevertheless stands as a solution within a consistent line of development.

Architectural Review, July 1959
Architectural Design, November 1962

1964

Royal Holloway College

Residential accommodation (first scheme 1961; redesigned in 1964) is planned on a steeply sloping site. Two self-contained halls for 250 and 170 students follow the same general pattern. The accommodation is arranged in linear forms to suit the contours of the land and orientation. Separate entrances on the north walls of these lines of accommodation lead to cross corridors which form clusters of roooms across the section of the building. Communal rooms form nodal points adjoining the dining halls.

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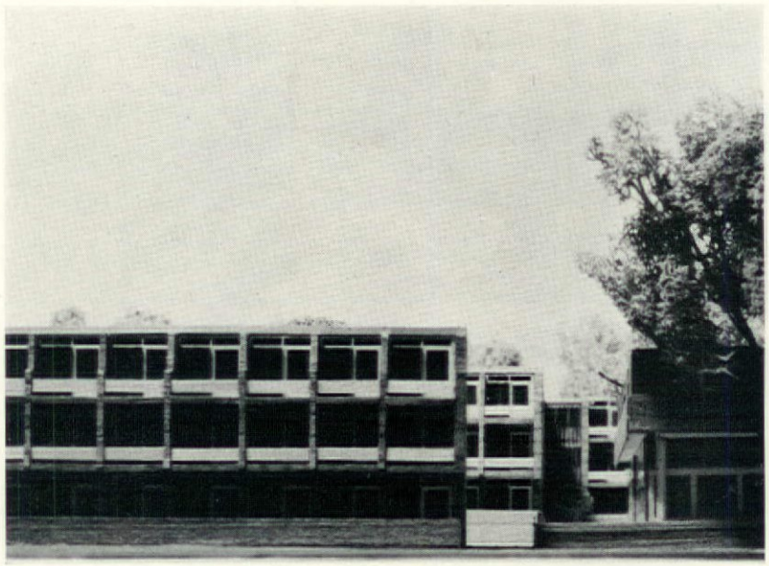

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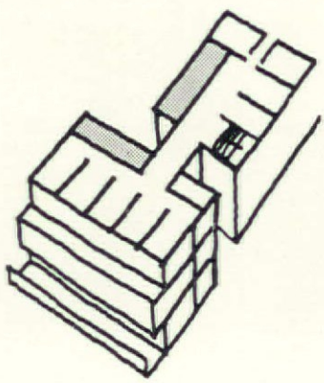

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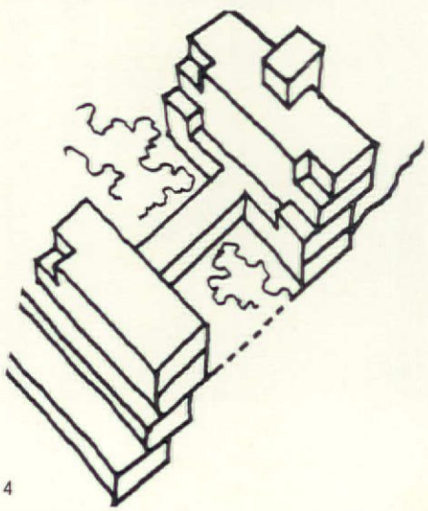

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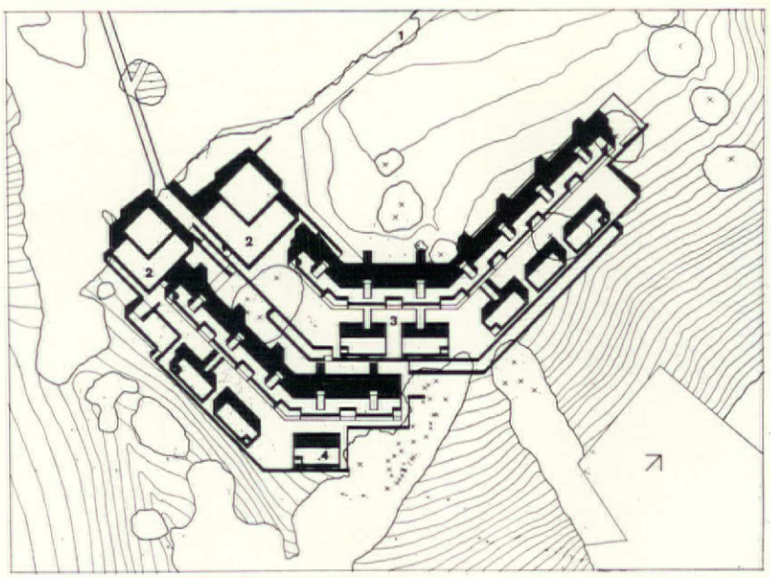

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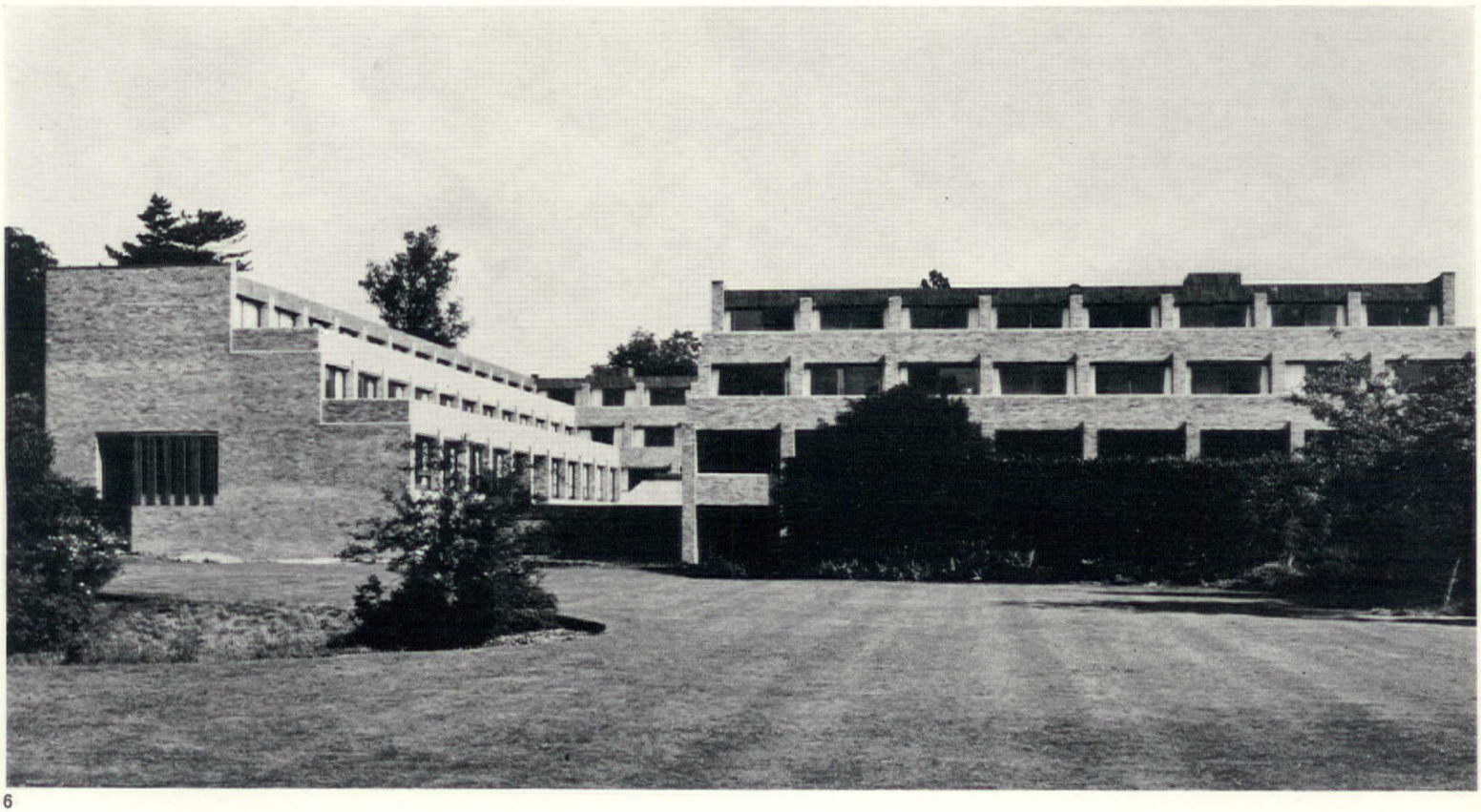
1
Site plan of the university hostel, College Hall, Leicester

2
Model of College Hall, south front

3
Diagram showing the cluster of room units at College Hall, Leicester

4
Diagram showing the cluster of room units proposed for the Royal Holloway College extensions

5
Site layout, Royal Holloway College
1 service road
2 dining hall
3 U.G.C. hall of residence, 250 students
4 Second hall of residence, 170 students



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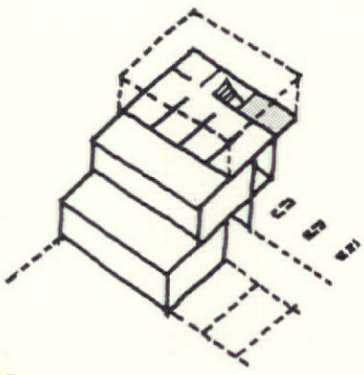

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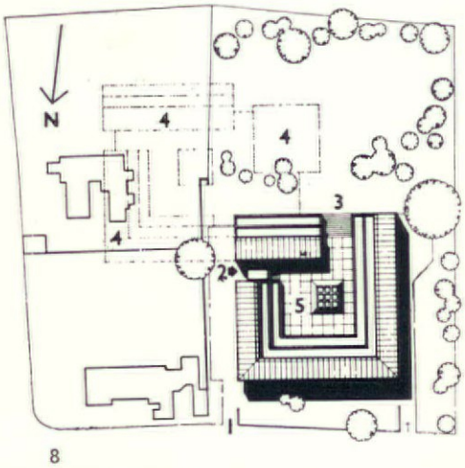

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6
Harvey Court, Gonville and Caius College, Cambridge, seen from the garden on the south side

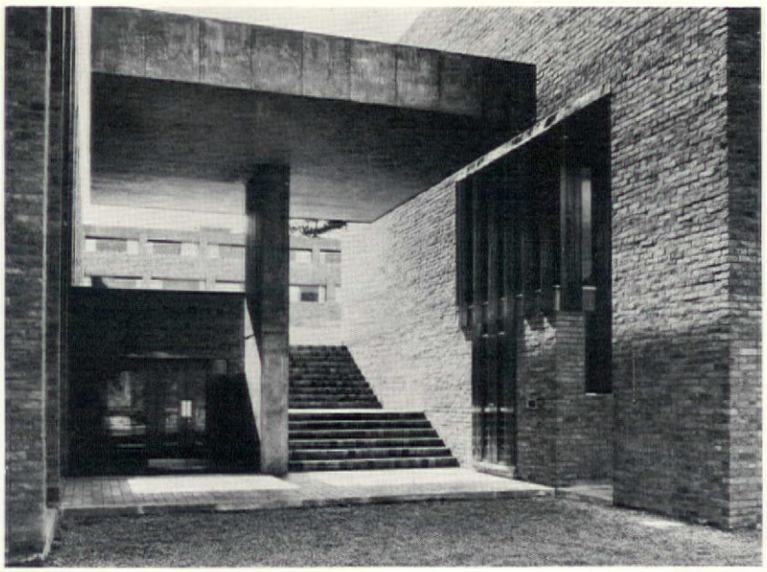
7
Diagram showing the cluster of room units in Harvey Court

8
Site plan, Harvey Court
1 entrance from the road
2 east entrance to the court
3 garden entrance
4 proposed extension

9
Stepped entrance to the central court, from the east

10
View of the main court looking south, with the roof of the breakfast room to the right

Photos: 6, 9 & 10 J. Donat



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1959–64

Library buildings

The group of library buildings at Oxford (with Colin St J. Wilson) illustrates the study of this particular building type and brings into one composite group three separate library buildings and certain shared facilities.

The largest component is the Law library. Its principal characteristic is that while it is very large (450,000 volumes) it is entirely a reference library for 350 readers with open access throughout. It also contains some teaching and seminar rooms, of which two are directly related to the reading room itself. The English library is both a reference and a loan library of 84,000 volumes with a closed stack of 10,000 volumes, and it seats 150 readers. It contains a higher ratio of teaching and seminar rooms. The Institute of Statistics is principally a research organization with a high percentage of study rooms and a comparatively small library of 52,000 volumes for reference and loan.

It is clear that the node of each section is its reading room. A series of preliminary studies established some generating principles which could apply to each library. The main considerations can be illustrated by the planning of the Law library. In this case the basic requirement included the need to make all the 450,000 volumes accessible and about half of this number closely related to readers. There are also three categories of reader: the undergraduate reader under visual supervision from the control desk, post-graduate and research readers, working in close proximity to the stack, and faculty members accommodated in carrels.

The principal problem raised by such requirements is one of sheer size leading to the risk of confronting the reader with a forest of bookstacks in which he might literally become lost.

The solution adopted resolves this difficulty. A square reading room is entered from one corner which contains a control desk and catalogue. The desks for the undergraduate readers are arranged in an L-shaped form in the remaining three-quarters of the square. The main section of the stack itself encloses this L-shaped form of the readers' tables in a single stack band. This is again enclosed by an L-shaped line of carrels and research readers' desks. The plan is therefore developed in a series of expanding layers, from the undergraduate readers through the stacks to the research readers and carrels around the perimeter. Books in the stack are equally accessible to all three types of reader.

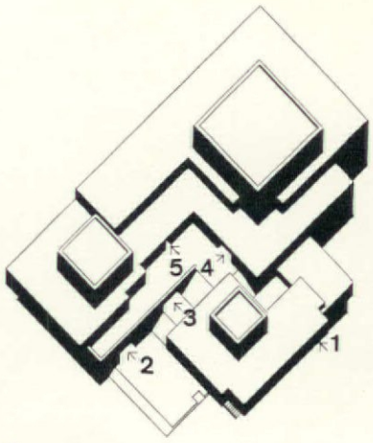
A study of bookstack spacing in relation to readers' desks and carrels establishes the structural grid. The plans of the three libraries are then related to this basic grid: the reading rooms being three bays (Statistics), four bays (English) and seven bays square. The varying quantities of books in each library are accommodated by the development of the section: thus, whilst English has only two floors of Stack, the Law library has four. In this case 200,000 volumes of the more frequently used books are accommodated at reading room and gallery level and the remaining 250,000 volumes are in the closed stack below.

The same generating principles control the planning of each library which has as its centre a lofty galleried and top lit reading room. The three libraries are then brought together into one single group which is arranged around an approach stairway leading to the various entrances and terraces and to the shared accommodation (lecture rooms, common rooms, etc.) which extends between the Law and English libraries. Externally the three top-lit reading rooms rising above the surrounding areas of stack identify each Faculty building within the group.

The validity of the generating idea may be tested by an application to the very large library, e.g. the British Museum library (with Colin St J. Wilson) where the plan may have to take into account a number of specialized reading rooms. The expanding library in which additional space for books and readers can be added over a period of time also seems important for the newer Universities where the library may in future have to contain over 1,000,000 books but where a building of this capacity, because of the rate at which books can be purchased, could not be used for library purposes for many years.

The expanding library would relate building need more closely to expenditure. It would remove temporary uses of unsuitable spaces. The problem is not one of flexibility; it is a question of the appropriate building form and the capacity of that form to expand.

(See *AD*, Sept. 1960.)



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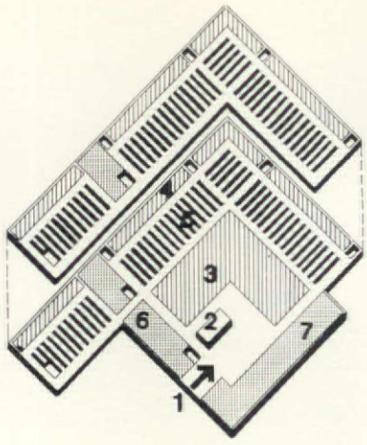

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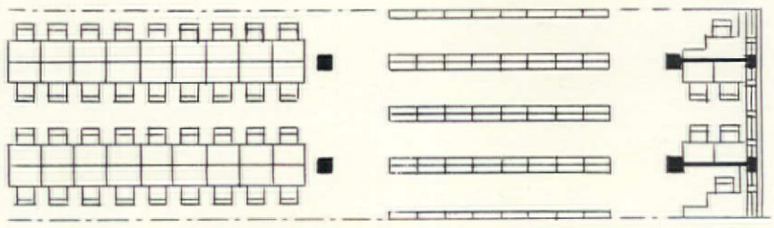

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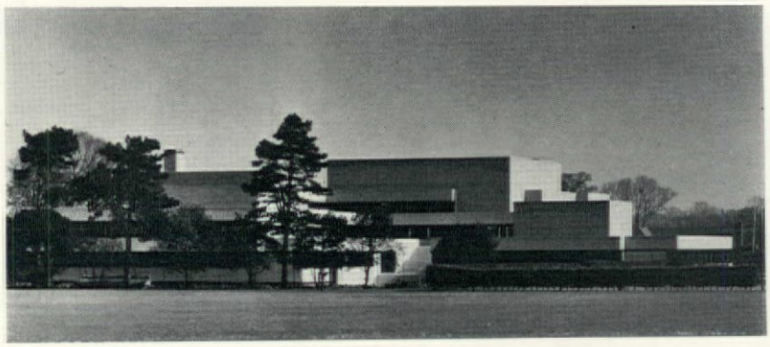

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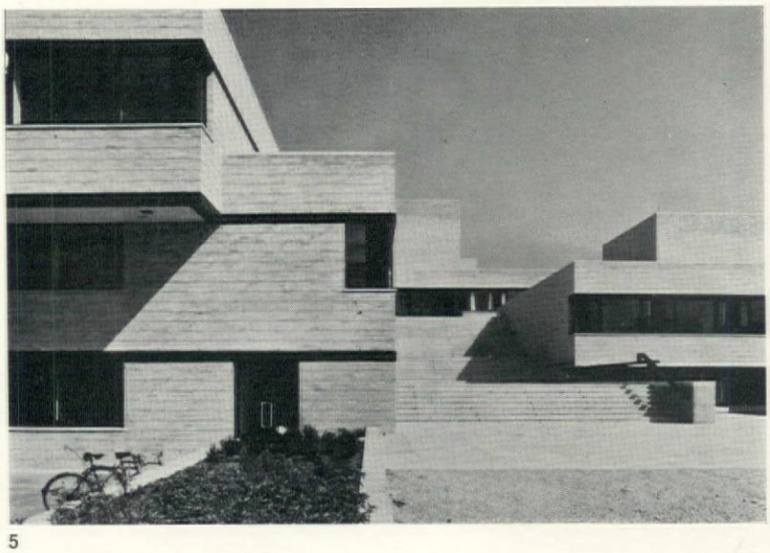

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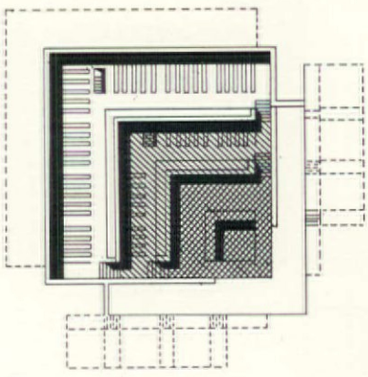

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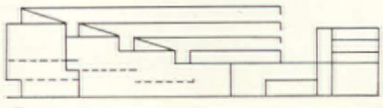


7

1
Axonometric of the Oxford University library buildings
1 Institute of Statistics
2 English library
3 lecture halls
4 Law library
5 common rooms

2
Diagram of the approved arrangement of the Law library
1 entrance
2 control
3 readers
4 carrels
5 stacks
6 microfilm, librarian
7 seminars and studies

3
Diagram of the basic arrangement of readers, stacks and study carrels

4
General view of the library buildings, Oxford, from the west

5
Main approach steps to the libraries

6
Diagram illustrating a basic library plan which can be extended in time without in any way disrupting the working of the library or altering the initial system of control.

7
Section of an expanding library

Photos: 4 & 5 John Donat

1959–64

Science buildings

These, like other building types, have tended to be limited by predetermined forms. The limitations of the slab are obvious, although it is frequently used. The slab width is mainly determined by daylight penetration and is usually between 40 and 50 feet. In order to assist this penetration, ceiling heights may be increased for the larger rooms. These then, in turn, become difficult to associate with smaller rooms requiring lower ceiling heights and both structure and spatial arrangement may become incoherent.

In the case of smaller research laboratories, some architectural clarification becomes possible by the use of single-storey building and the introduction of roof lighting. But in University science buildings, with their complex demands for many different kinds of space, including larger laboratory areas, administrative areas, lecture rooms, libraries and research space, the problem becomes more acute and a more fundamental thinking becomes necessary.

There is now some general agreement that in considering the science areas of universities, we are no longer considering separate buildings, but a general principle or system of layout in which individual departments and faculties form part of a larger concept. Quite apart from teaching needs in which students from one department use the facilities of another, there is a case for sharing lecture rooms, cloakroom space, etc. In addition, there is the certainty of change in needs; for increase or reduction of space in known departments and the unpredictable needs of new 'growing points' between them.

The need for a comprehensive system which will relate the needs of various departments and the possibility of sharing communal accommodation leads to a study of compactness and density of organization. Here again, if a particular attitude to natural lighting is adopted, as it is in these notes, the use of slab blocks appears to be unsatisfactory. At a theoretical level the plot ratio of any given site can be demonstrated in relation to the number of floors used. With a conventional light angle of 45° the plot ratio for four-storey buildings will be 2 : 1. If, however, the building becomes a solid block lit by courts (and although for certain heights such a form may be unacceptable) in four-storey building the plot ratio will be increased from 2 : 1 to 3 : 1, that is by a factor of 50 per cent.

1964

Such rather primitive studies suggested a form of building in which lower floors accommodating large rooms, such as teaching laboratories, could be mainly lit by top light and related to upper floors containing smaller rooms for administrative and research accommodation. Space is arranged in horizontal layers conforming to different types of use. This idea when related to convenient movement suggests a 'layering of accommodation'. This arrangement of uses and the total layout are related to a regular grid which is derived from considerations of space, lighting and an integral system of structures and services. The grid consists of 35ft squares separated from each other by 5ft strips. At any point within these strips, services, ducts, etc., can be introduced (*Architectural Design*, December 1964). The structural system becomes a series of cells or structural tables out of which many forms of accommodation can be built up. Use, spatial order and structure are inseparable. In any total conception the organization of use and form may vary, but it will remain a total unity built up from common elements.

1964–65

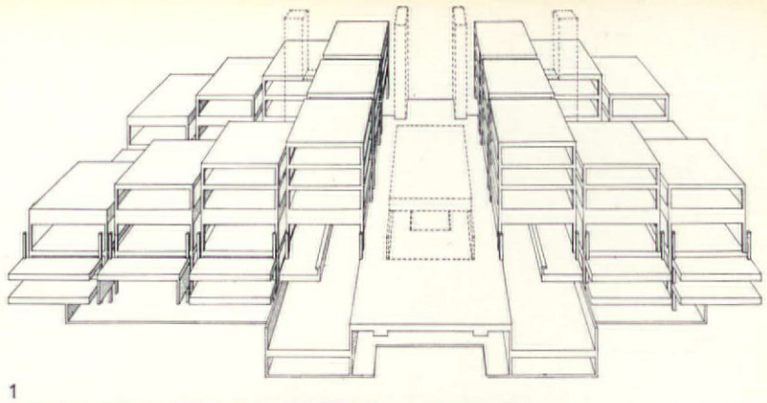
The buildings now being developed for the University of Oxford for the departments of Zoology and Psychology illustrate the application of the system. Plans show the main laboratory areas and circulation spaces on each side of a central spine which contains lecture rooms and library accommodation. These main circulation areas have a double height and a gallery at first floor level. The roof of these spaces forms an upper level circulatory deck which could bridge across streets and connect buildings together.

Above the laboratory areas are the research areas which will normally be subdivided into smaller rooms. Plan 7 shows the top floor of the building. Outdoor spaces required by both departments are associated with the research areas at every level.

The principles set out in the original proposals are now being given a practical test as planning develops. The lecture rooms in the central spine are being shared by the two departments. At the level of the teaching laboratories three distinct types of layout are being used: the first is the open type which allows great flexibility of use and is adaptable for classes of varying size; the second type uses open cubicles for more advanced pupils; the third (used by the psychologists) is a combination of cubicled space arranged around more open areas used for demonstration purposes. All three types can be readily rearranged if new needs arise. The adaptable form of the research areas has also been proved. Departments have been able to rearrange rooms at the planning stage in a way that would have not been possible in a more conventional form of building. Some areas of unallocated space are being included in the building with the knowledge that the system will allow detailed planning, and particularly different service requirements, to be worked out at a later stage. Vertical and horizontal ducts appear to be generous enough and a number of special services not envisaged at the outset are being accommodated without difficulty. The ducting system is being used as a means of increasing in the simplest manner the number of air changes in any of the research rooms, and it provides the possibility, if necessary, of ventilating mechanically the whole building.

The system of planning extends naturally from individual building needs into that of related uses. It stresses the need for an overall consideration of site layout.

(See *AD*, Dec. 1964.)



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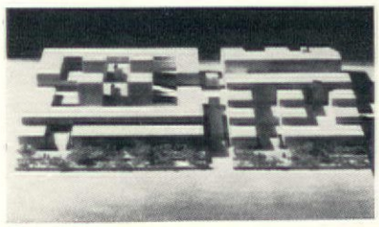

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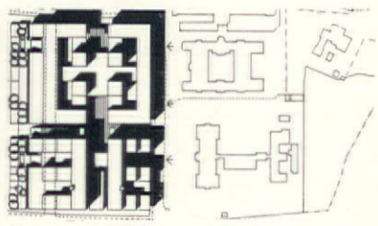

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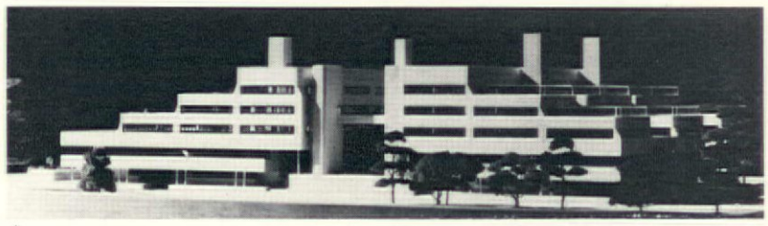

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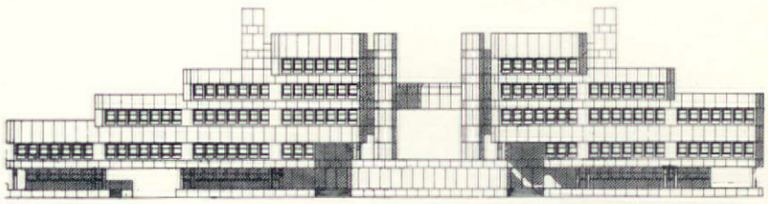

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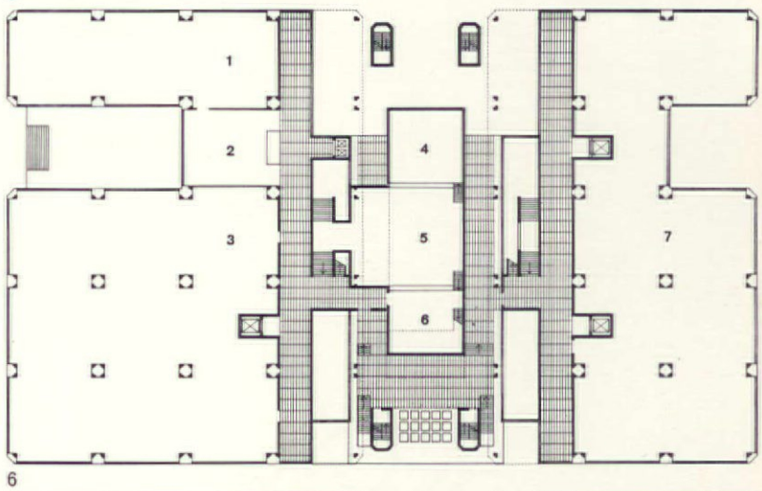

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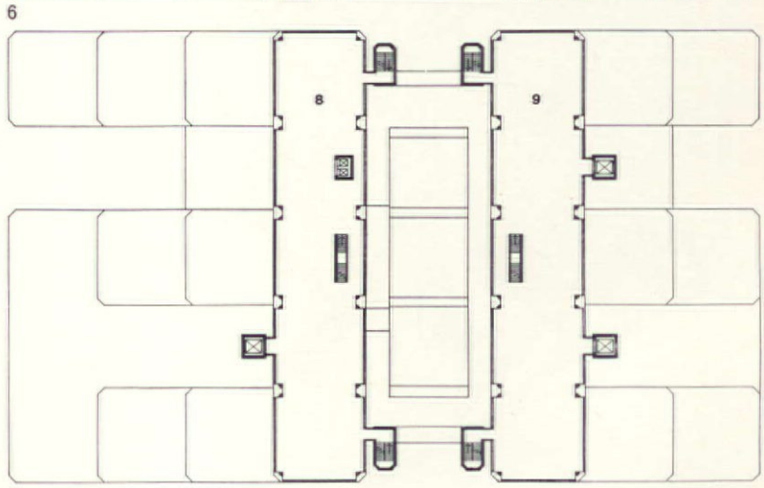

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1
Diagrammatic section through the proposed Oxford laboratories

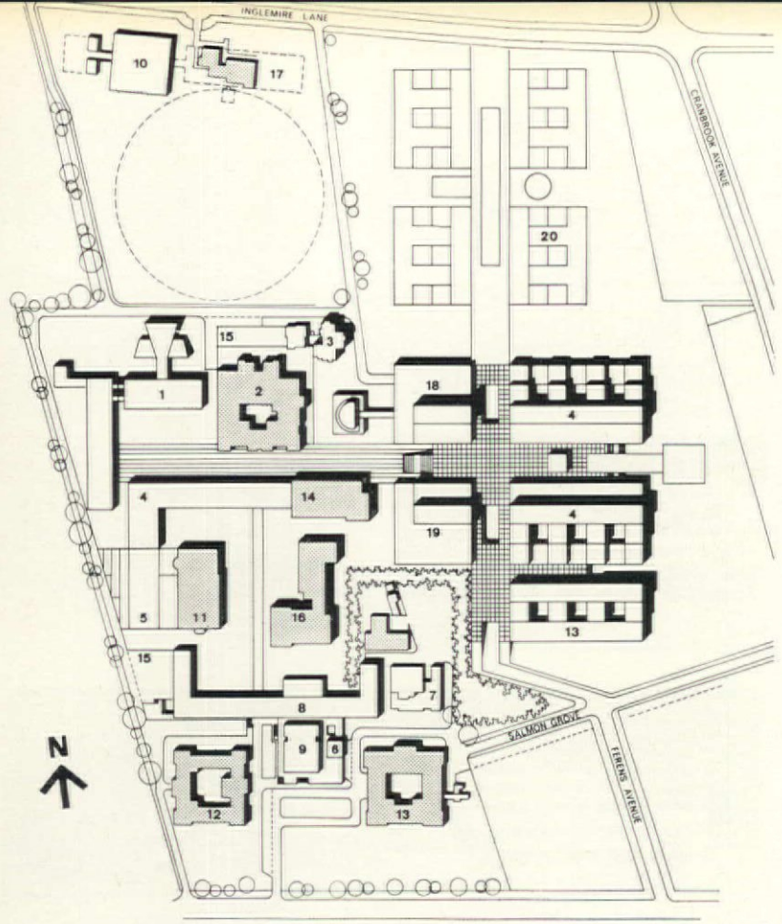
2
Site plan of the science laboratories

3
Block model of the Zoology and Psychology building indicating how it might be extended in all directions, over roads if necessary by means of bridges

4
Development model

5
Elevation

6, 7 & 8
First and fourth floor plans
1 Zoology final year laboratory
2 Demonstration
3 Zoology teaching laboratory
4 Ecology library
5 Zoology library
6 Ornithology library
7 Psychology teaching laboratory
8 Zoology research
9 Psychology research
10 Psychology library
11 lecture room
12 entrance hall



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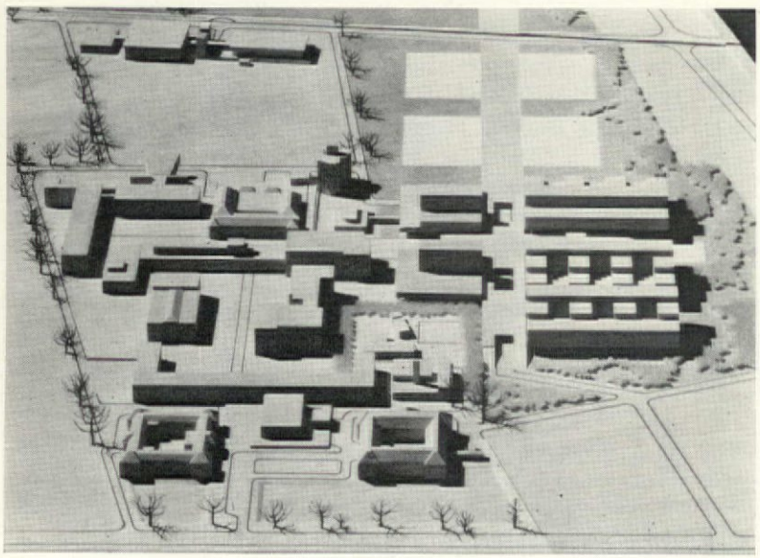

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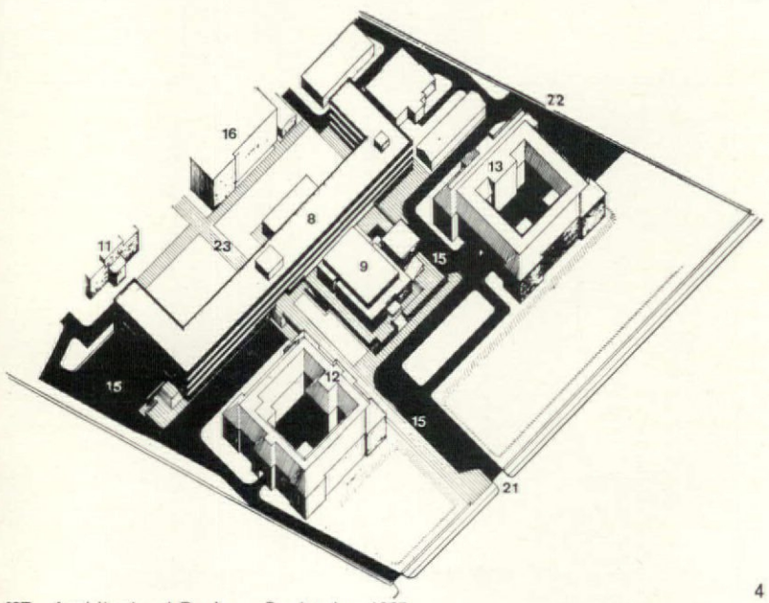

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University layout

The problem of University development is not a question of siting isolated buildings. It centres around the efficient use of ground space (this is often critical on urban sites and its full repercussions have still to be studied at a research level), the provision of internal areas in a form which can allow for growth or change, and a total layout which will give a sense of coherence and order. An early layout for a new development on a site adjoining the original site of the University at Leicester (1956), illustrated a form in which buildings for different departments but of similar general form could be added to provide ultimately a series of contiguous and potentially linked buildings centred around a communal area and main lecture room. The layout at Hull (1960–64) demonstrates three distinct stages: (1) the individual buildings of the immediate post war period; (2) the attempt to bring these into relationship by the use of linking buildings to meet the needs of various faculties; and (3) the new form of building proposed in the extension of the University on to an adjoining site, to cater for student numbers which will by 1967–68 have increased by 50 per cent. By 1980 this 1967 figure will have doubled itself.

A development on this scale is not just an addition to existing accommodation.

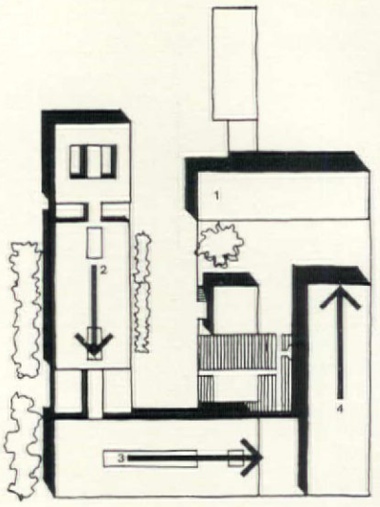
1 Meals provision and social facilities will be on an entirely new scale. Once these exist they could also serve the needs of a considerable residential population housed on the main site. (This proposal was made on adjacent land.)

2 Teaching buildings are planned for change and growth with maximum opportunities for sharing common elements, lecture rooms, etc.

3 Movement of students between teaching buildings and from central social and feeding facilities will require simple and direct undercover routes.

4 Servicing, car access, etc., will require a radical solution.

The plan shows a new 'Mall' running east to west and acting as a link between the old and new areas. A second 'Mall' running north–south acts as a spine for the new development. New catering and social buildings are placed at the crossing of these two Malls. New teaching buildings are developed along the line of the main north–south Mall and laid out on a regular grid. This Mall has two levels of circulation: a car route at ground floor level (leading to car park areas and servicing) and with covered pedestrian routes over. The roof of this route forms a pedestrian walkway at first floor level.



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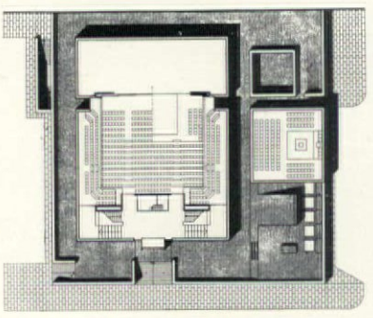

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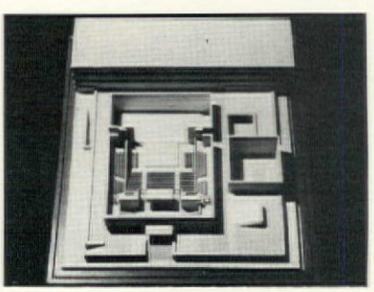

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1
Diagram indicating how the layout at Leicester University is being developed in stages 1, 2, 3 and 4

2 & 4
University of Hull, site layout and axonometric. Existing buildings are shaded.

1 physics
2 students union
3 Loten Hall
4 Applied Science
5 library extension
6 chapel
7 boiler house
8 arts
9 Middleton Hall
10 sports centre
11 library
12 administration
13 social science
14 biology
15 parking
16 chemistry
17 sports extension
18 Senate
19 catering
20 science extension
21 main entrance
22 Salmon Gt entrance

3
Model of layout, University of Hull

5 & 6
Plan and model of Middleton Hall
Photos: 3 & 6 Ed. Leigh

1959–64

Housing

The concept of density is not just a scientific measure of the number of people that can be housed to the acre. It is usually a series of figures attached to specific views about the way in which people should live, what they need in their homes, and what they should do with the space surrounding these. The mere figure of density, high or low, is neither good nor bad in itself. Before we can make that decision we need to know what conditions of living it involves and what kind of environment it creates.

But particular types of dwelling and environment have a tendency to become firmly attached to particular conceptions of density.

This tendency to limit density figures to particular types of housing is still equally misleading. The studies of density in the County of London Development Plan (1943) suggested that all housing of more than 100 persons per acre would involve some flats of eight to ten storeys. More recent housing at these densities has invariably assumed that tall building is essential.

From a purely statistical point of view, densities of 100 people per acre can be achieved equally by two-storey houses arranged in terraces, three- or four-storey houses, four-storey maisonettes, low blocks of flats, tall blocks of flats, or by combinations of these, as well as by many other forms and relationships of dwelling that we have yet to explore.

Clearly housing at high density can assume many forms: its success as housing is not a matter that can be judged or prejudged in terms of the measure of density. This is a question which must be assessed by other criteria which will certainly include such things as the degree of urbanity; the balance of neighbourliness and privacy; the family groupings that can be accommodated and the range of choice offered; the standards of space provided by the dwelling itself; the provision of private open space and the way in which open space is shared; and the cost at which building can be achieved.

If the requirements of housing are re-interpreted on this basis it is possible to show that tall building is not necessarily a universal solution for densities up to 136 persons per acre, however valuable this solution may be on certain types of site. Secondly, it can be demonstrated that a wider choice of the type of dwelling can be offered than that normally found in tower or maisonette blocks. Thirdly, the spatial arrangement of the dwelling need not be confined to the 'shelf' of the flat or the narrow front of the maisonette—the range of space and movement can be widened. Fourthly, the superimposition of differing patterns of living which are enforced by the use of tall and low blocks can be avoided. Finally the contrast between 'garden' (which some can have) and 'balcony' (which others must accept) has been replaced by the concept of 'private open space' which is provided for every family.

1962–65

These concepts when developed in relation to higher densities, for example 200 people to the acre, and related to particular situations may suggest a new relationship of uses. Such development will require a close relationship to shopping, etc.

Population figures of this order and on sites of considerable size would suggest a significant urban change in any area of London. An attempt was made, on the site of **the Foundling Estate (in a preliminary scheme developed with Patrick Hodgkinson)** to find an appropriate layout. The shopping is largely contained in a single street. This street is a nucleus for an area. A new shopping street could therefore form the backbone of any scheme. Housing, shopping, restaurants might be brought together in such a way that they contribute to a lively urban development. At the same time the residential units should demonstrate a wide range of choice; they should also have private open spaces in the form of patios or terraces.

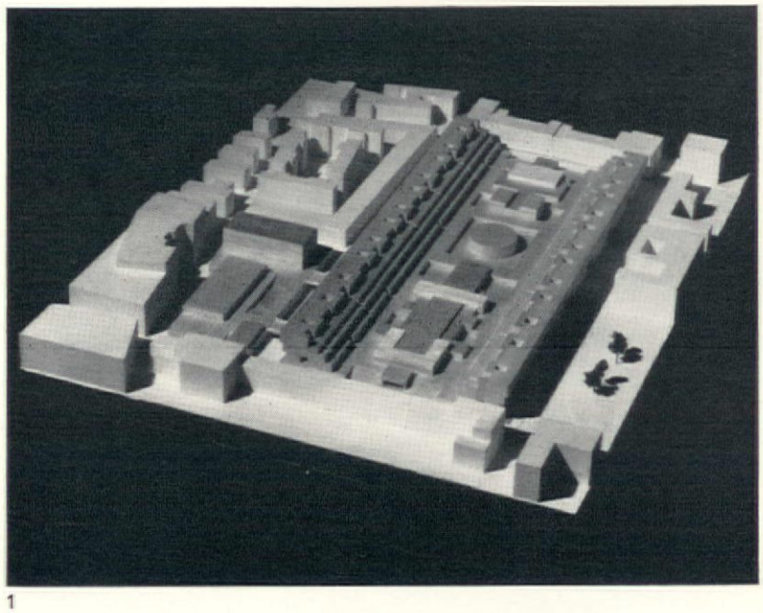
Housing and shopping clearly call for extensive garaging and servicing areas and this leads to a consideration of the separation of pedestrians from vehicles. Restaurants, a limited number of professional offices, doctors' consulting rooms, etc., and a meeting hall seemed to be essential components of the scheme. The developed design attempted to bring these related uses together so that they formed parts of a connected mass of building which itself becomes a generating form for an urban area.

In the layout proposed, a garage or lower deck sunk one level below ground covers the whole of the site. This lower level also accommodates service roads and storage for the shops. From this lower deck there are two types of access to the upper levels: escalators leading to the shopping area and lifts travelling directly to the housing overhead.

The main layout above this lower deck and at ground level consists of a street of shops running through the length of the site. The tube station is at one end of this street so that it forms a natural pedestrian way. The shopping street is not an isolated precinct: it is a connecting link within the area as a whole. It is arcaded and covered in along parts of its length to give shelter but at other points is open to the sky. Flights of stairs from this ground level lead to the upper level terrace, which contains restaurants and cafés, accessible from these two levels.

The housing is placed so that it runs in two parallel lines on each side of the shopping street and its upper deck so that it forms a valley. The houses are arranged so that their terraces face inwards across this valley.

The total scheme is a complex built up from a number of related uses. A high ground cover and density of population is achieved within buildings which remain within the scale of Regency terraces but are powerful enough to form the generating lines of a future development. Such a scheme occupies a key position within a surrounding area where boundaries have already been defined by major traffic routes. This larger area is potentially, in Buchanan's terms, an environmental area. 'The acceptance of this principle has an important bearing on the redevelopment of the area as a whole. Housing densities would not remain constant: the densities of individual sites could be graded from the linear nucleus (at 200 p.p.a.) to lateral branches of lower density housing. The range of choice of housing types and situations would be widened within an integrated total development.'



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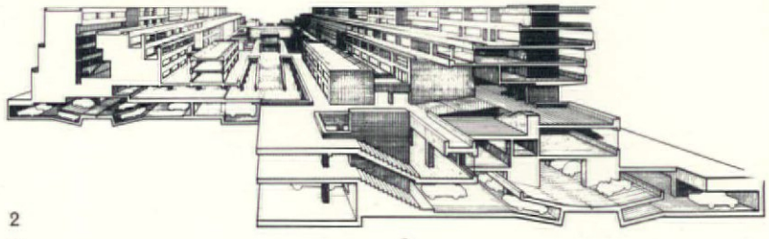


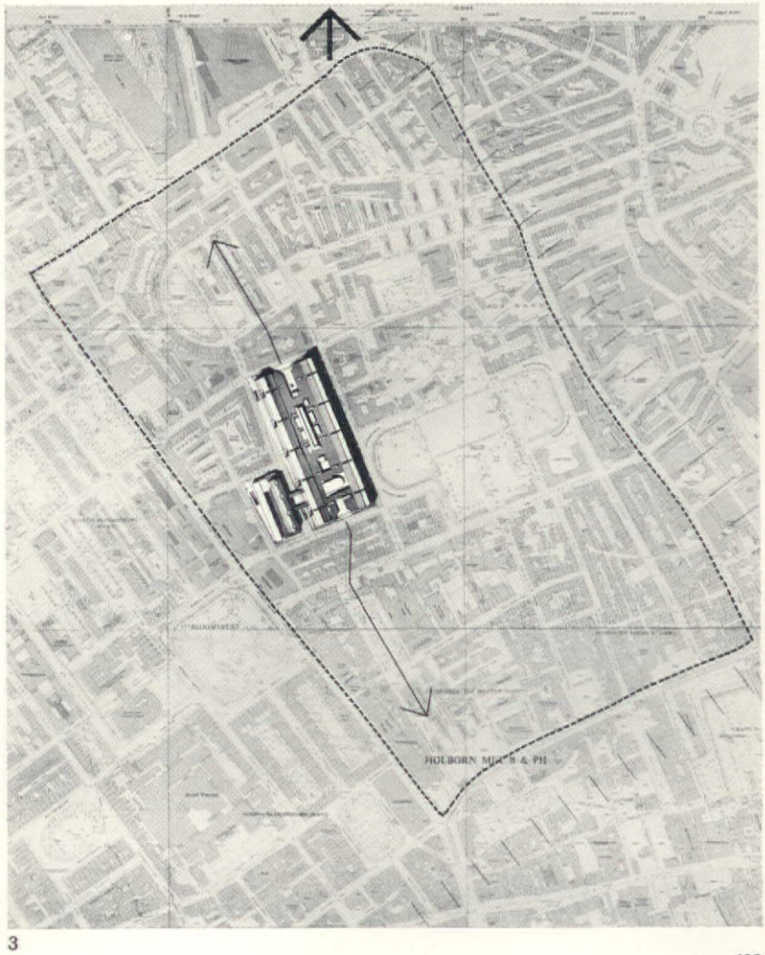
2

1
Model of the preliminary design for the development of the Foundling Estate. Leslie Martin remains coordinating architect for the area, Patrick Hodgkinson is now architect for the main site and later development

2
Section of the preliminary design

3
Location plan of the scheme indicating the way in which new building could form a linear development along a route

Photos: 1 & 2 Ed. Leigh



3

Whitehall: a national and government centre

(Sir Leslie Martin, assisted by J. R. B. Taylor and Lionel March)

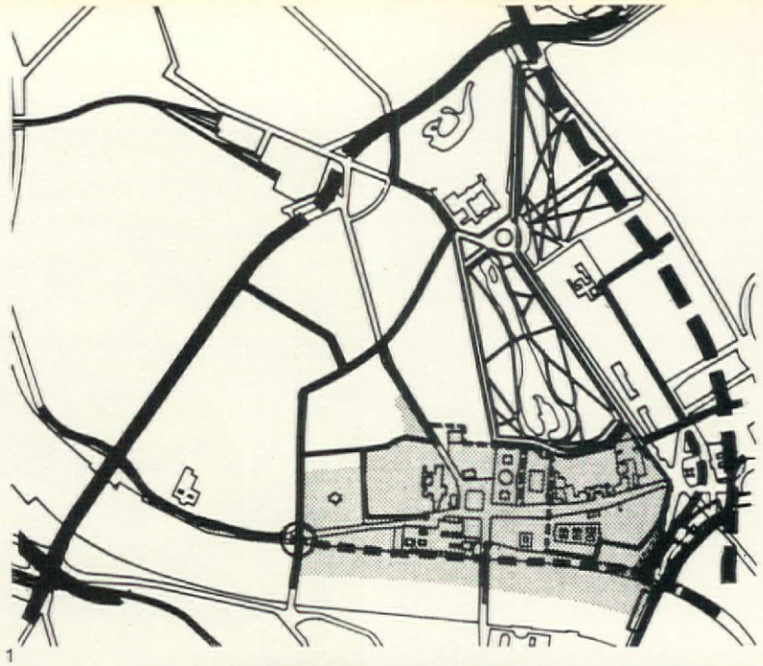
'The main ideas behind the plan suggest an order to be achieved and a hierarchy of buildings within this. The Abbey and the Palace of Westminster will continue to retain their predominance within the general setting. St Margaret's Church and Central Hall add to this distinguished group. The new Parliamentary building and the proposed building on the Broad Sanctuary site provide the oppurtunity for two more buildings of monumental scale appropriate to their importance, There is scope here for distinctive individual work.

The enclosing background to this group of national monuments will be the new Government office buildings. These present an opportunity of a different kind. As the studies for this report have continued, the advantages of an overall development of these sites have been emphasized at every stage. It is against this background that the preservation of individual buildings, such as the Foreign Office, must be considered. If redevelopment is limited to a series of isolated replacements of one building by another, the critic might well ask what has been gained. But when a comprehensive development of an area is proposed this is no longer the simple question. There is here a totally different comparison between individual sites as they are, or as they might be developed individually, and the advantages that result from an overall development. Some of these may be listed. Floor spaces which are difficult to achieve on single sites without excessive bulk or height, become possible within larger areas and allow bulk and height to be reduced. Amenities such as terraces and paved courts, which on limited sites become restricted if they can be built at all, can be generously realized as site area increases. Within these larger areas access to underground garaging becomes simpler and relative capacity increases: services can be rationalized and internal communications can be more direct and economical. A development programme, planned with the object of demonstrating these advantages, could provide convincing proof and at the same time set a completely new standard for this type of work which might form a pattern in other forms of urban development.

These are practical issues. It is equally important that throughout the development and arising directly from its generating ideas there would be an overall consistency and unity of conception within which there could be ample opportunity for variety of modelling and silhouette.

We have tried to demonstrate a new form of Government office building which results from a study of the principles underlying this building type. Internally its accommodation could be economical and flexible, but its entrances and galleries could recapture a scale and dignity that was once thought proper to important public buildings. Externally we have shown that the resulting form of these buildings will be something very different from the rectangular block or slab. Its plan will be opened out by grassed spaces. Its elevations provide changes of rhythms and modulation which make it adaptable to Parliament Square (where its form is asymmetrical and broken in outline); to Downing Street (where the stepped form reduces its scale); or to Whitehall (where it forms the "gateway" to Parliament Square).'

Extract from *Whitehall, a plan for the National and Government centre*, by Sir Leslie Martin. HMSO.



1

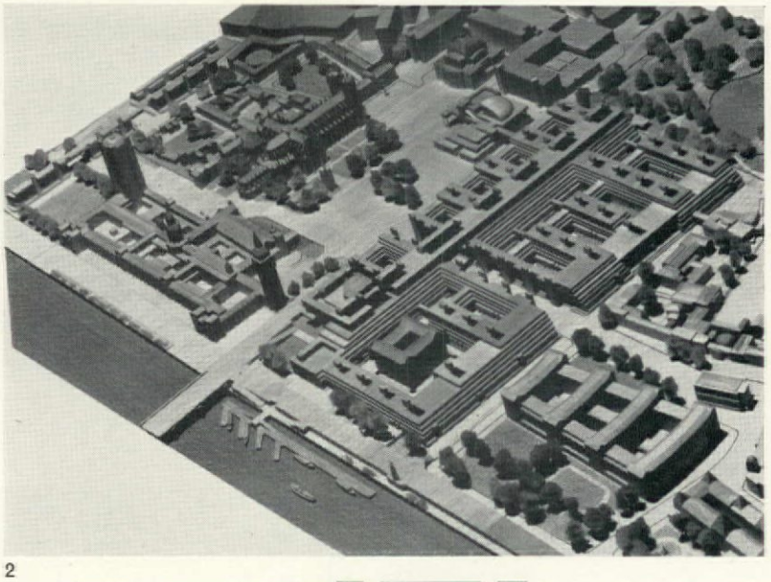
1
Diagram indicating a possible distribution system for the central district of London, suggested by Professor Colin Buchanan

primary: ground level
primary: underground
primary: elevated
distributor: ground level
distributor: underground
distributor: cars, taxis
local roads: ground level
to u/g car parks

2, 3 & 4
Views of the model of the proposed Whitehall development

5
Plan of the possible Whitehall development

Photos: 2, 3 & 4 Ed. Leigh



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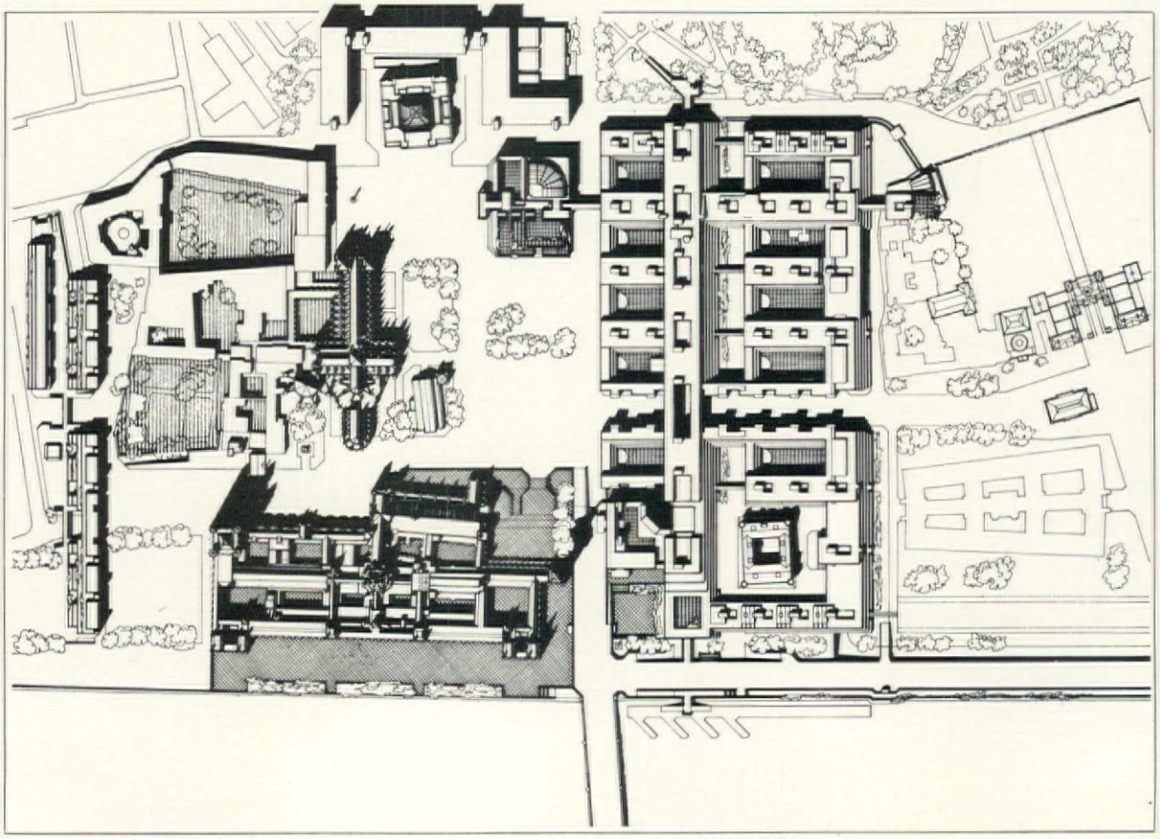

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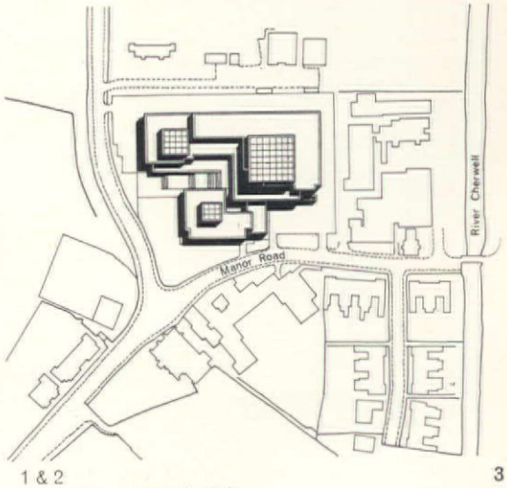
1

2

Library Group, Oxford

Sir Leslie Martin and C. St John Wilson,
Patrick Hodgkinson and Douglas Lanham

Engineers: Ove Arup Associates



3

1 & 2
The main approach stair

3
Site plan

All photographs not credited individually, John Donat

1
Section through the English and Statistics libraries

2
Section through the main approach stair and law library

3
Ground floor plan

4
First floor plan

5
Second floor plan

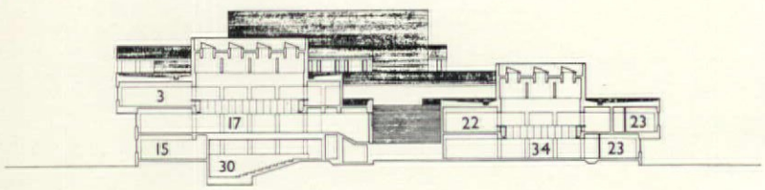
6
Third floor plan

7 & 8
Approach stair seen from Manor Road

Key to plans

1 Carrels
2 law library gallery
3 English gallery
4 wing stack
5 junior common room
6 kitchen
7 senior common room
8 workspace
9 microfilm
10 law library stack
11 secretary
12 librarian
13 entrance hall
14 study
15 seminar
16 cataloguing
17 reading room
18 w.c.
19 staff common room
20 binding
21 porter
22 statistics gallery
23 research room
24 courtyard
25 director
26 office
27 punched card
28 computing
29 lecture theatre
30 lecture room
31 plant room
32 receiving and packing
33 coffee
34 statistics library reading room
35 janitor's flat

1



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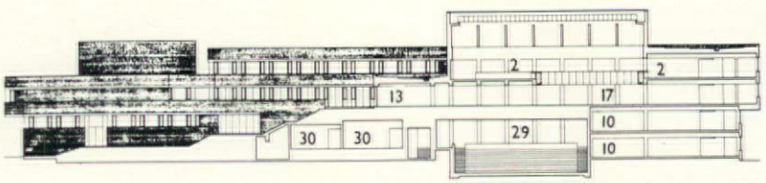

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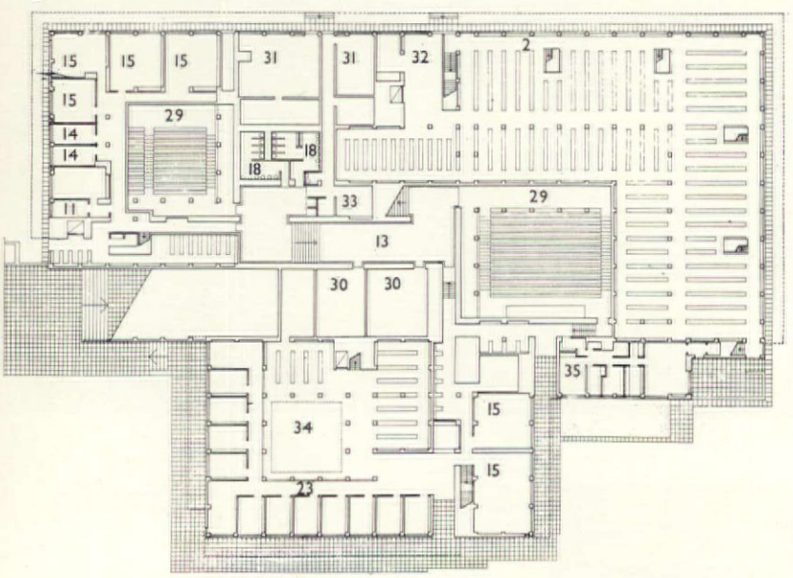

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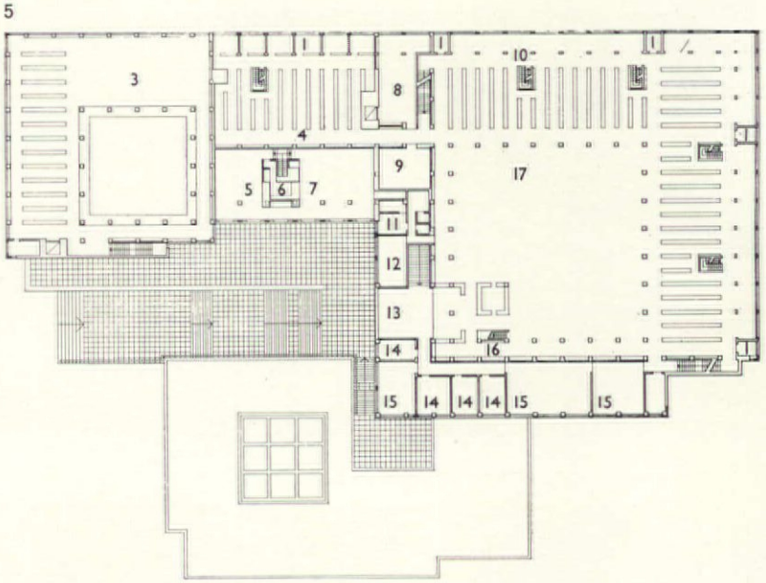

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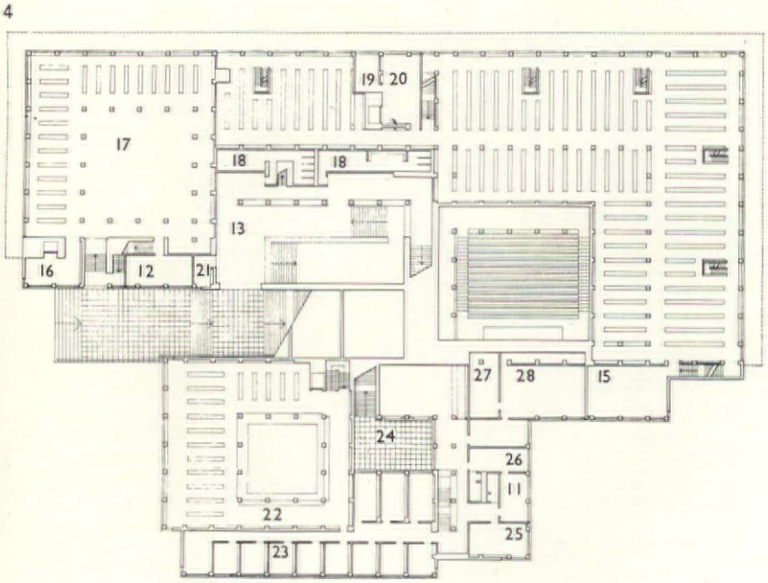

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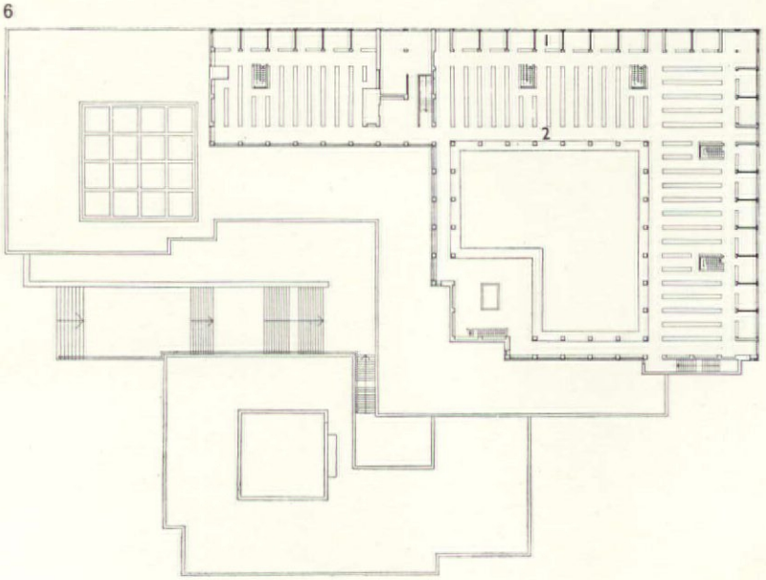
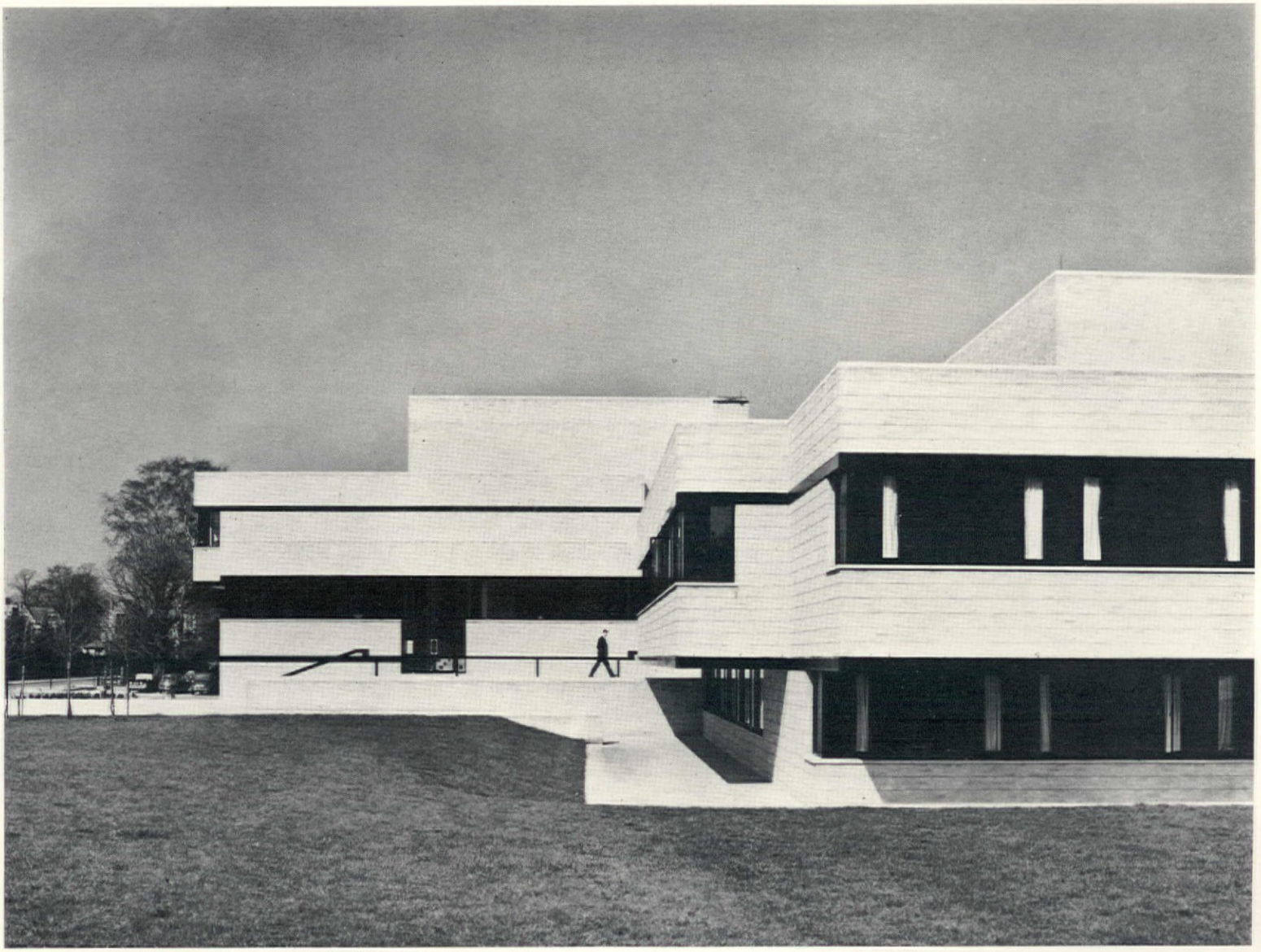


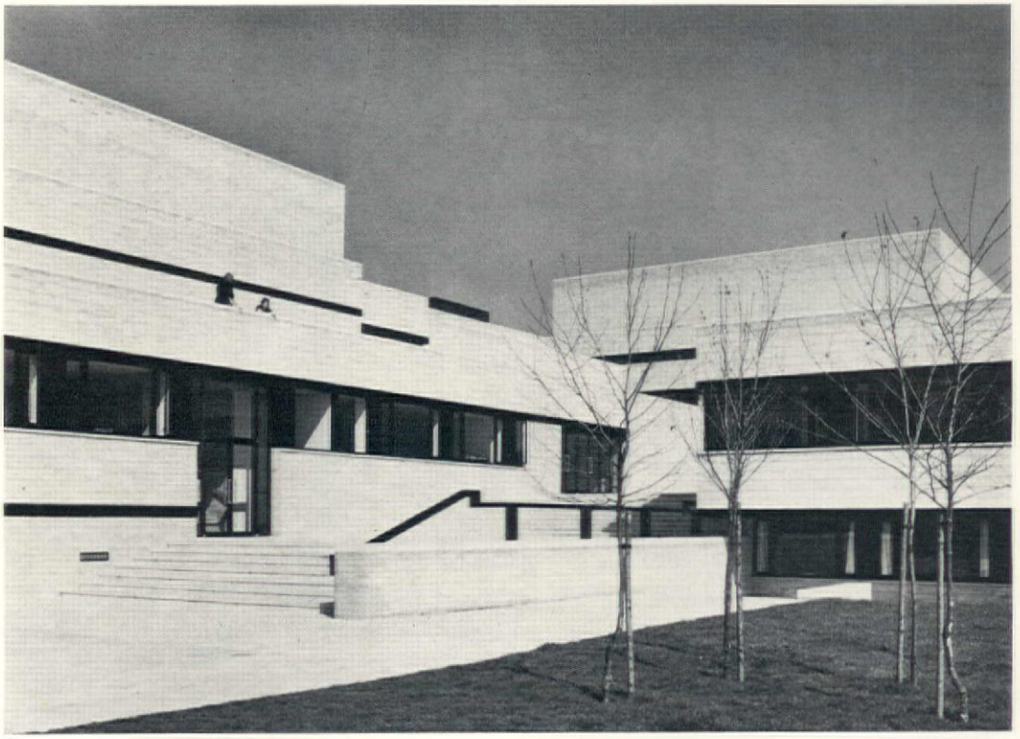


7

This library group includes the Bodleian Law library, the English Faculty library and a building including a library for the Institute of Statistics. The generating principles which control the planning of this group of libraries have already been described (*AD* July 1960). In each library the top lit reading room forms the node around which the plan develops. The three libraries of different size but similar pattern are then brought into an interlocking form which unites them also with the shared accommodation consisting of cloakroom and lecture room space. The external identifying forms of the top lit reading rooms, the planning around a main external stairway and the different levels at which the entrances are placed, are essentially the direct outcome of this interlocking concept.

In each library the reading room is a lofty galleried room top lit by evenly diffused natural lighting. The light is reflected off the deep cross beams and secondary beams of the roof structure. The height of each reading room and its general treatment is identical. Each one is square on plan and the plan sizes vary, Statistics being three bays square, English four bays and Law seven. This results in considerable differences in the volumetric effect of each library. But underlying this there is a basic consistency.

▷ Page 447



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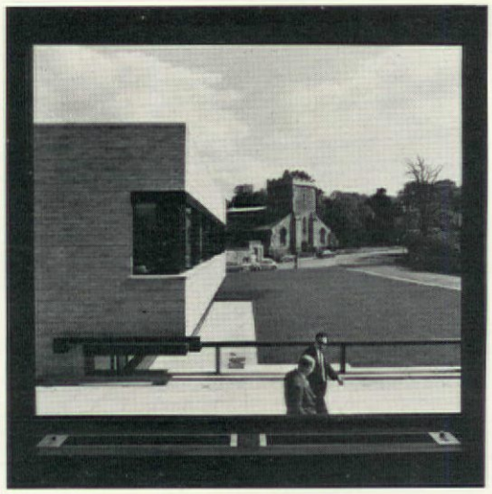

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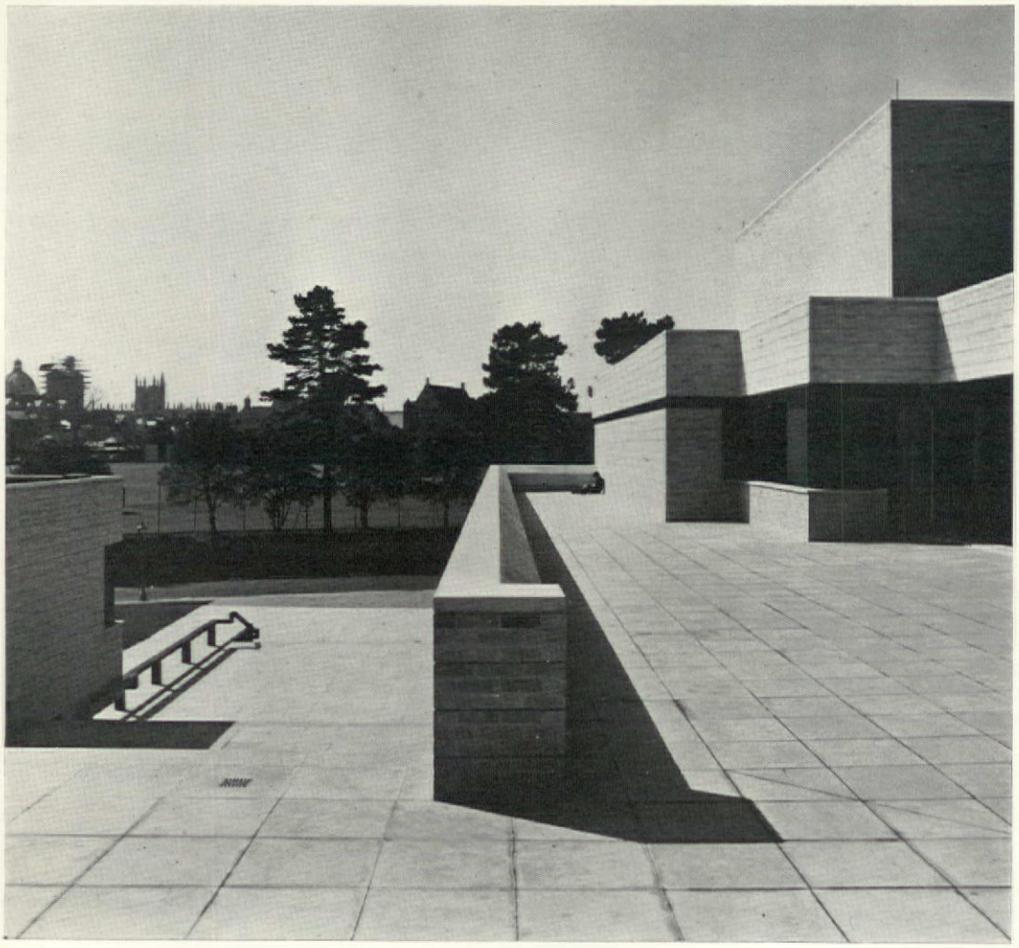

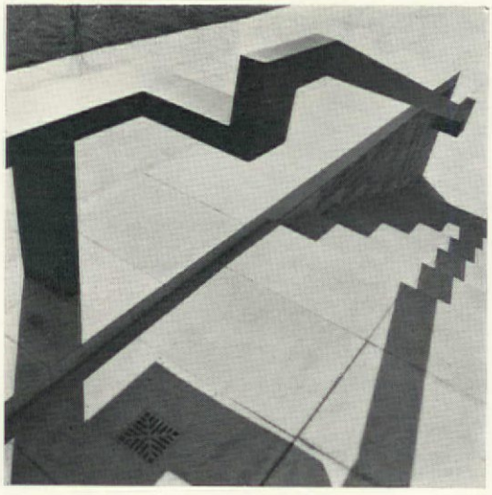

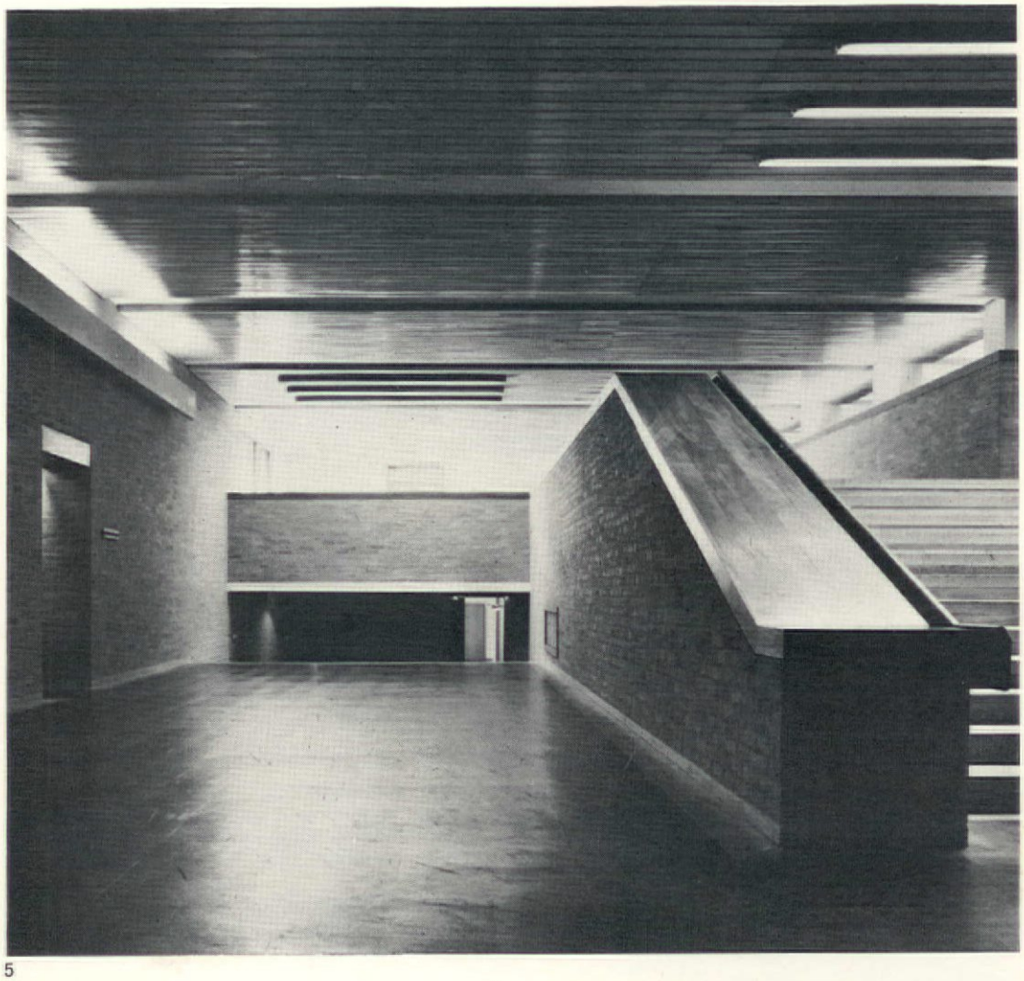

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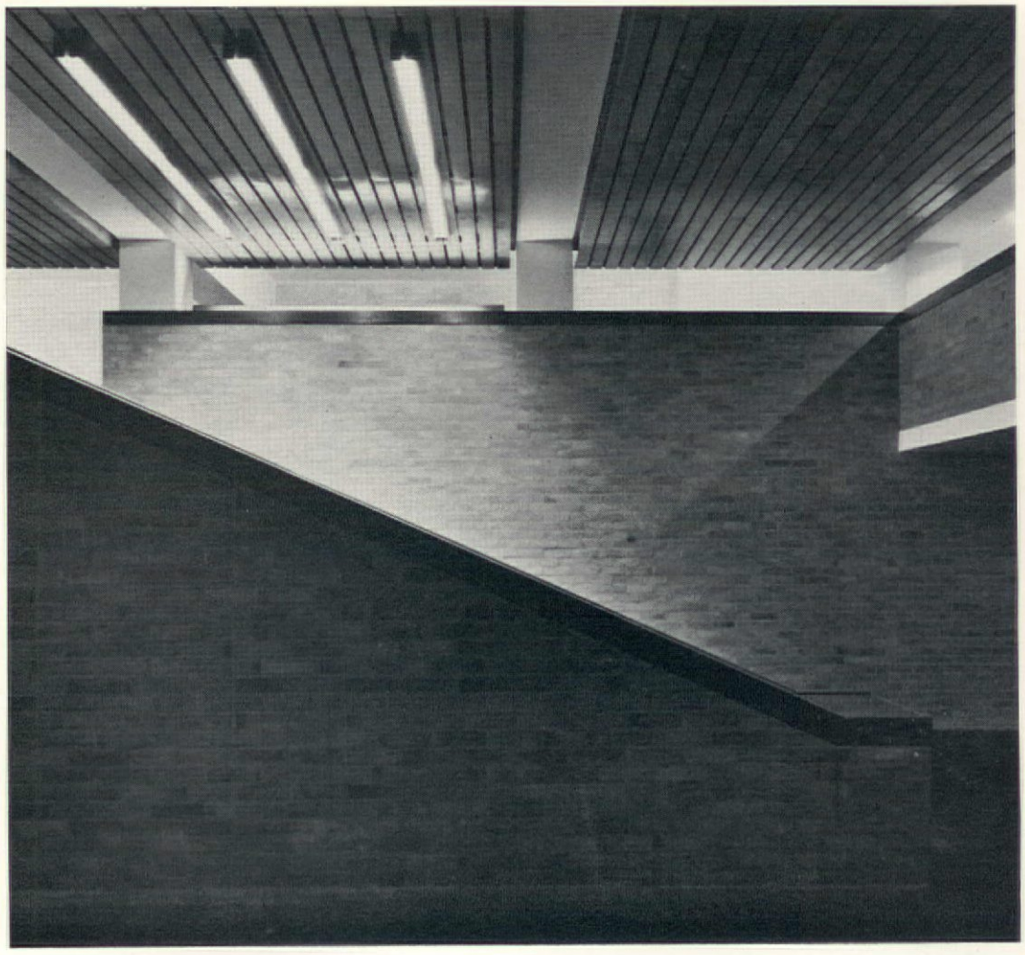


1 & 2
Views of the terrace at the head of the approach stair

3
View from the English library, looking across the approach stair towards the church of St Cross

4
Metal handrail detail of the approach stair

5 & 6
The main internal stair

7
Detail of the timber handrail

1
The lecturer's desk and chair in the main lecture hall

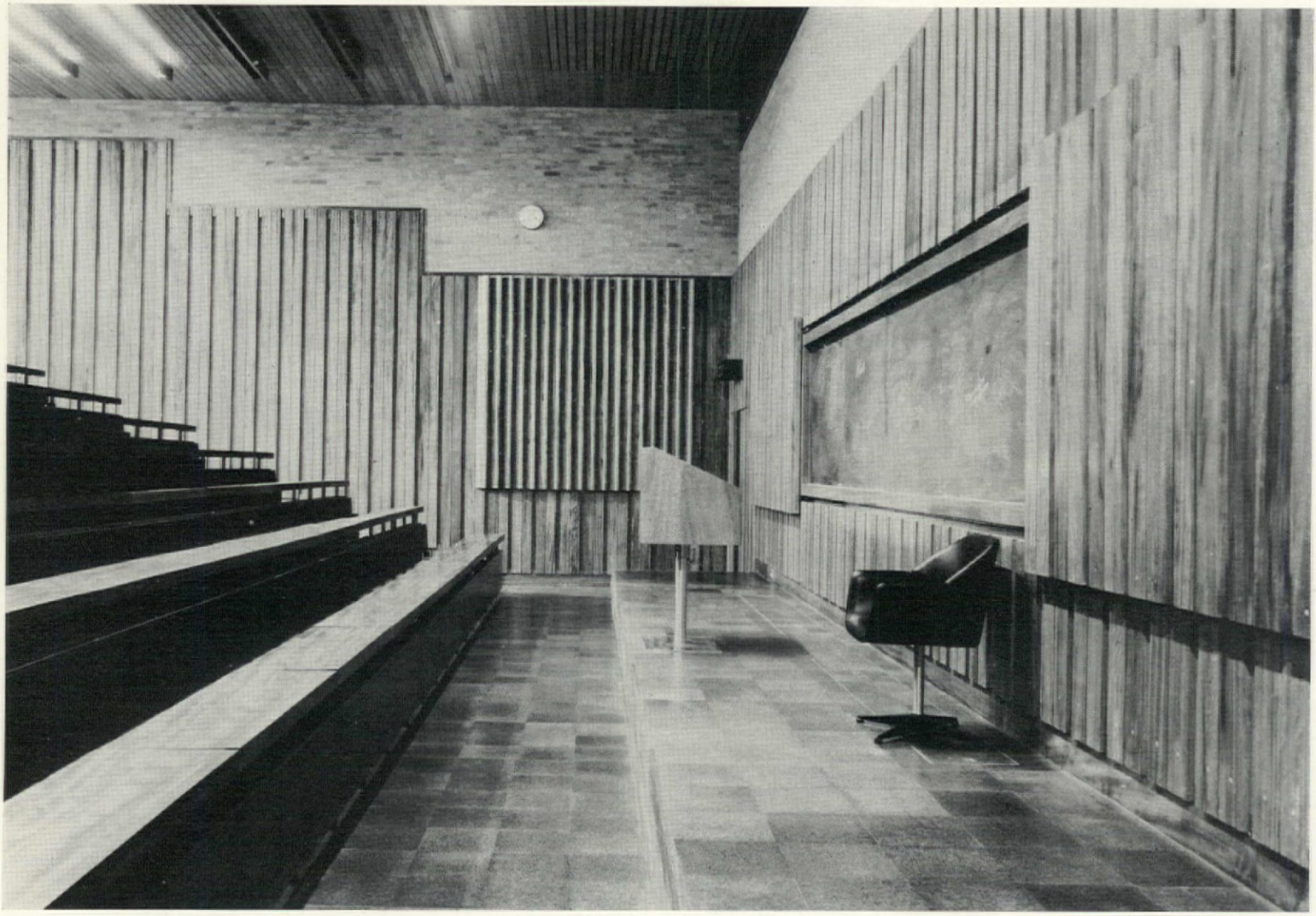
2
The end of the main lecture hall seen from the gallery

3
Detail of the tip-up seats and desk tops in the main lecture hall

4
Statistics library seen from the gallery

5
View across the gallery in the Statistics library

6
Desk and lighting detail in the Statistics library
Photo: 1 Henk Snoek



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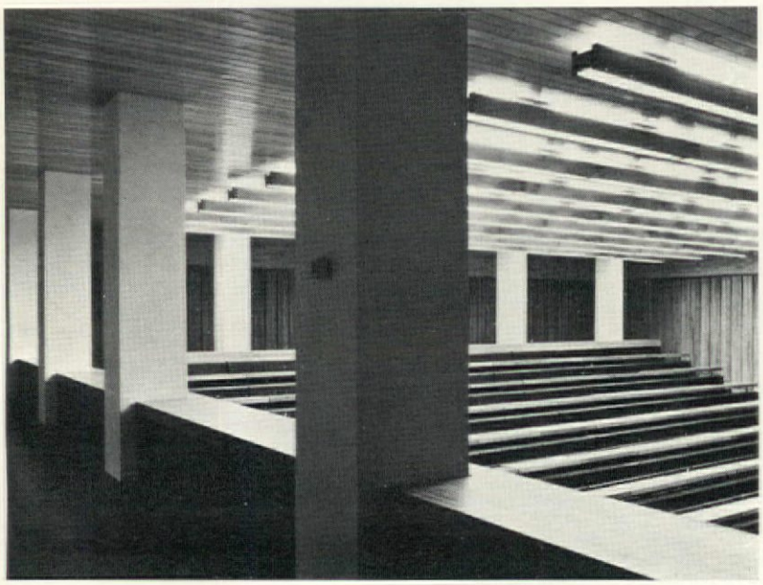

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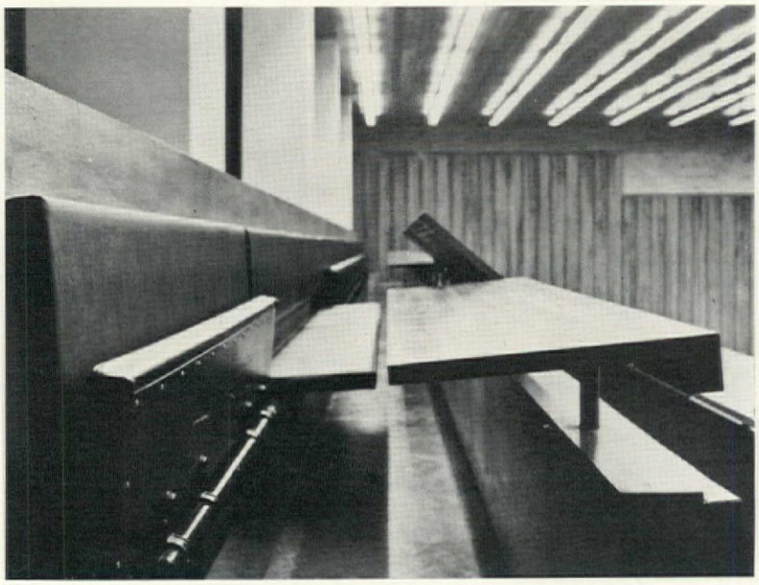

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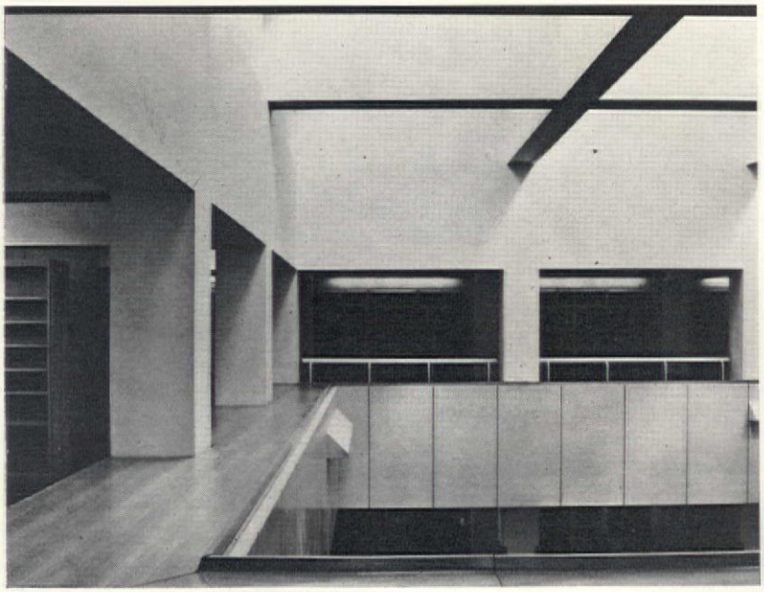

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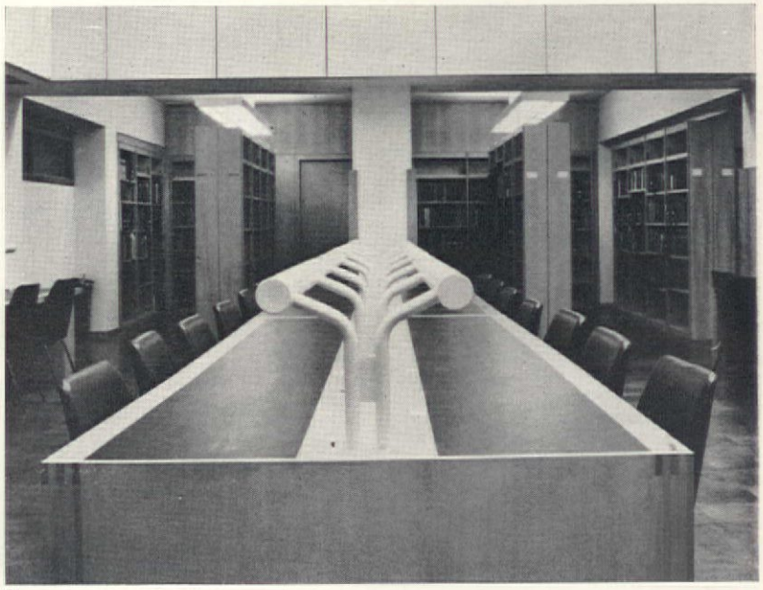

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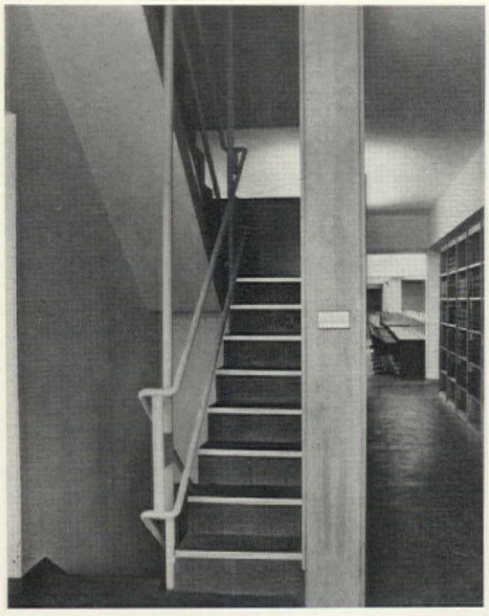

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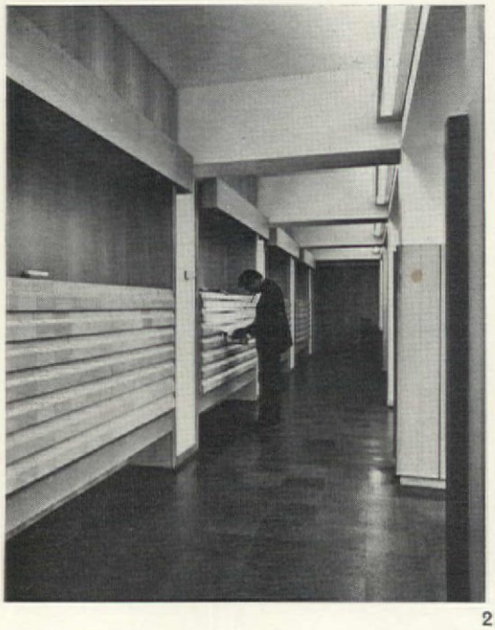

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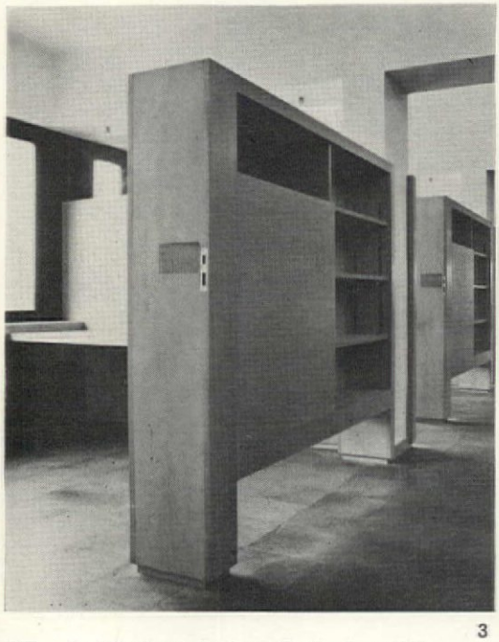


3

4

◁Page 442

This is emphasized by the structure in which column and beam sizes are maintained throughout the building and form a structural grid which is itself based on the spacing of stacks and reading desks. There is therefore a firm relationship between planning conception, structure, furniture and lighting: in the stack areas the ceiling panels between beams are themselves used as reflectors for the specially designed fluorescent light fittings and are used to secure a satisfactory level of illumination for the lower shelves of the stack.

Internally, in the library areas, the whole structure is painted white. In the reading rooms the gallery fronts are formed of concrete cast on plastic sheet to produce a highly polished grey surface. The bookstack fittings of the libraries are made of beech-faced laminboard, with adjustable shelving supported on brass fittings. Carefully selected beech has been used virtually throughout the building as a joinery timber. The floors of the libraries are covered with cork tiles.

Library tables and light fittings are designed by the architect. In the Law library, where they were presented by an anonymous donor, the tables are made from African walnut and the light fittings are in brass. In the other two libraries, beech is used with a black linoleum insert for the table top: the light fittings are stove enamelled pale grey. The black leather armchairs of the Law library and their smaller counterparts in the English and Statistics libraries were designed by Jack Lankester.

Externally the building is faced in brickwork. The window frames are in black anodized aluminium. The main external stairway and certain surrounding areas to the building are paved in artificial stone. In the entrance hall to the shared accommodation these external materials, the brick facing and stone paving, are taken into the interior of the building. In these areas and in the lecture rooms they are combined with hardwood strip ceilings (in which the light fittings are an integral part of the design) and hardwood panelling.

5

6

1
Stair to gallery in the Law library

2
Law library catalogues

3
Carrells off the Law library

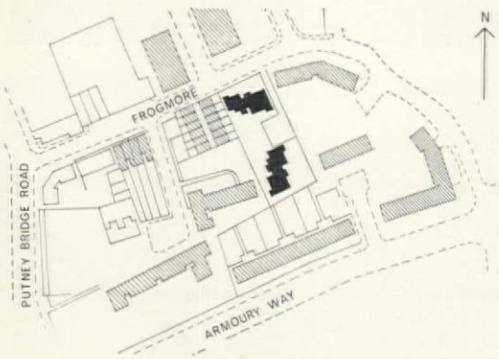
4
The Law library from the upper gallery

5
The Law library

6
Desk and light detail in the Law library

Children's homes, Frogmore, Putney

James Stirling and James Gowan



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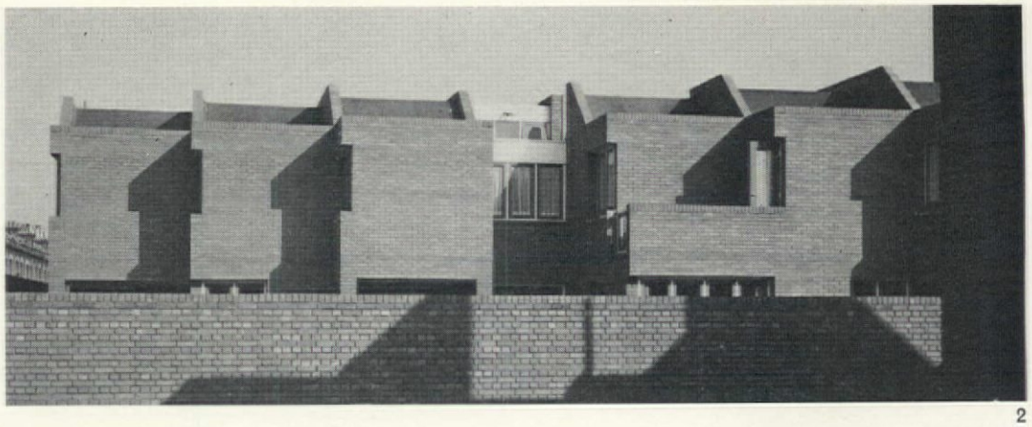

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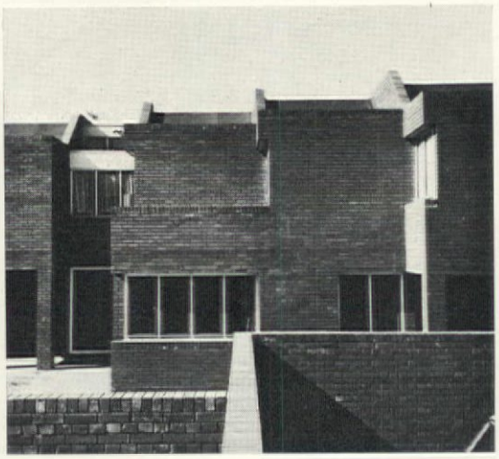
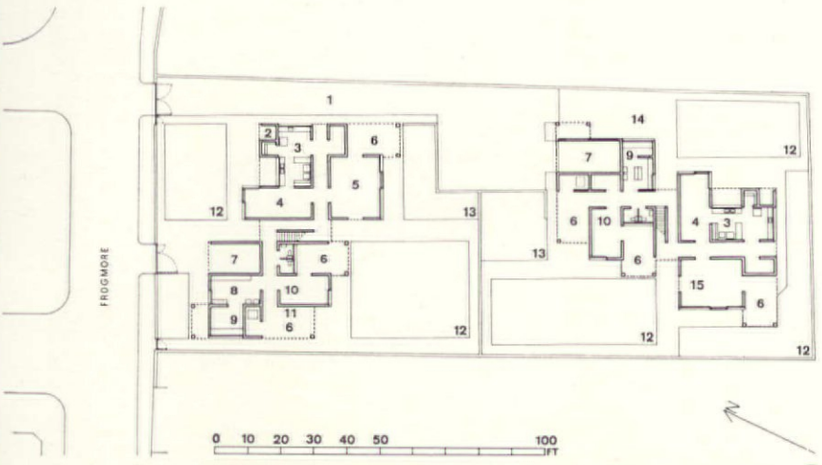


5

6

Key to plans:
1 service road
2 refuse
3 kitchen
4 dining
5 day room
6 covered play area
7 garage
8 cloaks
9 hobbies
10 sitting room
11 cycles
12 grass
13 planting
14 paving
15 day room
16 balcony
17 bedroom
18 staff bedroom
19 staff dining room



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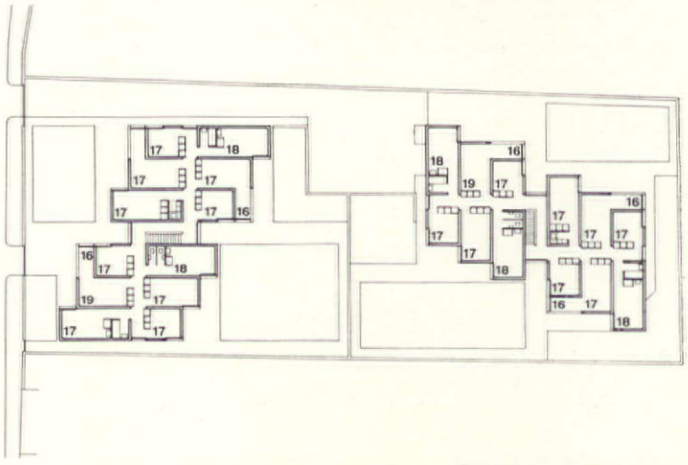

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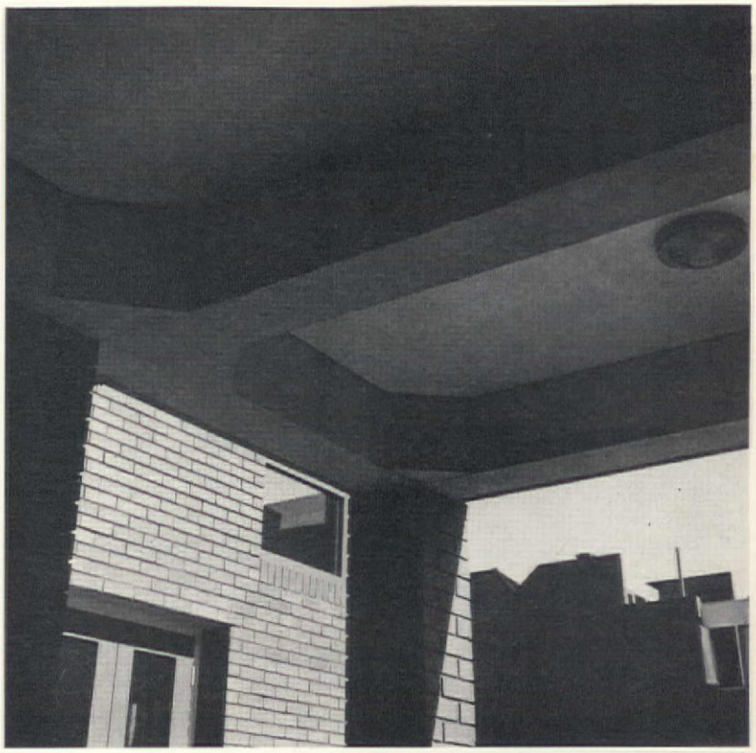

10

1
Location plan
2
View of one house across the intervening yards
3
One house seen from Frogmore
4
Hard standing between the two houses
5
View of a house from the yard areas
6
The houses seen from the service road
7
Ground floor plan
8
First floor plan
9
First floor window detail
10
View of a porch ceiling

The two houses are sited at right angles to one another for privacy and stand in a walled garden. A service road and pavement provides access to the rear house and there is a screened area of hard standing for two cars. A fence wall divides the two properties.

The service rooms on the ground floor (garage, cloaks, etc.) are planned on the approach side of the houses and day room, children's sitting room and covered play area on the garden side.

The bedroom floor of each house is arranged as four small groups of accommodation, each with two large rooms (135ft²) and one small room (90ft²) and a proportion of sanitary equipment. All the bedrooms have built-in lockers, with adjustable shelving and hanging space to suit any age group and staff rooms are provided with basins. The bedrooms have windows in the external wall, which give oblique views from the site and clerestorey windows at the back of the room, giving a good distribution of daylight for homework and reading. The three-child bedrooms have opening sashes in both windows for cross ventilation.

The houses are constructed of load-bearing parallel walls with repetitive spans of 9ft. Walls are built of smooth red facing brickwork which is carried over openings by secret reinforced concrete lintels and piers are in 13½in square brickwork.

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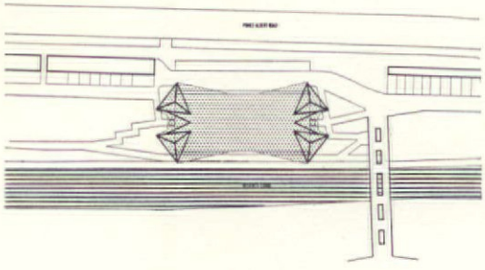

3

Northern Aviary London Zoo

Lord Snowdon, Cedric Price, Frank Newby

Consulting Engineers: Felix J. Samuely & Partners
Quantity Surveyors: Douglas Smith & Ruddle
Main Contractor: Leonard Fairclough (London) Ltd.

Opposite
View showing the main tension cables from the centre intersection to the apices of the end tetrahedra

1
View of the aviary looking north-east from the low level walkway on the south side of Regents canal

2
Location plan

3
Entrance gateway showing the inward opening doors with an aluminium bead curtain beyond. The curtain and gates, 6ft apart, form a lobby to prevent birds escaping. A prototype gateway was erected in the Great Aviary prior to final manufacture. The gateway, standing proud of the structure, is positioned with 1in spacers between the frame and the mesh stiffeners. Materials: Rectangular aluminium section frame and door frames. Aluminium and steel mesh. Aluminium beads on nylon covered stainless steel wires. Black nylon dipped aluminium push plates. Stainless steel fixings
Photos: Sam Lambert

In November 1960 the Zoological Society comissioned Lord Snowdon to prepare a design for a large "walk-through" aviary between the Regent's Canal and Prince Albert Road.

Lord Snowdon, with the approval of the Society invited Mr Cedric Price to work in association with him, and they invited Mr Frank Newby in January 1961 to act as consulting engineer.

At that time it had been decided that the structure should provide two crystalline end pavilions connected with either a stressed net or a net running over tension cables or a latticed shell, thus enabling a maximum free flight volume with sufficient height together with perching conditions at each end. The tops of the end pavilions were to be of equal height and to be the highest points on the perimeter.

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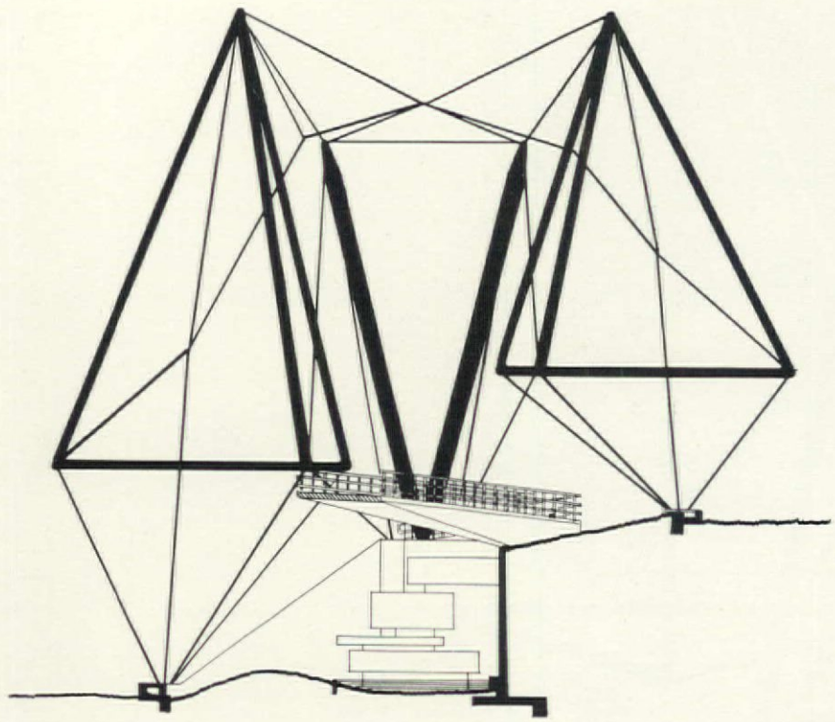

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1
Cross-section taken at the centre

2
Plan. Rigid superstructure in broken line. Cables omitted. Line of mesh at ground level dotted.
1 upper pool—deep
2 series of waterfalls—slow moving shallow pools pump and plant room under
3 walkway
4 lower pool—medium depth
5 cascade—rapid flow
6 nesting cliff

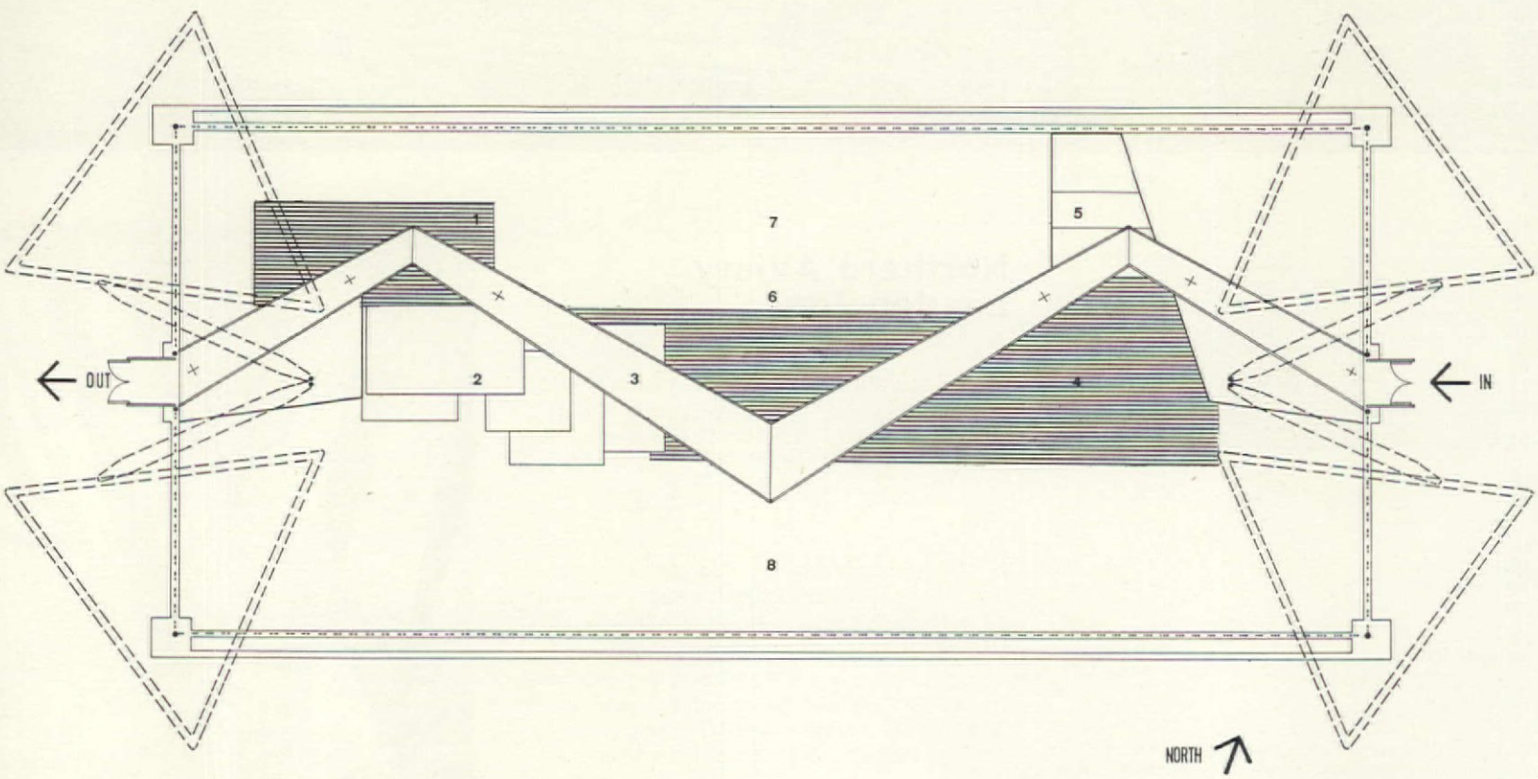
3
Elevation of walkway

1. The inner sections of the walkway cantilever 40ft from the cliff top, they have a dowelled connection at the centre and are restrained at their other ends by cantilevers tied down to the end foundation blocks. They are of in-situ concrete using white cement and are post-tensioned with 10 No. 0·276in diameter wire cables which are stopped off at varying distances from the ends of the cantilevers. The finish to the sides of the walkway is of t & g boarded shuttering and to the top surface is tamped

2. Hinged connections made up from $\frac{3}{4}$in and $1\frac{3}{4}$in thick mild steel plates with lead sheet between bearing surfaces. Uplift from the inner section is transmitted to the reinforced concrete outer section

4
Initial model, April 1961

5
Wind tunnel tests were carried out at Southampton University on this model of the final structure. It was designed to provide dynamic similarity and was tested at varying wind speeds up to 100mph in iced and un-iced wire conditions. Cable loads were measured and vibrations and deformations of the cables and mesh were recorded on film. The construction of the model indicated problems likely to be met during erection of the structure on site.
Photo: 4, Sam Lambert



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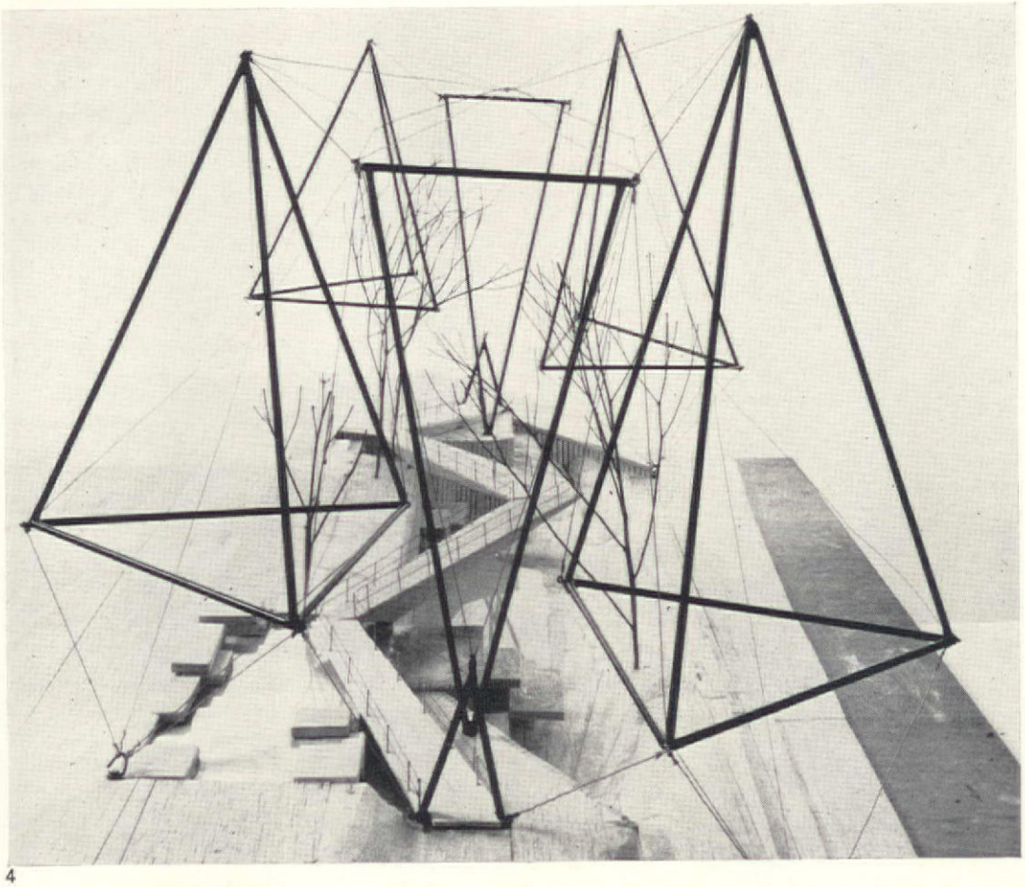

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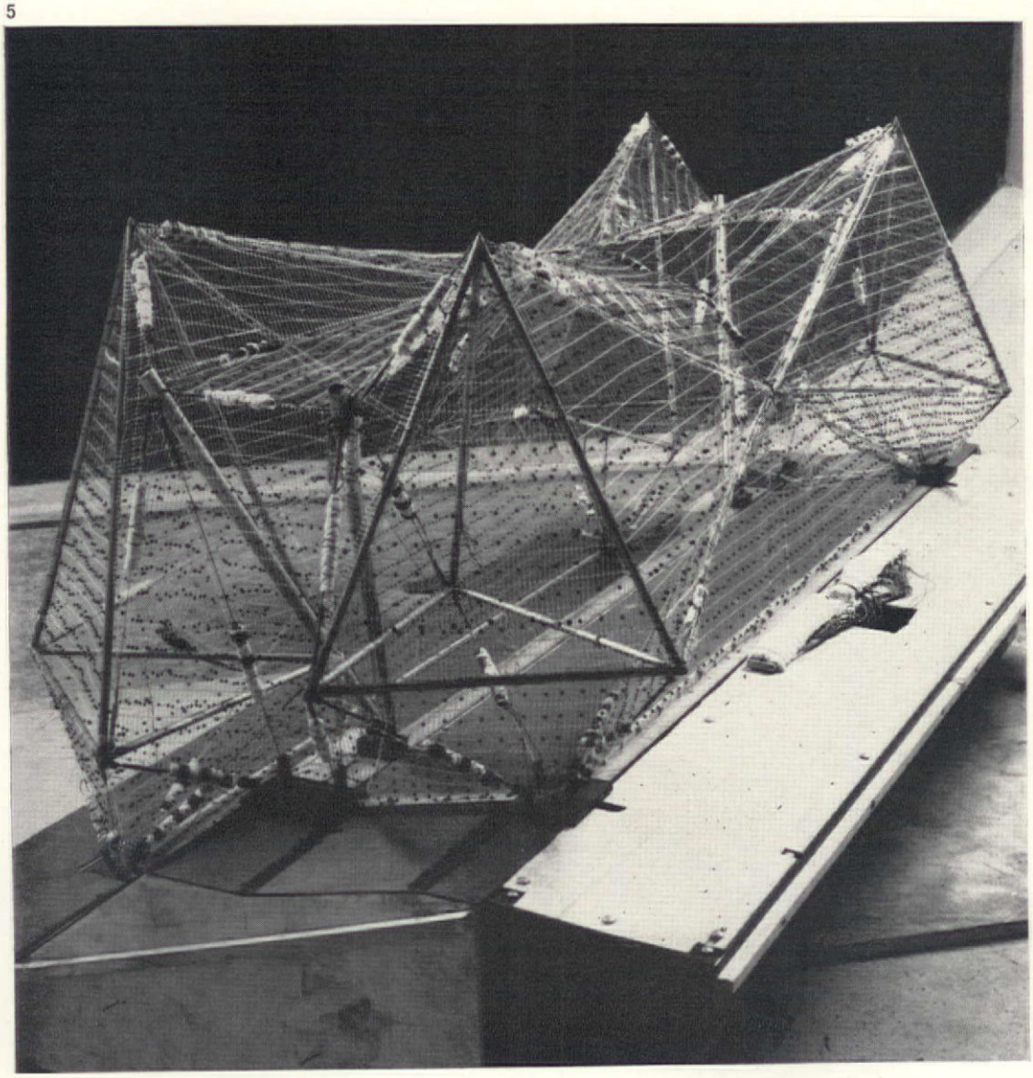

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When considering the structural possibilities the following criteria were kept in mind:

1. The site measured 150ft × 63ft on plan with a fall of 22ft across the short axis.
2. Loading on the structure was from wind, ice and snow.
3. Materials had to have weather resistance and be reasonably free from maintenance.
4. The appearance of the structure was of importance and full integration of the design team was required for success.
5. The structure would have to be approved by the LCC Special Structures Dept.

From experience the following information was applicable to the conception of possible structures for the project:

1. The deformation-stress characteristics of shell and tension structures, except for simple shapes, are difficult to predict without model tests or computer analysis.
2. Decisions made in design assume satisfactory confirmation later.

It was agreed that a tension cable structure would be the best solution in that it required a high structure at the ends and was economic for a span of 150ft. A stressed net presented too many technical problems to be solved in time.

The form of tension structure is influenced mainly by the method of producing anti-flutter stiffness. As the wind loading on a mesh is much smaller than that on a solid surface it was possible to consider crystalline network forms with a minimum number of anti-flutter cable intersections.

The supporting framework essentially has to cantilever from the ground to carry the tension cables. It can take innumerable forms, each one influencing and being influenced by the cable network.

It is true to say that an interest in tensegrity led to considering various forms where compression members were suspended in mid-air yet acted as a vertical cantilever.

The final solution was arrived at with the aid of models. At this time decisions were made on the assumptions that the wind vibration would be satisfactory and that detailed calculations would verify the direction of member loads in all climatic conditions.

After approval of the scheme in April 1961 the first problem was to determine the size of the mesh, as the main loading is wind and snow on iced wires. With wires at close centres any icing of wires would block all apertures and the wind loading would be as on a solid sheet. Such would the case be if sparrows were to be kept out of the aviary. A 50 per cent reduction in loading would occur if sparrows were allowed in and starlings kept out by using a mesh with a wider spacing of wires. This was accepted and from starling experiments the size of 6in × $1\frac{1}{8}$in mesh was agreed.

The probable deformations and stresses in the framework were checked by computer. Variations in form were likewise checked.

The analysis showed the initial assumption of tensegrity to be incorrect in that two cables of the end framework came into small compression. It was necessary to pretension these cables so that they could carry compression. This was achieved by tensioning the cable joining the tops of the end shear legs. No doubt in making the model the wires had been pretensioned automatically.

The behaviour of the tension structure under load is of interest. As tension cables are loaded they deflect and their tension is proportional to their deflection and to the applied load. As the long span cables are attached to a vertical cantilever in the case of the aviary their ends move inwards due to the deflection of the cantilever and in so doing increase the deflection of the cables, so reducing their tension. The stiffness of the end cantilever can therefore greatly influence the deflection and so the tension in the long span cables. The whole acts as a spring. With a large increase in live load on the structure the cable tensions are not substantially increased. Wind tunnel tests on a loaded model carried out at Southampton University showed that wind vibration as a whole should be satisfactory, although some fluttering of individual panels occurred with winds at particular speeds and directions.

All connections had to be designed to allow for movement of the structure. In particular the fixing of the aluminium mesh to the cables is such that no bending of the wires should occur. Cable anchorages to the ground and to the aluminium framework are pinned.

On erection the loads in the cables were measured and the correct prestress applied. The measured loads compared well with the theoretical loads and recent checks on the loads in a few cables 18 months after erection show little change.

Deformation of the tension cables and mesh under load has been noted and this increases the store of information on tension structures.

Throughout the conception and detail stages there were constant design discussions.

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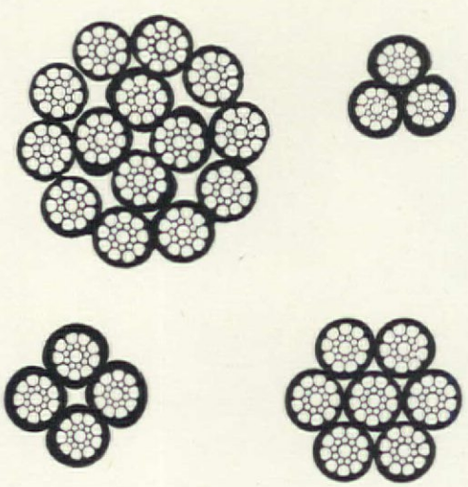


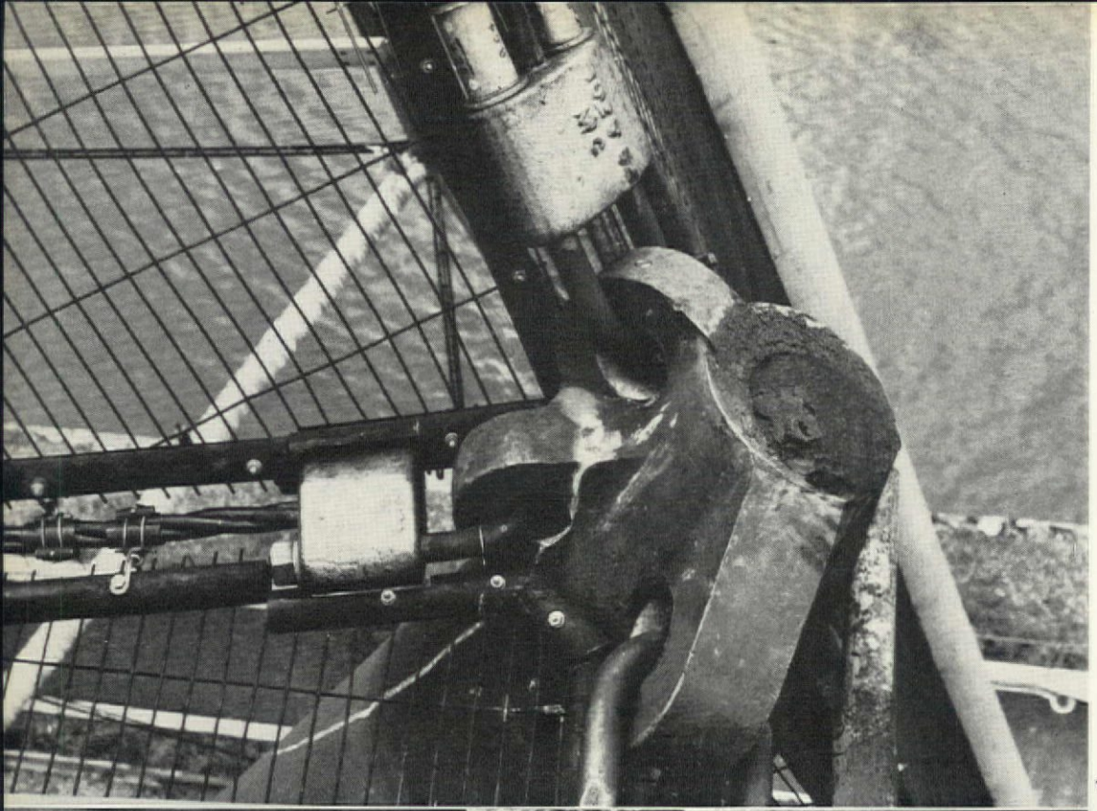
3

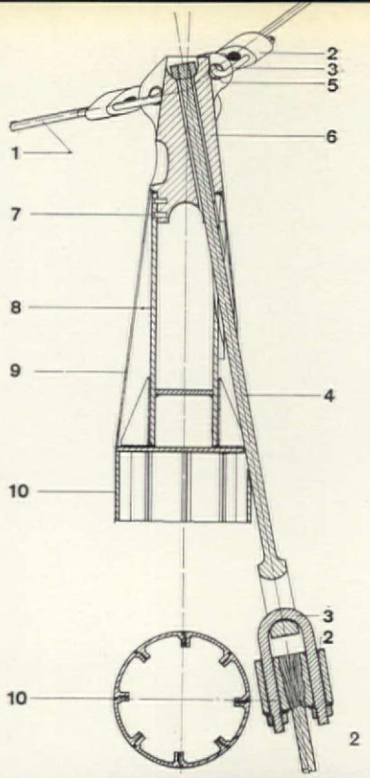
1 & 2
Views looking upwards at the tetrahedra and shear legs from the lower level showing also the suspended timber perches which occur in each tetrahedron

3
Cable-sections. To economically construct ropes of six different breaking loads of 30, 45, 85, 105, 165 and 195 tons the manufacturers elected to use a combination of dyform strands of 12 and 16 tons breaking loads. Each strand consists of $9 \times 9 \times 1$ galvanized wires spun with Metalcoat and sheathed in black PVC Each rope was repeatedly prestressed to 50 per cent of its breaking load to eliminate creep. The cable anchorage blocks are of galvanized cast steel with the wires held in plastic

Opposite
View from the lower level showing the cantilevered walkway, nesting cliff and lower pool

Photos: opposite, 1 & 2 Sam Lambert; 3 British Ropes Ltd.





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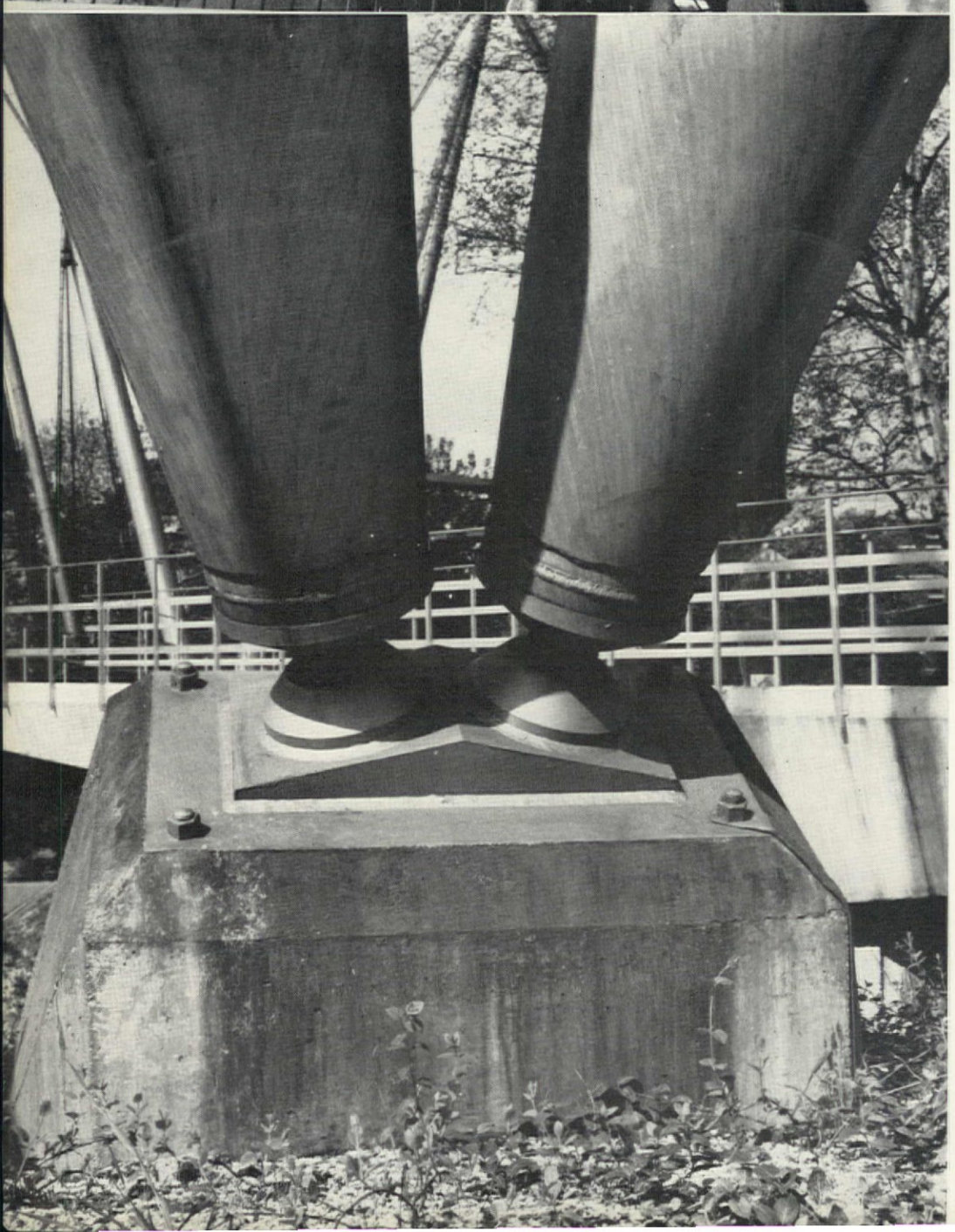

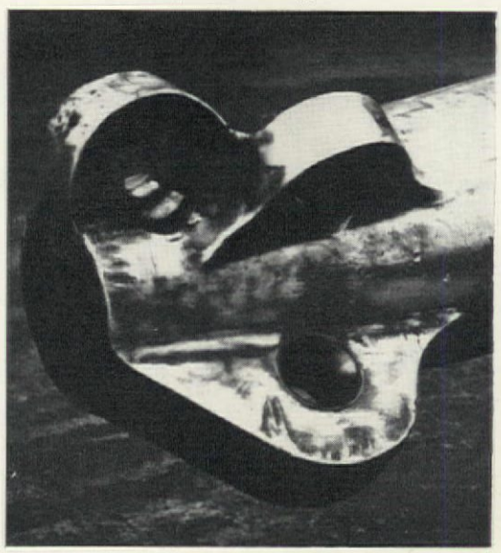

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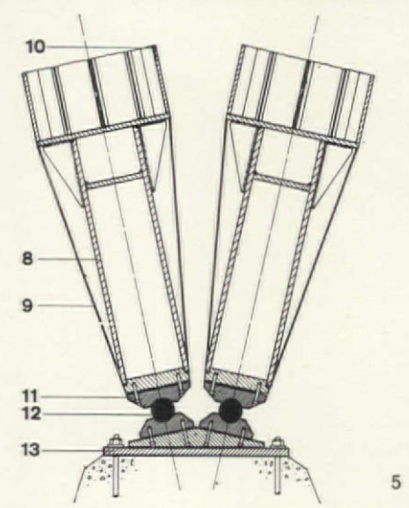


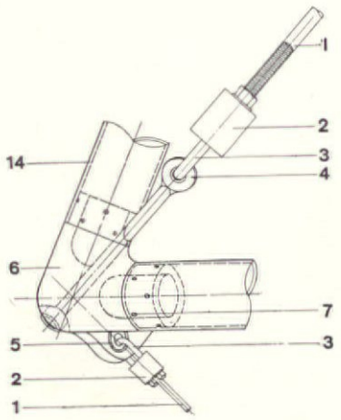
5

1, 2 & 4
Details of shear leg apex

3 & 5
Detail of shear leg base

6, 7 & 9
Details of tetrahedron lower corner

8
View of trial assembly of tetrahedron during fabrication. In order to eliminate fixing problems on site all tetrahedra were pre-assembled and the tube to casting fixing holes drilled and tapped



6

7

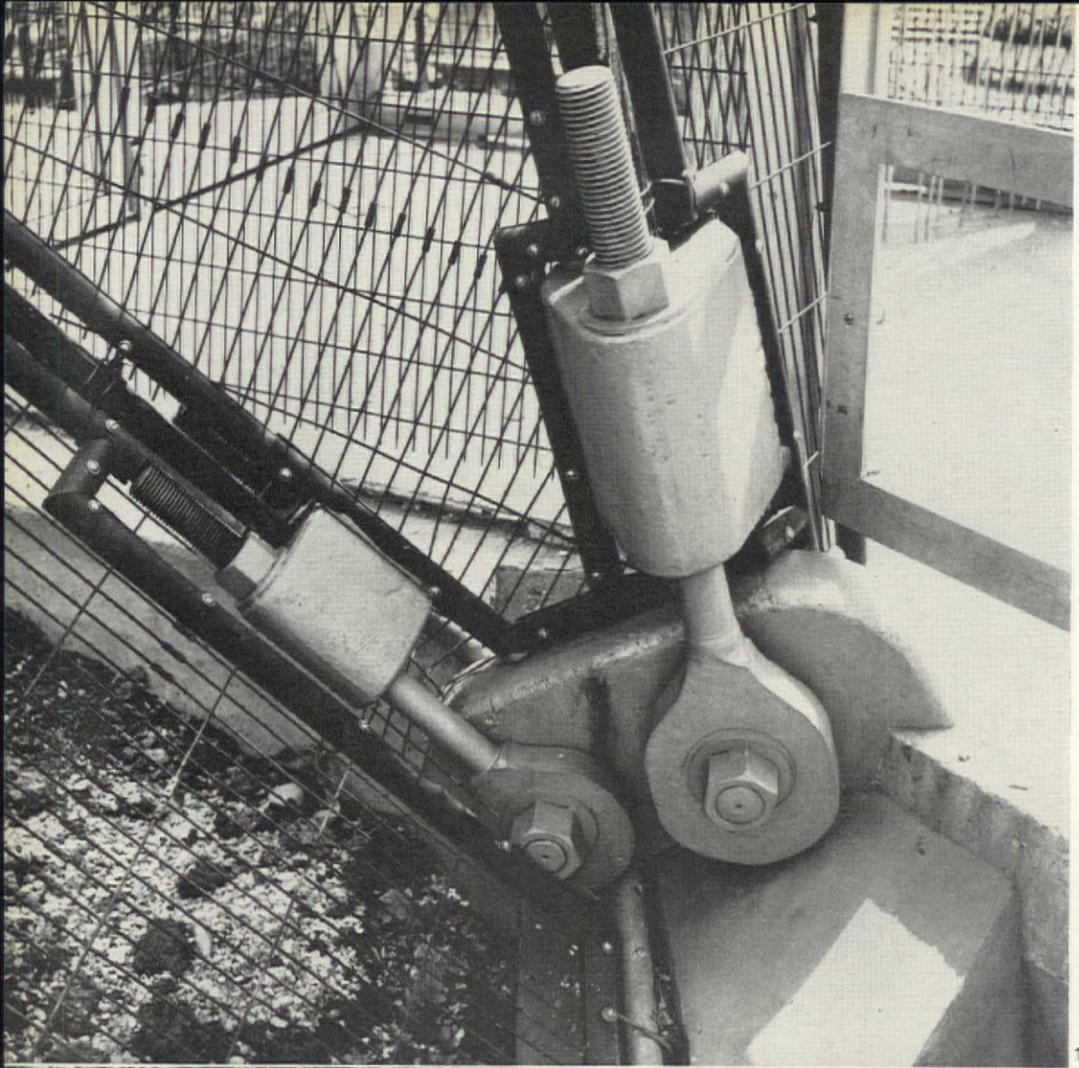
9

8

Key to drawings

1 tension cable
2 cable anchorage block
3 stainless steel U bolt
4 stainless steel eye bolt
5 stainless steel bush fitted in aluminium casting
6 Aluminium castings alloy B.S. 1490 LM8P all subjected to x-ray inspection in the highly stressed areas around the cable attachment fins.
7 $\frac{3}{8}$in diameter stainless steel screws connecting the aluminium tubes to castings. Araldite was used as a gap filler for site connections.
8 12in diameter $\frac{7}{8}$in thick aluminium tube with welded connections
9 $\frac{1}{2}$in thick aluminium plate cover cone non-structural
10 24in diameter shear leg tube made up in 14ft 9in sections from 8 aluminium extrusions $\frac{5}{8}$in thick with seam welding. Each tube is 44ft 3in in length and made up by butt welding three sections. Spot radiography checks were made on the weld quality
11 12in diameter hardened steel cup plates
12 4in diameter hardened steel bolt
13 Mild steel baseplate painted
14 12in diameter tubes of $\frac{3}{8}$in, $\frac{1}{2}$in or $\frac{7}{8}$in wall thickness BA25 alloy. The length of the inclined tetrahedra tubes are either 56ft 6in or 45ft 7in while the horizontal tubes are 36ft 6in. The tubes were supplied in lengths up to 15ft and butt welded together to form the required length. At each butt weld is a $\frac{1}{2}$in thick splice tube

Photos: 3 & 7 Sam Lambert; 8 British Aluminium Co.



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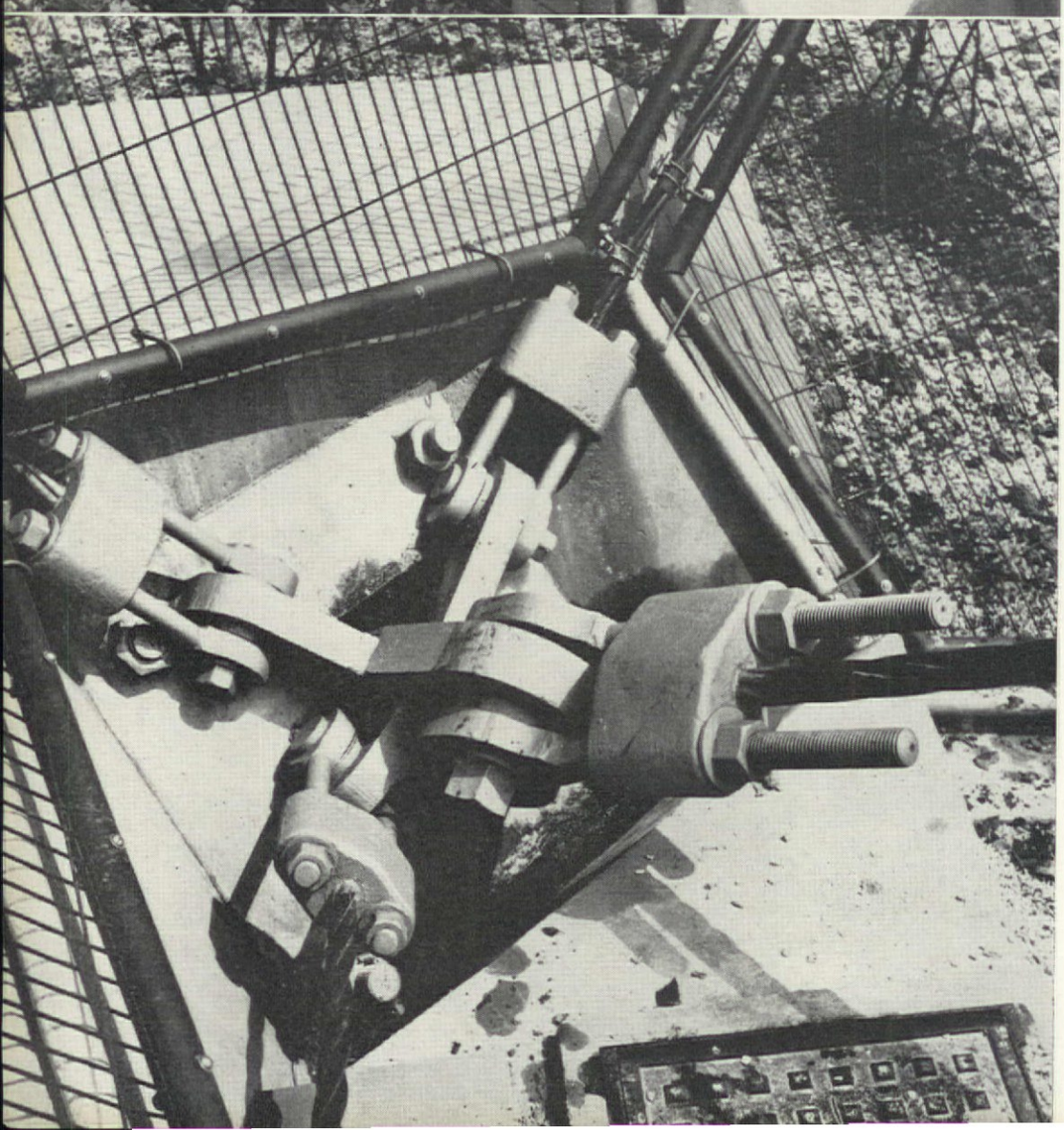

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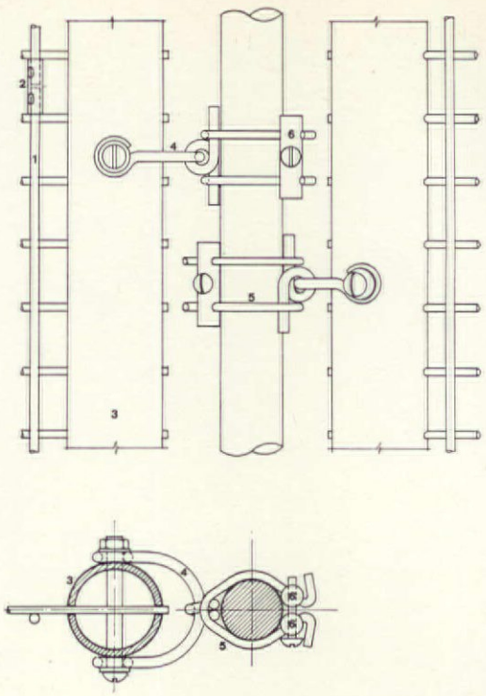


3

1
View of anchorage of main cables

2
View of corner base where the cables from the lower corners of the tetrahedron and a long span cable are anchored

3 & 4
Mesh to cable and mesh to ground connections

Key to drawings

1 Welded aluminium mesh made up in 12ft × 4ft panels from 10g wires with a 6in × 1⅛in rectangular grid and anodized black

2 Before erection strips of 4ft wide mesh were formed by joining panels end to end with cylindrical aluminium crimped connectors originally developed for connecting electric cables. After erection the cross wires of adjacent strips were joined using a crimped C connector, shown on the drawing, which also acted as a 1in distance piece. No internal projections which could harm the birds were allowed in any connection detail

3 2 no. semi-circular aluminium extrusions anodized black bolted together to form friction grip to mesh and to transfer loads from the mesh to the points of connection to the cables. A maximum opening of 1in had to be maintained

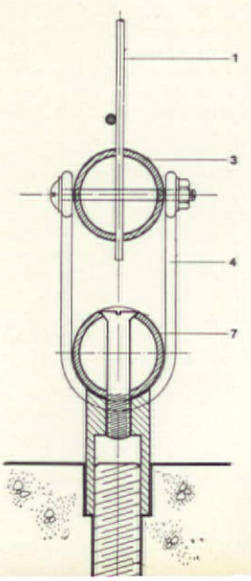
4 Stainless steel U bolt and eye from $\frac{3}{16}$in diameter rod.

5 12swg stainless steel wire

6 $\frac{3}{8}$in diameter stainless steel rod with screw to tighten wire to cable over protective sheet

7 Continuous 1½in diameter aluminium alloy tube fixed to 2in long aluminium alloy distance pieces which are in turn held down by $\frac{3}{4}$in diameter threaded steel bars which project from the concrete ground beam at 3ft 0in centres

Photos: 1 & 2 Sam Lambert



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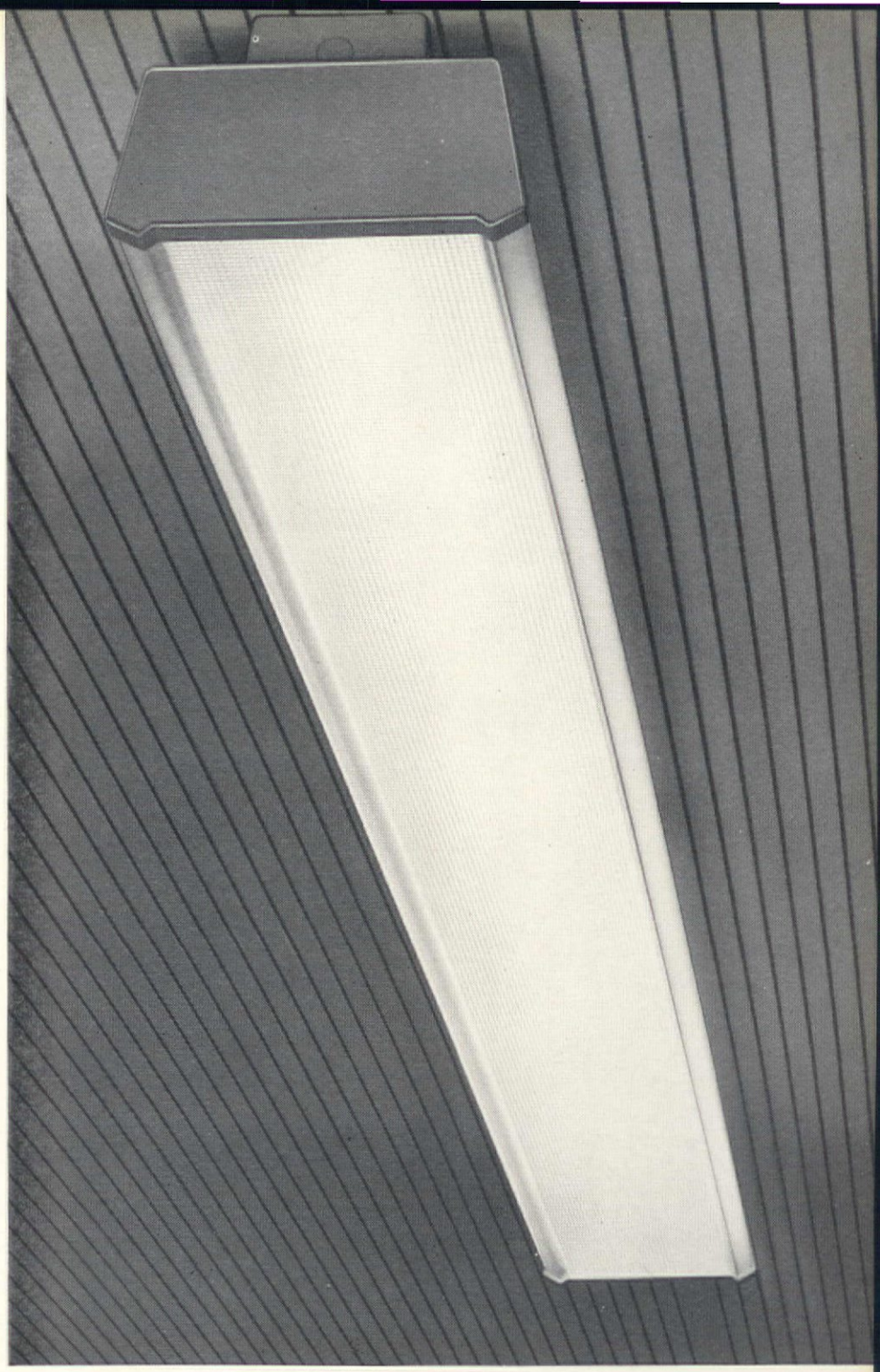

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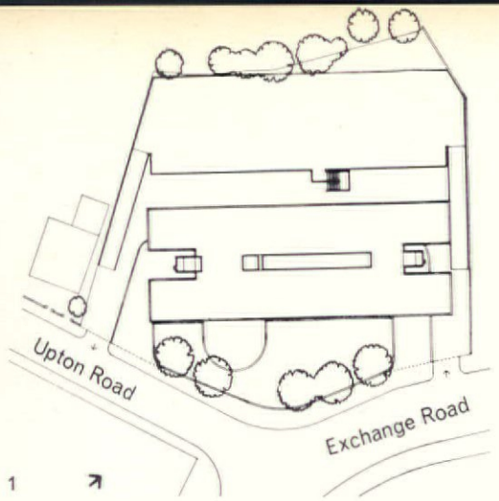

1

Offices, Watford

Douglas Stephen and Partners

Assistants in charge David Wild, Ed. Jones
Engineer: R. J. Crocker & Associates
Quantity surveyor: Brian Davis Associates

1
Site plan

2
Exterior from Exchange Road

3
Detail of the north-west façade from the parking terrace

All photographs Michael Karapetian

The building is situated in an area zoned for office development on Exchange Road, central Watford, with a height restriction of five storeys.

An attempt has been made to open up the site by raising the building clear of the ground and placing it as far back from the road as possible. The original design further provided an open paved forecourt; in the present scheme a change in level with a banked grass area and line of trees was used to define the private part of the site. Car parking is provided for 101 cars on two levels at the rear of the site. ▷Page 463

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3

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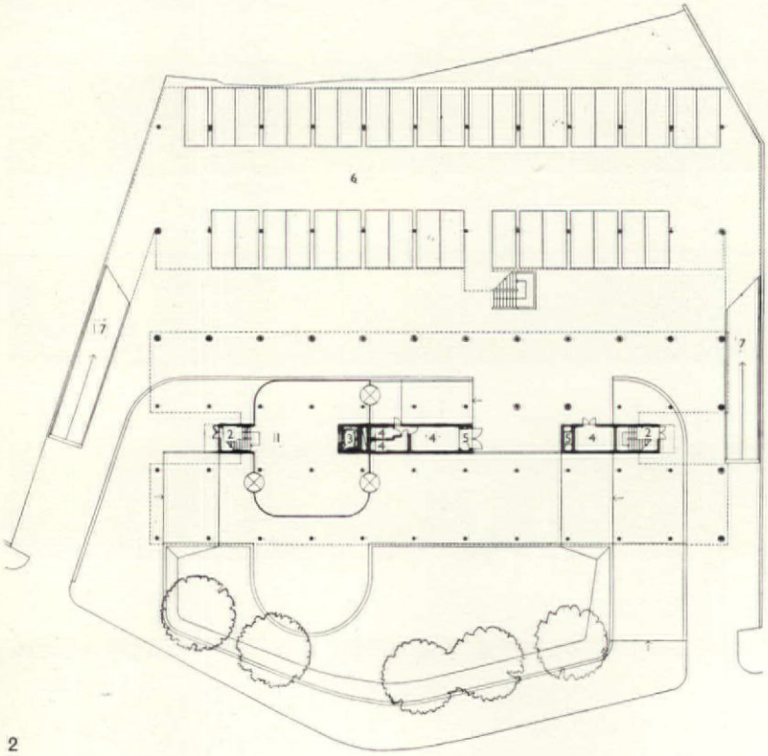

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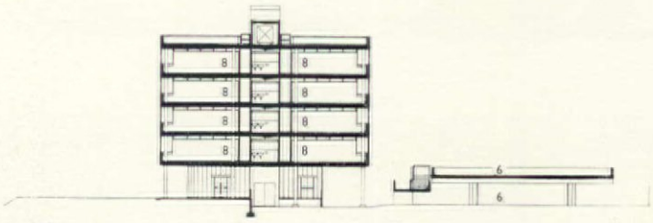

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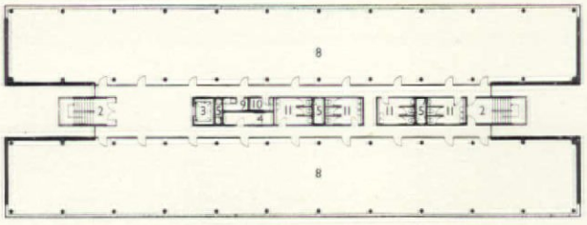
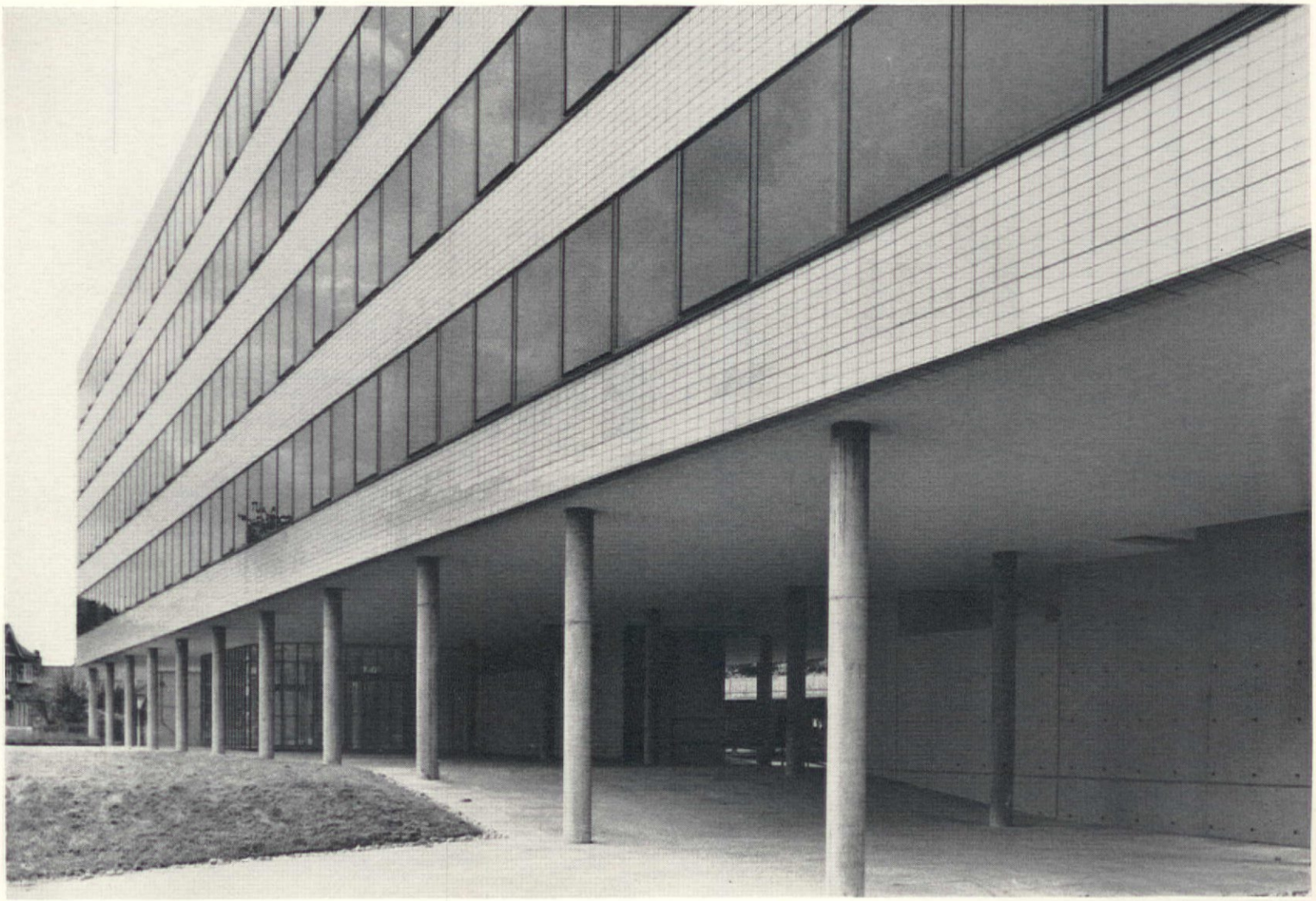


4

Key

1 entrance hall
2 escape stair
3 lift
4 plant room
5 duct
6 parking
7 ramp
8 office area
9 tea kitchen
10 cleaner's room
11 cloakrooms



5

1
Exterior from Upton Road

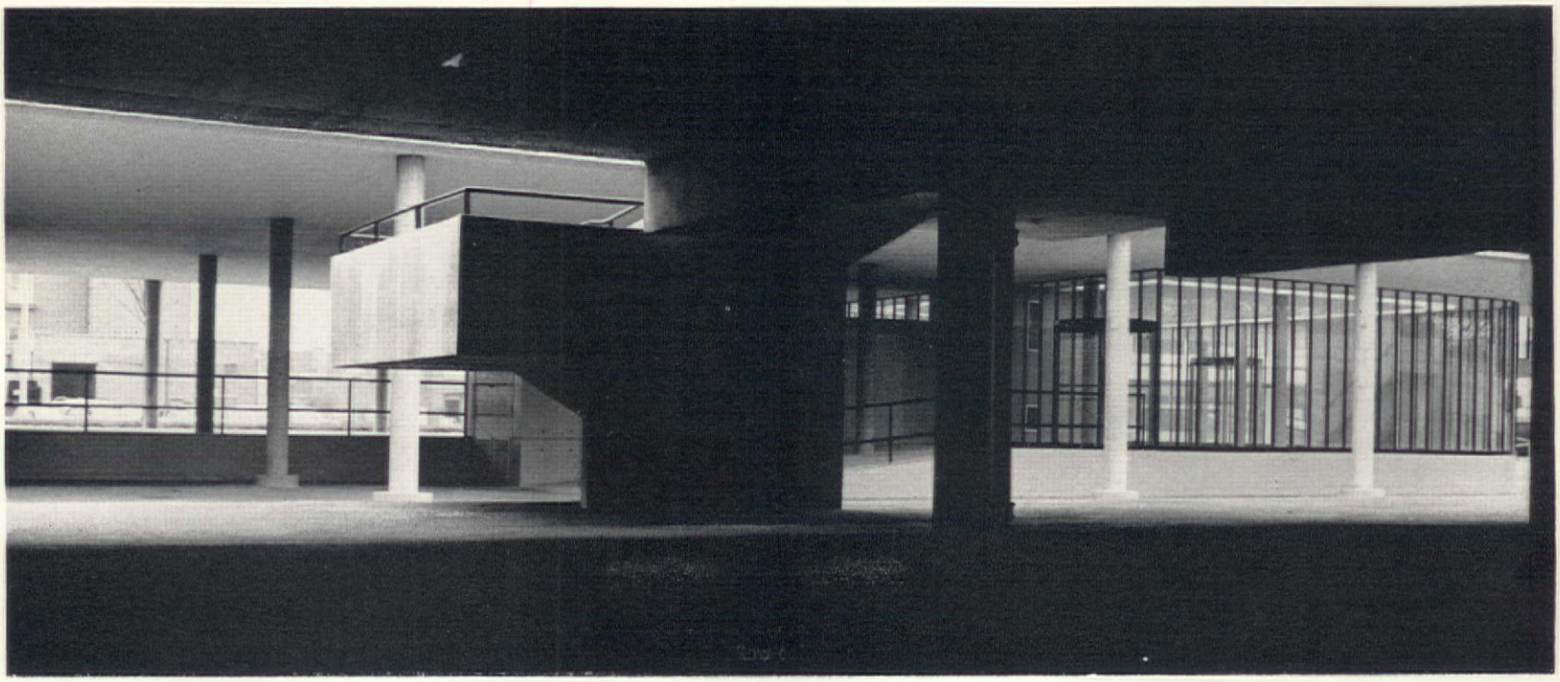
2
Ground floor plan

3
Section

4
Typical office floor plan

5
Exterior from the Exchange Road entrance

6
View of the entrance from under the parking terrace



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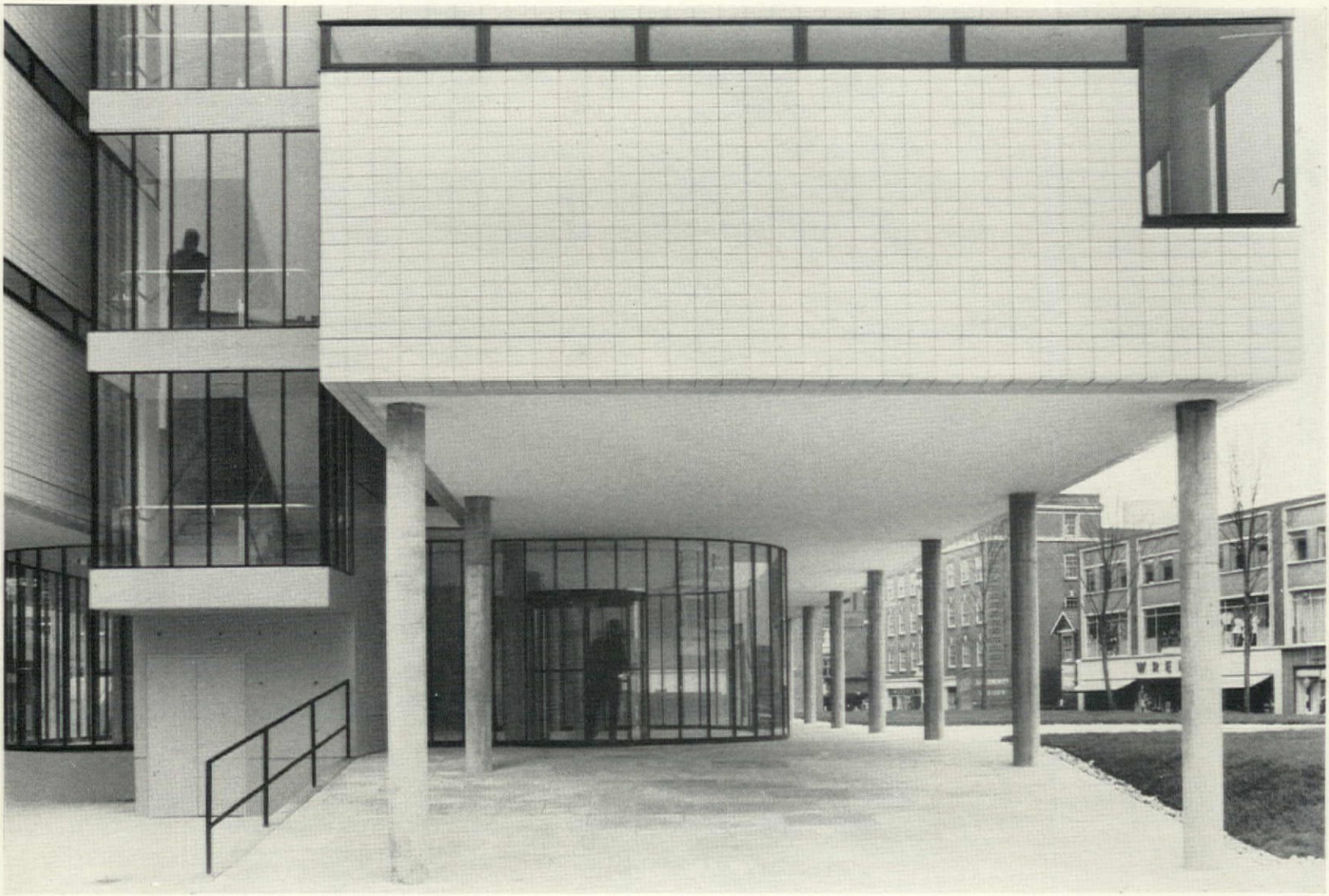

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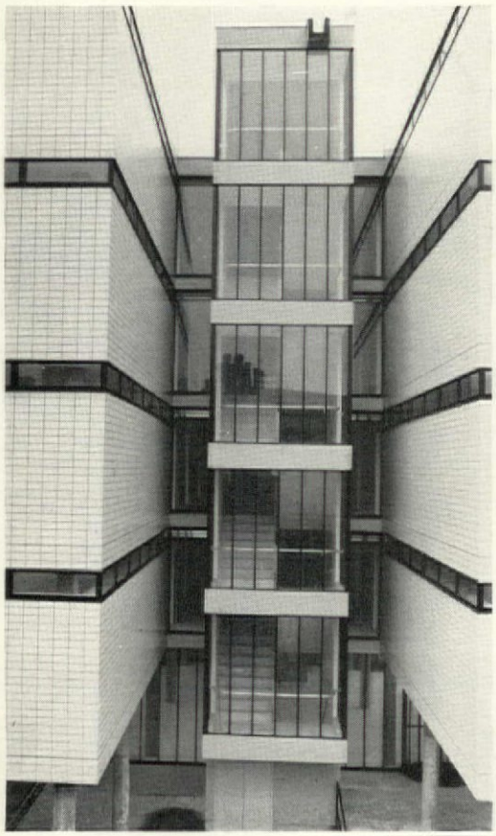


◁Page 460

The entrance hall is a free-standing glass envelope under the building, co-ordinating three different points of entry from either side and the the car park to the rear. A total of 33,000ft² of office accommodation is provided in two wings on either side of a linear core with stairs at each end and lift in the centre. This core is exposed externally allowing natural light and air to the stairs and corridor ends. The two core ducts, which are also structural, contain all services including ventilation trunking and lavatory cisterns. Non-load-bearing walls are brick or

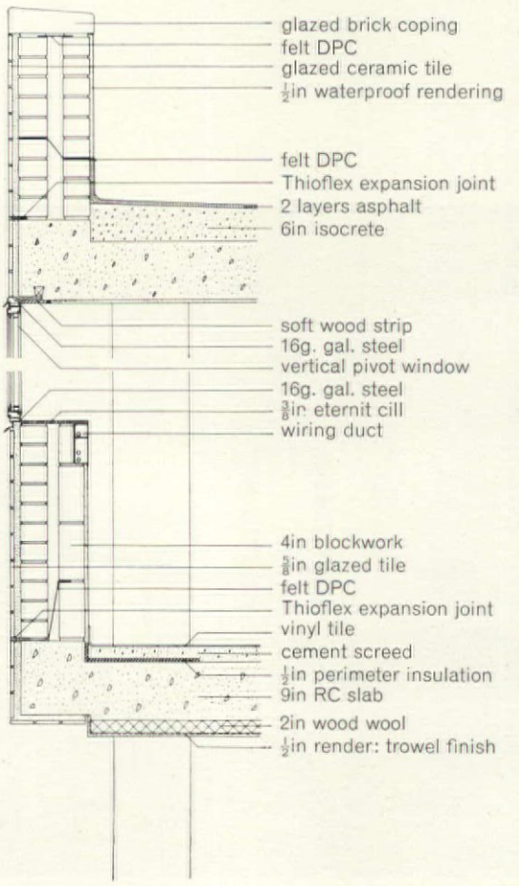
▷Page 465

1
View of the southern end of the main building

2
View of the junction between the office blocks and the escape stair at the southern end of the building

3
Detail of external walling

4
Detail of the junction between the escape stair, corridor, windows and office walls at the north end of the building



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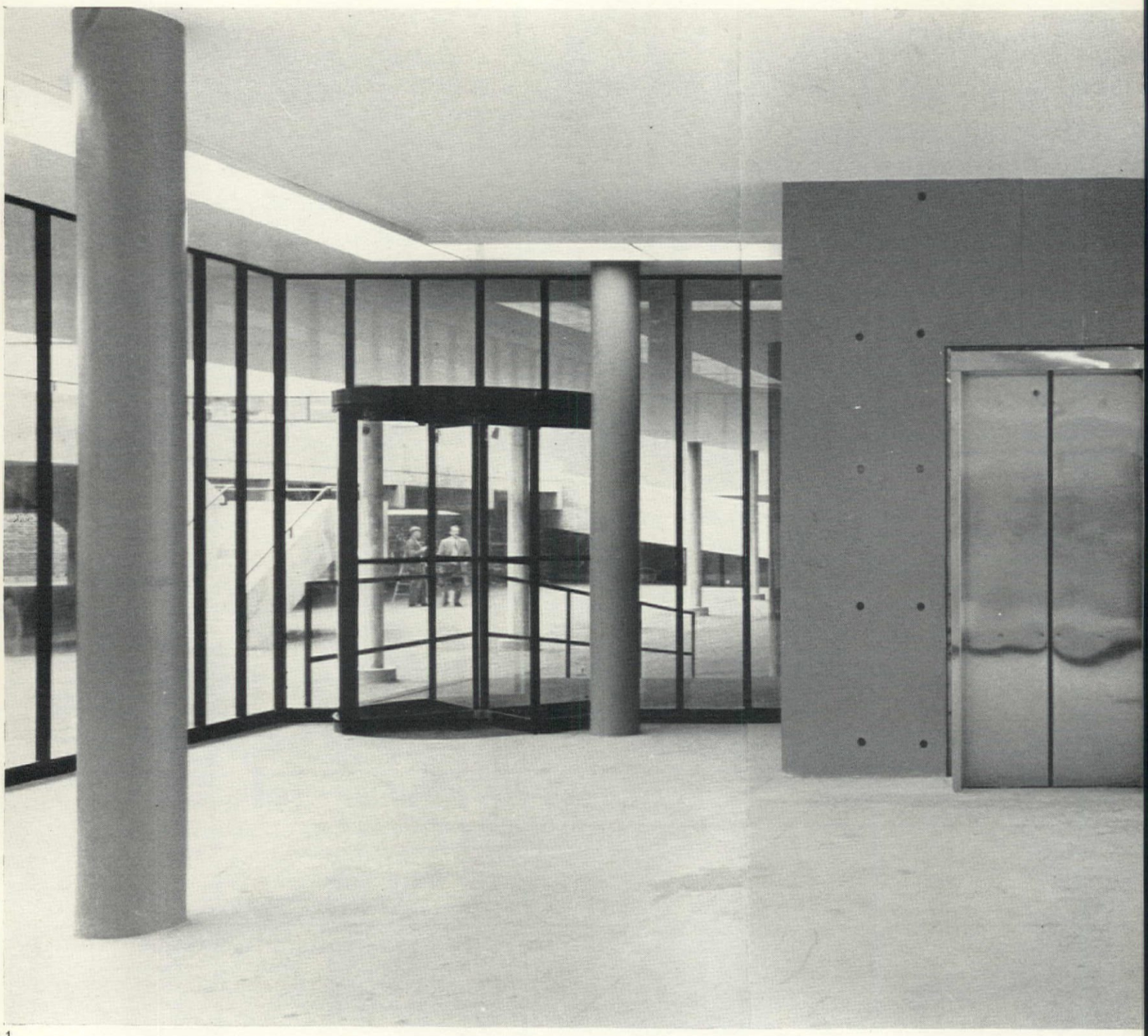
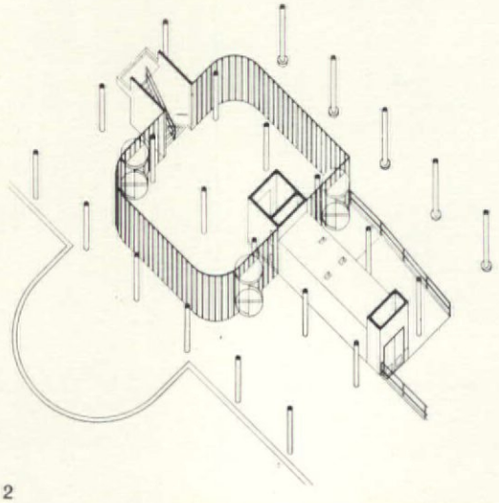


1

◁Page 463

breeze block, clad externally in white glazed tile finished flush with the window surface, and plastered internally. Lavatory walls are clad in white glazed tile up to clerestorey level with services concealed. The continuous clerestorey windows separate all non-load-bearing walls from the structural slab. The general glazing module is 4ft 0in, utilizing the maximum size possible with medium universal sections and $\frac{3}{16}$in sheet glazing. Close centred glazing bars are used in circulation areas and also satisfy local authority regulations as to pane size in escape lobbies. All metal windows and balustrades are painted black. Floors are light grey; terrazzo in the entrance hall and on the stairs, vinyl for the office floors, and ceramic tiles in the lavatories.

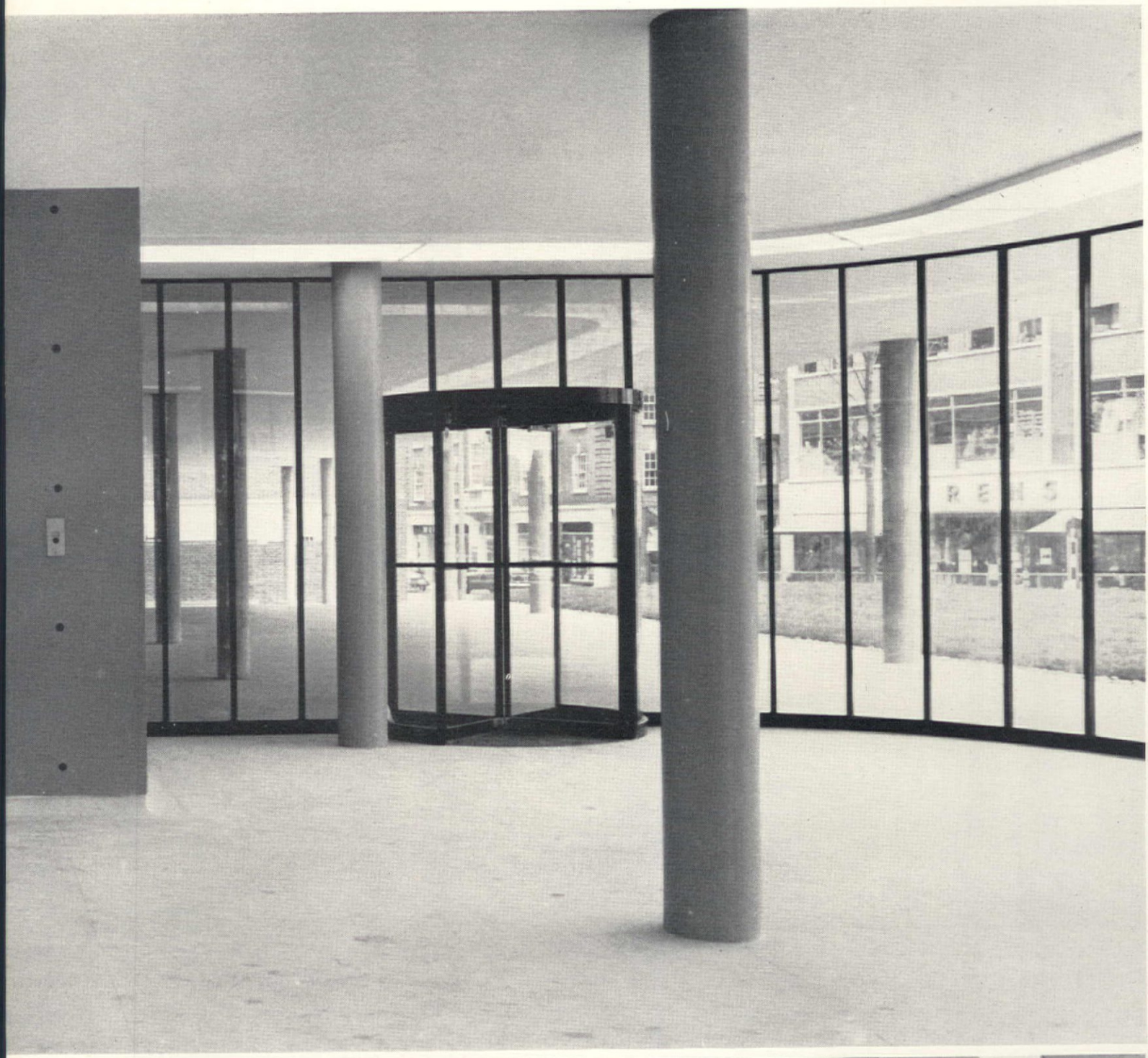


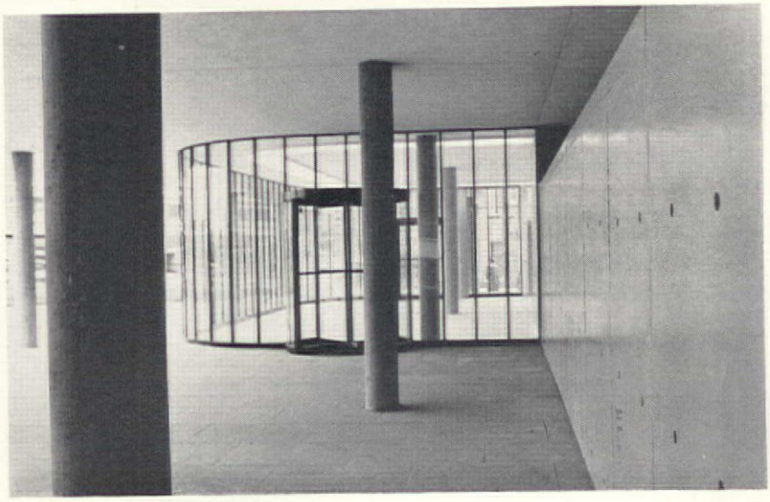
1
View of the entrance lobby

2
Axonometric of the entrance lobby

3
The main entrance and lobby from the approach terrace

4
View of the entrance lobby looking towards the stair





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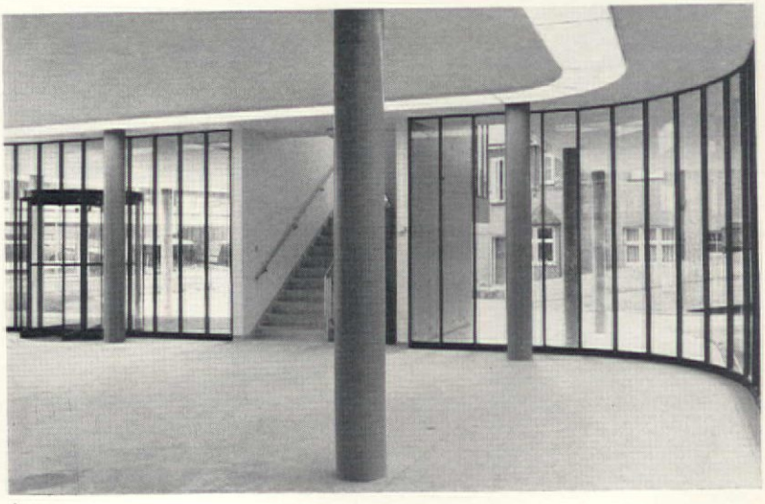

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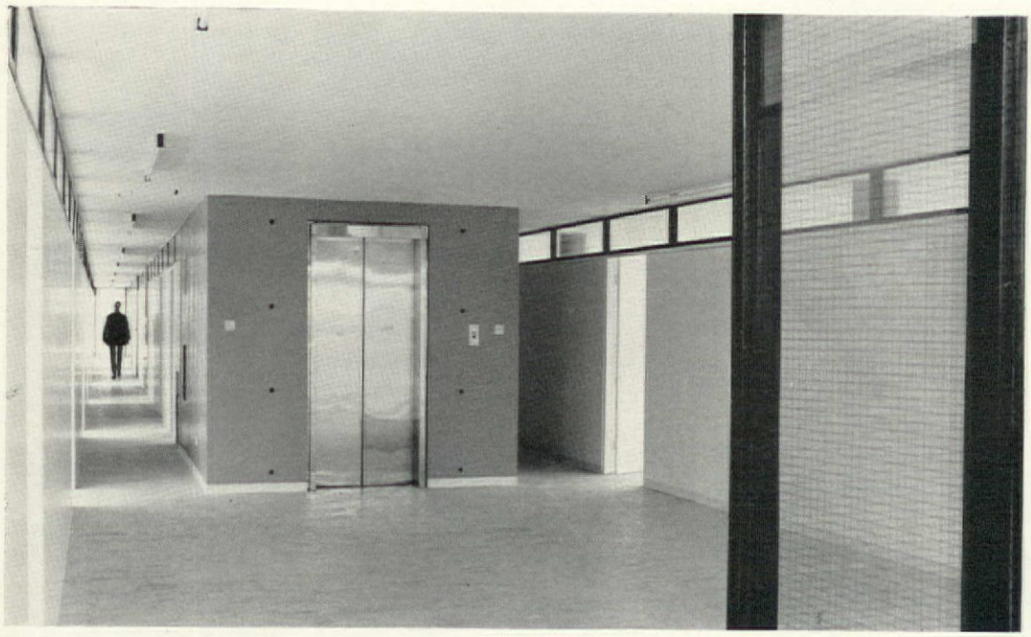

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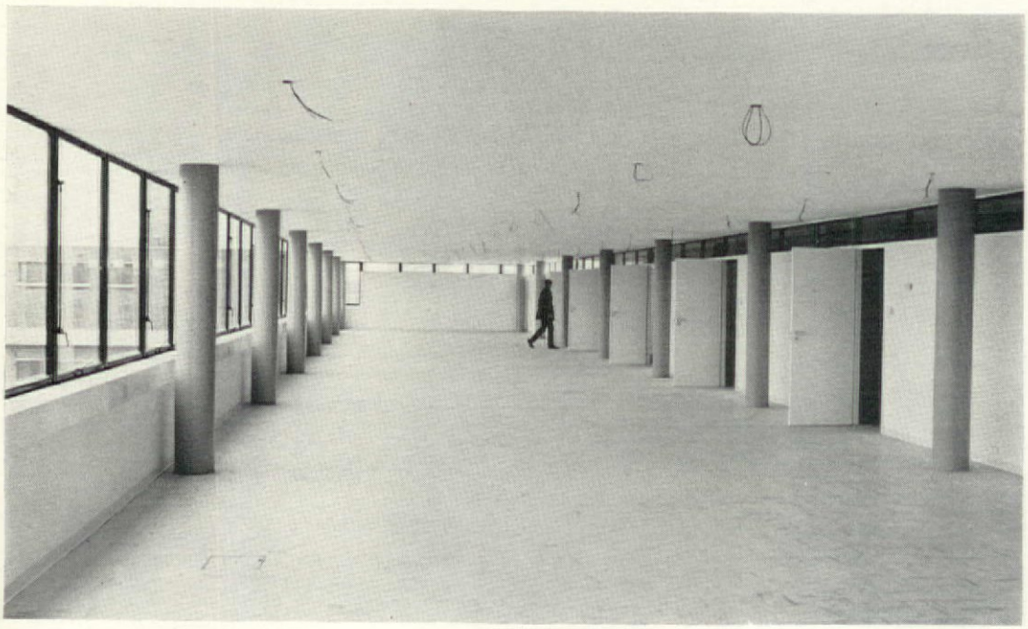

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4

1
The lift lobby and corridor on the first floor

2
The main stair leading off the lift lobby on the second floor

3
Unpartitioned office area

4
Entrance to the women's cloakroom

Code 55→

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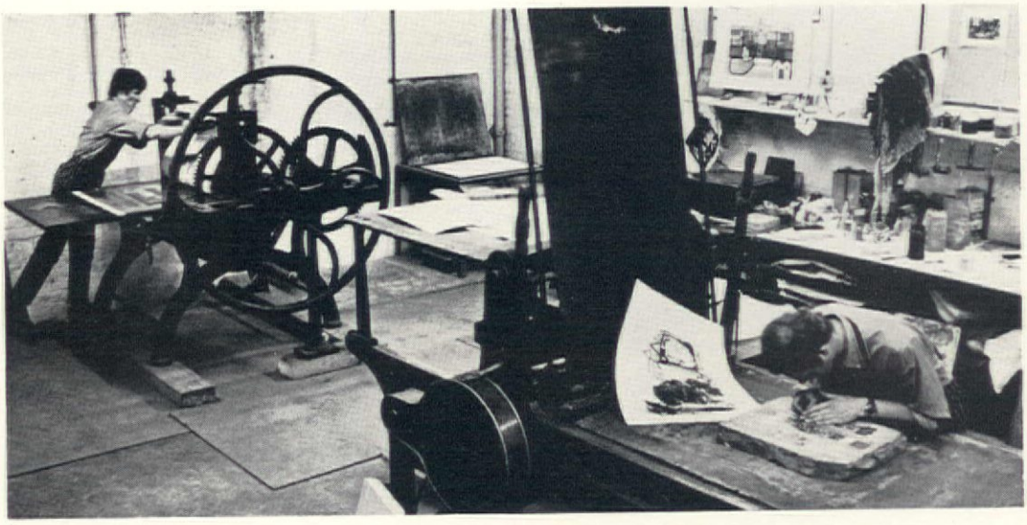


1

In May this year, Editions Alecto published 65 portfolios of 12 screen prints, in numbered and signed editions, by Eduardo Paolozzi, entitled 'As is when', based on the life and writings of Ludwig Wittgenstein. No. 2 Tortured life *is reproduced to two-fifths of the original size on the front cover of* AD *this month. The screenprints were made by Kelpra Studio.*

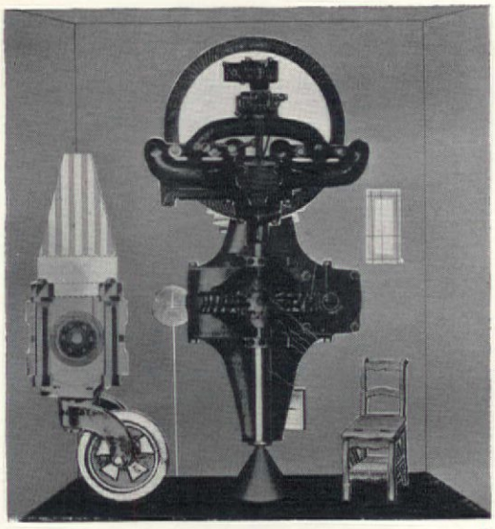
Since Robert Erskine opened the St George's Gallery Prints in Cork Street in 1955, the print movement in England slowly began to gather momentum. His series of annual exhibitions under the title of The Graven Image became a landmark in the development which more recently has taken an even more surprising turn. Erskine not only organized print exhibitions on an unprecedented scale, he also made two films about the processes of print making, one of which The Artist's Proof was shot in 1956–57. Already in the shows held during the late fifties one noted the departure from small black etchings in large white mounts, although the range, from the kitchen-sink school figuration to Stanley Hayter's abstraction, had little or nothing to do with the avant-garde. The print shows during the late fifties faithfully reflected the art situation at the time, although it was quite noticeable that very few of the younger and more adventurous artists were among those exhibiting. In their eyes the medium of printmaking belonged to tradition rather than new trends. The situation, however, has altered quite radically during the past two years. If one looks through the catalogue of the 1959 Graven Image show at Whitechapel and compares it with that of the Graphics in the Sixties at RWS in 1965, what becomes immediately noticeable is that none of the artists taking part in the first show are included in the second. The vitality of the 1965 exhibition was primarily due to the fact that it embodied all the essential qualities of the more exciting developments in contemporary art.

The first impetus towards this new development was contributed by the ICA print project which was conceived by Richard Hamilton towards the end of 1962. Twenty-four artists were invited to make screen-prints in collaboration with Chris Prater at Kelpra Studio. For many of them it was the first introduction to screen printing. The variety of surfaces, textures and nuances available through the advance of halftone screen printing methods opened up considerable numbers of possibilities. One of the main reasons, however, which was instrumental in fostering their interest and enthusiasm was the sort of collaboration with Chris Prater himself, which enabled artists like Kitaj **3** and Paolozzi **2** to work from sketches and notes, rather than by giving the printer a finished work to copy.

Chris Prater, who had done commercial screen work for 25 years, first produced some prints for Gordon House in 1960. Two years later he printed Paolozzi's book *Metafisikal Translations*, and also started doing some work for Richard Hamilton. Prater believes that the concept of the artist-craftsman is precious and outdated. In the same way that Paolozzi makes use of the technical skill of engineers in making his welded aluminium sculptures, and Tilson and Pasmore employ professional carpenters, there is no reason why the artist should not avail himself of the services of a skilled printer.

Many people still confuse the screen-printing process with that of reproduction, although in the majority of cases (and certainly those discussed here) this is not justified. Paul Cornwall Jones, the director of Editions Alecto, has referred to screen prints, as well as lithographs and etchings, as multiple originals, and this is very much more to the point. In the case of lithographs the artist prepares the stone; in the case of etchings he incises a metal plate; and with the stencil processes such as screen printing, the printer collages various images on the screen under the supervision of the artist. The actual composition may be conceived in the form

▷Page 469



1 2

1
Editions Alecto workshops

2
Metalisation of a Dream/screen print

3
Photography and Philosophy/screen print

3

Paper sculpture by Bruce Angrave—H.D. Vinyl tiles by Marley

Proud...

with good reason, the peacock is determined to show its advantages. So is Marley H.D. Vinyl flooring. One rarely finds a floor that combines such good looks with such extraordinary strength.

H.D. stands for Heavy Duty—a name that conveys only part of its character. For this 12″ x 12″ tile is a product of Marley's unrivalled experience in flooring. It is designed to provide the greatest possible resistance to abrasion and indentation—stiletto heels are no longer a problem. It has a distinctive marble appearance with a satin smooth finish, and is available in a range of attractive architectural colours. Easily maintained in clean, fresh condition, it effectively resists dirt, oils and grease. Produced by Marley regardless of expense, yet far from expensive. A remarkable combination of art, science and industry.

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Included in the Barbour Index File

◁Page 468

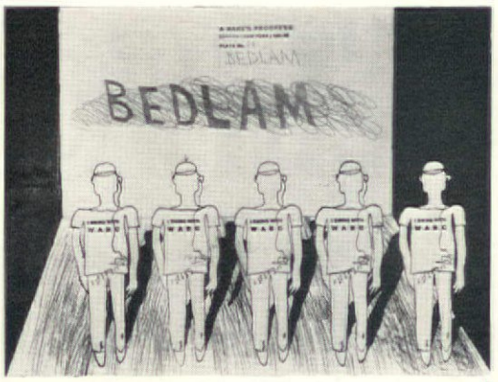
of a scribbled drawing with various notes, and the final result is achieved through discussion, experiment and correction in which both the artist and the printer take part. In this particular instance there is no original as such, and the work simply evolves during the printing process which varies in complexity according to the demands of the artist. To print an edition of 50 may take any time from two days to one week. Prater has made as many as 16 colour separations for particular prints, such as that by Gwyther Irwin which he did for the ICA project, although this is an exception rather than the rule and the more usual number of colour separations is between six and eight. In the case of Paolozzi's Wittgenstein suite (No. 2, *Tortured Life*, is shown on this month's cover), entitled 'As Is When', Prater has worked with 88 colour permutations so that every set is different.

The usual edition numbers between 50 and 70 prints, although there is no technical reason why one should not print 500 or 5000. The notion of scarcity value is still a strong motive in keeping numbers down, and the fact that one would be able to buy a print for £1 instead of £30 still does not appear to be a sufficient reason for increasing the size of the edition. In the first place there might not be the demand for 500 copies of the same print, and secondly quality and originality are inextricably associated with certain minimum price. Psychologically the difficulty of relating low price with quality still persists.

The prices of prints vary considerably. For the ICA print project, which included the work of Kitaj, Paolozzi, Bernard and Harold Cohen, Richard Smith, David Hockney, Peter Blake and Victor Pasmore, there was a uniform price imposed of 10 gns. Marlborough who started their print department in December 1964 and who make editions of 30 to 70 prints, have a price range of £10 to £50 per print. They commission artists to work on individual, or series of, prints, using Prater for screen, Curwen for litho, as well as printers abroad. Among artists who have done prints for them are Kitaj, Tilson, Ceri Richards, Kokoschka, Sutherland, Pasmore, Hundertwasser, Moore, Richard Lin and Max Bill. Where an artist does a series of prints, the first five sets are usually sold with an original design or drawing, the following 15 are kept in complete sets, and the rest are sold individually. During their first exhibition of prints, three times as many were sold as was expected and during the past few months the Marlborough print department has expanded considerably.

The most ambitious print concern in London was launched by Editions Alecto founded in 1960. Three years later they opened a gallery in Holland Street, where their first exhibition consisted of Hockney's Rake's Progress. A year ago Editions Alecto acquired a builder's yard in Kensington which is being reconstructed to make workshops, studios in which artists can work in all types of graphic media with technical help, as well as living accommodation for artists coming from abroad. Alecto are more concerned with printing, publishing and distribution than retailing. So far among the artists working with them are Hockney, Bernard Cohen, Richard Hamilton, Alan Davie, Allen Jones, Howard Hodgkin and Eduardo Paolozzi. Plans are going ahead to print work by Noland and Lichtenstein in the autumn. Although the ceiling price for a print by a British artist is about £50 at the moment, those by American painters like Jasper Johns are extremely high by comparison.

Page 470▷



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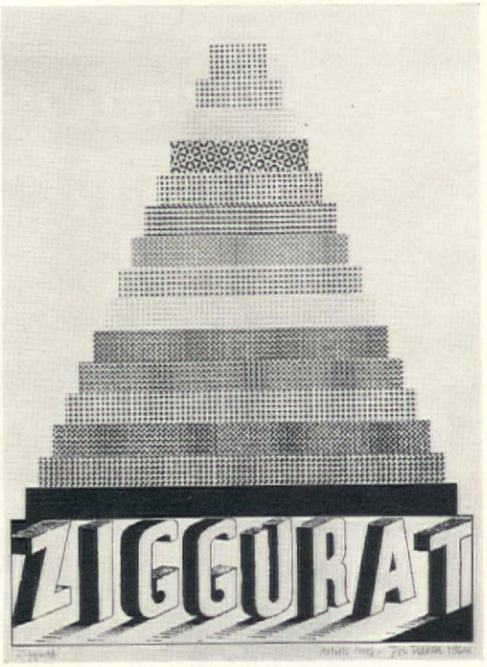

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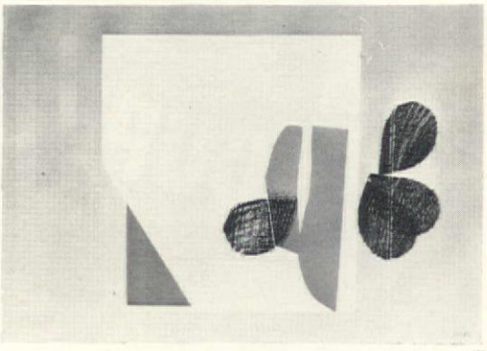

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4
David Hockney/*Bedlam*/etching

5
Joe Tilson/*Ziggurat*/screen print

6
Allen Jones/*Concerning Marriage*/lithograph

7
Howard Hogkins/*untitled ICA*/screen print

8
Chris Prater at Kelpra studio
Photo: Christopher Impey

8

←Code 57

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H24-1

◁Page 469

Prints by Johns, Rauschenberg and Sam Francis are £100 each. Whereas the graphic work of American artists tends to be in a higher price bracket, that of German and French artists is slightly lower than that of British artists. At the moment there is no international price scale that would apply logically to all types of prints, but it is probably true to say that when only a few prints remain in an edition, the price tends to increase.

So far prints have been confined to a flat surface and paper. The situation, however, is changing at this very moment. Joe Tilson, for instance, is working on a series of three dimensional screen prints on metal coated plastic. The mould is made by vacuum forming through heat and suction, and after the images have been painted the plastic is flattened by a reverse process so that the screen can be made. Richard Smith also has a project for making three dimensional free standing prints although the method of producing these has not so far been decided upon, and Paolozzi has also considered the possibility of using screen printed images on one of his sculptures. From this one can see that the sort of limitations that one has always associated with the print medium no longer apply, and there is no reason why in the very near future one should not walk into an exhibition of sculpture and find that all the exhibits are in fact prints.

Print making techniques

Wood-cuts, wood-engravings or relief processes

The basic principle of relief processes is that of cutting away part of the surface of a flat block, so that the desired pattern or image remains in relief to provide a printing surface.

Intaglio processes—engraving, etching, aquatint, mezzotint, drypoint

This is an opposite process to relief printing, and here it is the lines or surfaces which are etched out or cut away from the plate carry the ink. The plate is a metal one, usually copper.

Lithography

This process is based on the natural antipathy of oil and water. The image is made on the stone (or specially granulated zinc plate) with greasy crayon or ink. The texture of the stone allows the water to adhere to it in an even film, except where the grease has been applied. When an inked roller is applied to the moistened surface, the ink adheres only to the greasy areas.

Screen-printing and the stencil processes

The basic principle here is that of applying colour or inks to the perforated or cut out sections of the specially treated paper or thin material so that the desired pattern or design comes through the stencil to the surface to be printed.

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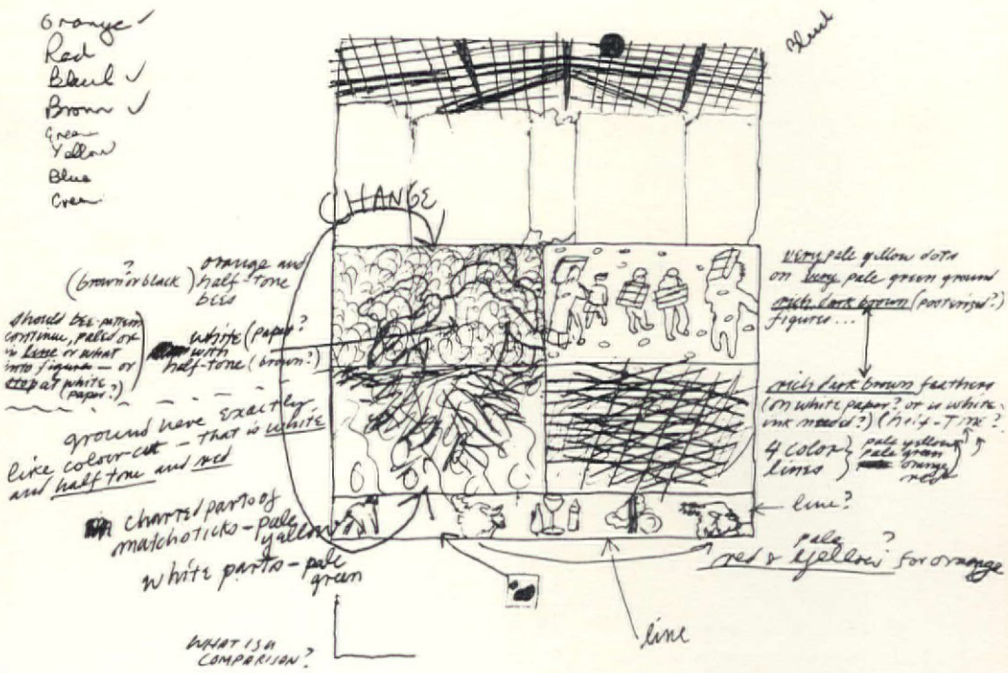

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Chris Prater's progress report on Kitaj's print 'What is a comparison?' 1965

9 & 10
The screen print and Kitaj's sketch and notes

Phase 1

Sketch supplied by artist, indicating composition and colour key of proposed print. Print to be composed of magazine illustrations, collage, and parts of artist's own work (photographs supplied). Stock to be soft white (Crisbrooke agreed on). Width to decide all measurements. Camera work discussed and agreed as follows; top 'roof' section line positive contrast to lose tones on original. Collage section of book jackets, colour reverse and straight line positives. Burnt matches to be same size as original, original half tone dot used on line positive. Black and red image, being smallest image to be enlarged to determine depth of remaining four images of centre bottom section, line colour separation positives. Dotted background. Colour reverse line positive to allow light dots on dark ground. Battle scene, strong contrast line positive enlarged from original, landscape to be eliminated. Beehives, original halftone dot would be too large and destroy image if enlarged, image put slightly out of focus and re-screened. Sculpture image enlarged to visual proportions on sketch, half tone positive for previous reason, beehive to be eliminated entirely over sculpture. Small section of chicken's wing masked by artist enlarged, put out of focus and re-screened. Grid to be used over this section. Bromide enlargement to allow hand cut positive colour separations and sharpness of lines. Small sketches at bottom to be enlarged to give visual evenness of spacing.

Phase 2

Camera work completed—complete colour separation positives made on hand-cut positive film and photographic elements collaged on. Artist checked position and colour separation of positives. Minor corrections to top edge of book section. Stencils prepared.

Phase 3

Proofing colours and density of inks agreed—beehive section to be continued over sculpture in background colour (extra printing).

Phase 4

Edition printed. Positives, stencils destroyed.

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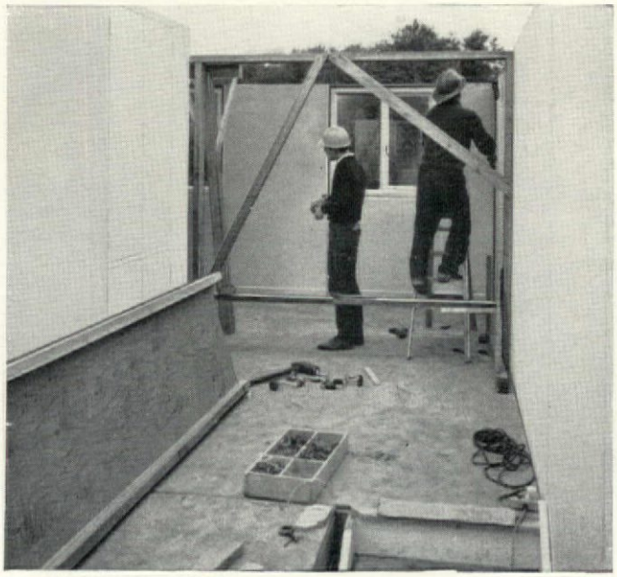

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Party wall stud framing in C.L.S. with roof panel being lifted into position.

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Design

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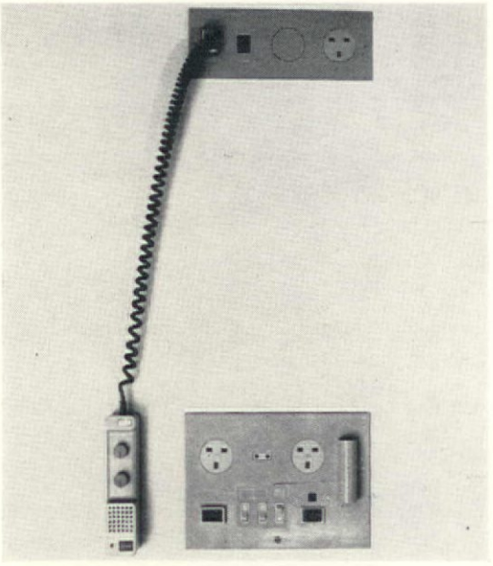

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4

Town run-about 1

Stuart Smith, during his student period at the Royal College of Art, designed a 2-seater town run-about*, economical in both initial and running costs, which fulfils a similar role to a scooter but adds weather protection and greater luggage carrying capacity. Transparent blinds can be pulled down if required. Not only is parking easy but the car can be lifted by the front and moved like a wheelbarrow. It can be stored standing vertically on its rear end, with its superstructure folded flat or removed, and a plastic bag right over it.

*See also *AD*, July 1965, page 364

Hospital furniture

Bedside locker/overbed table 2

Designed jointly by students Timothy Coward and George Lynn, the locker unit was one aspect of an inter-departmental project at the Royal College of Art which was intended to provide a modern context for a general purpose hospital bed developed by the Hospital Equipment Group working at the Royal College of Art.

It was decided to combine the locker and table in one unit because (1) in use the locker and table share certain basic requirements; (2) to accommodate the height adjustment of the bed both locker and table should adjust in height by a common mechanism; and (3) by sharing a common structure and components, it is possible to increase the function in proportion to cost, and the unit is more compact and mobile.

The unit has a laminated plastic top surface which tilts about its longitudinal axis, and a laminated plastics/sheet steel storage unit which rotates about its central axis. The storage compartments within it are vacuum formed in rigid PVC and rotate separately for access. Height adjustment is by tensator springs housed in the central vertical column. Provision is made in the top surface for locating flower vases and/or ashtray.

Nurse call and ward service system 3

A. P. Smallhorn designed the system for use also with the general purpose hospital bed. It consists of three main parts: patient handset, a wall-mounted socket outlet panel, and a nurse control panel. The patient handset will clip to the table/locker unit, to the bed, or to the wall when not in use; or could be left in bed with the patient. It provides: (1) a nurse call button, which is self-illuminating to show that a call is in the system; (2) a loudspeaker/microphone for communication with the nurse station; (3) an entertainment system consisting of a programme selection switch, a volume on/off switch, and a socket outlet for stethophone earphones. The loudspeaker can also be used; (4) a patient control for the reading light.

The unit would be injection moulded in two sections in polypropylene. The halves snap together so that there are no visible fixing screws. All electrical parts are carried on a separate aluminium chassis, and are low voltage operating solenoids where necessary. The unit plugs into the socket outlet panel through a sprung cable and multipin plug.

The nurse control panel contains: (1) a thermometer holder; (2) a nurse call button, and patient telltale. (When a patient presses the nurse call button on the handset the telltale is illuminated. This stays on until either the call is answered from the nurse station, or the nurse call button is pressed. This a nurse does every time she attends a patient. The light is cancelled and the system cleared for the next call by repressing the nurse call button); (3) an emergency push to call assistance; (4) a set of control switches for the ward lighting; (5) 13-amp socket outlets and a 2-amp razor socket. The panel would be finished in Portland grey and be a plastic coated mild steel. It hinges forward for servicing.

Rigid polyurethane foam chair 4

David Taylor, final year student in the Royal College of Art's department of furniture design, has been experimenting with rigid polyurethane foam to make a hospital bedside chair that can be wet sterilized daily. We quote his description of the manufacturing process:

"The proposed design employs a single moulding of the foam (RPF), of 15lbs per cu ft density, and has an integral moulded cushion of flexible polyether foam. The manufacturing process would commence with the production of a wooden facsimile chair (complete with a removable section which would occupy the space later to be filled with the flexible foam seat pad), around which RPF would be foamed. The wooden chair would then be removed from the block of RPF, leaving a hollow four- or five-piece mould of the chair. After coating with a release agent, the mould would be reassembled with the removable wooden upholstery section in place. RPF would then be foamed into the mould and allowed to cure. The wooden section would then be removed and flexible polyether foamed into this area whilst the chair remained in the mould. After removal from the mould, a vacuum formed plastic seat cover would be attached to the chair and the body of the chair sprayed with PVC paint.

By using RPF, tooling costs can be considerably reduced and replacement moulds can easily be made from the original wooden chair."

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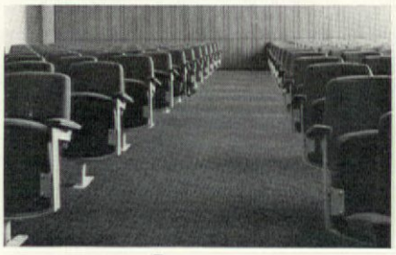

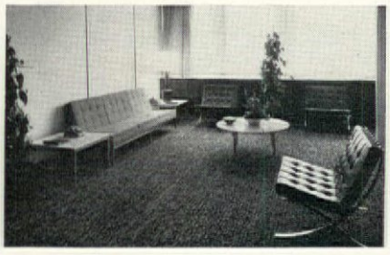

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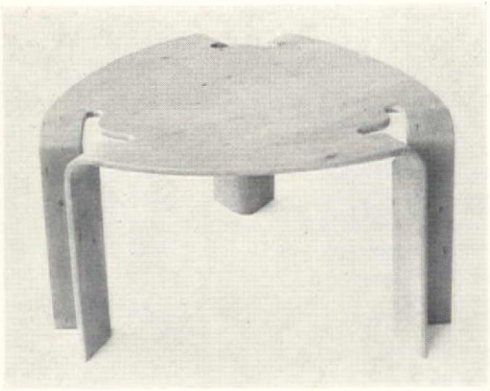

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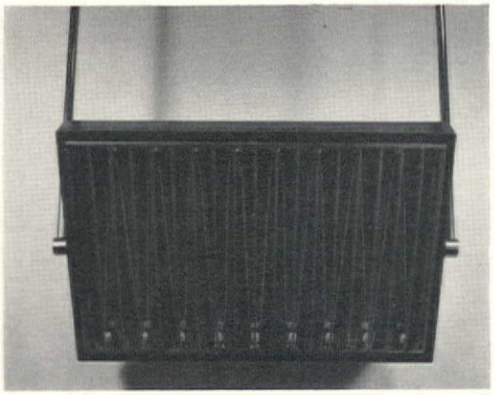

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◁ Page 471

Moulded ply table 5

Experimenting with moulded laminated beech RCA student David Taylor (see **4**) made a low table veneered with yew. Each of the legs is V-shaped in cross-section, split and formed at their tops to joint on to the top with two solid yew loose tongues in each wing.

Tape heater 6

Another versatile RCA student, Stuart Mason, has used a high resistance metal tape as the element in an experimental heater. Full heat can be obtained in 2–3 seconds, as the element is air-spaced and therefore has to overcome only its own thermal capacity. The tape glows bright orange at normal working temperature.
The body, reflector and grille of the heater are stamped and folded, and are designed in such a way that the same tools could be used to make any length of heater; the capacity of this one is about 2Kw.

'Concourse' for Gatwick 8

Both Gatwick Airport's building phases have spawned a special Robin Day/Hille chair. The more recent, called 'Concourse', has abandoned the right angle and the low ample proportions of the very popular 1958 design **7** , and gone over to curves, coupled with straight chrome-plated tubular legs ($1\frac{1}{8}$in diam). The mixture seems to have developed from Robin Day's '41' dining chair, made more comfortable by deepening and fully upholstering the back and arms and round ing the seat to match. The upholstery is foam rubber over springs (rather skimped on the seat). With a cover of black plastic material the cost will be about £75. There is also a three-seater matching settee, and a 4ft coffee table with white melamine top edged with black.
41 Albemarle Street

Lecture theatre seating 9

Though F. H. Taylor's lecture theatre chair for Horace Olaf Ltd is more clumsily designed than the Peter Dickenson/Race Contracts chair (*AD* October 1964, page 531) it is 16 per cent cheaper, costing about 10 guineas including installation. It, too, closes up completely flat, and has optional additional arms, shelves, modesty panels and ashtrays.
The framework is laminated wood, with high duty alloy holding-down plates and a steel chair mechanism. The seat and back are foam upholstered, and covered with a washable fabric with high resistance to abrasion, staining and soiling. Dimensions are $27\frac{1}{2}$in high, $18\frac{5}{8}$in wide, $4\frac{3}{4}$in deep when closed. Seat depth is 14in.
First Avenue, Queenborough, Kent

8

9

10

Cheap and quick 10

Low price and quick delivery are unusual qualifications in the furniture world these days, which is why we show Cox and Watford's latest typist chair, the 'Fiona FL 25', which meets all the normal performance standards and is handsome, yet sells for under £8, with a delivery of 7 days.

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Published by the
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Trade notes

Alexander Pike

To obtain additional information about any of the items described below, circle their code numbers (D1, D2 . . . etc.) on the Readers' Service Card inserted elsewhere in this magazine.

D1 Panel radiator 1

Steel Radiators Ltd., Stelrad Works, Bridge Road, Southall, Middlesex

An improvement on the Standard range, Stelrad Super radiators have ribs at narrower pitch, reduced headers and shallower depth. Supplied in a stoved primer finish, individually wrapped. Prices per sq ft of heating surface, 5*s* 6*d* for 17in, 23in and 29in heights, 6*s* 4*d* for 12in height.

D2 Memorandum on fences

Central Electricity Generating Board, Sudbury House, 15 Newgate Street, London, E.C.1

A miniature textbook giving detailed information on the design and siting of fences for all purposes. Free, well designed and worthy of bookshelf space.

D3 Anti-vandal sanitary fittings

Twyfords Ltd., Stoke-on-Trent, Staffordshire

A new range of WC suites, basins and urinals, although specially designed to reduce the possibility of vandalistic damage, incorporate features that contribute to heat installations in any situations. Waste outlets, cisterns and service and flush pipes are concealed behind walls, and foot-operated controls for basins and WCs are available.

D4 Flexible flue lining

Bowater Flexpipe Ltd., Ellesmere Port, Wirral, Cheshire

Suitable for new or existing gas central heating systems, the three-ply lining consists of an inner layer of lead, a middle ply of lead-coated steel, and an outer layer of aluminium. Available in 4in, 5in and 6in internal diameters, capable of working to minimum radii bends of 10in, 12½in and 15in respectively.

D5 Solid fuel heating unit 2

F. H. Biddle Ltd., 16 Upper Grosvenor Street, London, W.1

The Colomair provides in one unit, radiant heat from a glass-fronted source in the living room, warm air distribution to other rooms, and domestic hot water. Factory assembled with all internal plumbing, it requires only the connection to electrical supply and to water supply and draw-off points. Output 7300 BThU radiant, 18,000 BThU warm air.

D6 Decorative plastic mesh

Spicers Ltd., Specialities Division, Langston Road, Loughton, Essex

Figured Netlon, an integrally extruded high-density polythene mesh, is available in two mesh patterns in white, ebony, pearl and ivory. Rolls 18in × 50ft or 24in × 50ft. Price 1*s* 3*d* per ft².

D7 Cloakroom fittings 3

Brunswick Metal Windows Ltd., Glenfrome Road, Bristol, 2

Suitable for use in schools, gymnasia, swimming baths, etc., the Brunswick fitting can include seating, shoe baskets, back rests and coat separators. Square section steel frames support hardwood facings on which are mounted aluminium hooks.

D8 Ceiling tiles

British Gypsum Ltd., 15 Marylebone Road, London, N.W.1

D+ tiles consist of ½in plasterboard with a vacuum-formed PVC veneer on the face and aluminium foil on the reverse. The edges are bevelled, and secret fixing methods may be employed. Prices from 15*s* 3*d* to 20*s* per yd², according to quantity.

D9 Dual purpose light fitting 4

Plus Lighting Ltd., 2 Patshull Road, London, N.W.5

The Plus-Lamp is an inexpensive fitting that can be used as a desk and table lamp or as a wall lamp. The cylindrical shade rotates through 360°. Price 25*s*.

D10 Danish lighting fittings 5

Nina Breddal Ltd., 5 Newburgh Street, London, W.1

The Fog and Morup range of high quality light fittings is covered in a comprehensive catalogue. Golf, the type illustrated, is priced at £18 4*s* 2*d*.

D11 Audio visual venetian blind

Ventolite Venetian Blinds, Kettering Road North, Boothville, Northampton

The Dimlite has been specifically designed as a dim-out for use with audio visual equipment whilst still providing the sun shading and light control properties of a standard venetian blind. Ends of slats run in PVC channels with lipped edges. Max. sizes: width 16ft, area 144ft².

D12 Partitioning system

Versatile Fittings (W.H.S.) Ltd., 10 New Fetter Lane, London, E.C.4

The Versi-Wall partition makes provision for fitting lock-on office furniture, shelves, brackets, lighting units, etc. Aluminium framing supports expanded polystyrene cored panels in six sizes from 96in × 29¼in up to 120in × 47¾in.

D13 Glassfibre products

Vega Designs Ltd., 21 Rampayne Street, London, S.W.1

A large range of matching light fittings, small tables, wastebins and cigarette ashstands, all economically priced.

D14 Booklet on fire protection

Fire Protection Association, Aldermary House, Queen Street, London, E.C.4

An excellent publication, lucidly dealing with the nature, effects and control of fire, *Introduction to fire* should assist architects in planning against fire by principle rather than precept. Issued free.

D15 Washbasin 6

Twyfords Ltd., Stoke-on-Trent, Staffordshire

The Albany basin in vitreous china has a large right-hand shelf and deep bowl. Overall dimensions 28in × 16in.

D16 Non-welded aluminium doors

Ajax Aluminium Ltd., Ajax House, Kangley Bridge Road, London, S.E.26

New-Standard doors with specially designed corners eliminating welds are claimed to be much stronger than the traditional welded type.

D17 Adjustable switch fixing grid

EGA Electric Ltd., St Asaph, Flintshire, N. Wales

Providing a new method of fixing a switch or socket to the box, the grid can be fixed after the box has been installed, allowing a wide degree of adjustment. In rigid PVC, fits switches and sockets with BS 2⅜in hole spacing.

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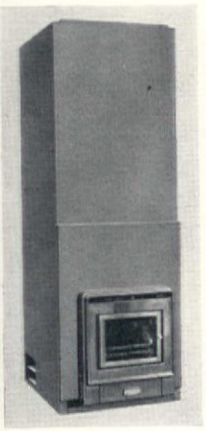

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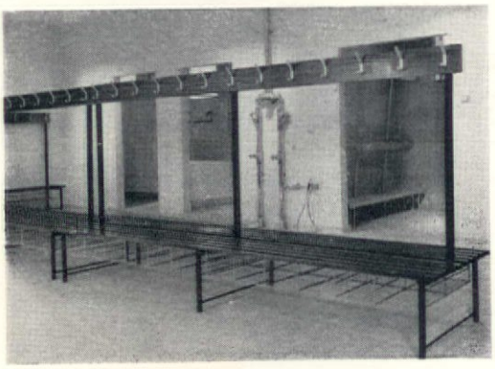

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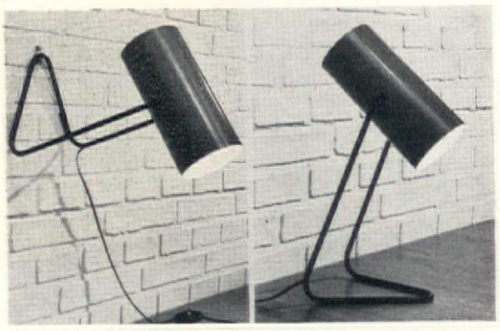

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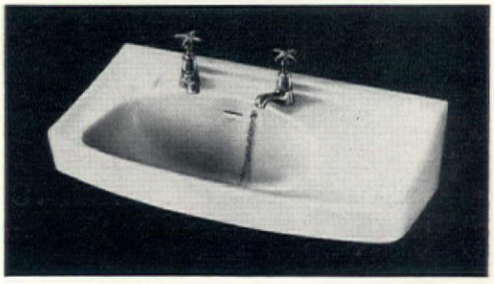

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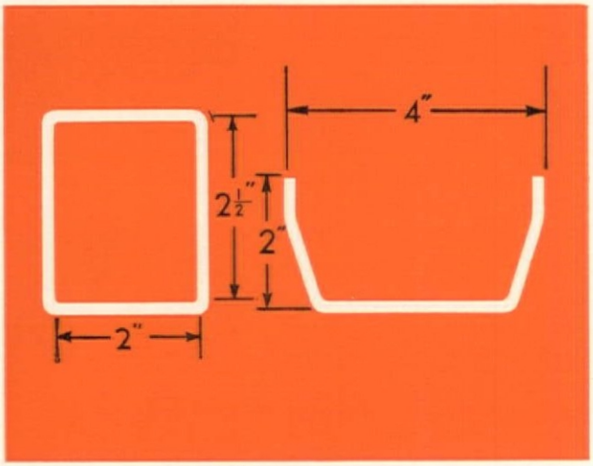

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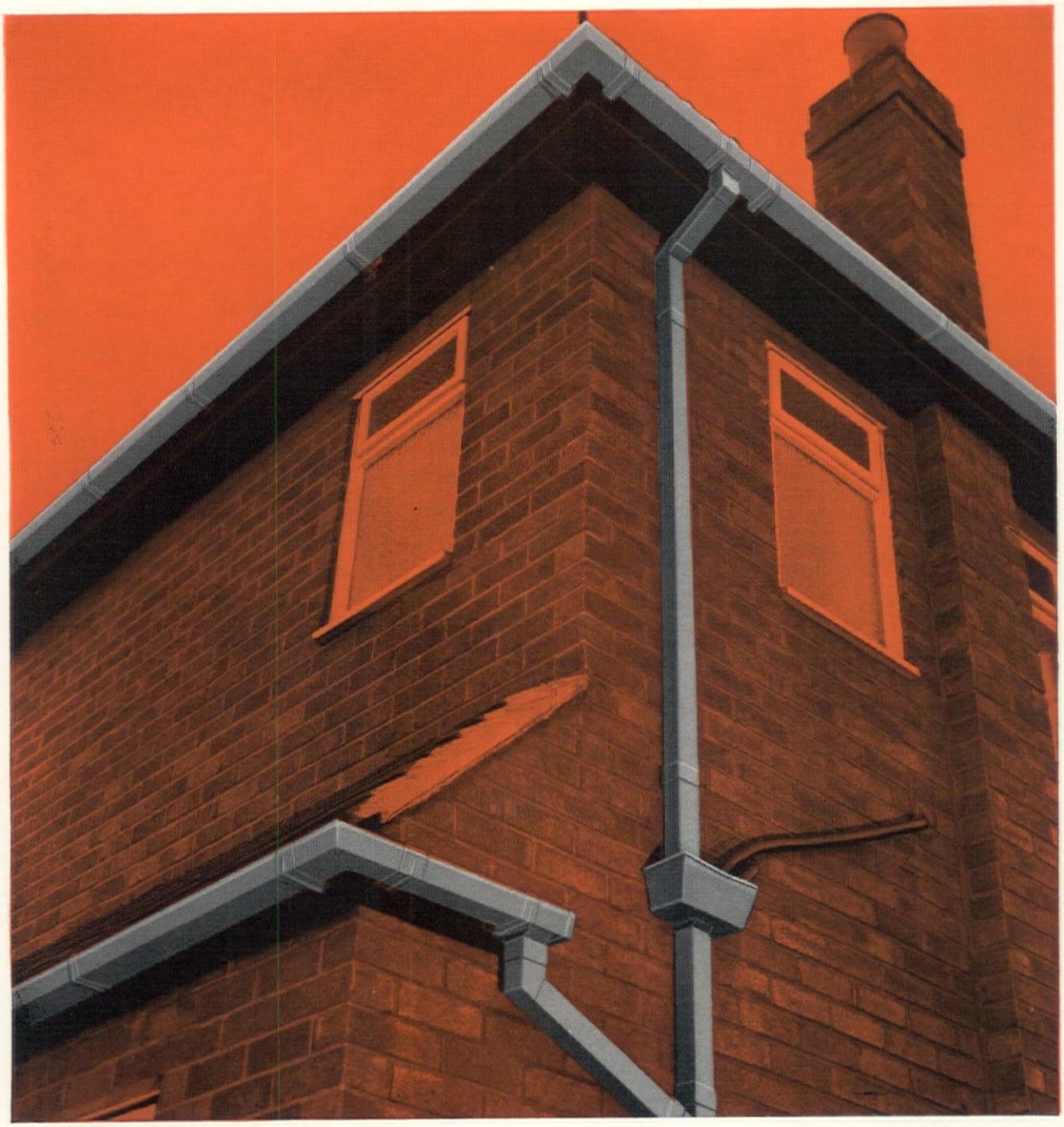
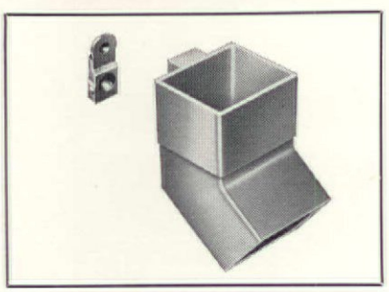
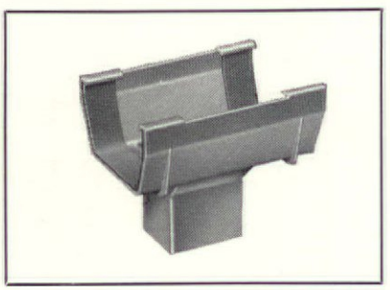
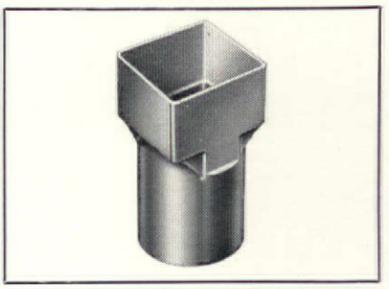




The wall clip is fixed by a masonry pin or screw, and the shoe is placed over it and snapped into position.



The gutter outlet has well radiused corners allowing for a smooth flow of water. This component also acts as a support.



The change piece is used when a downpipe is fitted directly into a back inlet gully, the circular section is cemented into the gully.

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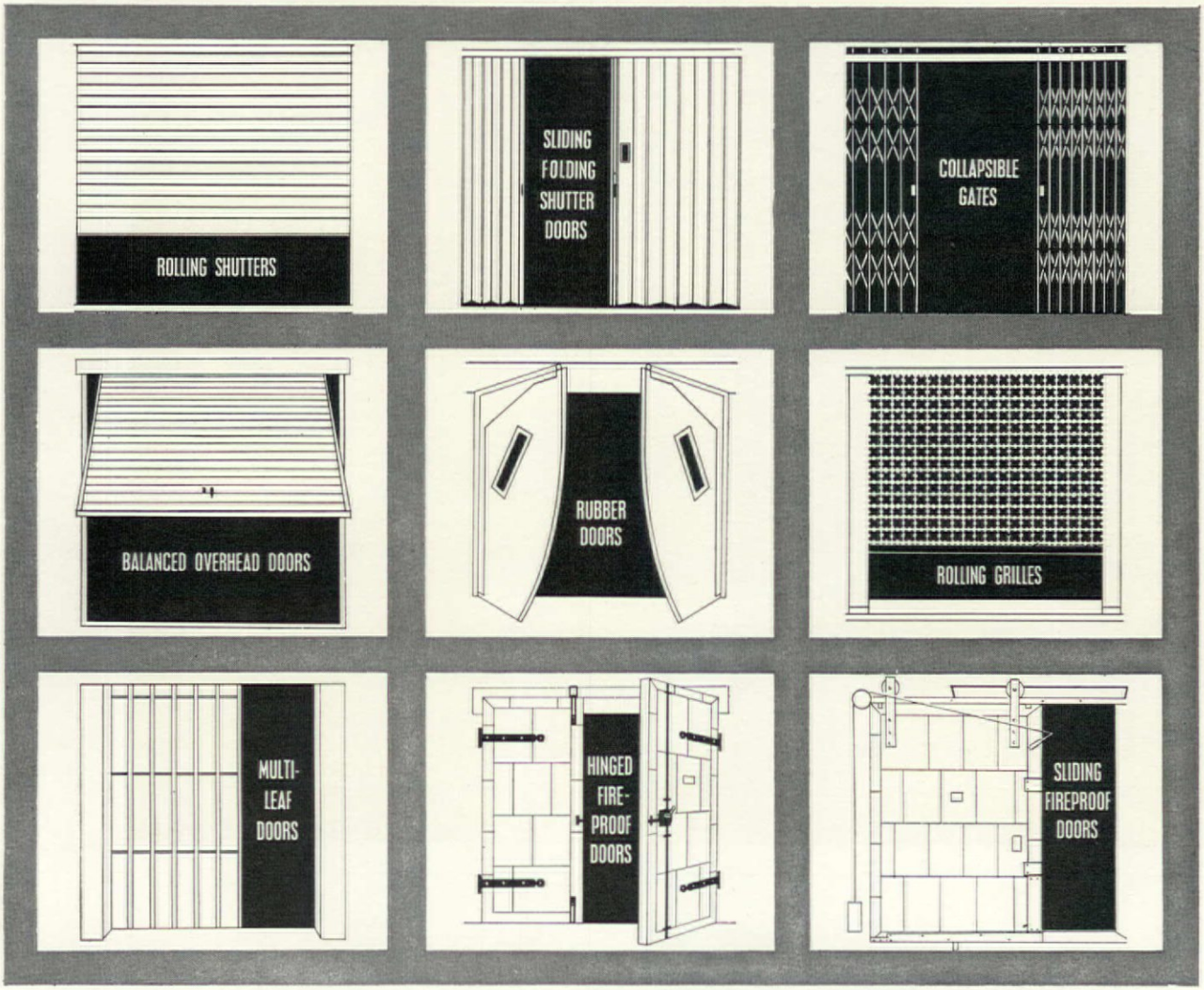

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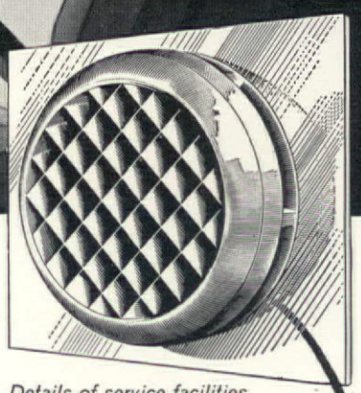

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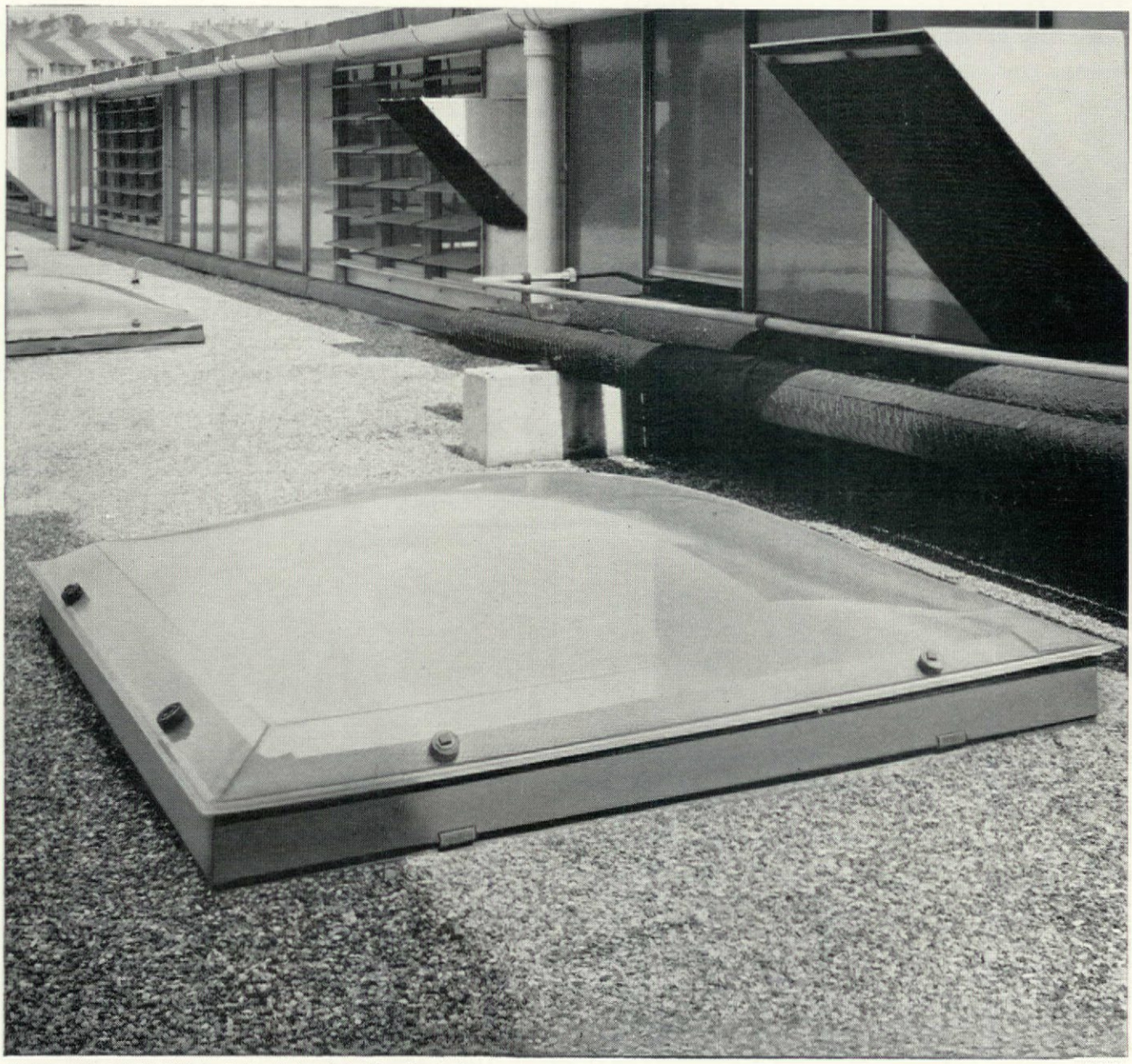

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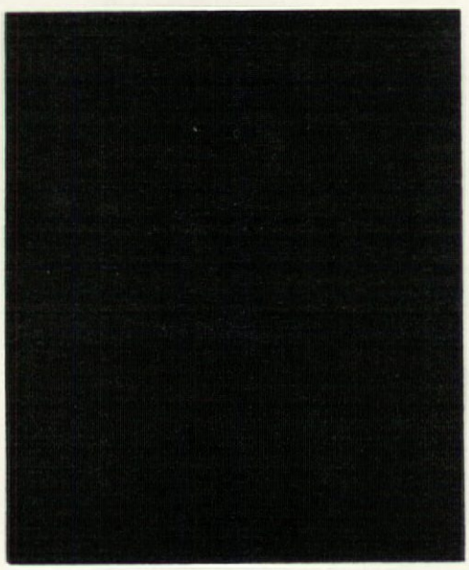
TEAM 10 PRIMER

The Aim of Team 10

Aim of Team 10 has been described as follows:
Team 10 is a group of architects who have sought each other out because each has found the help of the others necessary to the development and understanding of their own individual work. But it is more than that.
They came together in the first place, certainly because of mutual realization of the inadequacies of the processes of architectural thought which they had inherited from the modern movement as a whole, but more important, each sensed that the other had already found some way towards a new beginning.
This new beginning, and the long build-up that has followed, had been concerned with inducing, as it were, into the bloodstream of the architect an understanding and feeling for the patterns, the aspirations, the artefacts, the tools, the modes of transportation and communications of present-day society, so that he can as a natural thing build towards that society's realization-of-itself.
In this sense Team 10 is Utopian, but Utopian about the present. Thus their aim is not to theorize but to build, for only through construction can a Utopia of the present be realized.
For them 'to build' has a special meaning in that the architect's responsibility towards the individual or groups he builds for, and towards the cohesion and convenience of the collective structure to which they belong, is taken as being an absolute responsibility. No abstract Master Plan stands between him and what he has to do, only the 'human facts' and the logistics of the situation.
To accept such responsibility where none is trying to direct others to perform acts which his control techniques cannot encompass, requires the invention of a working-together-technique where each pays attention to the other and to the whole insofar as he is able.
Team 10 is of the opinion that only in such a way may meaningful groupings of buildings come into being, where each building is a live thing and a natural extension of the others. Together they will make places where a man can realize what he wishes to be.
Team 10 would like to develop their thought processes and language of building to a point where a collective demonstration (perhaps a little self-conscious) could be made at a scale which would be really effective in terms of the modes of life and the structure of a community.
It must be said that this point is still some way off.



The object of this Primer is to put into one document those articles, essays and diagrams which TEAM 10 regard as being central to their individual positions.

In a way it is a history of how the ideas of the people involved have grown or changed as a result of contact with the others, and it is hoped that the publication of these root ideas, in their original often naïve form, will enable them to continue life.

The first part of the document —the role of the architect—is concerned with the attitudes which the subsequent project material speaks about in another way. The project material has been roughly grouped into three sections—'Urban infra-structure', 'Grouping of dwellings', and 'Doorstep'. Each of these sections tends to be dominated by one person or group—he or they, whoever developed the root idea—and the complementary or commentary material by others is printed alongside making a kind of counterpoint. The following material is also included.

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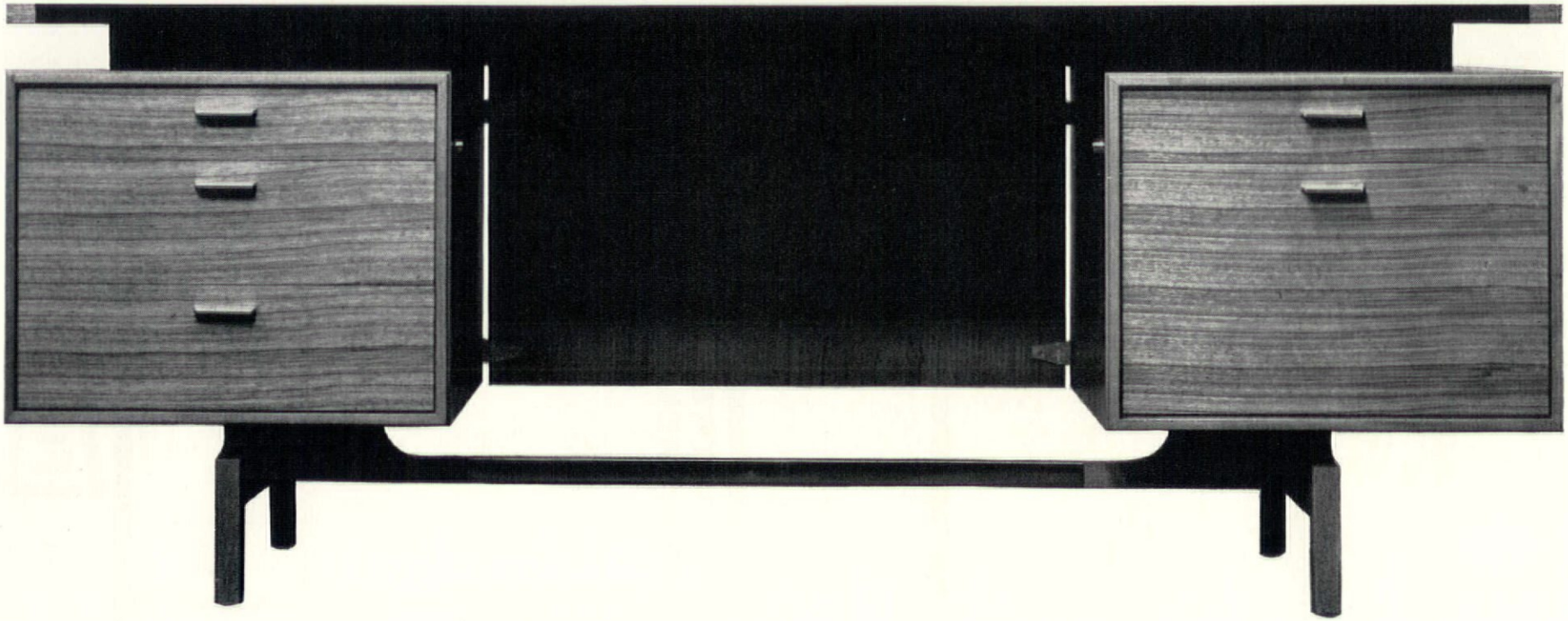

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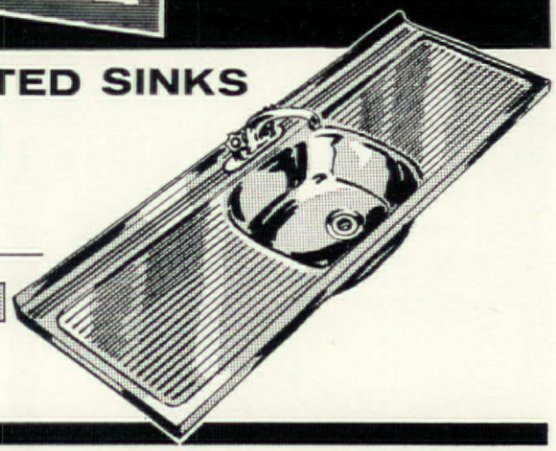

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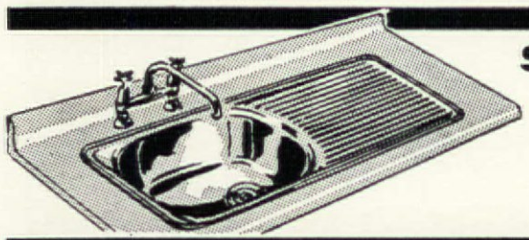

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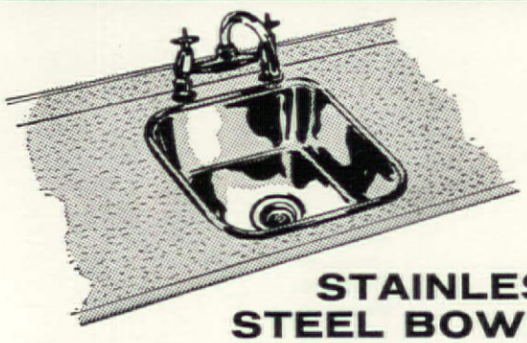

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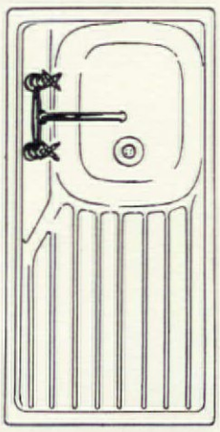

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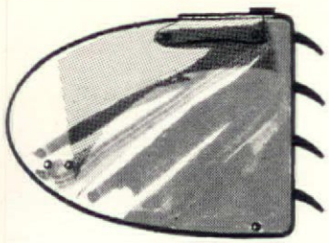

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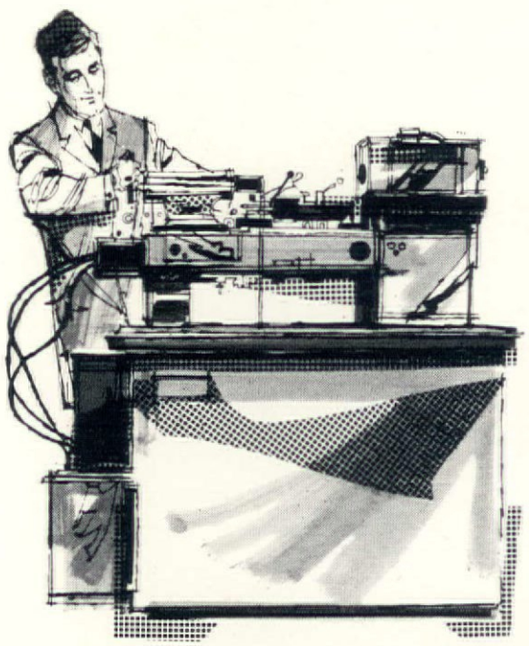

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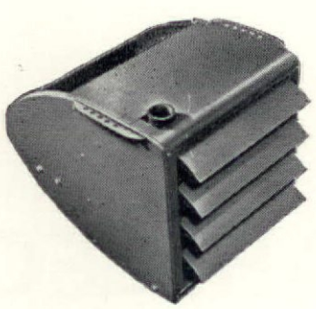

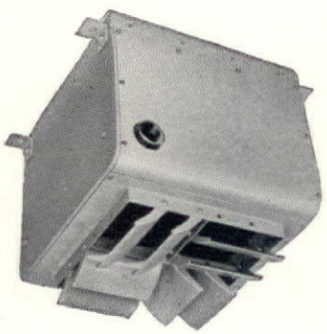

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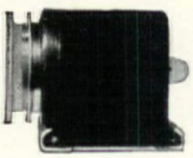

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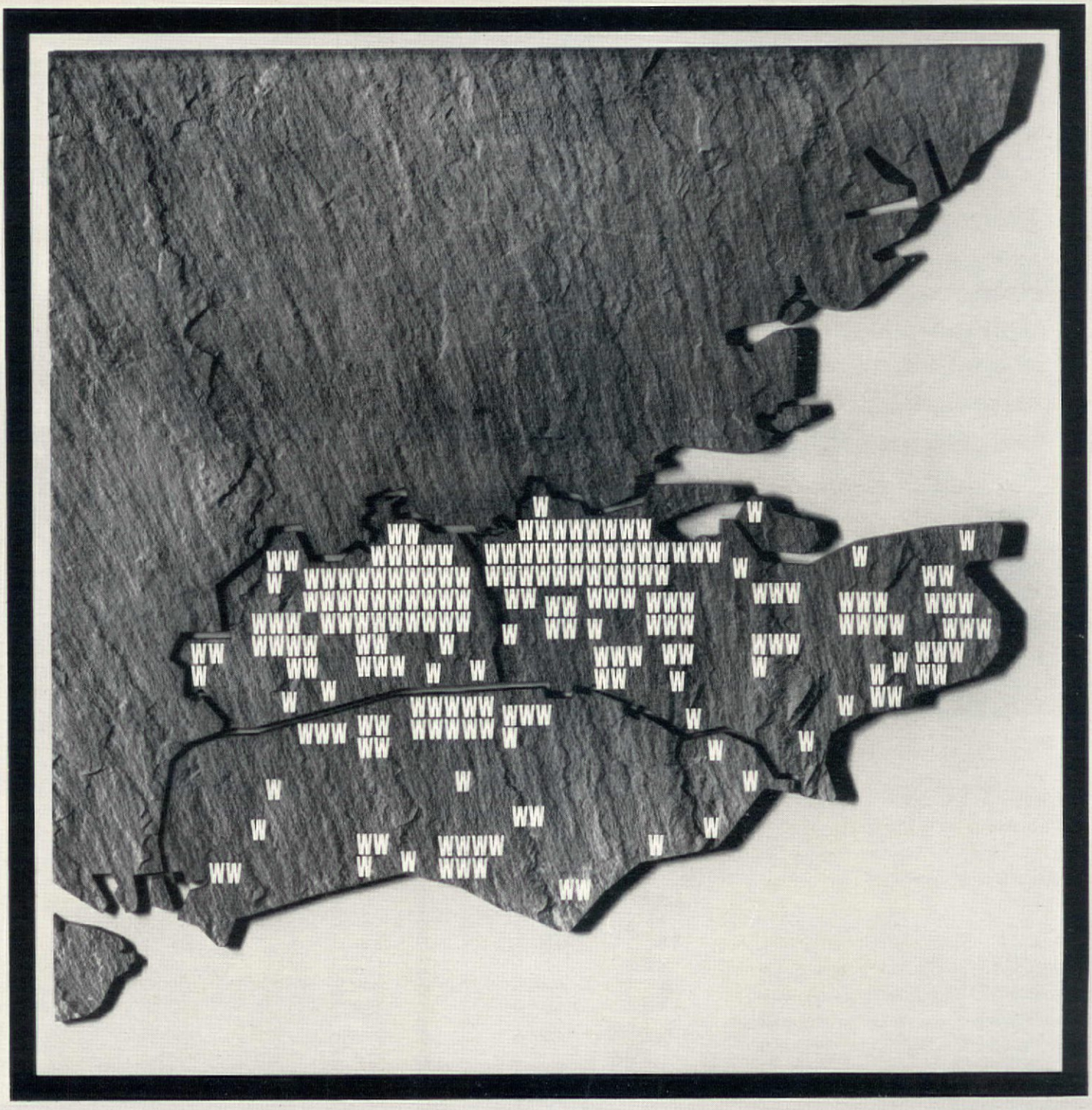

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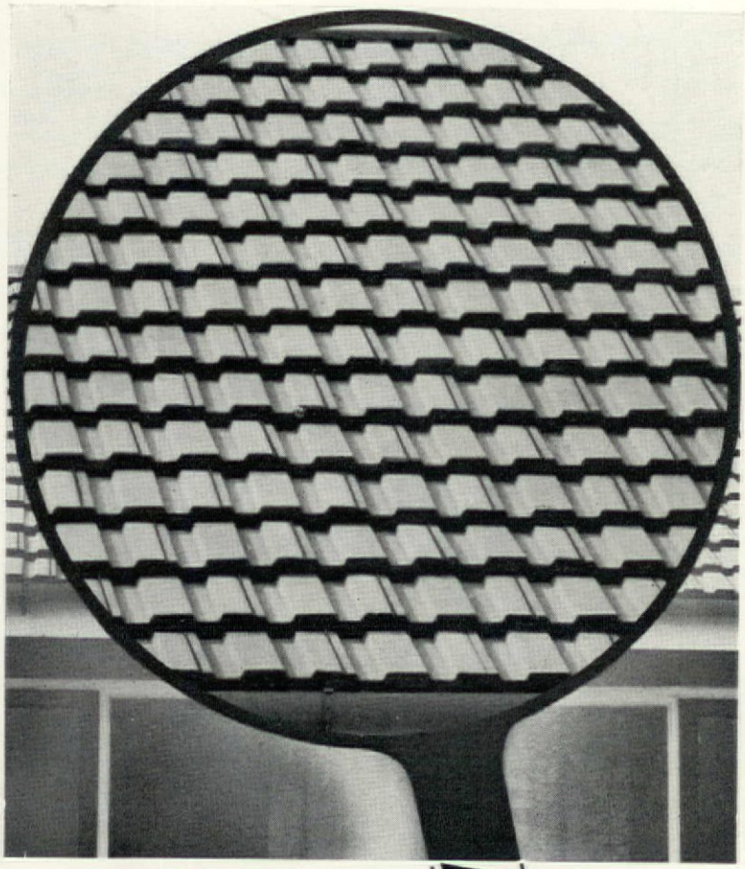

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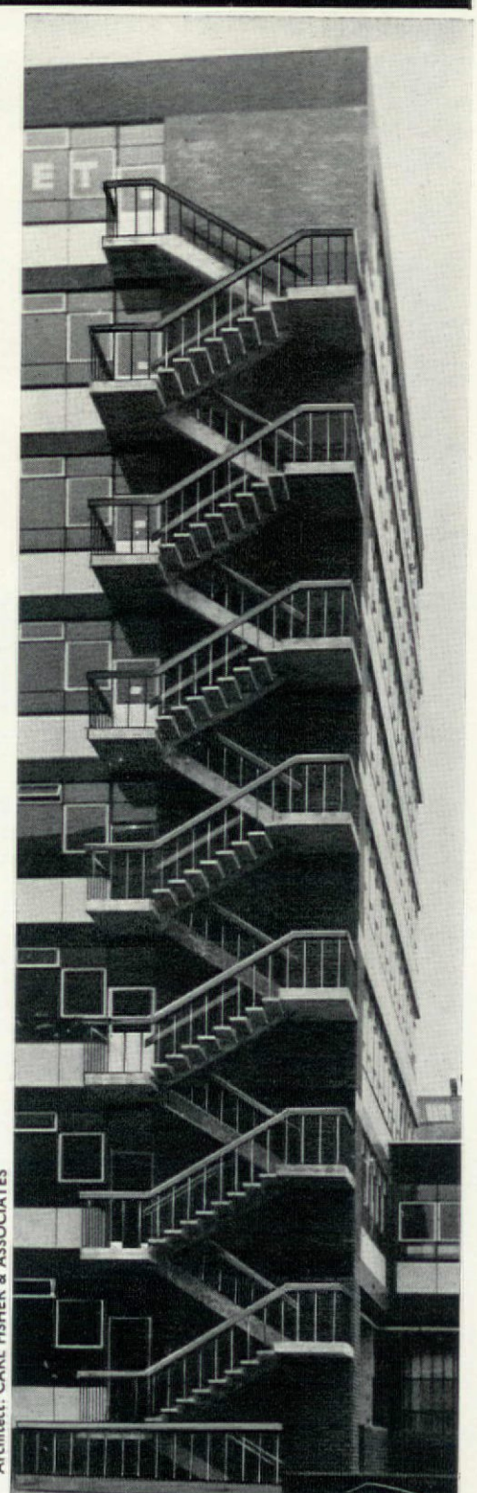

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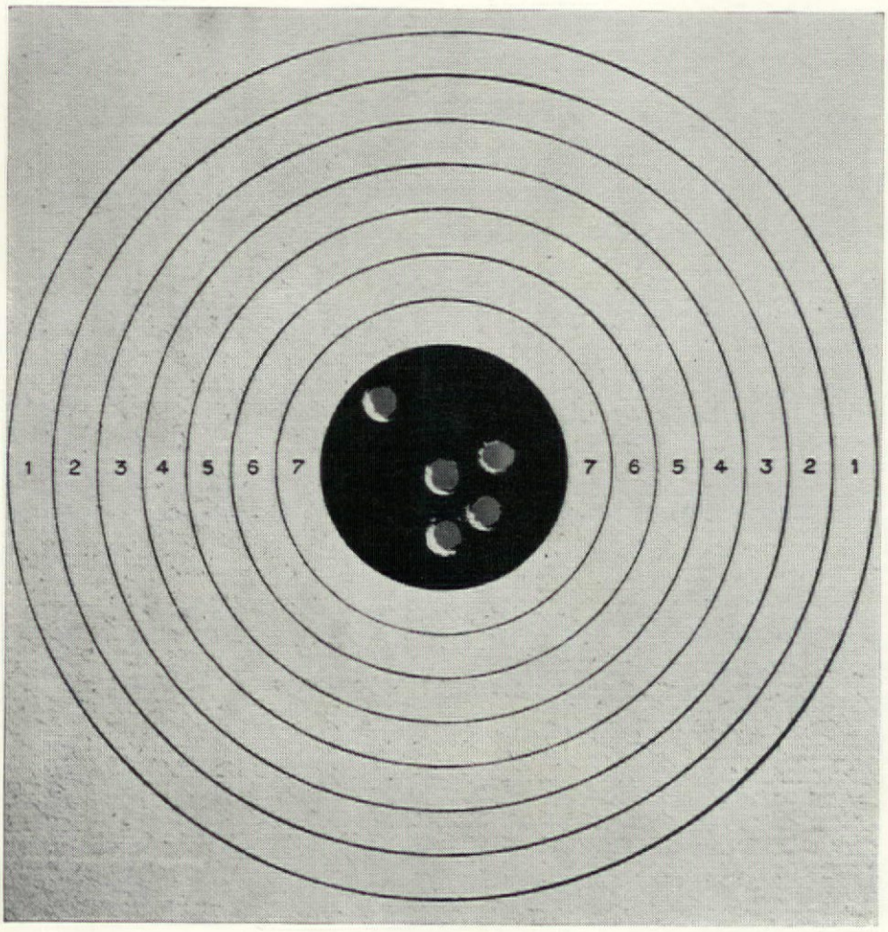

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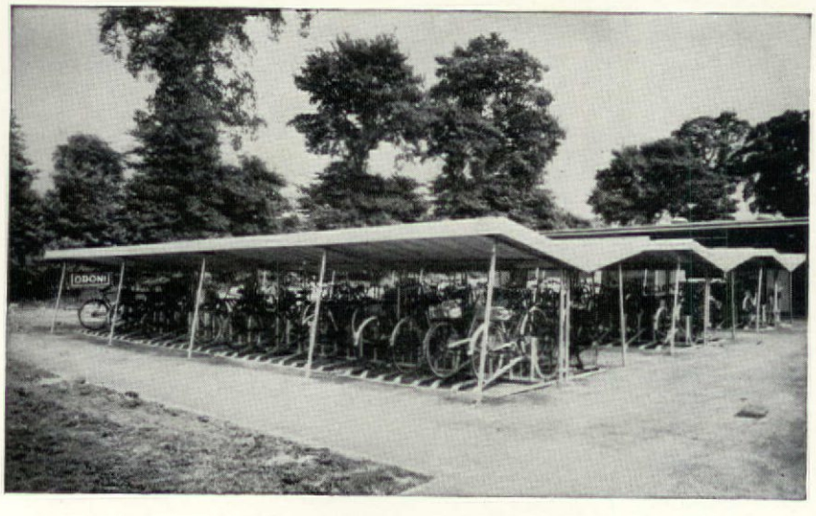

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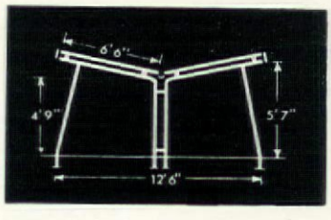

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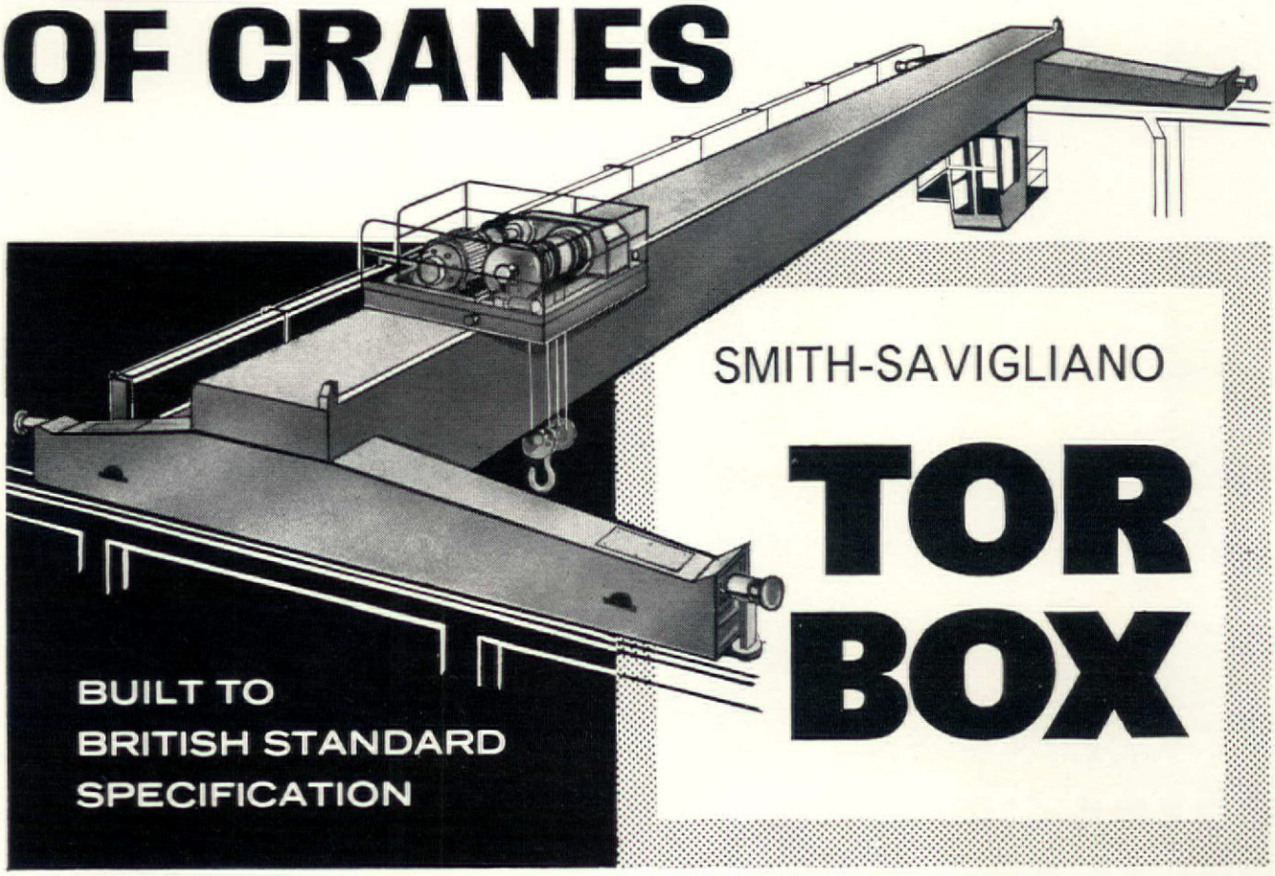

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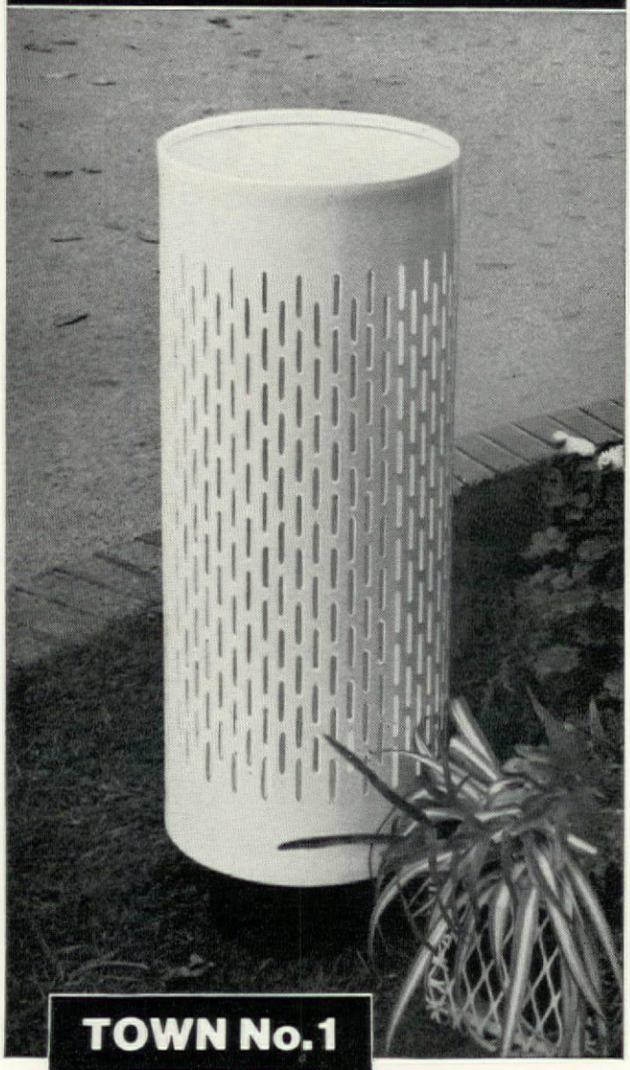

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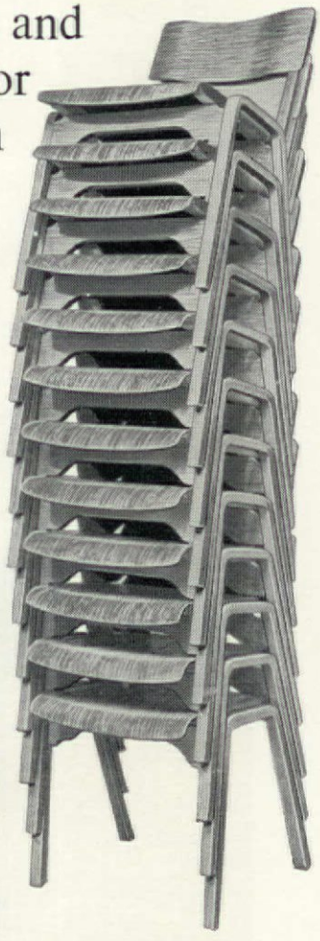

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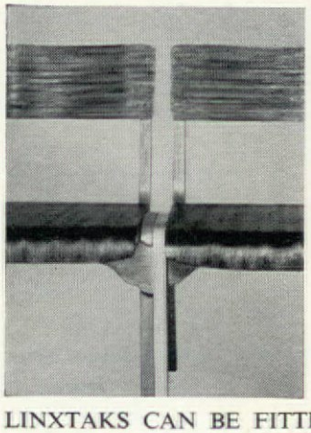

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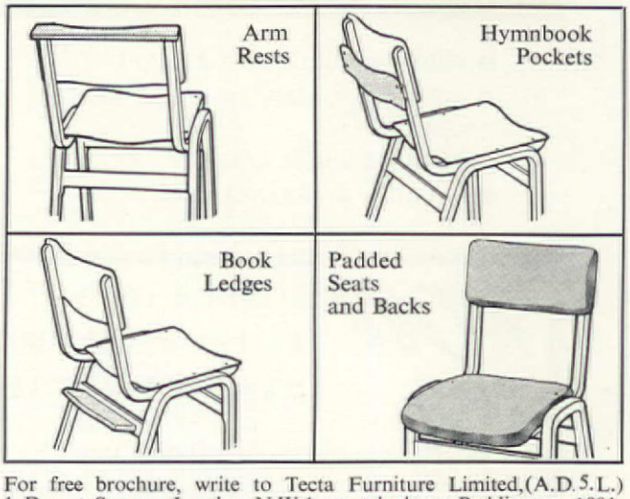

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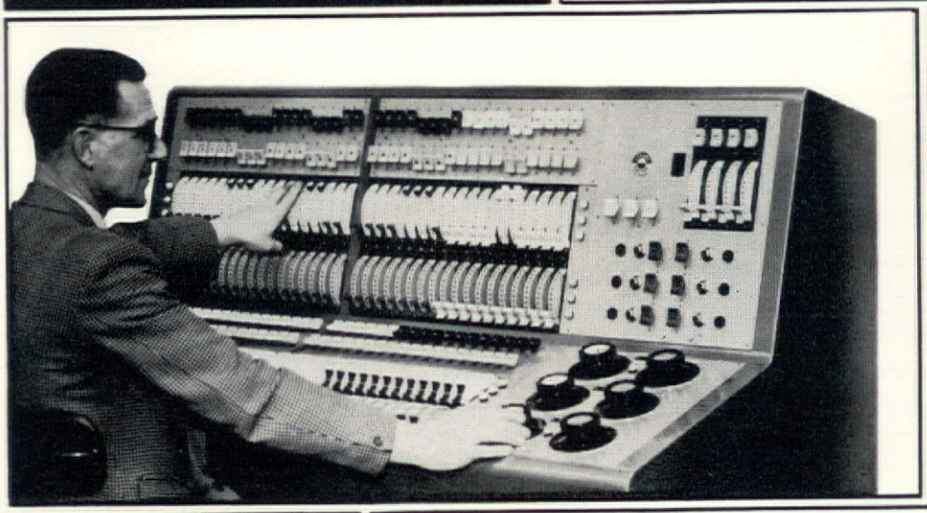

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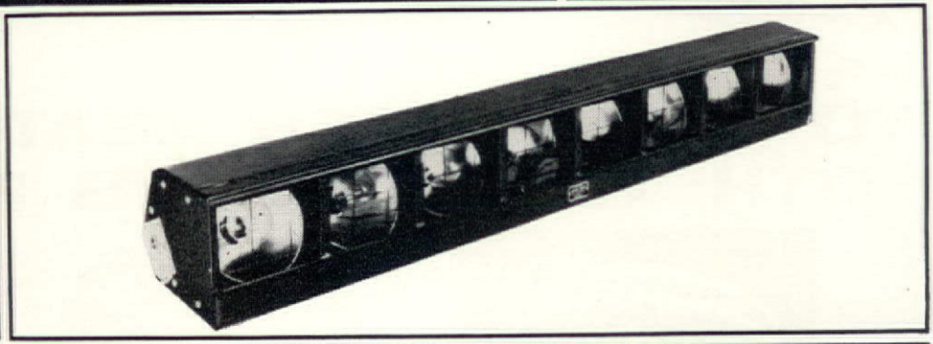

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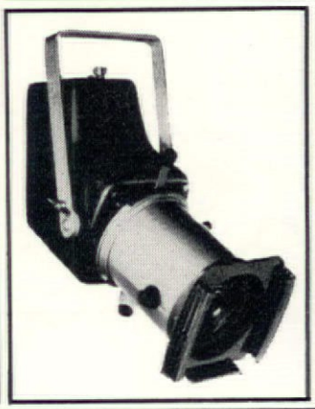

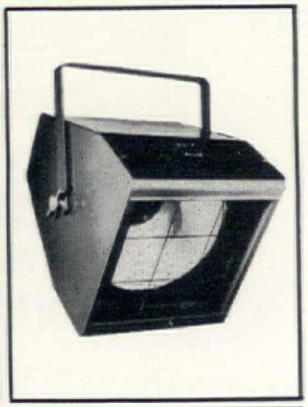

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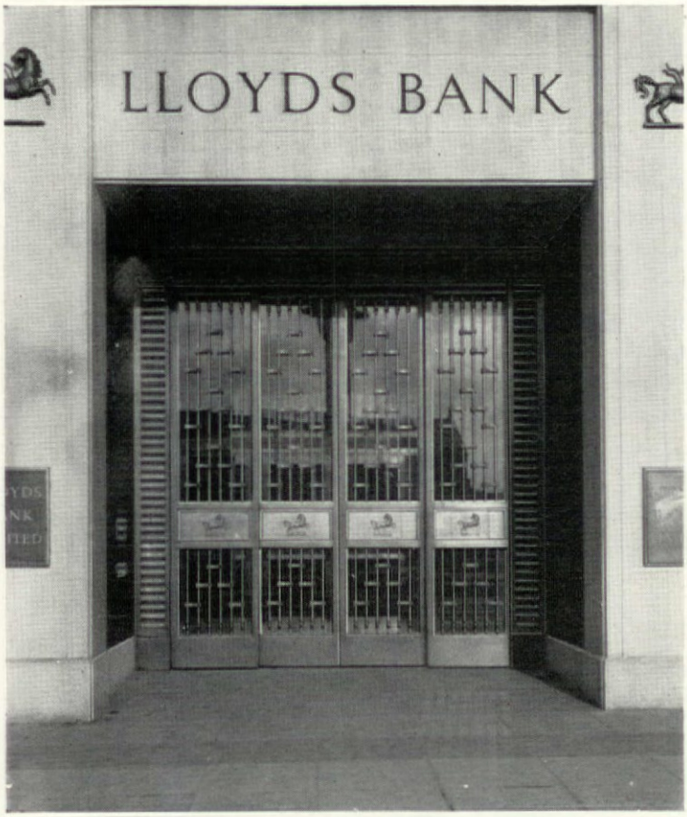

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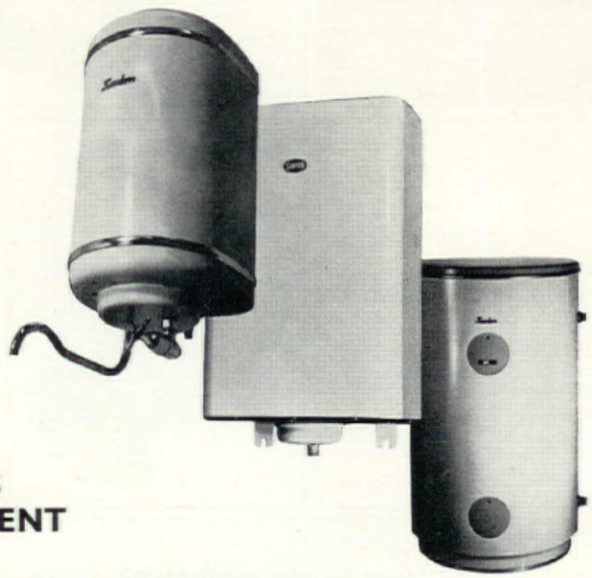

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	Race Contracts Ltd.	37
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	Tibor Ltd.	5
ASC, I, N, (38), (52), (53)	U.A.M. Group of Companies (Fort Sheeting)	35, 40, 41
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ASC, G	Uniton Ltd.	82
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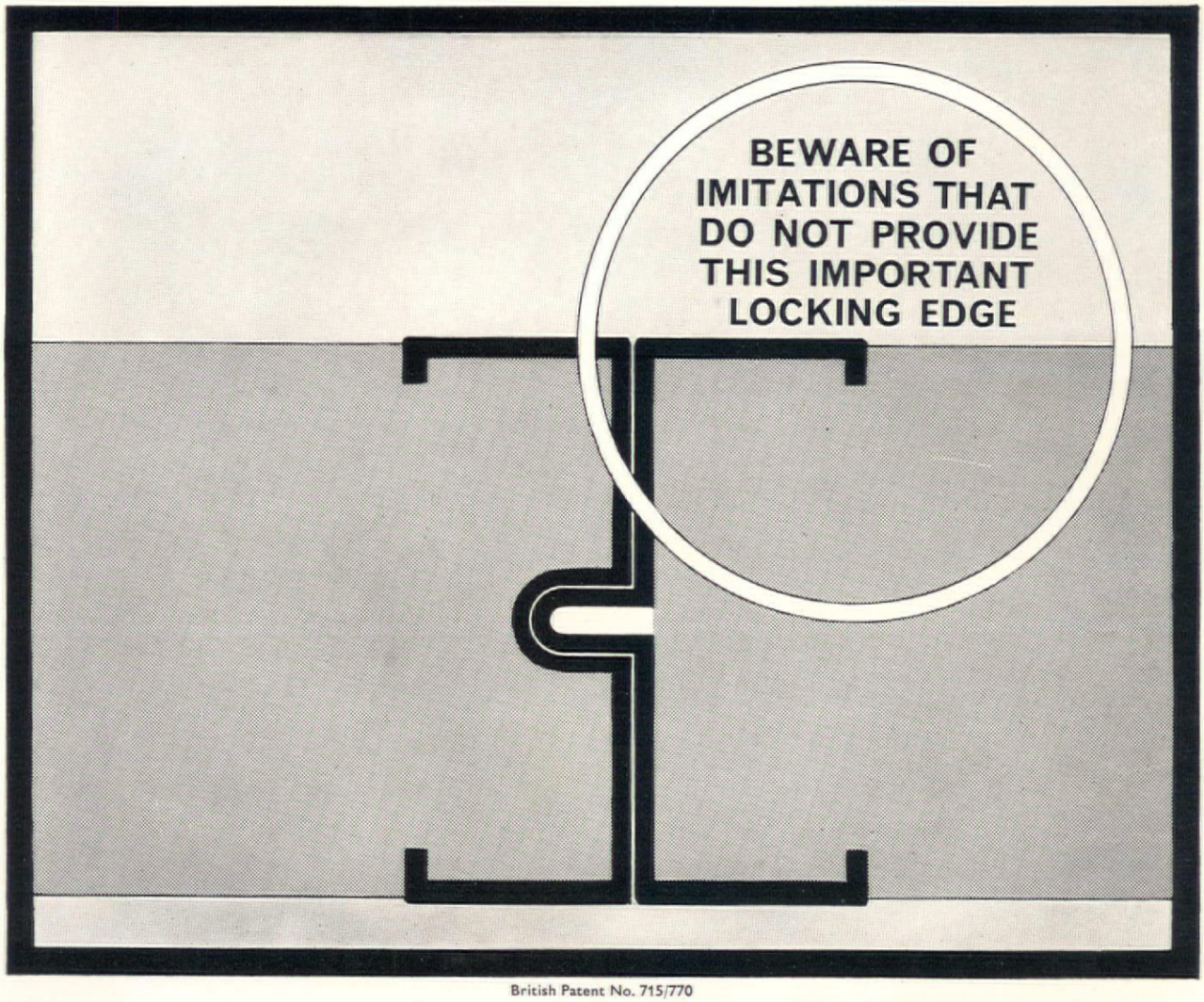

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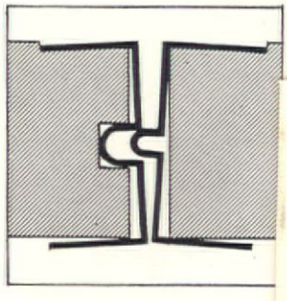

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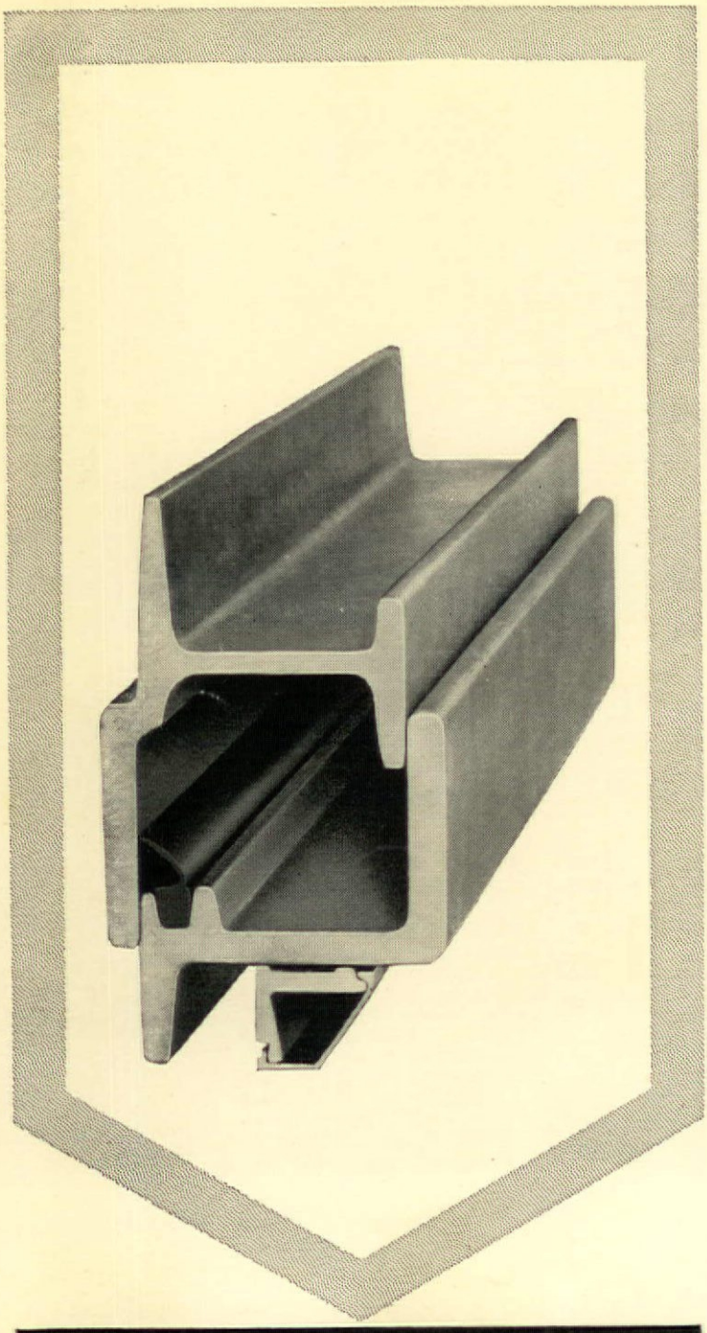

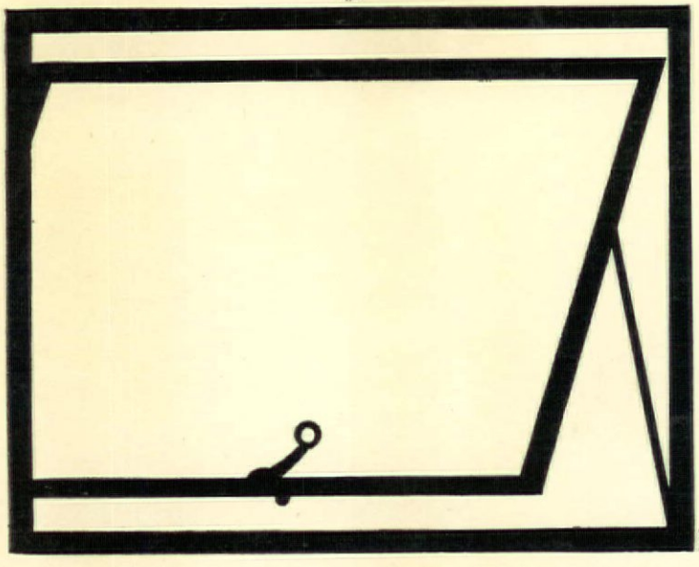

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